RNAV 10 (DESIGNATED AND AUTHORIZED AS RNP 10) JOB AID

APLICATION TO CONDUCT RNP 10 OPERATIONS

1. Introduction

This Job Aid was developed by the Latin American Regional Safety Oversight Cooperation System (SRVSOP) to provide States, operators, and inspectors with guidance on the process to be followed by an operator in order to obtain an RNP 10 authorization. RNAV 10 maintains the designation RNP 10, as specified in ICAO Doc 9613 – Performance-based navigation (PBN) manual.

2. Purposes of the Job Aid

2.1 To give operators and inspectors information on the main RNP 10 reference documents.
2.2 To provide tables showing the contents of the application, the associated reference paragraphs, the place in the application of the operator where RNP 10 elements are mentioned and columns for inspector comments and follow-up on the status of various RNP 10 elements.

3. Actions Recommended for the inspector and operator

Some recommendations for use of the Job Aid follow:

3.1 At the pre-application meeting with the operator, the inspector reviews the “basic events of the RNP 10 approval process”described in Part 1 of this Job Aid, in order to provide an overview of the approval process events.
3.2 The inspector reviews this Job Aid with the operator in order to establish the form and content of the RNP 10 approval application.
3.3 The operator uses this Job Aid as a guide to collect the documents/annexes of the RNP 10 application.
3.4 The operator inserts in the Job Aid references showing in what part of its documents are the RNP 10 programme elements located.
3.5 The operator submits the Job Aid and the application to the inspector (documents/annexes).
3.6 The inspector indicates in the Job Aid whether an item is in compliance or needs corrective action.
3.7 The inspector informs the operator as soon as possible when a corrective action by the operator is required.
3.8 The operator provides the inspector with the revised material when so requested.
3.9 The CAA provides the operator with the operational specifications (OpSpecs) or a letter of authorisation (LOA), as applicable, when the tasks and documents have been completed.

4. Structure of the Job Aid

5. Main sources of documents, information and contacts

Advisory Circular CA 91-001 is available on the ICAO/SAM Regional Office web page (www.lima.icao.int) through the SRVSOP link.

6. Main reference documents

Reference Documents	Title
Annex 6	Operation of aircraft
ICAO Doc 9613	Manual on performance-based navigation
FAA Order 8400.12A	Required navigation performance 10 (RNP 10) operational approval
AMC 20-12	Recognition of FAA Order 8400.12A for RNP 10 operations
Spain DGAC CO 01/01	Aprobación operacional y criterios de utilización de sistemas para la navegación en espacio aéreo designado RNP 10
AMC 20-5	Acceptable means of compliance for airworthiness approval and operational criteria for the use of the NAVSTAR Global positioning system (GPS)
AC 20-130()	Airworthiness approval of multi-sensor navigational system for use in the U.S. National Airspace System
AC 20-138A	Airworthiness approval of Global navigation satellite system (GNSS) equipment
AC 25-4	Inertial navigation system (INS)
AC 25-15	Approval of FMS in transport category airplanes
AC 90-45A	Approval of area navigation systems for use in the U.S. National Airspace System

PART 1: GENERAL INFORMATION

Basic events of the RNP 10 approval process

	Action by the Operator	Action by the CAA
1	Establishes the need to obtain RNP 10 authorization.	
2	Reviews the AFM, AFM supplement or Type Certificate Data Sheet (TCDS), or other appropriate documents (*e.g.,* service bulletins (SB), service letters (SL), etc.) to determine the eligibility of the aircraft for RNP 10 operations. The operator contacts the aircraft or avionics manufacturer, if necessary, to confirm RNP 10 or better eligibility of the aircraft.	
3	Contacts the CAA to schedule a pre-application meeting to discuss the operational approval requirements.	
4		During the pre-application meeting, establishes: • the form and contents of the application; • the documents that support RNP 10 approval • the date in which the application will be submitted for evaluation • if necessary, conducts a validation flight observed by the CAA.
5	Submits the application at least 60 days before the start-up of RNP 10 operations.	
6		Reviews the operator submission
7	Once the amendments to manuals, programmes, and documents have been approved, provides training to flight crews, flight dispatchers, and maintenance personnel, and conducts a validation flight, if required by the CAA.	Only if required, participates in the validation flight.
8		Once the operational and airworthiness requirements have been met, issues the operational approval in the form of OpSpecs for LAR 121 or 135 or equivalent operators, or an LOA for LAR 91 or equivalent operators, as appropriate.

