



International Civil Aviation Organization

The Fourth Meeting of the Future Air Navigation Systems Interoperability Team-Asia (FIT-Asia/4)

Bangkok, Thailand, 25-26 May 2015

Agenda Item 4: Data Link Guidance Material

OPERATIONAL SIGNIFICANCE OF 99.9% PERFORMANCE CRITERIA

(Presented by the Secretariat)

SUMMARY

This paper presents information responding to A task raised in the FIT-Asia Task List, relating to the significance of the 99.9% data link performance criteria.

1. INTRODUCTION

1.1 FIT-Asia Task 3/1 required the Secretariat to seek appropriate expert advice on the operational significance of the 99.9% data link performance criteria, and what can be done in cases of Actual Communication Performance (ACP), Actual Communication Technical Performance (ACTP) and ADS-C Downlink Latency “just” failing to meet the standard.

2. DISCUSSION

Datalink 99.9% Performance Criteria

2.1 The Global Operational Data Link Document (GOLD) in its overview of data link operations, states the following:

2.1.1.2 In addition, in airspace where procedural separation is being applied, the data link services improve communications, surveillance and route conformance monitoring to support operational capabilities that enable:

- a) Reduced separations, for example, in addition to navigation performance requirements, the following reduced separations require FANS 1/A aircraft, FANS 1/A ATSU, RCP 240 and RSP 180;
 - 1) 50 NM longitudinal separation;
 - 2) 30 NM longitudinal separation;
 - 3) 30 NM lateral separation;

2.3 GOLD Appendix B – **RCP Specifications** provides Required Communication Performance (RCP) specifications for RCP 240 and RCP 400. RCP continuity and availability requirements for the RCP expiration time (ET) are specified as follows:

RCP ET	Continuity	Availability
240	0.999	0.999
400	0.999	0.999

2.4 GOLD Appendix C – **RSP Specifications** provides Required Surveillance Performance Specifications (RSP) for RSP 180 and RSP 400. RSP continuity and availability requirements for the RSP overdue delivery time (OT) are specified as follows:

RSP OT	Continuity	Availability
180	0.999	0.999
400	0.999	0.999

2.5 The *Guidance Material for the Asia/Pacific Region for ADS/CPDLC/AIDC Ground Systems Procurement and Implementation* was adopted by APANPIRG under **Conclusion 18/5 - Adopt Guidance Material for the Asia/Pacific Region ADS/CPDLC/AIDC Ground Systems Procurement and Implementation**. Appendix C to the guidance material provides the regionally adopted performance criteria for RCP 240 and RCP 400. These performance criteria were subsequently used in the drafting of the GOLD.

Response to Failure to Meet the 99.9% Performance Criteria.

2.6 GOLD Appendix D provides guidance for data link post-implementation monitoring and corrective action. It includes guidance on:

- a) **ANSP data collection and analysis** - This section defines a common data reporting format. Guidance material is included on how to obtain the required data points from the FANS 1/A ACARS and ATN B1 messages and on the calculation of actual communication performance (ACP), actual communication technical performance (ACTP), pilot operational response time (PORT), actual surveillance performance (ASP), and how they are calculated. Examples of the type of analysis that can be carried out at an ANSP level are also included. Issues regarding data filtering are discussed including guidance on how to manage this.
- b) **Problem reporting and resolution** – This section provides guidance on the problem identification and resolution process
- c) **Regional performance monitoring** – This section provides guidance on the monitoring of ADS-C actual surveillance performance and CPDLC actual communication performance at a regional level.

2.7 GOLD Appendix D paragraph D 2.4.7.5 **Setting guidelines** states:

D.2.4.7.5.1 In airspace where procedural separation is being applied, it has been observed that complete withdrawal of data link may not be required even if performance is observed to fall below the RCP240/RSP180 criteria. While safety services such as reduced separation standards requiring RCP240/RSP180 would be withdrawn the observed performance may still meet RCP/RSP400 criteria and the local safety assessment may also conclude that maintaining the data link connection is viable.

D.2.4.7.5.2 Some ANSP have set monitoring guidelines to assist with their data analysis. These include:

- a) If the performance observed for a fleet by monthly monitoring at the 99.9% level is better than 99.75% then the fleet is considered to meet the 99.9% performance level.
- b) Observed fleet performance consistently falling below 99.0% will be subject to CRA problem reports and investigation that will attempt to determine the cause of the degradation.

- c) Any monthly performance degradation (0.5%) by a fleet below observed historical performance will be subject to investigation.

2.8 It should be recognized that FIT-Asia States that have provided data link performance reports to the meeting, and use or intend to use data link to support RNAV10/RNP10 or RNP4-based separations, have generally been reporting against the RCP 240 and RSP 180 criteria defined in GOLD. It should be further noted that these performance monitoring criteria support the performance objectives of the Asia/Pacific Seamless ATM Plan relating to the implementation of RNP-based separations in Category R¹ airspace. To further support the performance objectives of the Seamless ATM Plan, and to ensure consistency of performance monitoring, analysis and reporting and CRA problem reporting among FIT-Asia States, the meeting is invited to consider the following Draft Conclusion:

Draft Conclusion FIT-Asia/4-X – Data Link Performance Guidelines

That, FIT-Asia States are urged to:

- a) Monitor data link performance against the RCP240 and RSP180 criteria specified in Appendix B of the Global Operational Data Link Document (GOLD); and
- b) apply the guidelines specified in the Global Operational Data Link Document (GOLD) Appendix D Paragraph D.2.4.7.5.2 to determine whether fleet performance either:
 - i. Meets the 99.9% performance level; or
 - ii. Requires submission of CRA problem reports and/or investigation that will attempt to determine the cause of the degradation.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) consider the Draft Conclusion related to Data Link Performance Guidelines; and
- c) discuss any relevant matters as appropriate.

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¹ The Asia/Pacific Seamless ATM Plan defines Category R airspace as remote en-route airspace within Air Traffic Services (ATS) communications and surveillance coverage dependent on a third-party Communication Service Provider (CSP)