



International Civil Aviation Organization

**EIGHTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION
AND SURVEILLANCE SUG-GROUP (CNS SG/18) OF APANPIRG**

Asia and Pacific Regional Sub-Office, Beijing, China
(21 – 25 July 2014)

Agenda Item 5: Aeronautical Mobile Service (AMS)

- 5.1) Discuss RCP/RSP Implementation Framework
(APANPIRG Decision 24/33)

RCP/RSP IMPLEMENTATION FRAMEWORK

(Presented by Secretariat)

SUMMARY

This paper proposes an initial implementation framework of RCP/RSP across APAC Region in response to APANPIRG Decision 24/33 - APAC RCP/RSP Implementation Framework for discussion by the meeting.

1. INTRODUCTION

Background

1.1 In May 2013 a SIP Workshop on the Required Communication Performance (RCP) and Required Surveillance Performance (RSP) was conducted back to back with the CNS SG/17 meeting in accordance with APANPIRG Conclusion 23/24. The objective of the workshop was to better understand how to implement a performance-based framework for communications and surveillance (RCP and RSP) specified in the Global Operational Data Link Document (GOLD). It was understood that the RCP and RSP framework would initially apply to data link performance specifications and monitoring.

1.2 The CNS SG/17 meeting also recalled that IP/26 from USA recommended at APANPIRG/23 to adopt a draft Decision resulting from recommendation of SOCM/2 meeting on that matter. IP/26 called for inclusion of a RCP & RSP framework in the APANPIRG Sub-groups' work program. APANPIRG/23 did not adopt the Draft Decision, pending a better understanding of RCP and RSP and rather APANPIRG/23 adopted Conclusion 23/24 and 23/13 calling for a Seminar on data-link monitoring and a RCP/RSP Workshop.

1.3 Considering the positive feedback on the merits of RCP and RSP from the workshop and seminar, the meeting adopted the following Decision on RCP and RSP which would enable:

- a) States to prescribe RCP and RSP, for operators, aircraft systems and infrastructure, when applying separations predicated on such performance ;

- b) ANSPs to ensure infrastructure, including communication/satellite services, meets RCP and RSP allocations;
- c) Operators to obtain operational authorizations from State of Registry or State of the Operator for RCP/RSP operations, to ensure qualified flight crews, properly configured aircraft systems and participation in regional data link monitoring programs; and
- d) ANSPs to manage and support regional data link monitoring programs that identify substandard performance for appropriate action.

Decision 24/33 - APAC RCP/RSP Implementation Framework

That, APANPIRG Sub-groups include in their work program and implementation initiatives, consideration of the required communication performance (RCP) and required surveillance performance (RSP) framework.

1.4 While PBCS (performance based communication and surveillance) guidance is maturing and is expected to be delivered late 2014 by the Operational Data Link Panel (OPLINKP), there is a need to ensure that RCP and RSP will be defined, allocated, implemented and monitored in a uniform way across the different APANPIRG bodies and States/Administrations.

2. DISCUSSION

RCP/RSP concept ramifications

2.1 The ground/airborne communications performance and the surveillance performance are with the aircraft navigation performance clearly established by the ICAO Doc 9689 (ICAO methodology for the determination of Separation Minima) as the three factors conditioning the achievement of a given target level of safety (TLS) for a given traffic density.

2.2 The same document emphasizes the need to set system performance criteria (aircraft/ground equipment), implement changes in Air Traffic Management procedures, and to obtain operational approval from the appropriate aviation authority in accordance to the separation minima.

2.3 A RCP/RSP specification provides the basis to manage the performance of communication and surveillance capabilities. This is achieved by:

- developing a RCP/RSP specification for one or more the communication and surveillance capabilities supporting one or more ATM operations on a global basis; then
- applying a RCP/RSP specification related to one or more communication and surveillance system(s) supporting one or more ATM operations within that airspace; and
- complying with a prescribed RCP/RSP specification through initial approvals of the different system components and on-going State and regional monitoring programmes, which include operational assessments of the actual performance of communication and surveillance systems and corrective action.

2.4 The need for setting and maintaining a communication and surveillance performance is crucial in airspaces with procedural control methods and data-link capabilities as the variability of aircraft, equipment and procedures is greater. For example, monitoring agencies frequently report that the performance even varies between different aircraft of the same type. Even though the navigation performance has greatly increased in average, surveillance and communications performance matters as Large Height Deviations and more generally non conformances to ATC clearances are reported on a regular basis, and Air Traffic Control needs to maintain a sufficient buffer intervention to correct the situation. Therefore data-link applications involved in separation assurance, clearance request/delivery, weather deviations, position reporting and route conformance monitoring (based on CPDLC and ADS-C applications) are subject to RCP. Theoretically at least, VHF, HF and SATCOM voice capabilities are candidates as well.

2.5 While RCP is most commonly implemented in airspaces with procedural control methods and data-link capabilities, it is understood that RCP and RSP as such are stemming from the need to maintain a buffer intervention capability for the ATC commensurate with the separation standards, which relies in turn on human performance of pilots and air traffic controllers and technical performance of the systems used. This implies that RCP and RSP could also be established for airspaces under radar and/or ADS-B/MLAT/WAM surveillance. In view of the foregoing, there may be a need to review the regional provisions available for ADS-B performance specifications.

