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The purpose of this North Atlantic Operations Bulletin is to promulgate information concerning a trial of Advanced Surveillance-Enhanced Procedural Separation (ASEPS) using Automatic Dependent Surveillance-Broadcast (ADS-B) in the Shanwick, Gander and Santa Maria Oceanic Control Areas which will commence on or soon after 28th of March 2019.

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NAT OPS BULLETIN –TRIAL IMPLEMENTATION OF ASEPS USING ADS-B**1. Introduction**

1.1 The expansion of automatic dependent surveillance – broadcast (ADS-B) service, as facilitated by receivers hosted on satellites, into oceanic and remote areas previously limited by ground-based ATS surveillance systems will make it possible to maintain a safe, orderly and expeditious flow of air traffic using smaller air traffic control separation standards than are required today. Used together with the existing ground based ATS surveillance infrastructure, space-based (SB) ADS-B will permit uninterrupted ATS surveillance for equipped aircraft before, during and after entry into the North Atlantic (NAT) Region.

1.2 With the anticipated expansion of ADS-B availability into oceanic and remote areas, the ICAO Separation and Airspace Safety Panel (SASP) was tasked to develop proposals for ADS-B separation minima for implementation in oceanic and remote enroute airspace. The proposed minima (described below) can be used between aircraft meeting the specifications for RNP 4 and RCP 240 where ADS-B service is provided and Controller Pilot Data Link Communications (CPDLC) is available.

1.3 **On or soon after the 28 March 2019**, Shanwick, Gander and Santa Maria Oceanic Control Areas will commence a trial implementation of the following longitudinal separations. Application of the ATS Surveillance based procedural longitudinal separation will be as per the PANS ATM, Doc 4444 proposal for amendment from the ICAO SASP, as paraphrased below:

- a) *17 NM longitudinal separation of aircraft operating on same track or intersecting tracks provided, that the relative angle between the tracks is less than 90 degrees.*
- b) *14 NM provided the relative angle between the tracks is less than 45 degrees.*
- c) *Opposite-direction aircraft on reciprocal tracks may be cleared to climb or descend to or through the levels occupied by another aircraft provided that the aircraft have reported by ADS-B having passed each other by 5 NM.*

1.4 A trial implementation of lateral ASEPS will commence no earlier than 6 months after the commencement of the longitudinal separation operational trial. Operators will be advised via Aeronautical Information Circular (AIC) a minimum two AIRAC cycles prior to the commencement of lateral ASEPS implementation trial.

2. General

2.1 The space-based ADS-B system will consist of a constellation of LEO satellites hosting ADS-B receivers. A satellite will receive ADS-B data including position, velocity and altitude from aircraft, which is then routed through other satellites and down-linked to a satellite operations ground station from where it is on-forwarded to Shanwick and Gander. Santa Maria will utilise the existing ground based ADS-B system.

2.2 There will be no change to non VHF direct controller-pilot communications infrastructure or procedures using CPDLC, as contained in the Global Operations Data Link (GOLD) Manual (Doc 10037), and Satellite Voice Operations Manual (Doc 10038).

2.3 Flight crews are expected to comply with normal non-surveillance procedures, which include position reports via voice or ADS-C, and all other operator specific procedures currently used.

2.4 Application of the ATS surveillance based procedural separations will require that aircraft meet the specifications for RNP 4, RCP 240 and RSP 180 as annotated by the appropriate designator in the ICAO flight plan.

2.5 The existing FANS1/A infrastructure, including ADS-C waypoint change event contracts, vertical and lateral event contracts and CPDLC confirm assigned route [UM137/DM40], will continue to be

utilised to extract intent data (NEXT and NEXT+1) from the flight's FMS as part of conformance monitoring.

3. Qualifications to participate in the Trial

3.1 Eligible flights are those that meet the following requirements:

- a) RVSM/HLA approval
- b) ADS-B, with dedicated 1090 Mhz out capability
- c) Aircraft meeting the specifications for RNP 4
- d) Aircraft meeting the specifications of RCP 240 and RSP 180

3.2 ATS systems use Field 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link and navigation capabilities. The operator should insert the following items into the ICAO flight plan (as per the 2012 flight plan format) for FANS 1/A or equivalent aircraft:

- a) Field 10a (Radio communication, navigation and approach aid equipment and capabilities);
 - i) insert "J5" to indicate CPDLC FANS1/A SATCOM (Inmarsat) or "J7" to indicate CPDLC FANS1/A SATCOM (Iridium) data link equipment
 - ii) insert "P2" to indicate RCP 240 approval;
- b) Field 10b (Surveillance equipment and capabilities);
 - i) insert "D1" to indicate ADS with FANS1/A capabilities; and
 - ii) B1 or B2 to indicate ADS-B.
- c) Field 18 (Other Information); insert the characters "PBN/" followed by "L1" for RNP4 and SUR/RSP180

3.3 Operators do not have to apply to be part of the trial. As long as they meet the qualifications above, they will be participants in the trial.

4. Strategic Lateral Offset Procedure (SLOP)

4.1 The Strategic Lateral Offset Procedures (SLOP), implemented as a standard operating procedure in the NAT Region since 2004, remain unchanged.

5. Contingency Procedures

5.1 There are significant revisions to the current ICAO Doc 4444 Contingency Procedures. Coincident with the separations listed above, SASP has proposed changes to ICAO Doc 4444 Contingency Procedures. These procedures along with the revised weather deviation procedures will be included in a revised version of NAT Doc 007 Operations and Airspace Manual for the duration of the trial and until such time as they are published in ICAO Doc 4444. The following are the significant changes to the contingency procedures:

- a) a reduction in the offset distance to 9.3km (5NM) (also included for weather deviation);
- b) a strong recommendation for pilots to consider a descent below the predominant flow of traffic in a parallel track system where the aircraft's diversion path will likely cross adjacent tracks or routes. A descent below FL 290 can decrease the likelihood of: conflict with other aircraft, ACAS RA events and delays in obtaining a revised ATC clearance.

6. Trial Period

6.1 The trial will run until November 2020 or when PANS ATM, Doc 4444 proposal for amendment from the ICAO SASP is published, whichever is the later. It is anticipated that the amendments will become effective on 5 November 2020.

6.2 A review will take place and a decision will be made to implement ASEPS on a permanent operational basis.

7. Websites

7.1 The ICAO EUR/NAT Office Website is at: www.icao.int/eurnat. Click on **EUR & NAT Documents >> NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project documents.

8. Contacts

8.1 The following individuals may be contacted for information or to provide feedback on this operation trial:

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