

**Twenty Ninth Meeting of the
Informal South Pacific ATS Co-ordinating Group
(ISPACG/29)**

**Santiago, Chile
4-6 March 2015**

Agenda Item Review Open Action Items (AI 17-11)

Australian AIDC monitoring

Presented by Airservices

SUMMARY

This Working paper provides an AIDC update from Airservices Australia

1. INTRODUCTION

1.1 ATS Interfacility Data Communications (AIDC) allows the electronic exchange of coordination information between ATS Units. While the use of AIDC is transparent to the operators, the use of AIDC has the capability to enhance safety and to reduce controller workload, allowing improved response time in the processing of flight crew requests.

2. DISCUSSION

2.1 This working paper presents an update to Australian AIDC activities, as well as an analysis of AIDC messages sent and received by YBBB during the period 9th – 14th February 2015.

2.2 Use of CPL messages

2.2.1 CPL messages are being used by YBBB to acquit boundary coordination with NZZO and NFFF. This coordination is required for flights that will operate within 50NM of an FIR, but not directly enter their airspace. While the Eurocat controller HMI is not perfect it is a far easier technique than traditional voice coordination, especially if the receiving ATSU does not have a flight plan for the flight.

2.3 CDN messages

2.3.1 CDN messages continue to be used to revise coordination (estimate and/or level) for eastbound flights from YBBB to NZZO. Unfortunately due to Eurocat software problems the receipt of westbound CDN messages from NZZO had to be cancelled indefinitely in January 2015.

2.4 Testing with Colombo

2.4.1 A number of test AIDC messages have been received from VCCF as part of a test programme with YMMM. A number of anomalies were identified:-

- Inclusion of fields 16b (EET) and 16c (Alternate aerodrome) in the ABI
- Field 10a of the FPL (“SDFGHIJ5LOVM1M3RWXY”) was converted to simply “SRW” in the ABI
- Field 15 of the ABI simply terminated at the FIR boundary, rather than being truncated

2.4.2 Colombo has referred these (and other issues) to their supplier, and further testing will be required in the future.

2.5 Delayed responses to AIDC messaging

2.5.1 Analysis of AIDC message responses detected 19 occurrences of delays of greater than 45 seconds. All of these occurrences affected messages between YBBB and WAAF. The cause for these apparently random delays is not known.

2.5.2 The message delay is calculated by comparing time stamps in the AIDC message with the associated LAM (or LRM) response. Between YBBB and WAAF this is a response sent automatically upon receipt of the AIDC message, so it should not be subject to operator processing delays.

Msg	MRN	From	To	Msg sent	Ack sent	ACK	Tx time (sec)
AOC	WAAF009952	WAAF	YBBB	150211123037	150211123133	LAM	56
EST	WAAF010087	WAAF	YBBB	150211151200	150211152149	LAM	589
TOC	WAAF010088	WAAF	YBBB	150211151500	150211152149	LAM	409
ACP	WAAF010091	WAAF	YBBB	150211151550	150211152151	LAM	361
AOC	WAAF010093	WAAF	YBBB	150211151806	150211152154	LAM	228
EST	WAAF010094	WAAF	YBBB	150211151952	150211152155	LAM	123
TOC	WAAF010298	WAAF	YBBB	150211191058	150211191155	LAM	57
TOC	WAAF011722	WAAF	YBBB	150212192026	150212192119	LAM	53
EST	WAAF013182	WAAF	YBBB	150213191013	150213191102	LAM	49
ACP	YBBB068594	YBBB	WAAF	150213191102	150213191200	LAM	58
AOC	YBBB068630	YBBB	WAAF	150213191943	150213192100	LAM	77
TOC	YBBB068638	YBBB	WAAF	150213192229	150213192456	LAM	147
AOC	WAAF013189	WAAF	YBBB	150213192111	150213192258	LAM	107
TOC	WAAF013190	WAAF	YBBB	150213192340	150213192549	LAM	129
AOC	YBBB068655	YBBB	WAAF	150213192559	150213192820	LAM	141
TOC	YBBB068675	YBBB	WAAF	150213193103	150213193403	LAM	180
TOC	WAAF013193	WAAF	YBBB	150213192958	150213193140	LAM	102
TOC	YBBB068685	YBBB	WAAF	150213193301	150213193552	LAM	171
AOC	WAAF013195	WAAF	YBBB	150213193409	150213193556	LAM	107

2.6 LRM analysis

2.6.1 The normal response to a syntactically correct AIDC message is a Logical Acknowledgement Message (LAM). If the received message is syntactically incorrect, the response should be an Logical Rejection Message (LRM).

