INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE ELEVENTH MEETING OF THE AIR TRAFFIC FLOW MANAGEMENT TASK FORCE
(ATFM/TF/11)

BANGKOK, THAILAND, 26 – 30 NOVEMBER 2007

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

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

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1.1 Introduction

1.1.1 The Eleventh Meeting of the Air Traffic Flow Management Task Force (ATFM/TF/11) was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand on 26 to 30 November 2007.

1.2 Officers, Secretariat and Participants

1.2.1 Mr. Andrew Tiede, Regional Officer ATM, acted as the Secretary of the meeting, assisted by Mr. Polawat Chootai, Regional Officer ATM.

1.2.2 Forty-five (45) participants from Afghanistan, Bangladesh, India, Indonesia, Malaysia, Nepal, Pakistan, Singapore, Sri Lanka, Thailand, United States, Viet Nam and IATA 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 opened the meeting and welcomed participants to Bangkok. He highlighted a number of recent civil aviation milestones in the region that had occurred recently, including the implementation of RVSM throughout the airspace of China a few days ago and the first revenue flight in the world of the A380 on a Singapore Airlines service between Singapore and Sydney, Australia in late October 2007.

1.3.2 The implementation of long range international ATFM procedures across the Bay of Bengal and South Asia during July 2007 was one of the outstanding milestones this year and would long stand as an example of what could be achieved in a cooperative manner between States, ICAO, IATA and their member airlines for the systemic benefit of the region. This meeting was a post implementation review of the ATFM implementation that would allow any significant problems to be addressed and enhancements to procedures to be identified. Mr. Tiede wished the meeting every success.

1.4 Documentation and Working Language

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

1.4.2 Nineteen (19) working papers, four (4) information papers and one flimsy 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: Post-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 previous meetings had agreed to a regime of data collection over 7 consecutive days each month and thanked States concerned for their continued efforts in submission of data. The data collected for the seven day periods for the months from May to October 2007 inclusive were collated and analysed by Thailand's BOBCAT Development Team (BDT) and Thailand presented the meeting with an overview and analysis of this data.

2.2 The meeting noted that throughout the 12-month ATFM operational trial (24 July 2006 – 4 July 2007), 16,331 aircraft submitted slot requests, with 93.80 percent (15,319 aircraft) accepting a slot allocation. There were various reasons for aircraft not accepting their slot allocations such as delay factor, route availability and sometimes weather forecast which allowed a more efficient and cost-effective route outside the Kabul FIR.

2.3 The meeting also noted that in the 4 months between the operational implementation of ATFM procedures on 5 July 2007 and 5 November 2007, 6,055 aircraft submitted slot requests with 93.38 percent (5,626 aircraft) accepting a slot allocation.

2.4 A PowerPoint presentation (**Appendix C** refers) from Thailand highlighted a number of matters, including the following:

a) Overall Traffic Distribution; and,
b) Flight Level Change Comparison

Traffic Distribution by Route

2.5 It was noted that while PAVLO and ROSIE generally carry most of the traffic entering the Kabul FIR, traffic through ASLUM has increased to a substantial level not far below PAVLO and ROSIE, even without the availability of FL280 via ASLUM.

2.6 The meeting noted the reduction in the number flights without slot allocation and the continued improvement in this regard. From the traffic data analysis, flights without slot allocation were distributed evenly across all ATS routes entering the Kabul FIR.

Traffic Distribution by Flight Level

2.7 The meeting also noted the positive trend in relation to usage of FL350, with many more flights transiting Kabul FIR at FL350.

Flight Level Allocation

2.8 The meeting was pleased to observe the data analysis which indicated that there was an improvement in percentage of aircraft entering the Kabul FIR at the allocated or higher flight level, not including FL390. This percentage increased from 77% in April to 87% in July 2007 and 93% in August 2007.

2.9 The number of aircraft with slot allocation at FL350 being required to enter the Kabul FIR at FL280 had been significantly reduced. Of those that were still affected, many flights had either departed early or late outside the AWUT window or submitted inaccurate EETs. Moreover, no aircraft with slot allocation at FL350 were required to enter the Kabul FIR at FL280 in June, July, August and October 2007. There was still a small percentage of aircraft which were allocated FL350 but were required to enter the Kabul FIR at FL310 and vice versa.

2.10 Furthermore, the meeting was also pleased to note that on the following days during the data collection period, all aircraft (100%) were able to achieve their allocated or higher preferred flight level for transit of Kabul FIR:

a) 26 May 2007;
b) 23 August 2007; and,
c) 18 September 2007.

2.11 This result suggested that flights were adhering more closely to their departure window and, in addition, ANSPs had substantially improved their performance in the ATFM system. The meeting congratulated all involved in achieving such milestones.

Aircraft without Slot Allocation

2.12 Since May 2007, the number of aircraft entering the Kabul FIR without slot allocation had decreased substantially to an average of 8 aircraft per week or approximately one flight per day. The data demonstrated that most of these were newcomers to the system or one-off aircraft such as private or charter flights. ANSPs are requested to assist these aircraft through their AIS mechanism in order to further reduce the number of aircraft not submitting a slot request.

2.13 Nevertheless, analysis of collected data showed that flights entering the Kabul FIR without slot allocation were overwhelmingly managed by affected ACCs in such a manner that they did not interfere with flights holding a slot allocation. This was a significant improvement in the performance of enroute ACCs who were complying more closely with the provisions of the AIP Supplement in regard to the handling of flights without an allocated slot.

Inadequate aircraft performance

2.14 During August data collection period, it was found that an aircraft accepted a slot allocation via ASLUM/FL390. The data showed that the aircraft transited India at FL340. However, it entered the Kabul FIR at ROSIE/FL280 although a transit at FL390 was available. Analysis of the data showed that there were other aircraft entering the Kabul FIR at FL310 and FL350 on both ASLUM and ROSIE during the same time period, suggesting that the flight had been unable to reach FL390 and, as FLs 310 and 350 were already allocated, the affected ANSP had correctly descended the aircraft to FL280.

2.15 In summary, the case study indicated that airlines would be taking a high level of risk in accepting slot allocation at FL390 where it appeared that aircraft performance did not actually permit flight at this high level.

Early and Late Departure Relative to AWUT

2.16 Thailand gave a presentation (reproduced as **Appendix D**) illustrating the timing performance statistics of aircraft departing earlier than, within, or later than the allocated wheels up time (AWUT) window (defined as AWUT plus 5 minutes) based on data from the one-week periods in the months from May to October 2007.

2.17 The meeting recognised that most of the late departures had been unable to recover sufficient time to enter the Kabul FIR within the slot allocation window, however was pleased to note a decreasing trend of flights departing after AWUT window.

2.18 The meeting also noted the relatively large percentage of flights departing a few minutes ahead of AWUT. In the case of South East Asian ports, the majority of early departures from Bangkok fitted into a '< 4 minutes before AWUT' window whilst the majority of flights from Singapore and Kuala Lumpur fell into a '< 6 minutes before AWUT' window. Regrettably, the data indicated that the majority of these aircraft were also unable to adjust their flight to enter the Kabul FIR within the slot allocation window.

2.19 Both of these groups - the early and late departures - were major contributors to flight level issues affecting both the early/late flight itself and other flights.

Retain 5 minute buffer

2.20 The meeting expressed continued concern at the poor on-time performance in relation to compliance with AWUT and Kabul slot times. An improvement in on-time performance would result in immediate ATFM performance improvement and, if sustained, enable reduction of system buffers. Reduction of system buffers would make more slots available per hour, including more slots during peak hours.

2.21 The meeting recalled the extensive discussions held previously in relation to these issues. It was evident that there were many technical reasons that would result in a flight losing time and, when coupled with even modest inaccuracy in meteorological forecasts, weather deviations and ATC requirements including vectoring, speed control etc it was understandable that even small speed variations would have a significant impact. This was particularly likely in the situation of departures from the eastern side of the Bay of Bengal which covered 5 to 6 hour average route segments from departure to the Kabul FIR boundary.

2.22 The meeting recognized that both ANSPs airlines had important roles to play in improving on-time performance. Actions taken by ATC in positioning the aircraft at the runway holding point contributed greatly to accurate AWUT compliance. Similarly, ATC actions in the enroute phase of flight involving speed control, vectoring, rerouting or other necessary traffic management activities could make it extremely difficult for the flight to comply with the Kabul entry time.

2.23 Clearly, management of the flight by the operating crew also had obvious impacts on the on time performance. In particular, the meeting recalled that ATFM/TF/10 (May 2007) had noted performance data from one airline which demonstrated a relatively higher on-time performance in terms of AWUT and Kabul slot time compliance, indicating that, through careful attention, performance improvements could be realised in this area.

2.24 Notwithstanding, the meeting considered that varying the ATFM parameters including those relating to system buffer times was not desirable until the underlying factors causing poor on-time performance were better understood. The Task Force would continue to study these issues but agreed that the 5-minute buffer parameter would be retained until improvements in on time performance justified a reduction in the parameter.

Deficiencies in data provision

2.25 Thailand briefed the meeting, by way of the PowerPoint presentation shown as **Appendix E,** regarding some of the difficulties being experienced by AEROTHAI in attempting to collate and analyse the data provided by States. The meeting recognised that data collection had always been a prime requirement to ensure that the system was operating efficiently and reliably and to indentify areas of weakness in the operations so that enhancements could be made.

2.26 The prime defence against deficiencies in data input by ANSPs was the use of only the prepared Data Collection Spreadsheet (Excel Worksheet) circulated by AEROTHAI when submitting data to the Bangkok ATFMU, as well as ensuring that all data was correct and all required data was submitted. AEROTHAI then collated the data from each area in one master spreadsheet to facilitate analysis. The purpose of having one data collection format for all areas was to ease the workload for AEROTHAI in providing collation and analysis of data collected at future task force meetings.

2.27 However, shortcomings in the timely and accurate submission of data by States meant that AEROTHAI had to spend a lot of time chasing up data and then correcting the data once it was received to ensure that it was usable. In a few cases, data was unable to be accurately deciphered and had to be discarded from the analysis.

2.28 The meeting noted that some FIRs were making their own data spreadsheets which were not in accordance with the agreed spreadsheets, were not submitting all the data required and/or were not submitting data in a timely fashion. Another issue was that the methodology of inputting was not always correct which made the changeover to the master spreadsheet difficult to finalize. These issues made the work of AEROTHAI very difficult and time consuming and caused results to be subjective on occasions due to the lack of correct data.

2.29 AEROTHAI would continue to make more areas of the spreadsheet tamper proof by locking parameter formats in for respective cells, but sought assistance from all parties providing data in strictly following the promulgated guidelines and refraining from altering the structure of the spreadsheet in any way.

Ongoing data collection

2.30 Noting the valuable and factual information available to the ATFM/TF as a result of the data gathering and analysis, the meeting agreed that continued data collection was essential to improving ATFM performance.

2.31 The meeting agreed that continuation of the existing data collection arrangements was necessary. Accordingly, a 7 consecutive day data collection would occur each month, commencing from the third Sunday of each month inclusive, in accordance with the current arrangements. States were requested to provide the data to the ATFMU as soon as possible after the end of the 7-day period on each occasion, to enable collation and analysis. Unless there were negative trends identified during the monthly analysis which required immediate attention, results would be collated and presented to the periodic meetings of the ATFM/TF.

Agenda Item 3: Operational Issues

Malaysia – Operational Feedback

3.1 Malaysia provided information to the meeting regarding the implementation of ATFM procedures on 5 July 2007 and the commissioning of ATS route L510 to assist with traffic bunching issues continually being experienced in the Kuala Lumpur FIR. Malaysia undertook the following preparatory work for the full implementation of ATFM procedures and implementation of ATS route L510.

a) Revised AIP SUPP – 17/2007 (dated 24 May 2007) concerning ATFM procedures was issued superseding AIP SUPP 06/2006 (dated 06 April 2006)

b) An AIP SUPP – 18/2007 (dated 24 May 2007) was issued detailing the procedures and establishment of L510 and conversion of P628 into uni-directional westbound route to be implemented on 2 August 2007.

c) Trigger NOTAM A1822/07 was issued on 27 July 2007 notifying the effective date on the implementation of L510 and conversion of P628 to uni-directional westbound route.

d) Malaysia signed the Addendum to LOA and SLOA for ATS route L510 with India.

e) A day refresher course on ATFM procedures and briefing on the implementation of ATS route L510 and conversion of P628 into uni-directional route was conducted for operational controllers and AIS officers.

3.2 The implementation of L510 south of P628 on 2 August 2007 has alleviated the traffic bunching within Kuala Lumpur FIR. Affected flights that are required to divert into L510 would maintain FL260 initially and may expect higher climb latest by AGELO, which is 8 minutes to EMRAN (Kuala Lumpur/Chennai FIR Boundary).

3.3 Since the implementation of L510, a total of 7 flights were diverted into L510. *(Refer Table1 and 2).* During the early stage of the implementation, some of the operators were not familiar with the new route and procedures. As a result, two flights were required to make an orbit in order to achieve the required longitudinal separation. On another occasion one of the affected flights managed to divert into L510 after receiving details from KL ACC the route's procedure. One flight was unable

to divert into L510 due to bad weather and had to continue on P628 at FL260. **Table 1** below shows the total ATFM flights departing from Kuala Lumpur and Singapore between 1 January and 19 November 2007. From the figures shown, P628 is clearly favoured route over L759 and M770.

Month (2007)	**P628**	**L759**	**M770**	**L510**	**M751/ L507**	**Total Flights**
JAN	329	245	20	0	0	594
FEB	258	242	55	0	3	558
MAC	362	221	31	0	1	615
APR	326	225	25	0	0	576
MAY	299	245	33	0	0	577
JUNE	340	136	13	0	2	491
JULY	339	134	12	0	0	485
AUG	349	184	15	1	0	549
SEPT	350	161	10	3	0	525
OCT	327	212	22	3	0	564
Till- 19th NOV	303	206	27	0	7	543
TOTAL	**3582**	**2211**	**263**	**7**	**13**	**6077**
Percentage	*59*	*36.3*	*4.4*	*0.10*	*0.20*	*100*

TABLE 1 – Total ATFM affected flights departing from Kuala Lumpur and Singapore between 1 January and 19 November 2007

3.4 **Table 2** below shows the occurrence of bunching on P628, L759 and M770 between 1 January and 19 November 2007, which resulted in flights having to maintain non-optimum level of FL260, *FL320* and climbing to FL340 in the initial segment of their flights.

Month	**Routes and Flight Levels**										**TOTAL**
	Orbit		**FL260**		**FL320**		**FL340**			***L510***	
	P628	L759	P628	L759	P628	L759	P628	L759	M770		
Jan	0	0	0	3	2	0	17	2	0	-	24
Feb	0	0	0	6	0	1	11	4	1	-	23
Mar	0	0	6	2	0	0	14	1	0	-	23
Apr	0	1	7	1	0	0	9	2	0	-	20
May	0	1	2	1	0	3	11	4	0	-	22
June	0	0	1	1	0	0	17	1	0	-	20
July	0	0	3	0	0	0	15	0	0	-	18
Aug	2	0	1	0	0	0	11	0	0	**1**	15
Sept	0	2	0	0	0	0	15	4	0	**3**	24
Oct	0	0	1	2	0	0	19	2	0	**3**	27
Nov	0	0	1	1	0	1	7	6	0	0	16
TOTAL	2	4	22	17	2	5	146	26	1	7	**232**
%	*0.87*	*1.8*	*9.5*	*7.5*	*0.87*	*2.4*	*62*	*11.5*	*0.46*	*3.1*	*100*

TABLE 2 – Bunching of Traffic on P628, L759 and M770 between 1 January and 19 November 2007

3.5 The meeting thanked Malaysia for the information and noted the number of flights that had been diverted into L510, affected flights held at FL260 and flights obliged to orbit within Kuala Lumpur FIR. Importantly, the meeting also noted that the implementation of L510 had alleviated the traffic bunching issues previously experienced by Kuala Lumpur ACC.

Kabul ACC Briefing

3.6 The Kabul ATS authority in the person of the Manager of the Kabul ACC provided a short briefing in relation to operational matters in the Kabul FIR. Notably, the Kabul ACC served a zone of heavy military activity involving multi national forces on a twenty-four hour/7-day a week basis whilst also facilitating civilian domestic and overflight traffic to the maximum extent possible.

3.7 The Kabul ACC High Sector became active in May of 2005 and subsequently the complete Kabul ACC structure was commissioned on 11 July, 2005. 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. The airspace design was unique and had many areas that were restricted by military missions. Military restrictions still affect the airspace and its usage and these restrictions can change on a few minutes notice.

3.8 This situation was further complicated by poor radio and landline communications and the fact that there was no radar available for the Kabul ACC and all operations had to be handled using procedural control techniques. Nevertheless, the Kabul ACC was handling very large numbers of flights procedurally with approximately 132,000 traffic movements during 2006 and traffic for 2007 expected to exceed 150,000 movements.

3.9 The implementation of ATFM procedures had ensured an orderly flow of 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. Additionally, the ATFM procedures have 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.

3.10 Afghanistan recognized the hard and complex work undertaken by affected Asia/Pacific States and airspace users 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/11 meeting and was pleased to provide feedback in relation to the ATFM procedures as well as information concerning the Kabul ACC and its mission.

Thailand – Operational issues

3.11 Thailand advised the meeting that the occurrence of traffic bunching on L759 has increased over the past several months which have culminated in aircraft being held down to FL260. There has also been some occasions where aircraft have been required to carry out an orbit to gain the necessary separation needed outside of radar coverage crossing the Bay of Bengal. The meeting also noted that from a statistical perspective the number of flight utilizing M770 for transit across the Bay of Bengal is a very low percentage compared to flights operating on the parallel route of L759.

3.12 At the ATFM/TF/10 meeting, it had been requested by IATA that M770 be extended from RAN to VKB to support traffic flow on M770. Coordination was made and approved by the Thailand military authorities on this extension, which was fully implemented on AIRAC date of 5 July 2007. Unfortunately to date, it appears that there have been little or no flights using this extension to M770. The meeting encouraged IATA to ensure member airlines were fully aware of the availability of the RAN-VKB segment and its assistance in feeding M770.

ATFM Briefing to European Airlines

3.13 The AEROTHAI BOBCAT Development Team (BDT) presented the meeting with a report of the ATFM briefings to European airlines conducted in Paris and Frankfurt between 17 and 20 September 2007.

3.14 The meeting was informed that through discussions with European airlines over some difficulties experienced in either submitting slot requests or changing slot allocations after cut-off time, it was agreed that the BDT would conduct ATFM briefings to the European airlines in Paris and Frankfurt on 17 – 18 and 19 and 20 September 2007 respectively.

3.15 The BDT expressed their sincere thanks to all international airlines who participated, as well as to the ICAO Regional Office in Paris and Lufthansa Airlines in Frankfurt, who generously offered their premises to hold these important briefings. Details of the briefings are reproduced as **Appendix F** to this report.

3.16 The Task Force appreciated Thailand's continued readiness to assist in any way with improving the services provided by AEROTHAI. IATA thanked the BDT for undertaking the missions to Europe and for their continued willingness to interact with airlines in order to ensure that all operators were able to use the BOBCAT system to maximum advantage.

Outcomes from RDGE/7

3.17 The meeting was advised that the Seventh Meeting of the Route Development Group – Eastern Part of the ICAO EUR Region (RDGE/7) was held in the ICAO European and North Atlantic Office from 15 to 19 October 2007. The languages of the meeting were English and Russian with 65 participants from 18 States and three international organizations attending. Due to ATFM procedures for westbound flights transiting the Kabul FIR, AEROTHAI had also attended RDGE/7 and provided feedback to the ATFM/TF/11 meeting.

3.18 As part of its working methodology, the RDGE/7 meeting broke into a number of sub meetings. The Mini EUR/MID-INT Sub-Meeting combined with Middle Asia area sub-meeting was attended by representatives from Armenia, Azerbaijan, Kabul ACC, Russian Federation, Thailand (AEROTHAI), Turkmenistan, Uzbekistan, Eurocontrol, IACA, IATA and ICAO.

3.19 Various Working Papers were submitted from States, IATA and International Air Carriers Association (IACA). A presentation was given to the meeting on ultra long-haul flights flying from Mumbai (VABB) to North America. The meeting noted that the choice of route is critical for these types of operations.

3.20 The meeting noted that there is a current lack of adequate communication means (ground-ground and ground-air) within the Kabul FIR, an operational constraint greatly affecting flexibility for which the Kabul ACC will accept and implement many of the proposals put forward to the mini EUR/MID-INT sub-meeting. Nevertheless, it was agreed that the following routes will be evaluated by the Airspace Control Authority of Afghanistan and if considered feasible, submitted to the Afghan government as priority for implementation. Five routes would be considered:

a) MID/41: SAMAR (3121N 07434E) – LA (3130N 07424E) – LAJAK (3356N 07030E)

b) MID/42 Option 1: INDEK (3246N 07316E) – PS (3359.7N 07130.3E) – ALAMI (3506N 07025E) – PINAX (3715N 06906E) – G555

c) MID/47: PG (2657.3N 06407.5E) – New WPT – KAMAR (3239N 06044E)

d) MID/52: KAMAR (3239N 06044E) – SERKA (2951N 06615E)

e) MID/53: LAJAK (3356N 07030E) – DOSHI (3536N 06826.5E)

3.21 In respect to paragraph (d) above, the ATFM/TF/11 meeting has changed this route so that it enters the Tehran FIR and leaves the Kabul FIR at SOKAM (3313.3N 06037.9E), not KAMAR. The meeting was advised that the ICAO APAC, MID and EURO/NAT Offices would continue close cooperation on the outcome of progress in regard to the five proposed routes to ensure transparency of the issues that would affect the interface area of the three routes.

3.22 The meeting noted the work of the RDGE/7 meeting and the contribution given by Afghanistan and Thailand to this important meeting. It was pleasing to note that there was focus on not only Kabul issues but also issues on proposed new routes between India and Pakistan which have been discussed at previous ATFM/TF meetings.

Ultra long haul flights from Mumbai

3.23 The meeting recalled that in the past, the priority procedure of allocating FL280 to aircraft departing from Indian and Pakistan airports worked satisfactorily as it allowed aircraft departing from Indian and Pakistan airport to become airborne while aircraft departing from airports east of the Indian sub-continent to have priority for FL310 and above.

3.24 The meeting recognized that the situation had now changed where some airlines were now operating ultra long-haul flights to the USA and sometimes their preferred routing is via ASLUM which had a Minimum Enroute Altitude (MEA) of FL310. This restriction took away the opportunity of flying FL280 via ASLUM through the Kabul FIR. The meeting anticipated that routing via SERKA and PAROD or SERKA and SOKAM may also become shortly available, however under the present arrangements, when these aircraft would want to flight plan via these points, it would not be available due to MEA restrictions.

3.25 The meeting was informed that there were now 4 international airlines operating to the USA during the ATFM BOBCAT period; American Airlines and Continental Airlines departing from Delhi and Air India, Delta Airlines and Continental Airlines departing from Mumbai. The majority of the time, these airlines would file FL280 into the Kabul FIR at SITAX on ATS route A466. Nevertheless, there were occasions depending on wind forecasts where tracking via ASLUM or SERKA would be much more preferable. Other long-haul airlines departing Mumbai operating to Europe included Lufthansa, Air France and also British Airways on infrequent occasions. These airlines indicated their slot requests on a variety of routings through Kabul FIR including via ASLUM.

3.26 In discussing this matter are the meeting recognized that the allocation of priority at FL280 for departures from Mumbai meant that if these departures were tracking via ASLUM they were given priority for a flight level (FL280) that was not actually available. This acted to limit the flexibility for departures from Mumbai. Accordingly, the meeting agreed to remove the priority for FL280 all flights via ASLUM, meaning that departures from Mumbai wishing to proceed via ASLUM would be in equal competition with all flights via ASLUM for slots at FL310 and above.

3.27 As this change required a change to the BOBCAT software parameters AEROTHAI will make the software adjustment and provide at least two weeks notice of the change via the BOBCAT Announcements page.

3.28 Singapore commented that this issue should be reviewed holistically, not just in the case for Mumbai departures, as the traffic follow in this region would increase in the near future. IATA also considered that, now that the system was in stable operation, the arrangements for the priority at FL280 should be reviewed again to ensure that they were still necessary. The meeting added an item to the Action List to ensure the matter was reviewed during the next meeting.

Proposed routings into Kabul FIR during the ATFM period

3.29 In an extension of work commenced during ATFM/TF/8 (November 2006) Thailand presented the meeting with an initial capacity analysis resulting from introducing proposed SERKA-KAMAR/SOKAM and SERKA-PAROD routings to the Kabul FIR route structure.

3.30 The meeting recalled that during ATFM Operational Trials and ATFM Operational Implementation, there were requests from international airlines to introduce a new route from SERKA-KAMAR/SOKAM, as shown in **Figure 1** below. There had also been request from IATA to facilitate aircraft from Mumbai for their aircraft to enter the Kabul FIR at SERKA to join G792 at PAROD (Kandahar). The meeting was informed that from the BOBCAT perspective both these routings were feasible.

