

**Twenty Second Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/22)**

Papeete, Tahiti, 12-14 March 2008

**Agenda Item 4 – Review Open Action Items
AI 20-4**

Update from SP6 HF Working Group

Presented by Airways New Zealand

SUMMARY

The following paper is an update of the South Pacific (SP6) HF working group's progress over the last 12 months.

1. INTRODUCTION

- 1.1 The SP6 HF working group was formed from a recommendation at ISPACG/20 in Honolulu to address the issue of HF congestion.
- 1.2 The group is made up from representatives of the 5 HF Service providers in the south pacific who, since the group was formed, have met once a year and hold quarterly teleconferences.

2. DISCUSSION

- 2.1 The SP6 HF group decided that before we could move forward we needed to find out exactly where the industry currently stood and what the issues were. It was agreed that the best way to obtain such information was to elicit feedback directly from aircrew (the end user) on the level of service by way of a survey, the first such time one of the entire network had been done. In June 2007 each representative of the SP6 network, emailed or supplied airline organizations that flew in their Flight Information Region a survey that sought information from various categories, comments where the service could be improved and asked aircrew what they considered acceptable time delays in receiving various clearances.
- 2.2 The survey ran for about 4 weeks and at the end of which the group met to study the data obtained and review the comments and recommendations the respondents had made as a way of improving the service.

2.3 The group received over 180 responses from individual aircrew and airline representatives. Some of the replies were a collective response from an airline or agency meaning the total number exceeded this figure.

The table below is how the South Pacific HF network level of service was rated by the airline customers.

The scale was from 1 to 5 with the numbers approximating to;

1= Poor 3= Satisfactory 5= Excellent
2= Fair 4= Very Good

| Element | Average score |
|--|----------------------|
| HF Coverage | 3.7 |
| HF Quality | 3.3 |
| Timely Response from ground station | 3.4 |
| Timely Response to clearance requests | 3.4 |
| Professionalism | 4.1 |
| Interference other ground stations. | 3.1 |
| Frequency Transfers | 3.6 |
| SELCAL reliability | 3.9 |
| Satisfied with service | 3.5 |

2.4 The table below is a summary of the industry expectation of “acceptable delays” from survey verses the HF service providers reported delivery times derived by sampling.

| | Industry Expectation | HF Network Average |
|--|-----------------------------|---------------------------|
| Acceptable delay for non weather related clearance. | 4 minutes 27 seconds | 2 minutes 45 seconds |
| Acceptable delay for weather related clearance. | 2 minutes 30 seconds | 3 minutes 43 seconds |
| Acceptable delay for other requests i.e. weather reports. | 5 minutes 30 seconds | < 4 minutes. |

** The figures above do not include Tahiti’s sampling results due to the operational set up in Tahiti where the Oceanic controller is also the HF operator.*

2.5 The survey also asked aircrew to comment on the reasons that they marked any particular area in the survey as poor and how the service could be improved to better meet their needs.

The most common comments in descending order were:

- Delays in responding to requests.
- Delays for weather deviations.
- Frequency management issues i.e. too many ground stations using the same frequencies.
- Transfer of radio guard between FIR's is inconsistent at times and often aircraft are transferred on the wrong frequency.
- Documentation- or lack of with regards to information concerning the SP6 network of stations.
- No services- generalised heading reflecting degradation in HF propagation to a state that made SP6 frequencies unusable.
- Man made interference

2.6 Response from working group.

Listed below are some of the steps the HF network is taking to address the results and comments from the survey.

2.6.1 Delays In Responding To Requests (Non Weather Related)

This result is a little confusing for the ground stations as comparing data from the survey with the average figure reported by the HF ground stations from sampling audio and electronic data it would appear that on average the "acceptable delay is being met".

Like any average, there are a number of occasions where this figure was exceeded.

Operationally, there will always be a number of inherent system delays that will contribute to the time it takes a pilot to receive a response to a clearance.

A typical request from the pilot is received by the HF operator and sent electronically (or passed verbally) to the oceanic controller. He/she may already be on the phone, resolving an issue or processing another request. In processing the request consideration of the aircrafts proximity to an adjacent FIR boundary or boundaries may be required or will be required if coordination with the next facility has already taken place.