2.6 For the reasons developed above, the conduct by the ANSP of a safety case based on the establishment or change of separation minima is necessary, and may lead to more stringent requirements than global or regional provisions.

2.7 There would be a need to check if RCP 240 and RSP180 would be sufficient for all operational contexts in APAC region in line with the regional targets and the seamless plan v1.0 objectives, and if so, to allocate them to the regional ANS system, based on a method mixing a top/down approach and actual performance reports from RASMAG.

PBCS Framework and documentation

2.8 The current Doc 9869 Manual of RCP is being revised by OPLINK panel and renamed as the PBCS Manual with completion scheduled in October 2014.

2.9 The PBCS concept applies RCP and RSP specifications in any one or more of the following ways:

- Air traffic services (ATS) provision and prescription (in accordance with ICAO Annex 11, PANS, Doc 7030 and/or Aeronautical Information Publication (or equivalent publication)) of a RCP specification for a communication capability and/or a RSP specification for a surveillance capability, either of which is required for the ATS in a particular airspace;
- Operator authorization (under Air Operator Certificate, special authorization or equivalent, in accordance with ICAO Annex 6) of a communication and/or surveillance capability including aircraft equipage where RCP and/or RSP specifications have been prescribed for the communications and/or surveillance capabilities supporting the ATS provision; and

- State and regional monitoring programmes to assess actual communication and surveillance performance against RCP and RSP specifications and to determine corrective action, as applicable, for the appropriate entity.

2.10 A review of global existing provisions would be needed to identify those related to RCP and RSP, including Annex 11, ICAO Doc 4444, Manual on Required Communication Performance (RCP) (Doc 9869), and GOLD Edition 2. Eurocae ED-78A, ED-120 and ED-122 are of high interest for data-link applications.

2.11 The regional provisions would then be updated consistently and as required for a proper and uniform implementation.

Proposed scope of work

2.12 Based on the above, the bodies potentially concerned by the RCP/RSP work programme under APANPIRG would be:

Body	Proposed scope of work	Proposed priority
CNS SG and ATM SG	Confirmation that RCP 240 and RSP180 are sufficient Allocation of total RCP budget to technical and human components. Coordination of ad hoc recommendations to APANPIRG.	High
ACSICG	Allocation of RCTP (technical performance) to the different communications subsystems of the Air Navigation System Inclusion of RCTP/RSP into the work program (SWIM etc)	High
CRV TF	Implementation of RCTP and RSP in the scope of the aeronautical ground-ground CRV network	High
ADS-B SITF	Implementation and monitoring of RSP in ADS-B environments Review of regional provisions (including the baseline ADS-B Service Performance Parameters, September 2003) to assess the need for inclusion of RSP	Low
ATM SG	Definition of requirements on human performance (ATCO) in category R airspace, and means of oversight (surveys, etc) Assessment of the benefits and feasibility (ATC buffer intervention) to allocate such requirements in category S airspace	High
SRWG TF	Assessment of the benefits and feasibility to allocate a RCP to VHF and HF communications	Low
ATFM SG	Assessment of the benefits and feasibility to allocate a RCP to some of the ATFM exchanges (close-to-tactical exchanges only)	Low
RASMAG	Review and proposal of amendments of the regional provisions on Data-link monitoring against the GOLD Edition 2 RCP/RSP provisions	High
FIT Asia	Review and proposal of amendments of the regional provisions on Data-link against the GOLD Edition 2 RCP/RSP provisions Development and promotion of a template of MOU for data gathering and aggregation This should cover Asia-Pacific	High
<i>AIDC Task Force (envisaged)</i>	<i>Implementation of RCTP in the scope of the AIDC exchanges</i>	<i>High</i>
<i>OOG (envisaged)</i>	<i>Monitoring of RCP and RSP in the scope of the aeronautical ground-ground CRV network. In the future, if the intent to set up an OOG for overseeing the CRV Communication Service Provider is confirmed, OOG should monitor the RCP and RSP</i>	<i>High</i>

2.13 Development of work by RASMAG, FIT Asia and States proposed above would be done in line with the **Conclusion 24/25: En-Route Monitoring Agency Role and Tasks** adopted by APANPIRG: Considering the requirement for a defined process of monitoring airframe Required Communication Performance (RCP) and Required Surveillance Performance (RSP) compliance, and analysis of data-link performance affecting horizontal separation standards that utilise data-link, Asia/Pacific States should:

- a) in collaboration with RASMAG, assign an En-Route Monitoring Agency (EMA) for each FIR; and
- b) support the assigned EMA with the provision of information regarding -
 - i) observed aircraft horizontal navigation performance; and
 - ii) observed non-compliant data-link performance of individual aircraft; and
 - iii) aircraft data-link approvals, and
- c) recognise the potential benefit of EMAs in providing risk analysis to support horizontal separation implementation.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information about the implementation of RCP/RSP in APAC contained in this paper;
- b) discuss the proposed scope of work for APANPIRG bodies; and
- c) discuss any relevant matters as appropriate.