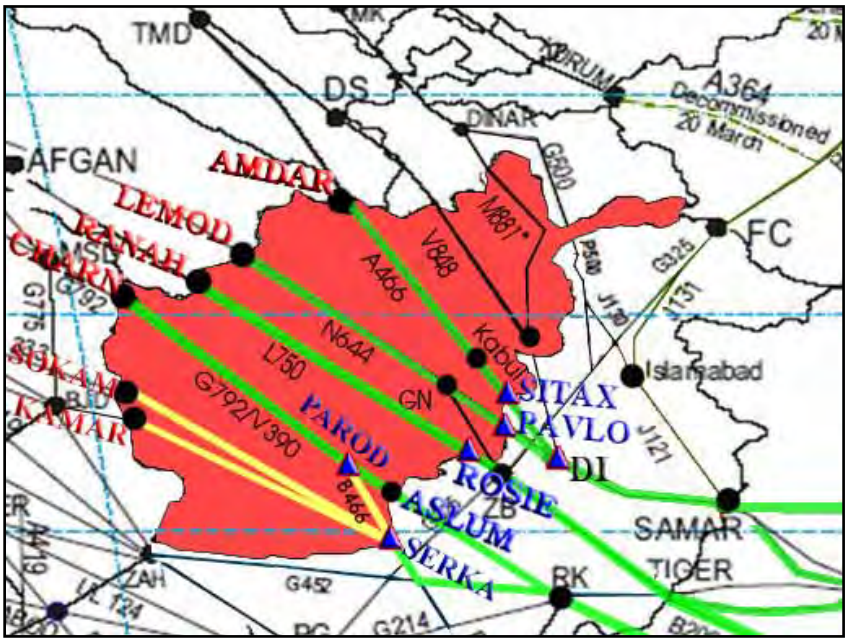

Figure 1: Kabul FIR Route Map with SERKA-PAROD/SERKA-KAMAR

3.31 As illustrated in Figure 1, the meeting noted that it would appear that SERKA would function much like DI for A466 and N644 routing. However, in the case where PAROD was active, there would no longer be a need of waypoint ASLUM as a flow management waypoint. Rather, all flights entering the Kabul FIR for G792/B466 could be metered at PAROD.

Changes to ATS Route Structure Entering the Kabul FIR

3.32 As a result of discussions on new proposed routes entering the Kabul FIR from Pakistan, it was decided that a Small Working Group (SWG) consisting of participants from Afghanistan, Pakistan, Thailand and IATA, to convene to discuss an action plan for several issues related to changes to the ATS route structure entering the Kabul FIR.

New ATS route SERKA – SOKAM extending UL333 across Kabul FIR

3.33 Arising from the previous work of the ATFM/TF and discussions held during the RDGE/7 meeting, Afghanistan had agreed to implement an ATS route segment between SERKA and SOKAM or SERKA and KAMAR. The SWG was advised by IATA that the Islamic Republic of Iran Civil Aviation Authority had contacted the IATA Middle East Office with agreement for aircraft flying this route to transit the Tehran/Kabul FIR boundary at SOKAM. Accordingly, the meeting agreed that the extension of existing route UL333 in Tehran FIR across the Kabul FIR via SOKAM to SERKA was the most logical and efficient way forward and would also alleviate congestion on G792 between PAROD and CHARN with traffic from MUMBAI joining from SERKA.

3.34 Accordingly, the meeting requested that Afghanistan coordinate closely with Iran and Pakistan with the objective of implementing this route. In particular, it would be important to formally confirm Iran's agreement to the entry point SOKAM into the Tehran FIR.

3.35 Pakistan advised the SWG that they did not foresee any issues in the implementation of this route and would be available to coordinate further actions. AEROTHAI, on behalf of Thailand, advised the SWG that the introduction of the new route into Afghanistan would require a change in the BOBCAT configuration. An additional sequencing point at SERKA would be inserted into the BOBCAT software to sequence flights. Thailand saw no difficulty or delay in achieving this end. The Kabul ACC representative advised that, in the initial stage, this route would have a Minimum Enroute Altitude (MEA) of FL310.

3.36 Noting that Iran was not represented at the meeting, the Regional Office would update the ICAO Middle East Office about these developments and request their assistance to Afghanistan in coordinating these arrangements with Iran in order that the route be implemented as quickly as possible. Afghanistan recognised that an AIP Supplement implementing the route would need to be issued with 2 AIRAC cycle (56 day) advance notification in order to ensure sufficient time for promulgation. Afghanistan would also need to submit an amendment proposal to the Middle East Basic Air Navigation Plan (BANP) to the ICAO MID Office in a timely manner and recognised that, if possible, a joint proposal from Afghanistan, Iran and Pakistan would also reduce the coordination subsequently required.

3.37 Once the route was activated, BOBCAT would sequence flights via SERKA/UL333 in the same manner as the other routes crossing Pakistan. Using the AIP Supplement published by Afghanistan to implement the route as the trigger, the BOBCAT Development Team would enable SERKA as a sequencing point and inform users by way of the BOBCAT messages page.

3.38 The meeting recognised that in order to enable BOBCAT sequencing via SERKA, States would need to extend the provisions of the existing AIP Supplement for ATFM procedures to include SERKA/UL333. The Regional Office would request States via letter to issue an appropriate NOTAM using the model text shown in **Appendix G**.

3.39 The meeting conveyed appreciation to Afghanistan for their good will and assistance in this regard and also thanked Pakistan for their flexibility in this matter. The Regional Office would assist as required.

Remove restrictions on B466 between SERKA and PAROD

3.40 The meeting was advised that in the initial stages of planning for ATFM operations there were no flights from Mumbai which fell within the period of the ATFM hours of operation. Consequently, no consideration was given to departing aircraft from Mumbai in the design of the BOBCAT system parameters. Furthermore, to avoid the inadvertent convergence of traffic on B466

and G792 at PAROD in Kabul FIR, a decision was taken to restrict the use of B466 between SERKA and PAROD during the hours of operation of ATFM.

3.41 However this situation had changed some time ago with a number of airlines commencing ultra long haul operations from Mumbai through the Kabul FIR during the ATFM period. Due to the location of Mumbai, departing aircraft that chose to plan via G792 to the ASLUM entry point into Kabul FIR were required to fly excessive additional mileage by established routes to join G792.

3.42 Following discussion of this matter with the BOBCAT Development Team (BDT), a proposal was put to ATFM/TF/10 (May 2007) under which, by moving the calculated "BOBCAT Kabul entry point" from ASLUM to PAROD, both B466 from SERKA and G792 from ASLUM could both be used during the ATFM operation period. BOBCAT calculations would treat both ATS routes as one route to calculate 15 minutes spacing overhead PAROD. Although ASLUM would remain on the charts, it would not be used in the BOBCAT spacing process, being replaced by PAROD for the purposes of the BOBCAT system.

3.43 Afghanistan confirmed their requirement of 10-minute separation at PAROD between two aircraft at the same level and, noting the short distance from the FIR boundary to PAROD, reiterated that assistance was necessary from the Pakistan ACCs to assist in achieving this requirement. Pakistan proposed that waypoints ABDUL and SERKA, both approximately 100 nm from PAROD, could be used to provide calculations in ensuring that a 10-minute separation could be achieved between two aircraft tracking to PAROD on B466 and G792 respectively. The meeting noted that the BOBCAT system would be configured to space aircraft 15 minutes apart over PAROD from a strategic point of view which would assist Pakistan in providing 10 minutes separation at PAROD.

3.44 Pakistan also advised that to simplify ATM procedures between Lahore and Karachi FIR in simultaneously operating B466 and G792 during the BOBCAT period, consideration is being given to moving responsibility of G792 within Lahore FIR across to Karachi FIR so that both routes would be under control of one ACC prior to entering Kabul FIR.

3.45 The meeting agreed that in relation to this proposal, at least the following specific areas needed to be further discussed:

a) Pakistan and Afghanistan would need to review their current air traffic management and coordination arrangements, including LOAs, to accommodate traffic from B466;

b) The minimum enroute altitude from SERKA and beyond would be FL310;

c) The BOBCAT system would require modification to have spacing calculation based on PAROD for both converging routes;

d) Airlines would require time to adjust their Slot Request Templates;

e) Mumbai ATS would need to be made fully aware of the new arrangements;

f) Existing restriction (5 hour closure) on the usage of B466 between SERKA and PAROD would need to be removed;

g) Remove the restrictions on the operational hours of B466/G792 and allow for 24 hour operations; and

h) NOTAM/AIP SUP requirements issued for the change.

3.46 It was noted that, similar to the SERKA-SOKAM route, the utilization of B466 simultaneously with G792 to PAROD would also require close coordination between Bangkok and Cairo ICAO Offices as well as States concerned.

Operations at FL280 on V390 SERKA-PAROD

3.47 Noting that Class E airway V390 lay underneath Class A airway B466 between SERKA and PAROD, the Kabul ATS authority advised the meeting that they would accept westbound flights on FL 280 on V390 between SERKA –PAROD-CHARN if they were transferred at that flight level from Pakistan. Pakistan reported that they did not foresee any difficulties in this regard but would study the matter and advise if any problems arose. As this operation was not included in the current BOBCAT parameters and this flow was not expected to impact the flow from ASLUM to CHARN on G792, the meeting agreed that there was no requirement for a slot to be issued from the ATFMU.

3.48 The Kabul ATS authority advised that as the low level route was Class E airspace, such flights would be processed in accordance with the applicable rules for Class E airspace and the relevant provisions of the Afghanistan AIP. The decision to operate in Class E airspace rested entirely with individual operators based on the outcomes of their due diligence investigations. The Kabul ATS authority also advised operators that, if using F280 on V390, they should expect adhoc diversions to an alternative route via V718 to VACUK, DILAM and GEROR (**Appendix H** refers) without notice and were requested to caution their flight crews accordingly if they intended to operate on V390.

3.49 The attention of the Kabul ATS authority was drawn to potentially misleading text in NOTAM A0422/04 under which it could be interpreted, at point 4, that V390 was closed. The Kabul ATS authority would coordinate with the Airspace Control Authority (ACA) to delete the text 'V390' from point 4 and reissue the NOTAM.

Pakistan & India ATS Route realignments

3.50 The meeting noted that some progress had been made at the ATFM/TF/10 meeting with regard to parallel routes for westbound flights entering the Kabul FIR at PAVLO and SITAX. The present procedures have one route from SAMAR diverging at DI to PAVLO and SITAX. This procedure could be better managed by parallel routes to both the entry points to the Kabul FIR. These proposals had been documented in previous ATFM/TF reports and work has been undertaken by States concerned in regard to this issue.

3.51 The meeting noted that India has extended M875 from BUTOP to GUGAL on the Lahore-Delhi FIR boundary. Pakistan was considering implementing a short route segment extending this route from GUGAL direct to JHANG and joining A466 at this position. As well as removing convergence at DI, this would result in an ideal route for aircraft using M770 transiting India, Pakistan and Afghanistan en route to Europe via N644 and PAVLO.

3.52 With respect to a proposed route linking SAMAR with LAJAK which joins M696/A466 within the Kabul FIR, Pakistan informed the meeting that, unfortunately, part of the proposed route goes through a prohibited area within the Lahore FIR, which would cause difficulty in processing this route. IATA advised that they would be willing to accept a diversion or 'kink' around this prohibited area to overcome this problem and the meeting urged Pakistan to continue its investigations in this regard.

3.53 Pakistan advised the meeting that they will study this issue in an endeavour to implement a more efficient route structure for entry points at LAJAK, in lieu of SITAX, and PAVLO. The SAMAR-LAJAK route is described in the in RDGE/7 meeting report as MID-41 route (SAMAR-LA-LAJAK), whilst the GUGAL-JHANG route is covered as MID-65 route.

Nepal ATS Route proposals

3.54 Noting that the ATFM/TF had previously identified the importance of streamlining ATS routes to assist traffic flows, Nepal presented route proposals in relation to routes Himalaya 1 and Himalaya 2 (**Appendix I** refers). These routes not only eased the traffic flow over Delhi but also improved the bottleneck over Kabul FIR. Additionally the routes reducing air distance significantly. Nepal urged affected States to coordinate each other for the early promulgation of these routes.

3.55 On the basis that an analysis of terrain clearance requirements would prove satisfactory from an airline perspective, IATA strongly supported the proposals and the meeting agreed that ensuring these route proposals were captured in the ICAO Asia Pacific ATS Route Catalogue as future requirements was an important first step. The Regional Office would work with Nepal to ensure that the proposals were included in the Route Catalogue.

3.56 Nepal and India would coordinate in regard to these proposals and update subsequent meetings.

IATA ATS Route proposals

3.57 IATA drew the attention of the meeting to the following route enhancements that, in IATA's opinion, would be of assistance in streamlining the traffic flows associated with ATFM procedures:

a) M770/M875 KAKID - BUTOP – GUGAL JHANG – DI (need to de-conflict traffic originating DPN and joining A466/N644); and

b) N877 PRA – SERKA – SOKAM (Iran)

3.58 Pakistan and India would study these proposals and update subsequent meetings.

Kabul Airspace Closures – ATFM Contingency Planning

3.59 Thailand informed the meeting of occasions where aircraft operating during the ATFM period had experienced changes to their slot allocation before entering the Kabul FIR due to the closure of one or more ATS routes with little or no warning prior to transiting the Kabul FIR. These changes had sometimes caused severe disruptions and penalty to the aircraft affected; on at least one occasion the aircraft was required to land for technical reasons prior to destination. Two recent events were as described below.

Kabul FIR closure on 10 October 2007

3.60 At 1430UTC on 10 October 2007, the ATFMU received a phone call from Lahore ACC advising that Kabul airspace was closed until further notice with no reason given. Shortly thereafter, the ATFMU was preparing to initiate a series of phone calls to airlines affected to advise them of the situation. At the time of the closure there were very few aircraft who had commenced their journey from the respective airports however, many were about to depart in the next 30-45 minutes.

3.61 At 1455UTC (25 minutes later), Lahore ACC advised that the airspace was now open for international traffic transiting the Kabul FIR on ATS routes A466, N644 and L750. It was fortunate that this information came before the phone calls to the airlines had commenced.

Re-routing of airborne aircraft entering the Kabul FIR

3.62 On 12 November 2007, 17 aircraft with slot allocations via SITAX on A466, were re-routed via PAVLO and N644. In addition, statistics from Lahore ACC indicated that one aircraft was re-routed from ROSIE to PAVLO and another from ASLUM to PAVLO. This particular incident caused one aircraft to land for technical reasons prior to the destination with the resultant inconvenience and cost. A number of other flights were fortunate to avoid similar technical stops.

3.63 The Kabul ATS Authority confirmed that these and other occasions were due to the high priority military mission being addressed in Afghanistan. Conflict events were often unpredictable and had to be managed at short notice. The Kabul ACC always endeavoured to give as much warning as possible, however often had little or no warning themselves. In most of these instances, Kabul ACC was heavily dependant on the very professional efforts of both the Karachi and Lahore ACCs in managing to divert the traffic flows at short notice. This had been the situation in these recent examples and the Kabul ACC Manager passed his congratulations and gratitude to Pakistan for the way in which these events had been managed.

3.64 The meeting noted that the key to handling this type situation was the rapidity of the message getting to each airline/pilot concerned so that the most safe and efficient decision could be made. In this context, as well as the ATC to ATC coordination with adjacent ACCs, the swift transmission of information by NOTAM was the most effective way of alerting airspace users.

3.65 The Kabul ATS Authority informed the meeting that NOTAMS were generally issued on behalf of Afghanistan by the AIS Office at the USAF base at Ramstein in Germany. Unfortunately, this AIS Office was not a H24 facility and events that occurred outside of office hours had to wait until the following day for NOTAM or other AIS action.

3.66 The meeting considered that having H24 AIS capability available to the Kabul ACC so that NOTAMs could be issued immediately would be an extremely valuable step in mitigating the effects of sudden changes on civilian airspace users. The meeting urged the Kabul ATS Authority to explore avenues by which this capability could be made reliably available. Solutions could include the preparation of a number of NOTAM templates for typical events and making arrangements to fax or email them to a H24 AIS Office for issue on behalf of Afghanistan.

TOS in Iran and Pakistan

3.67 In regard to the Traffic Orientation Scheme (TOS) currently in existence, IATA informed Pakistan that the TOS in both Iran and Pakistan might no longer serve a useful purpose considering the new airway networks developed in recent years. In fact they were now detrimental particularly to the ultra long haul flights between India and North America in terms of fuel, emissions, and payload.

3.68 Pakistan was requested to consider lifting the TOS totally, or at least consider one operator's request to operate eastbound via DANIB - G208 - PG. The TOS required operators to plan UL124 – KEBUD - UL124 - PG.

3.69 Pakistan advised that several eastbound routes converge at PG giving rise to separation difficulties but would nevertheless review IATA's request to lift the TOS.

Agenda Item 4: Safety and Airspace Monitoring Considerations

4.1 The meeting did not identify any safety or airspace monitoring considerations for discussion.

Agenda Item 5: Post-Implementation Management Considerations

BOBCAT Enhancements

5.1 The BOBCAT Development Team (BDT) presented the meeting with a perspective on the methodology for the development of BOBCAT enhancements. The meeting recalled that throughout previous ATFM/TF meetings, there had been discussions on possible ways to enhance the current BOBCAT system functionality to better service all concerned.

5.2 As the BOBCAT system is a regional system, all enhancements need to be considered by all parties concerned as a part of a regional solution. Moreover, these enhancements would require a certain amount of time to complete depending on the complexity. It was recognized that in order for the BDT to proceed in developing enhancements to the BOBCAT system, a firm set of enhancement requirements needs to be agreed to and endorsed by the meeting.

Establishment of ATFM Scrutiny Group

5.3 The meeting reviewed previous proposals 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. It was proposed that the 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. The focus of the BSG would be on aspects concerning safety, performance, efficiency and the even handed management of ATFM operations using BOBCAT, in accordance with an agreed Terms of Reference.

5.4 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 cost recovery funding arrangements for the continuing operation of the BOBCAT system and ATFMU;

- 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.

5.5 Recognising that the ATFM/TF would be dissolved once implementation matters had been addressed, unanimous agreement was reached by the meeting that some kind of ongoing maintenance group was necessary to oversight the ATFM operations. However, the meeting felt that the administrative arrangements currently proposed by the Secretariat would not be fully suitable and that further exploration and development of the concept was necessary. In particular, the proposal that members should be able to vote was considered to have the potential to undermine the even handedness that was necessary and should be discarded in favour of the consensus approach routinely adopted by ICAO.

5.6 As it was evident to the meeting that further study and work was required before a suitable outcome could be endorsed, the matter was deferred until the next meeting. In the interim, Thailand and IATA agreed to work with the Secretariat to develop and circulate a draft discussion paper for consideration prior to the next meeting.

Agenda Item 6: Future Direction and Arrangements

Post Implementation Review

6.1 In completing the post-implementation review, the meeting was in full agreement that the implementation of ATFM procedures across the Bay of Bengal and South Asia had been a success. Good results were evident in nearly all areas. The meeting congratulated the air traffic controllers in the Karachi, Lahore and Delhi ACCs for the notable improvement in tactical management of ATFM flights and the dramatically increased compliance with the published ATFM procedures. Recognising that further improvement in performance from all parties involved was likely simply as a result of increased experience with the system, beyond lifting the FL280 priority via ASLSUM the meeting elected not to vary the BOBCAT software parameters at this stage. This would allow the system to stabilise and facilitate further reviews would be conducted during subsequent meetings of the ATFM/TF.

6.2 The meeting had been informed of the many improvements that were evident as a result if the implementation, including reduced ground and airborne delays, many less reroutes, increased numbers of flights achieving their BOCAT allocated flight level or one level higher for transit of Kabul and significantly reduced numbers of flight being pushed down to FL280. The numbers of flights without slots had decreased markedly. ANSPs involved generally reported reduced ATC workload and increased flexibility. The situation in Kabul ACC was markedly improved leading to safer, more efficient and flexible traffic handling facilitating the rehabilitation of the Afghanistan civil aviation sector generally.

6.3 The meeting agreed that the most effective way forward in the near term was to pursue enhancements in the structural arrangements supporting the ATFM procedures, notably implementing and streamlining ATS route arrangements in the affected airspace. Affected States were urged to continue the rate of work in this regard in order that enhancements became operationally available as soon as possible. Additionally, Afghanistan and Pakistan were urged to collaborate in an effort to overcome the persistent ground-ground communications outages that degraded the abilities of the respective air traffic controllers to coordinate effectively with each other.

6.4 The longer term challenge for the ATFM/TF was to identify causes and implement solutions for the poor on time performance for AWUT and Kabul entry, both too early and too late, that was still evident in the data.

Review Terms of Reference

6.5 As a result of the milestone set by the implementation of ATFM procedures for the Bay of Bengal and South Asia, the meeting considered it timely to review the TOR of the ATFM/TF (**Appendix J** refers).

6.6 Following discussion, the meeting agreed that the Phase 1 implementation programme dealing with the management of Kabul transit flights should be considered as completed. Of course, further review of the Kabul transit operations would be a normal part of the work but was not anticipated to comprise a major work item for the Task Force.

6.7 The meeting also recognised that as part of the intense work effort completed by the ATFM/TF over the past 2 years, many aspects of the Phase 2 and Phase 3 implementation objectives described in the TOR had also been addressed. This meant that the ATFM/TF was very advanced in completing the objectives and work programme that had originally been established. As it was likely that the maintenance/scrutiny group that would be established and the Bay of Bengal ATS Coordination Group could take over residual work items, it was possible that the ATFM/TF could be considered for dissolution in due course. The meeting agreed that it was too soon to make this decision and that the matter should be more fully addressed at the next meeting in July 2008.

Review Action Plan

6.8 In reviewing the Action Plan of the ATFM/TF, the meeting was apprised of the status of items considered complete and suitable for closure as well as those remaining open, noting the progress that had been made. The meeting agreed that the updated task list included as **Appendix K** accurately reflected the work programme of the ATFM/TF and urged all parties to take action as soon as possible in relation to all items in the Action Plan.

Sub-Regional coordination complexities

6.9 In the meeting discussed the complexities inherent in enhancing operational arrangements around Afghanistan. In terms of the ICAO regional disposition, States in the vicinity of Afghanistan were accredited to three of the regional offices of ICAO. For example the discussions in relation to ATS route matters that had taken place during this meeting involved Iran, which was accredited to the MID Office of ICAO, Turkmenistan, which was accredited to the EUR/NAT Office of ICAO and India and Pakistan which are accredited to the APAC Office.

6.10 Attempts had been made to use the recent RDGE/7 meeting as an opportunity to conduct an interface meeting with the States surrounding Afghanistan, however the absence of some States from RDGE/7 had meant that this was unsuccessful. RDGE/7 had urged affected MID and EUR/NAT States to attend this ATFM/TF/11 meeting and, accordingly, Afghanistan had completed significant preparation to take advantage of such an interface opportunity. Regrettably, a number of significant States could not attend the Bangkok meeting.

6.11 Recognizing that the ATS route enhancements would be very valuable in streamlining operations in this area, the meeting requested that the Regional Office attempt to coordinate an interface meeting that included delegates from at least Afghanistan, India, Iran, Pakistan and Turkmenistan as well as representatives from the APAC and MID Offices of ICAO and relevant IATA officials.

Agenda Item 7: Any other business

Outcomes from 44th DGCAs

7.1 The 44th Conference of Directors General of Civil Aviation, Asia and Pacific Region (44th DGCAs) was held in Xi'an, China from 22 – 26 October 2007. The Conference was attended by 231delegates from 35 States/Administrations and 5 International Organizations and raised 17 items for action by regional DGCAs. In reviewing the action items, the meeting took particular note of Action Items 44/14 in relation to the management of aviation's environmental impacts and 44/15 calling for even greater regional cooperation and enhanced coordination between the various civil aviation groupings active in the region.

7.2 The ATFM/TF/11 meeting noted that significant environmental benefits would accrue as a result of the ATFM implementation which was reducing delays and enabling greater use of optimum levels. The meeting requested that IATA work with its member airlines to attempt to broadly quantify the environmental savings being made from the ATFM procedures and update the ATFM/TF/12 meeting accordingly.

Outcomes from APANPIRG/18

7.3 The Eighteenth meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/18) was held from 3-7 September 2007. As well as reviewing progress on Conclusions and Decisions raised by previous APANPIRG meetings, APANPIRG/18 raised a total of 62 new Conclusions and Decisions for regional action. The meeting noted the Conclusions and Decisions related to ATM, AIS and SAR matters.

Regional ATFM Seminar

7.4 In endorsing this Conclusion 18/7, which calls for the conduct of a regional ATFM Seminar, APANPIRG/18 recognized the need to actively endorse AFTM activities in the Asia/Pacific region and considered that a useful way forward in bringing existing ATFM provisions, techniques and procedures to the attention of States in the Asia/Pacific Region would be to conduct an ATFM seminar. Such a seminar would enable parties experienced in the provision of ATFM to pass on knowledge and guidance to States with less experience and was expected to lead to wider implementation of ATFM regionally, with associated efficiency and environmental gains.

