

RNAV 5 JOB AID

OPERATOR APPLICATION TO CONDUCT RNAV 5 OPERATIONS

1. Introduction

This job Aid was developed by the Regional Cooperation System for Safety Oversight (SRVSOP) to provide guidance to States, operators and inspectors on the process for operators to obtain an RNAV 5 authorization.

2. Purposes of this Job Aid

- 2.1 Provide RNAV 5 reference documents for operators and inspectors.
- 2.2 Provide a series of tables that show: the content of an application, related reference paragraphs, location in operator application where RNAV 5 elements are addressed and columns for the inspector to comment on, and track the status of various RNAV 5 elements.

3. Recommended inspector and operator actions

The following are suggestions on how the Job Aid can be used:

- 3.1 Inspector reviews the basic events in the RNAV 5 approval process in Part 1 with the operator in the pre-application meeting to provide an overview of approval process events.
- 3.2 Inspector reviews this Job Aid with the operator to establish the form and content of the operator application for RNAV 5 authority.
- 3.3 Operator uses the Job Aid as guide to assemble documents/exhibits for its application for RNAV 5.
- 3.4 Operator annotates Job Aid to show location of RNAV 5 program elements in the operator exhibits/documents.
- 3.5 Operator submits Job Aid and RNAV 5 operator application (exhibits/documents) to inspector
- 3.6 Inspector annotates Job Aid to show task or document “complete/satisfactory” or “open/further operator action required”.
- 3.7 Inspector informs the operator as soon as possible, when further operator action is required.
- 3.8 Operator provides inspector, when requested, with revised material.
- 3.9 The CAA issues the operations specifications (OpSpecs) or a letter of authorization (LOA) as applicable, to operator when required tasks and documents are completed.

4. Job Aid organization

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5. Primary source of documents, information and contacts

For accessing to the Advisory Circular CA 91-002, enter to the ICAO/SAM Regional Office Webpage (www.lima.icao.int) under SRVSOP.

6. Primary documents of reference

Documents of reference	Subjects
ICAO Doc 9613	Performance based navigation manual
AMC 25-11	Electronic display system
AMC 20-5	Acceptable means of compliance for airworthiness approval and operational criteria for the use of the NAVSTAR Global positioning system (GPS)
AC 20-121A	Airworthiness approval of LORAN C for use en the U.S National Airspace System
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 areas navigation systems for use in the U.S. National Airspace System
ETSO-C115b	Airborne area navigation equipment using multi sensor input
ETSO-C129A	Airborne supplemental navigation equipment using the Global positioning system (GPS)
ETSO-C145	Airborne navigation sensors using the Global positioning system (GPS) augmented by wide area augmentation system (WAAS)

ETSO-C146	Stand-alone airborne navigation equipment using the Global positioning system (GPS) augmented by the wide area augmentation system (WAAS)
TSO-C115, any version	Airborne area navigation equipment using multi-sensor inputs
TSO-C129/C129A	Airborne supplemental navigation equipment using the global positioning system (GPS)
TSO-C145A	Airborne navigation sensors using the Global positioning system (GPS) augmented by the wide area augmentation system (WAAS)
TSO-C146A	Stand-alone airborne navigation equipment using the Global positioning system (GPS) augmented by the wide area augmentation system (WAAS)
RTCA/DO-200A	Standards for processing aeronautical data
RTCA/DO-201A	Standards for aeronautical information
RTCA/DO-208	Minimum operational performance standards for airborne supplemental navigation equipment using Global positioning system (GPS)
RTCA/DO-229C	Minimum operational standards for Global positioning system/Wide area augmentation system airborne equipment
RTCA/DO-236A	Minimum aviation system performance standards: Required navigation performance for area navigation
RTCA/DO-178B	Software consideration in airborne systems and equipment certification

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PART 1: GENERAL INFORMATION**Basic events in RNAV 5 approval process**

	Operator actions	CAA actions (inspectors)
1	Establishes the need to obtain the RNAV 5 authorization.	
2	Reviews AFM, AFM Supplement or Type Certificate Data Sheet (TCDS) or others appropriate documents (e.g., Service Bulletins, Service Letters) to determine Aircraft eligibility for RNAV 5. Operator contacts airplane or avionics manufacturer, if necessary, to confirm airplane eligibility for RNAV 5.	
3	Contacts to the AAC to arrange a pre-application meeting to discuss requirements for operational approval. .	
4		During pre-application meeting, establishes: <ul style="list-style-type: none"> • form and content of operator application; • the date when operator application should be submitted for evaluation
5	Submits operator application to the AAC at least 60 days in advance of the planned start of RNAV 5 operations.	
6		Reviews operator application
7	Once the amendments to the manuals, programs and documents have been accepted or approved, the operator provides training to the flight crew, flight dispatchers and maintenance personnel and performs a validation flight in case of that flight is required by the AAC.	
8		Issues operational approval in the form of OpSpecs for LAR 121 and/or 135 or a letter of authorization (LOA) for LAR 91 operators.

