International Civil Aviation Organization

Fifteenth Meeting of the FANS Interoperability Team – Asia (FIT–Asia/15)

Bangkok, Thailand, 24 – 27 June 2025

Agenda Item 4: Review of ADS/CPDLC Operations and Performance

DATA LINK PERFORMANCE REPORT FOR UJUNG PANDANG FIR

(Presented by Indonesia)

SUMMARY

This paper presents data link performance data for 2024 for the Ujung Pandang FIR, and information on actions taken to identify and rectify the causes of performance issues.

1. INTRODUCTION

1.1 The performance data for Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance - Contract (ADS-C) is measured against the appropriate Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) 180 respectively.

1.2 CPDLC performance is measured by Actual Communication Performance (ACP) and Actual Communication Technical Performance (ACTP). This paper presents ADS/CPDLC performance categorized by media type, operator, and monthly performance from 1st January to 31st December 2024 for Ujung Pandang FIR.

1.3 ADS-C performance is measured by Downlink Latency, categorized by media type and monthly performance from 1st January to 31st December 2024.

1.4 **Tables 1 to 4B** summarize Automatic Dependent Surveillance – Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) performance where the Required Surveillance Performance (RSP) and Required Communications Performance (RCP) criteria stipulated in ICAO Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) were not met. Actions taken to address performance not meeting the criteria are discussed, together with the outcomes of such actions.

2. DISCUSSION

Ujung Pandang FIR ADS-C RSP180 Performance – Media Type, RGS and GES

2.1 **Table 1** summarizes overall ADS-C performance per media type, Remote Ground Station (RGS) and Ground Earth Station (GES) for downlinks sent within the Ujung Pandang FIR during 2024, where performance did not meet the RSP180 performance criteria.

Table 1: Ujung Pandang FIR ADS-C Downlink Latency per Media Type, RGS and GES

Criteria			RSP180					
Period			Jan-June 2024			July-Des 2024		
Colour Key: Meets Criteria / 99.0%-99.89% / Under Criteria			Message Counts	95% % <=90sec	99,90% % <=180sec	Message Counts	95% % <=90sec	99,90% % <=180sec
FIR	By Media Type							
WAAF	SATCOM		49049	99,10%	99,81%	57648	99,40%	99,84%
	HF		107	40,55%	58,02%	138	35,95%	60,00%
	VHF		192796	98,93%	99,42%	219583	98,93%	99,41%
	ALL		241952	98,96%	99,48%	277369	99,01%	99,48%
By Remote Ground Station (RGS) Ground Earth Station (GES)								
FIR	Designator	Type	(only RGS/GES with message counts >100 reacorded)					
	AMQ1	VHF	3758	97,62%	97,90%	2345	97,45%	95,72%
	AYQ1	VHF	178	97,09%	97,78%	122	92,97%	93,51%
	BIK1	VHF	850	98,85%	99,29%	684	98,50%	98,83%
	BME1	VHF	1155	96,29%	96,50%	1340	96,71%	96,97%
	CGK2	VHF	612	99,92%	100,00%	108	98,40%	98,96%
	DPS	VHF	3763	98,16%	98,95%	2735	98,35%	98,85%
	DRB1	VHF	1191	97,82%	98,21%	1506	98,14%	98,43%
	DVO	VHF	770	96,74%	97,43%	1004	99,00%	99,16%
	DVO1	VHF	858	94,78%	95,07%	905	98,48%	98,73%
	GOV1	VHF	1292	98,58%	98,66%	1427	99,25%	99,39%
	IG1	SAT	8295	93,15%	98,00%	13381	94,07%	98,27%
	KDI1	VHF	1250	97,37%	97,66%	2843	93,25%	93,79%
	KOE1	VHF	4427	97,71%	98,74%			
	LAO	VHF	259	95,16%	98,58%	150	98,42%	99,88%
	LGH1	VHF	114	97,76%	98,18%			
	MDC1	VHF	2595	98,41%	98,65%	3665	99,54%	99,62%
	MNL	VHF	214	91,70%	97,67%	200	99,43%	99,60%
	PHE1	VHF	1599	97,98%	98,12%	1212	97,78%	98,11%
	PLM	VHF	999	97,41%	98,61%	466	97,93%	99,40%
	SBW	VHF	359	98,64%	98,75%	407	99,54%	99,62%
	TTE1	VHF	151	97,43%	97,97%	2945	99,62%	99,67%
	UPG1	VHF	648	99,08%	99,18%	1328	98,67%	98,88%

