



International Civil Aviation Organization

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(NAT/CAR WG/3)

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Agenda Item 2: WATRS Plus Project Implementation Issues

PBN-BASED RNP 4 AUTHORIZATION JOB AID

(Presented by the United States)

SUMMARY

This Information Paper presents a Job Aid for operator/aircraft authorization for RNP 4. It contains references to the ICAO Performance Based Navigation (PBN) Manual. RNP 4 is an operator-option for application of 50 NM lateral separation in WATRS Plus Control Areas. 50 NM lateral separation will be applied to both RNP 10 and RNP 4 aircraft when the WATRS Plus project is implemented.

ICAO Strategic Objectives:

A: Safety – Enhance global civil aviation safety

D: Efficiency – Enhance the efficiency of aviation operations

E: Continuity – Maintain the continuity of aviation operations

Global Performance Indicators:

GPI-5 Performance Based Navigation

GPI-6 Air Traffic Flow Management

GPI-7 Dynamic and flexible ATS route management

GPI-8 Collaborative airspace design and management

1. Discussion

1.1 RNP 10 is the minimum navigation specification for the application of 50 NM lateral separation. RNP 4 is an option for eligible aircraft. 50 NM lateral separation will be applied to both RNP 10 and RNP 4 aircraft when the WATRS Plus project is implemented.

1.2. *PBN-based RNP 4 Authorization Job Aid for WATRS Plus Control Areas*

1.2.1 Job Aid Purpose. The purpose of the attached Job Aid is to provide an example that State regulators and operators can consider when developing documents to identify and track operator fulfilment of requirements to obtain RNP 4 authorization. This version is oriented to WATRS Plus. The Job Aid provides PBN Manual references for specific operator and aircraft RNP 4 requirements, the location of documents on the FAA WATRS Plus Webpage and FAA and ICAO contacts.

1.2.2 Current Edition. The most current edition of the Job Aid is posted in Section 2 of the FAA WATRS Plus Webpage. The WATRS Plus Webpage can be accessed through the Oceanic Operations Standards Homepage:

http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/oceanic/

2. Suggested Action

2.1 The Meeting is invited to review the PBN-based RNP 4 Job Aid and consider its application to RNP 4 eligible operators/aircraft operating in the WATRS Plus Airspace.

PBN-BASED RNP 4 JOB AID**OPERATOR APPLICATION TO CONDUCT RNP 4 OPERATIONS IN WATRS PLUS CTAs**

Introduction. This RNP 4 Job Aid was developed by the FAA Hq Flight Technologies & Procedures Division (AFS-400) to provide guidance to States, operators and inspectors on the process for operators to obtain RNP 4 authorization (approval) for operation on WATRS Plus Control Area (CTA) oceanic routes or areas. Application of 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 is planned to be introduced in WATRS Plus CTAs on 5 June 2008. The WATRS Plus CTAs are: the West Atlantic Route System (WATRS), the Atlantic portion of Miami Oceanic Airspace and the San Juan FIR. **(50 NM separation is currently applied in the Pacific, the South Atlantic and other global areas between aircraft authorized RNP 10 or RNP 4).**

Explanation of RNP 10 vs. RNP 4. RNP 10 is the minimum “Navigation Specification” required for the application of 50 NM lateral separation. **RNP 4 is an operator option.** A separate RNP 10 Job Aid is posted on the FAA WATRS Plus Webpage. “Navigation Specification” is a term used in the new ICAO Doc 9613 (ICAO Performance Based Navigation (PBN) Manual).

Important Explanatory Notes. See Part 1 “Notes on Issuing Commercial Operator Operations Specifications and IGA Letters of Authorization”.

Purposes of this Job Aid. The Job Aid:

1. Provides core RNP 4 reference documents for operators and inspectors.
2. Provides a series of tables that show: the content of an application, related reference paragraphs, location in operator application (documents/exhibits) where an RNP 4 element is addressed and columns for the inspector to comment on, and track the status of various RNP 4 program elements.