7.5 During APANPIRG/18 Australia, Japan, Thailand and the United States offered support for such a seminar. Japan informed APANPIRG/18 that Japan Civil Aviation Bureau (JCAB) established the Air Traffic Flow Management Center more than 10 years ago, which was recently integrated with the airspace management and oceanic ATC to be the Air Traffic Management Center, at Fukuoka. Japan offered to provide assistance with arrangements and invited the Seminar to be held in Fukuoka, Japan. APANPIRG/18 expressed appreciation to Japan and accepted the generous offer.

7.6 In coordination with Japan, the Regional Office has tentatively scheduled a 3 day Regional ATFM Seminar from 7 – 9 October 2008 in Fukuoka. The Regional Office would coordinate arrangements with the States assisting the presentation of the ATFM Seminar and would issue invitations in due course.

ATFM Terminology

7.7 The Secretariat informed the meeting about the details of the work accomplished between the FAA Air Traffic Control System Command Center (ATCSCC) and the Japan Civil Aviation Bureau Air Traffic Management Center (ATMC) to support a regional and global effort to standardize ATFM terminology and phraseology. As part of this work, in order to address bilateral issues in the North and Central Pacific oceanic areas, the FAA and JCAB had adopted an *Interim Guideline for ATFM Communication.*

7.8 Japan had informed APANPIRG/18 that in addition to the coordination between ATCSCC and ATMC, international ATFM coordination would take place with their neighbouring States in the Northeast Asia in the foreseeable future. Accordingly, Japan and the United States consider there are advantages in adopting the *Interim Guideline* for ATFM communication throughout the Asia/Pacific Region. APANPIRG/18 supported this initiative, and encouraged Japan and the United States to continue this work and present the documentation to the ATM/AIS/SAR/SG/18 meeting in 2008 in accordance with the established procedure of APANPIRG.

7.9 Following a review of the *Interim Guideline*, the meeting recognised the value of having a standardised regional guidance material of this nature and noted the well thought out format and general text of the document. However, the meeting considered that in order to be useful as a regional guidance material the phraseologies used in the examples should be aligned more closely with ICAO and proposed a number of changes in this regard, along with some additional editorial suggestions. These proposals have been included in the version shown at **Appendix L**. The meeting requested that the Secretariat bring the proposals from the Task Force to the attention of Japan and the United States for review.

Caribbean/South American ATFM Concept of operations

7.10 The Secretariat forwarded information that had been provided to the ATM/AIS/SAR/SG/17 meeting (July 2007) regarding the on-going ATFM initiatives in the Caribbean and South American areas. This work had led to the development of a formal Concept of Operations for these areas, a draft version of which is shown at **Appendix M**.

Collection of information on wake vortex

7.11 The Secretariat drew attention to a State Letter (Ref: AN 13/4-07/67) recently issued by ICAO Headquarters in regard to ICAO's efforts to collect and analyse data concerning wake vortex encounters of all aircraft types on a worldwide basis.

7.12 The meeting was informed that the A380 Wake Vortex Steering Group had been created as a result of wake turbulence concerns regarding the Airbus A380-800 entering into service. The Steering Group considered that an overall review of wake turbulence provisions including the current wake turbulence categorization scheme in the *Procedures for Air Navigation Services – Air Traffic Management* (PANS – ATM, Doc 4444) should be undertaken.

7.13 In order to provide a sound basis for any necessary amendment to these Doc 4444 provisions, the Steering Group had developed reporting forms for the collection and analysis of information on wake vortex encounters of all aircraft types on a worldwide basis. States were

requested to commence the wake vortex reporting scheme as soon as practicable by making available the template reporting forms A and B provided in the State Letter to pilots, aircraft operators and air navigation service providers. Reports should be submitted to the Regulator of the State of Occurrence and could also be filed through E-mail to wakevortex@icao.int.

Agenda Item 8: Date and venue for the next meeting

8.1 The meeting agreed that attempts should be made to accommodate the interface meeting referred to in paragraphs 6.9 – 6.11 above concurrently with the next meeting of the ATFM/TF. Ideally, a two day interface meeting would be held immediately preceding a three day ATFM/TF meeting.

8.2 Noting that the States affected by the interface meeting proposal were closer to Cairo than Bangkok, the meeting requested the Regional Office to attempt to coordinate such a combined meeting over five days using the Cairo Office of ICAO as the venue. The week of 7-11 July 2008 was preferred, adapted to the normal working week in Cairo as required.

8.3 The Regional Office would attempt to make such arrangements and would keep affected parties informed.

Closing of the Meeting

8.4 In closing the meeting, Mr. Tiede summarised the positive progress that had been achieved by the meeting in many areas. The post implementation review of ATFM implementation had found that there were many reasons to be pleased with the implementation outcomes. Continued improvements had been shown by all parties involved with the ATFM procedures on both the airline side and the ANSP side. In particular, the improved compliance with ATFM procedures by air traffic controllers in the Delhi, Lahore and Karachi ACCs has been of great assistance in streamlining the traffic flows and Mr. Tiede requested that the delegates present from Pakistan and India relay the appreciation of the task force for this professional approach to the staff in affected ACCs.

8.5 However, work needed to continue, particularly in relation to structural realignments and implementations of ATS routes. Mr. Tiede was encouraged that work had already commenced in studying many of these proposals and coordination was taking place between affected parties to enable some implementations. He was hopeful that this work would soon result in enhancements that would further benefit flight operations across the Bay of Bengal and South Asia. Also of importance to the ATFM outcomes would be reaching a better understanding of why there was still a significant problem with on-time performance as improvements in this area alone would result in many benefits.

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

WORKING PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	7	Outcomes of APANPIRG/18	Secretariat
WP/3	5	Establishment of ATFM Scrutiny Group	Secretariat
WP/4	2	BOBCAT Data Analysis from May to October 2007	Thailand
WP/5	3	New Proposed Routings into the Kabul FIR during the BOBCAT Period	Thailand
WP/6	3	Ultra Long-haul Flights from Mumbai and Delhi	Thailand
WP/7	3	The Seventh Meeting of the Route Development Group – Eastern Part of the ICAO EUR Region (RDGE/7)	Thailand
WP/8	3	ATFM Briefing to European Airlines	Thailand
WP/9	6	BOBCAT Enhancements	Thailand
WP/10	7	Outcomes of the 44th DGCA Conference	Secretariat
WP/11	6	Review of Terms of Reference Air Traffic Flow Management Task Force	Secretariat
WP/12	7	ATFM Terminology	Secretariat
WP/13	3	ATFM Contingency Planning – Airspace Closures	Thailand
WP/14	6	ATFM Task Force Action Plan	Secretariat
WP/15	3	Review of Operations	IATA
WP/16	6	Suggestions for Improving the System	IATA
WP/17	3	New Routing Arrangements for Long Haul Westbound Traffic Departing Mumbai	IATA
WP/18	2	Data Analysis Spreadsheet Format	Thailand
WP/19	3	Update on the Implementation of Air Traffic Flow Management and Establishment of ATS Route L510 in Kuala Lumpur FIR	Malaysia

INFORMATION PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	7	Collection of Information on Wake Vortex	Secretariat
IP/3	6	Caribbean/South American ATFM Concept of Operations	Secretariat
IP/4	7	Prospects of Himalaya Route	Nepal

FLIMSY

NUMBER	AGENDA	TITLE	PRESENTED BY
Flimsy No. 1	3	Air Traffic Movement between SERKA PAROD CHARN on V390 at FL280	IATA

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

ATFM/TF/11

Appendix C to the Report

BOBCAT Data Analysis
May 2007 – October 2007

Presented by ***AEROTHAI***

Data Analysis Overview

Note: Data comprises only 7 consecutive days per month, not 30 day data per month

Presented by ***AEROTHAI***

Data Analysis Overview

	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07
Total Aircraft	346	295	299	331	323	333
Aircraft/night	49.43	42.14	42.71	47.29	46.14	47.57
Average OK*	92.36%	87.79%	87.27%	92.59%	91.61%	88.27%
Max OK	100.00%	97.78%	97.67%	100.00%	100.00%	95.65%
Best Day	26-May-07	23-Jun-07	20-Jul-07	23-Aug-07	18-Sep-07	26-Oct-07
Min OK	84.78%	71.43%	75.00%	86.36%	86.36%	70.73%
Worst Day	23-May-07	19-Jun-07	21-Jul-07	25-Aug-07	19-Sep-07	23-Oct-07

*OK = Aircraft achieving higher FL than slot allocation not including FL390

Overall Traffic Distribution

Note: Data comprises only 7 consecutive days per month, not 30 day data per month

Presented by ***AEROTHAI***

Traffic Distribution by Route

All Aircraft	Feb 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07
Total Aircraft	**345**	**341**	**369**	**346**	**295**	**299**	**331**	**323**	**333**
Slot Allocation									
- SITAX (A466)	48	48	69	35	33	28	52	53	40
- PAVLO (N644)	**136**	**93**	**84**	**128**	75	**113**	**91**	**95**	**93**
- ROSIE (L750)	**86**	89	**98**	**106**	**94**	**85**	**90**	**90**	**107**
- ASLUM (G792/V390)	60	**97**	**98**	66	**86**	69	82	82	86
- *No Slot Request*	16	14	20	11	7	4	16	3	7
Actual Traffic									
- SITAX (A466)	60	60	85	43	38	29	53	52	42
- PAVLO (N644)	**137**	**93**	85	**130**	75	**115**	**97**	**93**	**97**
- ROSIE (L750)	**87**	**91**	**103**	**108**	**97**	**85**	**96**	**94**	**110**
- ASLUM (G792/V390)	60	97	**96**	65	**85**	70	85	84	84

Traffic Distribution by FL

All Aircraft	Feb 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07
Total Aircraft	**345**	**341**	**369**	**346**	**295**	**299**	**331**	**323**	**333**
Slot Allocation									
- FL280	74	49	54	63	32	31	38	50	52
- FL310	**141**	**133**	**140**	**130**	**119**	**115**	**137**	**123**	**132**
- FL350	**104**	**139**	**153**	**138**	**130**	**146**	**136**	**143**	**139**
- FL390	11	6	2	4	7	3	4	4	3
- *No Slot Request*	15	14	20	11	7	4	16	3	7
Actual Traffic									
- FL280	44	26	23	38	13	15	18	16	26
- FL310	**149**	**137**	**147**	**136**	**108**	**107**	**140**	**122**	**125**
- FL350	**147**	**173**	**195**	**162**	**165**	**173**	**172**	**178**	**175**
- FL390	5	5	4	10	9	4	1	7	7
- FL410	0	1	0	0	0	0	0	0	0

Flight Level Change Comparison

Note: Data comprises only 7 consecutive days per month, not 30 day data per month

Presented by ***AEROTHAI***

FL Change Comparison

All Aircraft	February	March	April
Total Aircraft	**345**	**341**	**369**
Lower-than-Slot			
- FL310 → FL280	12	4	3
- FL350 → FL280	5	3	2
- FL350 → FL310	26	32	31
Sub-Total	**43**	**39**	**36**
Higher-than-Slot			
- FL280 → FL310	31 (6 FL issues)	17 (no FL issue)	23 (1 FL issues)
- FL280 → FL350	20 (2 FL issues)	14 (1 FL issue)	14 (6 FL issues)
- FL310 → FL350	**50** (11 FL issues)	**53** (13 FL issues)	**50** (16 FL issues)
Sub-Total	101 (19 FL issues)	84 (14 FL issues)	87 (23 FL issues)

FL Change Comparison

All Aircraft	May	June	July
Total Aircraft	**346**	**295**	**299**
Lower-than-Slot			
- FL310 → FL280	3 (1 Early/Late)	3 (1 Early/Late)	2 (1 Early/Late)
- FL350 → FL280	5 (2 Early/Late)	2 (2 Early/Late)	1 (1 Early/Late)
- FL350 → FL310	18 (3 Early/Late)	25 (9 Early/Late)	32 (7 Early/Late)
Sub-Total	**26 (6 Early/Late)**	**30 (12 Early/Late)**	**35 (9 Early/Late)**
Higher-than-Slot			
- FL280 → FL310	28 (1 FL issues)	15 (1 FL issues)	12 (1 FL issues)
- FL280 → FL350	7 (1 FL issues)	9 (1 FL issues)	10 (1 FL issues)
- FL310 → FL350	41 (7 FL issues)	50 (9 FL issues)	49 (9 FL issues)
Sub-Total	76 (9 FL issues)	74 (11 FL issues)	71 (11 FL issues)

FL Change Comparison

All Aircraft	August	September	October
Total Aircraft	**331**	**323**	**333**
Lower-than-Slot			
- FL310 → FL280	1 (1 Early/Late)	1 (no Early/Late)	4 (no Early/Late)
- FL350 → FL280	5 (5 Early/Late)	3 (1 Early/Late)	1 (1 Early/Late)
- FL350 → FL310	19 (6 Early/Late)	19 (6 Early/Late)	21 (5 Early/Late)
Sub-Total	**25 (12 Early/Late)**	**23 (7 Early/Late)**	**26 (6 Early/Late)**
Higher-than-Slot			
- FL280 → FL310	16 (no FL issues)	25 (3 FL issues)	25 (1 FL issues)
- FL280 → FL350	13 (3 FL issues)	13 (2 FL issues)	8 (no FL issues)
- FL310 → FL350	37 (5 FL issues)	43 (4 FL issues)	51 (13 FL issues)
Sub-Total	66 (8 FL issues)	81 (9 FL issues)	84 (14 FL issues)

Discussions

Presented by ***AEROTHAI***

Thank You!

Presented by ***AEROTHAI***

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

ICAO ATFM/TF/11

Appendix D to the Report

Airport Performance Analysis

Presented by ***AEROTHAI***

Definitions

- **Early Departure** – Departure before AWUT
- **Okay Departure** – Departure within 5 minutes after AWUT
- **Late Departure** – Departure beyond 5 minutes after AWUT
- **≤ x min Late Departure** – Departure beyond 5 minutes but not more than 5+x minutes after AWUT
- **>x min Late Departure** – Departure beyond 5+x minutes after AWUT
- **Early ATO –** Kabul FIR entry before planned ETO
- **Okay ATO** – Kabul FIR entry within 5 minutes after planned ETO
- **Late ATO** – Kabul FIR entry beyond 5 minutes after AWUT
- **No Departure Data** – Flights with no departure data to determine early, okay or late departure

VIDP Departures

VIDP	April (59)		May (53)		June (48)		July (54)		August (56)		September (60)	
	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue
> 2 mins Early	**18**	**3**	**18**	**3**	**20**	**2**	**19**	**4**	**16**	**0**	**22**	**0**
- Early ATO	16	3	15	3	20	2	17	4	15	0	22	0
- Okay ATO	0	0	2	0	0	0	1	0	1	0	0	0
- Late ATO	2	0	1	0	0	0	1	0	0	0	0	0
≤ 2 mins Early	**1**	**0**	**2**	**0**	**3**	**0**	**4**	**1**	**3**	**1**	**3**	**1**
- Early ATO	1	0	2	0	3	0	3	1	3	1	3	1
- Okay ATO	0	0	0	0	0	0	1	0	0	0	0	0
- Late ATO	0	0	0	0	0	0	0	0	0	0	0	0
Okay	**10**	**0**	**10**	**0**	**11**	**2**	**11**	**1**	**9**	**1**	**12**	**1**
- Early ATO	5	0	4	0	7	1	4	1	2	0	7	1
- Okay ATO	4	0	6	0	4	1	7	0	6	1	5	0
- Late ATO	1	0	0	0	0	0			1	0	0	0
≤ 2 mins Late	**1**	**0**	**2**	**1**	**1**	**0**	**4**	**0**	**6**	**1**	**5**	**3**
- Early ATO	0	0	0	0	0	0	1	0	0	0	1	1
- Okay ATO	1	0	2	1	1	0	2	0	5	1	3	1
- Late ATO	0	0	0	0	0	0	1	0	1	0	1	1
> 2 mins Late	**21**	**4**	**17**	**0**	**12**	**1**	**16**	**3**	**22**	**4**	**12**	**0**
- Early ATO	0	0	0	0	0	0	1	0	1	1	0	0
- Okay ATO	6	0	3	0	2	1	3	1	2	0	1	0
- Late ATO	15	4	14	0	10	0	12	2	19	3	11	0
No Slot/No Info	**8**		**4**		**1**		**0**		**0**		**6**	

Note: No VIDP departure data submitted for October 2007

VTBS Departures

VTBS	April (118)		May (107)		June (104)		July (112)		August (110)		September (104)		October (104)	
	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue
> 4 mins Early	**1**	**0**	**4**	**4**	**3**	**0**	**1**	**1**	**4**	**1**	**3**	**0**	**1**	**1**
- Early ATO	0	0	1	1	3	0	0	0	3	1	3	0	0	0
- Okay ATO	0	0	3	3	0	0	1	1	1	0	0	0	0	0
- Late ATO	1	0	0	0	0	0	0	0	0	0	0	0	1	1
≤ 4 mins Early	**34**	**7**	**28**	**2**	**27**	**4**	**27**	**7**	**21**	**6**	**39**	**4**	**38**	**5**
- Early ATO	22	5	14	1	17	3	19	4	8	3	25	2	31	4
- Okay ATO	11	1	12	0	10	1	8	3	12	3	13	2	6	1
- Late ATO	1	1	2	1	0	0	0	0	1	0	1	0	1	0
Okay	**77**	**19**	**69**	**8**	**66**	**13**	**81**	**15**	**74**	**10**	**53**	**5**	**63**	**5**
- Early ATO	34	11	12	2	19	5	13	6	12	3	14	2	38	4
- Okay ATO	34	5	38	2	42	8	52	7	47	4	32	1	21	1
- Late ATO	9	3	19	4	5	0	16	2	15	3	7	2	4	0
≤ 4 mins Late	**5**	**1**	**4**	**0**	**4**	**0**	**3**	**1**	**10**	**2**	**7**	**1**	**2**	**0**
- Early ATO	0	0	0	0	0	0	0	0	0	0	0	0	1	0
- Okay ATO	2	1	0	0	2	0	2	0	4	1	5	1	1	0
- Late ATO	3	0	4	0	2	0	1	1	6	1	2	0	0	0
> 4 mins Late	**1**	**0**	**2**	**2**	**3**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**
- Early ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Okay ATO	1	0	0	0	1	1	0	0	0	0	1	0	0	0
- Late ATO	0	0	2	2	2	0	0	0	0	0	1	0	0	0
No Slot	**0**		**0**		**1**		**0**		**1**		**0**		**0**	

WMKK Departures

WMKK	April (39)		May (39)		June (37)		July (28)		August (37)		September (34)		October (42)	
	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue
> 6 mins Early	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
- Early ATO	0	0	0	0	1	1	0	0	0	0	0	0	0	0
- Okay ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Late ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
≤ 6 mins Early	**19**	**3**	**21**	**1**	**20**	**5**	**12**	**3**	**17**	**2**	**21**	**4**	**14**	**1**
- Early ATO	12	3	15	1	18	4	6	1	13	2	15	3	11	1
- Okay ATO	7	0	6	0	1	0	6	2	4	0	6	1	3	0
- Late ATO	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Okay	**18**	**4**	**16**	**3**	**13**	**1**	**15**	**3**	**16**	**0**	**13**	**1**	**23**	**4**
- Early ATO	10	2	4	1	3	0	5	1	10	0	6	1	9	1
- Okay ATO	8	2	8	1	10	1	8	2	4	0	5	0	11	1
- Late ATO	0	0	4	1	0	0	2	0	2	0	2	0	3	2
≤ 6 mins Late	**2**	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**4**	**2**
- Early ATO	0	0	1	0	0	0	0	0	1	0	0	0	2	1
- Okay ATO	1	0	0	0	2	0	1	0	3	0	0	0	0	0
- Late ATO	1	0	1	0	1	0	0	0	0	0	0	0	2	1
> 6 mins Late	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
- Early ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Okay ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Late ATO	0	0	0	0	0	0	0	0	0	0	0	0	1	0
No Slot	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

WSSS Departures

WSSS	April (98)		May (96)		June (84)		July (71)		August (87)		September (84)		October (90)	
	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue	Transit	FL Issue
> 6 mins Early	**2**	**0**	**8**	**2**	**2**	**2**	**3**	**1**	**6**	**1**	**5**	**1**	**9**	**2**
- Early ATO	2	0	7	1	0	0	1	0	5	1	5	1	8	2
- Okay ATO	0	0	1	1	2	2	2	1	1	0	0	0	1	0
- Late ATO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
≤ 6 mins Early	**33**	**8**	**36**	**6**	**26**	**3**	**32**	**4**	**29**	**1**	**49**	**5**	**42**	**7**
- Early ATO	25	6	28	5	21	3	25	3	20	0	36	4	34	6
- Okay ATO	7	2	7	1	4	0	6	0	7	1	12	1	8	1
- Late ATO	1	0	1	0	1	0	1	1	2	0	1	0	0	0
Okay	**48**	**7**	**30**	**1**	**38**	**8**	**28**	**1**	**39**	**2**	**22**	**2**	**30**	**8**
- Early ATO	23	7	17	0	13	1	10	1	15	1	6	1	18	4
- Okay ATO	23	0	11	1	16	2	16	0	19	0	15	1	12	4
- Late ATO	2	0	2	0	9	5	2	0	5	1	1	0	0	0
≤ 6 mins Late	**12**	**1**	**19**	**4**	**15**	**4**	**7**	**1**	**10**	**1**	**8**	**1**	**6**	**0**
- Early ATO	2	0	1	0	1	0	1	0	1	1	1	0	1	0
- Okay ATO	6	0	10	2	6	0	5	0	4	0	2	0	3	0
- Late ATO	4	1	8	2	8	4	1	1	5	0	5	1	2	0
> 6 mins Late	**1**	**0**	**3**	**2**	**3**	**2**	**1**	**1**	**2**	**0**	**0**	**0**	**3**	**0**
- Early ATO	0	0	1	1	0	0	0	0	0	0	0	0	0	0
- Okay ATO	0	0	2	1	0	0	0	0	0	0	0	0	0	0
- Late ATO	1	0	0	0	3	2	1	1	2	0	0	0	3	0
No Slot	**2**		**0**		**0**		**0**		**1**		**0**		**0**	

Data Interpretation

Presented by ***AEROTHAI***

Aircraft Causing FL issues

	April	June	August
All Aircraft	369	295	331
Early Departures			
- Early ATO causing FL issues	17	5	0
- Late ATO causing FL issues	2	0	0
All Early Departures causing FL issues	**19**	**5**	**0**
Late Departures			
- Early ATO causing FL issues	0	0	1
- Late ATO causing FL issues	8	4	4
All Late Departures causing FL issues	**8**	**4**	**5**
Total	**27**	**9**	**5**

Aircraft Causing FL issues

	April	June	September
All Aircraft	369	295	323
Early Departures			
- Early ATO causing FL issues	17	5	11
- Late ATO causing FL issues	2	0	0
All Early Departures causing FL issues	**19**	**5**	**11**
Late Departures			
- Early ATO causing FL issues	0	0	2
- Late ATO causing FL issues	8	4	1
All Late Departures causing FL issues	**8**	**4**	**3**
Total	**27**	**9**	**14**

Data Interpretation

	April	June	August	September
Aircraft transiting the Kabul FIR at FL lower than slot allocation	36	36	29	23
• Because of **another aircraft** departing outside AWUT window	10 (28%)	2 (6%)	0	4 (17%)
• Because of **the aircraft** departing outside AWUT window	6 (17%)	10 (28%)	1 (3%)	5 (22%)

FL350 → FL280

	April	June	August	September
Aircraft with FL350 slot allocation transiting the Kabul FIR at FL280 **(FL350 → FL280)**	2	2	5	3
• Because of **another aircraft** departing outside AWUT window **(FL350 → FL280)**	0	0	0	1 (33%)
• Because of **the aircraft** departing outside AWUT window **(FL350 → FL280)**	0	2 (100%)	5 (100%)	1 (33%)

FL310 → FL280

	April	June	August	September
Aircraft with FL310 slot allocation transiting the Kabul FIR at FL280 (**FL310 → FL280**)	3	3	1	1
• Because of **another aircraft** departing outside AWUT window (**FL310 → FL280**)	1 (33%)	0	0	0
• Because of **the aircraft** departing outside AWUT window (**FL310 → FL280**)	1 (33%)	0	1 (100%)	0

FL350/FL310 → FL280

	April	June	August	September
Aircraft transiting the Kabul FIR at FL280 despite slot allocation at higher flight level (**FL350/FL310 → FL280**)	4	5	6	4
• Because of **another aircraft** departing outside AWUT window (**FL350/FL310 → FL280**)	1 (25%)	0	0	1 (25%)
• Because of **the aircraft** departing outside AWUT window (**FL350/FL310 → FL280**)	1 (25%)	2 (40%)	6 (100%)	1 (25%)

Discussions

Presented by ***AEROTHAI***

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

ATFM/TF/11

Appendix E to the Report

Common Data Collection Issues

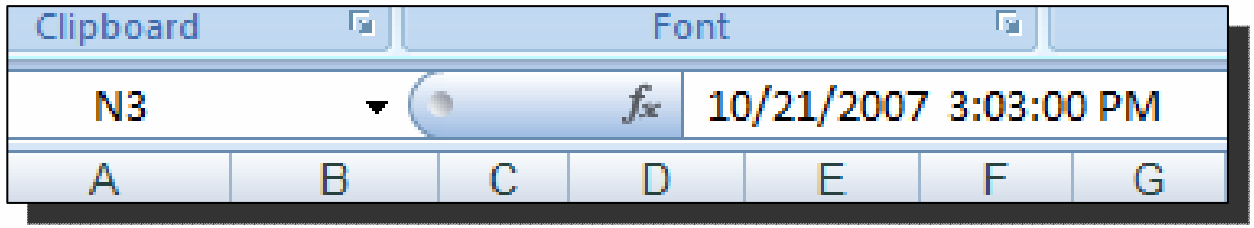
Presented by ***AEROTHAI***

Common Issues

- Large delay in receiving data
  - Sometimes months late

- Incorrect Time Format Input
  - **incorrect "hhmm" format:** "2212"

  - **Incorrect Time format with Date:** "10/10/2007 10:12PM"

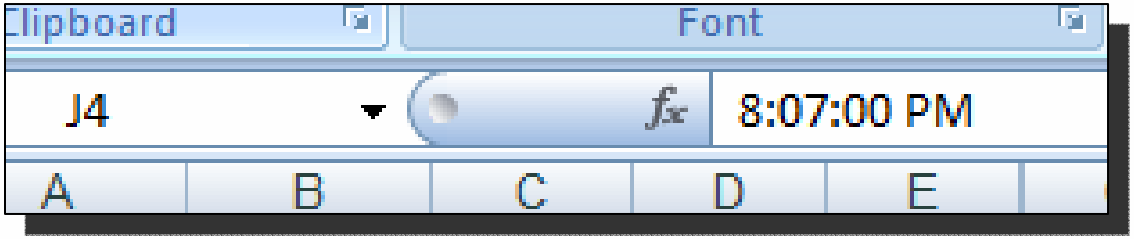


Common Issues

- Submission of data from an incorrect date
- Column Re-ordering
- Callsign followed by “ ” (i.e. blank space)
  - Makes it difficult to match aircraft callsign
  - Suggest using the “TRIM()” command in Excel elsewhere before submiting data
- Non-standard Flight Level input
  - “FL” prefix
  - “F” prefix
  - Only numerical such as “320” should be input, no alpha characters

Correct Time Format

- Correct Time Format
  - Input as “hh:mm” format (ensure colon [i.e. :] is included)
  - Shown as follows in Excel



Thank You!