2.2 In summary, ADS-C performance by SATCOM and VHF were able to meet the 95 % criterion but failed for 99,90% criterion for both January – June period and July – December period, as shown in Table 1 above. However, ADS-C performance by HF failed to meet the 95% and 99% criterion. For ADS-C differentiated by RGS/GES, 5 station had failed to meet 95% and 99.9% criteria either in one semester or throughout the year (AYQ1, DVO1, IG1, KDI1, and MNL).

2.3 The assessment for ADS-C performance by HF could not be statistically significant due to the low number of data points.

2.4 To recognize the causes of the issue, ANSP has monitored RGS/GES performance since beginning until the latest 2024 period. The SSP is expected to initiate close coordination with ANSP as a follow-up action to address the connection issues that have occurred.

2.5 Based on the monitoring activities, no improvement in performance was recorded. The SSP expected to identify the root causes of poor ADS-C performance attributed to RGS/GES, particularly for AYQ1 and IG1, which have shown no reported improvement since the previous year.

Ujung Pandang FIR ADS-C RSP180 Performance – Aircraft Operator/Type

2.6 **Table 2** below summarizes overall ADS-C performance per Aircraft Operator/Type for downlinks sent within the Ujung Pandang FIR during 2024, where performance did not meet the RSP180 performance criteria.

Table 2: Ujung Pandang FIR ADS-C Downlink Latency per Aircraft Operator/Type

FIR	**WAAF**					
Criteria	**RSP180**					
Period	**Jan-June 2024**			**July-December 2024**		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	**Message Counts**	**95%** **% <= 90sec**	**99,90%** **% <= 180sec**	**Message Counts**	**95%** **% <= 90sec**	**99,90%** **% <= 180sec**
By Aircraft Operator / Type (only message counts >100 recorded)						
CCA/B77W				221	94,46%	98,09%
CES/B77W				221	96,17%	98,04%
CPA/A320				846	95,02%	96,69%
CPA/B77W	9776	94,85%	98,52%	29892	97,70%	99,38%
CSN/B77L	105	98,17%	98,99%			
FDX/B77L	2035	98,23%	98,77%	2256	98,60%	99,35%
GIA/A339	123	100,00%	100,00%	643	97,15%	97,75%
HVN/B789	172	98,35%	98,69%	421	99,85%	100,00%
MSD/A333	394	90,74%	99,43%	1023	97,85%	99,15%
PAL/A21N	2801	92,29%	95,07%	4894	94,30%	97,72%
PAL/ A333	4227	99,12%	99,63%	100	92,38%	95,51%
QFA/A333	12835	98,26%	98,62%	13424	99,17%	99,44%
SJV/A320	799	95,81%	96,92%	621	93,54%	95,49%
TAX/A333	882	96,41%	96,69%	303	97,32%	98,71%
THA/A359	4870	98,30%	98,71%	6957	98,71%	99,04%
THA/B77W	1279	97,80%	98,37%	156	100,00%	100,00%
VJC/A333				6060	93,65%	94,80%
VTI/B789	291	96,76%	98,36%	244	99,88%	100,00%
XAX/A333	3729	98,86%	99,29%	2470	98,60%	98,70%

2.7 The ADS-C differentiated by aircraft operator/type, there are 7 aircraft operator/types that were unable to meet the 95% criteria in 2024 period and more than 18 stations had failed 99,9 Criteria.

2.8 Aircraft identified with low performance indicated issues with the data link connection, generally associated with CSP or SSP-related problems.

2.9 The ANSP will assess whether the observed issue pertains to an isolated flight event or reflects a persistent problem. Absence of similar occurrences in later monitoring periods may indicate that the issue has been resolved.

2.10 The ANSP will continue the monitoring to determine the problem, if it is still occurred the ANSP will take action to notify the aircraft operator.

