International Civil Aviation Organization

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Bangkok, Thailand, 24 – 27 June 2025

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

DATA LINK PERFORMANCE REPORT FOR PHILIPPINES

(Presented by Philippines)

SUMMARY

This paper presents data link performance data for the year 2024 for Manila FIR and information on actions taken to identify and rectify the causes of performance issues

1.   INTRODUCTION

1.1   **Tables 1 to 4B** summarizes 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.

1.2   The Philippines has been using ADS-C/CPDLC over the South China Sea and Central West Pacific airspaces within the Manila FIR, though long time usage has been established lateral and longitudinal separation were not yet implemented in the operation of ADS-C/CPDLC. HF voice communications were still being utilized in parallel with ADS-C/CPDLC in those regions. However, the distance-based lateral and longitudinal separations employed by Manila ACC are still monitored through radar surveillance coverage.

1.3   There were recurring issues related to the ADS-C/CPDLC functionality of the Philippine ATMC's TopSky that were temporarily resolved by restarting ATC workstations application. These were expected to be addressed in the new TopSky version R_22.2.14.0_3 (upgraded in September 2024 from version R_1.14.8.1_1_0), yet issues still persisted. Also, negative ADS-C and CPDLC logon issues have been common since fourth quarter of 2024, prompting Thales to produce a patch and subsequently modify a parameter on our AGDLC configuration file as a workaround in February 2025.

2.   DISCUSSION

<u>Manila FIR ADS-C RSP180 Performance – Media Type, RGS and GES</u>

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 Manila FIR during 2024, where performance did not meet the RSP180 performance criteria.

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

FIR		RPHI					
Criteria		RSP180					
Period		Jan-Jun 2024			Jul-Dec 2024		
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 Media Type							
SATCOM		146194	97.79%	99.74%	155605	97.80%	99.64%
VHF		480776	98.49%	99.34%	525264	98.38%	99.24%
HF		110	50.91%	62.93%	124	46.37%	64.96%
ALL		627,080	98.38%	99.39%	680993	98.28%	99.29%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES with message counts >100 recorded)					
BWN1	VHF				193	97.44%	97.49%
CXR1	VHF	100	93.25%	94.45%	139	95.08%	95.62%
IG1	SAT	7702	79.36%	96.92%	4760	85.90%	99.05%
IGW1	SAT	393	96.18%	98.73%	1049	96.19%	99.62%
OKA1	VHF	438	91.32%	99.64%	154	93.10%	99.28%
SFS1	VHF	1779	98.27%	98.51%	2739	98.92%	99.24%
SYX	VHF	4506	95.85%	96.42%	5434	97.02%	97.49%

2.2   The ADS-C performance by RGS for January-June 2024 shows that 5 RGS, or 8.62% of the total overall stations did not meet the 99.9% performance criteria. For July-December 2024, 4 RGS, or 6.9% of the total overall stations did not meet the 99.9% performance criteria. Under media type, HF had very low message count and had failed in all criteria all year long.

2.3   Under media, HF is anticipated to exhibit very low performance in comparison to other media types. Under RGS, the highest volume of messages was through the SAT-based station IG1, which also showed the poorest performance among others in the <=90sec criterion. Another station with high volume of messages is the VHF-based station SYX, it marginally passed the <=90sec criterion but failed in the <=180sec criterion. The reason for the non-compliance of IG1 and SYX, along with the other stations has yet to be determined.

2.4   Manila will continue to monitor these stations and gather data for the RSP performance in the next monitoring cycle.

