Information Notice

Civil Aviation Authority

# INFORMATION NOTICE

## Number: IN–2017/034

**Issued: 18 August 2017**

# Implementation of Performance Based Navigation – Guidance for Pilots

**This Information Notice contains information that is for guidance and/or awareness.**

Recipients are asked to ensure that this Information Notice is copied to all members of their staff who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

| **Applicability:** | |
|---|---|
| **Aerodromes:** | Not primarily affected |
| **Air Traffic:** | Not primarily affected |
| **Airspace:** | Not primarily affected |
| **Airworthiness:** | Not primarily affected |
| **Flight Operations:** | Not primarily affected |
| **Licensed/Unlicensed Personnel:** | All holders of UK-issued National Pilot licences and UK-issued JAR-FCL/Part-FCL Pilot Licences |

## 1 Introduction

1.1 This Information Notice gives further information on the implementation of European Commission Regulation (EU) No. 539/2016 Performance Based Navigation (PBN) that amends European Commission Regulation (EU) No. 1178/2011 (the Aircrew Regulation).

## 2 Scope

2.1 The new PBN regulations will require:

- That from **25 August 2018** pilots may only fly in accordance with PBN routes and procedures after they have been granted PBN privileges as an endorsement to their Instrument Rating (IR);
- All pilots with an IR or Enroute Instrument Rating (EIR) will need to have PBN privileges after the **25 August 2020**.

## 3 Applicability for Flight Crew

3.1 The UK CAA has adopted a PBN declaration process. To obtain a PBN endorsement pilots have two options;

(1) Undertake PBN IR theoretical knowledge and practical training at an Approved Training Organisation (ATO), which includes passing a theoretical knowledge examination prior to passing a Skill Test or Proficiency Check which includes the

applicable PBN IR elements with an examiner authorised to conduct such test or check; or

(2) Make a declaration confirming that the pilot is sufficiently familiar with PBN operations, including the theoretical knowledge elements. Also pass an oral theoretical knowledge assessment prior and in addition to, passing a Skill Test or Proficiency Check which includes the applicable PBN IR elements, with an examiner authorised to conduct such test or check.

3.2 A copy of the PBN declaration form is included in **Appendix 1** to this IN. This form must be printed and completed by the applicant prior to attempting the oral theoretical knowledge assessment and the Skill Test or Proficiency Check.

3.3 Examiners should refer to **IN 2017/026**, for guidance on their authorisation process.

## 4 Undertaking Training at an ATO

4.1 If the pilot attends an ATO, either UK or non-UK approved, the pilot must ensure that all training undertaken is conducted at an ATO that holds an approval to conduct instrument training[1] and has updated their syllabus to include the PBN elements.

4.2 The pilot must retain a copy of the course completion certificate issued by the ATO, along with the PBN declaration form and must provide these as evidence to the examiner prior to attempting the Skill Test or Proficiency Check.

4.3 Copies of these forms, together with the Examiner's Report, must be submitted to the CAA. Examiners must retain a copy and the CAA recommends that the pilot also keeps a copy.

4.4 For non-UK certificated examiners please refer to **IN 2016/003** for further guidance.

## 5 Making a Declaration of PBN Familiarity

5.1 All pilots are reminded of their responsibility to ensure that they are capable of operating at an appropriate level of competence in PBN operations prior to operating on routes or procedures that require use of RNAV systems to meet PBN navigation specifications.

5.2 A list of the areas of knowledge is included in **Appendix 2** of this IN. Pilots should ensure they are sufficiently familiar with all of these areas, when making the PBN declaration.

5.3 The pilot must present the PBN declaration form to the examiner at the time of undertaking the oral theoretical knowledge assessment. This must be prior to attempting the skill test or proficiency check. The content of the oral assessment is at the discretion of the examiner but will cover the areas of knowledge in Appendix 2 of this Information Notice.

