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Twelfth Meeting of the FANS Interoperability Team – Asia
(FIT-Asia/12)

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Agenda Item 6: Data Link-related ANS Deficiencies

AIR NAVIGATION DEFICIENCIES RELATING TO DATA LINK PERFORMANCE MONITORING AND ANALYSIS

(Presented by the Secretariat)

SUMMARY

This paper presents an update on the status of Asia/Pacific engagement in data link problem reporting through the FANS-CRA website, the status of performance analysis reporting to a recognized FIT, and APANPIRG Air Navigation Deficiencies in the ATM field relating to data link performance monitoring and analysis.

1. INTRODUCTION

1.1 The FIT-Asia Terms of Reference (TOR) require that it supports FIT-Asia participant States' compliance with ICAO Annex 11 – *Air Traffic Services* requirements and Global Operational Data-Link Document (GOLD) guidance for data-link performance.

1.2 The transition to Performance-Based Communications and Surveillance (PBCS) also require FIT-Asia to support and monitor participant States' compliance with new standards in Annex 6 – *Operation of Aircraft*, Annex 10 – *Aeronautical Telecommunications*, Annex 11 – *Air Traffic Services*, and in ICAO Doc 4444 – *Procedures for Air Navigation Services (PANS-ATM)*, as well as the guidance provided in Doc 9869 – *PBCS Manual*.

1.3 Air Navigation Deficiencies are raised to share among States information about deficiencies in a transparent manner, and to assist States to define their implementation priorities and to indicate remedial action required. Information on deficiencies from the Air Navigation Deficiencies database is provided to APANPIRG meetings for review under its terms of reference to, *inter alia*, make detailed assessment of the safety impact of the deficiencies as shown and propose remedial action required by States, for subsequent review by the Air Navigation Commission and Council.

2. DISCUSSION

Asia/Pacific CRA Website Registration and Data Link Problem Reporting

2.1 Monitoring, reporting and analysis of data-link performance and problems is essential for the achievement and maintenance of system performance required for the application of performance based separation. The introduction of ICAO standards and recommended Practices (SARPS) for Performance-Based Communications and Surveillance (PBCS), applicable from November 2016 but

with regional implementation from March 29 2018, requires that States fully engage in programs of data link problem reporting, and performance monitoring and analysis.

2.2 **APANPIRG Conclusion 24/24: ADS-C and CPDLC Problem Reporting and Analysis** requested States to register on the FIT-Asia website (formerly <http://www.ispacg-cra.com>, now <http://fans-cra.com>) by 31 December 2013, report problems relating to ADS-C and CPDLC to the Central Reporting Agency (CRA) utilizing the FIT-Asia website, and ensure the CRA analysis was reported to FIT-Asia.

2.3 To support APANPIRG tracking of CRA engagement and data link performance monitoring and analysis activities for all Asia/Pacific Administrations, IPACG and ISPACG were requested to provide information on the FIT-IPACG and FIT-ISPACG Administrations that were registered on the CRA, had submitted problem reports to the CRA, and had provided data link monitoring analyses to the FIT.

2.4 **Table 1** summarizes the Asia/Pacific administrations that have either implemented ADS-C/CPDLC, or are known to be expected to do so under the Asia/Pacific Seamless ATM Plan, and their FIT-Asia CRA registration status.

Administration	Data-Link (ADS-C/CPDLC) Service Status	Seamless ANS Expectation (Nov 2015)	CRA Registration
Australia	Implemented	YES	YES
China	Implemented	YES	YES
Fiji	Implemented	YES	N/K
France (Polynésie Française)	Implemented	YES	YES
India	Implemented	YES	YES
Indonesia	Implemented	YES	YES
Japan	Implemented	YES	YES
Malaysia	Implemented	YES	YES
Myanmar	Implemented	YES	YES
Maldives	Implemented	YES	YES
Papua New Guinea	<i>Implemented?</i>	YES	YES
Philippines	Implemented	YES	YES + SEASMA*
New Zealand	Implemented	YES	YES
Singapore	Implemented	YES	YES + SEASMA*
Sri Lanka	Implemented	YES	YES
USA	Implemented	YES	YES
Viet Nam	Implemented	YES	YES + SEASMA*
* <i>The South East Asia Safety Monitoring Agency (SEASMA) provides CRA service for Philippines, Singapore and Viet Nam.</i>			

Table 1: FIT-Asia ADS-C/CPDLC Implementation and CRA Registration Status.

2.5 **Table 2** lists the number of problem reports and performance analysis reports submitted by Asia/Pacific Administrations in 2022 (calendar year), and including those reported by FIT-IPACG and FIT-ISPACG.

