



FOCA GM/INFO

Guidance Material / Information

Performance Based Communication and Surveillance in the ICAO North Atlantic Region



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List of Abbreviations

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Abbreviation	Definition	Abbreviation	Definition
ADS-B	Automatic Dependent Surveillance - Broadcast	OCA	Oceanic Control Area
ADS-C	Automatic Dependent Surveillance - Contract	OM	Operations Manual
ANSP	Air Navigation Service Provider	OTS	Organised Track System
ATC	Air Traffic Control	PANS	Procedure for Air Navigation Services
ATM	Air Traffic Management	PBC	Performance Based Communication
ATS	Air Traffic Service	PBCS	Performance Based Communication and Surveillance
CMA	Central Monitoring Agency	PBN	Performance Based Navigation
CNS	Communication Navigation Surveillance	PBS	Performance Based Surveillance
CPDLC	Controller Pilot Data Link Communications	RCP	Required Communication Performance
CSP	Communication Service Provider	RLatSM	Reduced Lateral Separation Minima
DLM	Data Link Mandate	RLongSM	Reduced Longitudinal Separation Minima
DLMA	Data Link Monitoring Agency	RMA	Regional Monitoring Agency
EASA	European Air Safety Agency	RNP	Required Navigation Performance
EC	European Commission	RSP	Required Surveillance Performance
FANS 1/A	Future Air Navigation System	SSP	Satellite Service Provider
FH	Flight Hours		
FL	Flight Level		
FOCA	Federal Office of Civil Aviation		
FOM	Figure of Merit		
GM/INFO	Guidance Material / Information		
GNSS	Global Navigation Satellite Systems		
MMEL	Master Minimum Equipment List		
MNPS	Minimum Navigation Performance Specification		
NAT	North Atlantic		
NAT HLA	North Atlantic High Level Airspace		

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0 Introduction

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Developments in aircraft avionics and air traffic management flight data processing systems resulted in an initiative to analyse whether the lateral separation standard in the current North Atlantic High Level Airspace (NAT HLA) could be reduced from 60 NM to 25 NM thereby increasing the number of route options available and capacity at optimum flight levels.

An ongoing trial implementation of 25 NM lateral separation, referred to as Reduced Lateral Separation Minimum (RLatSM), has established tracks that are spaced by one-half degree of latitude with the inclusion of an extra track between the core tracks of the NAT Organised Track System (OTS) from Flight Level FL 350 to FL 390.

Phase 2 will extend the trial to the whole OTS and is planned to commence by the end of 2017. A similar trial has been ongoing in the Shanwick Oceanic Control Area (OCA) with the aim to reduce longitudinal separation between aircraft following the same track to 5 minutes. This initiative is referred to as Reduced Longitudinal Separation Minimum (RLongSM). These trials will be terminated on 29 March 2018.

Note: However, the application of both reduced lateral and longitudinal separation will still be possible after 29 March 2018 with the introduction of Performance Based Communication and Surveillance (PBCS).

0.1 Legal References

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- ICAO Annex 6 Operation of Aircraft
- ICAO Annex 11 Air Traffic Services
- ICAO Doc 9869 Performance Based Communication and Surveillance (PBCS) Manual
- ICAO Doc 10037 Global Operational Data Link (GOLD) Manual
- ICAO Doc 4444 PANS ATM Manual
- ICAO Doc 7030 Regional Supplementary Procedures Manual
- NAT Doc 007 North Atlantic Operations and Airspace Manual

0.2 Purpose of this GM/INFO

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This GM/INFO provides basic guidance and information for operators using the North Atlantic High Level Airspace (NAT HLA). It should assist in the understanding of the PBCS requirements for an unrestricted use of the NAT HLA.

0.3 Scope

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This GM/INFO applies to air operators holding a Swiss Air Operators Certificate and also to Swiss private operators, both referred to as 'operator', which are looking to benefit from increased route options and optimum flight level allocation in the NAT Region based on PBCS requirements.

0.4 Terms and Conditions

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When used throughout the GM/INFO the following terms shall have the meaning as defined below:

Term	Meaning	Reference
<i>shall, must, will</i>	These terms express an obligation, a positive command.	EC English Style Guide: Ch. 7.19
<i>may</i>	This term expresses a positive permission.	EC English Style Guide: Ch. 7.21
<i>shall not, will not</i>	These terms express an obligation, a negative command.	EC English Style Guide: Ch. 7.20
<i>may not, must not</i>	These terms express a prohibition.	EC English Style Guide: Ch. 7.20
<i>need not</i>	This term expresses a negative permission.	EC English Style Guide: Ch. 7.22
<i>should</i>	This term expresses an obligation when an acceptable means of compliance is to be applied.	EASA Acceptable Means of Compliance publications FOCA policies and requirements
<i>could</i>	This term expresses a possibility.	http://oxforddictionaries.com/definition/english/could
<i>ideally</i>	This term expresses a best possible means of compliance and/or best experienced industry practice.	FOCA recommendation

Note: To highlight information or an editorial note a specific note box is used.

- The use of the male gender should be understood to include male and female persons.