5.4 The oral assessment may take up to 2 hours. Failing the oral element test may mean that the flight test is failed or partially failed prior to the flight element taking place.

5.5 A copy of the declaration form and the Examiner's Report must be submitted to the UK CAA. Examiners are required to retain a copy and the CAA recommends that the pilot also keeps a copy.

[1] CAA considers this to mean any approved course which includes the IR, including integrated, modular and type or class rating courses.

## 6 Pilots Currently Undertaking IR Training

6.1 For pilots currently enrolled on an integrated or modular course the theoretical knowledge examinations will be revised to include the necessary PBN knowledge. Any candidate having passed examinations including this revised syllabus will not need to complete the course /oral assessment described in this IN.

6.2 Please refer to **IN 2017/028** for further guidance.

## 7 Third Country Licence Holders

7.1 Holders of ICAO compliant licences issued by third countries wishing to obtain an EASA IR by the existing conversion methods will need to become PBN qualified. The above PBN arrangements therefore apply. However, the licence conversion process will involve an oral element to demonstrate knowledge of the topics set out in Part-FCL. At the discretion of the examiner knowledge of these topics evidenced by a course completion certificate from an ATO may be taken into account.

7.2 Please refer to Information Notices **IN 2017/016** and **IN 2017/029** for further guidance.

## 8 Administration

8.1 A pilot planning to make an application for any licence, rating or certificate at the same time as applying to obtain a PBN endorsement, the appropriate course completion certificate and Examiner Report indicating that the PBN elements have been completed must be submitted along with the appropriate application forms for the licence, rating or certificate being applied for.

8.2 If the applicant is not applying for any other licence, rating or certificate, then after the completion of any training, if applicable, or making the declaration and passing the oral assessment and Proficiency Check, the pilot does not need to apply for the issue of the PBN endorsement on to their licence.

8.3 On successful completion of the Proficiency Check the examiner must sign the pilot's Certificate of Revalidation within their licence with PBN endorsement in the following format:

Example: B737IR/LV/PBN

IR SPA ME PBN

8.4 The appropriate Examiner Report Form must be clearly marked in Section 2 with the following:

'Instrument Rating Includes PBN Endorsement'

8.5 The UK CAA will update the applicable forms taking into account the above changes. The Flight Examiners handbook and Standards Documents will also be updated.

## 9 UK Instrument Meteorological Conditions (IMC) or Restricted Instrument Rating (IR(R))

9.1 The UK CAA will issue further information via Skywise on the impact of the PBN regulations on the IMC/IR(R) Rating and update Standards Document 25, later in the year.

## 10 Queries and Applications

10.1 Pilots should initially address any queries to their chosen ATO or to their operator.

10.2 All application forms and the PBN declaration form and Examiner Reports for pilots must be sent to:

Licensing, Shared Service Centre

Civil Aviation Authority

Aviation House, Gatwick Airport South

West Sussex, RH6 0YR

Telephone: 01293 567171

Email: **fclweb@caa.co.uk**

## 11 Cancellation

11.1 This Information Notice will remain in force until 31 August 2021, unless replaced or removed.

## Appendix 1

**Performance Based Navigation (PBN) - declaration form regarding PBN Instrument privileges and areas of knowledge.**

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

| 1. Personnel Details (fill in details or tick appropriate boxes) | To be completed by the applicant |
|---|---|

CAA Personal reference number ☐☐☐☐☐☐☐

Surname …… Forename(s) ……..

Title …….. Date of birth (dd/mm/yyyy) ……

Permanent address ……

…….. Postcode ……..

Address for correspondence (if different from above) ……

……

Telephone Number …… Email address ……

| 2. Declaration by the pilot applicant | To be completed by the |
|---|---|

I hereby declare that I meet the requirements laid down in Article 4a of Commission Regulation (EU) No. 1178/2011 regarding PBN privileges by:

☐ Having completed a theoretical knowledge and flight training course in PBN at an ATO with a copy of the Course Completion Certificate attached to this document.