State	# PR 2022 (to 20 July)	Performance Analysis Reports to FIT
Australia	3	YES
China	0	YES ¹
Fiji	0	YES
France (Polynésie Française)	0	YES
India	4	YES ²
Indonesia	0	YES ³
Japan	3	YES
Malaysia	0	YES ⁴
Myanmar	0	YES
Maldives	0	NO
Papua New Guinea	0	NO
Philippines ⁵	0	YES
New Zealand	4	YES
Singapore	0	YES
Sri Lanka	0	YES
USA	1	YES
Viet Nam	0	YES

Table 2: Asia/Pacific CRA Registration and Activity (calendar year) and Performance Analysis Reporting status.

2.6 While most States providing data link services provided performance data to FIT, few provided any information on their analysis of the data, or on any action taken to investigate and rectify data link performance and non-compliance issues, or to evaluate the need for withdrawal of PBCS-dependent separations where performance fails to meet RCP and/or RSP specifications. The meeting is reminded of the applicable Annex 11 standard, and **Conclusion RASMAG/23-2: PBCS Action List for ANSPs** (drafted by FIT-Asia/8 in 2018):

Annex 11 3.3.5.2: Where RCP/RSP specifications are applied, programmes shall be instituted for monitoring the performance of the infrastructure and the participating aircraft against the appropriate RCP and/or RSP specifications, to ensure that operations in the applicable airspace continue to meet safety objectives. The scope of monitoring programmes shall be adequate to evaluate communication and/or surveillance performance, as applicable.

Conclusion RASMAG/23-2: PBCS Action List for ANSPs

That, the PBCS Action List for Air Navigation Service Providers (ANSPs) provided at Appendix C to the Report be uploaded to the the ICAO Asia/Pacific website to provide guidance in the steps for analysis and reporting of PBCS performance problems.

¹ Lanzhou and Urumqi FIRs

² Chennai and Kolkata FIRs.

³ Ujung Pandang FIR.

⁴ Kuala Lumpur FIR.

2.7 ICAO Doc 9869 *PBCS Manual* Chapter 4 and Appendix D provides detailed guidance on compliance with RCP/RSP specifications, and continued operational compliance through PBCS monitoring programmes and corrective action.

ANS Deficiencies Relating to Data Link Performance Monitoring and Analysis

2.8 APANPIRG/26, held in September 2015, agreed to the following Conclusion:

Conclusion APANPIRG/26/25 – ANS Deficiencies Relating to Data Link Performance Monitoring and Analysis

That, an Air Navigation Deficiency should be raised against non-implementation of the provisions of Annex 11 Paragraph 2.27.5 when any FIT-Asia administration has implemented operational ADS-C/CPDLC services and:

- a) *has not made arrangements for the reporting and analysis of data link problems to a competent CRA as identified by the Regional Airspace Safety Monitoring Advisory Group (RASMAG); or*
- b) *does not report data link problems to the CRA; or*
- c) *does not provide data link problem analysis reports to a recognized FANS Interoperability/Implementation Team (FIT); or*
- d) *does not provide data-link performance analysis reports to a recognized FIT.*

2.9 The reference to Annex 11 paragraph 2.75 has been updated in the ANS Deficiency List to refer to paragraphs 2.29 (Safety Management) and 3.3.5.2 (RCP/RSP monitoring programmes).

2.10 **Attachment A** provides the relevant excerpt of the APANPIRG ATM and Airspace Safety Deficiencies list as updated by APANPIRG/32 in December 2021. The information in the deficiency list is based on the information provided (or not provided) to FIT-Asia by States, and the information provided to and by the FIT-Asia CRA, IPACG FIT and ISPACG FIT.

2.11 The following deficiency remain current:

Maldives: Problem reports not provided to CRA. Performance monitoring and analysis not reported to FIT.

India: Performance monitoring and analysis not reported for Mumbai FIRs.

2.12 The meeting is invited to note that future assessment of data link-related deficiencies will take into account the requirement for continuous monitoring of performance against RSP 180 and RCP 240 criteria, where performance-based separations requiring PBCS are in place, and appropriate analysis and corrective action to ensure communications and surveillance performance continues to support the application of performance-based separation minima.

2.13 The meeting is also invited to note that, while there has been considerable improvement in State submission of performance analysis reports to FIT in recent years, few States provide information on action taken to determine the causes of data link performance issues, and the corrective action taken.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) note and discuss the need for further development of State data link performance

monitoring programmes to ensure datalink performance issues are appropriately analyzed and corrective action taken;

- c) agree to the proposed amendment to the list of Air Navigation Deficiencies; and
- d) discuss any relevant matters as appropriate.

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Excerpt - ATM and Airspace Safety Deficiencies List – Updated 3 December 2021 (APANPIRG/32)

Identification		Deficiencies			Corrective Action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
Data Link Performance Monitoring and Analysis Requirements of Annex 11 paragraph 2.29 and/or 3.3.5.2 not met.								
	India	Post-implementation monitoring not implemented	5/6/2017	Performance monitoring and analysis not reported for the Mumbai FIR.	Performance monitoring and analysis reported for Chennai FIR and Kolkata FIR only. Delhi FIR N/A.	India	TBD	A
	Maldives	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.		Maldives	TBD	A