2.6.2 An LRM analysis can indicate interoperability problems between two ATS Units. Several examples identified from our AIDC logs are included below:

	NFFF	NZZO	Comment
Invalid message sequence	10	1	Caused by 'out of sequence AIDC messages.
Block level + crossing condition	2		Eurocat does not support a block level combined with a crossing condition (climbing/descending)
Invalid message	3		Cause of this is unknown (2.6.3)
Unknown	7		Believed to be related to the size of Field 18 in the ABI (2.6.4)
Invalid Header		2	Believed to be caused by formatting of received MIS message (2.6.5)

2.6.3 A number of LRMs were generated by NFFF in response to a CPL transmitted by YBBB for a flight infringing the 50NM tolerances of the NFFF FIR boundary in the vicinity of 2936S16214E.

```
(CPL-CUS33/A3227-IG
-DH8B/M-SDFGHUZM3R/EB1
-YCFS-2936S16214E/0236F050
-N0240F230 DCT CFS 3124S15852E 3116S15910E 3103S15910E LHIEG
2936S15910E 2936S16214E 2834S16205E 2721S16111E 2620S15831E
2636S15637E 2636S15500E SU DCT
-YBSU
-PBN/L1S1 NAV/RNP2 DOF/150211 REG/VHZZC SEL/ARDM OPR/SURVEILLANCE
AUST PER/B RMK/DIV 50NM FM TRK OPR BLW A050 SKEDS 0030 LAHSO PASSIVE)
```

It is unknown what caused the generation of the LRM.

2.6.4 The LRMs were generated by YBBB following the receipt of ABI from NFFF with Field 18 exceeding 250 characters. The size of Field 18 was larger than the original flight plan due to the inclusion of a RMK/ containing the flight planned speed level changes which had been stripped from Field 15 of the ABI as shown in the following table.

Flight plan	ABI that was responded to with an LRM
(FPL-HAL451-IS -A332/H-SDE3FGHIJ5M1RWXYZ/SB2D1 -PHNL2145 -N0469F360 OPIHI2 CARRP A579 CHEEM/M080F360 A579 CEBUR/M080F380 A579 KABAR/M080F400 A579 NATLI DCT ABARB DCT SHARK N774 MARLN DCT -YSSY1002 YBBN -PBN/A1B2C1D1L1 NAV/RNVD1E1A1 SUR/260B REG/N395HA EET/KZAK0043 CROBY0148 CEBUR0255 NFFF0406 YBBB0817 YMMM0955 SEL/BELS CODE/A4960C OPR/HAWAIIAN AIRLINES PER/C RALT/NSTU NWWW YBBN RIF/VIRAR A579 UBLIN DCT 28S160E DCT TABAL G329 SAVER SAVE8A YBBN RMK/RNP4)	100523 NFFFZQZF 2.000976-4.150210052255- 5.7ABA- (ABI-HAL451-PHNL-UBLIN/0611F400-YSSY -8/IS -9/A332/H -10/SDE3FGHIJ5M1RWXYZ/SB2D1 -15/N0469F400 CEBUR A579 KABAR A579 NATLI DCT ABARB DCT SHARK N774 MARLN -18/PBN/A1B2C1D1L1 NAV/RNVD1E1A1 SUR/260B REG/N395HA EET/KZAK0043 CROBY0148 CEBUR0255 NFFF0406 YBBB0817 YMMM0955 SEL/BELS CODE/A4960C OPR/HAWAIIAN AIRLINES PER/C RALT/NSTU NWWW YBBN RIF/VIRAR A579 UBLIN DCT 28S160E DCT TABAL G329 SAVER SAVE8A YBBN RMK/RNP4 ICAO CHEEM M080F360 CEBUR M080F380 KABAR M080F400)

It is believed that the Field 18 change actually originated in KZAK, but it is unknown why this occurs.