BOBCAT
Flow Management System

Presented by ***AEROTHAI***

Report of the ATFM Briefing to the European Airlines

Paris, France: 17 – 18 September 2007
Frankfurt, Germany: 19 – 20 September 2007

1. INTRODUCTION

1.1 The purpose of the visit to Paris, France and Frankfurt, Germany was to brief European Airlines involved in the ATFM system through the Kabul FIR on ways to improve their input to the BOBCAT system in obtaining their slot allocation.

1.2 In the time allocated and to ensure effectiveness of the briefing, it was decided to hold smaller meetings in both Paris and Frankfurt (five airlines at each location).

1.3 These briefings were coordinated, agreed to and supported by IATA Asia-Pacific Regional Office.

1.4 The AEROTHAI delegation consisted of Mr. Nopadol Sang-Ngurn, Executive Expert; Mr. Piyawut Tantimekabut, Systems Engineer; and, Mr. John Richardson, ATM Consultant to AEROTHAI.

2. PARIS BRIEFING

Participants

2.1 The Paris briefing was conducted at the ICAO European and North Atlantic (EURONAT) Office in Paris, France on 17 – 18 September 2007.

2.2 There were 11 participants from five (5) international airlines; Air France, British Airways, Finnair, KLM and SAS as well as the three (3) AEROTHAI officers. The briefing was given to both airline dispatchers as well as pilots who are involved in the ATFM BOBCAT process for westbound aircraft operating through the Kabul FIR during the BOBCAT period.

Discussion

2.3 The meeting was presented with a PowerPoint presentation as well as a verbal briefing on the roles of different players in the ATFM system involving BOBCAT as well as ways to improve the chance of obtaining efficient slot allocations by airline dispatchers for their aircraft. These players included airline dispatch staff, flight operations personnel, pilots, ATC at departure airports and responsible ACCs for en route management of these aircraft. The work of the Bangkok ATFMU was also mentioned at the meeting.

2.4 The meeting was reminded that a cooperative approach was required by all players involved to make the ATFM system a success.

2.5 The meeting examined several case studies of slot request based on actual data and identified and discuss ways in which these slot requests could be improved for a more effective slot allocation result. The case studies identified three main areas of the slot request:

a. MAD factor;

b. Use of flight levels; and,

c. Use of different routes.

2.6 By changing these parameters, the meeting noted that there was a better chance of improving an aircraft's slot allocation.

2.7 During this Frankfurt meeting, the participants also had the opportunity to observe BOBCAT in action around 1200UTC.

2.8 Airline dispatchers were advised that, after the slot allocation page was initially displayed on their web-page, it was important for them to press the "Acknowledge" button on the slot allocation page, which in turn, cancelled the yellow blinking lights attached to each aircraft's slot allocation. The reason for doing this was to then observe new slot allocation updates made by airline dispatchers and take appropriate action if this change opens a slot for their particular airline aircraft.

2.9 On another issue, it was mentioned that several airports were less flexible in allowing aircraft to depart earlier or later than the Allocated Wheels-Up Time (AWUT). AEROTHAI advised that statistics demonstrated that, during the ATFM Operational Trials, some aircraft that were permitted to depart early or late on the proviso that they would adjust their speed to arrive at the Kabul FIR entry window on time, did not appear to either slow down or make up time in order to meet their designated Kabul FIR entry time. On many occasions, this caused other aircraft to be inconvenienced by not being able to enter the Kabul FIR at their assigned flight level. As a result, there are some ANSPs who have elected to reduce this flexibility in allowing aircraft to depart earlier or later than the original AWUT window.

2.10 The meeting also discussed a possible enhancement to the BOBCAT system by publishing runway usage policy applicable to BOBCAT aircraft from each departing airport. This could potentially assist aircraft to better position themselves in making their AWUT window. It was pointed out that, in order for this enhancement to be effective, ANSPs will need to agree to provide runway policy information for specific airports. Therefore, it was suggested that the enhancement be collaborated through the IATA mechanism to ensure that this procedure is agreed to by all airlines before putting this proposal to ANSPs concerned.

2.11 Lastly, the meeting noted that the default Standard Taxi Time (STT) was 15 minutes except where ANSPs have decided to increase that time due to airport configuration. It was pointed out that there were some smaller airports in India that are being used by airlines involved where the taxi time to the runway is considerably less than the STT. It was suggested that IATA take this up with Airports Authority of India regarding amended procedures for these airports.

3. FRANKFURT BRIEFING

Participants

3.1 The Frankfurt briefing was conducted at Lufthansa Headquarters at Frankfurt-Main International Airport, Frankfurt, Germany on 19 – 20 September 2007.

3.2 There were 8 participants from four (4) international airlines; Austrian Airlines, Lufthansa, LTU and Swiss as well as the three (3) AEROTHAI officers.

Discussions

3.3 The meeting was presented with a PowerPoint presentation as well as a verbal briefing, similar briefing to the previous meeting held in Paris.

3.4 **A**EROTHAI representatives advised that they had just completed a briefing of five airlines at a similar meeting held in Paris, which was very successful. The briefing highlighted the roles of different players in the ATFM system involving BOBCAT as well as ways to improve the chance of obtaining an acceptable slot allocation by airlines.

3.5 Similar to the Paris meeting, the Frankfurt meeting also had the opportunity to view a live BOBCAT slot allocation and the resulting effect afterwards.

3.6 Airline dispatchers were also advised that, after the slot allocation page initially came up on their web-page, it was important for them to press the "Acknowledge" button on the slot allocation page, which in turn, cancelled the yellow blinking lights attached to each aircraft's slot allocation. The reason for doing this was to then observe new slot allocation updates made by airline dispatchers and take appropriate action if this change opens a slot for their particular airline aircraft.

3.7 A question was raised regarding the priority in allocation of slot allocations regarding the present method of entering slot request data.

3.8 The meeting was advised that BOBCAT currently looks at slot request in order of routing which includes flight levels. One of the participants advised whether this could be changed so that there is no preference between routing and flight levels. AEROTHAI advised the meeting that such changes were possible, but any changes to the BOBCAT system should be collaborated through the IATA mechanism to ensure that a change is agreed to by all airlines.

3.9 In addition to slot request practices, the meeting discussed possibility of automatic slot allocation improvements. AEROTHAI reiterated their awareness of the possibilities to improve slot allocation throughout the BOBCAT system. They advised the meeting that two major models of automatic slot allocation improvement were proposed: second cutoff time and automatic conditional slot change triggered by aircraft in front. The meeting was reminded that automatic slot allocation mechanism also needs to be agreed to by all airlines involved through the IATA mechanism.

3.10 In respect to varying demand of certain routes in different times, some airline representatives expressed concerns on difficulty in obtaining slot allocation once their flights are contesting for routes/flight level that are of high demands. It was suggested that, in order to alleviate the problems, the BOBCAT system could be modified to display demand of route/flight level based on first option of slot request before cutoff time. Alternatively, the system could also give an estimate on how much delay a certain slot request maybe allocated at cutoff time. However, it was also pointed out that both options could potentially encourage airlines to request a slot early.

3.11 Some airline representatives voiced concerns about special procedure stated in the Thailand AIP Supplement that departures from Suvarnabhumi International Airport were requested to obtain clearance 25 minutes before AWUT. The airline representative was curious whether the aircraft requesting clearance should have closed doors 25 minutes before AWUT. AEROTHAI representative clarified that the aircraft needed to call for clearance 25 minutes before AWUT in view that the aircraft is ready to push back in 5 minutes (20 minutes before AWUT).

3.12 Pilots attending the meeting expressed concerns of aircraft speed. The meeting was advised that there were some occasions when faster aircraft were following slower aircraft, which may have caused difficulty to in adhering to BOBCAT slot allocation.

3.13 It was interesting to note that pilots present were interested in moving towards the development of the BOBCAT system by providing a more tactical ATFM system. The meeting was advised that BOBCAT was designed to be a strategic system, as the responsibility of the provision of ATC from departure to the Kabul FIR boundary rests with the ANSPs concerned.

3.14 LTU representative advised the meeting that the airline is about to begin operations from several Indian airports which will enter the Kabul FIR during the BOBCAT period. In that respect, a “read-only” username/password was requested and granted to the LTU representative until such time that firm dates for these schedules are known.

4. **SUMMARY**

4.1 The combination of the two meetings captured over 90% of European airlines who participate in the ATFM/BOBCAT system. There were many questions on clarification, especially with regard to slot requests and all were answered, apparently to the satisfaction of the airline representatives.

4.2 Over the following two weeks, the BOBCAT Development Team monitored slot request/slot allocation performance of all airlines. It was pleasing to note that, whereas European airlines who were either not receiving a slot allocation or receiving a slot allocation with a fair degree of delay, performed significantly better than previous to the meetings held.

4.3 AEROTHAI would like to express a gratitude to both the ICAO EURONAT Office in Paris and to Lufthansa in Frankfurt for providing excellent facilities for the conduct of these meetings.

4.4 It is intended that a similar briefing be conducted for Asian airlines during or after the ICAO ATFM/TF/11 meeting to be held in November 2007.

ICAO Bay of Bengal ATS Coordination Group – ATFM Task Force

Model NOTAM to include SERKA/UL333 in ATFM Procedures

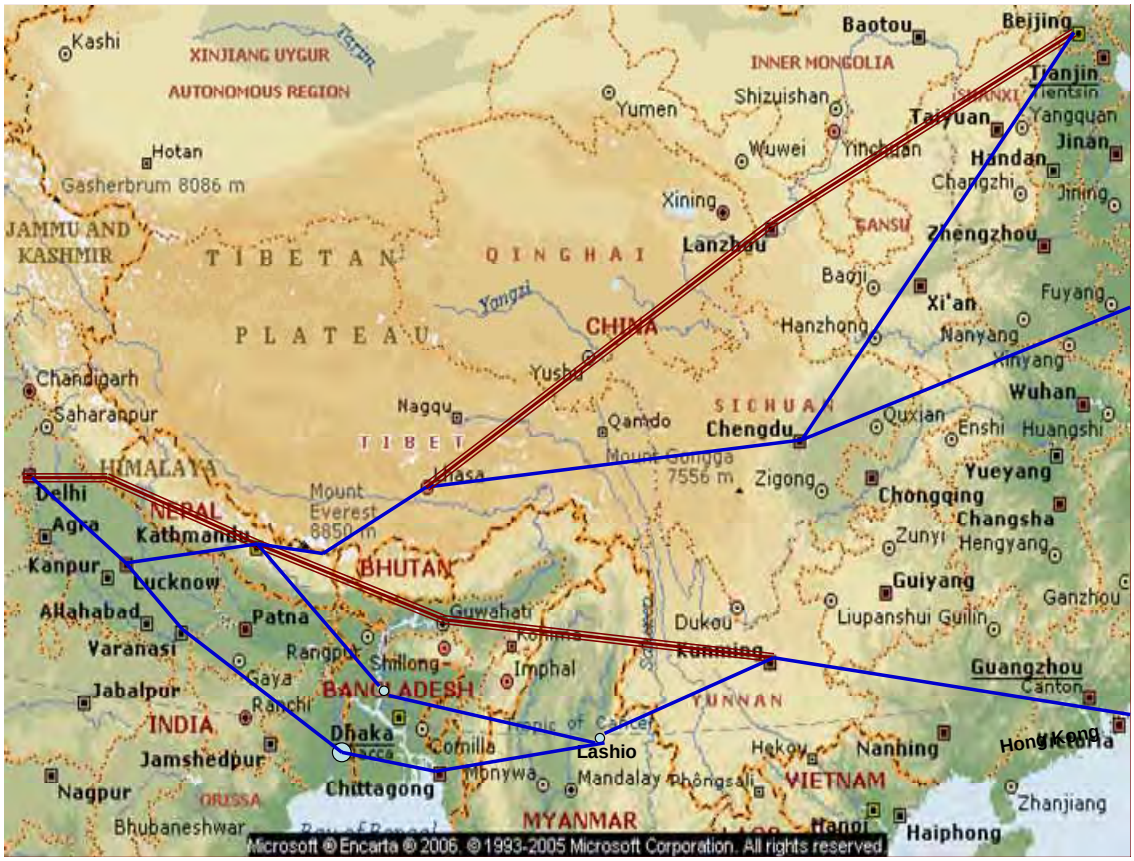
ATFM/TF/11 agreed to the implementation of an ATS route segment from SERKA to SOKAM across Kabul FIR and that, once implemented, this route extension would be included as part of the existing ATFM procedures. Therefore, ATFM AIP Supplements need to be expanded to include point SERKA and route segment SERKA to SOKAM which is expected to be called UL333. The following NOTAM text is suggested to extend provisions of ATFM AIP Supplement to include SERKA/UL333

NOTAM (name of State/authority). PROVISIONS OF ATFM AIP SUPPLEMENT (reference number of existing ATFM AIP Supplement) ARE EXPANDED TO INCLUDE ADDITIONAL KABUL FIR ENTRY POINT SERKA AND ATS ROUTE UL333 IN ATFM PROCEDURES.

WITH EFFECT FROM (date /time) ALL WESTBOUND FLIGHTS INTENDING TO ENTER THE KABUL FIR BETWEEN 2000UTC AND 2359UTC DAILY ON ADDITIONAL ATS ROUTE SERKA/UL333 FROM F310 TO F390 INCLUSIVE SHALL COMPLY WITH ATFM PROCEDURES INCLUDING MANDATORY REQUIREMENT TO OBTAIN ATFM SLOT ALLOCATION FROM BANGKOK ATFMU.


CHARN
DAXUP
B466-G792
V717
N644
VELDT
V338
VUVEN
OAHR
GEROR
V338
V838
M375
V338
V718
V390
L750
RIKAD
LABUS
ALEXY
SOKAM
B466-G792
G208
V717
KAMAR
BAGNI
M375
FARAH
DILAM
G202
DOLAN
ELUMA
ITIDA
EGLIS
V717
NABKA
V718
BOTUVOAKN
PAROD
DEBUG
OKA
DANOB
OIZB
SIGSI
A453
DASAP
PARES
VACUK
G775
G208
M375
V718
BOSTA
ELEKO
EMERO
A453
OPOT
LUBAX
KABUL
OAKX FIR
SERKA
B466
100
150
GADER
DAVER
LES

Nepal – Proposals for ATS Routes Himalaya 1 and Himalaya 2



Routes proposed during EMARSSH Project as Himalaya 1 and Himalaya 2 which overfly Nepalese airspace.

(i) Himalaya 1: Bangkok - Kolkata - Nepalgunj (Nepal) – Indek (Pakistan) - Two Way. (Bangkok – Kolkota existing route L507)

(ii) Himalaya 2: Kunming - Kathmandu (Two Way).

Terms of Reference for the Air Traffic Flow Management Task Force for the Bay of Bengal and South Asia region (ATFM/TF)

The Air Traffic Flow Management Task Force (ATFM/TF) will report via the BBACG to the ATM/AIS/SAR Sub Group of APANPIRG.

Objectives:

The objectives of the ATFM/TF are to:

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

2. To minimize ground and enroute delays;

3. To maximize capacity and optimize the flow of air traffic within the area;

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

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

Implementation Programme

To meet these objectives the ATFM/TF shall adopt a phased implementation programme as per 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

(Note: For the purposes of the ATFM/TF, South Asia includes India, Nepal, Pakistan and Sri Lanka).

…….

Bay of Bengal Air Traffic Flow Management Task Force

Action Plan

(last updated 30 November 2007)

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
~~8/4~~	~~Non-participating airlines issues – general follow up~~	~~July 2007~~	~~IATA, ATFM Task Force, Regional Office, affected States ATFM/TF Small Working Group,~~	~~Ongoing~~ Closed	~~FAA to follow up American Airlines and Continental Airlines.~~ ~~ATFM/TF/10 consider this is still a major problem, no improvement AAL or COA. Regional Office will issue State Letter to State of Registry of identified airlines urging regulatory compliance action. Report to ATFM/TF/11~~ ATFM/TF/11 noted significant improvement in this regard
~~8/5~~	~~ANSPs issues – general follow up~~	~~July 2007~~	~~ATFM Task Force, Regional Office, affected States, ATFM/TF Small Working Group to address ANSP issues~~	~~Ongoing~~ Closed	~~ATFM/TF/10 considers this is still a problem for some ANSPs, tasked SWG to conduct further investigation and remediation. Report to ATFM/TF 11~~ ATFM/TF/11 noted significant improvement in this regard

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
~~8/6~~	~~To alleviate traffic bunching on L759 and P628, that a westbound conditional 'Bypass Route' across the Bay of Bengal be implemented as soon as possible~~	~~August 2007~~	~~India, Malaysia, Regional Office, IATA.,~~	~~Ongoing~~ Completed	~~Updated AIP Supplement for new route in southern Bay of Bengal agreed during ATFM/TF/10 for implementation of new route as soon as possible, target – 2 August 2007.~~ ~~Report to ATFM/TF11~~ L510 implemented on 2 August 2007
8/7	Pakistan lower the Minimum Enroute Altitude (MEA) on P628 to FL300 as soon as possible to align with MEA for P628 in India	July 2007	Pakistan, Regional Office ATFM/TF Small Working Group	Ongoing	Discussed during SWG/1 March 2007 Pakistan advised ATFM/TF/10 that the matter is under consideration
~~8/10~~	~~Establish coordination unit in Bangkok ACC to support coordination between all affected States in eastern BOB during night time busy period~~	~~ATFM/TF/11~~ ~~November 2007~~	~~Thailand, arrangements with Malaysia, India, Myanmar~~	~~Ongoing~~ Closed	~~ATFM/TF/10 informed this may no longer be necessary, superseded by new ATS route in southern BOB and bypass procedures for L759/M770 agreed during ATFM/TF/10. ATFM/TF/11 to review~~
8/11	Study feasibility of route segments proposed during ATFM/TF/8 to assist N644 and A466 in vicinity of DI Khan	July 2007	Afghanistan, India, Pakistan, ATFM/TF Small Working Group	Ongoing	Discussed during SWG/1 March 2007, Pakistan advised ATFM/TF/10 that the matter is under consideration

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/12	Study and rectify inconsistency between bases of airways in the Yangon and Chennai FIRs with a view to harmonization	ATFM/TF/11 November 2007	India, Myanmar, Thailand to assist	Ongoing	Base of airways in Yangon FIR is charted (Jeppesen) as FL280, base in Chennai FIR charted as FL260
8/13	Study proposal for formulation of 'BOBCAT Scrutiny Group' as described in Agenda Item 7 of ATFM/TF/8 report	ATFM/TF/11 November 2007	All	Ongoing	ATFM/TF/10 agree to establish Scrutiny Group as requirement of 'Go' decision for implementation. ~~To be actioned during ATFM/TF/11~~ To be actioned during ATFM/TF/12
~~8/14~~	~~Draft AIP Supplement to update and replace existing AIP Supplement~~		~~Regional Office, Malaysia, Singapore, India, IATA Small Working Group~~	~~Ongoing~~ Completed	~~Revised Supplement adopted by ATFM/TF/10, effective date 5 July 2007. Regional Office to distribute by State Letter before 8 May 2007~~
8/15	Review trial related data with a view to incrementally reducing flow buffer time from 5 minutes	ATFM/TF/11 November 2007	ATFM/TF	Ongoing	ATFM/TF/10 reviewed this issue at length, high complexity, continue monitoring and further review at ~~ATFM/TF/11~~ ATFM/TF/12
~~8/16~~	~~Consider software solution for "Flow Rate Gate"~~	~~ATFM/TF/11 November 2007~~	~~BOBCAT Development Team~~	~~Ongoing~~ Closed	~~Report to ATFM/TF 11~~ Overtaken by events
8/18	The Regional Office would work with IATA to produce a suitable summary of airline concerns in relation to in flight re-route, for relay to ANSPs involved in ATFM procedures.	2007	Regional Office & IATA	Ongoing	Report to ~~ATFM/TF/11~~ ATFM/TF/12

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/19	Data provision. Provide 7 consecutive days data collection each month, commencing from the third Sunday of each month, first date 20 May 2007, promptly to the ATFMU	One week data per month continuously	Afghanistan, India, Pakistan, Malaysia, Singapore and Thailand	Ongoing	Report to ~~ATFM/TF/11~~ ATFM/TF/12
~~9/1~~	~~That operational letters of agreement be amended in relation to the usage of new route across Bay of Bengal~~	~~to be ready as soon as new route implemented.~~	~~India, Malaysia, Myanmar, Singapore, Thailand~~	~~Ongoing~~ Completed	~~LOAs to be in place to enable use of new route as soon as implemented.~~
~~9/5~~	~~Identify causal factors and recommend solutions to ensure minimum 70 - 75% compliance between flight level flown and flight level allocated by BOBCAT (exclusive of PIC request for higher level enroute that does not impact other ATFM flight). Consider short term and long term (e.g route realignment) solutions and include procedures for ANSPs and operators as necessary.~~	~~ATFM/TF/11 November 2007~~	~~Small Working Group~~	~~Ongoing~~ Closed	~~SWG/1 meeting held in Lahore Pakistan 27-29 March 2007. SWG/2 meeting to be scheduled July/August. Report to ATFM/TF/11,~~ -ATFM/TF/11 noted significant improvement in this regard
~~9/7~~	~~Conduct in depth analysis of available data from operational trial to establish linkages between data and reasons for poor operational trial performance, particularly Flight Level non compliance issue. Suggest remediations.~~	~~ATFM/TF/11 November 2007~~	~~Small Working Group~~	~~Ongoing~~ Closed	~~Report to ATFM/TF/11~~ ATFM/TF/11 noted significant improvement in this regard
~~9/10~~	~~Implement connector route between Ranong and Kota Baru in Bangkok FIR to improve access to M770.~~	~~March 2007~~ ~~ATFM/TF/11 November 2007~~	~~Thailand~~	~~Ongoing~~ Completed	~~ATFM/TF/10 informed that Thailand proposal was with State airspace committee for review, positive outcome expected shortly, when received Thailand would proceed with implementation Report to ATFM/TF/11~~

