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| naslov | **PUBLIC USE** | | | | | |
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|  | **Edition** | **:** |  |  |
| **Edition Date** | **:** |  |
| **Status** | **:** | **Draft** |
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Based on the Serbia and Montenegro Air Traffic Services SMATSA llc Regulation of organisation and job description - OU/DIR No 235/28 dated 21.12.2018. with associated amendments, in accordance with defined tasks and authorisation for the job position Director of SMATSA llc, I hereby enact

This document becomes effective upon approval from National Authorities of Montenegro (National Airspace Management Board - NOUVP).

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| Predrag Jovanović |

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**DOCUMENT CHANGE RECORD**

|  |  |  |
| --- | --- | --- |
| **Edition** | **Edition Date** | **Reason for change** |
| 0.1 | 03.03.2020. | Creation of the document |
| 0.2 | 11.03.2020. | Further content consolidation |
| 0.3 | 23.03.2020. | Further content consolidation |
| 0.4 | 08.04.2020. | Further content consolidation |
| 0.5 | 23.04.2020. | Further content consolidation |
| 0.6 | 15.06.2020. | Document updated after Eurocontrol NM revision |
| 1.0 | 13.08.2020. | Document in use |
| 2.0 | 14.01.2022. | Document updated after CAA Montenegro revision and in accordance with clarifications at EASA ATM/ANS TeB meeting held on 7th Dec 2020 on the applicability of the PBN regulation |
| 2.1 | 29.07.2022. | Content consolidation in accordance with NM feedback |

**DISTRIBUTION LIST**

|  |  |  |  |
| --- | --- | --- | --- |
| **Edition** | **Edition Date** | **Distribution** | **Remarks** |
| 0.5 | 29.04.2020. | * Eurocontrol Network Manager | Electronic copy |
| 0.6 | 15.06.2020. | * Eurocontrol Network Manager | Electronic copy |
| 1.0 | 13.08.2020. | * Eurocontrol Network Manager | Electronic copy |
| * Civil Aviation Agency of Montenegro | Electronic copy |
| * Ministry of Transport and Maritime Affairs | Hardcopy and electronic copy |
| 2.0 | 14.01.2022. | * Civil Aviation Agency of Montenegro | Electronic copy |
| * Eurocontrol Network Manager | Electronic copy |
| * National Airspace Management Board | Hardcopy and electronic copy |
| 2.1 | 29.07.2022. | * Civil Aviation Agency of Montenegro | Electronic copy |
| * Eurocontrol Network Manager | Electronic copy |
| * National Airspace Management Board | Electronic copy |

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****FOREWORD****

Bearing in mind that SMATSA llc is responsible for providing air navigation services in two countries - the Republic of Serbia and the state of Montenegro, two distinct but interrelated PBN transition plans were developed regarding each country in particular.

Montenegro, to which this document refers to, although not yet a fully member of the EU but candidate country, is the signatory of ECAA agreement meaning that EC Regulations shall be made part of its internal legal order.

PBN IR was transposed into national legislation in Montenegro during 2019, hence SMATSA llc has a legal requirement to comply with the implementation process of the requirements laid down in the PBN IR.

This is done in order to support harmonised approach on a European level, as the only recognised way to cope with the continued growth of aviation and increasing demands on the use of available airspace.

In the creation of this document relevant NETOPS meeting working papers were concerned and used adjusted according to the specific needs and current level of SMATSA llc compliance with requirements stipulated in the PBN IR.

This document is intended to be a living document. New editions will be published on the basis of experience gained and of comments and suggestions received from the relevant stakeholders.

****EXECUTIVE SUMMARY****

SMATSA llc has developed a PBN Transition Plan in order to ensure compliance with the PBN IR[[1]](#footnote-1) enabling smooth and safe transition to the provision of services using PBN in a timely and effective manner in its AoR.

Results of conducted comparative analysis of the current operations level against published requirements showed that in terms of en-route, TMA and approach operations SMATSA llc was in line with all objectives defined for 2020 and beyond.

After clarifications on the applicability of the PBN IR, given at EASA ATM/ANS TeB meeting held on 7th Dec 2020, additional runways have been considered within the list of eligible aerodromes.