Job Aid Organization

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Recommended Inspector and Operator Actions. The following are suggestions on how the job aid can be used:

	Lead	Action
1	Inspector	Reviews the “Basic Events in the RNP 4 Approval Process” in Part 1 with the operator in the pre-application meeting to provide an overview of approval process events.
2	Inspector	Reviews this Job Aid with the operator to establish the form and content of the operator application for RNP 4 authority.
3	Operator	Uses the Job Aid as a guide to assemble documents/exhibits for its application for RNP 4.
4	Operator	Annotates Job Aid to show location of RNP 4 program elements in the operator exhibits/documents.
5	Operator	Submits Job Aid and RNP 4 operator application (exhibits/documents) to inspector.
6	Inspector	Annotates Job Aid to show task or document “complete/satisfactory” <u>or</u> “open/further operator action required” .
7	Inspector	Informs the operator as soon as possible, when further operator action is required.
8	Operator	Provides inspector, when requested, with revised material.
9	Inspector	Issues Operations Specifications (OpSpecs) or IGA Letter of Authorization (LOA), as applicable, to operator when required tasks and documents are completed.

PART 1 – GENERAL INFORMATION

Basic Events In RNP 4 Authorization Process

	Operator Actions	State Inspector Actions
1	Establishes need to obtain RNP 4 or RNP 10 authority for WATRS Plus CTA operation.	
2	Reviews Airplane Flight Manual (AFM), AFM Supplement or Type Certificate Data Sheet or other appropriate documents (e.g., Service Bulletins, Service Letters) to determine aircraft eligibility for RNP 4. Operator contacts airplane or avionics manufacturer, if necessary, to confirm airplane eligibility for RNP 4.	
3	Contacts State civil aviation authority to arrange a pre-application meeting to discuss requirements for operational approval.	
4		During pre-application meeting, establishes: • Form and content of operator application (exhibits/documents) supporting RNP 4 authorization. • Date prior to start of operations when operator application should be submitted for evaluation
5	Submits operator application (exhibits/documents) to appropriate State Authorities at least 60 days in advance of the planned start of RNP 4 operations, for operational approval.	
6		Reviews operator application (submissions).
7		Issues operational approval in the form of OpSpecs (Commercial) or IGA LOA, as appropriate, when airworthiness and operational requirements are fulfilled.

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WATRS PLUS WEBPAGE: Core Documents, Contacts, etc. The FAA “**WATRS Plus Webpage**” can be accessed from the FAA Oceanic and Offshore Operations Homepage:

<http://www.faa.gov/ats/ato/130.htm> or http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/oceanic/

Core ICAO Reference Documents	Subject or Title	WATRS Plus Webpage Location
ICAO Performance Based Navigation (PBN) Manual (new ICAO Doc 9613)	Vol. II, Part C; Chapter 1 (RNP 4);	Section 2, ICAO RNP Guidance and Documents
Pilot Procedures: In-flight Contingencies, Weather Deviation, SLOP	Extract From FAA Notice on ICAO Doc 4444 Procedures	Section 2 Operating Policy

*Core FAA Reference Documents	Subject or Title	WATRS Plus Webpage Location
FAA Order 8400.33 (as amended)	RNP 4 Operational Approval	Section 2, FAA RNP Authorization Policy & Procedures
Acceptable Nav System Configurations	Explanation of Dual Equipage Requirements	Section 2, FAA RNP Authorization Policy & Procedures
FAA Notice (to be posted by 31 Aug 07)	WATRS Plus Operational Policy & Procedures (to be applicable 5 June 2008)	Section 2 Operating Policy
FAA Inspector Guidance: FAA Notice 8000.340, Fig. 1.5.5	FAA Inspector Guidance on Operational Approval	Section 2 FAA Inspector Guidance
FAA Order 8400.12 (as amended). (RNP 10 Job Aid provided on WATRS Plus Webpage).	RNP 10 Authorization For Oceanic and Remote Areas.	Section 2, FAA RNP Authorization Policy & Procedures

***Note:** the FAA RNP 4 authorization process is in accordance with the ICAO PBN Manual. No action is required for operators and aircraft previously approved under FAA Order 8400.33 (as amended).

