

Flight Operations Section

Commercial Air Transport (A) - Application For P-RNAV Operational Approval / Renewal

Submit at least 60 days before the intended date of operations

Before filling the application form, the applicant should familiarize himself with the applicable requirements contained in the applicable publications as listed in the Guidance Material Annex to this form.

Please complete the application form electronically.

SECTION ONE: OPERATOR / AIRFRAME DETAILS

Contact Information :

Name, position and contact information (phone No, e-mail address) of the person from the operator with technical knowledge regarding the application (aircraft airworthiness approval side).

1. Applicant Details – required for all Approval requests

Note: For AOC holders – company name, AOC number and e-mail address will suffice.

- 1(a) Name of Business or Trading Name(s) :
- 1(b) AOC Number (if applicable) :
- 1(c) Name of Individual (if applicable) :
- 1(d) e-mail address :
- 1(e) Phone number :

2. Aircraft Details – required for all Approval requests

Aircraft Type : Each aircraft type would require a separate application form to be submitted. In case some aircraft of the same type have different navigation equipment on which approval for P-RNAV operations would be based, separate applications forms would be required.

Registration Marks : List all the individual aircraft by their nationality and registration marks for which the approval for P- RNAV operations is sought.

Aeroplane type(s), series and registration mark(s)

Aeroplane Type	Aeroplane Series	Registration

SECTION TWO: P-RNAV NOTES FOR COMPLETION

1. Applicability

P-RNAV is a European RNAV specification with a required track keeping accuracy of ± 1 NM for 95% of the flight time, together with advanced functionality and a high integrity navigation database. P-RNAV capability can be achieved using inputs from DME/DME or GNSS and/or INS. Typically P-RNAV can be used to fly P-RNAV designed SIDs and STARs in Aerodrome Terminal Control Airspace.

2. Operator’s P-RNAV Submissions Matrix

Section Four of this application form is the Operator’s P-RNAV Submissions Matrix. All applicants should complete Column 3 of this matrix in full. If more than one type of aircraft/fleet is included in a single application a completed matrix should be included for each aircraft/fleet.

Failure to complete the P-RNAV Submissions Matrix may result in a delay in processing your application.

3. Documents to be included with the application

Copies of all documents referred to in the Operators P-RNAV Submissions Matrix should be included when returning the completed application form to the CAD. Original documents should not be sent, photocopies are sufficient. Do not send complete manuals, only the relevant sections/pages will be required.

Supporting documentation submitted:

- | | | |
|---|--|--|
| <input type="checkbox"/> Compliance statement | <input type="checkbox"/> Extracts from AFM | <input type="checkbox"/> LOA of database supplier |
| <input type="checkbox"/> Reporting procedure | <input type="checkbox"/> Extracts from MEL | <input type="checkbox"/> Extracts from AMP (if applicable) |

Compliance Statement :

Document prepared by the applicant showing how the requirements for P-RNAV operations have been satisfied. During the pre-application phase, a plan would be established between the applicant and the Airworthiness Inspectorate of all points to be addressed by the Compliance Statement.

Extracts from AFM :

Copies of Aircraft Flight Manual or Pilot Operating Handbook, as applicable, whereby a statement regarding the compliance status with the accuracy specifications and the operational requirements for P-RNAV is contained. Also copy of pages with the associate system(s) limitations.

LOA of database supplier :

Copies of EASA or FAA type 2 Letter of Acceptance (LOA) of the supplier of the navigation database.

Reporting procedure :

Copy of applicant's procedure which requires to investigate and report all incidents associated with the operation of the aircraft which may affect or could affect the safety of the P-RNAV operations.

Extracts from MEL :

Copies of pages from the Minimum Equipment List listing the required equipment for conducting P-RNAV operations and pages indicating that loss of particular equipment downgrades/prohibits the P-RNAV operations.

Extracts from maintenance program :

Copies of pages from the approved maintenance program evidencing that the equipment required for P-RNAV operations is included as per manufacturer (TC holder) recommendation, if applicable.

4. Submissions and Enquires

Address for submissions:

LYCAA- FLIGHT SAFETY DEP.
Operations Section
Main HQ
Dahra Distract, Triploi
LIBYA

Contact details for enquiries :

Phone : +218 21 361 3323
Fax : +218

Note: Applications for non-AOC P-RNAV operations must be accompanied by the appropriate fee. Please contact the Operations Section for details of the fee required.

SECTION THREE : SIGNATURE BLOCK

Name :
(Nominated Person Flight Ops)

Signature :

Date :

Position :

Name :
(Continuing Airworthiness Manager)

Signature :

Date :

Position :

Signature, Name, Position :

For commercially operated aircraft, it is expected that the application is submitted by the nominated person flight ops and the CAMO post-holder. In case of a privately operated aircraft, the application would be submitted by the owner.

Please note that a **minimum** of 30 working days will normally be required to check and confirm the information given above – if data is missing or omitted the process may take considerably longer.