Notes related to the approval process

1. **Responsible authority**

   a. **Commercial air transport (LAR 121 and/or 135 or equivalent regulations).-** The **State of registry** determines that the aircraft meets the airworthiness requirements. The **State of the operator** issues the RNP 10 approval (*e.g.,* OpSpecs).

   b. **General aviation (LAR 91 or equivalent regulations).-** The **State of registry** determines that the aircraft meets the airworthiness requirements and issues the operational approval (*e.g.,* an LOA).

2. The CAA does not need to issue an LOA or an equivalent document for each individual area of operation in the case of LAR 91 operators.

3. LAR 121 and/or 135 operators with RNP 10 approval must list the individual areas of operation in the OpSpecs.

4. Related sections of the Latin American Aeronautical Regulations (LAR) or equivalent regulations

   a. LAR 91 Sections 91.1015 and 91.1640 or equivalents

   b. LAR 121 Section 121.995 (b) or equivalent

   c. LAR 135 Section 135.565 (c) or equivalent

5. Related ICAO Documents

   a. Annex 2 to the Convention on International Civil Aviation – Rules of the Air

   b. Annex 6 to the Convention on International Civil Aviation – Operation of Aircraft

   c. OACI Doc 9613 – Performance-based navigation (PBN) Manual

   d. OACI Doc 4444 – Procedures for air navigation services – Air traffic management.

   e. OACI Doc 7030 – Regional supplementary procedures

PART 2: INFORMATION ON THE IDENTIFICATION OF AIRCRAFT AND OPERATORS

NAME OF THE OPERATOR: _____

Aircraft manufacturer, model and series	Registration numbers	Serial numbers	Long-range navigation systems (LRNS) Number, manufacturer and model	RNP specification

DATE OF PRE-APPLICATION MEETING_____

DATE IN WHICH THE APPLICATION WAS RECEIVED_____

DATE IN WHICH THE OPERATOR INTENDS TO BEGIN RNP 10 OPERATIONS _____

IS THE CAA NOTIFICATION DATE APPROPRIATE? YES _____ NO _____

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PART 3 – OPERATOR APPLICATION (ANNEXES AND DOCUMENTS)

Annex	Title of Annex/document	Indication of inclusion by the operator	Comments by the Inspector
A	**Operator letter requesting RNP 10 authorization**		
B	**Group of aircraft** Statement by the operator as to whether the aircraft and LRNS combinations belong to a group or aircraft or not		
C	**Airworthiness documents showing aircraft eligibility for RNP 10.** AFM, AFM revision, AFM supplement, or Type certificate data sheet (TCDS) showing LRNS eligibility for RNP 10.		
D	**Aircraft modified to meet RNP 10 standards. Documentation on aircraft inspection and/or modification, if applicable.** Maintenance records documenting the installation or modification of LRNS and of the aircraft (*e.g.,* FAA Form 337 – major repairs and alterations).		
E	**For aircraft equipped only with INS or IRU: RNP 10 time limit and area of operations.** Documentation showing RNP 10 time limit and the area of operation or routes for which the navigation system/aircraft is eligible. (Not applicable for aircraft equipped with GNSS.)		
F	**Maintenance programme** • For aircraft with established LRNS maintenance practices, the list of references of the document or programme. • For recently installed LRNS, the maintenance practices for review.		
G	**Minimum equipment list (MEL) (only for operators conducting**		

Annex	Title of Annex/document	Indication of inclusion by the operator	Comments by the Inspector
	operations based on a MEL): MEL showing LRNS provisions.		
H	**Training** **1. LAR 91 operators or equivalent: Training method:** Training at home, LAR 142 training centres, or other training courses, course completion records. **2. LAR 121 and/or 135 operators or equivalent:** Training programmes (training curricula) for flight crews, flight dispatchers, and maintenance personnel.		
I	**Operating policies and procedures** **1. LAR 91 operators or equivalent:** Operations manual (OM) or sections to be attached to the application, corresponding to RNP 10 operating procedures and policies. **2. LAR 121 and/or 135 operators or equivalents:** Operations manual and checklists.		
J	**Past performance.** If any, previous problems, incidents, path-keeping errors, corrective action will be included.		
K	**Withdrawal of RNP 10 approval** Indication of the need to follow up on navigation error reports submitted and the possibility of withdrawal of RNP 10 approval.		
	Validation flight plan: Only if required by the CAA.		