Example FAA IGA (FAA Part 91) Letters of Authorization (LOA): Operations Safety System (OPSS) Generated

1. OPSS LOA B036 (Operation in Required Navigation Performance Airspace)
2. OPSS LOA D098 (Flight in Special Areas of Operations For Short-term Operations)

Example FAA Operations Specifications (OpSpecs) Paragraphs

1. B036 (Class II Navigation Using Multiple Long-Range Navigation Systems (LRNS))
2. B054 (Class II Navigation Using Single Long-Range Navigation system): effective 5 June 2008, B054 will only be applicable for WATRS Plus operations when operating as a Non-RNP 10 aircraft. See FAA WATRS Plus Operational Policy & Procedures Notice on WATRS Plus Webpage for policy on operation of Non-RNP 10 aircraft after the 5 June 2008 project implementation.

PART 1 (cont.)

Notes on Issuing Commercial Operator Operations Specifications (OpSpecs) and IGA Letters of Authorization (LOA).

1. Responsible State Authority (FAA and ICAO Guidance).

- a. International Commercial Operators: The **State of Registry** makes the determination that the aircraft meets the applicable RNP requirements. The **State of Operator** issues operating authority (e.g., Operations Specifications (OpSpecs)).
- b. International General Aviation (IGA) Operators: **State of Registry** makes determination that aircraft meets the applicable RNP requirements and issues operating authority (e.g., Letter of Authorization (LOA)).

2. FAA Policies For Consideration

- a. Separate IGA Area of Operation LOAs. IGA (FAA Part 91) operators are **not required to be issued LOAs for individual areas of operations.** ICAO Annex 2, paragraph 2.3.2 and FAA LOA B036 require the operator to be responsible for policies/procedures applicable to individual areas of operation.
- b. An IGA (FAA Part 91) operator holding a current LOA showing RNP 4 authority does not have to re-apply for RNP 4 authority in WATRS Plus Control Areas.
- c. Inspector Action for IGA (FAA Part 91) Operators. **FAA inspector action is to “accept” RNP 4 related operations and airworthiness programs.** Formal “approval” is **not** required. (Reference FAA Order 8700.1, Chapter 3, paragraph 11).
- d. **An operator planning to obtain initial RNP 4 authority for WATRS Plus CTAs may apply for and be issued authority based on operational policies published and referenced in this Job Aid.**

Other Related ICAO Reference Documents

- 1. ICAO Annex 2 (Rules of the Air). See paragraphs 2.3 (Responsibility for compliance with the rules of the air) and 5.1.1 (Aircraft equipment).
- 2. ICAO Annex 6 (Operation of Aircraft), Part 1 (International Commercial Air Transport) and Part 2 (International General Aviation). See paragraph 7.2 (Navigation Equipment).
- 3. ICAO Doc 4444 (Procedures For Air Navigation Services – Air Traffic Management), paragraph 15.2 (Special Procedures For In-flight Contingencies In Oceanic Airspace)

PART 2: OPERATOR/AIRCRAFT IDENTIFICATION INFORMATION

OPERATOR NAME: _____

AIRCRAFT MAKE, MODEL, SERIES	# REGISTRATION NUMBER(s)	## SERIAL NUMBERS(s)	LONG-RANGE NAVIGATION SYSTEMS (LRNS): NUMBER, MANUFACTURER & MODEL	RNP TYPE REQUESTED (E.G., RNP 10, RNP 4)

##Note: may be provided separately in a form and manner acceptable to the inspector.

DATE OF PRE-APPLICATION MEETING _____

DATE APPLICATION RECEIVED: _____ DATE OPERATOR PLANS TO START RNP 10 OR RNP 4 OPERATIONS _____

NOTIFICATION TIME TO CAA ADEQUATE? ___YES ___NO

Note: Separate IGA (FAA Part 91) LOAs are not required to be issued for individual areas of operations.

