

**THE NINETEENTH MEETING OF THE
INFORMAL SOUTH PACIFIC ATC CO-ORDINATING GROUP
(ISPACG/19)
THE TWELFTH MEETING OF THE FANS INTEROPERABILITY TEAM
(FIT/12)**

(Brisbane, Australia, 28 February – 1 March 2005)

REPORT OF THE FIT MEETING

SUMMARY

This paper reports on the discussions at FIT/12.

The meeting was opened by Ron Rigney with administrative information. He offered a tour of Brisbane center on Friday morning. The papers are on the website or available in hard copy. This was followed by introductions (round the room).

Brad Cornell then introduced the agenda.

DSP Update

SITA gave a presentation on FANS-1/A issues. SATCOM issues include the so-called KAKES Black Hole problem (actually a spot beam transition problem). This affects Perth and Aussaguel GES. Nera has implemented fixes for this and the TAD reset issue. The spot beam issue was not fixed by the November update. The problem affects airplanes with Aero-I and Aero-H+. The spot beam transition should not affect data (on the global beam), but it does, resulting in downlinks not being delivered. Nera are debugging the new software release. It's not clear when the fix will finally be resolved.

The TAD reset issue is a buffer overflow problem caused by large traffic volumes. The November release resized the buffers, eliminating this problem.

There has been a gradual decline in downlink performance over the last 4 months. This is partly caused by the preceding problems, T-channel transmission errors and 777 BP03. It doesn't appear to be related to the need for additional T-channels. SITA has added an additional R-channel to Perth GES. An additional source of performance degradation is VHF-SATCOM transition, which should be improved by upgrading airplane tracking (around May), including removing the CAA server.

SITA plans to improve HFDL handling, by treating it as a separate priority (VHF→SATCOM→HFDL). This will avoid the problem of being unable to get back to SATCOM after trying HFDL.

GES ageing is one of SITA's main issues. The Nera hardware/software used in all GES (except KDD ones) is 14 years old. SITA is committed to the necessary investment to

upgrade them. They will be replacing the TAD EB pack. Inmarsat is paying for new packet mode units, allowing an increase in data/voice channel capacity coincident with Inmarsat 4 launch.

FANS traffic showed a 40% increase from 2003 to 2004 (~20% the previous year). A chart was then presented showing worldwide FANS availability.

Air New Zealand asked what kind of monitoring was provided (with the new upgrades) to more quickly find and fix the kind of problems we've seen recently. He pointed out that the "lost" messages were recorded as being received, so we should have spotted the lost messages sooner. Karen took an **Action Item** to look into what their AMOS tool can monitor.

ARINC gave an update on HF DL. The service has been operating since January 1998. There are 14 ground stations, and 425 airplanes. They are getting over 725,000 messages per month. Availability has improved from 98.54% in 2001 to 99.24% in 2004. They have modified their media selection logic to be VHF→SATCOM→HF DL for ATC, VHF→HF DL→SATCOM for AOC. HF DL is under evaluation in NAT.

ATSU Update

Fiji stated that controllers are sending too many free text messages but that is being addressed. Fiji has implemented RNP4. AIDC with Brisbane/Auckland has been implemented and work is still ongoing. Allocation of SSR codes from a non-radar to a radar environment is an issue. They are getting started with an ADS-B program with local airlines.

Tahiti stated there have been no significant changes this year. Coordination with Airways has been better. They are experiencing many delayed downlinks in the North with 50% failure of transfers (20% with Boeing airplanes). This is a big problem for Tahiti. **Action Item** for CRA to set up a new transfer study.