OR

☐ Previous training and/or familiarity with PBN operations through either:
- ☐ Flying for an operator with RNP approach approval, or;
- ☐ Previous familiarity with RNAV and RNP approach operations.

AND

☐ A successfully completed skill test or proficiency check where I have demonstrated competence in PBN operations in accordance with appendix 7 or 9 to Annex I (Part-FCL).

| 3. Declaration by the pilot applicant | To be completed by the |
|---|---|

I declare that the information provided by me on this form is correct.

Name: …… Signature: …… Date: ……..

**It is an offence, with intent to deceive to make any false representation for the purpose of either procuring the grant, issue, renewal or variation of any certificate, licence, approval, permission, exemption or other document, or in connection with the making of a declaration to the CAA. Persons doing so render themselves liable, on summary conviction, to a fine not exceeding the statutory maximum and on conviction on indictment to an unlimited fine or imprisonment for a term not exceeding two years or both. A Cancellation Charge may be applied as per the CAA Scheme of Charges when an application request has been cancelled by the CAA or the customer.**

| 4. Declaration of the examiner regarding PBN checking privileges | To be completed by the examiner |
|---|---|

I hereby declare that I as examiner have performed a proficiency check or skill test which included PBN operations with a minimum of one approach, as well as:

Previous training and/or familiarity with PBN operations through either:

☐ Having completed a theoretical knowledge and flight training course in PBN at an ATO with a copy of the Course Completion Certificate attached to this document.

OR

☐ Flying for an AOC holder with previous RNP approach approval, or;
☐ Previous familiarity with RNAV and RNP approach operations.

For Proficiency Checks only, I have endorsed the Certificate of Revalidation in the applicants licence with PBN privileges.

| 5. Declaration by the examiner examiner | To be completed by the |
|---|---|

I declare that the information provided by me on this form is correct.

Name: …… CAA Personal reference number ☐☐☐☐☐☐☐

Signature: …… Date: ……..……

**It is an offence, with intent to deceive to make any false representation for the purpose of either procuring the grant, issue, renewal or variation of any certificate, licence, approval, permission, exemption or other document, or in connection with the making of a declaration to the CAA. Persons doing so render themselves liable, on summary conviction, to a fine not exceeding the statutory maximum and on conviction on indictment to an unlimited fine or imprisonment for a term not exceeding two years or both. A Cancellation Charge may be**

**applied as per the CAA Scheme of Charges when an application request has been cancelled by the CAA or the customer**.

## 6. Instructions for completing the declaration form

**Performance Based Navigation (PBN) - declaration form regarding PBN Instrument privileges and areas of knowledge.**

The form shall be completed at least once for every pilot that has an instrument rating issued without PBN privileges included.

Sections 1 to 3 shall be completed by the applicant.
Sections 4 and 5 shall be completed by the examiner.

This form should be submitted together with the application form for an instrument or type rating (if applicable) or with the completed Examiners Report form.

## 7. Self-checklist for previous familiarity with PBN experience

I have received theoretical and practical instructions and consider myself proficient with normal and abnormal procedures in the following areas, tick (√) each item as required;

| Area | Theoretical | Practical |
|---|---|---|
| PBN limitations | | |
| PBN departure | | |
| PBN en-route | | |
| PBN arrival | | |
| 2D approach | | |
| 3D approach | | |
| Missed approach according to PBN | | |
| Training received at ATO (if applicable) | | |
| Training received (dd/mm/yy) (if applicable) | | |

