



International Civil Aviation Organization

**The Fourth Meeting of the Air Traffic Flow Management Task Force
(ATFM/TF/4) and BOBCAT Workshop**

Bangkok, Thailand, 7 to 11 November 2005

Agenda Item 3: Review Outcomes of BOBCAT Paper Trials

USER REQUIREMENTS FOR ATFM SYSTEM

(Presented by IATA)

SUMMARY

This paper reiterates IATA's position with regard to user requirements for the BOBCAT ATFM system

1. Introduction

1.1 The delays experienced by long haul flights departing from South East Asian airports during the late evening hours to destinations in Western Europe has been a cause for concern for sometime. The causes of the delays have been identified as the poor route structure, the lack of RVSM through the Kabul FIR, the inability of long haul aircraft operating at, or near, maximum weight to accept higher levels, the bunching of flights, and the preference for particular routes. Additionally, because there is no air traffic flow management for the Kabul FIR, a large number of slots over Kabul FIR are lost every night which causes unnecessary operational problems.

1.2 Measures taken so far to improve the flow, such as the establishment of the EMARSSH routes and the subsequent implementation of RVSM over the Bay of Bengal and India, has benefited the traffic flow over the Bay of Bengal.

1.3 However, traffic flow through the Kabul FIR between 2000-2359 UTC still continues to cause delays for departures at the S E Asian airports. More importantly, flights are routinely rerouted around the Kabul airspace adding at least 35 minutes extra flying time as well as causing expensive technical stops for refueling. It was felt that an air traffic management system was necessary to regulate the flow and optimise the usage of available slots through the Kabul FIR. This would provide users with a transparent system with choices of levels and routes and forewarning of applicable delays.

2. Discussion

2.1 AEROTHAI's offer to develop an air traffic flow management system called BOBCAT (Bay of Bengal Cooperative ATFM Advisory System) has been accepted by the ICAO ATFM Task Force which was charged to look into this matter. AEROTHAI has been asked to develop an ATFM system up to the stage of an operational trial. This trial is scheduled for 22 Dec 2005. However, given the number of outstanding intrinsic issues it is unclear if this deadline can be met.

2.2 BOBCAT paper trials were held from 5-7 October 2005. Participants were provided data sheets which indicated amongst other things:

- a) The inclusion of intermediate waypoints, in addition to Kabul FIR entry points, for the purpose of providing longitudinal spacing for flights at merging points in Indian domestic airspace.
- b) The inclusion of westbound flights landing at airports in Northern India and Pakistan, for slot allocation.
- c) The inclusion of all westbound flights entering Kabul airspace between 2000-2359 UTC regardless of point of departure.

2.3 Given that the objective is to develop a system to avoid re-routes around Afghanistan and departure delays, which will be suitable for operational trials, there is an urgent need for a system requirements statement to be developed so that the system can be designed and prepared in accordance with it.

2.4 AEROTHAI provided ATFM TF3 with a copy of the Concept of Operation of BOBCAT (ver 2.1). However, the basic issues, such as the following, has not been fully addressed:

- a) Is there a need for a full time ATFM Unit?
- b) What is the role of BOBCAT/ATFMU after the pre departure slot assignments are completed?
- c) What is the system play area? Which are the “system” airports? If Bangkok, Kuala Lumpur, Singapore, Delhi and Lahore are system airports, how are flights from non-system airports like Guangzhou, Hanoi and Hong Kong to be handled? How will non-system airports be involved in BOBCAT?
- d) Should there be a delay in departure resulting in a flight missing the assigned slot, how will new slots be obtained - by the operator or by ATC? What if the operator does not have an operational flight following system to undertake this task? What if the airport of departure is outside the “system” airports and therefore the local ATC have no knowledge of BOBCAT?
- e) Should a flight be delayed enroute, resulting in the flight missing the assigned slot over Kabul FIR, how will this be handled?
- f) What value will be accorded to Wheels up time? Who will decide it? Airline or ATC ? How does the Wheels up time impact the slot assignment?
- g) What are the system parameters and limits with regard to Maximum Acceptable Delay (MAD), longitudinal separation minima, Mach number, and time buffers?
- h) What are the cut-off times for slot application and approval?
- i) What are the rules for negotiation?
- j) What are the procedures for data entry? For example, can amendments be made after executing the input? How does the system deal with syntax or format errors?
- k) What is the output format?
- l) How will data be recorded?
- m) Who will review the system operations and when will it be done?