SECTION FOUR : APPLICANT'S P-RNAV SUBMISSIONS MATRIX

Expanded areas to be addressed by application	Reference Documentation and Sub-requirements	Operator's Operations Manual Reference or Document Reference
1.0 – Reference Documents used in compiling submission		
Your submission should be based on current up to date regulatory material. You should publish a compliance statement showing how the criteria of TGL 10 have been satisfied.	TGL 10 ICAO Doc 9613 ICAO Doc 8168 PANS-OPS	
2.0 – Airworthiness Navigation System Capability compliance statement		
Give reference to Navigation System capability, e.g. GNSS stand-alone equipment should be approved in accordance with ETSOC 129a. Is FMGS/FMS compliant with TGL 10 for PRNAV operations? Is FMGS/FMS compliant with performance requirements of ED-75/DO-236 for RNP RNAV operations? (e.g. All Airbus 320/321/330/340 are compliant.)	ETSO-C129a/ETSO-C145 (In CS-ETSO on the EASA website http://www.easa.europa.eu .) TGL 10 TGL 10	
2.1 – Aircraft Flight Manual (AFM)		
A statement or copy of the AFM showing the aircraft certification standard for RNAV operations.		
2.2 – Navigation Lateral Accuracy		
P-RNAV ± 1 NM for 95% of the flight time.		
2.3 – Quality Control Navigation database integrity checks		
Database obtained from a supplier holding a Type 1 and Equipment Supplier Type 2 Letter Of Acceptance (LOA). This demonstrates compliance with EUROCAE/RTCA document ED-76/DO-200A. (See http://eurocae.eu and http://www.rtca.org).		

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Expanded areas to be addressed by application	Reference Documentation and Sub-requirements	Operator's Operations Manual Reference or Document Reference
2.4 – SID/STAR chart supplier		
Show how you audit your supplier of SIDs and STARs in order to establish the effectiveness of your supplier's quality system.		
2.5 – Loading of Navigation Database		
Process to ensure that there is no possible corruption in the content of the database on the RNAV/GNSS system.		
2.6 – Navigation System FMS/Autopilot interface capability		
Full details of the Navigation System including type and number, e.g. specific capability. (TGL 10)	<ul style="list-style-type: none"> • Fly by waypoint (WP). • Fly over WP. • Direct to function. • Define vertical path (FPA to a WP). • At or above Altitude constraint. • At or below Altitude constraint. • At Altitude constraint. • Vertical Path control (provide guidance from WP to a vertically constrained WP). <p>Entire procedures loadable from aircraft database.</p> <ul style="list-style-type: none"> • Database that can be updated in accordance with the AIRAC cycle. • Display active WP. • Display validity period of database. • Continuous display of computed RNAV (GNSS) desired path. • RNAV/GNSS system failure/integrity downgrade alerting capability. • Display of active sensors. • Database protection against flight crew modification. • Distance/bearing to WP. • Automatic leg sequencing. <p>Means to retrieve and display data, e.g. Master Control and Display Unit (MCDU).</p>	

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Expanded areas to be addressed by application	Reference Documentation and Sub-requirements	Operator's Operations Manual Reference or Document Reference
2.7 – Incident reporting		
<p>Outline your process for error reporting/withdrawal of operational use of procedures.</p> <p>Note : In particular, significant errors (i.e. those that would affect the flight path of the aircraft) must be reported to the database supplier immediately, and the affected procedures withdrawn from company operations by company instruction without delay. Any database or chart anomaly identified during RNAV operations must be reported to the CAD through the Mandatory Occurrence Reports. Any Error reports from the Nav Database Supplier shall be promulgated to crew as soon as possible.</p>		
3.0 – Minimum Equipment List (MEL)		
	MEL handling: Items required for P-RNAV operations. Required equipment list.	
4.0 – Standard Operating Procedures		
<p>Manufacturer/operator developed.</p> <p>Manufacturer's procedures recommended as starting point and must include at least the following.</p>	<p>Statement that autopilot/flight director should be used whenever possible.</p> <p>SOPs for which pages should be displayed on the FMC for P-RNAV (PF and PNF).</p> <p>Database Validity Check.</p> <p>Monitoring of system navigation accuracy.</p> <p>SID/STAR Validity Check including confirmation of procedure track and distance.</p> <p>Navigation System Downgrade Procedure.</p> <p>Contingency procedures if unable P-RNAV.</p> <p>Statement that crew should not manually insert WPs into the procedure.</p>	

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Expanded areas to be addressed by application	Reference Documentation and Sub-requirements	Operator's Operations Manual Reference or Document Reference
5.0 – Operations Manuals		
Part A	<ul style="list-style-type: none"> • RNAV concepts. • Navigation accuracy assessment at dispatch, for destination and alternates. • RTF phraseology. • MEL handling. • SOPs. Crew Authorisation required/validation.	
Part B	Technical information and MEL. Revised checklists	
Part D	Training programme (Modular) in accordance with P-RNAV operations.	
5.1 Pre – Flight Planning		
	<ul style="list-style-type: none"> • MEL. • RAIM/AIME. • NOTAMs/Navigation infrastructure. • Crew qualified. • Database valid. • ATS flight plan – correct item 10 and item 18 	
5.2 – Training package		
	Compliant with Flight Crew Training and Testing requirements for P-RNAV Operations.	
P-RNAV		
P-RNAV concept training and training in the following topics : <ul style="list-style-type: none"> • Airspace where P-RNAV is required. • Performance requirements for P-RNAV. 	Some or all of: <ul style="list-style-type: none"> • Operations Manual content; • Handouts (paper or electronic); 	