Implementation of additional PBN procedures and establishment of contingency measures with transition to the minimum operation network of conventional NAVAIDs are set as primary objectives in the following period.

In that process, development of a convenient strategy for gradually moving towards the PBN only operational environment and reducing the network of conventional infrastructure to the extent appropriate for all stakeholders will be in the main focus.

Furthermore, SMATSA llc will undertake appropriate stakeholder consultation which will enable implementation of identified and confirmed transitional measures in accordance with agreed timelines. In that way airspace users will be informed about the planned changes in a timely manner and will be able to adequately equip/retrofit airborne equipment if required. In order to support that process a detailed strategic roadmap for PBN implementation is also provided within this document.

The final document, when fully completed, will describe the agreed airspace changes to meet regulatory requirements as defined in future operational environment.

# INTRODUCTION

## Presentation of the document

### About the document

This document is developed by the Serbia and Montenegro Air Traffic Services SMATSA llc (hereinafter: SMATSA llc) in compliance with:

* Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation (OJ L 189, 26.7.2018, p. 3–8), including national transposition – “Pravilnik o korišćenju vazdušnog prostora i operativnih procedura u vezi sa navigacijom zasnovanoj na navigacionim performansama (PBN) („Službeni list CG“, br. 01/20 i 109/20) (Preuzeta Uredba Komisije br. 2018/1048)” (hereinafter: PBN IR) and
* Executive Director Decision 2018/013/R of 21 November 2018 issuing Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1332/2011 and Commission Implementing Regulation (EU) 2018/1048 and repealing Decision 2012/002/R of the Executive Director of the Agency of 8 March 2012 and
* Annexes I and II to ED Decision 2018/013/R - Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1332/2011 and Commission Implementing Regulation (EU) 2018/1048 on common airspace usage requirements and operating procedures ‘AMC & GM to AUR’ (Issue 2, 21 November 2018)

### Structure of the document

This document contains following sections:

* Section 1: Introduction - provides the structure, purpose and scope of the document and the list of all requirements arising from the PBN IR;
* Section 2: Evaluation of the operational environment - presents description of the current operational environment subject to a change according to the PBN IR requirements;
* Section 3: Compliance with the requirements - provides an analysis regarding current fulfilment of the PBN IR requirements;
* Section 4: Implementation objectives - identifies the main objectives that need to be done in future period in accordance with the PBN IR requirements;
* Section 5: Transition plan - provides a detailed plan for the fulfilment of objectives identified in the previous Section;
* Section 6: Future operational environment - provides an overview of the future state of the operational environment when all of the specified goals are met;
* Section 7: Definitions - gives a reference to definitions;
* Section 8: Acronyms and abbreviations - gives a list of all acronyms and abbreviations used in the document;
* Section 9: Appendices - gives a list of all appendices in the document;
* Appendix 1 - PBN Checklist of Implementation - presents a general compliance table in regard of the PBN IR.
* Appendix 2 - Detailed PBN implementation roadmap - gives a general overview and timeline regarding implementation of defined transitional measures.

## Purpose

The primary purpose of the document is to ensure fulfilment of the requirements stated in Article 4 of the PBN IR regarding necessary measures to ensure a smooth and safe transition to the provision of the services using PBN in a timely and effective manner.

This document is consistent with the European ATM Master Plan and the common projects referred to in Article 15a of Regulation (EC) No 550/2004 of the European Parliament and of the Council[[2]](#footnote-2).

## Scope

SMATSA llc is a provider of air traffic management/air navigation services (ATM/ANS) responsible for development, implementation and maintenance of:

* Instrument approach procedures;
* STARs and SIDs; and
* ATS routes;

Within BEOGRAD ATCC Area of Responsibility, in the airspace of Montenegro (part of BEOGRAD FIR/UIR[[3]](#footnote-3)).

Aerodromes that are subject to the PBN IR are those with one or more IRE, including circling/indirect approaches (as shown in the table below).