Notes related with the approval process

1. **Responsible Authority.**
 - a. **Commercial Air Transport - LAR 121 and/or 135 or equivalent regulations operators.- The State of registry** makes the determination that the Aircraft meets the applicable RNAV 5 requirements. The State of operator issues operating authority (e.g., OpSpecs).
 - b. **General aviation - LAR 91 or equivalent regulations operators.- The State of registry** makes determination that aircraft meets the applicable RNAV 5 requirements and issues a LOA.
2. Sections related to the Latin American Aeronautical Regulations (LAR) or equivalents.
 - a. LAR 91 Section 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
3. Others related ICAO documents
 - a. Annex 2 – Rules of the air
 - b. Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management.

PART 2: AIRCRAFT AND OPERATORS IDENTIFICATION INFORMATION

OPERATOR NAME: _____

Aircraft make, model and series	Registration number(s)	Serial number(s)	RNAV navigation systems: Number, manufacturer and model	Navigation specification requested

DATE OF PRE-APPLICATION MEEETING _____

DATE APPLICATION RECEIVED: _____

DATE OPERATOR PLANS TO START RNAV 5 OPERATIONS _____

¿IS THE NOTIFICATION TIME TO CAA ADEQUATE? YES _____ NO _____

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PART 3 – OPERATOR APPLICATION (EXHIBITS/DOCUMENTS)

Exhibit	Document title	Operator indication of inclusion	Inspector comments
A	Operator letter requesting RNAV 5 authorization		
B	<p>1. For aircraft manufactured RNAV 5 compliant: Airworthiness documents that show RNAV 5 approval:</p> <ul style="list-style-type: none"> • AFM, AFM Supplement, TCDS o POH. <p>2. For in-service aircraft which eligibility can not be determined based on the AFM, AFM Supplement; TCDS o POH:</p> <ul style="list-style-type: none"> • Operator letter requesting assessment of aircraft RNAV equipment. 		
C	<p>For INS or IRU only equipped aircraft: RNAV 5 time limit and area of operation.</p> <ul style="list-style-type: none"> • Documentation establishing the RNAV 5 time limit and area of operations or routes for which the specific aircraft/navigation system is eligible. (Not applicable to GPS equipped aircraft). 		
D	<p>Maintenance program</p> <ul style="list-style-type: none"> • For aircraft with established RNAV 5 or GPS stand-alone maintenance practices, provide list of document or program references. 		
E	<p>Minimum Equipment List (MEL) (Only for operators operating under an MEL):</p> <ul style="list-style-type: none"> • MEL showing provisions for RNAV 5 equipment or GPS stand-alone. 		
F	Training		

Exhibit	Document title	Operator indication of inclusion	Inspector comments
	<ol style="list-style-type: none"> 1. LAR 91 operators: Methods of training: The following methods are acceptable for these operators: In-house training, LAR 142 training center or others courses of training. 2. LAR 121 or 135 operators: Training program: The LAR 121 or 135 operators shall provide initial and recurrent training program for flight crew, flight dispatchers and maintenance personnel. 3. GPS stand-alone: When the operator used a GPS stand-alone to conduct RNAV 5 operations, shall provide an initial and a recurrent training program for flight crew, flight dispatchers and maintenance personnel, if required. 		
G	<p>Operational policies and procedures</p> <ol style="list-style-type: none"> 1. LAR 91 operators: Operations manual or sections of operator's application, documenting RNAV 5 operational policies and procedures. 2. LAR 121 and/or 135 operators: Operations manual and check list. 3. GPS stand-alone used as a primary means of navigation: Operations manual 		
H	<p>Removal of RNAV 5 operating authority</p> <p>Indication of the necessity to follow up action after navigation error reports, and the potential for removal of RNAV 5 operating authority.</p>		
I	<p>Plan for validation flight: Only if required by the CAA</p>		

APPLICATION CONTENT TO BE SUBMITTED BY THE OPERATOR

___ **AIRCRAFT/RNAV 5 SYSTEM COMPLIANCE DOCUMENTATION**

___ **OPERATIONAL POLICY/PROCEDURES**

___ **MAINTENANCE MANUAL SECTIONS RELATED TO RNAV 5 SYSTEM OR GPS STAND-ALONE (if not previously reviewed)**

Note 1: Exhibits/documents may be included in a binder or submitted as a stand-alone documents