2.5 It is strongly requested that the ATFM TF4 meeting addresses the above issues and finalise the system definition so that AEROTHAI can develop and test the system to meet the requirements.

User requirements for the Air traffic management system- Phase 1

2.6 The sole objective of the users has always been and remains providing westbound slots entering into Kabul FIR and allowing airlines to choose their own slots.

2.7 IATA does not see the justification for, nor support, the inclusion of westbound flights to Delhi, and other Indian and Pakistan airports into the ATFM system for Phase 1.

2.8 Flights which do not transit the Kabul FIR can be cleared to other RVSM levels during the en-route phase. IATA also opposes the use of intermediate waypoints in determining slot availability over Kabul FIR as they result in a loss of slot availability and an extension of delays to a wider geographical area. Where westbound flights cross each other over continental India, they do so within radar cover and radar separation can be applied.

2.9 A list of user requirements is in **attachment A**.

3. **Conclusion**

3.1. The meeting is invited to:

- a) Agree that the BOBCAT system Phase 1 should not include westbound flights into Delhi and other airports in India and Pakistan for slot assignment.
- b) Agree that the BOBCAT system should not include the use of intermediate waypoints as this reduces the number of slots available in Kabul FIR and introduces unnecessary complexity. The resolution of ATC issues over India should properly be handled by ATC using radar, which is currently available.
- c) Agree that the BOBCAT system should be developed to meet the Basic User Requirement Statement for the ATFM system described in Attachment A.

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BASIC USER REQUIREMENT STATEMENT
FOR BOBCAT SLOT ALLOCATION PROGRAMME
PHASE I

1.0 ISSUE:

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

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

2.0 BOBCAT PARTICIPANTS:

2.1 IATA requests that all flights operating westbound on B466/V390, L750 and N644 that enter into the Kabul FIR between the hours of 2000-2359 UTC must participate in the BOBCAT slot allocation programme in order to be guaranteed a slot into Afghanistan.

2.2 Note: *The BOBCAT Slot Allocation Programme requirement should be promulgated by Afghanistan and Pakistan NOTAMs.*

2.3 Note: *Flights that do not choose to participate in the BOBCAT slot allocation programme during this time frame must be delayed or rerouted if their flight into Afghanistan conflicts with participating flights.*

3.0 DEFINITION OF BOBCAT ENTRY FIXES (GATES) INTO AFGHANISTAN

3.1 For G792: Kandahar (KN); FL310 and FL350

3.2 For L750: Zhob (ZB); FL280*, FL310 and FL350

3.3 For N644/A466: Dera Ismail Khan (DI); FL280*, FL310 and FL350

*NOTE: *Departing aircraft from India and Pakistan must be given priority for FL280 during the initial round of slot allocations issued by BOBCAT.*

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

4.0 LONGITUDINAL SEPARATION OF SLOTS

4.1 Slots are to be defined by ATC longitudinal separation minimum plus an additional buffer to allow flights to meet their slots. Therefore, for the current 10 minutes longitudinal separation required by Afghanistan the slots are defined as:

10 minutes longitudinal separation + “X” minutes buffer

4.2 Since Asia departures to Europe are late at night with very little domestic traffic at departure airports that could contribute to ground delays, it is recommended that BOBCAT starts with 15-minute slots (10 minutes longitudinal separation + 5 minutes buffer) and then review departure times and aircrafts ability to meet gateway estimates and then adjust the “X” factor as required.

4.3 Note that the “X” factor is the time allowed for the aircraft to enter into the gateway fix. The following tables define the slots and the crossing times required by aircraft.

