International Civil Aviation Organization

The Eighth Meeting of the APANPIRG ATM Sub-Group

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Agenda Item 5: ATM Systems (Modernization, Seamless ATM, CNS, ATFM)

SPACE-BASED ADS-B COVERAGE OVER INDIAN FIRS

(Presented by Airports Authority of India)

SUMMARY

This paper presents information on implementation plan by India in providing surveillance coverage using space-based ADS-B over entire Indian oceanic airspace.

1. INTRODUCTION

1.1 India has been augmenting infrastructure and procedures in line with ICAO Seamless Plan supporting Civil Aviation. To enhance infrastructure for Surveillance over Oceanic Airspace India has engaged into a contract with a service provider for Space based ADS-B services over Oceanic Airspace. This paper presents the details of Space based ADS-B implementation in Oceanic Airspace in Indian FIRs.

2. DISCUSSION

2.1 The Asia Pacific Seamless ATM Plan (APSAP) has firmly advocated the concept of Seamless ATM and airspace. The ANS Strategic Plan, therefore, suggests a services development strategy and roadmap to improve airspace safety and efficiency. Specifically, this strategy seeks to safely deliver airspace user operational efficiencies, improved operational flexibility and increased service resilience and predictability.

2.2 These improvements are planned to leverage current aircraft and air/ground communication capabilities together with the planned deployment of SB ADS-B, to augment the surveillance capability in oceanic airspace. The S ADS-B System will provide ADS-B surveillance coverage in areas not served by ground radars or other surveillance mechanisms. The implementation of S ADS-B is planned in two phases.

2.3 In Phase-I, S ADS-B surveillance data will be utilized in oceanic airspace for situational awareness purpose to support present level of services with improved safety. Present separation minima and methods will continue.

Following separation minima will be applicable:

i. 50NM/Longitudinal Separation on RNP-10 Routes between ADS-C/CPDLC equipped aircraft;

ii. 50NM Lateral Separation on RNP-10 Routes; and

iii. 10/15 minutes -Longitudinal Separation on RNP-10 Routes.

2.4 Existing communication facilities and navigation facilities will continue to be used. ADS-C information will be supplemented by SB ADS-B. Automation upgradation (for RCP 240) and CPDLC mandate over Oceanic Airspace would be required for uniform application of procedure and separation minima, to achieve optimum airspace utilization.

2.5 Benefits of using S ADS-B in Phase-I would be:

a. ATS surveillance enhanced through use of SBADS-B;

b. Enhanced safety through better Situational awareness;

c. Improved coordination between adjacent ACCs;

d. Reduced safety incidents/ improved TLS, reduced LHD/LLD; and.

e. Reduced controller workload/better fatigue management.

2.6 In Phase-II, suitable reduced separation minima will be introduced to enhance airspace capacity maintaining same or better level of safety with application of Advanced Surveillance Enhanced Procedural Separation (ASEPS), after meeting the pre-implementation conditions.

2.7 In addition to the benefits accrued in Phase I, the following benefits of using SB ADS-B in Phase II would be :

a. ATS surveillance through ADS-B (RSP180);

b. Application of Reduced separation minima;

c. Improved airspace capacity, availability of optimum levels and preferred route; and

d. Reduced fuel burn, reduced carbon emission.

2.8 The following assumptions are considered about the operating practices that will be implemented as part of the application of surveillance-enhanced procedural separations within the designated airspace.

a. The requirement to obtain an oceanic clearance prior to entering the OCC airspace will remain in place for all aircraft.

b. Conformance monitoring via ADS-C, VHF or HF will remain in place; i.e. confirm assigned route, waypoint change event, vertical and lateral deviation contracts will be set up between aircraft equipped with FANS 1/A or equivalent.

c. ADS-B and non-ADS-B flights will operate in the same airspace; i.e. mixed-mode operations until ADS-B mandate is extended to designated airspace.

d. An ADS-B flight is an aircraft that is equipped with and using an appropriately approved ADS-B system and which can be expected to be surveillance identified while operating in the designated airspace.

e. Reduced separations will only be applied between surveillance-identified aircraft operating within designated airspace, applying ASEPS subject to agreements with adjacent FIRs.

f. Reduced separation minima will be applied in accordance with ICAO Standards.

g. The required communications performance (RCP) regional mandate for RCP240.

h. In line with ICAO-APAC Seamless ANS plan and agreement between adjacent FIRs, the required navigation performance for the airspace (RNP) as RNP2 or RNP4.

i. Downlinked ADS-B position performance level will be NIC ≥ 4 and NACP ≥ 5 (NUCP ≥ 4).

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper.

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