Ujung Pandang FIR CPDLC RCP240 Performance – Media Type, RGS and GES

2.11 **Tables 3A and 3B** summarize overall CPDLC performance per Media Type, RGS and GES for messages sent within the Ujung Pandang FIR during 2024, where performance did not meet the RCP240 performance criteria.

Table 3A: Ujung Pandang FIR CPDLC Performance Latency per per Media Type, RGS and GES – Jan-Jun 2024.

FIR		**WAAF**					
Criteria		**RCP240**					
Period		**Jan - June 2024**					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria		**Message Counts**	95% Benchmark		99.9% Benchmark		95%
							PORT
			ACP	**ACTP**	**ACP**	**ACTP**	
			% < = 180sec	**% <= 120sec**	**% < = 210sec**	**% <= 150sec**	
By Media Type							
SATCOM		10.504	99,44%	99,91%	99,65%	99,94%	97,20%
SV		382	98,22%	99,55%	98,30%	99,62%	94,50%
VHF		31.808	99,36%	99,78%	99,51%	99,83%	97,59%
ALL		42694	99,37%	99,80%	99,53%	99,85%	97,47%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(RGS/GES with message counts >100)					
IG1	**SAT**	1857	98,44%	99,88%	99,20%	99,98%	91,60%
PNK1	**VHF**	103	97,30%	99,36%	98,12%	99,82%	96,12%
SRG	**VHF**	921	99,19%	99,40%	99,22%	90,43%	98,62%
ZAM	**VHF**	160	97,77%	100,00%	97,86%	100,00%	94,17%

Table 3B: Ujung Pandang FIR CPDLC Performance Latency per per Media Type, RGS and GES – Jul-Dec 2024.

FIR		WAAF					
Criteria		RCP240					
Period		Jul - Dec 2024					
Colour Key: Meets Criteria / 99.0%-99.89% / Under Criteria		Message Counts	95% Benchmark		99.9% Benchmark		95%
			ACP	ACTP	ACP	ACTP	PORT
			% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	
By Media Type							
SATCOM		10609	99,28%	99,83%	99,40%	99,89%	97,05%
SV		496	98,49%	100,00%	98,94%	100,00%	94,35%
VHF		35487	99,34%	99,72%	99,45%	99,76%	97,74%
ALL		46592	99,31%	99,75%	99,43%	99,79%	97,55%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(RGS/GES with message counts >100)					
APK1	VHF	8150	98,82%	99,22%	98,99%	99,35%	96,60%
DVO	VHF	114	95,85%	99,61%	96,87%	99,77%	88,06%
IG1	SAT	2732	98,68%	99,77%	99,05%	99,84%	93,30%
SRG	VHF	109	98,31%	100,00%	98,36%	100,00%	98,17%
ZAM	VHF	202	96,28%	99,65%	96,38%	99,70%	92,86%

2.12 The Actual Communications Performance (ACP) measurement for CPDLC messages performance that sent within Ujung Pandang FIR for the period from 1 January 2024 to 31 December 2024 are categorized by data link media type, RGS/GES, and Aircraft Operator/Type. The ACP for messages sent over Satellite and VHF meet the 95% criteria but marginally fall below the 99,9% criteria. As for CPDLC differentiated by RGS and GES, 6 stations had failed to meet 99,9% criteria as follows IG1, PNK1, SRG, ZAM (from period of January to June 2024) and APK1, DVO, IG1, SRG, ZAM (from period of July to December 2024) had failed to meet 99,9% criteria.

2.13 The CPDLC differentiations from both of RGS/GES stations were caused by the delay related to specific VHF station, it happened when the delayed CPDLC messages are observed via a specific VHF ground station. In conjunction with RSP 180, the performance criteria for RCP 240 experienced failures due to connection issues from numerous ground stations.

2.14 Indonesia has identified the differentiations based on the observation during the period of 2024, the result also showed the ACP which did not meet the criteria is caused by the low percentages from pilot operational response time (PORT).

2.15 According to the results, the ANSP expects the CSP to identify the causes of the RGS/GES delays.

Ujung Pandang FIR CPDLC RCP240 Performance – Aircraft Operator/Type

2.16 **Tables 4A and 4B** summarize overall CPDLC performance per Aircraft Operator/Type for messages sent within the Ujung Pandang FIR during 2024, where performance did not meet the RCP240 performance criteria.

