INSPIRE INDIAN OCEAN STRATEGIC PARTNERSHIP TO REDUCE EMISSIONS	**ARABIAN SEA INDIAN OCEAN ATS COORDINATION GROUP AND INDIAN OCEAN STRATEGIC PARTNERSHIP TO REDUCE EMISSIONS ANNUAL MEETING**

Combined ASIOACG/10 and INSPIRE/6Meeting, 2015

Madagascar, 17th to19th November 2015

Agenda Item 5: Communication Navigation and Surveillance Issues

Introduction of ADS-B to enhance ATS surveillance capability in Male FIR

(Presented by Maldives)

SUMMARY

The aim of this paper is to share information on a the efforts by Maldives to introduce ADS-B for the provision of ATS in Male FIR

1. INTRODUCTION

1.1 In November 2012, 4 ADS-B stations (2 at Male' Ibrahim Nasir Intl Airport, 1 at Kulhudhuffushi Island in the North and 1 at FuahMulah Island in the south) were installed to enhance surveillance capability within Male FIR. Since November 2013, the ADS-B has been further integrated with the ATM system; and is now available forusecovering up to 90% of Male FIR above FL290 (29,000 feet)

1.2 Maldives intends to introduce ADS-B to enhance ATS surveillance capability in Male FIR as early as January 2016.

1.3 At this stage, thecarriage of ADS-B equipment will NOT be mandatory. The provision of ADS-B surveillance service will be available for ADS-B capable aircraft; and the radar surveillance service will remain available up to of 200NM from Male International Airport.

2. DISCUSSION

2.1. **Aircraft Equipage for ADS-B Out**

2.1.1 Carriage of ADS-B equipment in Male FIR will be voluntary.

2.1.2 However, IFR aircraft intending to use ADS-B Out in Male FIR shall be certified as meeting:

a) EASA AMC 20-24, or

b) the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia; and

2.1.3If IFR aircraft carries ADS-B transmitting equipage which does not comply with the requirements of paragraph 2.2, the equipment shall be:

a) Deactivated ; or

a) Set to transmit only a value of zero for the Navigation Uncertainty Category (NUC_P) or Navigation Integrity Category (NIC).

2.2 Safety Case

2.2.1 A safety case was conducted based on the guidelines in the following documents:

- ICAO Guidance Material: Security Issues with ADS-B;
- ICAO ADS-B Implementation and Operations Guidance Document, Edition 7.0, September 2014; and
- ICAO Guidance Material on building a Safety Case for Delivery of an ADS-B Separation Service, Version 1.0, September 2011

2.2.2 Based on the safety case, it was determined that thesystem parameters of ADS-B station at Male (2 autonomous ground stations including antenna, each providing data, no common point of failure) meet the Category 1 Baseline ADS-B Service Performance Parameters adopted by ICAO APANPIRG/18 – September 2007. Thereby, meet the requirements that commensurate with 5nm separation capable Radars (separation/vectoring/high performance with reliability, integrity &latency).

2.2.3 The system parameters of the ADS-B stations at Kulhudhuffushi and FuvahMulah (1 unduplicated ground station including antenna) only meet the Category 2 Baseline ADS-B

Service Performance Parameters adopted by ICAO APANPIRG/18 – September 2007.Thereby, meet the parameters required for situational awareness similar to ADS-C (safety net alerts, SAR, supports procedural separation even without voice but NOT 5nm separation).

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.