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PART 4: CONTENT OF OPERATOR APPLICATION FOR RNAV 5

#	Content of operator application for RNAV 5	Reference paragraphs CA 91-002	Where found in operator exhibit/documents Note: 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 RNAV 5 authorization	Paragraph 9.1 b) 1) Appendix 3, Paragraph e)	Exhibit A		
2	Airworthiness documents to determine Aircraft eligibility Airworthiness documents that establish the aircraft and the navigation system have been approved for RNAV 5 operations.	Paragraphs 8.1, 8.2 y 8.3	Exhibit B Exhibit C		
3	RNAV 5 system requirements Documents that show the aircraft equipment 1. One (1) RNAV system comprising of: <ul style="list-style-type: none">• one or a combination of the following navigation sensors: VOR/DME, DME/DME, INS o IRS, LORAN C y GNSS o GPS;• an area navigation (RNAV) computer;	Paragraph 8.5 b)	Exhibit B Exhibit C		

#	Content of operator application for RNAV 5	Reference paragraphs CA 91-002	Where found in operator exhibit/documents Note: operator should update this column to reflect the content of its application	Inspector recommendation and /or comments	Inspector Tracking: Item status and date
	<ul style="list-style-type: none"> • a control display unit (CDU); and • a navigation display(s) or instrument(s) (e. g., navigation display (ND), heading situation indicator (HSI) or course deviation indicator (CDI). 				
4	<p>Availability of the conventional navigation equipment on board the aircraft when the GPS stand-alone is used</p> <p>Documents that show the availability of the conventional navigation equipment on board the aircraft when the GPS stand-alone is used</p> <p>When GPS stand-alone equipment is used, the traditional navigation equipment (e. g., VOR, DME, TACAN or ADF), must be installed and operational in the aircraft, so as to provide an alternative means of navigation.</p>	Paragraph 8.4 e) 1) iv.	Exhibit B Exhibit C		
5	<p>Training</p> <p>1. LAR 91 operators: Methods of training: The following methods</p>	Paragraphs 9.1 b) 6),	Exhibit F		

#	Content of operator application for RNAV 5	Reference paragraphs CA 91-002	Where found in operator exhibit/documents Note: operator should update this column to reflect the content of its application	Inspector recommendation and /or comments	Inspector Tracking: Item status and date
	Operations manual and check list. 3. GPS stand-alone used as a primary means of navigation: Operations manual	Paragraph 10. b)			
7	Maintenance practices <ul style="list-style-type: none"> • For Aircraft with established RNAV or GPS stand-alone maintenance practices, the operator shall provide document references. • For newly installed RNAV or GPS stand-alone, the operator shall provide maintenance practices for review. 	Paragraph 9. b) 3)	Exhibit D		
8	Minimum equipment list (MEL) updates, if applicable Only applicable if operator conducts operations under an MEL	Paragraph 9. b) 5)	Exhibit E		
9	Continued airworthiness	Paragraph 8.7	Exhibit H		
10	Removal of RNAV 5 operating authority Indication of the necessity to follow up action after navigation error reports,	Paragraph 12	Exhibit H		

#	Content of operator application for RNAV 5	Reference paragraphs CA 91-002	Where found in operator exhibit/documents Note: operator should update this column to reflect the content of its application	Inspector recommendation and /or comments	Inspector Tracking: Item status and date
	and the potential for removal of RNAV 5 operating authority.				

PART 5 – GUIDE FOR DETERMINING AIRCRAFT ELIGIBILITY

#	Subjects	Reference paragraphs CA 91-002	Location in operator exhibits	CAA Recommendations and comments	Inspector tracking item status and date
1	RNAV system requirement	Paragraphs 5.7, 6.2, 8.1 a) y 8.5 b).	Exhibit B		
2	Aircraft eligibility 1. For aircraft manufactured RNAV 5 compliant 2. For in-service aircraft which eligibility can not be determined based on the AFM, AFM Supplement; TCDS o POH:	Paragraphs 8.2 Paragraph 8.3 a)	Exhibit B		
3	GPS stand-alone used as a primary means of navigation	Paragraph 8.4 e) 1) iii. (first paragraph)	Exhibit B		
4	Multi-sensor navigation system that incorporate GPS with integrity provided by RAIM or equivalent means	Paragraph 8.4 e) 1) ii.	Exhibit B		
5	GPS stand-alone with integrity provided by RAIM	Paragraph 10. b) 2.	Exhibit B		
6	GPS stand-alone that include the following functions: <ul style="list-style-type: none">• Pseudorange step detection; and• Health word cheking	Paragraph 8.4 e) 1) ii.	Exhibit B		