2.6.5 Two LRMs were transmitted to NZZO on separate occasions following receipt of what appears to be an incorrectly formatted MIS message:

	Occurrence 1	Occurrence 2
A request for a flight plan was sent by YBBB to NZZO	FF NZZOZQZX 090402 YBBBZQZA (RQP-FNY5435-YSNF-YSNF-0)	FF NZZOZQZX 101941 YBBBZQZA (RQP-ANG085-NFFN-AGGH-0)
A MIS message response sent by NZZO. The response would appear to contain formatting errors	FF YBBBZQZA 090402 NZZOZQZF (MISNZZO/YBBB002-FNY5435-No FPL on file)	FF YBBBZQZA 101942 NZZOZQZF (MISNZZO/YBBB003-ANG085-No FPL on file)
LRM by YBBB	FF NZZOZQZF 090402 YBBBZQZF 2.034340- 3.NZZO000001-4.150209040217- 5.AAD2- (LRM-RMK/4/HEADER/ ?(MISNZZO/YBBB002)	FF NZZOZQZF 101941 YBBBZQZF 2.045624- 3.NZZO000001-4.150210194149-5.99E3- (LRM- RMK/4/HEADER/?(MISNZZO/YBBB003)

There appear to be a number of anomalies in these messages which will be followed up with Airways New Zealand

2.7 AIDC performance and statistical summary

2.7.1 The Attachment to this working paper provides a summary of AIDC performance and message statistics for AIDC messages sent and received by YBBB during the monitoring period.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this working paper
- b) Consider conducting AIDC analysis to identify messaging interoperability issues with adjoining ATS Units.

Summary of AIDC messages sent by YBBB (9th – 14th February 2015)

YBBB ==> YMMM			Application response			>45 sec		Operational Response				
	#	# Blk level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	4168	35	4168	0	0.5	0	0	-	-	-	-	-
EST	2324	21	2324	0	0.2	0	0	2294	-	-	30	0.6
ACP	2383	-	2383	0	0.3	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
PAC	3	0	3	0	0.7	0	0	3	-	-	0	1.0
CPL	0	-	0	0	-	0	0	0	0	0	0	-
TOC	2344	-	2344	0	0.2	0	0	-	-	-	-	-
AOC	2366	-	2366	0	0.2	0	0	-	-	-	-	-

YBBB ==> WAAF			Application response			>45 sec		Operational Response				
	#	# Blk level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	0	0	0	0	N/A	0	0	-	-	-	-	-
EST	598	4	598	0	2.8	0	0	586	-	-	12	6.5
ACP	425	-	424	0	3.4	1	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	0	-	0	0	-	0	0	0	0	0	0	-
TOC	674	-	671	0	2.6	3	0	-	-	-	-	-
AOC	461	-	459	0	3.2	2	0	-	-	-	-	-

YBBB ==> NFFF			Application response			>45 sec		Operational Response				
	#	# Blk level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	196	5	189	7	1.1	0	0	-	-	-	-	-
EST	167	5	164	3	0.8	0	0	164	-	-	3	1.0
ACP	162	-	162	0	1.0	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	19	-	16	3	1.1	0	0	16	0	0	3	3.2
TOC	170	-	162	0	0.6	0	0	-	-	-	-	-
AOC	177	-	175	0	0.9	0	0	-	-	-	-	-

YBBB ==> NZZO			Application response			>45 sec		Operational Response				
	#	# Blk level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	430	13	430	0	3.4	0	0	-	-	-	-	-
EST	374	12	373	1	2.0	0	0	373	-	-	1	3.2
ACP	377	-	377	0	2.1	0	0	-	-	-	-	-
CDN	24	-	24	0	2.3	0	0	23	0	0	1	46.2
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	11	-	11	0	3.7	0	0	11	0	0	0	5.3
TOC	375	-	374	0	1.4	0	0	-	-	-	-	-
AOC	378	-	377	0	1.9	0	0	-	-	-	-	-