CONTENTS OF THE APPLICATION TO BE SUBMITTED BY THE OPERATOR

____ **RNP 10 COMPLIANCE DOCUMENTATION OF THE AIRCRAFT/NAVIGATION SYSTEMS**

____ **OPERATING PROCEDURES AND POLICIES**

____ **SECTIONS OF THE MAINTENANCE MANUAL RELATED TO LRNS (if not previously reviewed)**

Note 1: Documents may be grouped in a single binder or may be submitted as individual documents.

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PART 4: CONTENTS OF OPERATOR APPLICATION FOR RNP 10

#	Contents of the RNP 10 application by the operator	Reference paragraphs CA 91-001	In what Annexes/Documents of the operator can the application contents be located Note: The operator must update this column to reflect the contents of the application	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
1	**Operator request letter** Statement of intent to obtain RNP 10 authorization.	Paragraph 9.1.1 b) 1) Appendix 2, Paragraph e)	Annex A		
2	**Aircraft/ navigation system RNP 10 eligibility method** Airworthiness documents that establish the aircraft/navigation system eligibility method, its approval status, and, in a format acceptable to the inspector, a list of airframes included in this method.	Paragraphs 8.2 and 8.3	Annex B Annex C		
2a	**Dual LRNS requirement** At least two LRNS with displays and functions suitable for oceanic operations are required.	Paragraph 8.1.1 Paragraph 10.2	Annex B Annex C		
3	**Time limit only for aircraft equipped with INS or IRU** RNP 10 time limit proposed or approved for	Paragraph 8.4	Annex B Annex C		

#	Contents of the RNP 10 application by the operator	Reference paragraphs CA 91-001	In what Annexes/Documents of the operator can the application contents be located Note: The operator must update this column to reflect the contents of the application	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
	aircraft with INS or IRU as the only source of long-range navigation (LRN). (Not applicable for aircraft equipped with GNSS.)				
4	**RNP 10 area of operation for aircraft equipped only with INS and IRU.** Documentation establishing the area of operation or RNP 10 routes for which the navigation system/aircraft is eligible. (Not applicable for aircraft equipped with GNSS.)	Paragraphs 10.5 and 10.9 (Paragraphs 10.10 and 10.11, as applicable)			
5	**Training** **1. LAR 91 operators or equivalent: Training methods:** The following methods are acceptable for these operators: Training at home, LAR 142 training centres, or other training courses. **2. LAR 121 or 135 operators or equivalent: Training programmes:** Operators will develop an initial and periodic training programme for flight crews, flight dispatchers, if applicable, and maintenance personnel.	Paragraph 12 b) Paragraph 12 a)	Annex F		

#	Contents of the RNP 10 application by the operator	Reference paragraphs CA 91-001	In what Annexes/Documents of the operator can the application contents be located **Note: The operator must update this column to reflect the contents of the application**	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
6	**Operating policies and procedures** **1. LAR 91 operators or equivalent:** Operations manual or section of the operator application documenting RNP 10 policies and procedures. **2. LAR 121 and/or 135 operators or equivalent:** Operations manual and checklists.	Paragraph 9.1.1 b) 6) (b) Paragraph 9.1.1 b) 6) (a)	Annex G		
7	**Maintenance practices** • For aircraft with established LRNS maintenance practices, the operator will provide document references. • For newly installed LRNS systems, the operator will provide maintenance practices for review.	Paragraph 8.5 b)	Annex D		
8	**Minimum equipment list (MEL) update** Applicable to operators conducting operations according to a MEL.	Paragraphs 8.5 a) and 9.1.1 b) 7)	Annex E		
9	**Past performance.** Performance record identifying previous problems, incidents,	Paragraph 9.1.1 b) 10)			

#	Contents of the RNP 10 application by the operator	Reference paragraphs CA 91-001	In what Annexes/Documents of the operator can the application contents be located Note: The operator must update this column to reflect the contents of the application	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
	track keeping errors and corrective actions.				
10	**Withdrawal of RNP 10 operating authority** Indication of the need for follow-up on the navigation error reports and the possibility of withdrawal of the RNP approval.	Paragraph 9. 3	Annex H		
11	**Validation flight plan, only if required** The validation flight plan will be presented only if required.	Paragraph 9.1.1 d)			