PART 3:**CONTENT OF OPERATOR APPLICATION FOR RNP 4**

	<u>CONTENT OF OPERATOR APPLICATION FOR RNP 4</u>	ICAO PBN Manual, Part C, Chapter 1	Where Found in Operator Exhibits/Documents <u>Note:</u> operator should update this column to reflect the content of its application.	Inspector Recommendation and/or Comments	Inspector Tracking: Item Status and Date
1.	Operator Request Letter: statement of intent to obtain RNP 4 authority. (Recommended)	1.3.2	Exhibit A		
2.	Aircraft/Navigation System RNP 4 Eligibility Group. Airworthiness documents that establish the proposed aircraft/navigation system group, its RNP 4 approval status and, in a form acceptable to the inspector, a list of airframes in that group.	1.3.2.1 (Aircraft Eligibility)	Exhibit B, C, D, as applicable		
3.	Dual Equipage & GNSS (Global Navigation Satellite System) Requirement: GNSS required. At least two Long Range Navigation Systems (LRNS) with adequate display and functionality required.	1.3.3	Exhibit B, C, D, as applicable		
4.	a. Part 91 (General Aviation) Pilot Training or Knowledge. (e.g., operator in-house training, part 142 training center or other course of instruction). b. Part 121 or 135 Pilot and, if applicable, Dispatcher Training documents.	1.3.2.2.2; 1.3.5	Exhibit G		
5.	a. IGA (FAA Part 91) Operations Manuals or Documents. Operations Manual or section of operator's application documenting RNP 4 operational policies and procedures. b. Commercial (FAA Part 121 or 135) Operations Manuals and Checklists.	1.3.2.2.3; 1.3.4; Contingency, Weather, Strategic Lateral Offset Procedures (See Job Aid Parts 6 & 7).	Exhibit H		
6.	Maintenance Practices. For aircraft with established LRNS maintenance practices, provide document references. For newly installed LRNS, provide maintenance practices for review.	1.3.2.2.4 (second paragraph)	Exhibit E		

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#	<u>CONTENT OF OPERATOR APPLICATION FOR RNP 4</u>	<u>ICAO PBN Manual (Doc 9613) Vol. II Part C</u> <u>Reference Paragraphs:</u>	Where Found in Operator Exhibits/Documents <u>Note:</u> operator should update this column to reflect the content of its application.	Inspector Recommendations and/or Comments	Inspector <u>Tracking:</u> Item Status and Date”
7.	Minimum Equipment List (MEL) updates, if applicable. (Only applicable if operator conducts operations under an MEL).	1.3.2.2.4 (first paragraph)	Exhibit F		
8.	Removal of RNP 4 Operating Authority. Awareness of the necessity to follow up action after navigation error reports, and the potential for removal of RNP 4 operating authority.	1.3.7	Exhibit I		

PART 4: OPERATOR APPLICATION (EXHIBITS/DOCUMENTS)

Exhibit	Exhibit/Document Title	Operator Indication of Inclusion	INSPECTOR COMMENTS
A	(Recommended) Operator Letter Requesting RNP 4 Authority		
B	Aircraft Eligibility Group. Operator statement of RNP 4 Eligibility Group or Groups into which its aircraft/Long Range Navigation System (LRNS) combinations fall. See Job Aid Part 5.		
C	Aircraft airworthiness documents.....showing RNP 4 ... in accordance with ICAO PBN Manual, e.g., AFM, AFM Revision, AFM Supplement or Type Certificate Data Sheet (TCDS) showing that aircraft LRNS are RNP 4 eligible. (See Job Aid Parts 4 and 5).		
D	Aircraft Modified To Meet RNP 4 Standards.....documentation of aircraft inspection and/or modification. <u>If applicable</u>, maintenance records documenting installation or modification of aircraft/LRNS (e.g., FAA Form 337 (Major Repair and Alteration)		
E	Maintenance Program: for aircraft with established LRNS maintenance practices, provide list of document or program references. For newly installed LRNS, provide LRNS maintenance practices for review.		
F	Minimum Equipment List (MEL) (<u>only</u> for operators operating under an MEL): MEL or MMEL showing provisions for LRNS		
G	1. IGA (FAA Part 91) Operator Method of Pilot Training/Knowledge: operator in-house training, part 142 training center or other course of instruction. 2. Commercial Operator (FAA Part 121 or 135) Pilot &, if applicable, Dispatcher Training documents		
H	1. IGA (FAA Part 91) Operator Operations Manuals <u>or</u> Documents: Operations Manual <u>or</u> section of operator's application documenting RNP 4 operational policy/procedures. 2. Commercial (FAA Part 121 or 135) Operations Manuals		
I	Removal of RNP 4 Operating Authority. Awareness of necessity for timely, effective follow-up to navigation errors and potential for removal of RNP 4 authority.		