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<ul style="list-style-type: none"> • Navigational equipment required to be operational for flight in designated P-RNAV airspace and the limitations associated with PRNAV equipment including MEL issues. • Flight planning requirements. • Charting, database and avionics issues including RNAV path terminator concepts, especially : <ul style="list-style-type: none"> a) Use of the 'CF' path terminator. b) Use of the 'TF' path terminator. • Use of RNAV equipment including : <ul style="list-style-type: none"> a) Retrieving a procedure from the database b) Using the autopilot, flight director and auto throttle at different stages of the procedure. c) Flight mode annunciations. • Flying the procedure including: <ul style="list-style-type: none"> a) Use of lateral navigation mode and associated lateral control techniques. b) Use of vertical navigation mode and associated vertical control techniques. • Contingency procedures. 	<ul style="list-style-type: none"> • CBT; and • Classroom; and <p>Standard Simulator Training Events (OPC and LPC) including :</p> <ul style="list-style-type: none"> a) at least one P-RNAV procedure flown as PF by each crew member; and b) failures such as map shift, sensor failure etc. 	
<p>B-RNAV</p>		
<p>Basic Area Navigation concept training <u>and</u> training in the following topics :</p> <ul style="list-style-type: none"> • Airspace where B-RNAV is required. • Changes to charting and documents to reflect B-RNAV. • Navigational equipment required to be operational for flight in designated B-RNAV airspace, and the limitations associated with RNAV equipment. • Use of lateral navigation mode and associated lateral control techniques. • Flight planning requirements. • Contingency procedures. 	<p>Some or all of :</p> <ul style="list-style-type: none"> • Operations Manual content; • Handouts (paper or electronic); • CBT; and • Classroom; and: <p>Line Training.</p>	

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Expanded areas to be addressed by application	Reference Documentation and Sub-requirements	Operator's Operations Manual Reference or Document Reference
All RNAV Operations		
<p>Basic Area Navigation Concepts :</p> <ul style="list-style-type: none"> • Theory of RNAV including differences between B-RNAV, P-RNAV and RNP-RNAV. • RNAV/RNP Definitions. • The meaning of RNP/ANP. • Limitations of RNAV. • Limitations of Baro-VNAV. • GPS concepts and limitations (if applicable). • Charting, database and avionics issues including : <ol style="list-style-type: none"> 1. WP naming and depiction concepts. 2. Fly-by and fly-over WPs. 3. Use of RNAV equipment including, where appropriate : <ol style="list-style-type: none"> a) Verification and sensor management. b) Tactically modifying the flight plan. c) Addressing discontinuities. d) Entering associated data such as : <ol style="list-style-type: none"> i) Wind. ii) Altitude/speed constraints. iii) Vertical profile/vertical speed. • RTF phraseology for RNAV/RNP. • The implications for RNAV/RNP operations of systems malfunctions which are not RNAV related (e.g. hydraulic failure or engine failure) <p>NOTE : Training in Basic Area Navigation concepts is required for all types of RNAV/RNP operations. However, credit may be given/taken for previous Basic Area Navigation concept training when adding a qualification for further type(s) of Area Navigation operations.</p>	<p>Some or all of :</p> <ul style="list-style-type: none"> • Operations Manual content; • Handouts (paper or electronic); • Computer-Based Training (CBT); and • Classroom 	

Any further comments to support your application :

Guidance Material Annex

Guidance material for the global performances specifications, approval process, aircraft requirement (e.g. generic system performances, accuracy, integrity, continuity, signal-in-space, RNP navigation specifications required for the on-board performance monitoring and alerting system), requirements for specific sensor technologies, functional requirements, operating procedures, flight crew knowledge and training and navigation databases integrity requirements, can be found in : (1) ICAO Doc 9613 Performance-Based Navigation (PBN) Manual, (2) ICAO DOC 9997 Performance Based Navigation (PBN) Operational Approval, (3) ICAO Doc 8168 Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) JAA TGL 10 and (4) in the table below.

FLIGHT PHASE									
	En-route		Arrival	Approach				Departure	LYCAA AMC /EASA AMC
	Oceanic / Remote	Continental		Initial	Intermediate	Final	Missed		
RNAV10	10								AMC 20-12
RNP 4	4								To be developed
RNAV 5		5	5						AMC 20-4A
RNAV 2		2	2					2	To be developed
RNAV1 (P-RNAV)			1	1	1		1	1	To be developed
BASIC-RNP 1			1	1	1		1	1	To be developed
RNP APCH (LNAV & LNAV/VNAV)				1	1	0.3	1		AMC 20-27A
RNP APCH (LPV)						0.3	1		AMC 20-28
RNP AR APCH				1 - 0.1	1 - 0.1	0.3 - 0.1	1 - 0.1		AMC 20-26