## Appendix 2

PBN Learning objectives

| Learning objective Reference | Subject |
|---|---|
| **062 07 00 00** | **PBN** |
| **062 07 01 00** | **PBN concept (as described in ICAO Doc 9613)** |
| **062 07 01 01** | **PBN Principles** |
| LO | List the factors used to define RNAV or RNP system performance requirements (accuracy, integrity, continuity and functionality). |
| LO | Explain the concept of continuity. |
| LO | Explain the concept of concept of integrity. |
| LO | State that, unlike conventional navigation, performance-based navigation is not sensor-specific. |
| LO | Explain the difference between raw data and computed data. |
| **062 07 01 02** | **PBN components** |
| LO | List the components of PBN as NAVAID infrastructure, navigation specification and navigation application. |
| LO | Indentify the components from an example. |
| **062 07 01 03** | **PBN scope** |
| LO | State that in oceanic/remote, en-route and terminal phases of flight PBN is limited to operations with linear lateral performance requirements and time constraints. |
| LO | State that in the approach phases of flight PBN accommodates both linear and angular laterally guided operations. |
| **062 07 02 00** | **Navigation specifications** |
| **062 07 02 01** | **RNAV and RNP** |
| LO | State the difference between RNAV and RNP in terms of the requirement for on-board performance monitoring and alerting. |
| **062 07 02 02** | **Navigation functional requirements** |
| LO | List the basic functional requirements of RNAV and RNP specifications (continuous indication of lateral deviation, distance/bearing to active waypoint, g/s or time to active waypoint, navigation data storage and failure indication). |

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| **062 07 02 03** | **Designation of RNP and RNAV specifications** |
| LO | Interpret “X” in RNAV X or RNP X as the lateral navigation accuracy (total system error) in nautical miles, which is expected to be achieved at least 95 per cent of the flight time by the population of aircraft operating within the airspace, route or procedure. |
| LO | State that aircraft approved to the more stringent accuracy requirements may not necessarily meet some of the functional requirements of the navigation specification having a less stringent accuracy requirement. |
| LO | State that RNAV10 and RNP4 are used in the oceanic/remote phase of flight. |
| LO | State that RNAV5 is used in the en route and arrival phase of flight. |
| LO | State that RNAV2 and RNP2 are also used as navigation specifications. |
| LO | State that RNP2 is used in the en route and oceanic/remote phases of flight. |
| LO | State that RNAV1 and RNP1 are used in the arrival and departure phases of flight. |
| LO | State that RNP APCH is used in the approach phase of flight. |
| LO | State that RNP AR APCH is used in the approach phase of flight. |
| LO | State that RNP 0.3 navigation specification is used in all phases of flight, except for oceanic/remote and final approach, primarily for helicopters. |
| **062 07 03 00** | **Use of PBN** |
| **062 07 03 01** | **Airspace planning** |
| LO | State that navigation performance is one factor used to determine minimum route spacing. |
| **062 07 03 02** | **Approval** |
| LO | State that the airworthiness approval process assures that each item of the area navigation equipment installed is of a type and design appropriate to its intended function and that the installation functions properly under foreseeable operating conditions. |
| LO | State that some PBN specifications require operational approval. |

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| **062 07 03 03** | **Specific RNAV and RNP systems functions** |
| LO | Recognise the definition of an RF leg. |
| LO | Recognise the definition of a fixed radius transition. |
| LO | Recognise the definition of a fly-by-turn and a fly-over. |
| LO | Recognise the definition of a holding pattern. |
| LO | Recognise the definition of an ARINC 424 path terminator. |
| LO | Recognise the definition of the following path terminators:<br>IF, TF, CF, DF, FA, CA. |
| LO | Recognise the definition of an offset flight path. |
| **062 07 03 04** | **On board performance monitoring and alerting** |
| LO | State that on-board performance monitoring and alerting of flight technical error is managed by on-board systems or crew procedures. |
| LO | State that on-board performance monitoring and alerting of navigation system error is a requirement of on-board equipment for RNP. |
| LO | State that on-board performance monitoring and alerting of path definition error are managed by gross reasonableness checks of navigation data. |
| **062 07 04 03** | **Abnormal situations** |
| LO | State that abnormal and contingency procedures are to be used in case of loss of the PBN capability. |
| **062 07 04 04** | **Database management** |
| LO | State that, unless otherwise specified in operations documentation or AMC, the navigational database must be valid for the current AIRAC cycle. |
| **062 07 05 00** | **Requirements of specific RNAV and RNP specifications** |
| **062 07 05 01** | **RNAV 10** |
| LO | State that RNAV10 requires that aircraft operating in oceanic and remote areas be equipped with at least two independent and serviceable LRNSs comprising an INS, an IRS FMS or a GNSS. |
| LO | State that aircraft incorporating dual inertial navigation systems (INS) or inertial reference units (IRU) have a standard time limitation. |
| LO | State that operators may extend their RNAV10 navigation capability time by updating. |
| **062 07 05 02** | **RNAV 5** |