Table 1 Aerodromes falling into the scope of the PBN IR

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Location** | **ICAO Code** | **TMA** |
| Podgorica | Podgorica | LYPG | TMA Podgorica |
| Tivat | Tivat | LYTV | TMA Tivat |

In the event of the appearance of new eligible airports, this document will be updated accordingly.

## Entry into force and application

The following tables provide a summary of the PBN IR requirements.

Table 2 originates from Annexes I and II to ED Decision 2018/013/R and gives a list of requirements by implementation timing and Table 3[[4]](#footnote-4) represents requirements in a more transparent way.

CP 1 IR[[5]](#footnote-5) requirements (AF#1 and AF#3) which supersedes the PCP IR[[6]](#footnote-6) are not considered within this document.

General PBN requirement stated in Article 3 of the PBN IR is considered fulfilled when all other requirements are met.

Table 2 Summary of the PBN IR requirements by implementation timing

|  |  |
| --- | --- |
| Implementation by 3 December 2020 | AUR.PBN.2005 points |
| RNP APCH or RNP AR to all IREs without PA, and, where required, RF legs | (1) + (2) + (3) |
| RNAV 5 for all ATS routes at or above FL150 | (6) |
| Implementation by 25 January 2024 | |
| RNP APCH or RNP AR to all IREs, and, where required, RF legs | (1) + (2) + (3) |
| For all IREs, RNAV 1 or RNP 1(+) for at least one established SID/STAR | (4) + (5) |
| For all IREs, RNP 0.3 or RNP 1 or RNAV 1 for at least one established SID/STAR for rotorcraft operations | (7) |
| RNAV 5 for ATS routes established below FL150 | (6) |
| RNP 0.3 or RNP 1 or RNAV 1 for ATS routes established below FL150 for rotorcraft operations | (7) |
| Implementation by 6 June 2030 | |
| RNAV 1 or RNP 1(+) applicable to all SIDs/STARs when established | (4) + (5) |
| RNP 0.3 or RNP 1 or RNAV 1 applicable to all SIDs/STARs for rotorcraft operations when established | (7) |
| RNP 1(+): RNP 1 specification including RF and/or vertical paths defined by constraints | |

Table 3 Summary of the PBN IR requirements by article

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **REQUIREMENTS** | | **03 DEC**  **2020** | **25 JAN**  **2024** | **06 JUN**  **2030** |
| **Article 4 and Article 7 Applicability of AUR.PBN.2005** | | | | |
| Article 4 | Transition Plan (*or significant updates)* approved *(living document)\** | x\* | x\* | x\* |
| AUR.PBN.2005 (1) or (2) or (3) | RNP APCH at IREs without Precision Approach (PA) | x |  |  |
| RNP APCH at all IREs (with PA) |  | x |  |
| AUR.PBN.2005 (4) or (5) | RNAV 1 or RNP 1(+) SID and STAR - one per IRE |  | x |  |
| RNAV 1 or RNP 1(+) for all SID and STARs |  |  | x |
| AUR.PBN.2005 (6) | RNAV 5 ATS routes at and above FL150 | x |  |  |
| RNAV 5 ATS routes below FL150 |  | x |  |
| AUR.PBN.2005 (7) | Helicopter RNP 0.3/RNAV 1/RNP 1 SID/STAR - one per IRE |  | x |  |
| Helicopter RNP 0.3/RNAV 1/RNP 1 for all SID/STAR |  |  | x |
| Helicopter RNP 0.3/RNAV 1/RNP 1 ATS routes below FL150 |  | x |  |
| **Article 5 and Article 6** | | | | |
| Article 5 | Exclusive use of PBN |  |  | x |
| Article 6 | Contingency measures | x | x | x |

\* The transition plan will have several iterations; Article 4 requires that the draft/significant updates to the plan must be approved by the competent authority prior to being implemented. The obligations in the transition plans would need to be commensurate with the target date obligations.

# EVALUATION OF THE OPERATIONAL ENVIRONMENT

## Instrument approach procedures

Status of the current approach operations is presented in the table below.

