Twenty Fourth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/24)

Brisbane, Australia, 11-12 March 2010

Agenda Item 3: Review Relevant Work Conducted Since ISPACG/23

FMC waypoint position Reporting in YBBB airspace

Presented by Airservices Australia

SUMMARY

This working paper provides an update on the implementation of FMC WPR in the YBBB Tasman Sea airspace.

1. INTRODUCTION

1.1 Flight Management Computer Waypoint Position Reporting (FMC WPR) functionality was described in WP/16 presented by Airways New Zealand at ISPACG/22.

1.2 As a result of discussions at ISPACG/22, Airservices Australia agreed to consider the implementation of FMC WPR in YBBB airspace. A pre-operational trial of FMC WPR commenced in the Tasman Sea airspace on 15th Jan 2009. During the pre-operational trial FMC WPR-generated ARPs were sent to a non-operational AFTN address for off line analysis. WP/16 presented by ASA at ISPACG/23 contained initial results of this pre-operational trial.

1.3 An operational trial of FMC WPR was implemented in the south Tasman Sea airspace on 14th Jan 2010.

2. DESCRIPTION

2.1 FMC WPR is available for ANZ A320 aircraft operating on routes between New Zealand and Melbourne/Adelaide (i.e. South Tasman Sea airspace).

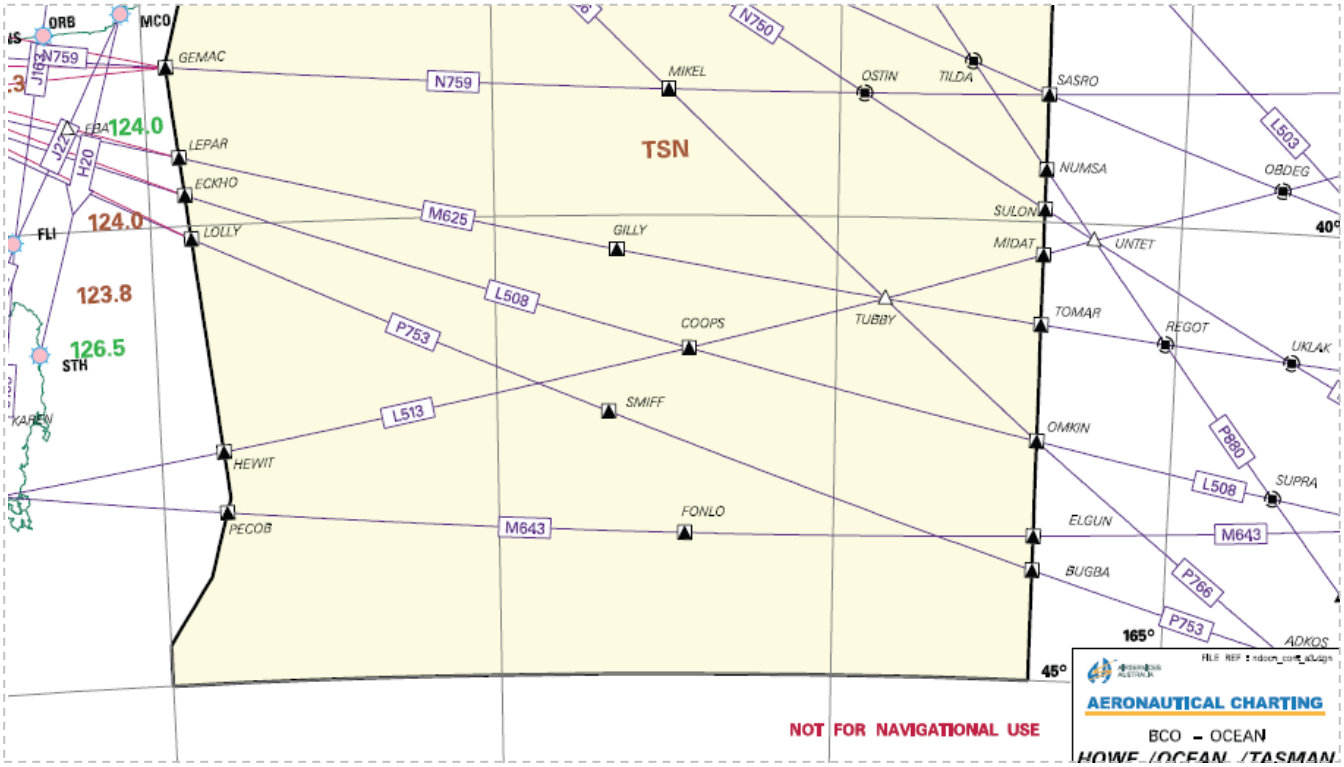


Figure 1. Airspace in which FMC WPR is available

2.2 This airspace was chosen as it is outside YBBB ATS surveillance coverage, and so overcomes the problems associated with ARPs being rejected due to the aircraft being radar/ADS-B coupled when the ARP is received.