Manila FIR ADS-C RSP180 Performance – Aircraft Operator/Type

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

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

FIR	RPHI					
Criteria	RSP180					
Period	Jan-Jun 2024			Jul-Dec 2024		
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)						
AAR/A21N	5141	98.69%	99.69%	5686	97.01%	98.73%
ABL/A21N	4140	96.21%	98.61%	5725	96.17%	98.88%
CAL/A21N	9160	97.61%	99.31%	10395	96.68%	98.96%
CES/A333	1406	96.37%	97.72%	3302	97.64%	99.21%
CES/B77W	174	97.63%	98.93%	290	97.59%	99.62%
CPA/A333	22916	94.66%	98.83%	21982	95.61%	98.99%
CPA/B773	789	93.41%	98.57%	2036	92.29%	98.20%
CPA/B77W	12431	92.01%	98.25%	15132	92.64%	98.41%
CSN/A21N	5641	90.78%	95.04%	10544	92.29%	96.04%
CSN/B77L	134	96.46%	98.40%			
GIA/A332				132	96.24%	96.51%
GIA/A339	903	99.44%	99.64%	1706	96.92%	97.78%
GTI/B77L				165	97.93%	98.43%
KAL/A21N	1370	92.41%	98.25%	4868	97.25%	98.79%
MAS/A333	5107	97.89%	98.31%	5244	99.25%	99.37%
PAL/A21N	9885	97.97%	98.98%	12414	97.36%	98.90%
PAL/A321	25732	92.46%	94.19%	30392	92.65%	94.07%
XAX/A333	8200	97.90%	98.67%	7052	97.89%	98.49%

2.6   The ADS-C performance by aircraft operator/type for January-June 2024 shows that 15 aircrafts operators/types, or 9.55% of total aircraft operators were below the RSP180 criteria. For July-December 2024, the ADS-C performance shows that 20 aircraft operators/types, or 12.74% of total aircraft operators were below the RSP180 criteria.

2.7   **Table 2** shows that the three aircraft operators with the highest message count CPA/A333, CPA/B77W, and PAL/A321, were consistent in below performance throughout the year. However, the cause of their poor performances is yet to be verified with them. Noticeably, there were more aircraft operators that were under the RSP180 criteria in the second half of the year most likely due to negative ADS-C issues in the last quarter 0f 2024 onwards.

2.8   Manila upgraded its TopSky software from version R_1.14.8.1_1_0 to R_22.2.14.0_3 as recommended by Thales in September 2024. The negative ADS-C issue which was only known while investigating CPDLC logon issues that started on 4th quarter of 2024 and were rectified via patch provided by Thales on February 2025.

2.9   The improvement to ADS-C in the new version is not clear since ATCs do not report ADS-C issues since then. However, the patch which increases the btp_window parameter in our AGDLC configuration file did manage to resolve negative ADS-C and CPDLC logon issues. Close coordination

between the engineers and ATCs were encourage so as to extinguish any negative effect of the patch provided.

MANILA FIR CPDLC RCP240 Performance – Media Type, RGS and GES

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

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

FIR		RPHI				
Criteria		RCP240				
Period		Jan-Jun 2024				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% <= 180sec	% <= 120sec	% <= 210sec	% <= 150sec	%< 60secs
By Media Type						
SATCOM	10210	99.13%	99.84%	99.42%	99.85%	91.57%
VHF	10742	98.24%	98.68%	98.46%	98.79%	95.18%
VS	162	96.53%	97.82%	96.72%	97.94%	81.69%
HV	272	83.30%	76.47%	86.40%	85.13%	78.68%
ALL	23358	98.30%	98.69%	98.56%	98.87%	94.50%
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	Type	(RGS/GES with message counts >100)				
APK1	SAT	4797	97.31%	97.68%	97.53%	97.85%	93.43%

Designator	Type	Message Counts	ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	PORT %< 60secs
APK1	SAT	4797	97.31%	97.68%	97.53%	97.85%	93.43%
BKI	VHF	101	98.38%	99.33%	98.55%	99.46%	96.16%
CEB	VHF	279	99.93%	100.00%	100.00%	100.00%	93.64%
DVO	VHF	481	98.78%	99.67%	98.84%	99.73%	97.71%
H16	HV	126	84.59%	78.41%	87.30%	85.98%	80.16%
IG1	SAT	856	96.81%	99.95%	98.36%	100.00%	80.61%
KHH	VHF	187	97.42%	97.01%	97.47%	97.12%	96.63%
LAO	VHF	1970	97.23%	96.85%	97.33%	97.13%	95.69%
MNL	VHF	766	98.77%	98.98%	98.88%	99.10%	97.54%
SYX	VHF	126	82.32%	82.19%	82.97%	83.72%	81.35%
XXP	SAT	521	98.43%	99.14%	98.86%	99.18%	92.51%