*SUBMISSION INCLUDES: ____ AIRCRAFT/LRNS COMPLIANCE DOCUMENTATION
 ____ OPERATIONAL POLICY/PROCEDURES
 ____ MAINTENANCE MANUAL SECTIONS RELATED TO LRNS (if not previously reviewed)

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PART 5 GUIDE FOR DETERMINING AIRCRAFT ELIGIBILITY

#	Subject	ICAO PBN Manual Vol. II, Part C Chapter 1 Reference Paragraphs:	Location in Operator Exhibits	FAA Recommendations/Comments	Inspector Tracking Item Status & Date
1	Aircraft eligibility group(s) to which operator aircraft belong	1.3.2.1	B, C, D, as applicable		
2	Requirement for at least dual Long Range Navigation System equipage	1.3.3	B, C, D, as applicable		
3	RNP 4 requirement for GNSS equipage	1.3.3	B, C, D, as applicable		
4	<u>Eligibility Group 1</u> – RNP Certification (RNP compliance documented in Airplane Flight Manual (AFM))	1.3.2.1a)	B, C		
5	<u>Eligibility Group 2</u> – Prior Navigation System Certification	1.3.2.1b)	B, C, D, as applicable		
a	GNSS as primary means of long range navigation.	1.3.3.2.1b) i	B, C, D, as applicable		
b	Multi-sensor Systems Integrating GNSS with integrity provided by RAIM	1.3.3.2.1b) ii	B, C, D, as applicable		
c	Multi-sensor Systems Integrating GNSS with integrity provided by AAIM	1.3.3.2.1b) iii	B, C, D, as applicable		
4	<u>Eligibility Group 3</u> – New Technology	1.3.2.1c)	B, C, as applicable		
5	Aircraft requirements	1.3.3			
a	System Performance, Monitoring and Alerting	1.3.3.1	B, C		
b	Functional Requirements and Explanation of Functional Requirements	1.3.3.2 1.3.3.3	B, C, D, as applicable		
6	Navigation Database	1.3.6	C, D, as applicable		

PART 6: BASIC PILOT PROCEDURES FOR RNP 4 OPERATIONS

#	Subject	<u>ICAO PBN Manual Vol. II, Part C Chapter 1 Reference Paragraphs</u>	Location In Operator Exhibits	FAA Recommendations/Comments	Inspector <u>Tracking</u> Item Status & Date
	Operating Procedures	1.3.4	Exhibits G and H		
1	Pre-flight Planning				
a	Verify aircraft long-range navigation systems (LRNS) required to meet <u>minimum</u> Navigation Specification (RNP) specified for the route or area is operational.	1.3.4. Pre-flight Planning	Exhibits G and H		
b	**Annotate ICAO Flight Plan block 10 (Equipment) with “R” and “Z” and annotate Item 18 with “NAV/RNP4” -If two approved LRNS not operational, delete the above annotations and operate in accordance with policy applicable to the airspace.	1.3.4 Pre-flight Planning **Flight Plan “Z” and Item 18 annotations are WATRS Plus area policy.	Exhibits G and H		
c	Review applicable contingency procedures	1.3.4 Preflight Planning			
2	As applicable, verify that Navaids, including GNSS requirements such as Fault Detection & Exclusion (FDE) are accounted for.	1.3.4 Availability of GNSS	Exhibits G and H		
3	Pre-flight Procedures at the Aircraft.				
a	Review maintenance logs and forms for LRNS status;	1.3.4 Pre-flight Planning	Exhibits G and H		
b	Confirm Navigation Database currency	Note under Pre-flight Planning	Exhibits G and H		

