



**THE FORTY-FIFTH MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/45)**

(Tokyo, Japan, 11 & 12 December 2019)

Agenda Item 6: CNS Issues

PBCS Non-Compliance Reporting

(Presented by the Federal Aviation Administration)

SUMMARY

This paper provides updates related to the activity in the regions to identify and report aircraft non-compliance through the monitoring prescribed by the performance-based communication and surveillance (PBCS) framework, in order to achieve continuous improvement of system efficiency and safety.

1. Introduction

1.1 **Annex 11, Air Traffic Services**, details the requirements for an air traffic service provider (ATSP) to establish a monitoring program in airspace where required communication performance (RCP) and required surveillance performance (RSP) are applied.

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.

Note.— Guidance material relating to RCP and RSP specifications and monitoring of communication and surveillance performance is contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

1.2 Correspondingly, **Annex 6, Operation of Aircraft**, details the requirements for the State of the operator for acting in with accordance with the PBCS monitoring programs (paragraph 7.1.5 from Part I is reproduced below, but related requirements are contained in Part I, paragraph 7.3.4, and Part II, paragraphs 2.5.1.9 and 2.5.3.5).

7.1.5 The State of the Operator shall ensure that, in respect of those aeroplanes mentioned in 7.1.3, adequate provisions exist for:

- a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, 3.3.5.2; and*
- b) taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RCP specification(s).*

1.3 ICAO Doc 9869, the PBCS Manual, Chapter 4, *Complying with an RCP/RSP Specification*, provides the necessary guidance for the ATSP and the State of the Operator to fulfil the Annex 11 and Annex 6 requirements noted above.

Section 4.2.2, *State safety oversight of an ANSP*:

4.2.2.4 *The State should ensure that the ANSP establishes a means to notify the operator and the State of the Operator or the State of Registry when the actual performance of the operator's fleet, taking into account different aircraft types/systems, does not comply with an RCP/RSP specification (refer to 4.5.3.11).*

4.2.2.5 *The State should ensure that the ANSP establishes a means to assess the risk of any non-compliance with the RCP/RSP specification and take appropriate action to correct the related deficiency and provide notification, as appropriate.*

4.2.2.6 *If the non-compliance cannot be satisfactorily corrected, the ANSP may continue to provide communication and surveillance services, but cease any ATM operation predicated on the RCP/RSP specification in the relevant airspace or as appropriate (e.g. cease an ATM operation involving a particular aircraft operator or an aircraft type/system within an operator's fleet).*

Section 4.2.3, *State safety oversight of an aircraft operator*:

4.2.3.6 *If the relevant PBCS monitoring programme provides notification that a particular aircraft operator does not comply with the RCP/RSP specification, the State of the Operator or the State of Registry should provide the aircraft operator with information on the non-compliance and corrective action with a predetermined timeframe based on the severity of the deficiency and magnitude of the solution.*

Note.— The relevant PBCS monitoring programme would provide such notification, in accordance with 4.5.3.11, after the non-compliance and recommended action has been confirmed with the aircraft operator that participated in the investigation.

4.2.3.7 *If the non-compliance cannot be corrected within the timeframe specified, the State of the Operator or the State of Registry may allow the aircraft operator to continue to use the communication and surveillance capabilities, but should restrict the aircraft operator from filing RCP/RSP capability and participating in ATM operations predicated on the RCP/RSP specification.*

Section 4.5, *Continued Operational Compliance — PBCS Monitoring Programmes*:

4.5.1.4 *The ANSPs should establish the policies and procedures for administering the regional PBCS monitoring programmes, including:*

- a) *formats and intervals of ANSP-monitored data provided to the regional PBCS monitoring programme;*
- b) *the extent to which the PBCS monitoring programme will manage problem reports, maintain data, and support analysis of ANSP-monitored data; and*

- c) *formats and intervals of reports provided by the PBCS monitoring programme to the ANSPs and other participants.*

4.5.2.6 *The ANSP should perform an analysis of ACP and ASP at an interval suitable to verify system performance, and enable continuous performance improvement by detecting where specific infrastructure, aircraft operator fleet, aircraft type, or individual aircraft is not meeting the RCP/RSP specification.*

Note.— Typically, an ANSP will conduct its analysis on data taken at monthly intervals. However, the specific interval will depend on local factors, such as volume of data accumulated and confidence level in the stability of performance over time.

4.5.3.11 *The regional PBCS monitoring programme should notify appropriate parties when the operational system does not meet the RCP/RSP specification, including:*

- a) *the relevant ANSP, when the non-compliance concerns a subsystem of the infrastructure, including the CSP, under its control; and*
- b) *the relevant operator and the State of the Operator or the State of Registry when the non-compliance concerns the operator, or any aircraft type or individual aircraft within its fleet.*

2. Discussion

Asia-Pacific region updates

2.1. The Twenty-fourth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG) was held in Bangkok, Thailand from 9 to 12 July 2019. RASMAG/24 conclusions that required State action. Of particular interest is Conclusion 24-2: Continuous Data Link Performance Monitoring.