Airservices stated that they have been working 30/30, which was implemented on 20 January, but there is a lack of aircraft due to delays in RNP4 certification. SIA and UAL are the only customers for it. Some operators are indicating RNP4 when they are not approved. QANTAS started UPRs on BNE-LAX 6 months ago. They have had AIDC to Nadi since 28 October 2004, with the same incremental process as with Oakland. No voice required since 25 November 2004. They still need voice for some things (such as weather deviations and offsets) since their version of AIDC doesn't support those. There have been ADS-B trials since 2003. Five mile separation has been approved by CASA when ADS-B sites are commissioned. They may put a site on Lord Howe Island. Work on incorporating ADS-B in ICAO documents is ongoing. CASA has issued an ADS-B paper for discussion. Airservices is now providing the FIT performance metrics for Fiji. Brisbane assumed responsibility for provision of ATS in Nauru FIR. They have around 25 datalink customers. The KAKES problem has deteriorated, and is a significant issue. They have also been receiving a lot of cruise climb requests, and free text continues to be a problem. Airservices is also working on flex-tracks for Emirates. Flex-track training starts in March, and also ADS-B training.

Airways talked about some issues that have been resolved, including system stability, their datalink application causing dropouts, a sync server for seamless transfers, the

datalink transfer issue (sending NDA before being CDA), and 30/30 implementation. They will be getting AIDC version 2 for weather deviations and block levels in 9/05 or 11/05. They will be putting time stamps on CPDLC uplinks. They have an operating system upgrade, and are improving controller HMI, system monitoring and analysis tools. AIDC with Nadi is in final testing, with a staged implementation in March/April. Current issues include the 777 BP03 problem, delayed ADS reports in Tasman, and getting false ADS lateral event reports. Delayed ADS reports are an issue, but they haven't been able to look at them in the detail the KAKES report has been analyzed.

The FAA said that Ocean 21 build 2 is expected in March (initial operational capability) in New York center. Oakland center implementation is expected in the summer 05 and training is under way. They will begin the safety case by the end of this year for 30/30. The FAA is focused on transitioning to the Ocean 21 system as soon as they can.

ICAO Informed the group that combining the NAT guidance material for ATS data link services in North Atlantic airspace with FANS Operations Manual is under discussion.

The FAA gave an update on the NATFIG discussions on FOM harmonization; a draft of the combined manual should be available in April.

IFALPA asked about HF frequencies particularly for transfer to Nadi. They are very rarely the correct frequency. With MONITOR, you could wait a long time. He insists on his crews contacting the center to make sure. **Action Item** Oakland center to ensure they are issuing the correct HF frequencies.

Operators Update

QANTAS

FANS operations are generally fairly smooth. They brought up a few issues to be discussed later. There have some improvements in met data, which will provide benefits when generating AOC DARP routes.

Air New Zealand

Problems seen early on in FANS operations are being seen again as a result of crew turnover (and new crews coming on). ANZ suggested a CRA news letter noting operational issues be sent to FANS operators and ATSU's. **Action Item** for CRA to develop and distribute a news letter. They want to discuss early termination of the data link connection. Worldwide procedures are an issue (especially the NAT). ANZ is waiting for full implementation of DARPS. Communication costs are a big issue. ANZ requested that the ATSU's only use an ADS reporting rate required by the separation standard.

Singapore Airlines

SIA is seeing a decrease in use of free text by the flight crews. Standardization of global operational procedures is an important issue.

UAL

UAL is happy to see the successful start of 30/30. They are looking forward to full implementation of DARPS.

Air Caledonie

Only operates in the South Pacific and has not experienced any operational problems. They are waiting for their A320s to be FANS equipped later this year.

USAF

Standardization of operational procedures is also an important issue for USAF. 57 KC-135s approved (490 eventually), 180 C-17s, 55 C-5s, 59 KC10, 2 VC-32s, and 2 VC-25s (over 1000) aircraft will eventually be FANS equipped.

