CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Advisory Circular
AC91-26

Revision 0
5 April 2026

Performance-based communication and surveillance

General

Civil Aviation Authority (CAA) Advisory Circulars (ACs) contain information about standards, practices, and procedures that the Director has found to be an **acceptable means of compliance** with the associated rule.

Consideration will be given to other methods of compliance that are presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate AC.

Purpose

This AC describes an acceptable means of compliance with Performance-based communication and surveillance (PBCS) requirements and the way these relate to flight planning and operations.

Related Rules

This AC relates to Civil Aviation Rule Parts 91.265 and 91.267.

It should be read alongside AC91-21, *Operational approvals – Performance-based navigation* and Notice of Requirement NTC 91.267.

Change Notice

Initial issue.

Version History

History Log

Revision No.	Effective Date	Summary of Changes
0	5 Apr 2026	Initial issue

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Overview

PBCS complements Performance-Based Navigation (PBN) in establishing a performance framework for Communications, Navigation and Surveillance (CNS) systems in support of specific Air Traffic Management (ATM) scenarios and operations.

These requirements apply to every operator of an aircraft operating under instrument flight rules using a PBCS.

The PBCS concept is aligned with that of PBN. While PBN applies required navigation performance (RNP) and required area navigation (RNAV) specifications to the navigation element, PBCS applies required communication performance (RCP) and required surveillance performance (RSP) specifications to communication and surveillance elements, respectively.

There are some differences between the two concepts:

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

Abbreviations

ACP: Actual Communication Performance
ADS-C: Automatic Dependent Surveillance – Contract
AFM: Aeroplane Flight Manual
ANSP: Air navigation service provider
AOC: Air Operator Certificate
ASP: Actual Surveillance Performance
ATM: Air Traffic Management
CNS: Communications, Navigation and Surveillance
CRAs : Central Reporting Agencies
CSPs : Communication Service Providers
FANS: Future air navigation systems
FANS 1/A: Future Air Navigation System – initial
MEL: Minimum Equipment List
PBCS: Performance-based Communication and Surveillance
PBN: Performance-Based Navigation
RCP: Required Communication Performance
RMA: Regional Monitoring Agency
RNAV: Required Area Navigation
RNP: Required Navigation Performance
RSP: Required Surveillance Performance
RVSM - Reduced Vertical Separation Minimum
STC: Supplemental Type Certificate
TC: Type Certificate

Definitions

FANS 1/A	A direct datalink communication between the pilot of an aircraft and ATC via FANS 1/A avionics and FANS 1/A ground end systems, based on EUROCAE ED-100A/RTCA DO-258A, or a later version as in force from time to time. *Note: References to FANS 1/A are taken to include FANS 1/A+.*

RCP 240 concept

RCP and RSP specifications are made up of certain performance-related parameters. An RCP specification is identified by a designator (e.g. RCP 240) which shows the maximum transaction time in seconds. Similarly, the RSP designator (e.g. RSP 180) indicates maximum data delivery time in seconds. There are other performance parameters attached to each RCP and RSP designator which include continuity, availability and integrity. See Figure 1 (below).

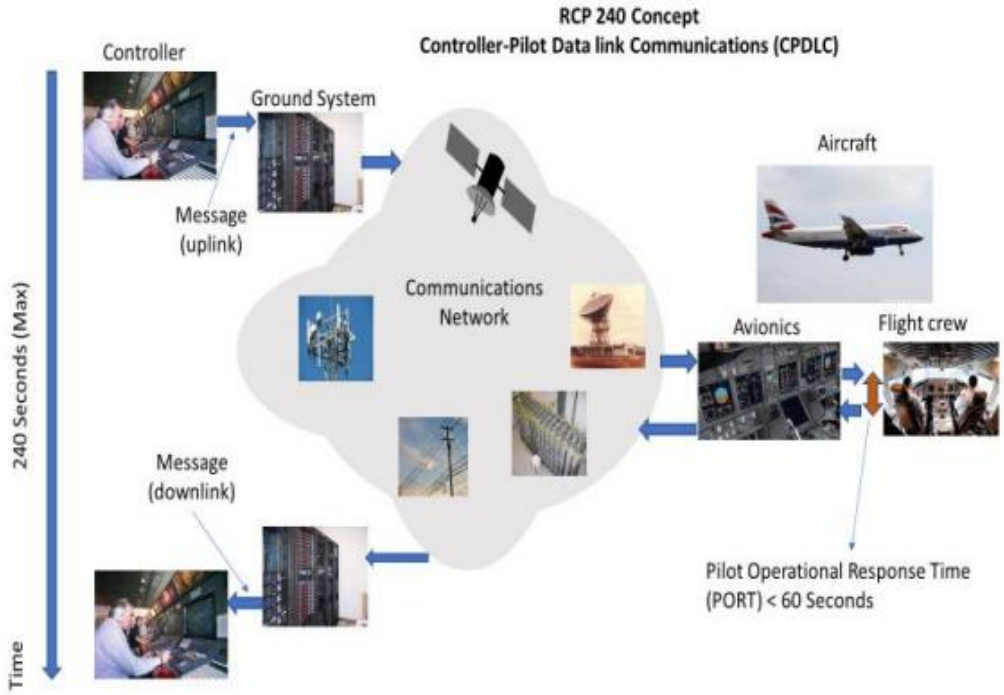

Figure 1- RCP 240 Concept[1]