Table 4 Overview of the current approach operations

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **IAPs** | | | | | | |
| **Conventional** | | | | **PBN - RNP APCH** | | |
| **PA** | **NPA** | | **Circling** | **PA** | **APV** | **NPA** |
| **LYPG** | **18** | / | / | | Circling with prescribed tracks | / | / | / |
|  | **36** | ILS Cat I (LOC) | VOR (DME) | NDB (DME) | / | LPV Cat I | LNAV/ VNAV | LNAV |
| **LYTV** | **14** | / | / | | Circling with prescribed tracks | / | / | / |
|  | **32** | / | LOC[[7]](#footnote-7) (DME) | NDB (DME) | Circling with prescribed tracks | / | / | / |

### Aerodrome Podgorica – LYPG

General information about approach operations at LYPG is given in Table 5 and detailed description of conventional approach procedures is presented in Table 6.

Table 5 LYPG approach operations

|  |  |  |
| --- | --- | --- |
| RWY | 18 | 36 |
| **NAV provided** | Non-instrument approach | PBN and Conventional |
| **IAPs provided** | Circling with Prescribed Tracks | PA, APV and NPA |
| **Primary IAP** | / | ILS Cat I |
| **Redundancy** (fallback /backup /contingency) | /  (Implementation excessively difficult due to terrain and national border proximity) | Multiple redundancy is provided by means of RNP APCH procedures down to all three minima lines and additional VOR and NDB approaches which may be used on request; radar vectoring to IF |

Table 6 Conventional approach procedures at LYPG

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **Approach Phase** | | | **NAVAIDs** | | | |
| **Primary** | | **Support/Backup** | |
| **LYPG** | **18** | Final approach | Approach to Circling with Prescribed Tracks | | VOR/DME: POD  NDB: (L) GO | | / | |
| **36** | Initial / Intermediate approach | ILS (LOC) Z, Y | | VOR/DME: POD  (Radar vectoring) | | NDB: POD | |
| VOR Z, Y | | VOR/DME: POD  (Radar vectoring) | | NDB: POD | |
| NDB Z, Y | | NDB: POD  DME: POD  (Radar vectoring) | | VOR: POD | |
| NDB X (dual ADF) | | NDB: POD, (L) GO  (Radar vectoring) | | / | |
| Final approach | ILS (LOC) Z, Y | | GP/LOC: YUI  DME: POD  NDB: (L) GO | | NDB: POD  Markers (OM, MM) | |
| VOR Z, Y | | VOR/DME: POD  NDB: (L) GO | | NDB: POD | |
| NDB Z, Y | | NDB: POD  DME: POD | | VOR: POD  NDB: (L) GO | |
| NDB X (dual ADF) | | NDB: POD, (L) GO | | / | |
| Missed approach | ILS (LOC) Z, Y | | VOR/DME: POD | | NDB: POD | |
| VOR Z, Y | | VOR/DME: POD | | NDB: POD | |
| NDB Z, Y | | NDB: POD  DME: POD | | VOR: POD  NDB: (L) GO | |
| NDB X (dual ADF) | | NDB: POD, DAN | | / | |
| **Total nb. of NAVAIDs** | | ILS: 1 | | VOR/DME: 1 | | NDBs: 3 | | Markers: 2 |

### Aerodrome Tivat – LYTV

General information about approach operations at LYTV is given in Table 7 and detailed description of conventional approach procedures is presented in Table 8.

Table 7 LYTV approach operations

|  |  |  |
| --- | --- | --- |
| RWY | 14 | 32 |
| **NAV provided** | Non-instrument approach | Conventional |
| **IAPs provided** | Circling with Prescribed Tracks | NPA |
| **Primary IAP** | / | LOC (DME required) |
| **Redundancy** (fallback /backup /contingency) | /(Implementation excessively difficult due to terrain) | Limited up to FAF. After FAF no redundancy. All instrument procedures have final visual segment and are marked as “day only”. |

