International Civil Aviation Organization

The 11th Meeting of the Future Air Navigation Systems Interoperability Team-Asia (FIT-Asia/11)

Video Teleconference, 23 – 27 August 2021

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 1 January to 31 December 2020 for the Ujung Pandang FIR and information on actions taken to identify and rectify the causes of performance issues

1. INTRODUCTION

1.1 **Tables 1 to 6** summarize Automatic Dependent Surveillance – Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) performance where when the Required Surveillance Performance (RSP) and Required Communications Performance (RCP) do not meet the criteria stated in ICAO Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM). Actions and their outcomes to mitigate these cases are also presented on this paper.

1.2 In addition, Indonesia also submits the survey of the status of current and planned implementation of performance-based horizontal separation minima in Ujung Pandang FIR.

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 2020, when performance did not meet the RSP180 performance criteria.

Criteria			RSP180					
P			Jan-June 2020			July-Des 2020		
			Message Counts	95% % <=90sec	99,90% % <=180sec	Message Counts	95% % <=90sec	99,90% % <=180sec
FIR	By Media Type							
WAAF	SATCOM		24305	98,71%	99,64%	15347	98,66%	99,78%
	HF		323	68,58%	83,80%	168	67,56%	85,12%
	VHF		111315	99,25%	99,63%	56359	99,26%	99,60%
	ALL		135.943	99,08%	99,39%	71874	99,06%	99,61%
By Remote Ground Station (RGS) Ground Earth Station (GES)								
FIR	Designator	Type	(only RGS/GES with message counts >100 reacorded)					
	IG1	VHF	1919	92,55%	97,33%	1708	94,67%	98,77%
	MDC1	VHF	945	94,58%	96,96%	376	95,57%	97,27%
	SYD8	VHF				113	86,73%	86,73%

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

2.2 Concisely, ADS-C performance by SATCOM and VHF were able to meet the 95% criterion but failed for 99.9% criterion as shown in Table 1 above. The assessment for ADS-C performance by HF could not be statistically significant due to the low number of data points.

2.3 For ADS-C differentiated by RGS/GES, 3 stations had failed to meet 95% and 99.9% criteria (IG1, MDC1, and SYD8).

2.4 To improve the performance and to meet the criteria, ANSP will continue monitoring the delay by RGS/GES (IG1, MDC1, and SYD8) to determine whether the problem is related to the network issues.

2.5 ANSP will notify the CSP regarding the issues of RGS/GES (IG1, MDC1, and SYD8) delay.

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

2.6 **Table 2** summarizes overall ADS-C performance per Aircraft Operator/Type for downlinks sent within the Ujung Pandang FIR during 2020, when performance did not meet the RSP180 performance criteria.

FIR	WAAF					
Criteria	RSP180					
Period	Jan-June 2020			July-December 2020		
Colour Key Meets Criteria 99.0%-99.84% 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)						
CSN/A332	971	98,54%	99,00%	111	93,25%	93,85%

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

2.7 ADS-C performance by aircraft operator/type were able to meet the 95% criteria but unable to meet the 99.9% criteria. Whereas, the ADS-C differentiated by aircraft operator/type, there is only 1 aircraft operator/type (CSN/A332) that is unable to meet the 95% and 99.9% criteria in July to December 2020 period.

2.8 The aircraft captured with low performance shows that there was a data link connection problem. ANSP will check whether this appears to be a problem with this particular flight or whether this is an ongoing problem. If this problem is not observed on later periods, the issue may have been addressed.

2.9 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

2.10 **Table 3A** and **3B** summarize overall CPDLC performance per Media Type, RGS and GES for messages sent within the Ujung Pandang FIR during 2020, when performance did not meet the RCP240 performance criteria.

FIR		RCP240					
Criteria							
Period		Jan - Jun 2020					
Colour Key: Meets Criteria; 99.0%-99.84%; Under Criteria		Message Counts	95% benchmark		99.9% Benchmark		95%
			ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT
By Media Type							
SATCOM		5.588	98,32%	99,85%	98,55%	99,95%	94,49%
SV		618	95,91%	99,84%	96,42%	99,84%	93,85%
VHF		15.694	98,25%	99,65%	98,50%	99,71%	95,24%
ALL		21900	98,20%	99,70%	98,45%	99,78%	95,01%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(RGS/GES with message counts >100)					
DVO	VHF						
TWU1	VHF	225	94,48%	100,00%	95,19%	100,00%	92,25%
XXA	SV	432	94,61%	100,00%	95,13%	100,00%	92,36%
XXQ	SV						
ZAM	VHF	169	74,51%	100,00%	75,01%	100,00%	67,85%

Table 3A: Ujung Pandang FIR CPDLC Performance Latency per Media Type, RGS and GES – January - June 2020

FIR	RCP240					
Criteria						
Period	Jul - Dec 2020					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT
By Media Type						
SATCOM	3425	98,25%	99,92%	98,41%	100,00%	94,77%
SV	385	95,08%	100%	96,10%	100%	93,47%
VHF	7641	97,74%	99,56%	98,10%	99,64%	94,42%
ALL	11451	97,80%	99,68%	98,12%	99,75%	94,49%
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator / **Type**	(RGS/GES with message counts >100)					
DVO / VHF	107	79,56%	100,00%	80,14%	100,00%	78,54%
TWU1 / VHF						
XXA / SV	179	95,57%	100,00%	96,57%	100,00%	93,24%
XXQ / SV	146	93,65%	100,00%	95,21%	100,00%	92,22%
ZAM / VHF						

Table 3B: Ujung Pandang FIR CPDLC Performance Latency per Media Type, RGS and GES – July - December 2020

Ujung Pandang FIR CPDLC RCP240 Performance – Aircraft Operator/Type

2.11 **Tables 4A** and **4B** summarize overall CPDLC performance per Aircraft Operator/Type for messages sent within the Ujung Pandang FIR during 2020, when performance did not meet the RCP240 performance criteria.