RCP 240 maximum time allocations for various elements of the system are shown in Table 1. Flight crew can only feel and assess their own performance in terms of reading and responding to an ATC message within 60 seconds . Other time allocations and parameters are measured, tabulated and analysed by the air navigation service provider's (ANSP) data link monitoring system in airspace where it is prescribed.

All parameters of RCP 240 are shown in Table 2.

Table 1 - RCP 240 Time Allocations (combined uplink and downlink - in seconds)

Controller	ATS Ground System	CSP/Network	Avionics	Flight Crew	Continuity
30	15	120	15	60	99.9%
30	10	100	10	60	95%

Note: *The RCP allocation for the Communication Service Provider (CSP) is intended to help the ANSP and the aircraft operator develop contracts and service agreements. Further information can be found in ICAO Doc 9869.*

[1] The images are licenced under and credited to Creative Commons (https://creativecommons.org/licenses/by-sa/3.0/)

Table 2 - RCP 240 Parameters

Transaction time (in seconds)	Continuity	Availability	Integrity
240- Maximum	0.999	0.999	Malfunction 10^{-5} per flight hour
210- Nominal	0.95	Efficiency 0.9999 – see note	

Note: *The availability criteria are allocated entirely to CSP/Network and assume that the ATS unit's system is always available. Further information can be found in ICAO Doc 9869.*

RCP 180 concept

The concept of RSP 180, as applied to ADS-C, is shown in Figure 3. Since ADS-C is an automatic data link application, it doesn't involve flight crew and the reports are automatically generated by avionics based on a contract with the ATS ground system. The process starts when a report is generated, and it finishes when it is displayed to the controller.

Maximum time allocations for various elements of the ADS-C system are shown in Table 3. Time allocations and parameters of RSP 180 that are shown in Table 4, are measured, tabulated and analysed by the ANSP in airspace where it is prescribed.

Table 3 - RSP 180 Time Allocations (downlink in seconds)

Avionics	CSP/Network	ATS Ground System	Continuity
5 (maximum)	170 (maximum)	5 (maximum)	99.9%
3 (nominal)	84 (nominal)	3 (nominal)	95%

Note: *The RCP allocation for the CSP is intended to help the ANSP and the aircraft operator develop contracts and service agreements. Further information can be found in ICAO Doc 9869.*

Table 4 - RSP 180 Parameters

Data Delivery time (in seconds)	Continuity	Availability	Integrity
180 (maximum)	0.999	0.999	Navigation = FOM (based on Nav Spec) Time at Position Accuracy +/- 1sec (UTC) Data Integrity: Malfunction 10^{-5} per flight hour
90 (nominal)	0.95	0.9999 (efficiency – see note)	

Note: *RTCA DO-306/EUROCAE ED-122 specifies an availability value based on a safety assessment of the operational effects of the loss of the service. The availability value here is more stringent, based on a need to maintain orderly and efficient operations.*