Table 8 Conventional approach procedures at LYTV

| **ICAO Code** | **RWY** | **Approach Phase** | | | **NAVAIDs** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Primary** | | **Support/Backup** | |
| **LYTV** | **14** | Final approach | Approach to Circling with Prescribed Tracks | | DME: TIV  NDB: TAZ | | / | |
| **32** | Initial / Intermediate approach | LOC Z | | VOR/DME: POD  NDB: TAZ  DME: TIV | | / | |
| LOC Y | | RNP 1\*  NDB: TAZ | | DME: TIV | |
| NDB Z | | VOR/DME: POD  NDB: TAZ  DME: TIV | | / | |
| NDB Y | | RNP 1\*  NDB: TAZ | | DME: TIV | |
| Final approach | LOC Z | | LOC/DME: TIV | | NDB: TAZ | |
| LOC Y | | LOC/DME: TIV | | NDB: TAZ | |
| NDB Z | | NDB: TAZ  DME: TIV | | NDB: RO | |
| NDB Y | | NDB: TAZ | | / | |
| Missed approach | LOC Z | | DME: TIV  NDB: RO, TAZ  VOR/DME: POD (MA holding) | | / | |
| LOC Y | | DME: TIV  NDB: RO, TAZ  RNAV 1 (MA holding) | | VOR/DME: POD (MA holding) | |
| NDB Z | | NDB: TAZ, RO  DME: TIV  VOR/DME: POD (MA holding) | | / | |
| NDB Y | | NDB: RO, TAZ  RNAV 1 (MA holding) | | VOR/DME: POD (MA holding) | |
| **Total nb. of NAVAIDs** | | LOC: 1 | | DMEs: 2 | | VOR: 1 | | NDBs: 2 |

\* RNP transition to conventional approach.

## SID and STAR routes

### TMA Podgorica (LYPG)

General information about TMA operations is given in Table 9 and detailed description of arrival and departure procedures is presented in Table 10.

Table 9 LYPG TMA operations

|  |  |
| --- | --- |
| RWY | 18 / 36 |
| **Radar service provided** | Yes |
| **NAV provided** | PBN and Conventional |
| **NAV specification** | RNP 1 |
| **PBN NAV infrastructure** | GNSS |
| **Conventional NAV infrastructure** | Based on a single VOR/DME and five NDB navaids. |
| **Concept of operations** | Primary procedures in use are those based on conventional navaids; aircraft equipped and able to use RNP 1 routes will be cleared to used them upon request. All aircraft may be subject to radar vectoring in accordance with ATC Surveillance Minimum Altitude Chart. |

Table 10 Conventional and PBN TMA procedures at LYPG

|  |  |  |  |
| --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **SIDs** | **STARs** |
|
| **LYPG** | **18** | **RNP 1** / based on GNSS | **/** |
| **Conventional** / based on:  VOR/DME: POD  NDB: POD, MOJ, NIK, DAN, (L) GO | **/** |
| **36** | **RNP 1** / based on GNSS | **RNP 1** / based on GNSS |
| **Conventional** / based on:  VOR/DME: POD  NDB: POD, MOJ, NIK, DAN, (L) GO | **Conventional** / based on:  VOR/DME: POD  NDB: POD, MOJ, NIK, DAN, (L) GO |
| **Total nb. of NAVAIDs** | | VOR/DME: 1 | NDBs: 5 |

### TMA Tivat (LYTV)

General information about TMA operations is given in Table 11 and detailed description of arrival and departure procedures is presented in Table 12.

Table 11 LYTV TMA operations

|  |  |
| --- | --- |
| RWY | 14 / 32 |
| **Radar service provided** | No (procedural ATC only) |
| **NAV provided** | PBN and Conventional |
| **NAV specification** | RNP 1 |
| **PBN NAV infrastructure** | GNSS |
| **Conventional NAV infrastructure** | Based on a single VOR, two DMEs and four NDBs. |
| **Concept of operations** | RNP 1 and conventional routes may be used on request on an equivalent base |