YBBB ==> KZAK			Application response			>45 sec		Operational Response				
	#	# Blk level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	3	0	3	0	1.0	0	0	-	-	-	-	-
EST	3	0	3	0	1.0	0	0	3	-	-	0	51.3
ACP	4	-	4	0	0.5	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	0	-	0	0	-	0	0	0	0	0	0	-
TOC	2	-	1	0	1.0	0	0	-	-	-	-	-
AOC	0	-	0	0	-	0	0	-	-	-	-	-

Summary of AIDC messages received by YBBB (9th – 14th February 2015)

WAAF ==> YBBB			Application response			>45 sec		Operational Response				
	#	# Bik level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	0	0	0	0	N/A	0	0	-	-	-	-	-
EST	517	1	480	0	2.7	3	0	425	-	-	92	6.4
ACP	624	-	585	0	3.1	1	0	-	-	-	-	-
CDN	0		0	0	-	0	0	0	0	0	0	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	0		0	0	-	0	0	0	0	0	0	-
TOC	526	-	486	0	2.6	5	0	-	-	-	-	-
AOC	587	-	547	0	2.5	4	0	-	-	-	-	-

NFFF ==> YBBB			Application response			>45 sec		Operational Response				
	#	# Bik level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	210	10	201	9	0.0	0	0	-	-	-	-	-
EST	168	9	168	0	0.0	0	0	162	-	-	6	0.1
ACP	181	-	181	0	0.2	0	0	-	-	-	-	-
CDN	0		0	0	-	0	0	0	0	0	0	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	0		0	0	-	0	0	0	0	0	0	-
TOC	178	-	178	0	0.0	0	0	-	-	-	-	-
AOC	162	-	162	0	0.0	0	0	-	-	-	-	-

NZZO ==> YBBB			Application response			>45 sec		Operational Response				
	#	# Bik level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	408	5	408	0	2.2	0	0	-	-	-	-	-
EST	377	5	377	0	0.1	0	0	376	-	-	1	2.4
ACP	407	-	407	0	1.3	0	0	-	-	-	-	-
CDN	0		0	0	-	0	0	0	0	0	0	-
PAC	1	0	1	0	0.0	0	0	1	-	-	0	2.0
CPL	0		0	0	-	0	0	0	0	0	0	-
TOC	377	-	377	0	0.1	0	0	-	-	-	-	-
AOC	374	-	374	0	0.3	0	0	-	-	-	-	-

KZAK ==> YBBB			Application response			>45 sec		Operational Response				
	#	# Bik level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	5	0	5	0	0.2	0	0	-	-	-	-	-
EST	5	0	5	0	0.0	0	0	4	-	-	1	0.5
ACP	3	-	3	0	0.0	0	0	-	-	-	-	-
CDN	1		1	0	0.0	0	0	0	0	0	1	-
PAC	0	0	0	0	-	0	0	0	-	-	0	-
CPL	0		0	0	-	0	0	0	0	0	0	-
TOC	0	-	0	0	-	0	0	-	-	-	-	-
AOC	1	-	1	0	0.0	0	0	-	-	-	-	-

YMMM ==> YBBB			Application response			>45 sec		Operational Response				
	#	# Bik level	LAM	LRM	Response	LAM	LRM	ACP	REJ	CDN	NIL	Round trip
ABI	5037	42	5037	0	0.5	0	0	-	-	-	-	-
EST	2381	31	2381	0	0.3	0	0	2357	-	-	24	0.6
ACP	2297	-	2297	0	0.2	0	0	-	-	-	-	-
CDN	0		0	0	-	0	0	0	0	0	0	-
PAC	29	0	29	0	0.5	0	0	26	-	-	3	0.8
CPL	0		0	0	-	0	0	0	0	0	0	-
TOC	2398	-	2398	0	0.2	0	0	-	-	-	-	-
AOC	2283	-	2283	0	0.2	0	0	-	-	-	-	-