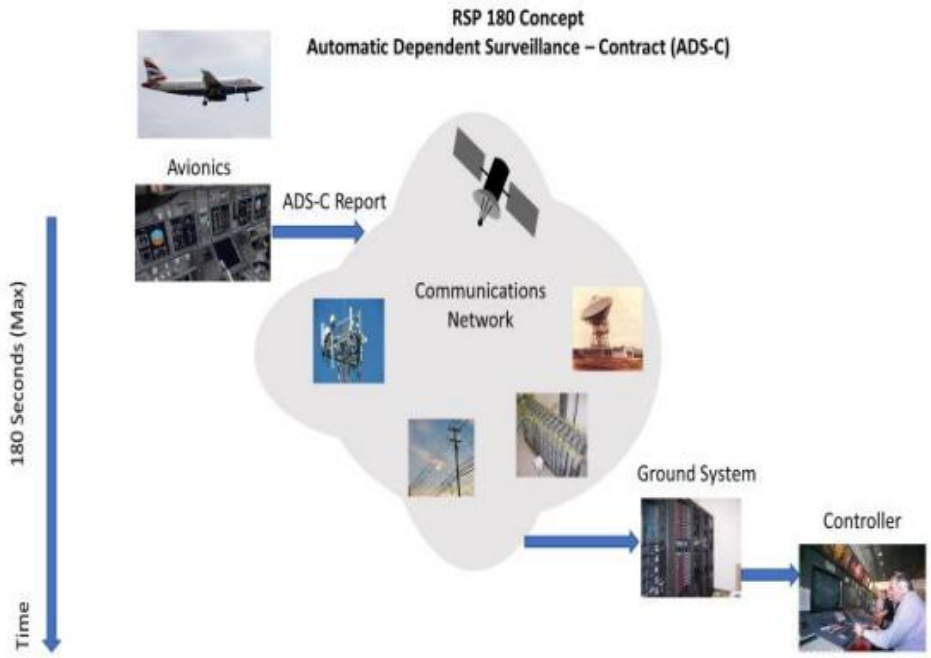

Figure 2- RSP 180 concept[2]

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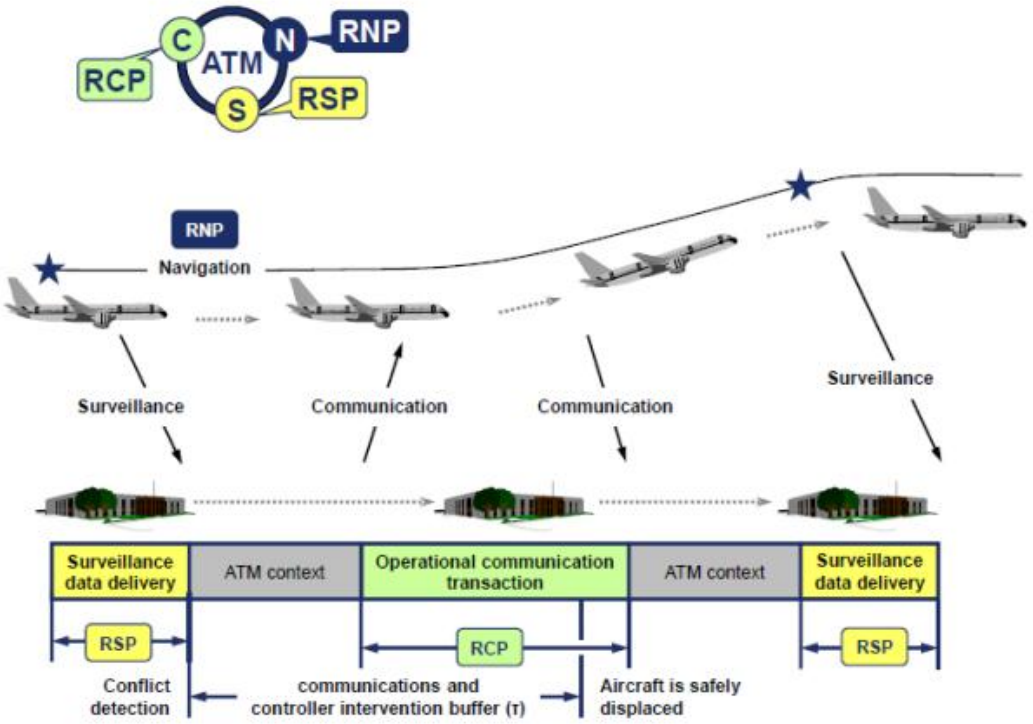

Figure 3 – Operational Use of an RSP and RCP specification[3]

Figure 3 shows an RCP and RSP being used during the provision of an ATS. The RSP defines the performance of the ongoing ATM surveillance, while the RCP is used when communicating instructions with the aircraft.

Requirements for demonstrating compliance

The demonstrated compliance with specific RCP/RSP specifications may be documented in one of the following documents:

- Type Certificate (TC)
- Supplemental Type Certificate (STC)
- Aeroplane Flight Manual (AFM), AFM Supplement, or other document(s) that is acceptable to the Director, or
- A compliance statement from the manufacturer, which has been approved by the State of Design and accepted by the State of Registry or the State of the Operator.

[3] Source: New Southern Sky – PBCS Implementation document - 40PBCS-Implementation-Document-v1.2.pdf

Note 1: *For a FANS 1/A CPDLC and ADS-C aircraft system, the Safety and Performance Requirements Standard for Air Traffic Data Link Services in Oceanic and Remote airspace (RTCA DO-306/EUROCAE ED-122) is equivalent to RCP240, RCP400, RSP180 and RSP400 contained in the PBCS Manual (Doc 9869, 2nd Edition).*

Note 2: *FAA AC20-140A or later satisfy the requirement for RCP240/400, RSP 180/400.*

Monitoring and troubleshooting

Ongoing monitoring of PBCS performance of aircraft, once they are approved, is central to PBCS. This ensures that aircraft maintain the ability to deliver suitable communication and surveillance performance for the ATS provided. If an aircraft or operator falls below the threshold, it may be redirected to a less consistent separation standard and/or routing that has less stringent communication and surveillance performance requirements.

