

*INTERNATIONAL CIVIL AVIATION ORGANIZATION***TWENTY-SECOND MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)****Bangkok, Thailand, 5-9 September 2011****Agenda Item 3: Performance Framework for Regional Air Navigation Planning
and Implementation****3.5 Other Air Navigation Matters****UPDATE ON AIR NAVIGATION PLANNING AND IMPLEMENTATION**

(Presented by Maldives)

SUMMARY

This paper provides update information on improvements to airspace and upgrade of communication and surveillance capability within Male FIR.

This working paper relates to Strategic Objective A & C.

1. INTRODUCTION

Due to high fuel price and obligation to reduce emission, airline industry of today has been calling for new technologies and efficient procedures to optimize utilization of available airspace.

Maldives, with high demand on aviation for the economic growth and its susceptibility to environmental degradation, has been upgrading facilities for better surveillance and communication capability, organizing and improving airspace for optimum routes and efficient procedures.

Upgrading to facilities include:

- MSSR and ADS-C
- Extended VHF and CPDLC

Optimized routes and new procedures include:

- Implementation PBN procedures
- Implementation of Connector routes for transiting aircraft

Upcoming projects and procedures include:

- ADS-B and Wide Area Multilateration
- RNAV Visual Flight Procedures

2. FACILITIES UPGRADE

For many years ATC in the Maldives had been provided without any surveillance system. Communication by VHF had a limited coverage, approximately 200 miles from Male. Large part of the FIR was under HF, and maintaining two-way communication was a daunting task for both pilots and ATC.

A major upgrading project was undertaken with aim for a modern, integrated ATC System. By 2009, a new ATC Centre was open, with MSS Radar, ADS-C and automatic Flight Data Processing System.

Communication has been upgraded with extended VHF which allows Direct Controller Pilot Communication over entire archipelago of Maldives and more than 80% of Male FIR. Only a small portion comes under CPDLC or HF.

And two months back, additional contract has been signed for system maintenance, training and software upgrade.

3. IMPLEMENTATION OF PBN

3.1 Enroute

Selected routes have been re-designated RNAV 10 since Nov 2009.

3.2 Terminal Area

RNAV1 (GNSS) SIDs and STARs have been implemented at Male International Airport effective 29 July, 2010.

3.3 Approaches Procedures

Approach procedures based on APV Baro-VNAV criteria are now implemented at Male International Airport.

- ILS backup for RWY36
- Primary approach for the non-ILS equipped RWY18

4. DIRECT ROUTES IN MALE FIR

Aim was to remove the constraints imposed by the fixed route structure and, through optimized use of airspace, allow airlines to obtain benefits of capacity, flexibility, flight efficiency, cost savings, and reduction of CO2 emission while maintaining safety standards.

In close cooperation with other regional air navigation service providers and leading carriers, Maldives has successfully implemented series of way points along Male/Melbourne FIR, Male/Colombo FIR and Male/Mumbai FIR. RNAV 10 capable aircraft transiting Male FIR above FL285 are now able to fly between these way points from entry to exit without reference to the Air Traffic Services (ATS) route network.

5. RNAV VISUAL FLIGHT PROCEDURE (RVFP) FOR MALE INTERNATIONAL AIRPORT

General guidelines are found in FAA Order 8260.55.

RVFP is a procedure that capitalizes on RNAV System technology to promote stabilized visual approaches to a designated runway.

Males RVFP are designed and developed. In partnership with Emirates, the flyability of the procedures has been tested in the simulator and first trial flight has also been flown successfully. Additional trials are planned and will be conducted this year.

We hope to publish these procedures by 2012.

6. ADS-B AND WIDE AREA MULTILATERATION (WAM)

Plans to implement ADS-B and WAM will begin from next year.

Currently single Radar unit located at Male International Airport has no backup and has limited coverage. Instead of installing additional Radar unit we consider a more cost effective method would be to use surveillance by ADS-B and Multilateration, as Radar backup and as primary surveillance function in area where Radar has no coverage. With domestic traffic booming, WAM will be the ideal tool to provide surveillance over domestic routes and the entire archipelago.

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