Once separation with other traffic is assured the clearance will be sent to the air ground operator either electronically or verbally and then onto the crew as soon as the air ground operator has finished his/her current task and the frequency is available for use, which in itself, can be difficult in peak times. During some periods of the day, it is not unusual for two or three requests to be waiting for radiotelephony time so they can be transmitted to the aircrew.

HF Ground stations will continue to monitor the delivery delay by way of individual sampling programmes.

2.6.2 Delays For Weather Deviations

This result confirmed comments contained in the survey in that delays to weather related requests appeared to take too long. The industry “acceptable delay” was two minutes 30 seconds while the network on average delivered a response to a weather related clearance in three minutes 43 seconds. Again, it is important to remember that the HF ground station is the relaying agency and acts on information received as soon as they can. The calculation and coordination aspect of the request by ATC generally takes the majority of the processing time.

While not all ATC systems are the same, weather related requests from aircraft are generally prioritised and actioned before other general requests from aircraft (a possible contributory factor to the delay with general clearances). The reason for the increase in delay times with weather deviations is often due to the increased complexity “off track” requests create. There is usually a need to ensure that the lateral track separation does not compromise other adjacent traffic “down the track” as it were. The deviation may take the aircraft closer to an adjacent FIR requiring coordination with one or more facilities and with reduced longitudinal separation standards like 50nm and 30nm in trial, it is sometimes necessary to move one aircraft in the vertical plane before a weather deviation can be issued. This may also require coordination with the next facility.

2.6.3 Frequency Management Of The HF Network

Many comments received asked why air-ground stations in the south pacific use the same HF frequencies at the same time.

This is a double-edged sword. The principle behind the “network” is such that if one air-ground station was unable to hear an aircraft due to HF propagation or atmospheric, another is able to step in, take the call, and relay it to the facility concerned. There are frequent occasions where this occurs but the downside to being on the same frequency is congestion.

In recent times, the five air-ground stations in the south pacific have introduced a notification system whereby each network user advises the others of their primary frequency. This gives adjacent stations the ability, subject to HF propagation, to work one frequency higher or lower than their neighbour does. There will, however, be times where one frequency is best and most stations will use the same one.

2.6.4 Transfer Of Radio Guard Between FIR's Is Inconsistent At Times And Often Aircraft Are Transferred On The Wrong Frequency

All five HF air-ground stations in the SP6 group recently signed a memorandum of understanding that documents procedures for notifying each other of the primary HF frequencies in use in a direct attempt to reduce the number of times aircraft are transferred to the wrong primary frequency.

There will be times when degradation of a particular HF frequency may occur with little notice but with the network of SP6 stations another ground station should be able to relay a request or position report.

2.6.5 Documentation - Or Lack Of - With Regards To Information Regarding The SP6 Network Of Stations

The HF working group has agreed to produce a High Frequency Management guidance material document similar to that available in the North Atlantic.

This guide would include HF propagation properties e.g. how HF works, the frequencies and allocation within the SP6 network, technical specifications of each station and any information the group considered worthwhile to aircrew, air traffic and air ground operators alike.

It is proposed to have a draft available by late 2008.

2.6.6 No Services - Generalised Heading Reflecting Degradation In HF Propagation To A State That Made SP6 Frequencies Unusable

There is little the HF working group can do to influence HF propagation however better use of HF prediction charts by ATC along with documentation of how HF behaves may help raise awareness and understanding of this medium.

2.6.7 Man Made Interference

A number of the SP6 stations have reported the recent man made interference on 5643 kHz (Chinese military over the horizon radar testing). As air-ground stations, we do what we can to limit the interference by reporting such to the appropriate authorities however not all issues are able to be readily resolved particularly when the source of the interference is outside of the country.

- 2.7 The working group decided that all the results and comments received should be distributed to those that took the time to complete the survey in the trust that they will participate in the future with the aim of improving the overall level of service the network can deliver. To this end in late 2007 and early 2008 all FIR's contacted those concerned either directly via email or through the company operations to thank the individuals for their time and input.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
- a) Note/Review the work undertaken by the HF working group in addressing the issues that the airlines have raised and will continue to do so while such a need exists.