FIT 11 open action items

	Action	Assignee	Status
1.	Resolve provision of performance monitoring data for Nadi Center.		Closed (Nadi working with ASA to provide monitoring data)
2.	Provide a white paper summarizing issues relating to use of MTSAT (voice, passenger, etc.) to IPACG/JCAB.	Boeing, ANZ, ISPACG Secretariat	Closed
3.	Provide white paper addressing MTSAT issues raised by AI #2.	JCAB	Closed
4.	Follow up on ARINC "bad avionics" listing	ARINC, CRA	Closed
5.	Send e-mail to ATSUs detailing the performance monitoring data that is needed each month	Airservices	Closed
6.	Close the PRs listed in the minutes.	CRA	Closed
7.	Schedule another transfer failure monitoring program	CRA, ANZ	Open
8.	Propose RFC on procedure for CLB/DES TO REACH BY	Airservices	Open
9.	Editorialize on L or R in Airservices RFC	Boeing	Closed
10.	Work HF DL RFC by e-mail for this FOM update (in time for IPACG)		Open – need inputs from the ATSUs
11.	Review the data on transfer failures (WP/04) and determine appropriate action	Nadi Center	Open. Still an issue. Will be covered by new AI for this meeting.
12.	Draft RFC for military-specific messages	USAF	Open. USAF would like specific chapter in FOM.

Review of proposed changes to DO-258 (Version Change)

Boeing presented a summary of the changes in DO-258A, and the impacts to the airplane and the ground if a version number roll were required. Airservices stated a

preference to avoid a version number change, since they don't plan to use the new features. They have no issue with the proposed changes. They could make use of the changes by issuing an AIP without the version number change.

ATCA-J noted that NEC said that minimal changes are needed for Tokyo (time stamp to the second).

Airways Corporation New Zealand noted that they don't have a time stamp today, but will be putting one in. It's a good change from a safety case perspective. A version number roll would cause them grief, although they have not scoped it. They do not see anything in the changes that warrants a version number roll.

Air New Zealand noted that 747 doesn't have the latency timer function.

Airservices noted that address forwarding would be an issue too. It could increase the transfer failure problem.

Qantas reiterated that airlines would ultimately have to pay for any version number change.

Boeing noted that Eurocontrol has tried to avoid affecting the rest of the FANS community, and this is why they haven't recommended a version number change.

The FAA presented an overview of the criteria (both safety and performance, and interoperability) affecting the version number. They noted that there are airplanes out there that comply with DO-258A and have no interoperability issues with ground systems. They also noted that ensuring the appropriate equipment is an operator issue.

The FIT position is that FIT has no issue with the changes proposed in the current draft of DO-258A. Further, the FIT believes that the version number should not be rolled, as the changes contained in DO-258A do not affect interoperability, and the existing draft of DO-258A allows ground systems to take advantage of these changes without additional costs.

A Flimsy was proposed, containing the suggested ISPACG position. The IATA representative objected stating that further coordination is required to reach consensus. A telecon was scheduled for the following morning to further discuss the proposed changes with the USAF. The results of those discussions will be reflected in an updated version to the flimsy which will be presented to ISPACG. The FAA noted that the DO-258A changes were developed under a work program to align DO-258 with the safety/performance requirements of DO-290. They also noted that up to now it has not been the responsibility of ATC to police airplane equipage.

Qantas noted that what they need is to ensure that operators are not forced into expensive software changes just to maintain interoperability. There was a long discussion on whether this affects interoperability. Continued discussion was deferred to a telecom at 8:00 am on Wednesday.

System Performance

Airservices presented the datalink performance statistics, including data from all FIRS in the region. It was noted that this is the first time that all South Pacific ATSUs were providing data link performance data.

Overall system performance continues to exceed the target performance requirements of 95% within 60 seconds. The downward trend during the year is very clear. Lost messages include those delivered after 900 seconds. VHF was well above 95%, but in SATCOM, some downlinks are as low as 93%. CPDLC does better than ADS.

Weather deviation performance from 2 ATSUs, including the seasonal variations in the number of requests was also shown.