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

FIR			RPHI				
Criteria			RCP240				
Period			Jul-Dec 2024				
Colour Key: Meets Criteria (green), 99.0%-99.84% (yellow), Under Criteria (red)		Message Counts	95% Benchmark		99.9% Benchmark		95%
			ACP	ACTP	ACP	ACTP	PORT
			% < =180sec	% <= 120sec	% < = 210sec	% <= 150sec	%< 60secs
By Media Type							
SATCOM		20791	99.42%	99.95%	99.56%	99.97%	94.62%
VHF		19526	98.28%	98.49%	98.49%	98.63%	95.51%
VS		312	98.03%	99.76%	98.69%	99.81%	79.33%
HV		440	84.55%	75.68%	87.39%	82.33%	77.27%
ALL		44358	98.44%	98.63%	98.65%	98.81%	95.25%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(RGS/GES with message counts >100)					
APK1	SAT	9594	97.58%	97.54%	97.75%	97.70%	94.43%
H06	HV	110	87.18%	69.55%	89.82%	76.93%	82.73%
H16	HV	244	84.43%	78.14%	88.32%	85.34%	76.23%
IG1	SAT	1755	97.83%	99.87%	98.78%	99.94%	83.99%
IGW1	SAT	706	96.88%	99.70%	97.65%	99.86%	87.96%
IOR5	SAT	383	98.18%	99.59%	98.30%	99.78%	92.95%
ISG1	VHF	126	98.77%	99.63%	98.93%	99.77%	93.65%
KHH	VHF	327	96.38%	96.57%	96.53%	97.04%	95.73%
LAO	VHF	2916	96.97%	96.61%	97.40%	96.90%	95.87%
MNL	VHF	1558	98.77%	98.90%	98.96%	98.98%	97.37%
PPS	VHF	1179	97.88%	98.60%	98.17%	98.93%	95.82%
SYX	VHF	351	85.94%	86.68%	86.56%	87.21%	80.20%

2.11 For **Table 3A**, the CPDLC performance by RGS for the period January-June 2024 shows that 12 RGS, or 30% of total RGS failed in the ACP 99.9% benchmark in which two stations (H16 and SYX) totally failed in all criteria. For **Table 3B**, the CPDLC performance by RGS for the period July-December 2024 shows that 13 RGS, or 32.5% of total RGS failed in the ACP 99.9% benchmark, same station as with the first half of the year (H06, H16, and SYX) totally failed in all criteria. Under media type, HV consistently failed in all criteria for the whole year while VHF and VS failed in the 99.9% benchmark and SATCOM and VS failed in the 95% PORT.

2.12 The cause of the underperformance of the RGS maybe affected by the planned and unplanned degradation of the ground stations. SITA sends timely advisories through email. Outages of RGS in the Philippines especially the MNL, MNL2, MNL8, DVO1, and SFS1, were reported to have an accumulated timeout for hours. But the cause of poor performance of SYX which failed all criteria and had the poorest performance among all stations other than HF based stations is yet to be determined.

But with regard to Manila's connection to SITA, it was recorded an interruption on April, May, August, November, and December 2024.

2.13　　　　Manila will continue to monitor advisories from SITA via email and gather data for RCP low performance. Also, Manila will ensure that the PMNL routers to SITA are well maintained that the link to SITA servers is monitored and that immediate reporting to SITA is done in the event of failed connections with its third-party communication link provider.

MANILA FIR CPDLC RCP240 Performance – Aircraft Operator/Type

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

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

FIR	RPHI				
Criteria	RCP240				
Period	Jan-Jun 2024				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% <= 180sec	% <= 120sec	% <= 210sec	% <= 150sec	%< 60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
ABL/121N	117	97.70%	100.00%	98.24%	100.00%	86.32%
ANA/B789	862	98.89%	98.64%	98.98%	98.75%	97.42%
ANA/B78X	137	94.12%	95.46%	94.90%	96.16%	93.47%
CAL/A359	830	94.10%	92.77%	94.54%	93.77%	92.53%
CPA/A333	267	96.08%	100.00%	96.86%	100.00%	84.64%
CPA/B77W	496	97.35%	99.96%	98.59%	100.00%	85.55%
CSN/B789	1737	95.75%	95.68%	96.06%	96.35%	93.96%
PAL/A321	270	97.83%	99.90%	97.95%	100.00%	94.26%
PAL/A333	250	96.89%	99.80%	97.02%	99.92%	92.53%
QFA/A333	287	98.89%	100.00%	98.97%	100.00%	94.08%
SIA/A359	1384	94.67%	95.05%	95.16%	95.58%	92.73%
SIA/B78X	1076	96.68%	95.57%	96.96%	96.33%	95.07%