2.3 During this operational trial, FMC WPR-generated ARPs are used to update ATS flight plan information. Flight crews may transmit FMC WPR as a replacement for the following types of reports:

- Routine position reports
- Revised estimates
- Notification of maintaining an assigned level

2.4 Examples of the various types of ARPs received are included below:

Routine position report
ARP ANZ129 MIKEL 0012 F340 GEMAC 0101 FARRA MS43 322/79 -FMC 005303 REV 3817S15129E

Revised estimate

ARP ANZ221 MIKEL 2123 F340 MIKEL 2123 GEMAC MS44 261/50 -FMC 211613 REV 3835S15831E

Notification of level maintenance
ARP ANZ125 MIKEL 0438 F360 GEMAC 0526 FARRA MS48 308/42 -FMC 044705 LVL 3833S15613E

The text at the end of the ARP ("-FMC [timestamp] [other information]") is not used by the ground system – it is included to facilitate performance analysis.

3. ANALYSIS

3.1 The following analysis is based on FMC WPR data received during the period 14th Jan – 14th Feb 2010.

3.2 Usage

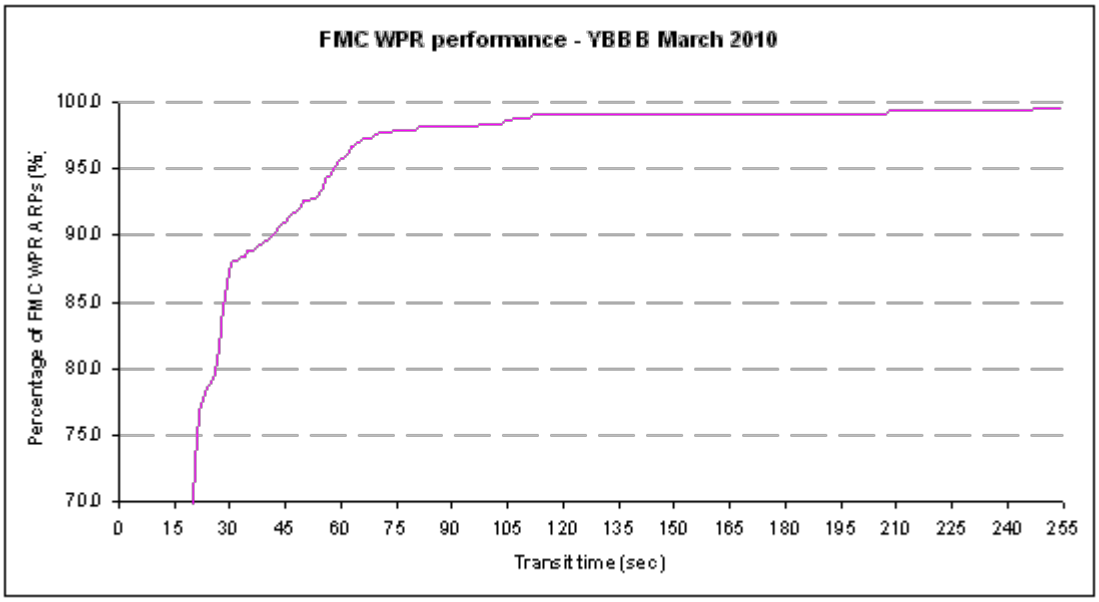
3.2.1 During this period 649 FMC WPR-generated ARPs were received. The following table contains a breakdown of these position reports.

Type of report	No. of reports received
Routine position report	592
Revised estimate	18
Level report	39
Total	649

Table 1. Breakdown of FMC WPR-generated ARPs

3.3 Performance

3.3.1 FMC WPR performance was measured by comparing the time of transmission of the ACARS report (which was included in the AFTN ARP) with the time of receipt of the report by the Communications centre. While this is not strictly a measurement of end-to-end performance (as it does not include transit time from the Comm centre tto the ATS ground system), these delays are minimal (fractions of a second), and would not be expected to affect the overall performance measurement.



Graph 1. FMC WPR performance for the period 14th Jan – 14th Feb 2010

3.4 During the period Jan/Feb, performance analysis indicates that 95% of reports are received within approx 58 seconds. The average transit time for was 24 seconds (after filtering reports with a transit time of greater than 600 seconds)

4. PROBLEMS IDENTIFIED

4.1 A number of minor discrepancies were detected during the analysis of the FMC WPR data.

4.2 Level discrepancies

4.2.1 A small number of ARPs were received at levels 100 feet displaced from the cleared flight level. Investigation revealed that this minor discrepancy was probably due to an Airbus feature that permits slight deviations from the cleared level during turbulence.

4.3 Delays in initiating the FMC WPR

4.3.1 Currently flight crews are manually initiating the FMC WPR which results in an additional delay in the receipt of the ARP. Of the 592 routine position reports received:

- 272 reports were not initiated until at least 60 seconds after sequencing the waypoint;
- 57 reports were not initiated until at least 120 seconds after sequencing the waypoint;
- 25 reports were not initiated until at least 180 seconds after sequencing the waypoint.

4.3.2 The average of these delays was 71 seconds. This is expected to improve as flight crews become more familiar with the procedures associated with FMC WPR. The introduction of automated FMC WPR should (hopefully) make this delay negligible.

4.4 **Manual data entry errors**

4.4.1 Prior to sending the ACARS report, flight crews need to add data to the scratchpad. On a small number of occasions errors were detected (e.g. an incorrect time entered in the scratchpad).

4.5 **Outages**

4.5.1 A small number of outages caused messaging delays during the month. While one of these outages was planned, it appears that some flight crews still attempted to use FMC WPR for position reporting.

5. ACTION BY THE MEETING

5.1 The meeting is invited to note the information in this working paper.