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
9/11	Beyond Kabul FIR, 3 of the routes through Kabul join in Turkmenistan leading to further capacity restrictions. Regional Office to coordinate with EUR/NAT (Paris) Office of ICAO to seek assistance in ensuring exit capacity from Kabul FIR.	2007	Regional Office	Ongoing	Report to ATFM/TF/11 Attention drawn to this matter during RDGE/7 meeting in Paris, October 2007
9/13	Thailand and India agreed to use M770 as an alternate route when a bunching situation occurred on L759. Flights affected by the bunching will be re-routed to M770 and rejoin L759 over the Indian continent via position PALKO and BBS. A coordination procedure will be arranged between India, Myanmar and Thailand as soon as possible	June 2007	Thailand, India, Myanmar, keep IATA informed	Ongoing	ATFM/TF/10 agreed to draft procedure, Thailand will coordinate with Myanmar during May 2007 then procedure will be implemented. ATFM/TF/11 informed that Thailand and Myanmar have agreed to procedure, awaiting agreement from India
~~10/1~~	~~Schedule second Small Working Group Meeting (SWG/2) to focus on non compliance by flights entering Kabul FIR with the flight level allocated by BOBCAT and streamlining of ATS route arrangements to assist ATFM procedures~~	~~July/August 2007~~	~~India, Pakistan, Thailand, IATA comprise the Small Working Group~~	~~Ongoing~~ Closed	~~Include Afghanistan, Iran in activities of SWG as required~~ ATFM/TF/12 will advance concept of Scrutiny Group, SWG no longer required.
~~10/2~~	~~Publish AIP Supplement with effective date 5 July 2007 implementing permanent ATFM procedures~~	~~Not later than 7 June 2007~~	~~Afghanistan, Bangladesh, China, Hong Kong China, India Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Thailand and Viet Nam.~~	~~Ongoing~~ Completed	~~Model text for AIP Supplement authorised by ATFM/TF/10, distributed by Regional Office State Letter.~~
10/3	Continue investigation into use of PAROD vice ASLUM as BOBCAT sequencing fix for departures from Mumbai. Subject to agreement from affected parties, implement appropriate change to BOBCAT software parameters to accommodate PAROD	ATFM/TF/11 November 2007	Thailand BOBCAT Development Team, IATA, India, Pakistan, Afghanistan	Ongoing	Report to ATFM/TF/11 ATFM/TF/11 agreed to use PAROD, implementation date TBD

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
~~10/4~~	~~Examine ways to enhance existing RVSM=>CVSM flight level arrangements between Delhi ACC and Lahore ACC to include consideration of Kabul entry flight level slot~~	~~July/August 2007~~	~~India, Pakistan, SWG/2~~	~~Ongoing~~ Closed	~~Report to ATFM/TF/11~~ ATFM/TF/11 noted significant improvement in this regard
10/5	Implement conditional ATS route with RNP10 lateral separation with N644 for bypass via TOXEX entering Afghanistan	July/August 2007	Pakistan, Afghanistan SWG/2	Ongoing	Report to ~~ATFM/TF/11~~ ATFM/TF/12
11/1	Adjust BOBCAT software parameters to remove priority for flights via ASLUM	December 2007	Thailand BOBCAT Development Team	Ongoing	Report to ATFM/TF/12
11/2	Study impact on Karachi ACC operations of flights into Kabul FIR at FL280 via SERKA to join V390.	January 2008	Pakistan, Afghanistan	Ongoing	Report to ATFM/TF/12
11/3	Kabul ATS Authority via ACA re-issue NOTAM A0422/04 with text ‘V390” deleted at point 4.	December 2007	Kabul ATS Authority	Ongoing	Report to ATFM/TF/12
11/4	Kabul ATS Authority to explore avenues by which H24 AIS capability could be made available. Solutions could include the preparation of a number of NOTAM templates for typical events and making arrangements to fax or email them to a H24 AIS Office for issue on behalf of Afghanistan.	First quarter 2008	Kabul ATS Authority	Ongoing	Report to ATFM/TF/12

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
11/5	Prepare and circulate discussion paper in relation to maintenance group, scrutiny group responsible for continued oversight of the BOBSA ATFM operations	First quarter 2008	Thailand, IATA, Regional Office	Ongoing	Report to ATFM/TF/12
11/6	Pakistan to review outstanding Action Items attributed to Pakistan in this list and provide update to Regional Office by end January 2008	January 2008	Pakistan	Ongoing	Report to Regional Office by end January 2008
11/7	Investigate and correct the persistent ground-ground communications outages between Afghanistan and Pakistan ACCs.	ATFM/TF/12 July 2008	Afghanistan, Pakistan	Ongoing	Report to ATFM/TF/12
11/8	Identify causes and implement solutions for the poor on time performance for AWUT and Kabul entry, both too early and too late, that was still evident in the data reviewed by ATFM/TF/11. Review standard taxi times for affected airports.	ATFM/TF/12 July 2008	All	Ongoing	Report to ATFM/TF/12
11/9	Conduct overall review of the priority allocated at FL280 for departures from India and Pakistan	ATFM/TF/12 July 2008	ATFM/TF/12	Ongoing	
11/10	Pakistan to review the Traffic Orientation Scheme applicable in Karachi and Tehran FIRs to enhance traffic flows on G208	ATFM/TF/12 July 2008	Pakistan	Ongoing	Report to ATFM/TF/12
11/11	Noting DGCA Action Item 44/14 in relation to environmental benefits, ATFM/TF/11 requested that IATA work with its member airlines to attempt to broadly quantify the environmental savings being made from the ATFM procedures.	ATFM/TF/12 July 2008	IATA	Ongoing	Report to ATFM/TF/12

Interim Guideline for ATFM Communication

Version 1.0

October 2006

Review by ATFM/TF/11 (November 2007)
This document was reviewed on a preliminary basis by the Bay of Bengal ATFM Task Force as part of the ATFM/TF/11 meeting proceedings in November 2007. A number of issues were identified that need to be addressed before the material advances to Asia/Pacific Guidance Material status, as per the discussion in the Report of APANPIRG/18, paragraphs 3.2.85 – 3.2.88.

In addition to the general comments below, some suggestions have been included in the body of the document using redline ~~strikeout~~ format.

General comments

1) In order to be useful as Asia/Pacific Regional guidance material, the document must address the situation where two non English speaking States are coordinating based on this document. Long experience shows us that ATS incidents do already occur during coordination across an FIR boundary, so phraseologies must be exceptionally clear when dealing with States where English is not commonly spoken.

2) Also, as regional guidance material, maximum alignment with ICAO is necessary. Logically, the closer it is to current ICAO provisions, the more likely States and ICAO will be to accept it as guidance material and the more suitable it will be for global review on the way to becoming global guidance material. Suggested phraseologies are not generally compliant with PANS-ATM and are sometimes to long/wordy. Recommend full review against Doc 4444 phraseologies and suggest use Doc 4444 Chapter 12 syntax as well as established mechanisms for keeping the phrases and options brief, and open ended for options that can't be predicted (i.e. use of round and square [optional] brackets).

3) Reduce number of examples, provide more general phrasing e.g. can we say "DUE (reason)" and do without the long, obvious list of the different meteorological circumstances that could cause a flow problem by saying DUE WEATHER?

More specific comments.

1) Try to use the PANS-ATM syntax...it will make it easier to abbreviate the phrases, and it allows for optional additions [square brackets] to the phrases.

2) Is the flow control optional or compulsory – it is sometimes not clear and, if compulsory, phrases should make this very clear and also define situations of a request/accept proposal.

3) Are phrases consistent with existing Doc 4444 coordination phrases? If so, the phraseologies would perhaps be more like:
   REQUEST: "REQUEST (distance) MILES-IN-TRAIL ON ATS ROUTE (ATS route)
   REPLY: AGREED TO (distance) MILES-IN-TRAIL ON ATS ROUTE (ATS route)

4) Define "ground stop" or remove it and use appropriate plain English.

5) Define “BLOCK” or remove it and use appropriate plain English.

6) Paragraph 2.2. The naming conventions are inconsistent with Annex 10 Volume II, paragraph 5.2.1.7.1. i.e. rather than define a unit as "ATCSCC", the "who" should apply a name of location and the unit/service available. As the FLOW service is presently not included in 5.2.1.7.1.2, an Annex 10 amendment will be necessary, but perhaps consider something along the lines of (Unit) FLOW/TRAFFIC MANAGEMENT e.g. Tokyo FLOW or Tokyo TRAFFIC MANAGEMENT and raise amendment to Annex 10 accordingly.

7) Reduce extraneous words e.g. it is unnecessary to start all examples in paragraph 2.3 with “I/WE NEED”. Perhaps say, for example "(name) FIR CLOSED UNTIL ((time) or FURTHER NOTICE) [DUE (reason)]" Occasionally, you might want to start a phrase with REQUEST or, if intended to be an instruction, perhaps start with FLOW REQUIREMENT …

8) “Information may be developed into ATFM” is wordy and perhaps not clear to non native English speaker. Suggest… POSSIBLE TRAFFIC RESTRICTIONS DUE (reason) or POSSIBLE CAPACITY RESTRICTIONS DUE (reason) or similar phrase

9) Paragraph 2.4 - Change "Track E" to "Track Echo" and change "Oceanic" to "Oakland Oceanic" or to "(FIR) [(sector designation)]".

10) Paragraph 2.5 – Rather than FOR THE NEXT (number) HOURS suggest give a specific time as provided for in the other examples. Another example of too many options/examples.

11) Paragraphs 2.6 and 3.4 - Prefer "STATE AIRCRAFT ACTIVITY" rather than "STATE ACTIVITY". The latter sounds like a question.

12) There is no information on read back requirements . Is it the intent that read backs will not be required? Would prefer to see read back provisions for critical information.

13) Re Abbreviations
    a) suggest remove "Aeronautical Radio Inc." as ARINC advise that ARINC does not stand for anything now,
    b) some clashes with PANS-ABC – ideally they should align and new abbreviations be proposed for inclusion in PANS-ABC

FOREWORD

Centralized traffic management facilities are best able to communicate their national system's ability to accept traffic from adjacent international air traffic service (ATS) providers. As coordination and collaboration efforts intensify between the countries, effective communications are essential. A key element in removing language barriers is establishing common terms and phrases. Terminology and phraseology differences in air traffic flow management (ATFM) could be a potential source of confusion during communications among the Japan Civil Aviation Bureau (JCAB) Air Traffic Management Center (ATMC) and the Federal Aviation Administration (FAA) David J. Hurley Air Traffic Control System Command Center (ATCSCC).

IPACG/21 discussions resulted in a recommendation to develop the common terms of reference for ATFM communications. IPACG/22 (January 2005) supported the formation of a Task Force to address this issue. The operation of the Task Force was outlined at IPACG/23 (July 2005). The ATCSCC and ATMC established a process to examine the ATFM common terminology and phraseology at IPACG/24 (January 2006). This document was submitted by the Task Force at IPACG/25 (October 2006). The bilateral effort herein should be combined with an ICAO effort to standardize ATFM terms in the future.

The terminology will be an essential element in developing definitive, clear, and concise communication between international ATFM units. Likewise, the phraseology will be a technical pattern of communication to exchange standardized and harmonized messages between international ATFM units. These terminology and phraseology are not intended to be a requirement for ATFM communications, but may be used as a guideline for the exchange of ATFM messages.

This guideline is largely based on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA.

TABLE OF CONTENTS

1. General

1.1 The primary goal of these guidelines is to develop terminology and phraseology for the exchange of ATFM messages between units providing ATFM services. The terminology and phraseology contained herein are intended to both reflect the current use of plain language and provide a basis for standardization and harmonization.

1.2 Although there are various plain language words and phrases in use today by ATFM service providers, these words and phrases can be organized into a modular and structured method of delivery to ensure communication harmonization and reduce the incidence of misunderstanding between units providing ATFM service.

1.3 These guidelines include the concept of modular and structured ATFM messages and defines an ATFM message's components as *who, what, where, when* and *why*. These five components are described as follows:

1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
2). What: The ATFM objective to be achieved.
3). Where: The location of the ATFM objective to be achieved.
4). When: The time and/or duration of the ATFM objective to be achieved.
5). Why: The reason for the ATFM objective.

1.4 There should be no module regarding "how" the ATFM restrictions should be achieved by the counterpart ATFM service provider. It is the counterpart's responsibility how they fulfill the requested ATFM restrictions within their airspace. However, the center being asked for the ATFM restrictions may collaborate with the originating center on the type and method of ATFM measure application.

1.5 Below are the examples of possible ATFM messages:

- ~~ATCSCC~~ Herndon FLOW, this is ~~ATMC~~ Fukuoka TRAFFIC MANAGEMENT…We ~~need~~ require 100 miles ~~interval regardless of altitude~~ at all flight levels on R220, R580 and all ~~the~~ PACOTS tracks for traffic landing at Narita ~~airport estimated~~ estimating FIR boundary from 0100 UTC until 0500 UTC due to severe weather.
- ~~ATMC~~, Fukuoka FLOW this is ~~ATCSCC~~ Herndon FLOW …~~Information may be developed into ATFM~~… Possible capacity restrictions Los Angeles has started flow control for all aircraft landing at Los Angeles ~~airport~~ due to earthquake. They **(who?)** are requesting ground stops for arrivals **(Question, what does *'ground stops for arrivals mean*? A) to a native English speaker and B) to a non-native English speaker)** until further notice.

2. ATFM Message Components

2.1 The use of a modular and structured ATFM message provides for consistent ATFM message design and delivery. Each of the ATFM message's five components can contain plain language elements that when combined provide a complete ATFM message. The harmonization achieved lies in the delivery of an ATFM message that has all of the required components in a structured format while making allowances for different plain language elements. This is of particular benefit for ATFM service providers that use different ATFM terminology or for ATFM service providers that do not use English for their intra-ATFM coordination.

As the modular and structured ATFM message may contain several different elements of plain language, this section will examine each of the five components and detail some of the possible plain language words and phrases that are in use today.

2.2 **WHO**: The *who* component identifies the ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact. Examples of the who component:

- ATMC, this is ATCSCC…*See previous comments re use of Annex 10 compliant station identifier*
- ATCSCC, this is ATMC…

2.3 **WHAT**: The *what* component identifies the ATFM objective to be achieved. Objectives include but are not limited to:

~~I/WE NEED~~…REQUIRE

- (X) MILES/MINUTES ~~INTERVAL~~ AT THE SAME ~~ALTITUDE~~ FLIGHT LEVEL…
- (X) MILES/MINUTES ~~INTERVAL REGARDLESS OF ALTITUDE~~ AT ALL FLIGHT LEVELS…
- A RATE OF (X) AIRCRAFT PER HOUR…
- (X) MILES-IN-TRAIL AT (specified ~~altitude(s)~~ flight level(s))…
- (X) MINUTES-IN-TRAIL AT (specified ~~altitude(s)~~ flight level(s))…
- TO BLOCK (specified ~~altitude(s)~~ flight level(s**)…(What does BLOCK mean?, perhaps able to be confused with a 'block of flight levels' or 'block clearance', could we say FLIGHT LEVELS XXX AND YYY ARE NOT AVAILABLE)**
- ~~TO LIMIT THE ACCEPTABLE ALTITUDE TO (specified altitude(s))~~ ONLY FLIGHT LEVELS XXX, YYY AND ZZZ ARE AVAILABLE
- TO SUSPEND THE FIR ENTRY…(TO CLOSE THE (name) FIR UNTIL (time))

2.4 **WHERE**: The *where* component represents the location of the ATFM objective to be achieved. It is often preceded by modifying clause, indicating what aircraft or traffic the restriction will apply to. The modifying clause and the location combination are used to construct there where component.

Examples of there where clause:

- …~~OVER~~ AT NIPPI…
- …NARITA AIRPORT…
- …ANCHORAGE APPROACH…
- …ON A337…
- …WESTBOUND ON PACOTS TRACK C…
- …~~EAST FLOW~~ EASTBOUND ON A590…
- …INBOUND ON G344…
- …ON PACOTS TRACK 2 LANDING AT SAN FRANCISCO AIRPORT…
- …ON PACOTS TRACK E BELOW FLIGHT LEVEL (X)…
- …ABOVE FLIGHT LEVEL (X)…
- …INBOUND TO TOKYO ACC…
- …INBOUND TO OCEANIC SECTOR 5…
- ... (compass direction) OF (a significant point/airway/location)…

Examples of the modifying clause:

- …FOR ~~TURBO~~JET TRAFFIC…
- …FOR ALL AIRCRAFT…
- …FOR TRAFFIC ~~GREATER~~ FASTER THAN (X) KNOTS…
- …FOR HEAVY AIRCRAFT…
- …FOR TRAFFIC LANDING…

- …FOR AIRCRAFT DEPARTING…
- …FOR TRAFFIC OVERFLYING…
- …FOR AIRCRAFT PASSING…

2.5 **WHEN**: The *when* component represents the time and/or duration of the ATFM objective to be achieved:

- …FROM 0300 UTC UNTIL 0600 UTC…
- …FROM NOW UNTIL 0600 UTC…
- …FROM 2300 UTC UNTIL FURTHER NOTICE…
- …UNTIL FURTHER NOTICE…
- …~~FOR THE NEXT (X) HOURS…~~

2.6 **WHY**: The *why* component represents the reason for the ATFM objective:

DUE TO/FOR…

- RUNWAY CLOSURE
- (SEVERE) WEATHER
- COMMUNICATION ~~SYSTEM OUTAGE~~ FAILURE
- RADAR FAILURE
- (significant event)
- (natural disturbance such as FIRE or VOLCANIC ASH)
- STATE AIRCRAFT ACTIVITY
- MILITARY ACTIVITY
- EQUIPMENT OUTAGE
- EMERGENCY
- ~~ADJACENT~~ ATFM MEASURES IN (location)

3. ATFM Message Types

3.1 **Information to be shared prior to invoking the ATFM restrictions**: The information-sharing should be facilitated not only during the actual flow control but also (and more importantly) well prior to invoking the ATFM restrictions when the possibility of flow control arises. The following phrases will make clear the distinction between the ATFM messages and the information provided for situation awareness:

- INFORMATION MAY BE DEVELOPED INTO ATFM *See earlier comments re this phrase*
- CAPACITY RELATED INFORMATION

3.2 Examples of messages sent prior to invoking ATFM restrictions follow:

- ATCSCC, this is ATMC…**Information may be developed into ATFM**… Narita airport has closed one of the runways and started snow removal.
- ATCSCC, this is ATMC…**Capacity related information**…Narita airport has entered the storm zone of the typhoon.

3.3 **ATFM Initiative Message**: ATFM initiatives communicate air traffic flow restrictions/objectives from one ~~nation~~ State to another. They follow the five component structure described earlier:

1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
2). What: The ATFM objective to be achieved.
3). Where: The location of the ATFM objective to be achieved.
4). When: The time and/or duration of the ATFM objective to be achieved.
5). Why: The reason for the ATFM objective.

3.4 Examples of ATFM initiatives follow:

- ATMC, this is ATCSCC…~~I need a R~~**Require 30 minutes** ~~interval~~ **at the same** ~~altitude~~ **flight level** *for all aircraft landing at Chicago airport* from 0800 UTC until further notice due to state aircraft activities.
- ATCSCC, this is ATMC…~~We need to block FL350 and below~~ **FL350 and below not available** *for aircraft overflying Japanese domestic airspace* ~~for the next 12 hours~~ until time XXXX due to emergency.

3.5 **Coordination of aircraft exempted from ATFM initiatives**: The following phrases will be used for the coordination of aircraft which are deemed necessary to exempt from the ATFM restrictions:

- REQUEST EXEMPTION FROM ATFM
- COORDINATION OF ATFM EXEMPTION

3.6 The following types of aircraft may be exempted from the flow control restrictions:

- Aircraft in a state of emergency
- Aircraft engaged in search and rescue missions
- Aircraft operating for humanitarian reasons
- Aircraft carrying the head of state or distinguished visitors of state
- Aircraft carrying a patient who needs urgent treatment

3.7 Examples of messages requesting ATFM exemption follow:

- ATMC, this is ATCSCC…**Request exemption from ATFM**…UAL123 is carrying a patient who needs urgent treatment.
  UAL123…Exemption is approved.
- ATCSCC, this is ATMC…**Coordination of ATFM exemption**… JA501A is operating for search and rescue missions.

3.8 **Information for the next coordination**: If it is possible and appropriate, the expected time of next coordination will be forwarded with the ATFM messages:

- I WILL CALL YOU AT 0400 UTC FOR FURTHER COORDINATION
- WE WILL CALL YOU AGAIN IN 30 MINUTES

3.9 An example of a message with information for the next coordination follows:

- ATMC, this is ATCSCC… **Require 30 minutes at the same flight level** ~~I need a 30 minute interval regardless of altitude~~ for all aircraft on PACOTS track 8 from 1000 UTC until further notice due to military activity. I will call you again in 60 minutes.

3.10 **Amendment**: The amendment of an ATFM message should be structured as the initial message and include similar elements but with additional modifiers. These modifiers may include:

- CHANGE
- AMEND
- REDUCE
- INCREASE
- DECREASE

3.11 Amendment messages should also identify which message is being amended, as several restrictions could be in place at one time. Examples of ATFM amendment messages follow:

- ATCSCC, this is ATMC…We have **changed** the restriction on traffic flying PACOTS tracks C, E and F for Narita airport. We now need 20 minutes ~~intervals~~ at the same ~~altitude~~ Flight Level on PACOTS tracks C, E and F for traffic landing at Narita airport from now until 0900 UTC.
- ATMC, this is ATCSCC…We have **increased** the inbound rate from 5 aircraft per hour to 10 aircraft per hour for traffic beyond Oakland FIR until further notice.

3.12 **Cancellation**: The cancellation of an ATFM message should be structured as the initial message and include similar elements but contain a canceling word or phrase. It is normally not necessary to state the *why* or reason for the cancellation. A canceling word or phrase may include:

- CANCEL
- RESUME
- RESUME NORMAL
- RELEASE

3.13 Cancellation messages should also identify which message is being cancelled, as several restrictions could be in place at one time. An example of an ATFM cancellation message follows:

- ATCSCC, this is ATMC…We have **canceled** the restriction on traffic beyond the Fukuoka FIR at this time. **Resume normal** traffic flow.

4. Abbreviations

4.1 The abbreviations used by the ATCSCC and ATMC that are not defined in the ICAO Doc. 8400 (PANS-ABC), are shown in the **Appendix**. The shaded abbreviations are considered to be the common terms between the two centers.

4.2 The non-common abbreviations are deemed inappropriate for the inter-facility ATFM communication between ATCSCC and ATMC.

Table of Abbreviations

The abbreviations listed here are those used by ATCSCC and ATMC respectively that are not defined in the ICAO Doc. 8400 (PANS-ABC). The shaded abbreviations are considered to be the common terms between the two centers. The asterisk shows verbatim difference in the original collocation but the abbreviation still indicates the common object.