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#	Subject	ICAO PBN Manual Vol. II, Part C Chapter 1	Location In Operator Exhibits	FAA Recommendations/Comments	Inspector Tracking Item Status & Date
4	En route Procedures	1.3.4	Exhibits G and H		
a	Before oceanic entry point, verify two LRNS meeting the minimum RNP specified are operating. If not, notify ATC and operate in accordance with policy applicable to the airspace.	1.3.4 En-route	Exhibits G and H		
b	Before entering oceanic airspace, perform navigation accuracy check and position update (if necessary) using accepted method. See item 4 below.	1.3.4 En-route	Exhibits G and H		
c	Follow in-flight operating drills to to prevent inadvertent deviation from cleared routes.	1.3.4 En-route	Exhibits G and H		
d	Use flight director or autopilot in lateral deviation mode	1.3.4 En-route			
d	Advise ATC of loss of long-range navigation capability and operate in accordance with policy applicable to the airspace.	1.3.4 En-route	Exhibits G and H		

PART 7: IN-FLIGHT CONTINGENCY, WEATHER DEVIATION & SLOP (STRATEGIC LATERAL OFFSET PROCEDURES)

1. **Explanation:** The guidance cited below is not applicable to a specific lateral separation standard (i.e, it is not specific to 50 nm Lateral separation). It is applicable to general oceanic operations. An operator may have previously adopted the guidance for oceanic operations. **If so, the operator only needs to confirm that that is the case.**

2. **Webpage Reference:** see WATRS Plus Webpage, Section 2, Operating Policy: “Contingency, Weather Deviation and Strategic Lateral Offset Procedures”.

3. **ICAO Doc 4444:** FAA guidance reflects ICAO Document 4444, section 15.2 (*Special Procedures For In-flight Contingencies In Oceanic Airspace*).

#	Subject	# <u>Webpage Reference Document Paragraphs</u>	Location In Operator Exhibits	FAA Recommendations/Comments	Inspector <u>Tracking</u> Item Status & Date
1	Procedures For In-flight Contingencies In Oceanic Airspace		Exhibits G and H		
	Introduction (purpose of in-flight contingency procedures)	Introduction: paragraphs 1, 2	Exhibits G and H		
	General Procedures	General Procedures: Paragraphs 1-4	Exhibits G and H		
	Special Procedures For ETOPS Aircraft	ETOPS paragraph	Exhibits G and H		
2	Weather Deviation Procedures For Oceanic Operations		Exhibits G and H		
	General Procedures	Paragraphs 1-3	Exhibits G and H		
	Obtaining Priority From ATC When Weather Deviation Required	Paragraph 4	Exhibits G and H		
	Actions To Be Taken When Controller-Pilot Communications Are Established	Paragraph 5	Exhibits G and H		
	Actions To Be Taken If A Revised ATC Clearance Cannot Be Obtained	Paragraph 6	Exhibits G and H		

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#	Subject	# Webpage Reference Document Paragraphs	Location In Operator Exhibits	FAA Recommendations/Comments	Inspector Tracking Item Status & Date
3	Strategic Lateral Offsets Procedures (SLOP) In Oceanic Airspace		Exhibits G and H		
	Introduction (objective of SLOP)	Paragraph 1	Exhibits G and H		
	Guidelines For Offset Positions	Paragraph 2	Exhibits G and H		
	Guidance For Using SLOP	Paragraph 3	Exhibits G and H		
	SLOP Application In The San Juan FIR And Bermuda Airspace	Paragraphs 3(f) and 3(g)	Exhibits G and H		

PART 8 – FAA Notice: WATRS Plus Operational Policy & Procedures. Posted on WATRS Plus Webpage 27 Sept 07.

PART 9 – ICAO AND FAACONTACTS

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