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| LO | State that manual data entry is acceptable for RNAV 5. |

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| **062 07 05 03** | **RNAV/RNP1/2** |
| LO | State that pilots must not fly an RNAV/RNP1/2 SID or STAR unless it is retrievable by route name from the on-board navigation database and conforms to the charted route. |
| LO | State that the route may subsequently be modified through the insertion (from the database) or deletion of specific waypoints in response to ATC clearances. |
| LO | State that the manual entry, or creation of new waypoints by manual entry, of latitude and longitude or place/bearing/ distance values is not permitted. |
| **062 07 05 04** | **RNP 4** |
| LO | State that at least two LRNSs, capable of navigating to RNP4 and listed in the flight manual, must be operational at the entry point of the RNP airspace. |
| **062 07 05 05** | **RNP APCH** |
| LO | State that pilots must not fly an RNP APCH unless it is retrievable by procedure name from the on-board navigation database and conforms to the charted procedure. |
| LO | State that an RNP APCH to LNAV minima is a non-precision instrument approach procedure designed for 2D approach operations. |
| LO | State that an RNP APCH to LNAV/VNAV minima has lateral guidance based on GNSS and vertical guidance based on either SBAS or BaroVNAV. |
| LO | State that an RNP APCH to LNAV/VNAV minima may only be conducted with vertical guidance certified for the purpose. |
| LO | Explain why an RNP APCH to LNAV/VNAV minima based on BaroVNAV may only be conducted when the aerodrome temperature is within a promulgated range. |
| LO | State that the correct altimeter setting is critical for the safe conduct of an RNP APCH using BaroVNAV. |
| LO | State that an RNP APCH to LNAV/VNAV minima is a 3D operation. |
| LO | State that an RNP APCH to LPV minima is a 3D operation. |
| LO | State that RNP APCH to LPV minima requires an FAS data-block. |
| **062 07 05 06** | **RNP AR APCH** |
| LO | State that RNP AR APCH requires authorisation. |

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| **062 07 05 07** | **A-RNP** |
| LO | State that Advanced RNP incorporates the navigation specifications RNAV5, RNAV2, RNAV1, RNP2, RNP1 and RNP APCH. |
| LO | State that Advanced RNP may be associated with other functional elements. |

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| **062 07 05 08** | **PBN Point in Space (PinS) departure** |
| LO | State that a PinS departure is a departure procedure designed for helicopters only. |
| LO | State that a PinS departure procedure includes either a “proceed VFR” or a “proceed visually” instruction from landing location to IDF. |
| LO | Recognise the differences between “proceed VFR” and “proceed visually” instruction. |
| **062 07 05 09** | **PBN Point in Space (PinS) approach** |
| LO | State that a PinS approach is an instrument RNP APCH procedure designed for helicopters only, and that may be published with LNAV minima or LPV minima. |
| LO | State that a PinS approach procedure includes either a “proceed VFR” or a “proceed visually” instruction from the MAPt to a landing location. |
| LO | Recognise the differences between “proceed VFR” and “proceed visually” instruction. |