

Democratic Socialist Republic of Sri Lanka



Civil Aviation Authority of Sri Lanka

Implementing Standards

(Issued under Sec. 120, Civil Aviation Act No. 14 of 2010)

Title: Performance Based Navigation

Reference No. : CA-IS-2013-OPS-002 **S.N. :** 024 **Date:** 31st October 2013

Pursuant to Sec. 120 of the Civil Aviation Act No.14 of 2010, Director General of Civil Aviation shall have the power to issue, whenever he considers it necessary or appropriate to do so, such Implementing Standards for the purpose of giving effect to any of the provisions of the Civil Aviation Act, any regulations or rules made thereunder including the Articles of the Convention on International Civil Aviation which are specified in the Schedule to the Act.

Accordingly, the undersigned being the Director General of Civil Aviation do hereby issue the Implementing Standards as mentioned in the Attachment hereto (Ref: CA-IS-2013-OPS-002-Att-01], for the purpose of giving effect to the provisions in the aforementioned Act and Standards & Procedures described under Article 37 of the Convention, which are specified in the Attachment.

These Implementing Standards shall remain in force unless revoked.

Attention is also drawn to sec. 103 of the Act, which states inter alia that failure to comply with Implementing Standard is an offence.

H.M.C. Nimalsiri
Director General of Civil Aviation and
Chief Executive Officer

Civil Aviation Authority of Sri Lanka
04, Hunupitiya Road
Colombo 02.

Enclosure: Attachment No. CA-IS-2013-OPS-002-Att-01

Implementing Standards

Title: Performance Based Navigation

Definitions

Performance-based navigation (PBN) - Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Navigation specification - A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace as described in the ICAO PBN Manual (DOC 9613).

- **Required navigation performance (RNP) specification** - A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP.
- **Area navigation (RNAV) specification** - A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV.

Applicable **Aviation Safety Notices– 18, 32, 46, 63, 75 & 89**

References:	ICAO Doc	9613
	ICAO Doc	9997
	SLCAP	4520

1. PERFORMANCE BASED NAVIGATION

- a. No person shall operate flights along ATS routes, on an instrument approach procedure, or in a designated airspace where a Navigation Specification has been prescribed unless:
 - 1 the operator has received authorization from the Director General, Civil Aviation Authority, Sri Lanka
 2. the aircraft is equipped with the navigation equipment to enable it to operate in accordance with the prescribed Navigation Specification; and
 3. the aircraft is equipped with navigation equipment that continuously provides information to the flight crew of adherence to or departure from track with respect to the required degree of accuracy at any point along that track.
- b. No person shall operate an aircraft unless it has sufficient navigation equipment that will enable the aircraft to navigate in accordance with paragraph (a) above, such that in the event of the failure of any piece of navigation equipment at any stage of flight, the remaining equipment will enable the aircraft to continue to a destination or an alternate destination.

2 ELECTRONIC NAVIGATION DATA MANAGEMENT

- a. No operator shall employ electronic navigation data products that have been processed for application in the air and on the ground unless the Director General, Civil Aviation Authority, Sri Lanka has approved:
 - 1. The operator's procedures for ensuring that the process applied and the products delivered have acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them;
 - 2. The operator's program for continual monitoring of both process and products; and
 - 3. The operator's procedures to ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

3 INITIAL PBN OPERATIONS TRAINING

- a. No person shall serve nor any AOC holder shall use a person as a flight crew member or flight operations officer (if applicable) unless he or she has completed the appropriate initial PBN operations training curriculum approved by the Director General, Civil Aviation Authority, Sri Lanka
- b. The initial PBN training curriculum for each Navigation Specification shall ensure that each pilot and flight operations officer (if applicable) is qualified in the type of operation in which he or she serves and in any specialized or new equipment, procedures, and techniques, such as:
 - 1 Knowledge of specialized navigation procedures;
 - 2 Knowledge of specialized equipment;
 - 3 SIDs and STARs (if applicable);
 - 4 The ability of the airborne equipment to fly the designed flight path. This may involve pilot intervention where the equipment functionality is limited;
 - 5 Management of changes (procedure, runway, track, etc.);
 - 6 Turn management (turn indications, airspeed & bank angle, lack of guidance in turns);
 - 7 Route modification (insertion/deletion of waypoints, direct to waypoint) and restrictions on route modification;
 - 8 Intercepting route, radar vectors; and
 - 9 Where GNSS is used, flight crews will be trained in GNSS principles.

