WORLDWIDE SYMPOSIUM ON PERFORMANCE OF AIR NAVIGATION SYSTEM

Montreal, 26th to 30th March, 2007

Background Material Submitted by India

SUMMARY

This paper provides an update on the airport and airspace capacity enhancement initiatives in India

1. Introduction

1.1 India a strategic player in Global Aviation

1.1.1 Having situated at a very strategic geographical location at the confluence of ATS routes connecting the major destinations in the East / South East and Western parts of the world, Indian airspace has become a vital link to the smooth flow of traffic between these two major blocks of airspace in the Globe.

1.1.2 India has recorded , in the recent past, a pheneomenal rate of traffic growth which was unprecedented in the history of civil aviation in the world. With the advent of new airlines commencing operations with highly attractive fare structure the domestic traffic has increased multifold at the rate of 24% in the year 2004 and the growth is being sustained till now. On the other hand, international traffic also has increased significantly as Indian destinations have become more popular for international tourist and commercial interest due to liberal economic policies.

1.1.3 The complexities of Indian airspace and air transport in India is unique in nature. The air transport in India has also to serve as a connectivity to inaccessible and remote areas which are not commercially viable and operationally feasible. Based on the topography various types of aircraft starting from Helicopter to bigger type of jet aircraft are being operated in various sectors. Military aircraft movement constitute a major flying across the country using various types of transport aircraft and fighters. Restricted airspace for Military flying and the mixed type of aircraft with un matching capabilities occupy the airspace and their conflicting demands need to be accommodated

2. Challenges

2.1 Civil commercial, Military, general Aviation, Space research, hobby and adventure flying, Flying training, Helicopter flying have been constantly increasing and thereby the airspace has been getting congested day by day.

2.2 As the airspace user agencies are increasing along with increase in civil air traffic, the airspace management and air traffic management has become a challenging task as the complex and conflicting user requirements also need to be accommodated adequately along with commercial civil air traffic .

2.3 Technological innovations such as UAVs, are some of the new technology that provide more simple and flexible solutions not only for transportation needs but also for national security and economic development.

2.4 The operations of UAVs along with other aircraft in the same airspace has opened up a new challenge to the ATM system not only from the safety and security point of view but also added burden on the capacity and air traffic management point of view.

2.5 In the absence of appropriate SARPS for the operation of UAVs, in the common use airspace and dynamic air traffic environment, it has become a serious challenge to ensure SAFETY and efficiency. The airspace requirements are not only restricted to in the segregated areas but also demands in the common use airspace where mixed type of aircraft with various operational objectives are already in operation. India has taken up this through APANPIRG with ICAO council for development of appropriate SARPS at the earliest.

2.6 Low Cost carriers

2.6.1 Entry of Low cost carriers with attractive flying schemes have boosted the traffic in the recent past and the air transport industry is in the upswing with more and more passengers switching from conventional surface transport to air travel. These carriers have not only become a potential competitors to the established scheduled airlines but also a potential challengers to the ATM system as the airspace/ airports are getting more and more congested and leading to delay and holding resulting in burning of extra fuel.

2.7 Miltary flying

2.7.1 Military flying activities with frequent airspace closure and airport closures have become unavoidable from the security point of view which has put added burden on the civil flight operation and ATM systems.

3. Indian Airspace a snapshot

India manages one of the biggest airspace in the world which encompass huge area of oceanic airspace in the Bay of Bengal and Arabian Sea area.

Total Airspace : 6.0 Million Sq.Km (approx)
Land area : 2.2 Million Sq.Km (approx)
Oceanic area : 3.8 Million Sq.Km (approx)

3.1 The entire Airspace has been divided into 5 FIRs

Mumbai, Delhi, Kolkata, Chennai & Guwahati

11 Area control centres and 100 control towers are established for efficient air traffic Management.

3.2 Radar Cover

Mono Pulse SSR (MSSR) are installed at 12 strategic locations to ensure radar coverage to the entire land area
(Mumbai, Delhi, Chennai, Kolkata, Ahmedabad, Nagpur, Hyderabad, Mangalore,Thiruvananthapuram,Varanasi, Guwahati & Berhampur)

3.3 There are 12 neighboring states which share common FIR boundary with Indian FIRs

Pakistan, Oman, Saana, Mogadishu, Seychelles, Mauritius, Male, Srilanka, Malaysia, Myanmar, Bangladesh and Nepal.

4. ATS routes and Flexible use of airspace

4.1 Realising the need to utilise the available airspace in an optimum way Civil-Military co-ordination mechanism has been worked out successfully and the airspace utility and capacity has been significantly enhanced through effective co-ordination with military authorities. India could implement many ATS routes through Military areas to facilitate civil flight operations on most direct routings resulting huge savings in fuel and flying time to the airlines.Use of resources in a co-operative and co-ordinated manner enhanced the operational flexibility and cost efficiency in operations.

4.2 Implementation of new conditional ATS routes through Military areas provide most economical and direct routings from point to point resulting in huge savings in fuel and flying time.

