International Civil Aviation Organization

Eleventh Meeting of the ICAO Asia/Pacific Search and Rescue Workgroup (APSAR/WG/11)

Bangkok, Thailand, 5 – 8 May 2026

Agenda Item 4: Asia/Pacific and Inter-regional SAR Planning, Coordination and Cooperation

USE OF SPACE-BASED ADS-B DURING SAR OPERATIONS

(Presented by New Zealand)

SUMMARY

This paper presents information on New Zealand's use of space-based Automatic Dependent Surveillance–Broadcast (ADS-B) during search and rescue (SAR) operations to locate aircraft in distress.

1. INTRODUCTION

1.1 During SAR operations involving an aircraft in distress, it is critical that the distress location is known. Without an accurate distress location, the search area can be large and delay the rescue of survivors, which can reduce people's chance of survival.

1.2 Space-based ADS-B provides surveillance coverage in locations where ground stations are not possible or not currently provided, such as over oceans, mountainous areas, and polar regions. This paper provides an overview of New Zealand's use of space-based ADS-B by the Rescue Coordination Centre New Zealand (RCCNZ) to locate aircraft and reduce response times during SAR operations.

2. DISCUSSION

Background

2.1 New Zealand has the third largest Search and Rescue Region (SRR) in the world covering 30 million square kilometers, the majority of which is remote oceanic areas. The SRR extends from five degrees below the equator to the South Pole, halfway to Australia, down to part of Antarctica, and halfway to Chile.

2.2 RCCNZ has access to space-based ADS-B surveillance data through an agreement with Aireon Locate, enabling search and rescue officers to access an aircraft's last known position for emergency and SAR purposes.

2.3 If the aircraft in distress is equipped with ADS-B OUT, RCCNZ can request Aireon Locate to provide the last known position of the aircraft. RCCNZ then uses this data to supplement other distress position information which may be available such as ATS surveillance data, distress beacon activation, or a mayday call.

Case Study – Trans-Pacific Flights from South America

2.4 During 2025, RCCNZ opened 12 SAR incidents relating to scheduled passenger flights operating from South America. These aircraft were either within, or planned to enter, the New Zealand Flight Information Region (NZFIR) and were declared INCERFA or ALERFA by ATS due to a loss of communications.

2.5 Flights from South America typically approach the eastern boundary of the NZFIR (NZZO) at approximately 70° South latitude, an area well known for persistent radio-communications challenges. When an aircraft fails to make its scheduled position report at this boundary, ATS is unable to verify its status or confirm continued progress towards the next reporting point. In the absence of further information, this triggers uncertainty about the aircraft's location, operational status, and ability to continue the planned route, prompting the declaration of an emergency phase.

2.6 Prior to the availability of space-based ADS-B, RCCNZ frequently had limited situational awareness for several hours after the initial loss of communications. Aircraft were not reliably tracked in this region, and SAR planners were required to assume the possibility of an in-flight issue or diversion. As a result, RCCNZ would maintain the emergency phase until the aircraft eventually entered radio coverage and communications were restored. During this period, extensive SAR planning and coordination with aviation partners would take place to ensure readiness for a potential response.

2.7 When an emergency phase is now declared by ATS, RCCNZ obtains the last known position from the space-based ADS-B tracking data. This provides immediate confirmation that each aircraft is continuing along its planned track, at expected speeds and altitudes, despite the communications lapse. The availability of this data now enables RCCNZ and ATS to resolve the uncertainty phase earlier, stand down SAR planning efforts, and avoid unnecessary escalation.

Benefits of Space-Based ADS-B to Search and Rescue

2.8 Space-based ADS-B provides continuous, global aircraft surveillance, eliminating traditional ATS surveillance gaps across oceanic and remote regions. For SAR operations, this capability significantly improves the timeliness and accuracy of last known position information, thereby significantly reducing search areas and response times.

3. ACTION BY THE MEETING

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

— END —