#	Subjects	Reference paragraphs CA 91-002	Location in operator exhibits	CAA Recommendations and comments	Inspector tracking item status and date
7	Availability of conventional navigation equipments when GPS stand-alone is used	Paragraph 8.4 e) 1) iv.	Exhibit B		
8	Aircraft requirements: RNAV 5 navigation systems	Paragraph 8.4	Exhibit B		
9	RNAV 5 system requirement <ul style="list-style-type: none"> • Precision • Availability and integrity 	Paragraph 8.5	Exhibit B		
10	RNAV 5 system functional requirements <ul style="list-style-type: none"> • Required functions • RNAV 5 navigation displays 	Paragraph 8.6	Exhibit B		
11	Navigation data base	Paragraph 10. d)	Exhibit B		

PART 6 – BASIC PILOT PROCEDURES FOR RNAV 5 OPERATIONS

Subjects	Reference paragraphs CA 91-002	Locations in operator exhibit	CAA recommendations and/or comments	Inspector tracking: Item status and date
Operating procedures	Paragraph 10	Exhibit G		
Flight planning	Paragraph 10.1			
Verify aircraft is approved for RNAV operation	Paragraph 10.1 a) 1)			
Verify RNAV system required to meet RNAV 5 navigation specifications for the route and area are operational	Paragraph 10.1 a) 3)			
Verify that space-based or ground-based navigation aids required for RNAV 5 operations are available	Paragraph 10.1 a) 4)			
Revise i.e. contingencia procedures	Paragraph 10.1 a) 5)			
Indicate approval for RNAV 5 operations by annotating block 10 (Equipment) of the ICAO flight plan as defined within ICAO Doc 7030 for these operations	Paragraph 10. c)			
Verify the availability of GPS integrity RAIM for the intended flight (route and time), through the use of a prediction program either ground-based or provided as an equipment function or from an alternative method that is acceptable to the authority, in	Paragraph 10 b)			

Subjects	Reference paragraphs CA 91-002	Locations in operator exhibit	CAA recommendations and/or comments	Inspector tracking: Item status and date
the following cases: <ul style="list-style-type: none"> • when any GPS satellites are scheduled to be out of service; or • more than one satellite is scheduled to be out of service for GPS equipment that incorporate pressure altitude aiding. 				
The operator shall not dispatch or release a flight in the event of predicated continuous loss of RAIM of more than 5 minutes for any part of the intended flight. In this case the flight may be delayed, cancelled or re-routed.	Paragraph 10 b) 7)			
Pre-flight procedures at the aircraft				
Review maintenance logs and forms for RNAV 5 status.	Paragraph 10.2 a)			
Verify navigation data base currency (current AIRAC cycle), if this data base is installed.	Paragraph 10.2 b)			
En route procedures				
Verify RNAV equipment required for RNAV 5 operation has not been degraded in flight	Paragraph 10.3 a) 1)			
Verify the route of flight correspond to the	Paragraph 10.3 a) 2)			

Subjects	Reference paragraphs CA 91-002	Locations in operator exhibit	CAA recommendations and/or comments	Inspector tracking: Item status and date
clearance				
Verify aircraft precision navigation is suitable for RNAV 5 operations through pertinent cross-checks.	Paragraph 10.3 a) 3)			
Verify others navigation aids (e. g., VOR, DME and ADF) are selected, so as to allow immediate cross-checking or reversion in the event of loss of GPS navigation capability.	Paragraph 10.3 a) 4)			
Contingency procedures	Paragraph 10.4			
The aircraft must not enter or continue operations in an airspace designated as RNAV 5, in accordance with a current clearance of ATC, if due to a failure or degradation, the navigation system is downgraded under the RNAV 5 requirements, in this event, the pilot will obtain when it is possible a amended clearance.	Paragraph 10.4 a) 1)			
In accordance with ATC instructions, the operations may continue in compliance with ATC current authorization or when it is not possible, the pilot may request an amended clearance to return to conventional VOR/DME navigation.	Paragraph 10.4 a) 2)			

Subjects	Reference paragraphs CA 91-002	Locations in operator exhibit	CAA recommendations and/or comments	Inspector tracking: Item status and date
In all cases, the flight crew must follow the contingency procedures establish for each region and obtain an ATC clearance as soon as possible.	Paragraph 10.4 a) 3)			
Contingency procedures in the event of loss of GPS navigation capability				
The contingency procedures should identify the flight crew actions required in the event of the GPS stand-alone equipment indicating a loss of the integrity monitoring detection (RAIM) function or exceedance of integrity alarm limit (erroneous position).	Paragraph 10.4 b) 1)			
Whatever contingency registered in flight must be notify to the AAC within 72 hours, unless the delay is justify.	Paragraph 10.4 b) 3)			

SRVSOP Contact

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