PART 5 – GUIDE FOR DETERMINING RNP 10 AIRCRAFT ELIGIBILITY

#	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
1	**Group aircraft definition**	Paragraph 8.2.1	Annex B		
2	**Dual long-range navigation system (LRNS)**	Paragraph 10.2	Annex B		
3	**Eligibility Method 1.-** Eligibility of aircraft through RNP certification (RNP compliance documented in the AFM).	Paragraph 8.3.1 a)	Annex B		
4	**Eligibility Method 2.-** Eligibility of aircraft through previous certification of the navigation system.	Paragraph 8.3.1 b)	Annex B		
4a	INSs or IRUs approved according to LAR 121, Appendix G (time limit 6.2 hours)	Paragraph 8.3.1 b) 4)	Annex B		
4b	INSs or IRUs approved for MNPS operations in the North Atlantic (time limit 6.2 hours)	Paragraph 8.3.1 b) 6)	Annex B		
4c	Obtaining of approval with extended time limit for aircraft equipped with INS or IRU systems.	Paragraph 8.4	Annex B		
4d	GNSS (*e.g.,* GPS) approved as primary means of navigation (AC 20-138 or equivalent)	Paragraph 8.3.1 b) 1)	Annex B		
4e	Multi-sensor systems into which the GNSS	Paragraph 8.3.1 b) 2)	Annex B		

#	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the inspector	Follow-up by the inspector: Item status and date
	(*e.g.*, GPS) is integrated (AC 20-130 or equivalent)				
4f	Equipment with a single GNSS and another approved LRNS (*e.g.*, INS or IRU)	Paragraph 8.3.1 b) 7)	Annex B		
5	**Eligibility Method 3 – Eligibility through data collection**	Paragraph 8.3.1 c)	Annex B		
5a	Sequential method	Paragraph 8.3.1 c) 2) (a)	Annex B		
5b	Periodic method	Paragraph 8.3.1 c) 2) (b)	Annex B		

PART 6 - BASIC PILOT PROCEDURES FOR RNP 10 OPERATIONS

	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
	Operating procedures	Paragraph 11	Annex G		
1	**Flight planning**	Paragraph 11.1 a)			
	Verifying if aircraft has been approved for RNP 10 operations	Paragraph 11.1 a) 1)			
	Verifying that two LRNS are operational	Paragraph 11.1 a) 2)			
	Verifying if the RNP 10 time limit has been taken into account (only aircraft equipped with INS or IRU)	Paragraph 11.1 a) 3)			
	Verifying the requirements for GNSS, such as FDE, if applicable to the operation	Paragraph 11.1 a) 4)			
	Verifying if the letter “R” has been inserted in Box 10 of the ICAO flight plan (also insert the letter Z in that same box, and NAV/RNP 10 in Box 18 for WATRS plus spaces)	Paragraph 11.1 a) 5)			
	If required, taking into account any operational restriction related to RNP 10 approval for a specific navigation system	Paragraph 11.1 a) 6)			

	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
	Verifying the planned flight route, including the deviation to any alternate aerodrome, in order to identify the existing RNP types	Paragraph 11.1 a) 7)			
2	**Pre-flight procedures**	Paragraph 11.1 b)			
	Review flight technical records (maintenance logs) to ascertain the conditions of the equipment required for flight in RNP 10 airspace or route. Ensure that maintenance actions have been taken to correct defects in the required equipment	Paragraph 11.1 b) 1)			
	During the external inspection of the aircraft, check the condition of the navigation antennas and the condition of the fuselage skin around each of these antennas (this can be done by a competent and authorised person other than the pilot, like, for instance, an on-board mechanic or a maintenance person)	Paragraph 11.1 b) 2)			
	Review the emergency procedures for operations in RNP 10 airspace or routes. These are not different from the normal oceanic emergency procedures, with one exception: crews must	Paragraph 11.1 b) 3)			