Message use statistics show that the most common uplinks vary between ATSUs. CLIMB TO AND MAINTAIN is the most common, with free text at #3. Position report requests and cruise climb requests were also discussed. Apparently most cruise climb clearances are not executed as such. The question is whether it is an HMI issue, or whether crews really want cruise climbs. QANTAS has a company policy of prohibiting cruise climbs requests. Operators stated that airplane automation systems are not capable of performing a cruise climb.

Miscellaneous CPDLC Issues

Airservices presented WP/05 on various CPDLC issues. A lot of these are resurgences of old issues. It was noted that several of these items are good candidates for the proposed CRA newsletter.

1. Multiple Logons

Airplanes have been seen logging onto several centers at one time.

2. Aircraft calling on frequency immediately

Airplanes ignoring "AT position/time...". This can impact controller workload. This is primarily a datalink issue, but it has been seen with voice too.

3. Inappropriate response when in block clearance

Some aircraft are responding with single level when responding to CONFIRM ASSIGNED ALTITUDE, or putting the airplane's current level, rather than the block level. They also sometimes use free text.

4. Canceling block clearances

Some pilots assuming reporting level cancels the block clearance, but the block clearance continues until cancelled by the controller.

5. Cruise Climb

A lot of cases have been reported in which the airplane requested one, but climb directly to the new level.

6. Late Position Reports

Operators are not always sending CPDLC position reports at the boundary as required by the FOM. When controllers send a request for a position report they are usually received promptly.

7. Use of whole lat/long

Some crews are requesting direct to a lat/long rather than a named fix on the route (particularly on UPRs). If the lat/long is abbreviated in the downlink request ATSU's cannot process the request because the lat/long is not on the route for the aircraft in the ATSU's flight data processor.

8. Entering STARs

Some airplanes have a STAR in the flight plan before getting a clearance for it, so this can cause ADS route conformance warnings.

9. Offsets vs Weather Deviations

Some airplanes treat offset clearances like weather deviations as "up to xx miles".

Qantas brought up that airplanes dump the wind data when they load a route uplink. They are looking at work-around procedures, such as comparing the uplinked route with what was requested, rather than loading it.

Airservices then presented WP/02 on cruise climb requests. Very few appear to be for real cruise climbs. Some were "DUE TO WEATHER". Most aircraft reached the new level within 2 minutes. Most are from Boeing airplanes (although Airbus airplanes are about a third of the datalink fleet). Airbus airplanes have CRUISE CLIMB on the second page.

In many cases, flight crews penalize themselves with these requests, as their climb request may be denied. He recommended considering this in future HMI design.

Airways noted that Auckland sees the same thing. Auckland can't issue cruise climb clearances.

Oakland center noted about 300 cruise climb requests are received per month in Oakland's airspace.

Tokyo confirmed that they do not issue cruise climb clearances.

Airservices then presented WP/01 on delayed position reports. They performed a study on 6 months worth of data, looking at position report requests to see how many corresponded to late reports (>3 min). Internal (YBBB/YMMM) reports were 3 times worse than international boundary position reports. He will analyse the data by airplane types for the next meeting.

Airservices noted that he had been distributing a list of issues to airlines they have safety agreements with, and that those airlines have responded very well, reducing the issues on the list. Those airlines are to be congratulated.

Qantas noted that going into LAX CPDLC connection is terminated at the same time as the CONTACT uplink is sent (about 10 minutes before they can contact on VHF).

Oakland has made software changes that they think will fix this (moving it 3 minutes later). Auckland has split CONTACT and End Service messages.

Problem Reports

The CRA presented a summary of the problem reports received. There are 30 new ones. Only 2 had to be rejected due to lack of data, so kudos to the DSPs for providing the data.

2 PRs are closed by the Airbus FANS-A+ software release (PR462 and 468).

Several PRs were proposed for closure that were not airplane-related (PR456, 457, 465, 473, 475, and 482).

