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WORKING PAPER

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**Eighth Eastern Caribbean Network Technical Group (E/CAR/NTG/8) and  
Sixth Eastern Caribbean Radar Data Sharing Ad hoc Group (E/CAR/RD/6)**  
Saint George's, Grenada, 3 - 5 September 2018

**Agenda Item 7: Other Business**

**PERFORMANCE BASED COMMUNICATIONS AND SURVEILLANCE (PBCS)**

(Presented by the Secretariat)

<b>EXECUTIVE SUMMARY</b>	
This paper presents a review of performance-based communication and surveillance (PBCS), operative objectives, ICAO standards application and implementations requirements.	
<b>Action:</b>	The suggested actions are presented in Section 3.
<b>Strategic Objectives:</b>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>
<b>References:</b>	<ul style="list-style-type: none"><li>• <a href="http://www.icao.int">www.icao.int</a></li><li>• Doc 9869-<i>Manual on Required Communication Performance (RCP)</i></li><li>• Annex 6 - Operation of Aircraft</li><li>• Doc 4444 - Air Traffic Management.</li></ul>

**1. Introduction**

1.1 The Performance-Based Communication and Surveillance (PBCS) concept provides objective operational criteria to evaluate different and emerging communication and surveillance technologies, intended for evolving air traffic management (ATM) operations. The PBCS also provides a framework in which all stakeholders (regulators, air traffic service providers, operators, communication service providers (CSP), and manufacturers) continue to collaborate in optimizing the use of available airspace while identifying and mitigating safety risks.

1.2 PBCS concept is aligned with Performance-Based Navigation (PBN). While the PBN concept applies Required Navigation Performance (RNP) and Area Navigation (RNAV) specifications to the navigation element, the PBCS concept applies Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specifications to communication and surveillance elements, respectively. However, there are some differences between the PBCS and PBN concepts:

- PBCS concept applies RCP and RSP specifications, which allocate criteria to ATS provision, including communication services, aircraft capability, and the aircraft operator; whereas the PBN concept applies RNP/RNAV specifications, which allocate criteria only to the aircraft capability and the aircraft operator; and
- PBCS concept includes post-implementation monitoring programmes, on a local and regional basis, with global exchange of information; whereas the PBN concept includes real time monitoring and alerting functionality in the aircraft capability.

1.3 The PBCS concept provides a framework to apply RCP and RSP specifications to ensure acceptable levels of communication and surveillance capabilities and performance of an operational system. These specifications are applied using the following methods:

- prescription of an RCP specification for a communication capability and/or an RSP specification for a surveillance capability, either of which is required for air traffic services (ATS) provision in a particular airspace
- operational authorization to file the flight plan RCP/RSP capabilities including aircraft equipage where RCP and/or RSP specifications are prescribed for the communications and/or surveillance capabilities supporting the ATS provision
- local and regional monitoring programmes to assess actual communication and surveillance performance against RCP and RSP specifications, thereby determining corrective action, as applicable, for the appropriate entity

1.4 When RCP/RSP specifications are not prescribed, the ANSP may still apply appropriate RCP/RSP specifications to identify the continuing compliance criteria for PBCS monitoring programmes when employing new technology for communication and surveillance capabilities.

1.5 As of 10 November 2016, certain separation minima shall be applied only to those pairs of aircraft meeting required communication performance (RCP) and a required surveillance performance (RSP) specifications in accordance with provisions in:

- Annex 6 — *Operation of Aircraft*;
- Annex 11 — *Air Traffic Services*;
- Doc 4444 - Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM);
- Doc 7030 - *Regional Supplementary Procedures*.

1.6 Operators who wish to continue taking advantage of performance-based lateral and longitudinal separation standards, in airspace where there is availability, will need to obtain a PBCS operational authorization for applicable RCP and RSP specifications. This PBCS authorization will certify that the aircraft and operator meets both the communication and surveillance requirements allocated to them. This will require the State to have a PBCS policy based on the requirements of Annex 6 and guidance contained in Doc 9869. Attached to this working paper is PBCS Operational Authorization Guide\_V1.0\_Final.pdf and there are more details in the following State regulatory and/or implementation organizations:

- United States Federal Aviation Administration (FAA)
- New Zealand Civil Aviation Authority
- United Kingdom Civil Aviation Authority
- Transport Canada

## **2. Discussion**

2.1 The application of 30 NM and 50 NM longitudinal separation minima are predicated on C, N and S performance and PBCS provides global RCP/RSP specifications for communications and surveillance performance supporting this ATM function and RCP 240 and RSP 180 time criteria were derived from the separation standards for applying these separation minima, ICAO Document 4444.

2.2 The implementation of these facilities is done through the use of ADSC / CPDLC and satellite data links, which is why it is important that the ATC systems that implement it have ATM requirements for the correct management of information and compliance with the times and alarm systems required.

2.3 The aircraft that will use this facility must be certified that comply with the communications and surveillance requirements necessary for their use.

2.4 Finally, States must generate the necessary regulation for their use and implementation.

## **3. Suggested actions**

3.1 The Meeting is invited to:

- a) Take note of the information provided; and
- b) Agree to any other actions as deemed appropriate.