Table 4A: Ujung Pandang FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2024

FIR	**WAAF**					
Criteria	**RCP240**					
Period	**Jan - Jun 2024**					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	**Message Counts**	95% benchmark		99.9% Benchmark		95%
		ACP	**ACTP**	**ACP**	**ACTP**	**PORT**
		% < = 180sec	**% <= 120sec**	**% < = 210sec**	**% <= 150sec**	
By Aircraft Operator / Type (only message counts >100 recorded)						
ANZ/B77W	175	99,47%	100,00%	99,69%	100,00%	93,33%
CBJ/A332	274	95,04%	96,63%	95,76%	97,63%	93,50%
CCA/A333	118	98,58%	100,00%	98,69%	100,00%	97,63%
CPA/B77W	1759	98,64%	99,86%	99,39%	99,94%	92,33%
FDX/B77L	269	99,15%	99,80%	99,64%	99,87%	92,94%
PAL/A21N	527	97,43%	98,65%	98,07%	99,21%	94,12%
PAL/A332	122	98,55%	99,54%	98,69%	99,67%	96,72%
QFA/A333	1771	98,76%	100,00%	98,11%	100,00%	95,60%
SIA/A359	2668	98,72%	98,68%	98,86%	99,03%	97,66%
SJV/A320	107	98,26%	100,00%	98,34%	100,00%	94,94%

Table 4B: Ujung Pandang FIR CPDLC Performance Latency per Aircraft Operator/Type – Jul-Dec 2024

FIR	**WAAF**					
Criteria	**RCP240**					
Period	**Jul - Dec 2024**					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	**Message Counts**	95% Benchmark		99.9% Benchmark		95%
		ACP	**ACTP**	**ACP**	**ACTP**	**PORT**
		% < = 180sec	**% <= 120sec**	**% < = 210sec**	**% <= 150sec**	
By Aircraft Operator / Type (only message counts >100 recorded)						
CBJ/A332	474	96,92%	98,64%	97,20%	99,23%	96,27%
CES/B789	791	98,93%	99,68%	99,19%	99,84%	93,93%
CPA/A333	329	99,18%	99,82%	99,45%	99,96%	94,93%
CPA/B77W	2375	98,78%	99,86%	99,24%	99,90%	94,40%
CSC/A332	228	98,55%	99,63%	98,63%	100,00%	97,99%

FIR	WAAF					
Criteria	RCP240					
Period	Jul - Dec 2024					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		95%
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT
CSC/A333	316	97,86%	100,00%	97,93%	100,00%	95,38%
CSN/A333	1248	98,23%	99,26%	98,53%	99,46%	95,19%
CSN/B789	2774	98,09%	98,02%	98,12%	98,30%	97,50%
CXA/B789	617	98,69%	99,17%	98,76%	99,35%	97,59%
FDX/B77L	295	98,83%	100,00%	98,98%	100,00%	92,54%
PAL/A21N	808	99,16%	99,79%	99,22%	99,82%	94,99%
UAE/A388	229	98,69%	100,00%	98,72%	100,00%	97,92%

2.17 The Actual Communications Performance (ACP) measurement for CPDLC messages performance that sent within Ujung Pandang FIR for the period from 1 January 2024 to 31 December 2024 are categorized by aircraft operator type, there are 10 pairs of aircraft operator/type which failed 99,9% criteria for the period from January 2024 to June 2024 and 12 pairs of aircraft operator/type which failed 99,9% criteria for the period July to December 2024.

2.18 The CPDLC issues at both aircraft operator/type occurred due to delays at certain VHF ground stations. Therefore, the ACP which did not meet the criteria also caused by the low percentages from pilot operational response time (PORT).

2.19 Based on the performance monitoring, we analyzed that the delayed CPDLC transactions are caused by high large pilot operational response time (PORT). It was reported that during this period, there were involving 8 different aircraft operators/types.

2.20 ANSP will notify the airline operators especially local ones, therefore they are expected to review procedures to reduce the pilot operational response time (PORT).

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

— END —