



*International Civil Aviation Organization*

**The Second Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/2)**

Bangkok, Thailand, 22-25 May 2012

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**Agenda Item 5: ATS Route Development**

**UPR Paper Trials for feasibility study of establishment of UPR Zone in Arabian Sea  
Indian Ocean Region**

(Presented by Airports Authority of India)

**SUMMARY**

INSPIRE has initiated efforts to establish a UPR Zone in southern part of Arabian Sea and the Indian Ocean. This paper presents a brief review of Paper Trials for the feasibility study.

**1. INTRODUCTION**

- 1.1 The INSPIRE has identified User Preferred Routes as one of the initiatives for reducing emissions in the enroute phase of flight. In its first meeting in May 2011 in Abudhabi, INSPIRE team had planned four INSPIRE Green flights to adopt the best practices for reducing emissions and demonstrate the results. AAI facilitated the INSPIRE Green flights to fly UPRs in Mumbai FIR in July 2011. The flights were successful in demonstrating reduction in carbon emission of 73,000 Kgs. Encouraged by the results and the WP presented by IATA in its second meeting in Cape Town South Africa, the INSPIRE team adopted UPR implementation as an initiative in its work programme. It was decided to explore feasibility of establishing a UPR Geo Zone in southern part of Arabian Sea and the Indian Ocean. The diagrammatic representation of proposed UPR zone and the UPRs studied during paper trials is attached in Annexure 1.
- 1.2 A work programme to study the feasibility included conducting paper trials for UPR Flight plans. This paper discusses the trials conducted so far and the future plans.

**2. DISCUSSION**

- 2.1 The paper trials for User Preferred Routes were conducted in two phases. In the first phase the trials were conducted in Mumbai FIR in collaboration with the IATA, India office by Mumbai Oceanic Control Centre on 28<sup>th</sup> Feb 2012 and 4<sup>th</sup> & 5<sup>th</sup> April 2012. Seventy One flight Plans submitted by 7 Airlines were analyzed and 20 flight plans were selected to conduct simulation in live traffic scenario.
- 2.2 The synthetic dummy tracks were generated in the automation system as per the flight plan data along the UPRs and flights were tracked throughout their journey in the Mumbai FIR along with the live traffic in the FIR to identify conflicts and traffic management issues. As the trials were conducted on the standby machines, it did not interfere with the actual Air Traffic Management but at the same time allowed for real time study in live traffic scenario.

