INTERNATIONAL CIVIL AVIATION ORGANIZATION

TWENTY NINTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/29)

Bangkok, Thailand, 3 to 5 September 2018

Agenda Item 2: Global and Inter Regional Activities

POTENTIAL OF SPACE-BASED ADS-B TO IMPROVE GLOBAL AVIATION SAFETY

(Presented by ICCAIA)

SUMMARY

Space-Based ADS-B service will become operational in late 2018 and will enable significant safety benefits in airspace without continuous and seamless surveillance.

Strategic Objectives:

*A: **Safety** – Enhance global civil aviation safety*

B: ***Air Navigation Capacity and Efficiency**—Increase the capacity and improve the efficiency of the global aviation system*

E***: Environmental Protection** — Minimise the adverse environment effects of civil aviation activities.*

1. INTRODUCTION

1.1 The first Space-Based ADS-B service will become operational in late 2018. This service offers safety improvements in all airspace without continuous and seamless surveillance today. Air Navigation Service Providers (ANSPs) and regulators need to be aware that the service will be available and can be readily integrated into Air Traffic Control (ATC) systems that already process Automatic Dependent Service – Broadcast (ADS-B).

1.2 In particular, the service offers high performance surveillance across the oceans as well as terrestrial, enroute and terminal airspace.

2. DISCUSSION

2.1 ATC surveillance, whether from radar, terrestrial ADS-B, space-based ADS-B or multilateration brings significant safety benefits compared to environments without continuous and seamless surveillance. However, the terrestrial solutions are limited in the airspace they can cover, for example, in Oceanic regions or in remote locations and in locations where it is difficult to maintain terrestrial infrastructure. Space-based ADS-B can cover almost all airspace of each FIR.

2.2 These surveillance safety benefits include:

2.2.1. Situational awareness for ATC
2.2.2. Enhanced automated safety alerts (RAM, CLAM, STCA, DAIW, MSAW)
2.2.3. Improved Flight Information Region (FIR) boundary safety
2.2.4. Reduced voice & data communication/ workload decreasing distraction
2.2.5. Support for GADSS & better Search and Rescue
2.2.6. Improved Analysis/ Statistics and safety reviews based on high update data
2.2.7. Improved and safer ATC management in adverse weather
2.2.8. Improved contingency backup to terrestrial surveillance - unaffected by weather

2.3 Space-based ADS-B allows these benefits to be delivered by ATC anywhere.

2.4 Space-based ADS-B will also bring capacity improvements including the reduction in separation standards, following on from the ICAO SASP successful development of applicable separation standards using CPDLC and Space-based ADS-B.

2.5 It is recognised that regular position reporting exists for some aircraft in Oceanic airspace using FANS1/A. However, this is rarely used to support narrow body aircraft and suffers from the lack of timeliness of reports.

2.6 Safety benefits are difficult to quantify. Before any significant adverse safety event, safety improvements are hard to justify and are not greatly valued. After any event, the value of such improvements are invariably considered to be worth more than the costs.

2.7 At the same time, the community expectations of safety continues to grow (perhaps unreasonably) every year. ANSPs could consider whether the average citizen or passenger would think it reasonable to not have surveillance (in 2018) when it is available everywhere.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to note that

a) ATC surveillance will soon be available covering everywhere on the globe using ADS-B; and

b) Air Traffic Management Service provider organizations that do not have complete surveillance coverage and fail to use the benefits of global surveillance expose themselves to the claim that they have not made aviation risks as low as reasonably practical.

3.2 The Meeting is invited to adopt the following recommendation:

As global ATS surveillance capability will be operational and certificated early in 2019, States should consider implementation of this technology to improve safety and efficiency in airspace currently without continuous and seamless surveillance. This technology enables some states to leapfrog legacy surveillance capabilities and helps ensure that ‘no State is left behind’.

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