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 OF INDIA

(Presented by Airports Authority of India)

SUMMARY

This paper presents Data Link performance data for 2020 for the VOMF FIR and information on actions taken to identify and rectify the causes of performance issues.

1. INTRODUCTION

1.1 BOBASMA conducted the annual End-to-End Safety and system performance monitoring of the Chennai ATS Data link ground system in India for the period 1st January to 31st December 2020. **Tables 1 to 3** 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

ADS-C RSP180

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 VOMF FIR during 2020, where performance did not meet the RSP180 performance criteria.

FIR	VOMF					
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 Media Type						
SATCOM	165439	97.45%	99.05%	99643	98.07%	99.35%
VHF	76202	98.84%	99.43%	45679	99.42%	99.73%

HF		272	40.81%	57.35%	277	18.95%	34.61%
ALL		241913	97.82%	99.12%	145599	98.34%	99.34%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(only RGS/GES with message counts >100 recorded)					
APK2	SAT	14169	95.77%	98.06%	5309	97.10%	98.82%
EUA1	SAT	1103	94.25%	98.14%	487	97.02%	98.99%
EUA2	SAT	854	92.74%	98.53%	272	94.39%	96.73%
IG1	SAT	595	80.34%	93.82%	436	81.08%	94.53%
IGW1	SAT	6556	94.57%	98.58%	1034	93.47%	98.82%
XXF	SAT	847	89.49%	96.75%	586	89.25%	96.61%
XXI	SAT	734	97.21%	98.05%	548	97.81%	99.30%
XXP	SAT	10548	94.17%	96.52%	8397	94.94%	97.38%
BTJ1	VHF	5925	97.60%	98.67%	2201	99.05%	99.20%
IXZ1	VHF	10866	96.95%	98.20%	5783	98.84%	99.48%
MLE1	VHF	124	100.00%	100.00%			

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

2.2 Both SATCOM and VHF performance met the 95% criteria and marginally satisfied the 99.9% criteria. The performance of HF data link did not meet both the 95% and 99.9% criteria. The degradation in the performance of ADC-C performance was mainly due to HF data link performing well below par.

2.3 The degradation in the performance of ADC-C performance was mainly due to HF data link performing well below par.

2.4 The Data Link Performance report of the Chennai data link ground system has been forwarded to the Communication Service Provider, SITA for investigation.

2.5 The ongoing pandemic situation has resulted in delays in collection and analysis of the data link data on a periodical basis and hence resultant delay in rectification of the poor performance. BOBASMA/AAI is in the process of resolving the issue in coordination with CSP,SITA.

VOMF 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 VOMF FIR during 2020, where performance did not meet the RSP180 performance criteria.

FIR	VOMF					
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)						
ABD/B744	507	94.61%	99.37%	474	94.23%	99.32%
AFL/B77W	137	85.77%	95.63%			

AIC/A20N	566	69.26%	77.34%			
AIC/B744	102	92.97%	98.64%			
AZG/B744	686	90.52%	97.74%	196	90.92%	99.26%
CES/A332	908	97.14%	98.47%	163	94.75%	96.58%
CLX/B744	1268	92.55%	95.50%	424	93.36%	97.04%
CPA/A333	2468	89.59%	92.83%	673	95.54%	97.81%
CPA/B744	5762	88.27%	93.13%	3418	88.33%	93.36%
CPA/B77W	2299	87.91%	95.08%	727	85.08%	94.09%
CSN/A333	1004	96.18%	97.65%			
ETD/B77L	947	97.18%	98.93%	342	98.40%	99.67%
ETH/B788	8839	96.42%	97.81%	4689	95.50%	97.12%
FDX/B77L	2787	95.44%	98.40%	1357	96.65%	98.80%
FIN/A359	363	99.46%	99.51%	141	98.61%	98.74%
GFA/A321	139	96.81%	98.59%			
GIA/A333	112	94.82%	95.37%			
GIA/B77W	1526	98.34%	99.18%	156	97.92%	98.76%
HDA/A333	519	93.64%	97.14%	225	92.44%	97.34%
KLM/B772	400	96.32%	98.77%			
MAS/A333	5339	97.72%	98.54%	3068	98.71%	99.28%
MMZ/B763	187	93.05%	99.56%			
N/GLF5	321	95.02%	98.20%	133	97.74%	99.75%
N/GLF6	354	92.20%	95.10%			
OMA/A333	2481	99.59%	99.79%	215	96.54%	98.08%
QFA/A388	369	97.57%	97.58%			
QQE/GLF6	295	97.65%	98.59%	155	100.00%	100.00%
QTR/B77L	5379	96.06%	98.48%	1858	98.04%	99.29%
QTR/B77W	28177	95.88%	98.36%	14140	97.24%	98.76%
SIA/B744	4222	97.09%	98.68%	2181	97.19%	98.68%
SLK/A320	998	95.06%	97.94%			
SVA/B744	1399	92.07%	97.24%			
T/GL5T	109	93.52%	96.56%			
THA/B772	2046	96.09%	98.87%			
THA/B773	332	91.93%	96.51%			
THY/A333	2317	96.94%	98.24%	468	97.93%	98.66%
THY/B77L	751	97.34%	98.93%	425	96.94%	99.04%
XAX/A333	2973	94.43%	97.31%	133	94.49%	97.12%

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

2.7 Out of 144 Aircraft Operator/Type combinations 38 combinations failed to meet RSP180 criteria. 13 combinations failed to meet both the 95% & 99.90% criteria.

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

2.8 The overall CPDLC performance per Media Type, RGS and GES for messages sent within the VOMF FIR during 2020, met the RCP240 performance criteria. However in few cases it was between 99.0% - 99.84%.

VOMF FIR CPDLC RCP240 Performance – Aircraft Operator/Type

2.9 **Tables 3** summarize overall CPDLC performance per Aircraft Operator/Type for messages sent within the VOMF FIR during 2020, where performance did not meet the RCP240 performance criteria.

FIR						
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 %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
CPA/B77W	163	97.55%	96.27%	97.76%	97.14%	99.23%

Table 3: VOMF FIR CPDLC Performance Latency per Aircraft Operator/Type – Jul-Dec 2020

2.10 Only one Aircraft operator/Type combination, CPA/B77W did not meet the RCP240 criteria.

2.11 The ongoing pandemic situation has resulted in delays in collection and analysis of the data link data on a periodical basis resulting in delay in rectification of the poor performance. BOBASMA/AAI is in the process of resolving all the issues related to data link performance in coordination with CSP, SITA.

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.

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