4.3.1

Slot segment	Aircraft’s Slot (Must cross gateway at this time)	BOBCAT ATM Slot (System dimension)
1	2000 – 2005 UTC	2000 – 2015 UTC
2	2015 – 2020 UTC	2015 – 2030 UTC
3	2030 – 2035 UTC	2030 – 2045 UTC
Etc.	Etc.	Etc.

4.3.2 A more expanded rendition of assigned slots with entry requirements is as follows:

Slot number	Aircraft’s Slot (Must cross gateway at this time)	BOBCAT ATM Slot (System dimension)
KN-1	2000 – 2005 UTC at FL310	2000 – 2015 UTC at FL310
KN-2	2000 – 2005 UTC at FL350	2000 – 2015 UTC at FL350
ZB-1	2000 – 2005 UTC at FL280	2000 – 2015 UTC at FL280
ZB-2	2000 – 2005 UTC at FL310	2000 – 2015 UTC at FL310
ZB-3	2000 – 2005 UTC at FL350	2000 – 2015 UTC at FL350
DI-1	2000 – 2005 UTC at FL280	2000 – 2015 UTC at FL280
DI-2	2000 – 2005 UTC at FL310	2000 – 2015 UTC at FL310
DI-3	2000 – 2005 UTC at FL350	2000 – 2015 UTC at FL350
KN-3	2015 – 2020 UTC at FL310	2015 – 2030 UTC at FL310
KN-4	2015 – 2020 UTC at FL350	2015 – 2030 UTC at FL350
ZB-3	2015 – 2020 UTC at FL280	2015 – 2030 UTC at FL280
ZB-4	2015 – 2020 UTC at FL310	2015 – 2030 UTC at FL310
ZB-5	2015 – 2020 UTC at FL350	2015 – 2030 UTC at FL350
DI-3	2015 – 2020 UTC at FL280	2015 – 2030 UTC at FL280
DI-4	2015 – 2020 UTC at FL310	2015 – 2030 UTC at FL310
DI-5	2015 – 2020 UTC at FL350	2015 – 2030 UTC at FL350
KN-5	2030 – 2035 UTC at FL350	2030 – 2045 UTC at FL350
Etc	Etc	Etc

Note: This table is for illustration only and is assuming that all aircraft are flying at same speed and will have same longitudinal spacing exiting Afghanistan. This table also assumes that A466 and N644 are treated as a single route within Kabul FIR.

5.0 BOBCAT SLOT ALLOCATION

5.1 Airlines bid for BOBCAT slots per BOBCAT Concept of Operation (Draft Version 2.1) section 3 Theory of Operations. Departing aircraft from India and Pakistan must be given priority for FL280. It should be noted that initial cut-off time to allow for first slot allocation process needs to be defined.

6.0 PROPOSED DEPARTURE TIMES AND TIME TO GATEWAY

6.1 The User requirements for BOBCAT phase I is for a simple system designed to allocate slots based on airline estimates. This means that:

- a) Airlines are responsible for their own estimates based on known upper winds and route of flight per flight plan,
- b) BOBCAT (phase I) does not require an upper winds system plain and therefore does not calculate en route times from departure to gateway.
- c) Airlines will amend their proposed departure time based on the slot assigned by BOBCAT and known upper winds. (The advised WUT will be used by ATC as a guide to facilitate the departure of the flight to enable it to meet the slot time)

7.0 INABILITY TO MEET SLOT TIME

7.1 If for some reason an aircraft cannot meet its slot time it must inform ATC and obtain a new slot from BOBCAT. There should be two ways available for pilots to obtain a new slot:

- a) Requirement: By contacting ATC (tower control if aircraft is on ground and ACC if aircraft is en route) with a new slot time request. ATC will then obtain a new slot from BOBCAT and if the pilot accepts the new slot ATC will then issue a new ATC clearance as required.
- b) Optional: By contacting company, who will obtain a new slot from BOBCAT. Pilot will then advise ATC of the new slot and ATC will then issue a new ATC clearance as required.

7.2 Therefore BOBCAT system must be continuously up to date with available slots and accessible by ATC and users during the period that ATFM is in force.