



International Civil Aviation Organization

**SPECIAL IMPLEMENTATION PROJECT (SIP) ON ATS
INTER-FACILITY DATA COMMUNICATION
IMPLEMENTATION SEMINAR**

Bangkok, Thailand, 12-13 October 2010

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- Agenda Item 3: Review version 3 of the Asia/Pacific ICD for AIDC**
• **Status of AIDC implementation in the region**

AUSTRALIAN AIDC PERFORMANCE

(Presented by Airservices Australia)

SUMMARY

This Information paper reviews the performance of AIDC messages being transmitted and received by YBBB.

1. BACKGROUND

1.1 Version 3 of the document “Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data link systems in the Asia Pacific Region” was issued by the ICAO Asia/Pacific Regional Office in Bangkok in May 2008. This document describes the need to conduct performance monitoring of data link applications such as ADS-C, CPDLC and AIDC, in accordance with Annex 11.

1.2 Appendix A to this Guidance material document provides the recommended process to measure the AIDC performance of an ATS Unit.

2. DISCUSSION

2.1 While no formal AIDC monitoring programme has been implemented by Airservices Australia, ad hoc statistical analysis is conducted periodically to identify any new AIDC-related problems that may arise from time to time. This information paper describes the methodology that may be used to calculate AIDC performance.

2.2 As described in the Guidance material document, an AIDC message is defined to be “unsuccessfully delivered” if neither a LAM nor LRM response is received within a specified time interval. For the purpose of the analysis described in this paper, a time out period of 180 seconds was used. The message delivery success rate can then be calculated as follows:

$$MessageDeliverySuccessRate = 1 - \frac{TO}{TOT}$$

where:

TO = total number of Time Outs

TOT = total number of messages

2.3 A summary of AIDC performance for ABI and EST messages transmitted by YBBB to adjacent ATS Units is included in the following table.

Message sent by YBBB to:	ABI				EST			
	No. ABIs	Transit time (sec)	No. LAM/LRM	%	No. ESTs	Transit time (sec)	No. LAM/LRM	%
YMMM	5165	0.4	5164	99.98%	3186	0.2	3185	99.97%
NZZO	622	3.3	622	100.00%	493	1.9	492	99.80%
NFFF	255	1.7	255	100.00%	189	1.0	189	100.00%
KZAK	8	3.6	8	100.00%	7	2.9	7	100.00%
WAAF	731	5.0	393	53.76%	657	2.4	348	52.97%

2.4 In the above table, transit time is measured by comparing the time stamp in the transmitted AIDC message with the transmission time stamp of the application response (LAM/LRM). So for example, in the message pair below, the transit time for the EST message would be measured as “2 seconds”.

2.030606-4.100928093800-5.B01C-
EST-UAE419/A1376-YSSY-KARAG/1008F320-VTBS)

2.040726-3.YMMM030606-4.100928093802-5.CF71-
(LAM)

A similar methodology can be used to calculate performance for all AIDC message types.

2.5 The data in the above table shows the current unreliability of AIDC messaging with WAAF. While the average transit time is acceptable (2.4 to 5 sec for the EST and ABI respectively), no application response is received for nearly half of the AIDC messages transmitted by YBBB. This problem is currently under investigation.

2.6 Attachment 1 contains a summary of AIDC performance data for all AIDC messages transmitted to and from YBBB. This summary also includes information on Operational responses (e.g. ACP messages).

3. CONCLUSION

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

A-1 The following Table(s) provides information concerning AIDC messages sent to and received by Brisbane (YBBB) during a 7 day period (28th September to 5th October 2010).

YBBB ==> YMMM	#	# Bik level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)	LAM	LRM	ACP	REJ	CDN	NIL	Transit time (sec)
ABI	5165	27	5164	0	0.4	1	0	-	-	-	-	-
EST	3186	16	3185	0	0.3	1	0	3131	-	-	55	0.4
ACP	3262	-	3262	0	0.3	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	3199	-	3198	0	0.2	1	0	-	-	-	-	-
AOA	3362	-	3362	0	0.2	0	0	-	-	-	-	-

YBBB ==> WAAF	#	# Bik level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)	LAM	LRM	ACP	REJ	CDN	NIL	Transit time (sec)
ABI	731	20	393	0	5.0	0	0	-	-	-	-	-
EST	657	14	348	0	2.6	0	0	334	-	-	323	2.4
ACP	300	-	299	0	4.1	1	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	696	-	369	0	2.2	0	0	-	-	-	-	-
AOA	315	-	312	0	3.0	0	0	-	-	-	-	-