	ATCSCC	ATMC
AAR	Airport Acceptance Rate	
ACID	Aircraft Identification	
ADL	Aggregate Demand List	
ADR	Airport Departure Rate	
ADZY	Advisory	
AIM	Aeronautical Information Manual	
ALTRV	Altitude Reservation	Altitude Reservation
ANP	Air Navigation Plan	
AOA	Office of the Administrator	
AOC	Airline Operations Center	
AP	Air Patrol	
APREQ	Approval Request	Approval Request
APVL	Approval	Approval
ARINC	Aeronautical Radio Incorporated	
ARO	Airport Reservation Office	
ARTCC	Air Route Traffic Control Center	Air Route Traffic Control Center
ARU	Airspace Reservation Unit (Canada)	
ASM		Airspace Management
AT	Air Traffic	
ATCSCC	Air Traffic Control System Command Center	Air Traffic Control System Command Center
ATMC	Air Traffic Management Center	Air Traffic Management Center
ATMetC		Air Traffic Meteorological Center
ATO	Air Traffic Operations Program	
AUTODIN	Automatic Digital Network	
CARF	Central Altitude Reservation Function	
CCFP	Collaborative Collective Forecast Product	
CCWSU	Command Center Weather Service Unit	
CDM	Collaborative Decision Making	Collaborative Decision Making
CDR	Coded Departure Route(s)	Conditional Route
CDR	Continuous Data Recording	
CDT	Controlled Departure Time	
CFR	Code of Federal Regulations (formerly FAR)	
CIWS	Corridor Integrated Weather System	
COMSEC	Communications Security System	

	ATCSCC	ATMC
CR	Collaborative Routing	
CT	Select Flights Ground Delay Program	
CTA	Controlled Time of Arrival	
CTAS-TMA	Center TRACON Automation System Traffic Management Advisor	
CVRS	Computerized Voice Reservation System	
CWA	Central Weather Advisory	
CWSU	Center Weather Service Unit	
DARC	Direct Access Radar Channel	
DCCWU	ATCSCC Weather Unit	
DOTS	Dynamic Ocean Track System	Dynamic Ocean Track System
DP	Departure Procedure	
DSP	Departure Sequencing Program	
EDCT	Expected Departure Clearance Time	Expected Departure Clearance Time
EFAS	Enroute Flight Advisory Service	
EFTO	Encrypt For Transmission Only	
EOF	Emergency Operations Facility	
EOR	Emergency Operations Room	
EPS	Engineered Performance Standards	
ESCAT	Emergency Security Control of Air Traffic	
ETE	Estimated Time Enroute	Estimated Time Enroute
ETMS	Enhanced Traffic Management System	
EUCARF	European Central Altitude Reservation Facility	
FA	General Ground Delay Program	
FAA	Federal Aviation Administration	Federal Aviation Administration
FADT	Fuel Advisory Delay Time	
FCA	Flow Constrained Area	
FDMS		Flight Data Management System
FDPS		Flight Data Processing Section
FEA	Flow Evaluation Area	
FP	Flight Plan	
FPL	Full Performance Level	
GA	General Aviation	
GAAP	General Aviation Airport Program	
GDP	Ground Delay Program	
GS	Ground Stop	
HARS	High Altitude Route System	
HDTA	High Density Traffic Airport	
IFCN	Interfacility Communication Network	
IFPFP	Individual Flight Plan From this Point	Individual Flight Plan From this Point
IFSS	International Flight Service Station	
INATS	Interruption of Air Traffic Service	

	ATCSCC	ATMC
JCAB	Japan Civil Aviation Bureau	Japan Civil Aviation Bureau
LAA	Local Airport Advisory	
LADP	Local Airport Deicing Plan	
LOA	Letter of Agreement	Letter of Agreement
MAP	Monitor Alert Parameter	
MARSA	Military Assumes Responsibility for Separation of Aircraft	Military Assumes Responsibility for Separation of Aircraft
MEL	Minimum Equipment List	
MINIT	Minutes in Trail	
MIT	Miles in Trail	
MOS	Military Operations Specialist	
MTSAT	Multi-functional Transport Satellite	Multi-functional Transport Satellite
MVFR	Marginal Visual Flight Rules	
NADIN	National Airspace Data Interchange Network	
NAS	National Airspace System	
NAVAID*	Navigational Aid	Navigation Aid
NFDC	National Flight Data Center	
NMCC	National Maintenance Coordination Center	
NOAA	National Oceanic and Atmospheric Administration	
NOM	National Operations Manager	
NOPAC	North Pacific	North Pacific
NOS	National Oceanographic Service	
NRP	National Route Program	
NTMO	National Traffic Management Officer	
NWS	National Weather Service	
OAG	Official Airline Guide	
ODP		Oceanic Air Traffic Control Data Processing System
OPSNET	Operations Network	
OTG		Oceanic Track Generator
OTR		Oceanic Transition Route
PACMARF*	Pacific Military Altitude Reservation Facility	Pacific Military Altitude Reservation Function
PACOTS	Pacific Organized Track System	Pacific Organized Track System
PMTC	Pacific Missile Test Center	
PO	Plan of Operation	
Pref Route	Preferential Route	
PT	Planning Team	
RA	Route Advisory	
RAA	Remote Airport Advisory	
ROT	Runway Occupancy Time	
SAA	Special Activity Airspace	
SOP	Standard Operating Procedure	

	ATCSCC	ATMC
STMP	Special Traffic Management Program	
SUA	Special Use Airspace	
SVRW	Severe Weather	
SWAP	Severe Weather Avoidance Program	
TEC	Tower-Enroute Control	
TELCON	Telephone Conference	
TFM	Traffic Flow Management	
TIS	Traffic Information System	
TMC	Traffic Management Coordinator	Traffic Management Coordinator
TMCIC	Traffic Management Coordinator in Charge	
TMI	Traffic Management Initiative	
TMU	Traffic Management Unit	Traffic Management Unit
TSTM	Thunderstorm	
WSO	Weather Service Office	

APPENDIX H

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Caribbean/South American Air Traffic Flow Management Concept of Operation

(CAR/SAM CONOPS ATFM)

Version	Draft 0.1
Date	October 2006

FOREWORD

The *Caribbean/South American ATFM Concept of Operations (CAR/SAM CONOPS ATFM)* is published by the ATM/CNS Subgroup of the Caribbean/South American Regional Planning and Implementation Group (GREPECAS). It describes air traffic flow management concept operational to be applied in both regions.

The GREPECAS and its contributory bodies will issue revised editions of the Document as required to reflect ongoing implementation activities.

Copies of the *CAR/SAM ATFM Concept of Operations* can be obtained by contacting:

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The present edition (Draft Version 0.1) includes all revisions and modifications until October 2006. Subsequent amendments and corrigenda will be indicated in the Record of Amendment and Corrigenda Table, according to the procedure established in page 3.

The publication of amendments and corrigenda is regularly announced through correspondence with States, and the ICAO web site, which holders of this publication should consult. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS			
No.	Date applicable	Date entered	Entered by

CORRIGENDA			
No.	Date applicable	Date entered	Entered by

AMENDMENTS TO THE DOCUMENT

1. The Caribbean and South American (CAR/SAM) ATFM Concept of Operations is a regional document that includes aeronautical scientific and technological advances; as well as the operational experiences, both of the CAR/SAM Regions as of the other ICAO Regions that may affect ATFM concepts and procedures therein established in the same.

2. Due to this particularity, the ATFM CONOPS is also a dynamic document, in permanent progress and permeable in order to accept every modification originated by the constant improvement in the aeronautical disciplines and activities that enable its harmonious use in the CAR/SAM Regions, ensuring air operations safety.

3. In order to keep this ATFM CONOPS updated and make the required changes and/or modifications, the following amendment procedures have been established.

4. The ATFM CONOPS consists of a series of loose-leaf pages organized in sections and parts describing the concepts and procedures applicable to ATFM operations in the CAR/SAM Regions.

5. The framework of the sections and parts, as well as the page numbering have been developed so as to provide flexibility, facilitating the review or the addition of new texts. Each Section is independent and includes an introduction giving its purpose and status.

6. Pages bear the date of publication, as applicable. Replacement pages are issued as necessary and any portions of the pages that have been revised are identified by a vertical line in the margin. Additional material will be incorporated in the existing Sections or will be the subject of new Sections, as required.

7. Changes to text are identified by a vertical line in the margin in the following manner:

Italics	*for new or revised text;*
Italics	*for editorial modification which does not alter the substance or meaning of the text; and*
Strikethrough	~~for deleted text.~~

8. The absence of change bars, when data or page numbers have changed, will signify re-issue of the section concerned or re-arrangement of text (e.g. following an insertion or deletion with no other changes).

Page

Document content

GLOSARIO DE ACRÓNIMOS/ACRONYMS GLOSSARY

ACC	Centro de control de área Area control center
	Aeronautical fixed service
AFTN	Red de telecomunicaciones fijas aeronáuticas Aeronautical fixed telecommunication network
AIP	Publicación de Información aeronáutica Aeronautical Information Publication
AIS	Servicio de información aeronáutica Aeronautical information service
ANP	Plan navegación aérea Air navigation plan
ANS	Servicios de navegación aérea Air navigation services
ANSP	Proveedor de servicios de navegación aérea Air navigation service provider
AO	Operador de aeronave Aircraft operator
APP	Oficina de control de aproximación Approach control office
ATC	Control de tránsito aéreo Air traffic control
ATFM	Gestión de la afluencia del tránsito aéreo Air traffic flow management
ATM	Gestión del tránsito aéreo Air traffic management
ATS	Servicios de tránsito aéreo Air traffic services
CAA	Administración de aviación civil Civil aviation authority
CAR/SAM	Regiones Caribe y Sudamérica Caribbean and South American Regions
CATFM	Dependencia de Gestión de la afluencia del tránsito centralizada Centralized air traffic flow management unit
CBA	Análisis de costo/beneficios Cost/benefit analysis
CNS/ATM	Comunicaciones, navegación y vigilancia/gestión del tránsito aéreo Communications, navigation, and surveillance/air traffic management
FDPS	Sistema de procesamiento de datos de vuelo Flight data processing system
FIR	Región de información de vuelo Flight information region
FMU	Dependencia de organización de la afluencia Flow management unit
FMP	Puestos de gestión de afluencia Flow management position

FPL	Plan de vuelo Flight plan
GREPECAS	Grupo regional de planificación y ejecución CAR/SAM CAR/SAM regional planning and implementation group
MET	Servicios meteorológicos para la navegación aérea Meteorological services for air navigation
OACI/ICAO	Organización de aviación civil internacional International civil aviation organization
PANS ATM	Procedimientos para los servicios de navegación aérea –Gestión de tránsito aéreo Procedures for Air Navigation Services –Air traffic management
PIRG	Grupo regional de planificación y ejecución Planning and implementation regional group
TBD	A ser determinado To be determined
TMA	Area de control terminal Terminal management area
TWR	Torre de control Tower
WWW	Red mundial World Wide Web

Explanation of terms and expressions

The writing and explanation of some terms and particular expressions used in this document are defined for a better understanding

Homogeneous ATM area. A homogeneous ATM area is an airspace with a common ATM interest, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements or other specified considerations wherein a common detailed plan will foster the implementation of interoperable ATM systems.

Routing area. A routing area encompasses one or more major traffic flows, defined for the purpose of developing a detailed plan for the implementation of ATM systems and procedures.

Centralized ATFM.- A centralized unit responsible for the provision of air traffic flow management within a specific area.

Capacity (for ATFM purposes). The maximum number of aircraft that can be accommodated in a given time period by the system or one of its components (throughput).

ATM Community.- All the organizations, bodies or entities which might participate, collaborate and cooperate in the planning, development, use, regulation, operation and maintenance of the ATM System.

Demand.- The number of aircraft requesting to use the ATM system in a given time period.

Efficiency.- The ratio of the cost of ideal flight to the cost of procedurally constrained flight.

Air Traffic Flow Management (ATFM).- A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

Air Traffic Management.- Service which comprises airspace management, air traffic flow management and air traffic services.

Flight Management Position/Unit – FMP/FMU).- A position or working unit established in an appropriate air traffic control unit to ensure the necessary interphase between the local ATFM and a centralized ATFM units related to air traffic flow management – ATFM.

Main Traffic Flows.- It is a concentration of significant volumes of air traffic on the same or proximate flight trajectories.

Air Traffic Management System.- A system which provides ATM through the integration in cooperation with human beings, information, technology, facilities and services, with the support of communications, navigation and surveillance on board and spatial based.

Air Traffic Volume.- The number of aircraft within a defined airspace or aircraft movement in an aerodrome, within a specific time frame.

Executive summary

GREPECAS considered that early ATFM implementation shall ensure optimum air traffic flow towards specific areas or through them during periods in which the demand exceeds or is foreseen to exceed available capacity of the ATC system. Therefore, an ATFM system should reduce aircraft delays both in flight and ground and avoid system overloading.

In this connection, GREPECAS approved the operational concept described herein, which reflects the expected order of events which might occur and should assist and guide the planners in the design and gradual development of ATFM system, in order to provide safety and effectiveness, and ensure an optimum air traffic flow towards certain areas or through them during periods in which the demand exceeds or is foreseen to exceed the available capacity of the ATC system.

The main actors involved in air traffic flow management have been identified taking considering as ATFM community the organizations, bodies or entities which might participate, collaborate and cooperate in the planning, development, use, regulation, operation and maintenance of the ATFM System.

From the analysis of the statistics it may be noted that during the period 1994-2004, the passengers regular traffic (in PKP) of airlines in the Latin American and Caribbean Region grew at an average annual rate of 3.3% (in comparison to the 5.1% annual rate of global growth, foreseeing that air traffic growth continues to gradually improve at mid term, at the same time that the economical activity.

The total of operations of the main airports of the CAR Region in the period 2002 to 2005 reflected a positive trend of 1.92%. However, in the same period the trend in the SAM Region was negative –0.56% being the global trend positive 0.66% for both regions.

Also, several airspaces with common interests have been identified as regards air traffic management, based on similar characteristics of traffic density, complexity and air navigation system infrastructure requirements within which a common plan shall foster the implementation of an ATM Global Concept. A description of such homogeneous and routing areas is attached as CAR/SAM ATFM CONOPS.

As established in ICAO documents, air traffic flow management should be implemented within a region or within other defined areas as a centralised ATFM organization, with the support of flow management units (FMU) established in each ACC within the region or area of application.

In view of the above, this document describes the main objective of the centralised ATFMs which has as main task to contribute so that the ATC may use to the maximum possible extent its capacity and, as required, issue flow management initiatives to maintain a safe, orderly and expeditious air traffic circulation, ensuring that air traffic volume is compatible with declared capacities making at the same time a description of principles and functions and establishing some requirements as regards units equipping or air traffic flow management units and the proper centralised ATFM units.

In the current operational concept, GREPECAS establishes a simple implementation strategy through the development in phases in order to ensure maximum utilisation of available capacity and permit all parties concerned to obtain sufficient experience. The implementation would be initiated with the application of basic ATFM procedures in airports and in an evolutionary manner to reach more complex phases, without the immediate need for a regional ATFM centre, since its implementation would demand further studies to define operational concepts, systems requirements and institutional aspects for its implementation.

Finally, GREPECAS deemed pertinent to establish exceptions for the application of ATFM measures for aircraft performing ambulance flights, humanitarian flights, search and rescue operations and State aircraft in international flights, leaving at the discretion of the States/Territories and International Organizations the measures to be adopted on this matter for domestic flights. It also set out that for a partial or total interruption of flow management and/or support services the corresponding contingency will also be available.

1. History

1.1 ICAO CNS/ATM Systems received support from the Tenth Air Navigation Conference held in 1991 at ICAO Headquarters in Montreal, Canada. The same year, the CAR/SAM Regional Planning and Implementation Group (GREPECAS) started to work towards a regional application of this new air navigation services concept.

1.2 Further, at the Eleventh Air Navigation Conference (AN-Conf/11, Montreal September 2003), States supported and approved the new ICAO ATM Global Operational Concept, which encourages the implementation of a services management system which enables an operationally continuous regional airspace through the application of a series of ATM functions.

1.3 As per the guidance principles established by ICAO Council with regard to the facilitation of the inter-regional harmonization, the regional plans for CNS/ATM systems implementation in the regions should be prepared in accordance to the general profiles defined in the Global Air Navigation Plan for CNS/ATM Systems. After a careful analysis of the guidance principles of this Global Plan, GREPECAS adopted them and incorporated characteristics inherent to the CAR/SAM Regions, using as a basis the definitions of Homogeneous Areas and Main Traffic Flows. Homogeneous areas are those airspace portions with ATM requirements and similar complexity degrees, while main air traffic flows are airspaces where a significant amount of air traffic exists.

1.4 From the analysis carried out by ICAO/UNDP Project RLA/98/003, it may be inferred that while in general terms in the CAR/SAM Regions environment, currently no traffic congestions are registered requiring a complex flow management, they have been identified in some airports and airspace sectors, mainly in special periods and specific hours, where some congestions are already produced, which should be avoided.

1.5 In view of the above, GREPECAS considered that the early implementation of the ATFM shall ensure an optimum air traffic flow towards some areas or through them, during periods in which the demand exceeds or is foreseen to exceed the available capacity of the ATC system. Therefore, an ATFM system should reduce aircraft delays both in flight and ground and avoid system overloading. The ATFM system shall assist the ATC to comply with its objectives and achieve a more effective utilisation of the airspace and airports available capacity. ATFM should also ensure that air operations safety is not compromised in case unacceptable levels of air traffic congestion occur and at the same time ensure that air traffic is effectively administered without applying unnecessary restrictions to flow.

2. Purpose of the document

2.1 This document on CAR/SAM Air Traffic Flow Management Operations Concept (ATFM) is oriented towards the description of a high level on the service to be provided in the CAR/SAM Regions in a specific time horizon. It explains the current situation and which shall be the future situation to be progressively reached through a series of specific change stages.

2.2 The operational concept described herein reflects the expected order of events which might occur and should assist and guide the planners in the design and gradual development of ATFM system, in order to provide safety and effectiveness, and ensure an optimum air traffic flow towards certain areas or through them during periods in which the demand exceeds or is foreseen to exceed the available capacity of the ATC system.

3. Actors involved in ATFM

3.1 The ATFM community includes organizations, bodies or entities which could participate, collaborate and cooperate in the planning, development, utilisation, regulation, operation and maintenance of ATFM system. Among them, the following may be emphasized:

3.2 ***Aerodrome Community***.- which includes aerodromes, aerodromes authorities and other parties involved in the provision and operation of the physical infrastructure needed to support the take-off, landing and ground handling of aircraft.

3.3 ***Airspace Providers***.- referring in general terms to Contracting States in their owners capacity with legal authority to permit or deny access to their airspace sovereignty. The expression may also be applied to organizations of the State to which the responsibility has been assigned to establish standards and guidelines for the airspace use.

3.4 ***Airspace users***.- mainly referring to airlines and pilots.

3.5 ***ATM service providers.-*** are constituted by all organizations and personnel (i.e. controllers, engineers, technicians) implied in the provision of ATFM services to airspace users.

3.6 ***Military aviation.-*** referring to personnel and material of military organizations as wardens and their vital role in States' security.

3.7 ***International Civil Aviation Organization (ICAO)***.- considered as the only international organization in conditions to efficiently coordinate implementation activities of global ATM leading to become real a continuous global ATM.

4. Trends and traffic forecasts in the main airports of the CAR/SAM Regions

4.1 During the period 1994-2004, the Latin American and Caribbean Region's airlines passengers' regular traffic (in PKP) grew at an annual average of 3.3% (in comparison to the global annual average growth rate of 5.1%). Until year 2000 privatisation of national carriers fusions and inter-regional alliances, together with a wide rationalization of fleets and routes, counted among the measures that enabled airlines of the regions to capture a greater portion of traffic of United States – Latin America and Caribbean, one of the aviation markets with greater growth rate. After high traffic growth rates in 1997 and 1998 (9.5% and 7.8% respectively), the passengers traffic decreased in 1999 in a 0.3% but it was recovered in 2000 with a growth rate of 4.4%, decreasing again in 2001 in 5.1%. The traffic decreased in 1.6% in 2002 before recovering in 2003 (3.8%) and 2004 (8.4%). In some CAR/SAM areas the traffic growth in 2005 registered scopes of up to 13%.

4.2 Aircraft movement in the main airports in the period 2002-2005 would indicate that, in the CAR Region the total operations reflect a positive trend of 1.92% observing that in some States particularly, positive trends are reflected that vary from 2.42% to 6.41%. In the SAM Region, the total of operations reflected a negative trend of -0.56% between years 2002 to 2005 observing that some States particularly reflect positive trends which vary from 0.85% to 4.79%.

4.3 Making a balance of the previous information, it is observed that during years 2002 to 2005 the global trend in the CAR/SAM Regions is reflected in a positive 0.66%. It is foreseen that the traffic growth continues to gradually improve at mid term at the same time than economical activity.

4.4 For a better illustration, the evaluation of the information submitted by CAR/SAM States is shown in **Appendix A.**

5. Main traffic flows

5.1 The CAR/SAM air navigation plan has identified several airspaces with common interests as regards air traffic management, based on similar characteristics of traffic density, complexity and air navigation system infrastructure requirements within which a common plan shall foster the implementation of the ATM Global Concept. Within these routing areas the main traffic flows have also been identified following the same or close flight trajectories between pairs of cities.

5.2 These routing areas and the respective traffic flows are described in the Table shown as **Appendix B** to this document.

6. Identification of areas and/or routes where traffic congestion is produced

6.1 Currently, saturation periods have been identified in several airports and traffic flows of some of the CAR/SAM Regions FIRs. In view of this, it is necessary that CAR/SAM States maintain identified the saturation periods of their respective airports, terminal areas and traffic flows.

7. Objectives, principles and functions of a Centralized ATFM

Objective of the Centralized ATFM

7.1 As established in the PANS ATM (Doc 4444) air traffic flow management should be implemented within a region or within other defined area, as a centralized ATFM organization with the support of flow management positions (FMP) established in each ACC within the region or area of application.

7.2 The objective of the Centralized ATFMs shall be to contribute so that the ATC use to the maximum possible extent its capacity and, as required, shall issue flow management initiatives to maintain a safe, orderly and expeditious air traffic circulation, assuring that the traffic volume is compatible with the declared capacities.

7.3 Consequently, and aware of their operational needs in agreement with its reality as regards ATC service, air traffic and airport problems, as well as air traffic volume, administrations should define whether a FMU is necessary, which in addition to communicating with the Centralized ATFM, may manage and coordinate the implemented Flow Management Position (FMP) implemented in ATC units which so require or adopt the direct communication process from these FMPs with the Centralized ATFM.

Principles in which ATFM will be based

7.4 Regional ATFM structure should be composed in such a manner that each State/Territory and International Organization of the CAR/SAM Regions may have access to a Centralised ATFM corresponding through an organization adequate to their needs and developed as per guidelines determined on this matter.

7.5 The Centralized ATFM, to comply with its objectives, should be based on the following principles:

a) To be at disposal of all States/Territories and International Organizations in the region under their responsibility, considering the requirements of operators, airports, ATC units and other pertinent ATFM units.

b) Use a common and permanently updated database.

c) Take pertinent measures well in advance to prevent and/or minimise overloads.

d) Keep close and continuous coordination with flow management units (FMUs) and/or flow management positions (FMPs), aircraft and airport operators, corresponding ATC units and other pertinent Centralized ATFM units.

e) Take measures that ensure that existing delays are equitably distributed among operators.

f) Apply quality management to the services provided.

g) Base the implementation of ATFM measures in the collaborative decision making (CMD) process.

h) Favour, to the maximum possible, the use of the existing capacity without compromising safety.

i) Contribute in the achievement of the global ATM objectives.

j) Have the necessary flexibility to enable operators to change their arrival or departure schedules.

Functions of a Centralized ATFM

7.6 To provide Air Traffic Flow Management (ATFM) service, the Centralized ATFM should comply with the following activities:

a) Establish and maintain a data base in the region under its responsibility on:

- the air navigation infrastructure, ATS units and registered aerodromes;
- pertinent ATC and airport capacity; and
- flight data foreseen.

b) Establish a coherent chart of foreseen air traffic demand, a comparison with available capacity and determination of areas, and a time-frame of critical air traffic overloads foreseen;

c) Make the necessary coordination to make every possible attempt to increase the capacity available, when necessary.

d) When deficiencies in the capacity available matter may not be eliminated, determine and timely apply ATFM measures, as required, previously coordinated with aircraft operators and interested aerodromes.

e) Carry out a follow-up on the result of measures adopted.

f) Coordinate ATFM service with the other centralized ATFM units, when so required.

8. Equipment requirements for FMU/FMP and Centralized ATFM

8.1 The implementation of the ATFM shall require identifying and determining which would be the minimum requirements for the implementation of the service and the Centralized ATFM, FMU, or FMP in each CAR/SAM Regions ATC unit.

*Note: A more detailed description of these requirements is shown in **Appendix C** to this document.*

9. Personnel requirements for FMU/FMP and Centralized ATFM

9.1 Personnel performing in the Centralized ATFM as well as FMU/FMP functions shall require training and shall be qualified to provide an efficient flow management service. A detailed planning of ATFM training in advance shall ensure the optimisation of benefits in terms of capacity and operational efficiency and that personnel from FMU/FMPs be able to satisfactorily face the important change in their operational environments, ensuring high levels of continuous security.

10. Operational procedures

10.1 The operational procedures of the Centralized ATFM as well as those for the FMUs and FMPs should be developed in separate documents. These documents should describe the procedures applicable between the ATFM and all the FMUs/FMPs. Changes in these procedures shall be first agreed upon and shall be published as amendments to operational procedures prior to consultation to all parties involved.

10.2 The purpose of these documents shall be to assist personnel from the Centralized ATFM and FMUs/FMPs to establish a common understanding of the roles of each party interested in the effective provision of the flow management service and the capacity to air traffic services control and to aircraft operators.

10.3 ATFM measures should be addressed to traffic flows or flight series and to specific flights and days. To this end, planning, strategies development, and day-to-day monitoring, should be made. With regard to the above, ATFM activities could be developed in three phases: strategic - up to 48 hours before the day of the operation; pre-tactical - during 48 hours prior to the operation day; and, tactical - during the day of the operation. During all ATFM phases, responsible units should maintain a close liaison with ATC and with aircraft operators to ensure an effective and equitable service.

11. ATFM Implementation Strategy

11.1 The operational concept establishes a simple implementation strategy. This strategy should be develop in phases, so as to ensure maximum utilisation of the available capacity and enable all concerned parties to obtain sufficient experience.

11.2 The experience acquired in other Regions and by some States in the CAR/SAM Regions permits States/Territories and International Organizations to apply basic ATFM procedures in airports, without the immediate need for a Regional ATFM Centre. A Regional ATFM Centre shall demand ample studies to define operational concepts, requirements of systems and institutional aspects for ATFM implementation in the CAR/SAM Regions.

12. ATFM implementation stages

12.1 In order to enable maximum use of all resources available in the regions, either from personnel, equipment, facilities and/or automated systems, the implementation process of ATFM should be established, planned and developed in stages, according to the following sequence:

ATFM Airport Strategic

12.2 Normally the adoption of strategic flow management measures in airports located in airspaces of air traffic low density, avoids congestion and saturation of such airspace. Another aspect to be considered is that the adoption of ATFM strategic measures in airports are more simple to apply, keeping in mind that they demand a reduced data collection of flight intentions (RPL, Official Airline Guide - OAG, flight lists etc) and the use of automation and existing infrastructure tools.

12.3 The implementation process of ATFM in the CAR/SAM Regions should start with the establishment of a common methodology of estimation of the airport capacity which would enable identification of airports where periods exist in which demand is higher than capacity. As of that identification, measures could be adopted with a view to optimise the utilisation of the existing capacity.

12.4 ATFM strategic measures in airports should be limited to the use of Airport Slots and would have as objective to ensure a balance between the demand of regular flights and airport capacity. The application of slots would ensure the hour distribution of flights in airports.

12.5 Therefore, airports slots distribution procedures should be developed to operators which perform regular flights in function to the saturation/congestion of airports. The necessary capacity for other airspace users (non-regular flights) should also be kept in mind.