In New Zealand, Airways currently monitors all controller pilot data link communications equipped aircraft in the Auckland Oceanic airspace, and reports this data to a Central Reporting Agency (CRA) for analysis. This data is available on the fans-cra.com website. Airways will review the content and frequency to ensure that reports are provided according to accepted international standards and submits the data to ICAO and CRA each year.

The monitoring programme also involves operators and CSPs finding the cause of substandard performance so that corrective action can be taken to improve performance. For example, individual airframes have shown significantly worse performance than the rest of an operator's fleet. The problem has been traced to installation issues or satellite provider misconfigurations.

The worldwide monitoring program, facilitated by CRAs, also maintains a list of recommended software versions for various aircraft, to address known issues.

Procedures for addressing non-compliance

Submit PBCS non-compliance report to designated RMA by 20th of every month (if falls on a weekend then the next available working day). (Refer to clause 3.1 of the draft PBCS notice-Requiements for demonstrating compliance and procedures for addressing non-compliance with PBCS)

Operator Requirements

Operators should establish a process to participate in local or regional PBCS monitoring programmes. The process should also address the actions to be taken with respect to problem reporting and resolution of deficiencies, such as:

- reporting problems identified by the flight crew or other personnel to the PBCS monitoring entities associated with the route of flight on which the problem occurred
- disclosing operational data in a timely manner to the appropriate PBCS monitoring entities when requested for the purposes of investigating a reported problem
- investigating and resolving the cause of the deficiencies reported by the PBCS monitoring entities.

Procedures for using FANS1/A CPDLC and ADS-C

Aircraft operators using FANS1/A CPDLC and ADS-C in the Auckland Oceanic FIR are required to register on the FANS —CRA) website at http:/www.fans-cra.com. This website is administered by Airways New Zealand.

The website provides a means for FANS1/A stakeholders to:

- Raise problem reports against the FANS1/A system
- View de-identified problem reports
- View problem report reports raised by the stakeholder or assigned to them by the regional monitoring authority, and
- View information on system performance.

Once the aircraft operator has created a login and can access the website, they should establish and maintain procedures acceptable to the Director for the regional monitoring and problem reporting programs, as listed below:

Data analysis

- Extract FANS1A analysis data for CPDLC and ADS-C using guidance provided in ICAO Doc 9869 PBCS Manual Appendix D.
- Filter extracted data FANS1A analysis data for CPDLC and ADS-C using guidance in PBCS Manual Appendix D.

- Monthly analysis of CPDLC RCP and ADS-C RSP.
- Investigate any performance degradation identified during monthly analysis

Reporting

- Report non-compliance with RCP/RSP specifications to CRA
- Support CRA non-compliance investigations
- Report any aircraft that are filing as PBCS-qualified but showing non-compliance with RCP and RSP 95% normal operating criteria to CAA and RMA/EMA
- Withdraw the use of performance-based separation minima requiring PBCS where aircraft data link performance is not compliant with RCP and RSP 95% operating criteria
- Compile PBCS RCP and RSP performance report for the year from January to December, following regional reporting guidelines, using the template provided on the Asia/Pacific Regional Office website. This must be submitted to the ICAO Secretariat by not later than 28 February each year to be included in the aggregated regional data reporting to FIT-Asia, RASMAG and APANPIRG.

Application

- Annual analysis of service availability to determine the impact of reported unplanned outages in airspace
- Local procedures and training to ensure operational staff log FANS1/A problems identified during operations to enable subsequent investigation
- Local investigation process for reported FANS1/A problems
- CRA website reporting of confirmed FANS1/A problems
- Sign up to Global PBCS Charter on CRA website.

References

ICAO

- Doc 9869, *Performance-Based Communication and Surveillance (PBCS) Manual*, 2nd Edition (2017)
- *Operational Authorization Guidance for Performance-based Communication and Surveillance (PBCS)*[4], January 2018 (Version 1.0).
- Doc 4444, *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM)

These publications are available from the ICAO store https://store.icao.int/

FAA:

- FAA AC20-140A - *Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS)*

https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_20-140B.pdf

CASA

- AC 91-06 - Performance-based communications and surveillance

AC 91-06 v1.1 - Performance-based communication and surveillance (PBCS)

CAA

- New Southern Sky – PBCS Implementation document - 40PBCS-Implementation-Document-v1.2.pdf

Other publications

- Attachment 1 Working Paper on PBCS Monitoring Guidance [NAT Doc 011 (EN) - Edition 1, Amd 2].pdf

4 This ICAO document aims to provide regulatory authorities and operators with a summary of guidance material contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869) and other State regulatory documents with respect to PBCS operational authorization. The latest version of this guide can be found at www.icao.int/airnavigation/pbcs.