International Civil Aviation Organization

Fifth Meeting of the Bay of Bengal Traffic Flow Review Group (BOBTFRG/5)

Bangkok, Thailand, 6 – 8 December 2023

Agenda Item 6: Any Other Business

ICAO AIR NAVIGATION WORLD 2023 – ATM PROCEDURES FOR TODAY

(Presented by IATA)

SUMMARY

This paper presents a relevant Summary of ICAO conference "Air Navigation World (ANW) 2023 – ATM Procedures for Today", in context with the BOBTFRG work Geographical area.

1. INTRODUCTION

1.1 ICAO organized the Air Navigation World 2023 conference to deliberate "ATM Procedures for Today" from 23 to 27 October in Singapore. This program provided insights on ATM procedures available today within ICAO Provisions, but they are not implemented on a wider and more consistent scale that can enable enhancing efficient management of the growing air traffic demand.

1.2 Air traffic in South Asia is increasing. Air Traffic Management has a critical role in accommodating the expected air traffic growth in a safe, efficient and environmentally sustainable manner. However, there are several challenges while balancing the demand growth with capacity. The development of infrastructure keeping pace with this constant increase in growing air traffic is a typical challenge.

1.3 The purpose of this paper is to appraise BOBTFRG stakeholders and to urge them to consider exploring the available ATM procedure options and develop suitable work programs as applicable.

2. DISCUSSION

ATM Procedures for today in context with BOBTFRG work geographical area:

2.1 The BOBTFRG work program focuses on the below priority areas:

- Runway Capacity Enhancement; and,
- Enroute Capacity Enhancement.

The following paragraphs discuss the ICAO provisions for present ATM procedures that are available today and should be further explored for implementation as appropriate.

2.2 Runway Capacity Enhancement:

2.2.1 Lateral Separation RNP1: 5 NM,

2.2.1.1 ICAO DOC 4444 (PANS-ATM) provision:

5.4.1.2.1.4 Lateral separation of aircraft on published instrument flight procedures for arrival and departure.

5.4.1.2.1.4.1 Lateral separation of departing and/or arriving aircraft, using instrument flight procedures, will exist:

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b) where the distance between any combination of RNP1, RNP APCH or RNP APCH AR tracks is not less than 9.3km (5NM); or

2.2.2 Optimised Runway Separations: As suitable for the aircraft categories; below example for aircraft CAT 3.

- Applying appropriate runway separations that landing aircraft may cross the threshold when preceding landing or departing is 2400 m from the threshold.

- Or departing aircraft may commence take-off when the preceding departing aircraft is airborne and at 2400 m from the threshold (different minima for aircraft cat 1 and 2).

2.2.2.1 RECAT (Re-categorisation of wake turbulence categories): More precise categorisation of aircraft from 4 to 7 categories can safely increase airport capacity through the reduction of runway separation minima; however, it requires consistent and predictable Minimum Runway Occupancy Time (ROT) to be met by the operator's flight crew.

2.2.2.1.1 Time-based wake turbulence longitudinal separation minima based on seven wake turbulence groups is an alternative means that States can choose to adopt.

2.2.3 Runway Occupancy time (ROT): The operator’s flight crew need active participation to focus on minimum ROT:

- To comply with the ATC speed restrictions on the final approach.
- Adhere to minimum Runway Occupancy Time – arrivals, ensuring consistent and predictable Arrival ROT.
- Vacate at the first available RET

2.2.4 Surveillance – 2.5NM: Reduced separation minimum can be applied between succeeding aircraft established on the final approach track within 10NM of the runway threshold.

- The average Runway Occupancy Time (ROT) does not exceed 50 Sec,
- Braking action reported as good,
- ROT is not adversely affected by runway contaminations.

2.2.5 Equivalent Lateral Spacing Operations (ELSO) concept: ELSO leverages aircraft navigation performance on PBN SIDs to reduce the minimum divergence of adjacent departure paths from 15 to 10 degrees.

The reduced divergence departures can increase throughput with additional departure paths, save track miles, and reduce traffic over Noise-sensitive areas.

2.3 Enroute Capacity Enhancement:

2.3.1 DOC 4444 - Performance-based separations:

2.3.2 Enroute performance-based separation methods and minima were to transition (between 2016 and 2020) from 50NM-30NM to 20NM meeting RNP, RCP, and RSP with maximum ADS-C periodic reporting interval criteria.

2.3.3 Chapter 8 (year 2020): 8.7.4: Separation minima using ATS surveillance, where VHF voice communication is not available:

- Predicted on the identification of aircraft (e.g. SB ADS-B)
- Separations have performance-based communication.

2.3.4 Chapter 8 (year 2024) 8.7.3.3: Where the communication system used satisfies RCP240, a horizontal separation minimum based on an ATS surveillance system of 15NM may be applied.

2.3.5 Free Route Airspace (FRA): Refer to Eurocontrol's ERNIP1 (European Airspace Design Methodology Guidelines):

2.3.5.1 FRA definition: *A specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) significant points, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control.*

2.3.5.2 FRA Operational concept:

- In the fixed ATS routes, the ATS route placement is determined to ensure the strategic de-confliction between published RNAV routes requiring a specific navigation performance to operate on the route.

- In FRA, aircraft choose their trajectory between two waypoints (multiple flight paths may cross); the trajectories are not strategically positioned, and therefore, conflicts must be resolved tactically by ATC using ATS surveillance.

2.3.5.3 Adherence to centerline:
With fixed published ATS routes, the aircraft is required to adhere to the centerline of the track (according to ICAO Annex 6) and meet the stated navigation performance requirement stipulated in the AIP.

The flight paths used in FRA do not have a published track, and therefore, no airway record is created in the navigation database.

The ATS route is defined onboard by the aircraft's RNAV or RNP system in the FMS, and a nominal navigation performance requirement (in Europe, RNAV 5) is set to nominally 'bound' the operation along the aircraft's defined track.

2.3.5.4 FRA Implementation:

- Horizontally: Flight plannable within specified airspace between promulgated Entry/Exit points or via intermediate points (either published waypoints or unpublished, i.e. coordinates) as suitable.
- Vertically: Within a specified flight level band (lower/mid/upper flight levels), as suitable.
- Timely: Either at different hours of the day, days of the week or H24, 24X365, as suitable.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss to explore suitable opportunities/work programs as appropriate.

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