Several PRs will be closed with the 777 BP05 release (PR287, 448, 449, 463 and 470).

The FIT agreed with the above PRs proposed for closure, and agreed that the ones listed as being closed with 777 BP05 may be closed when the software is released.

PR466 (Message sent to wrong aircraft) was discussed. It appears to be a controller error. It was agreed to be closed as a lesson learned.

PR 469 (ADS in emergency without crew activation) was discussed. This is a ground system problem, and will be corrected this month. This will be left open and closed when it is confirmed that the ground system has been fixed.

PR470 (BP03 unable to downlink over SATCOM) was discussed. This is caused by having an application downlink when transferring from VHF to SATCOM. There is a maintenance procedure to correct it after the flight, and operators can switch to SATCOM before getting out of VHF range. It will be fixed in BP05, but the fix for AIMS-1 will need a flight test airplane.

PR471 (transfer failure due to ground system station fault)

PR476 (service advisory) was discussed, highlighting the need for ARINC to send service advisories. **Action Item** for ARINC to provide service advisories.

PR477 (offsets vs weather deviations) was discussed. Adam Watkin reminded everyone of the differences between them, and the need to fly what was cleared.

PR481 (difficulty with DESCEND TO REACH BY clearance) was discussed. A crew received this clearance, but did not expedite their descent. The time in the uplink was very close to current time when it was received, which may have added to the confusion. The downlink request had DUE TO WEATHER, and the clearance was issued with the time limit, expecting the crew to reject it if they could not meet the time. This kind of clearance will become more frequent in Oakland with Ocean 21 introduction.

ATCA-J noted that "BY" may be a difficulty with non-English-speaking crews. For Japanese people, "BEFORE" would be more usual. The CRA has an **Action Item** to check how the uplink was displayed.

Airbus presented a paper on SATCOM problems (the KAKES black hole problem). Airbus airplanes have experienced problems in the Tasman and at N00W140 (eastbound). One problem is a link test with the NERA GES, resulting in NO COMM. The other results in downlinks not being delivered to the GES. This can last up to 15 minutes. The link test problem was not fixed by the November 04 software release, and occurs during spot beam transitions. SITA is going to be monitoring this with one airplane to verify the problems are related. The ARINC representative was unaware whether they have experienced the same problem.

Airservices presented a paper on Airservices experience with this problem. The delay seems to be localized, and seems to affect certain aircraft types, affecting eastbound flights only. He analyzed ADS downlinks, looking for delays >500 seconds, and between 300 and 500 seconds.

UPR / DARP Trials

The CRA described the current DARP procedures, which are in RFC05-001. There was discussion about the amount of notice (time ahead of the aircraft that the reroute begins). This is currently 10 minutes, but will change. Words will be added to the RFC about using the inactive route for the AOC uplink.

The use of Um80 or um83 for the clearance was discussed. There is a belief that um83 replace the entire route. Um83 only replaces the route from the position parameter in the uplink. Boeing has an **Action Item** to run a test of this, using the route from Airways to determine the proper uplink message to be used.

Once bench tests are completed trials will be scheduled for Northbound routes. UAL would also like to join the trials, as well as QANTAS and ANZ.

The DARP route needs to rejoin the existing route by the gateway fix. Airservices brought up the problem with duplicate waypoints. Um83 avoids this problem.

DARP will have to be within FIRs that have AIDC, to avoid AOC having to send change messages. Airservices thought it might be an ICAO requirement anyway (PANS/ATM 11.4.2.2.4).

The RFC will be put on hold until the trials (using the bench) have demonstrated that the procedures work as planned.

It is the goal to have these southbound as well by the end of 2005.

In trail climbs using ADS-C

UAL brought up a proposal to use ADS-C for in-trail climbs. No procedure has yet been defined. TCAS procedure fell out of favor, but has been used recently (~3 times in last 6 months), and it is restricted to situations involving 2 UAL airplanes.