4.3 In view of the high density of traffic transiting thru Indian airspace, 5 new international routes connecting South-East Asia and Europe via northern Indian airspace are established to enhance airspace capacity and facilitate availability of optimum levels and direct routings.

Route Designator	Reporting Points	Route Distance (NM)	Lower limit	Availability (UTC)
M875	KAKID-AGROM-LAPAN-DOMET-IGONA-BUTOP	819	F280	1630- 2230
L509	GGC-UXUPO-GUGIP-ASARI	634	F320	1630- 2230
P761	MMV-IDASO-SADAP-PPB	742	F240	H24
P628	ASOPO – RK (PAK FIR)	614	320	H24
L333	KKJ – TIGER	467	300	1630-0030
M875 & L509 notified through AIP Supp. 11/2006 Effective from 11th May 2006 P761 notified through AIP supp 04/2006. Effective from 16th March 2006				

4.4 ATS route M875 is presently available only within Indian airspace, with the approval of Pakistan ATS authorities, this route can extend up to Dera-Ismail-Khan (DI) VOR. ICAO and IATA are requested to coordinate with Pakistan and Afghanistan ATS authorities for the necessary approvals.

4.5 M875 and L509 constitute two independent parallel traffic flows in northern Indian airspace which connect South-East Asia to Pakistan/Kabul FIR.

4.6 Opening of domestic route segments for scheduled International flights

4.7 Scheduled International flight are permitted to flight plan using domestic ATS route segments to and from destination, departure and approved alternate airports in India which are not connected by international ATS routes. This amendment provides more flexibility to the International flights to flight plan for the most appropriate alternate airport. The change has been published thru AIP Supplement 26/2005.

5. Extended Surveillance

5.1 Extended area of radar surveillance in Varanasi TMA.

5.1.1 Lateral limits of Varanasi TMA have been extended from 22nd Dec 2005. Full TMA is under radar coverage and the radar control service from Varanasi is now available on international route M875 in addition to the existing international routes P646, R460, L509, G590, A201 and B209 apart from the domestic routes. The enhanced level of service has benefited the aircrafts operating on these routes with the availability of optimum cruising levels and direct flight paths. The traffic flow between Delhi TMA and Varanasi TMA has improved significantly.

5.2 H24 ACC services in Mangalore TMA

5.2.1 Mangalore ACC services are now extended to H24 from earlier dawn-dusk. Thus Mangalore radar control service is now available to aircraft on ATS route M300, P570 and R461 apart from the domestic routes. There are plans to extend lateral limits of

Mangalore TMA in the north and west directions so that all aircrafts transiting thru this airspace are accommodated at preferred flight levels and direct routings.

6. Implementation of semi-circular system of cruising level below FL150

6.1 Quadrantal system of cruising levels for IFR/VFR flights below FL150 was in force in India.

6.2 To align the system of cruising levels for IFR/VFR flights in conformity with Appendix 3 to Annex 2, the semi-circular system of cruising levels has been implemented below FL150. The change was published thru AIP Supplement No. 3 of 2006 and has become effective from 13th April 2006.

7. Airport capacity enhancement initiatives

7.1 Airport capacity is one of the major element which adversely affect the ATM functions and Airline operations. The airports not only cater to the needs of transport but also play a vital role in boosting the trade and development of the local area and thereby economic development of the region.

7.2 The ground infrastructure at two major airports in India, Mumbai and Delhi have been upgraded to meet the growing demand.

7.3 Capacity enhancement at Delhi and Mumbai International airports

7.3.1 Since Delhi and Mumbai airports are focal points of air traffic growth, traffic congestion and resulting delays have adversely affected the efficient aircraft operations. Following have been implemented with the objective of achieving enhanced handling capacity at these airports and reducing frequency congestion.

7.3.2 To facilitate the aircrafts to obtain clearances upto 30 min prior to startup, dedicated channel for Clearance Delivery has been implemented at Mumbai and Delhi airports. Since commencement of dedicated clearance delivery system, significant improvements have been noticed in ATC communication.

7.3.3 To make optimum use of near parallel runways at Delhi and Crossing runways at Mumbai with the objective of enhancing the capacity and minimize delays procedures were developed in house, safety assessment carried out and after simultaneous operations on near parallel runways at Delhi and crossing runways at Mumbai has been successfully implemented . ATC personnel were trained in-house for the operations. Ground delays have reduced at Mumbai to the tune of 5-7 mts in respect of departures as the taxiing time has reduced drastically. Similarly ground delays in respect of departures and holding delays in respect of arrival at Delhi has significantly reduced and also there is appreciable capacity enhancement.

7.3.4 To minimise the runway occupancy time and to enhance the capacity, intersection departure procedures for Mumbai and Delhi airports have been developed and notified.

7.4 Electronic version of AIP India is launched on website

7.4.1 Electronic version of AIP India (Fifth Edition) is launched on Airports Authority of India website (www.aai.aero). The website allows full browsing access to all the sections of AIP.

8. Conclusion

The meeting is invited to note the airport and airspace capacity enhancement initiatives by India.

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