- c. Each AOC holder shall require each pilot and flight operations officer (if applicable) to complete a demonstration of competence to a defined standard of knowledge and performance.
- d. Each AOC holder shall develop a recurrent training program at appropriate intervals to maintain the proficiency level of all flight crew members as required by the Performance Based Navigation Operational Approval Handbook Chapter 3, Section 3.3(SLCAP 4520).
- e. Applications for all PBN Operations shall be in the format as given in the Annex A of this IS.

EXAMPLE APPLICATION FORM**APPLICATION FOR PBN OPERATIONAL APPROVAL OR RENEWAL**

Please complete the form in BLOCK CAPITALS using black or dark blue ink.

This form is designed to elicit all the required information from those operators requiring [Insert PBN Type] operations approvals. The completed form and supporting documentation should be submitted to the Civil Aviation Authority at the address listed below:

Director General of Civil Aviation
Civil Aviation Authority of Sri Lanka
No. 04 Hunupitiya Road
Colombo 02

Section I - Operator/Airframe Details (completion is mandatory)

Section II - Notes for Completion

Section III - Signature Block (completion is mandatory)

Section IV - Operator's Submissions Matrix (completion is mandatory)

SECTION I - OPERATOR/AIRFRAME DETAILS**1 Applicant Details**

Provide official name, address, mailing address, e-mail address and contact telephone /fax number.

2 Aircraft Details

Aeroplane Type	Aeroplane Series	Registration

SECTION II : - NOTES FOR COMPLETION**1 Applicability**

[General description of operation with references to appropriate standards and guidance material]

2 Operator's Submissions Matrix

Section IV of this application form is the Operator's Submissions Matrix. All applicants should complete Column 4 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 SUBMISSIONS MATRIX MAY RESULT IN A DELAY IN PROCESSING THE APPLICATION.

3 Documents to be included with the submission

Copies of all documents referred to in Column 4 of the Operator's Submissions Matrix should be included when returning the completed application form to the CAASL. Original documents should not be sent, photocopies are sufficient. Do not send complete manuals, only the relevant sections/pages.

FAILURE TO INCLUDE ALL RELEVANT DOCUMENTATION MAY RESULT IN A DELAY IN PROCESSING THE APPLICATION.

4 Submissions and enquiries

Deputy Director Operations
Civil Aviation Authority of Sri Lanka
No. 4 Hunupitiya Road
Colombo 2
Tel. No. 011 235 8882

SECTION III - SIGNATURE

Signature:

Name (Block Letters):

Title:

Date:

SECTION IV - OPERATOR'S SUBMISSIONS MATRIX

Reference Documents	Submission based upon current regulatory material Compliance statement should show how criteria have been satisfied	List of appropriate documents
Airworthiness Navigation System Capability Compliance Statement	Specify to what standards the Navigation System complies.	List of applicable standards/TSOs/guidance material
Aircraft Flight Manual	Copy of extract from AFM showing certification standard for PBN operation.	
Navigation System FMS/Autopilot Interface Capability	Full details of Navigation System, FMS and Autopilot including type, number, software version	
Navigation Accuracy	Statement of certified navigation accuracy.	
Navigation Database	Details of supplier of navigation database, supplier's approval status and, where necessary, additional quality assurance/data integrity checks applied by the operator or the supplier.	
Maintenance	Details of maintenance procedures applicable to Navigation System and associated databases.	
Charts	Details of supplier of charts, supplier's approval status and, where necessary, additional quality assurance /data integrity checks applied by the operator or the supplier.	
Error Reporting	Outline of error reporting process and procedures for error analysis, prevention and correction, including feedback to the CAA, navigation database and chart suppliers, as well as OEMs.	

Standard Operating Procedures	Details of applicable operating procedures. It is recommended that manufacture's procedures are used as a starting point.	
Operations Manual	Details of dispatch requirements (nav accuracy, MEL, RAIM, NOTAMS); RTF phraseology; SOPs; crew authorization requirements; training and testing requirements.	
Any Further Comments		