FIR	WAAF					
Criteria	RCP240					
Period	Jan - Jun 2020					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
CSC/A333	141	92,85%	99,62%	93,45%	99,83%	88,30%

Table 4A: Ujung Pandang FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2020

FIR	WAAF					
Criteria	RCP240					
Period	Jan - Jun 2020					
Colour Key Meets Criteria 99.06%-99.84% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
CHH/A333	140	94,61%	100,00%	94,82%	100,00%	90,61%
CPA/A359	192	93,84%	100,00%	93,97%	100,00%	91,05%
CPA/A35K	974	93,74%	100,00%	94,05%	100,00%	91,59%
CRK/A333	194	91,87%	100,00%	91,99%	100,00%	90,88%

Table 4B: Ujung Pandang FIR CPDLC Performance Latency per Aircraft Operator/Type – July - December 2020

2.12 The Actual Communications Performance (ACP) measurement for CPDLC messages sent within Ujung Pandang FIR for the period from 1 January 2020 to 31 December 2020 are categorized by data link media type, RGS GES, and Aircraft Operator/Type. The ACP for messages sent via Satellite and VHF meet the 95% criteria but marginally fall below the 99.9% criteria. As for CPDLC differentiated by RGS and GES, 5 stations had failed to meet both 95% and 99.9% criteria as follows TWU1, XXA, ZAM (from period of January to June 2020) and DVO and XXQ (from period of July to December 2020). For the CPDLC differentiated by aircraft operator/type, there are 5 pairs of aircraft operator/type which failed the 95% and 99.9% criteria (CSC/A333, CHH/A333, CPA/A359, CPA/A35K, CRK/A333).

2.13 The CPDLC differentiations from both of RGS/GES stations and Aircraft Operator/Type 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. Other than these, the ACP which not meet the criteria also caused by the low percentages from pilot operational response time (PORT).

2.14 Based on the performance monitoring, we analyze that the delayed CPDLC transactions are caused by high large pilot operational response time (PORT).

2.15 ANSP will notify the administrator so that the operator to review their procedures to reduce the pilot operational response time (PORT).

Additional Information

2.16 Attachment A shows the survey of the status of current and planned implementation of performance-based horizontal separation minima in Ujung Pandang FIR. It represents the actual condition in 2021

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.

……

ATTACHMENT A

SURVEY OF THE STATUS OF CURRENT AND PLANNED IMPLEMENTATION OF PERFORMANCE-BASED HORIZONTAL SEPARATION MINIMA

				Y/N	If NO, Planned Date
1. Has your State completed any of the following preparations for PBCS implementation?					
PBCS Implementation Task List	**Task Group**	**Task ID**	**TASK descriptor**		
	Group A	A-1	AIP (Prescription of an RCP/RSP specification. Also see B-3 below)	**Y**	
		A-2	PBCS policies, objectives supporting safety oversight of ANSP PBCS operations	**N**	**Des 2021**
		A-3	PBCS policies, objectives supporting safety oversight of Aircraft Operator and Aircraft System PBCS operations	**N**	**TBD**
		A-4	Proposal for Amendment to ICAO Doc 7030 - *Regional Supplementary Procedures* for PBCS operations , if applicable	**Y**	
	Group B	B-1	PBCS Implementation Plan	**Y**	
		B-2	Target dates for PBCS and relevant ATM operations	**Y**	
		B-3	RCP/RSP specifications	**Y**	
		B-4	PBCS awareness	**Y**	
	Group C	C-1	Operational concepts and procedures for PBCS operations	**Y**	
		C-2	ATM automation system changes to use flight plan RCP/RSP indicators	**Y**	
		C-3	ATM automation changes for PBCS monitoring	**Y**	
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications	**Y**	
	Group D	D-1	Aircraft operator readiness	**Y**	
		D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP	**Y**	
	Group E	E-1	PBCS monitoring, analysis and reporting - post implementation	**Y**	

	Y/N	If NO, Planned Date
1. Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)	**Y**	

3. Does your State monitor and analyze data link performance in accordance with the following specifications and report the analysis to a recognized FANS Interoperability Team (FIT)?					
Communication Specifications & Interoperatability Standards	Normal	RCP240	FANS1/A CPDLC	**Y**	
	Alternate	RCP400	SATVOICE	**N**	
		RCP400	HF	**Y**	
Surveillance Specifications & Interoperatability Standards	Normal	RSP180	FANS1/A ADS-C	**Y**	
	Alternate	RSP400	SATVOICE	**N**	
		RSP400	HF	**Y**	
4. Has your State implemented or planned to implement the following performance-based horizontal separation minima?					
Navigation Specifications & Applicable ATM Operations	RNAV/RNP	RNAV/RNP 10	50 NM Lateral Separation	**Y**	
			50 NM Longitudinal Separation	**Y**	
		RNP 4	30 NM Longitudinal Separation	**Y**	
			30 NM Lateral Separation	**Y**	
			23 NM Lateral Separation	**N**	**TBD**
		RNP2	30NM Climb-Descend Through	**N**	**TBD**