Conclusion RASMAG/24-2: Continuous Data Link Performance Monitoring

That, States providing ADS-C and CPDLC services are urged to undertake the following actions, in accordance with ICAO Docs 9689 - PBCS Manual and 10037 - GOLD

Manual, and the Asia/Pacific PBCS Action List for ANSPs:

- 1. Continuously monitor data link performance;*
- 2. Conduct monthly data link performance analyses on a rolling three-month basis, and report problems and significantly poor performance to the CRA and RMA in accordance with the Asia/Pacific PBCS Action List for ANSPs;*
- 3. Take steps to identify any local cause of poor performance identified in each monthly analysis;*
- 4. Compile monthly performance report data in reporting periods from January to June and July to December each year;*
- 5. Provide the compiled performance report data to the State responsible for the compilation and analysis of Regional aggregated data,*

6. Include narrative information on efforts made to determine the causes of poor performance, action taken to rectify poor performance, and the results of that action, in annual performance monitoring analysis reports to FIT-Asia; and

7. Make airframe and fleet performance data available on request to all Administrations for regulatory oversight purposes.

2.2. **Attachment A** contains the terms of reference for the Asia-Pacific RMAs, which have been updated to include responsibilities related to PBCS monitoring and compliance.

North Atlantic region updates

2.3. In the North Atlantic (NAT), the ATSPs have established a regional monitoring program through the Technology and Interoperability Group (TIG) to assess the data link performance in the NAT. On a semi-annual basis, regional monitoring reports are provided to the NAT implementation management group (IMG), and reports with combined performance results specific to fleets and airframes operating in the NAT are posted to the FANS-CRA website.

2.4. Conclusion 55/5 from the fifty-fifth meeting of the NAT Systems Planning Group (SPG) took steps to further the monitoring program in reporting and taking action for cases of identified non-compliance.

NAT SPG Conclusion 55/5 – Monthly PBCS reports to NAT CMA by the NAT ANSPs

That:

a) the NAT air navigation service providers (ANSPs) establish monthly Performance-based Communication and Surveillance (PBCS) reports to the NAT Central Monitoring Agency (CMA), by 1 July 2019, to identify fleets and aircraft that filed PBCS indicators at least once during the reporting period and were not meeting the 95% performance criteria for Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) 180, and report to the NAT CMA using a standardized format as provided in Appendix D;

2.5. The NAT TIG has been coordinating during and in between meetings to develop harmonized processes for detecting, investigating and reporting non-compliance according to NAT SPG Conclusion 55/5. During the eighth meeting of the NAT TIG, held 7-11 October 2019, there was significant discussion regarding some of the details of the process. The TIG analysts provided a working paper to the meeting detailing the lessons learned so far and some of the remaining challenges. The lessons learned include:

- a) There are some cases of non-compliance observed only in one NAT FIR based on origin and destination of the routes flown by the aircraft,
- b) There are cases of multiple aircraft within the same fleet observed as non-compliant due to the same apparent cause, with different airframes being observed from month to month but having the same issues on the routes flown,
- c) The most common cause of non-compliance is media transitions, including VHF/SAT and transitions between different satellites or different VHF stations,
- d) CPDLC transaction counts for individual aircraft are even more problematic in the smaller month and 3-month data sets, and

- e) Ambiguous wording in agreements led to different interpretations and thus different monitoring in every FIR.
- 2.6. **Attachment B** contains an excerpt from the NAT TIG/8 Summary of Discussions (paragraph 3.13) that captures the TIG inputs to the questions posed by the TIG analysts.
- 2.7. Also following up on this SPG conclusion, the twentieth meeting of the NAT Safety Oversight Group (SOG) established a Project Team to review and harmonize NAT ATSPs and States practices on notification of non-compliance through the NAT central monitoring agency (CMA). **Attachment C** provides the definition for this Project Team.
- 2.8. Due to lack of registered participants, particularly those with necessary regulatory expertise, this Project Team was delayed in beginning the work. During the NAT TIG/8 this matter was discussed extensively, which resulted in it being subsequently highlighted to the NAT Implementation Management Group (IMG) that this Project Team was of vital importance in resolving the open areas of the NAT non-compliance reporting process.
- 2.9. The Project Team has heretofore held two teleconferences with participation that includes ICAO EUR/NAT and IATA. The five questions listed below have been the focus of the discussions. A survey is being considered to solicit inputs to these questions from the NAT ANSPs and regulators.
- (1) What is the minimum data sample size being used to conclude on non-compliance?
 - (2) What is the reporting interval, e.g. one month, three months, six months, etc.?
 - (3) What is done with aircraft that operate in multiple FIRs and non-compliance is not detected in all FIRs?
 - (4) How and when is the RCP240/RSP180 authorization is impacted when a State receives a report of non-compliance?
 - (5) How the aircraft is expected to demonstrate resolution of the non-compliance once the corrective action has been taken?

3. Conclusion

- 3.1 The meeting is invited to note the information provided in the paper and the three attachments.