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

FIR	RPHI				
Criteria	RCP240				
Period	Jul-Dec 2024				
Colour Key / Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% <= 180sec	% <= 120sec	% <= 210sec	% <= 150sec	%< 60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
AAR/A21N	379	99.10%	100.00%	99.60%	100.00%	91.29%
AAR/A333	166	94.77%	96.18%	95.25%	96.36%	88.55%
AJX/B788	192	97.26%	96.85%	97.47%	97.11%	97.14%
ANA/B789	1731	98.74%	98.74%	98.77%	98.84%	97.42%
ANA/B78X	214	96.85%	96.14%	96.96%	96.74%	95.00%
CAL/A359	1300	93.24%	91.02%	93.64%	91.74%	91.62%
CBJ/A332	435	96.32%	96.12%	97.91%	96.39%	94.02%
CSC/A359	177	96.11%	94.04%	96.47%	95.80%	93.79%
CSN/A333	743	96.62%	96.14%	96.83%	96.46%	94.62%
CSN/B789	2365	96.14%	94.93%	96.44%	95.60%	94.29%
CXA/B789	436	97.48%	96.73%	98.21%	96.64%	96.59%
FDX/B77L	132	94.28%	96.49%	94.54%	96.61%	91.76%
HVN/B78X	175	97.86%	98.00%	97.92%	98.10%	94.97%
KAL/A21N	175	97.65%	100.00%	98.53%	100.00%	90.60%
PAL/A333	286	97.06%	99.88%	97.16%	99.97%	91.38%
QTR/B77W	226	93.98%	100.00%	94.80%	100.00%	86.58%
SIA/A359	2721	95.69%	95.14%	95.96%	95.80%	93.38%
SIA/B78X	2031	96.28%	96.12%	96.61%	96.73%	93.75%
TGW/A21N	197	94.92%	100.00%	96.20%	100.00%	82.23%
XAX/A333	514	98.25%	100.00%	98.34%	100.00%	92.22%

2.15   For **Table 4A**, the CPDLC performance by aircraft operator/type for the period January-June 2024 shows that 15 aircraft operator/type, or 18% of the total aircraft operators failed in the ACP 99.9% benchmark. For **Table 4B**, the CPDLC performance by aircraft operator/type for the period July-December 2024 shows that 21 aircraft operator/type, or 25.3% of the total aircraft operators failed in the ACP 99.9% benchmark.

2.16   A lot of factors can affect poor CPDLC performances. Issues reported by ATCs are mostly software glitches, such as unable to open CPDLC window, frozen or unresponsive CPDLC tabs, CPDLC window not appearing, etc. These recurring issues were mostly resolved by relaunching ATC workstation application. It has also reported a lot of CPDLC logon issues that started fourth quarter of 2024.

2.17   As mentioned earlier, the short-term solution to immediately rectify software glitches was to relaunch the TopSky application. As a long-term solution, Manila upgraded its TopSky software from version R_1.14.8.1_1_0 to R_22.2.14.0_3 as recommended by Thales on September 2024. For the

CPDLC logon issues experienced since fourth quarter of 2024, Manila and Thales investigated and found out that the btp_window parameter of our AGP server abnormally read 0 and 1 values only which normally should be greater than 1. Thales then provided a patch in February 2025 that increases the parameter value in the AGDLC configuration file.

2.18   The patch did manage to solve the ADS/CPDLC logon issues. The new version improved other software issues but for the CPDLC functionality we encountered even additional issues such as CPDLC not disappearing from aircraft data blocks, pixels left upon closing windows. Manila will continue to collect data to monitor the effect of the version update for the CPDLC performance.

Additional Information

2.19   RGS stations that were determined to be under criteria were being raised to SITA, the communication service provider of Manila. However, SITA responded sometime that other stations does not belong to them and only presented the success rate report not the latency. This prompted a recommendation to the management regarding the service contract update to obliged SITA to provide not just the success rate report but individual RGS performance and latency report.

2.20   On the other hand, with regards to aircraft operator/type consistent furnishing of performance report to the management for our aircraft regulator/inspector to address failing aircraft type.

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 —