YBBB ==> NZZO	#	# Bik level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)	LAM	LRM	ACP	REJ	CDN	NIL	Transit time (sec)
ABI	622	4	621	1	3.9	0	0	-	-	-	-	-
EST	493	2	491	1	2.3	1	0	492	-	-	1	2.7
ACP	460	-	460	0	2.2	0	0	-	-	-	-	-
CDN	26	-	26	0	2.2	0	0	26	0	0	0	67.5
TOC	501	-	495	0	2.1	1	0	-	-	-	-	-
AOA	473	-	455	0	2.0	0	0	-	-	-	-	-

YBBB ==> NFFF	#	# Bk level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)			LAM	LRM	ACP	REJ	CDN
ABI	255	10	250	5	1.7	0	0	-	-	-	-	-
EST	189	9	186	3	1.0	0	0	183	-	-	6	36.3
ACP	211	-	211	0	1.0	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	193	-	186	0	0.7	0	0	-	-	-	-	-
AOC	216	-	215	0	0.9	0	0	-	-	-	-	-

YBBB ==> KZAK	#	# Bk level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)			LAM	LRM	ACP	REJ	CDN
ABI	8	0	8	0	3.6	0	0	-	-	-	-	-
EST	7	0	7	0	2.9	0	0	7	-	-	0	80.4
ACP	7	-	7	0	2.9	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	3	-	3	0	3.0	0	0	-	-	-	-	-
AOC	0	-	0	0	-	0	0	-	-	-	-	-

WAAF ==> YBBB	#	# Bk level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)			LAM	LRM	ACP	REJ	CDN
ABI	0	0	0	0	N/A	0	0	-	-	-	-	-
EST	316	0	316	0	3.2	0	0	285	-	-	31	3.5
ACP	334	-	334	0	2.4	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	334	-	334	0	2.2	0	0	-	-	-	-	-
AOC	320	-	320	0	2.1	0	0	-	-	-	-	-

NZZO ==> YBBB	#	# Bk level	Application response			>180 sec	Operational Response					
			LAM	LRM	Transit time (sec)		LAM	LRM	ACP	REJ	CDN	NIL
ABI	518	19	517	1	1.1	0	0	-	-	-	-	-
EST	458	18	458	0	0.4	0	0	458	-	-	0	0.7
ACP	518	-	518	0	1.5	0	0	-	-	-	-	-
CDN	1	-	1	0	1.0	0	0	0	0	0	1	-
TOC	460	-	460	0	0.2	0	0	-	-	-	-	-
AOB	495	-	495	0	0.3	0	0	-	-	-	-	-

NFFF ==> YBBB	#	# Bk level	Application response			>180 sec	Operational Response					
			LAM	LRM	Transit time (sec)		LAM	LRM	ACP	REJ	CDN	NIL
ABI	281	12	275	6	0.0	0	0	-	-	-	-	-
EST	224	12	224	0	0.0	0	0	211	-	-	13	0.0
ACP	183	-	183	0	0.1	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	226	-	225	1	0.1	0	0	-	-	-	-	-
AOB	186	-	186	0	0.1	0	0	-	-	-	-	-

KZAK ==> YBBB	#	# Bk level	Application response			>180 sec	Operational Response					
			LAM	LRM	Transit time (sec)		LAM	LRM	ACP	REJ	CDN	NIL
ABI	17	0	5	12	2.3	0	0	-	-	-	-	-
EST	7	0	7	0	1.6	0	0	7	-	-	0	1.7
ACP	7	-	7	0	1.3	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	0	-	0	0	-	0	0	-	-	-	-	-
AOB	1	-	1	0	2.0	0	0	-	-	-	-	-

Attachment

YMMM ==> YBBB	#	# Bk level	Application response			>180 sec		Operational Response				
			LAM	LRM	Transit time (sec)	LAM	LRM	ACP	REJ	CDN	NIL	Transit time (sec)
ABI	5939	38	5939	0	0.4	0	0	-	-	-	-	-
EST	3259	26	3258	0	0.3	1	0	3225	-	-	34	0.5
ACP	3139	-	3139	0	0.2	0	0	-	-	-	-	-
CDN	0	-	0	0	-	0	0	0	0	0	0	-
TOC	3288	-	3288	0	0.2	0	0	-	-	-	-	-
AOC	3135	-	3135	0	0.2	0	0	-	-	-	-	-