	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
	be capable of recognising, and the ATC must be notified, when the aircraft is no longer capable of flying at its capacity level according to the RNP 10 approval				
3	**En-route procedures**	Paragraph 11.1 c)			
	At the oceanic point of entry, at least two LRNS must be capable of navigating in RNP 10, otherwise, the crew will consider using an alternate route or initiating a deviation to repair the systems	Paragraph 11.1 c) 1)			
	Before entering oceanic airspace, aircraft position must be checked as accurately as possible using external navigation aids. This may require DME/DME or VOR checks to identify navigation system errors by comparing displayed and actual positions. If it is necessary to update the system, the appropriate procedures must be followed with the assistance of a prepared checklist	Paragraph 11.1 c) 2)			
	Operating procedures must include mandatory cross-check procedures in order to identify navigation errors in advance and	Paragraph 11.1 c) 3)			

	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
	prevent the aircraft from inadvertently deviating from the routes authorised by the ATC				
	Crews must notify the ATC of any degradation or failure of the navigation equipment below the navigation performance requirements, or of any deviation required for a contingency procedure	Paragraph 11.1 c) 4)			
	Pilots must use a lateral deviation indicator, an FD or an AP in lateral navigation mode (LNAV) for RNP 10 operations. All pilots are expected to follow the route centreline, as represented on the on-board lateral deviation indicators and/or flight guidance, during all RNP 10 operations, unless authorised by the ATC to deviate or due to an emergency. For normal operations, the cross-track error/deviation (the difference between the path estimated by the RNP system and the position of the aircraft relative to the path) must be limited to ± ½ the navigation precision associated with the flight route (*e.g.*, 5 NM). Small lateral deviations from this requirement are allowed (*e.g.*,	Paragraph 11.1 c) 5)			

	Topics	Reference paragraphs CA 91-001	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
	overshooting or undershooting the path) during or immediately after an en-route turn, up to a maximum of 1 times (1xRNP) the navigation precision (*e.g.*, 10 NM). ***Note.-*** *Some aircraft do not show or do not estimate a path during turns. Pilots of such aircraft may not be capable of meeting the ± ½ precision requirement during en-route turns; however, they are expected to meet interception requirements after the turn or in the straight segments.*				
4	**Update the LRNS position**				
	Impact of en-route updates	Paragraph 10.9			
	Update the automatic position (as applicable).	Paragraph 10.10			

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PART 7 - PROCEDURES FOR IN-FLIGHT CONTINGENCIES, DEVIATIONS DUE TO WEATHER CONDITIONS AND STRATEGIC LATERAL DISPLACEMENT

	Topics	CA 91-001 Reference paragraphs Doc 4444, Paragraph 15.2	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
Procedures			Annex G		
1	**Special procedures for in-flight contingencies in oceanic airspace**	CA 91-001, Paragraph 11.1 d) 2) (a) Doc 4444, Paragraph 15.2			
	Introduction	CA 91-001, Paragraph 11.1 d) 2) (a) (1) Doc 4444, Paragraph 15.2.1			
	General procedures	CA 91-001, Paragraph 11.1 d) 2) (a) (2) Doc 4444, Paragraph 15.2.2			
	Extended range operations by aeroplanes with two turbine power-units (ETOPS)	CA 91-001, Paragraph 11.1 d) 2) (a) (3) Doc 4444, Paragraph 15.2.2.4			
2	**Procedures for deviations due to weather conditions**	CA 91-001, Paragraph 11.1 d) 2) (b) Doc 4444, Paragraph 15.2.3			
	General aspects	CA 91-001, Paragraph 11.1 d) 2) (b) (1) Doc 4444, Paragraph 15.2.3.1			
	Measures to be taken when controller-pilot communications are established.	CA 91-001, Paragraph 11.1 d) 2) (b) (2) Doc 4444, Paragraph 15.2.3.2			
	Measures to be taken in order to obtain a revised ATC clearing.	CA 91-001, Paragraph 11.1 d) 2) (b) (3)			

	Topics	CA 91-001 Reference paragraphs Doc 4444, Paragraph 15.2	Location in the Annexes of the operator	Comments and/or recommendations by the CAA	Follow-up by the Inspector: Item status and date
		Doc 4444, Paragraph 15.2.3.3			
3	**Procedures for strategic lateral displacement in oceanic airspace and remote continental areas.**	CA 91-001, Paragraph 11.1 d) 2) (c) Doc 4444, Paragraph 15.2.4			

Contacts in the SRVSOP

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Job Aid RNAV 10 (designated and authorised as RNP 10)
Version: Original
Date: 12/10/2009