ATFM Airport tactical

12.6 The evolution of ATFM measures in airports should evolve towards the inclusion of non-regular flights in balancing procedures between demand and capacity. The adoption of ATFM tactical measures in airports would be still of low complexity. However, it would demand an increase in the data collection programme for intention flights in order to include FPLs and it would be necessary in addition to the use of tools of automation and existing infrastructure tools, the use of an efficient communications means between aircraft operators which perform non-regular flights and FMUs or FMPs.

12.7 ATFM tactical measures in airports would continue to be limited to the use of airport slots. However, the balance between demand and airport capacity would also consider non-regular flights. At this phase, slots distribution procedures to operators should also consider non-regular flights.

12.8 It is expected that strategic measures in airports be sufficient to solve specific problems in airports where there is a significant demand of regular flights, while tactical measures would be applied only to airports in which a significant amount of non-regular flights are carried out.

ATFM Airspace strategic

12.9 From the experience acquired in the demand and airport capacity management, States/Territories and International Organizations should consider airspace analysis, mainly those in

which ATFM measures in airports are not sufficient to solve congestion and airspace saturation problems. These ATFM strategic measures should avoid congestion and airspace saturation. The adoption of these measures would be of low complexity since it would only include their influence in the establishment of airports slots. However, it would demand the use of more sophisticated automation and infrastructure tools which permit the analysis of air traffic movement in each airspace portion, in order to identify congestion or saturation in control sectors.

12.10 The balance between demand and capacity would consider regular flights that are carried out. At this phase airports slots distribution procedures should take into account airports and airspaces saturation/congestion previsions.

12.11 It is expected that strategic ATFM measures in the airspace are sufficient to prevent overload of control sectors, mainly in those airspaces in which there is a significant over-flights demand.

ATFM Airspace tactical

12.12 At this ATFM implementation phase, States/Territories and International Organizations should move to the most complex phase which involves ATFM tactical measures related to airspace, including dynamic procedures that are applied to flights carried out in few hours. The adoption of airspace tactical measures would be very complex since it would include the application of ATC slots, as per a continuous analysis of the relationship demand/capacity. This analysis would demand the use of more sophisticated automation and infrastructure tools than in the previous phase, which permit the assignment of ATC slots, addressed to avoid overloads of airspace sectors and airports.

12.13 It is expected that airspace tactical ATFM be implemented only in States/Territories and International Organizations where there is a clear operational requirement, keeping in mind that the complexity of the application of tactical measures in airspace shall have a high cost in automated systems, data bases, telecommunications system and human resources training.

12.14 States/Territories and International Organizations who decide to implement airspace tactical ATFM should develop standards, procedures and operational manuals applicable to ATFM service.

13. Centralized ATFM implementation strategy in the CAR/SAM Regions

13.1 GREPECAS/13 was of the opinion that two CAR and SAM scenarios should be taken into account, but that they could be modified insofar as the operational concept development and the implementation plans progress. The strategy is to develop a harmonized planning of a CAR and SAM interregional ATFM system.

13.2 In order to maximise its efficiency, it was considered that Centralized ATFM should have the responsibility of providing service on the maximum extension of airspace possible, provided that this is homogeneous. In accordance with ATFM planning in the CAR and SAM Regions, it will have at least two Centralized ATFMs, one for each region.

13.3 It was also considered necessary that the procedures during all the implementation process be developed in a harmonious manner among the ATFM units to avoid risking operational safety. This entails establishing a regional and interregional strategy to facilitate and harmonize all the implementation process. The ATFM Task Force will accomplish these planning and harmonization objectives while for the implementation, two scenarios will be established depending on the operational needs and own features of each CAR and SAM Region. The activation of two ATFM Implementation Groups was considered, one for each Region.

13.4 It was considered that operational implementation should be carried out in phases, according to ICAO Doc 9854 – *Global air traffic management operational concept*, in order to permit a progressive implementation and acquire necessary capacities for an adequate implementation. Each phase should be implemented, based on operational configurations, descriptive documents of the operational models and systems, as per the established strategy.

13.5 In order to harmonize the National Plans with the Regional CAR/SAM ATFM Regional Plan, it is necessary that the civil aviation administrations take the required measures and make a closer follow-up of the regional development of the ATFM and prepare a ATFM implementation programme where implementation needs are determined, the impact that will have in the national ATC system, air traffic services as well as in operations and airport services be analysed, and pertinent coordinations are established, which make it possible an integral regional, timely and harmonious implementation.

14. Special flights exempt from application of ATFM measures

14.1 Aircraft complying ambulance flights, humanitarian flights, search and rescue operations to State aircraft in international flights would be exempt from the application of ATFM measures. States would continue having under their criteria measures to be adopted on this matter regarding domestic flights.

15. Contingency plan

15.1 In case of a partial or total interruption of the flow management service and/or support services, ATFM and FMUs/FMPs will have the corresponding contingency plans prepared as per GREPECAS guidelines, in order to help to ensure the safe and orderly movement of air traffic. These plans should be incorporated to the documents related with operational procedures of the Centralized ATFM and FMUs/FMPs.

APPENDIX A

Evaluation of operations in the main airports of the Regions

1. The methodology used to verify the percentage trend of operations of an airport, a State, a Region, or both CAR/SAM Regions, was as follows:

a) The information was initially collected and processed in Excel.

b) A comparative procedure of one year with respect to the other was applied and it was divided between the year required for comparison either in percentage or numerical (operations).

c) A formula was applied to obtain global average of data collected in all years counted either by airport, State or Region.

d) Finally, to obtain the global data a sum was made of data processed in all years counted.

e) The data processed were designed in bar and linear graphics and numerical so that operational data appears in bars and lines by States. Even though this graphic may also be designed by airports.

2. Trends per regions as per aircraft movement in the period comprised between 2002 and 2005 were as follows:

a) CAR Region
The total of operations reflected a positive trend of 1.92% between years 2002 to 2005.

b) SAM Region
The total of operations reflected a negative trend of -0.56% between years 2002 to 2005.

c) CAR/SAM Regions
The global trend in both CAR/SAM Regions reflects in a positive manner 0.66% between years 2002 to 2005.

d) In the CAR Region, the following States reflect positive trends:

Cuba	6.41%
Dominican Republic	5.74%
Belice	4.77%
El Salvador	3.06%
México	2.57%
U. S. (P. R) (V. I)	2.51%
Guatemala	2.51%
Costa Rica	2.42%

e) In the SAM Region the following States reflect positive trends:

Venezuela	4.79%
Panamá	3.73%
Chile	2.59%
Bolivia	2.49%
Perú	0.85%

3. Analysis of data

Based on the information sent by States, an analysis on flights concentration in the CAR/SAM Regions was made. The result of such analysis is contained is as follows:

a) Approximately 80% of flights reported is concentrated in the following 7 countries, as shown below:

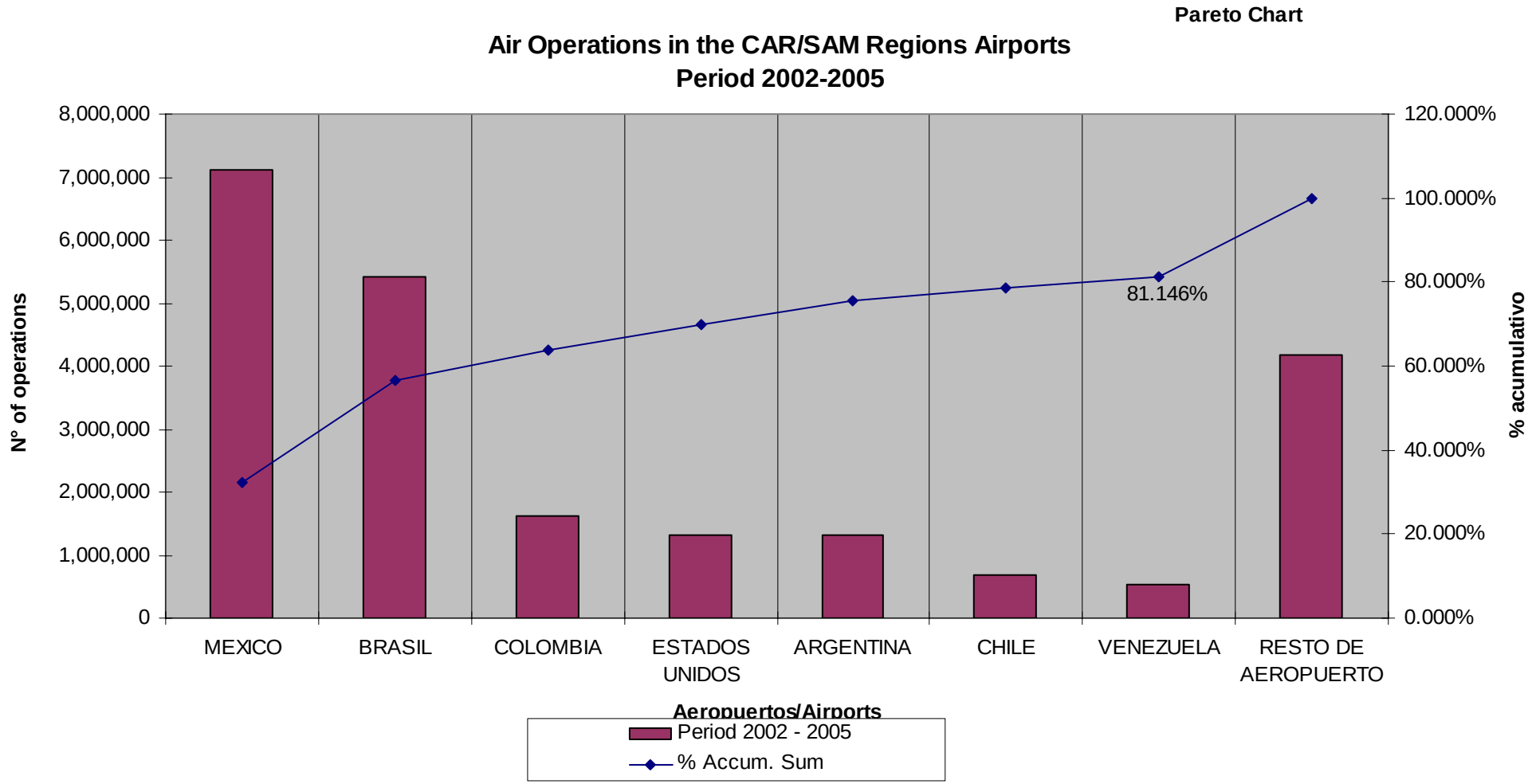
N°	AEROPUERTOS DE LAS REGIONES CAR/ SAM AIRPORTS IN THE CAR/SAM REGIONS	Periodo / Period 2002 - 2005	%
1	MEXICO	7,116,319.00	32.090%
2	BRASIL	5,412,758.00	24.408%
3	COLOMBIA	1,630,559.00	7.353%
4	ESTADOS UNIDOS/USA	1,328,879.00	5.992%
5	ARGENTINA	1,307,842.00	5.898%
6	CHILE	676,718.00	3.052%
7	VENEZUELA	522,090.00	2.354%
8	RESTO DE AEROPUERTOS/REST OF AIRPORTS	4,181,009.00	18.854%
	TOTAL	**22,176,174.00**	**100.000%**

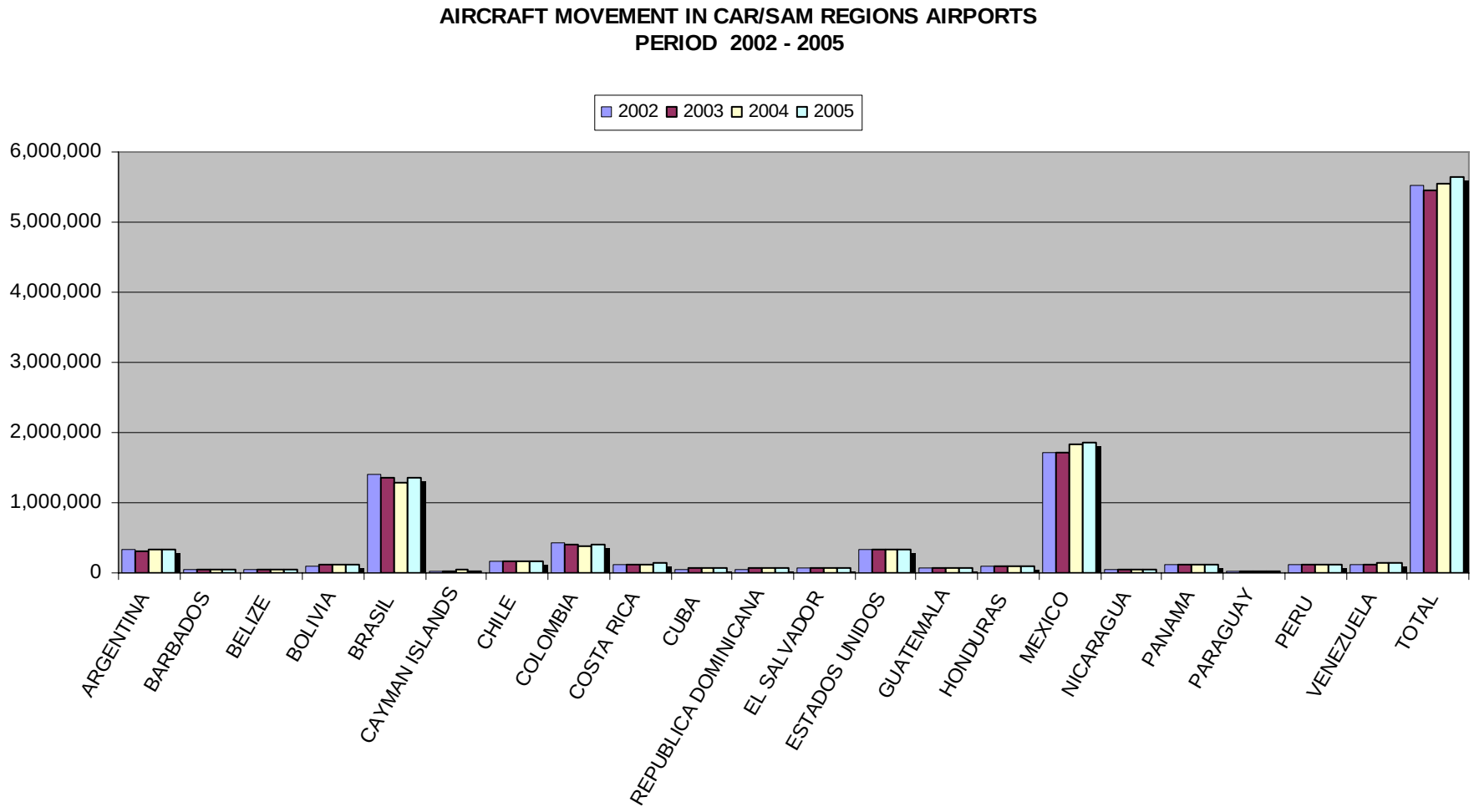
b) From these seven (7) countries, 2 belong to the CAR Region: México with the greatest percentage in the CAR/SAM Regions (32.09%) and United States which occupies fourth place 5.99%). The rest of the places belong to SAM Region States. The flight volume generated in Brazil should be highlighted, representing a 24.408%, corresponding to the second place in both Regions.

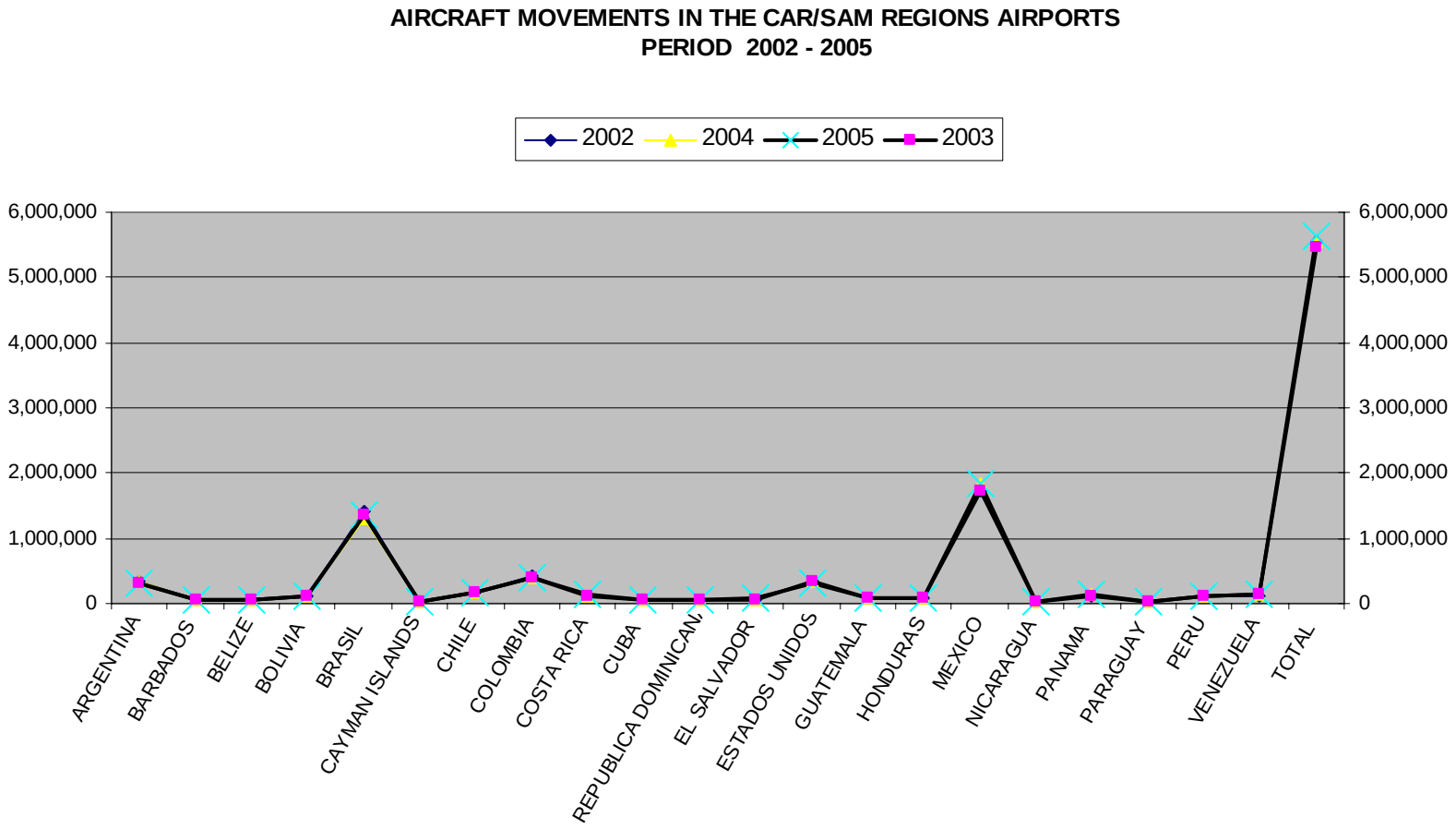
c) The rest of the States has been grouped in REST OF AIRPORTS, which individually contributes with non-significant margins (values of less than 5%) which jointly represent 18.854%.

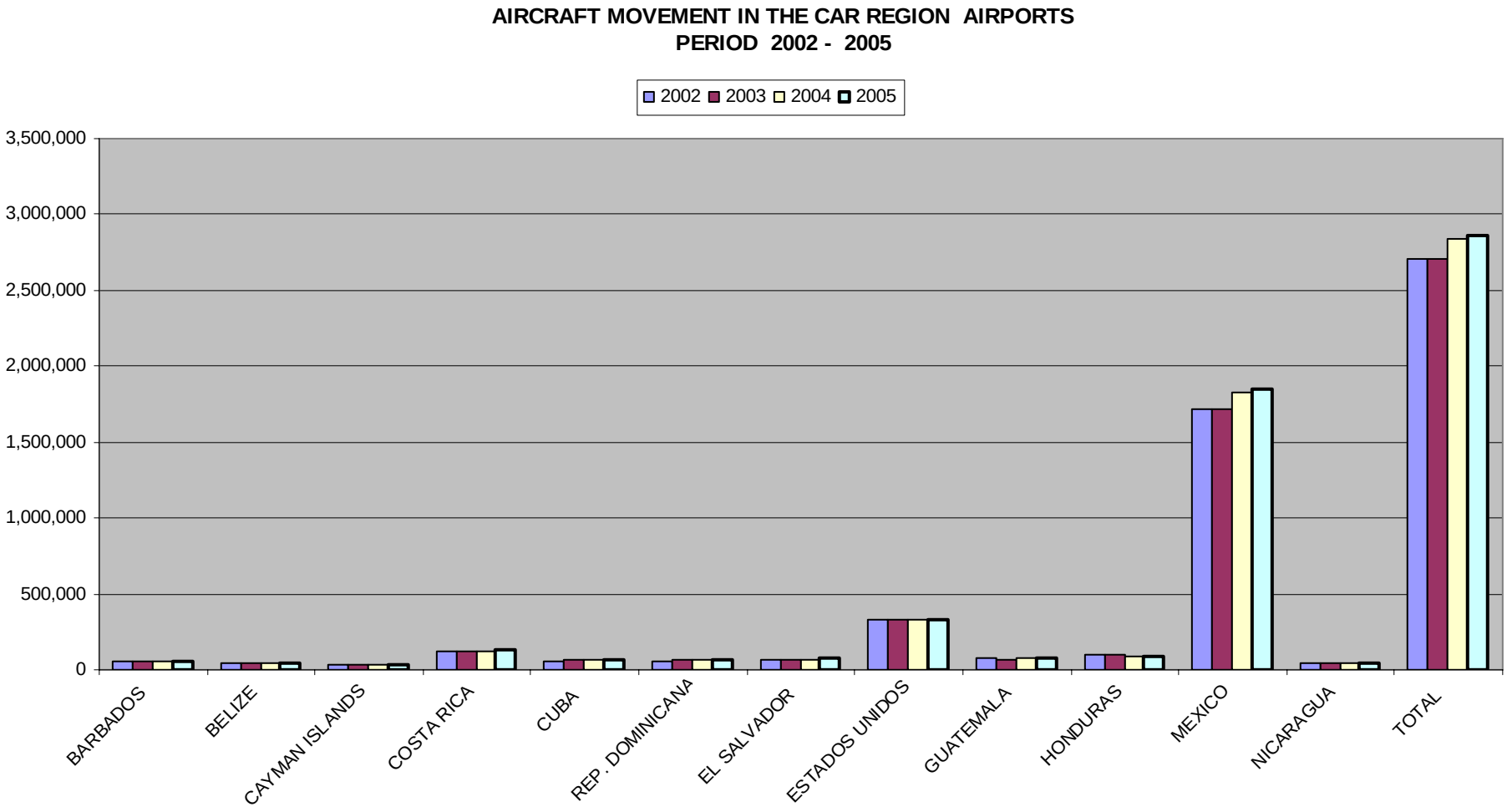
d) It is considered that percentages reflected in the table of numeral i) shall not vary, taking into consideration that States which did not submit information (50%) are mostly Caribbean States from which it is deemed that their flight volumes are below **5%**, which would not affect the table shown above.