1 Performance Based Communication and Surveillance (PBCS)

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1.1 Basic Information

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Performance Based Communication (PBC) and Performance Based Surveillance (PBS) refers to communication and surveillance based on performance specifications applied to the provision of air traffic services. The standards and procedures for an air traffic management (ATM) operation that are predicated on communication and surveillance capabilities, such as the application of reduced separation minima, must refer to the appropriate Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specification.

The RCP and RSP specifications are a set of requirements for air traffic service provision and associated ground equipment, aircraft capability and operations needed to support performance based communication and surveillance.

1.2 Extent and Time Frame

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Performance based operations and monitoring have been implemented in the North Atlantic (NAT) High Level Airspace (HLA) to ensure the ongoing safety and efficiency of ATM operations. The performance of FANS 1/A (and equivalent), Controller Pilot Data Link communications (CPDLC) and Automatic Dependent Surveillance – Contract (ADS-C) are monitored in the NAT HLA against the RCP 240 and RSP 180 specifications.

Note: From 29 March 2018 flights will be required to indicate compliance with the RCP 240 and RSP 180 specifications in order to qualify for reduced lateral and/or longitudinal separation minima.

Note: Initially, this will apply to the OTS from FL 350 to FL 390, but will be extended to the whole of the NAT HLA in due course. In the future, it is expected that RCP and RSP compliance will also be required in other airspaces.

2 RCP 240 and RSP 180

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2.1 Provision of PBCS

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The provision of PBCS in the NAT HLA applies RCP 240 and RSP 180 specifications. This permits ATC to apply 30 NM, 50 NM or five minutes longitudinal separation minima; and to apply 23 NM lateral separation minimum.

An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and the associated transaction time, continuity, availability, integrity and safety and functionality needed for the proposed operation in the context of a particular airspace concept. The following table shows the RCP 240 specification:

RCP Specification	RCP Transaction Time (seconds)	RCP Continuity (probability)	RCP Availability (probability)	RCP integrity (acceptable rate / FH)
RCP 240	240	0.999	0.999 0.9999 (efficiency)	10 ⁻⁵

An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and the associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data and safety and functionality needed for the proposed operation in the context of a particular airspace concept. The following table shows the RSP 180 specification:

RSP Specification	RSP Delivery Time (seconds)	RSP Continuity (probability)	RSP Availability (probability)	RSP integrity (acceptable rate / FH)
RSP 180	180	0.999	0.999 0.9999 (efficiency)	FOM=Navigation Specification Time at Position Accuracy +/- 1 Sec 10 ⁻⁵ (malfunction)

2.2 Stakeholders

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The Air Traffic Services (ATS) system, the Communications Service Provider (CSP), the Satellite Service Provider (SSP), the operator and the aircraft system must all comply with an RCP / RSP specification. The PBCS requirements for the design of the aircraft system have an impact on its functionality, interoperability and performance in accordance with national airworthiness standards. There are no additional PBCS requirements concerning the production and airworthiness certificates other than those required by national regulations.

3 Operator Eligibility

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3.1 Minimum Requirements

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Only those operators that satisfy the requirements of RCP 240 and RSP 180 will be eligible for the reduced separation minima in the NAT HLA. Minimum Navigation Performance Specification (MNPS) approval (issued prior to 1 January 2015) or NAT HLA approval remain a requirement. Operators will be eligible to indicate compliance with RCP 240 and RSP 180 provided that the aircraft are:

- a) Required Navigation Performance (RNP-4) capable;
- b) Automatic Dependent Surveillance – Contract (ADS-C) equipped; and
- c) Controller Pilot Data Link Communications (CPDLC) equipped.

3.2 Contracted Services

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The operator shall ensure that contracted services, such as CSP / SSP are bound by contractual arrangements stipulating the RCP / RSP allocations, including any monitoring or recording requirements.

The operator shall also ensure that contractual arrangements include a provision for the CSP / SSP to notify the appropriate ATS units of failure conditions impacting PBCS operations.

4 Formal Application

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4.1 General

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The formal application including Form 44.20, together with all relevant documents, the revised parts of the Operations Manual (OM) containing instructions and information regarding RCP / RSP, as a complete package, shall be submitted to FOCA.

4.2 Application of PBN, PBCS – Filling in Form 44.20

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For the application of the required navigation performance tick the box adjacent to “PBN / NAT HLA” and fill in the respective specific attachment.

To indicate the communication and surveillance performance tick the box adjacent to “DLS / FANS” and fill in the respective specific attachment.

4.3 Operational Approval

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The Operations Specification RCP / RSP shall be listed in the OM together with all operations specifications of the operator concerned.

4.4 Route Competence for RCP / RSP

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For flight crew members, the qualification “Route Competence for RCP / RSP” shall be declared in OM-A, Chapter 5.

4.5 Operating Procedures

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For operations, where an RCP / RSP specification is required, the operator shall establish and document the following requirements:

- a) Normal, abnormal and contingency procedures;
- b) Flight crew qualification and proficiency requirements, in accordance with appropriate RCP / RSP specifications;
- c) A training programme for relevant personnel consistent with the intended operations;
- d) Appropriate maintenance procedures to ensure continued airworthiness, in accordance with the required RCP / RSP specifications;
- e) Reporting procedure for any failure or malfunction of GNSS, ADS-C or CPDLC equipment;
- f) Procedures to participate in ANSP and regional PBCS monitoring programmes.

End of FOCA GM/INFO