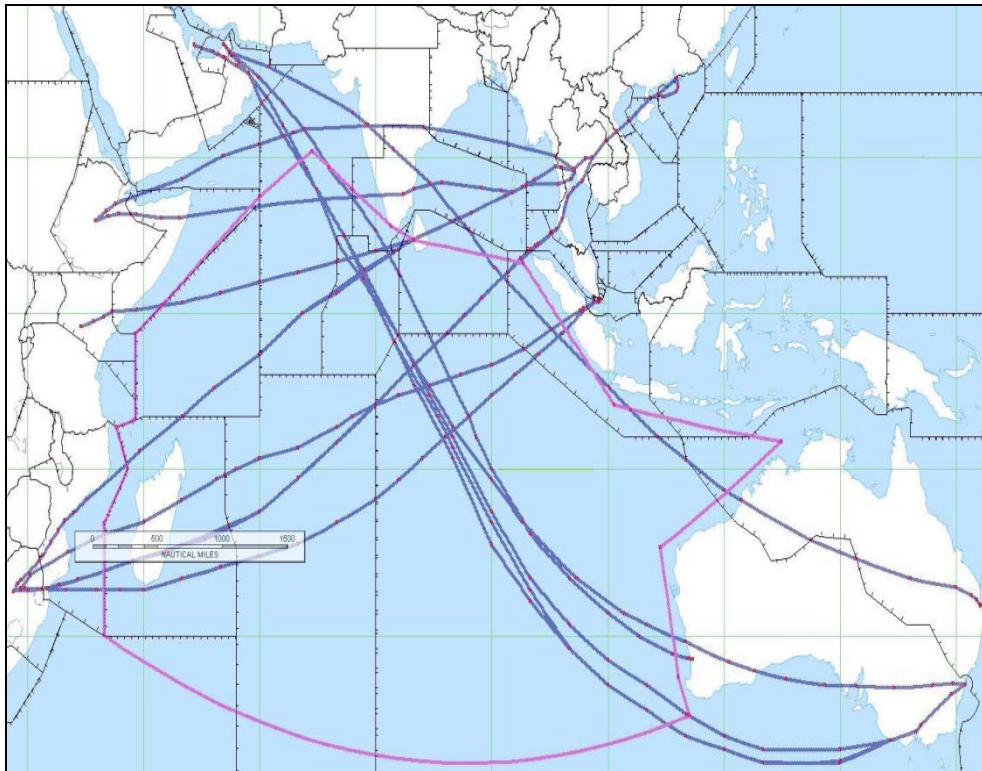
- 2.3 Based on the results of first phase it was recommended by AAI and IATA to INSPIRE to conduct paper trials on a larger scale involving all the FIRs in the proposed UPR Geo Zone. INSPIRE accepted the proposal in its teleconference on 30<sup>th</sup> April. The second phase of UPR paper trials were conducted on 14<sup>th</sup> and 15<sup>th</sup> of May 2012 with mutual coordination among Mumbai, Chennai, Colombo, Male, Mogadishu, Melbourne Seychelles Antananarivo Johannesburg and Mauritius FIRS. In these Paper Trials simulation in live traffic were conducted for twelve dummy flights of five different airlines in operational ATM systems to study impact on Air Traffic Management and analyze conflicts. The flights were coordinated with downstream FIRs as they progressed on UPRs passing through several FIRs. In Melbourne FIR the trials were conducted Offline.
- 2.4 The analysis of the trials is as follows;
- 2.4.1 Gulf - Australia Flow: Flights to operate on UPR routes is feasible within identified UPR zone (below DONSA and Eastern boundary UL425) in ASIO portion of Mumbai FIR. Traffic is manageable during day as well as night hours in both Chennai and Mumbai FIRs within the UPR zone.
- 2.4.2 Bangkok – Nairobi - Bangkok: UPR paper trials indicate UPRs in southern portion of Mumbai FIR (Indian Ocean), within UPR Geo area are possible. Flight timings are during Night hours with manageable traffic conditions. Limitation of HF communication is a major impediment in supporting the live traffic on flexi track and the other aspect is co-ordination with adjacent FIRs which is an essential one.
- 2.4.3 Bangkok - AdisAbaba - Bangkok: UPR Paper trials indicate that tracks are outside identified UPR Zone and cutting across high density traffic during night (early morning) hours. Accommodation of UPRs on this city pair will adversely affect 5 to 8 flights at any given time hence not feasible.
- 2.4.4 Hong Kong - Johannesburg - Hong Kong: UPR Paper trials indicate tracks passing thru Southern portion of Mumbai FIR and traffic is manageable in co-ordination with adjacent FIRs.
- 2.4.5 Conflicts: Some of the UPRs were such that the flights required vertical separation with flights on two adjacent routes. This may result in non availability of that particular level for traffic on two routes. The Conflicts for crossing Tracks (Traffic from/ to Gulf conflicting with Traffic to/from Africa) were observed in some cases. However application of existing FLAS would resolve the conflicts.
- 2.4.6 Over all UPR paper trials were found useful in simulating the airlines requirement in live traffic. The trials also indicated feasibility of UPRs in the Indian FIR portions of proposed UPR Geo zone.
- 2.5 IATA in its WP presented to the second meeting of BOBASIO in Chennai had predicted average seven minute saving per flight with the use of UPRs.
- 2.6 The complete report of trials will be available after the working group meeting of INSPIRE in Dubai on 21<sup>nd</sup> and 22<sup>nd</sup> May 2012.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- i) note that India has actively supported the UPR concept right from the green flights in July 2011;and
- ii) Discuss any relevant matters as appropriate.

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(Chart indicates Proposed UPR Geo Area with Violet boundaries & UPR Paper trial Tracks in blue)