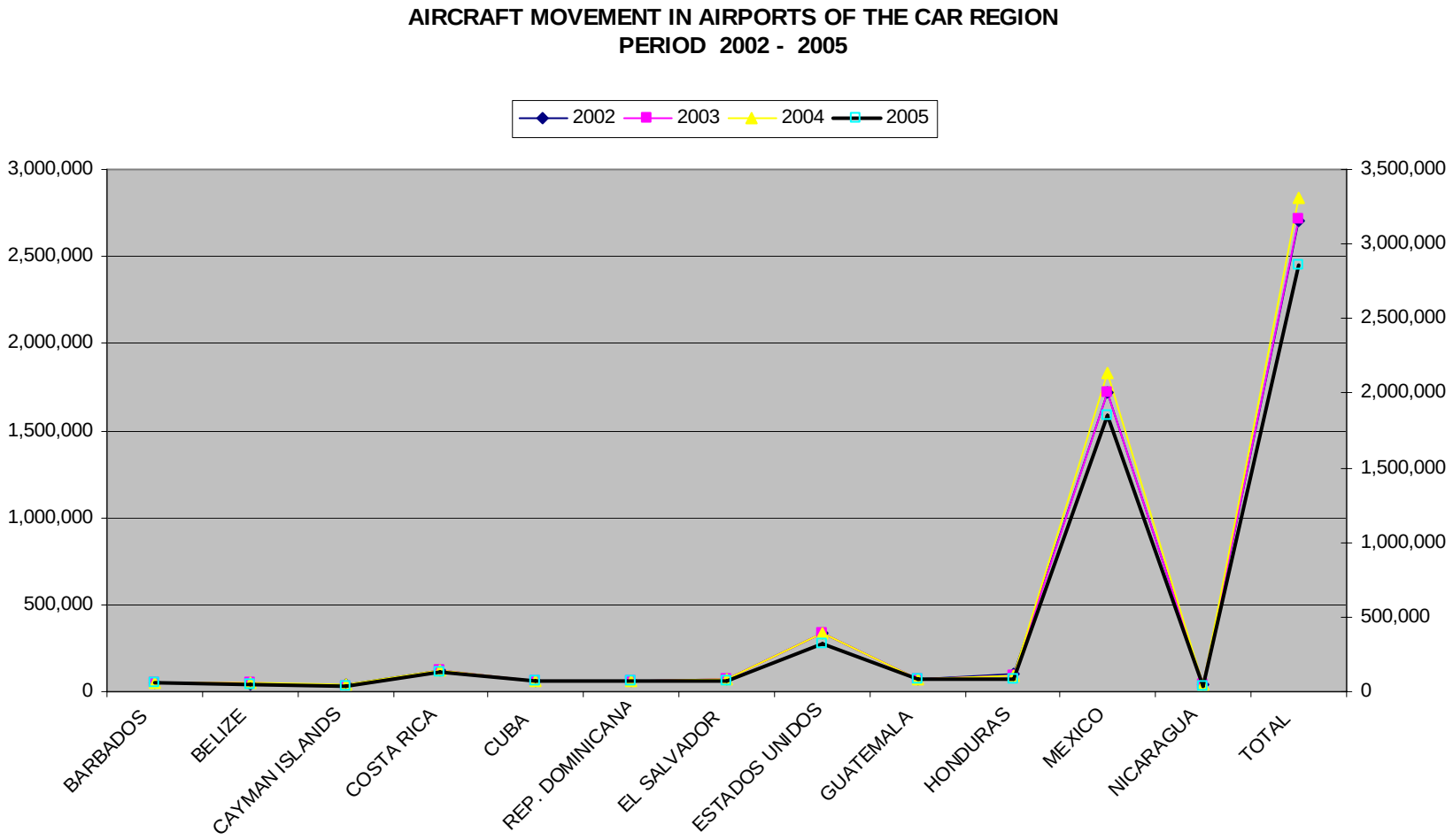
4. Resulting graphics

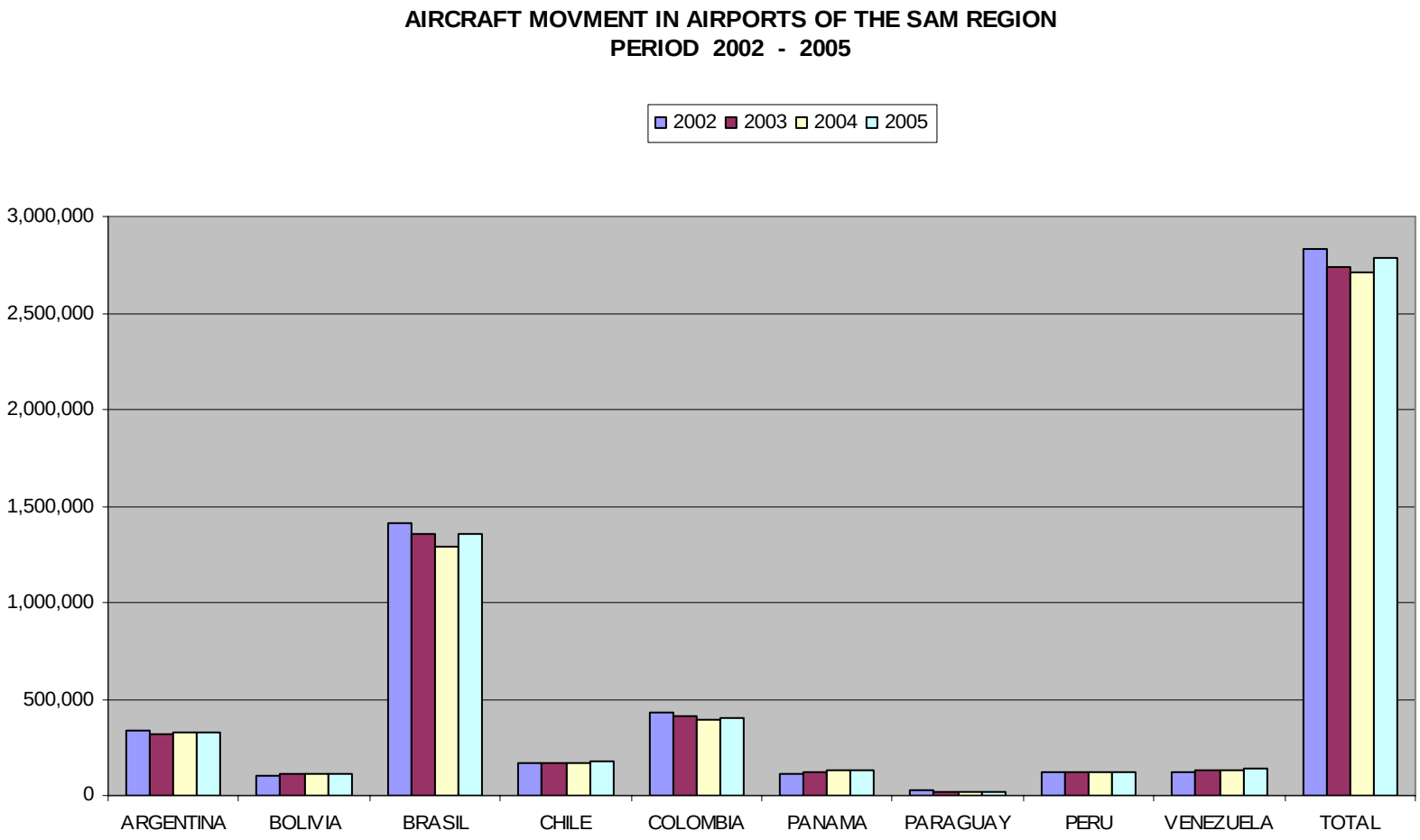

Pareto Chart
Air Operations in the CAR/SAM Regions Airports
Period 2002-2005
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Nº of operations
120.000%
100.000%
80.000%
60.000%
40.000%
20.000%
0.000%
% acumulativo
81.146%
MEXICO
BRASIL
COLOMBIA
ESTADOS UNIDOS
ARGENTINA
CHILE
VENEZUELA
RESTO DE AEROPUERTO
Aeropuertos/Airports
Period 2002 - 2005
% Accum. Sum

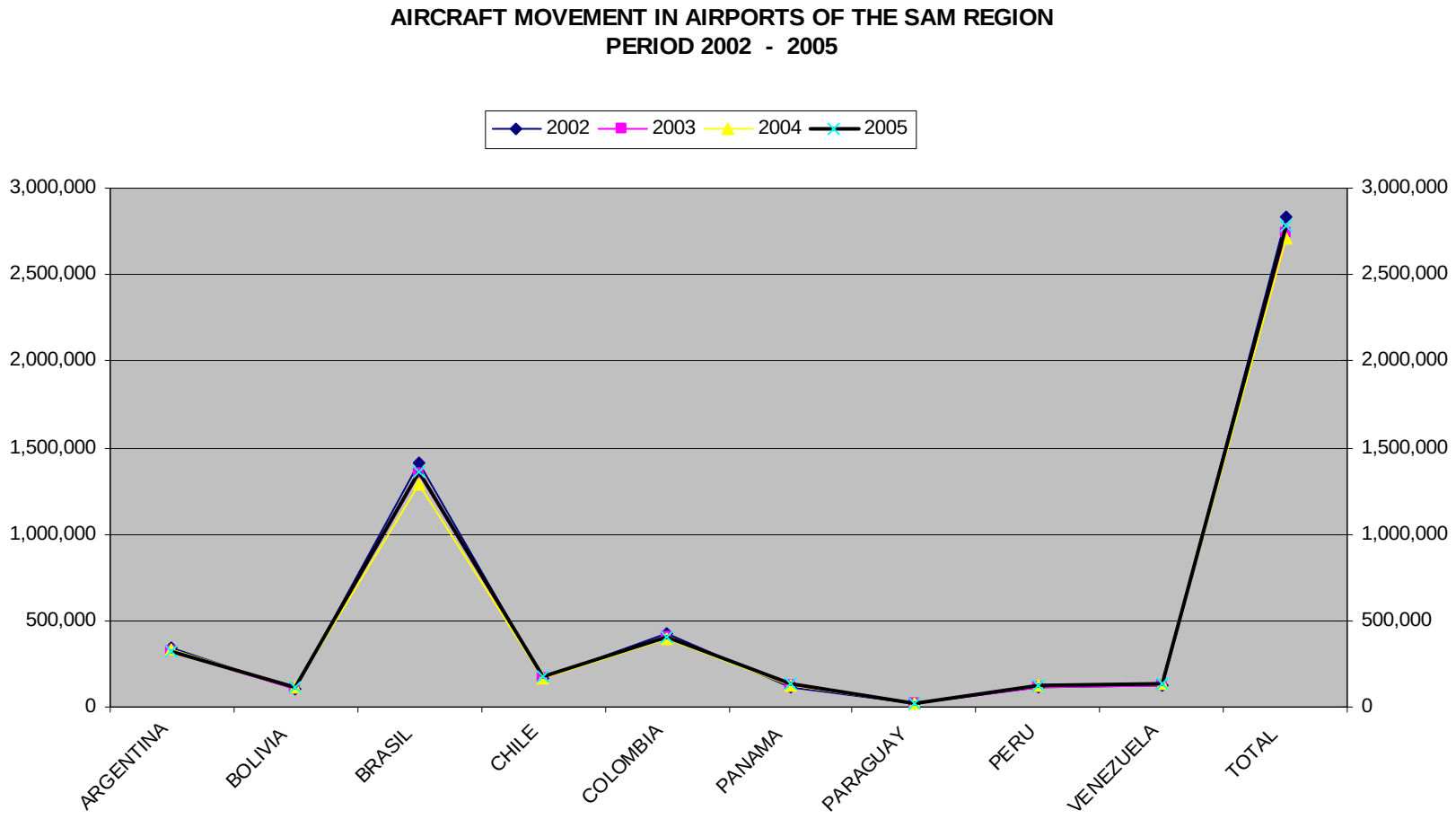

AIRCRAFT MOVEMENT IN CAR/SAM REGIONS AIRPORTS
PERIOD 2002 - 2005
2002
2003
2004
2005
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
ARGENTINA
BARBADOS
BELIZE
BOLIVIA
BRASIL
CAYMAN ISLANDS
CHILE
COLOMBIA
COSTA RICA
CUBA
REPUBLICA DOMINICANA
EL SALVADOR
ESTADOS UNIDOS
GUATEMALA
HONDURAS
MEXICO
NICARAGUA
PANAMA
PARAGUAY
PERU
VENEZUELA
TOTAL


AIRCRAFT MOVEMENTS IN THE CAR/SAM REGIONS AIRPORTS
PERIOD 2002 - 2005
2002
2004
2005
2003
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
ARGENTINA
BARBADOS
BELIZE
BOLIVIA
BRASIL
CAYMAN ISLANDS
CHILE
COLOMBIA
COSTA RICA
CUBA
REPUBLICA DOMINICANA
EL SALVADOR
ESTADOS UNIDOS
GUATEMALA
HONDURAS
MEXICO
NICARAGUA
PANAMA
PARAGUAY
PERU
VENEZUELA
TOTAL


AIRCRAFT MOVEMENT IN THE CAR REGION AIRPORTS
PERIOD 2002 - 2005
2002
2003
2004
2005
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
BARBADOS
BELIZE
CAYMAN ISLANDS
COSTA RICA
CUBA
REP. DOMINICANA
EL SALVADOR
ESTADOS UNIDOS
GUATEMALA
HONDURAS
MEXICO
NICARAGUA
TOTAL


AIRCRAFT MOVEMENT IN AIRPORTS OF THE CAR REGION
PERIOD 2002 - 2005
2002
2003
2004
2005
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
BARBADOS
BELIZE
CAYMAN ISLANDS
COSTA RICA
CUBA
REP. DOMINICANA
EL SALVADOR
ESTADOS UNIDOS
GUATEMALA
HONDURAS
MEXICO
NICARAGUA
TOTAL


AIRCRAFT MOVMENT IN AIRPORTS OF THE SAM REGION
PERIOD 2002 - 2005
2002
2003
2004
2005
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
ARGENTINA
BOLIVIA
BRASIL
CHILE
COLOMBIA
PANAMA
PARAGUAY
PERU
VENEZUELA
TOTAL


AIRCRAFT MOVEMENT IN AIRPORTS OF THE SAM REGION
PERIOD 2002 - 2005
2002
2003
2004
2005
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
ARGENTINA
BOLIVIA
BRASIL
CHILE
COLOMBIA
PANAMA
PARAGUAY
PERU
VENEZUELA
TOTAL

INTENCIONALMENTE DEJADA EN BLANCO

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APPENDIX B

Table

Routing Areas and Main Traffic Flows Identified in the CAR/SAM Regions

-1- Routing Area (AR)	-2- Traffic flows	-3- FIRs involved	-4- Type of area	-5- Remarks
Caribbean/South American Regions (CAR/SAM)				
AR 1	Buenos Aires-Santiago de Chile	Ezeiza, Mendoza, Santiago	Low density Continental	SAM intra-regional traffic flow
	Buenos Aires-Sao Paulo/Río de Janeiro	Ezeiza, Montevideo, Curitiba, Brasilia	Low density Continental	SAM intra regional traffic flow
	Santiago de Chile-Sao Paulo/Rio de Janeiro	Santiago, Mendoza, Córdoba, Resistencia, Asunción, Curitiba, Brasilia	Low density Continental	SAM intra regional traffic flow
	Sao Paulo/Rio de Janeiro-Europe	Brasilia, Recife	Continental / Low density Oceanic	SAM/AFI/EUR inter regional traffic flow
AR 2	Sao Paulo/Río de Janeiro-Miami	Brasilia, Manaus, Maiquetía, Curacao, Kingston, Santo Domingo, Port au Prince, Habana, Miami	Continental / Low density Oceanic	CAR/SAM/NAM inter- and intra-regional traffic flow
	Sao Paulo/Río de Janeiro- New York	Brasilia, Belem, Paramaribo, Georgetown, Piarco, Rochambeau, San Juan (New York)	Continental / Low density Oceanic	CAR/SAM/NAM/ NAT inter- and intra-regional traffic flow
AR 3	Sao Paulo/Río de Janeiro- Lima	Brasilia, Curitiba, La Paz, Lima	Low density Continental	SAM intra-regional traffic flow
	Sao Paulo/Río de Janeiro- Los Angeles	Brasilia, Porto Velho, Bogotá, Barranquilla, Panamá, Central América, Mérida, México, Mazatlán (Los Angeles)	Low density Continental	CAR/SAM/NAM inter- and intra-regional traffic flow
AR 4	Santiago - Lima - Miami	Santiago, Antofagasta, Lima, Guayaquil, Bogotá, Barranquilla, Panamá, Kingston, Habana, Miami.	Continental / Low density Oceanic	CAR/SAM/NAM inter- and intra-regional traffic flow

-1- Routing Area (AR)	-2- Traffic flows	-3- FIRs involved	-4- Type of area	-5- Remarks
	Buenos Aires - New York	Ezeiza, Resistencia, Asunción, La Paz, Porto Velho, Manaus, Maiquetía, Curacao, Santo Domingo, Miami (New York)	Continental / Low density Oceanic	CAR/SAM/NAM/ NAT NAM inter- and intra-regional traffic flow
	Buenos Aires - Miami	Ezeza, Resistencia, Córdoba, La Paz, Porto Velho, Bogotá, Barranquilla, Kingston, Habana, Miami	Continental / Low density Oceanic	CAR/SAM/NAM NAM inter- and intra-regional traffic flow
AR 5	North of South America - Europe	Guayaquil, Bogotá, Maiquetía, Piarco (NAT-EUR)	Continental / high density Oceanic	SAM/NAT/EUR inter-regional traffic flow
AR 6	Santiago - Lima - Los Angeles	Santiago, Antofagasta Lima, Guayaquil, Central Amérca, México	Low density oceanic	CAR/SAM /NAM intra- and inter-regional traffic flow
AR 7	South America – South Africa	Ezeiza, Montevideo, Brasilia, Johanesburgo (AFI)	Low density oceanic	SAM/AFI inter-regional traffic flow
	Santiago de Chile - Isla de Pascua - Papeete (PAC)	Santiago, Pascua, Tahiti	Low density oceanic	SAM/PAC inter-regional traffic flow
GM-1	Mexico, Toluca, Guadalajara, Monterrey, Mazatlán, La Paz, Acapulco, Puerto Vallarta, Huatulco, Cancún Gulf of Mexico— North America	Mexico, Houston, Miami; Albuquerque; Los Angeles	Continental/oceanic high density	CAR/NAM inter-regional major traffic flow
	Cancún, Guatemala, El Salvador, Nicaragua, Honduras, Costa Rica – Miami	Mexico, Central America, Havana, Miami	Continental/oceanic high density	CAR/NAM interregional traffic flow
GM-2	Mexico, Cancun, La Havana, Nassau — Europe	Mexico, Havana, Miami -NAT-EUR	Continental/oceanic high density Major traffic flow	CAR/NAM/NAT/ EUR inter-regional traffic flow
GM-3	Costa Rica, Panama, Honduras Kingston, Haiti, Santo Domingo San Juan, The Caribbean —	Central America, Panama, Kingston, Port-au-Prince, Curacao, Santo Domingo, San Juan –	Oceanic high density	CAR/ NAT/EUR intra and interregional major traffic flow

-1- Routing Area (AR)	-2- Traffic flows	-3- FIRs involved	-4- Type of area	-5- Remarks
	Europe	EUR		
	North America – East Caribbean	New York, Miami, Havana, San Juan, Santo Domingo Piarco	Oceanic high density	West Atlantic Route System CAR/NAM inter-regional traffic flow

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APPENDIX C

General Considerations for the implementation process of a Centralized ATFM

The implementation of the Centralized ATFM should consider the following requirements:

a) Access to the operational status of the air navigation infrastructure.

b) Access to aeronautical information and cartography.

c) Access to meteorological information.

d) Database of:

- aerodromes;
- airport capacity;
- ATC capacity
- Air traffic demand
- Airspace structure
- Radio navigation aids
- Aircraft performance; and
- Utilization of airports and control sectors.

e) Access to flight planning data (FPL, RPL, etc.).

f) Flight plans processing.

g) Access to surveillance data (SSR, ADS, etc.)

h) Automated resources:

- Processing and data visualization system for flow management, having, among other thing, the following sub-systems:

  - Flight data processing
  - Airspace and airports structure data;
  - Situation analysis (capacity and demand);
  - Presentation of air traffic situation;
  - Monitoring of the operational status of the infrastructure;
  - Support to collaborative decision making (ATC slots, alternate routes, etc.).
  - Database maintenance.

i) Communication to coordinate with:

- Other centralized ATFMs
- Operators (airlines, general aviation, State, etc.);
- Airport management;
- FMUs and/or FMPs and/or ATS units;
- Aeronautical meteorological units;
- AIS units.

j) Human resources

- qualified personnel;
- support personnel;
- recurrent training.

k) Use of adequate tools for statistics

l) Infrastructure

- buildings
- equipment
- electrical power
- air conditioning
- supplies
- software

m) Implementation of FMUs and/or FMPs, as required.

n) Redundancy of critical systems.

APPENDIX I

MINIMUM REQUIREMENTS FOR THE PREPARATION OF A COST-BENEFIT ANALYSIS

What is a cost-benefit analysis?

1.1 The cost-benefit analysis is the process to place numbers in a reference currency in the different costs and benefits of an activity. When using it, we may calculate the financial impact of what we wish to achieve.

1.2 It should be used when comparing costs and benefits of the different decisions. A cost-benefit analysis by itself may not be a clear guide for making a good decision. There are other items to be taken into account; for example, the workload of ATCOs, safety oversight, legal obligations, environment protection, savings produced in users' operations, etc.

1.3 Cost-benefit analysis involves 6 basic steps:

a) Gather data from important factors related with each one of the decisions. This may be accomplised in brainstroming sessions.

b) Determine costs related with each factor. Some costs, such as labour will be accurate while others will be estimated.

c) Add total costs for each proposed decision.

d) Determine benefits in a reference currency for each deicsion.

e) Place the amounts of costs and total benefits in a relationship where benefits are the numerator and costs are the denomintor:

$$\frac{\text{BENEFITS}}{\text{COSTS}}$$

f) Compare the relationship for the different proposed decisions. The best solution, in financial terms, is that with the highest relationship between benefits to costs.

INFORMATION REQUIRED FOR THE EVALUATION OF AN ATFM IMPLEMENTATION PROJECT

Following is an example of some criteria and elements that ANSPs and users would be required to contribute with the information that is required in attention to Task 1.13 – Provide information for the cost-benefit analysis" of the Action Plan for ATFM implementation in the CAR/SAM Regions.

I. By the service providers

1. Situation with and without project (Impact)

a) Current situation.
b) Situation if ATFM were implemented.

2. Techcnical-operational aspects

a) Quantification of the demand in time. Historical data and forecasts.
b) Execution phases of the project and time required for each phase (study, coordination, quotation of equipment, obtaining of resources, acquisition, arrangements in hiring of personnel, training, acquisition/offices space, installation, operation, trials).
c) Time required for the system operation.
d) Requirements of the system in the short, mid and long terms.

3. Investment

a) Value of equipment acquired, with breakdowns for each system component.
b) Useful life cycle of each component
c) Value of intangible assets of the project (software, data entry information to feed the system), feasibility studies, technical-operational training, trials.
d) Physical value of infrastructure (if available)
e) Other investments: computers, printers, photocopying machine, office furniture, fax, etc.

4. Annual expenses

a) Professional, technical and administrative and security personnel required.

i) Provision required per specialization in function of the operational hours of the system (H-24, H-12), upon requirement or other, such as administrative schedules.

b) Operational expenses

i) acquisition of services, communications service, security, cleaning, etc.

ii) renting of offices and other facilities.
iii) Maintenance
iv) General services (in case the current provision is not sufficient):

- water
- energy supply
- cleaning
- telephone/fax

c) Supplies:

- desk supplies
- paper, etc.

II. **<u>By the users</u>**

1. **Situation with and without project (impact)**

a) Current situation
b) Situation if ATFM were implemented

2. **Technical operational aspects**

a) Assess the time demand. Historical data and forecasts.

3. **Investment**

a) Costs

i) Avionics equipment
ii) Supplies
iii) Planning
iv) Maintenance
v) Training
vi) Services acquisition

b) Benefits foreseen with ATFM

i) economy during flight hours
ii) expenses avoided
iii) others.

MINIMUM REQUIREMENTS FOR THE PREPARATION OF A COST-BENEFIT ANALYSIS

Following is an example of some of the criteria and elements that selected airports could require from selected airports to contribute with the information that shall be required in attention to *Task 1.13– Provide information for the cost-benefit analysis" of the Action Plan for ATFM implementation in the CAR/SAM Regions,* which the ATFM implementation groups shall execute.

Criterion	Elements
Non-regular traffic volume	Traffic arriving and departing
	Large amount of non-scheduled traffic (e.g. General Aviation)
Non-homogenous traffic mix	Integrated operations among heavy, medium and light aircraft
	Mixture of fast and slow aircraft
	Mixture of commercial and other traffic (e.g. training or General Aviation)
	Mixture of civil and military traffic
Delay situation unsatisfactory	Delays are higher than agreed with airlines as acceptable
	Delays are too high to achieve desired minimum connecting times
	Total delays per day and per month due to traffic congestion
Complex layout	Intersecting runways
	Converging runways
	Runways parallel but cannot be used independently of each other
	Aircraft need to cross active runway when taxiing
	Design permitting possible incursions in runway/taxiway.
	Complex deicing situation at airport (if applicable)
Airspace factors	Airspace surrounding airport limited, fragmented or used by neighboring airports
	SIDs and STARs over centres of population
Scope for efficiency improvement	Results achieved not sufficient relative to human resources employed
	Results achieved not sufficient relative to financial resources employed
Latent arrival capacity	Arrival demand is unsatisfied. Declared to attend arrivals capacity is sustained capacity less than existing daily normal capacity.?
Latent departure capacity	Departure demand is unsatisfied. Declared departure capacity to attend departures is less than existing daily normal capacity.?
High traffic volume	Every co-ordinated airport could be expected to have high traffic volume at least during peak periods of the day
	Estimate of traffic volume during peak hours of the day

Frequent low visibility conditions	Estimate number of days with low visibility
Technical improvements still to be implemented	Landing aids are not up to date
	Surveillance facilities are not up to date
	RNAV departures and arrivals have not been implemented
	Other facilities such as lighting, signs, etc. are not up to date and complete
Scope for improving work environment	ATCO working position does not have an optimised intelligent / ergonomic point of view, data presentation
	Tower to ground control and arrival/departure sector visibility has not been optimised (also from an ergonomic point of view)
	Social/contractual environment can be improved
Scope for optimising procedures	A strategic removal of conflicts between arrival and departure routes or sectors has not been implemented
	Reduced runway separation has not been implemented
	No adequate procedures to accelerate operations are used of aircraft in runway, keeping safety
	Conditional clearances have not been implemented
	Landing clearance is not based on adequate procedures to accelerate operations
	Non optimized runway occupancy time
	Visual turns are not carried out
Critical environmental sustainability issues	Airport in close proximity to residential areas
	Environmental regulations or constraints apply
	Major airport development envisaged