

**Twenty Fifth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/25)**

Honolulu, Hawaii, USA, 24-25 March 2011

Agenda Item 7: Other Business

COMMUNICATIONS AT HIGH SOUTHERLY LATITUDES

Presented by Qantas Airways Ltd

SUMMARY

This paper summarises the communications capability experienced during a route proving flight from Buenos Aires, Argentina to Sydney, Australia over a route that proceeded via position 80 degrees south latitude.

1. INTRODUCTION

- 1.1 Qantas operates scheduled services between Sydney, Australia and Buenos Aires, Argentina via a User Preferred Route through Australian oceanic gateways that join the fixed track system in continental South America. Route analysis indicates that westbound flights going as far as 80 degrees south are operationally beneficial; to date flights have been limited to 72 degrees south.
- 1.2 In planning flights at high latitudes considerations that have to be met include fuel freeze limitation, solar radiation, ozone concentration and safety height corrections for extreme cold temperatures. Qantas uses a fuel temperature prediction algorithm (provided by Boeing) that integrates with the flight planning system to ensure the flight does not enter areas of extreme cold temperatures that could result in fuel freeze occurring. Solar flare activity is monitored and steps are taken to ensure the flight is not exposed to solar radiation in excess of recommended levels. A prediction tool developed by the UK Met Office allows Qantas to ensure that flights avoid areas of high ozone concentration that could prove harmful to passengers and crew.
- 1.3 On February 7, 2011 a Qantas B747-400 operated a route proving service from Buenos Aires to Sydney via a route that progressed via position 80 degrees south latitude. The flight traversed the oceanic control areas of Santiago (SCEZ), Auckland (NZZO) and Melbourne (YMMM). A graphical representation of the route is attached.

2. DISCUSSION

- 2.1 To ensure ATC awareness of the flight's position, an ADS-C contract was established by NZZO as a back-up to that of SCEZ. The contract with NZZO was established before the flight entered SCEZ airspace.
- 2.2 As can be seen from the INMARSAT diagram following, a loss or reduction in satellite coverage could have been expected after the flight left the coverage of the AOR (W) satellite. This in fact did occur and was indicated to the crew by DATALINK LOST and SATVOICE LOST messages. However a review of the datalink traffic post flight showed that there was no impact to uplinks or downlinks to both SCEZ and NZZO during the transition from AOR (W) to the POR satellite. Further, after initial logon to the POR satellite continuous satellite communications capability was experienced for the remainder of the flight.
- 2.3 HF communications with Santiago was established and the quality of reception was very good.
- 2.4 After entering the NZZO FIR a HF radio check was attempted. Repeat attempts over a period of a few hours were made to contact Auckland using various frequencies however HF communications were unable to be established. As a precaution HF was established with McMurdo Centre. The quality of reception with Mac Centre was excellent.
- 2.5 Normal CPDLC and HF communications were available through the remainder of the flight in the YMMM FIR.
- 2.6 The route proving flight has established that:
 - 2.6.1 Datalink communications can be maintained outside the nominal INMARSAT coverage for a flight progressing as far as 80deg S.
 - 2.6.2 HF communications with Auckland are not possible at lower latitudes however as a backup to datalink in NZZO airspace, HF with McMurdo Centre is possible and has proven to be adequate.
- 2.7 Qantas expects to begin regular flights as far as 80S during the upcoming months (winter period).

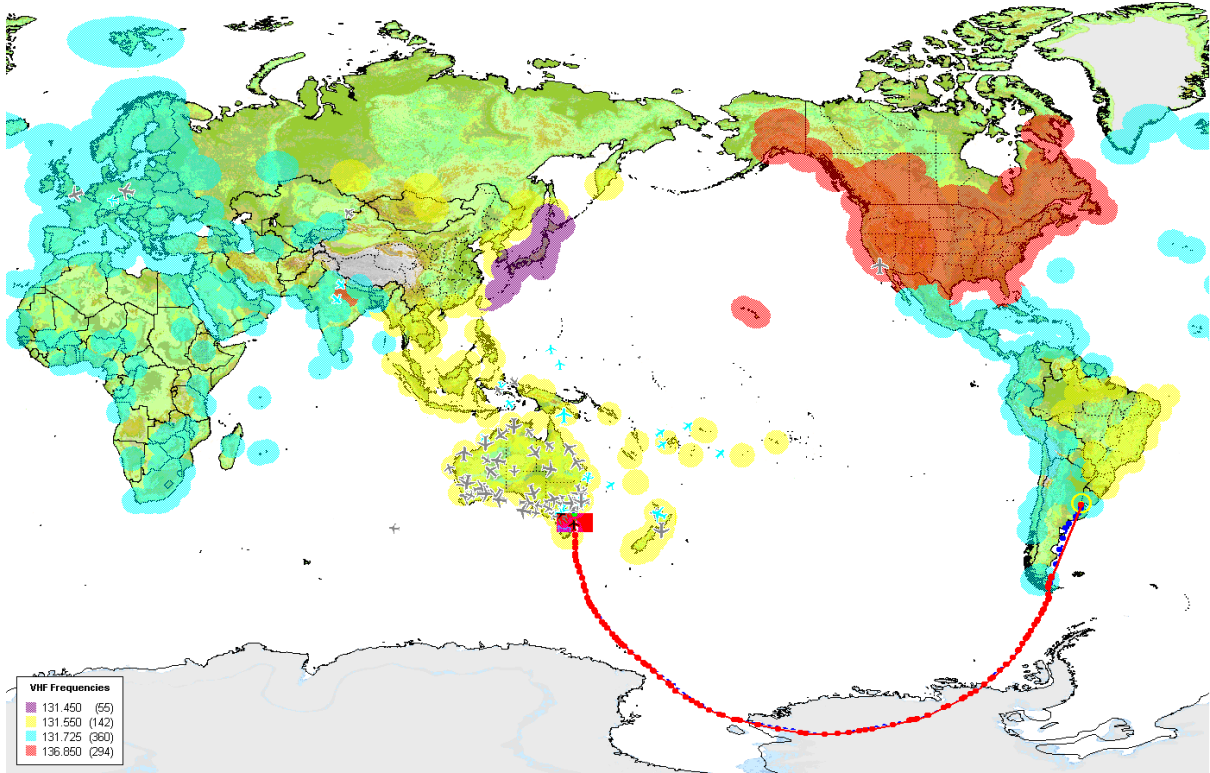


3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the communications facilities that were able to be used for the flight.
- b) Request that Airways Corporation review the geographic coverage of its HF radio system and/or ensure that McMurdo Centre can act as a gateway and relay for HF communications if required.

ATTACHMENT 1 – Route Map



Inmarsat Satellite Coverage