ATSU would have to control the climb, which amounts to a new separation standard.

This issue was deferred to ISPACG as there was a working paper to discuss it there as well.

Airservices will be running an ADS-B in-trail climb procedure this year. ANZ said they were going to put their CDTI on the EFB.

Pre-flight HF SELCAL Checks

Qantas raised this issue, whether this is required if CPDLC is to be used as the primary means of communication. FOM implies it is not required in North/Central Pacific. This test does not help the pilot. There is no indication in flight if SELCAL fails, but there is one for SATCOM failure. Not doing it would also help alleviate frequency congestion.

Airways has a couple of papers related to this subject.

FAA took an **Action Item** to determine whether SELCAL checks are necessary in Oakland for CPDLC airplanes. This would require an RFC. The FAA will draft the RFC.

Airways does not believe pre-flight checks are necessary (this is in an ISPACG working paper). SELCAL is an MEL item, and airplanes can dispatch without it.

CPDLC Guidance Material

Airservices introduced WP/08 on CPDLC Guidance material, asking for comments on the draft document, which is available on the website. It is very ATC-centric, given the author. It has been prepared for the OPLINK panel.

Miscellaneous ADS Issues

1. Lateral Event Contract

Airways presented information on invalid lateral deviation reports. These occur when lateral offsets are used in the FMS flight plan.

With "CLEARED TO DEVIATE UP TO", if heading select is used (no offset), the report will occur when crossing the event threshold, relative to the original track. If an offset is used, the report is sent immediately, and every time the contract is resent (until close to the offset track).

Tokyo uses a 5-minute periodic report in this situation. TAAATS will ignore the report if the airplane is shown to be on track. ANZ executes an offset if the deviation is over 20 miles.

Airbus presented a response to this issue. Today's Airbus FMSs operate the same way as Boeing airplanes (an event report will be issued as soon as the offset is executed if it is greater than the lateral deviation threshold). Future Airbus FMSs will not send a lateral deviation report when the offset is executed. It will construct a path to the offset, and the lateral deviation will be relative to this track. This will be on the Thales FMS (certify March 05 for twin aisle, July 05 for single aisle) and 2006 for Honeywell FMS.

This approach was received favourably, but it was noted that it does not fully cover the need where deviation clearances (up to...) are used. Boeing took an **Action Item** to propose a solution for Boeing airplanes.

FANS Operations Manual and RFC review

Airservices introduced an RFC on canceling block levels. The RFC reiterates the rules for canceling a block clearance. There was some discussion on the need for ATC to send a free text to cancel a previous block clearance, but it was noted that a new vertical clearance supersedes the previous vertical clearance, so it should not be necessary. The RFC was not not approved or in other words the RFC was approved.

The FAA introduced an RFC on preflight HF SELCAL tests. The option to delete the entire section was agreed.

Any Other Business

No other business other than lunch was identified. The chairman thanked the group for their continued support and FIT 12 was adjourned. The group thanked Airservices for accommodations provided during the meeting.

List of FIT 12 Action Items

No.	Action	Assignee
1	Determine what monitoring capability can be provided using AMOS tool to ensure that lost messages are detected.	SITA
2	Set up a new transfer study	CRA
3	Resolve source of HF frequencies issued at transfer, to ensure that correct frequencies are used.	Oakland Center
4	Consult with operators to determine appropriate content for a periodic newsletter to be provided to operators and controllers, highlighting issues that have been resolved.	CRA
5	Provide service advisories for system outages and planned maintenance.	ARINC
6	Determine how the "DESCEND TO REACH" uplink was displayed on the flight deck.	Boeing
7	Run a bench test using uplink 83 to verify proper loading of route clearances.	Boeing/Airways
8	Determine whether preflight HF SELCAL checks are necessary in Oakland airspace for CPDLC airplanes.	Oakland Center
9	Propose solution to the erroneous ADS lateral event report issue for Boeing airplanes.	Boeing