Table 12 Conventional and PBN TMA procedures at LYTV

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **SIDs** | | **STARs** | |
|
| **LYTV** | **14** | **RNP 1** / based on GNSS | | **RNP 1** / based on GNSS | |
| **Conventional** / based on:  NDB: TAZ, RO, NIK, (+POD backup only)  DME: TIV  VOR/DME: POD | | **Conventional** / based on:  NDB: TAZ, RO, NIK, (+POD backup only)  DME: TIV  VOR/DME: POD | |
| **32** | **RNP 1** / based on GNSS | | **RNP 1** / based on GNSS | |
| **Conventional** / based on:  NDB: TAZ, RO, NIK, (+POD backup only)  DME: TIV  VOR/DME: POD | | **Conventional** / based on:  NDB: TAZ, RO, NIK, (+POD backup only)  DME: TIV  VOR/DME: POD | |
| **Total nb. of NAVAIDs** | | VOR/DMEs: 1 | DME: 1 | | NDBs: 4 |

## En-route

Aircraft, other than State aircraft, operating under instrument flight rules within BEOGRAD FIR/UIR above 9500 FT ALT, shall be equipped, as a minimum, with RNAV equipment meeting RNAV 5 (B-RNAV) specification as set out in ICAO Doc 7030 – Regional Supplementary Procedures.

NOTE: RNAV 5, defined in ICAO Doc 9613 – Performance-based Navigation Manual, is equivalent to B-RNAV with regard to the navigational equipment and certification requirements. Those two terms (RNAV 5 and B-RNAV) in AIP Serbia/Montenegro are treated as equal.

SMATSA llc has implemented crossborder FRA on 24/7 basis (SECSI FRA).

Status of current en-route operations is presented in the table below.

Table 13 Overview of current en-route operations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NAV application** | **Limits** | **NAV specification** | **NAV infrastructure** | **NAV back-up infrastructure** |
| **FRA\*** | FL660  FL205 | / | GNSS | VOR/DME & NDB  + Radar as required |
| **ATS routes** | FL205  MNM ALT | RNAV 5 |

\* Outside of the PBN IR scope.

## Surveillance and communication systems

TBD

## Airborne equipment and capabilities

PBN fleet capability for 2019 flights at LYPG and LYTV is given in the table below. Statistics are prepared through Eurocontrol’s CNS Dashboard under the following conditions:

* Period: JAN – DEC 2019;
* Traffic: Arrivals only;
* Flight type: Scheduled.

Main conclusions are:

* Almost all flights were PBN approved (99.98% LYPG, 99.89% LYTV), however significantly less flights were GNSS capable (~69% LYPG, ~67% LYTV);
* RNP 1 capabilities are not so strong (~36% LYPG, ~43% LYTV), meaning that more than 50% of flights operated at LYTV and over 60% flights at LYPG were not capable to use published RNP 1 SID and STAR routes and that they still depend on conventional NAVAIDs as a source of navigation;
* RNP APCH capabilities were at a 60% level (~62% LYPG, ~58% LYTV) without any flight with LPV capability on for both aerodromes. This is most probably due to the fact that RNP APCH to LPV minima were implemented on 26 March 2020, and the increase in LPV capable operations can be expected;
* Capabilities regarding RNP AR APCH (~3% LYPG, <9% LYTV) and GBAS (<1% LYPG, <14% LYTV) were also at low level.

Table 14 PBN fleet capability at LYPG and LYTV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **FLEET CAPABILITY** | **LYPG** | | **LYTV** | |
| Flights | Percentage | Flights | Percentage |
| **Total number of flights** | **6264** | **4657** |
| **R - PBN approved** | **6263** | **99.98%** | **4652** | **99.89%** |
| **G - GNSS** | **4349** | **69.43%** | **3140** | **67.43 %** |
| **RNAV 1 – Any means (any Dx)** | **5527** | **88.23%** | **3316** | **71.20%** |
| **RNAV 1 – GNSS only (D2 only)** | **612** | **9.77%** | **517** | **11.10%** |
| **RNAV 1 – Non GNSS (D3 or D4 and not (D1 or D2))** | **1273** | **20.32%** | **240** | **5.15%** |
| D1 - RNAV 1 all permitted sensors | 3403 | 54.33% | 2437 | 52.33% |
| D2 - RNAV 1 GNSS | 851 | 13.59% | 639 | 13.72% |
| D3 - RNAV 1 DME/DME | 770 | 12.29% | 130 | 2.79% |
| D4 - RNAV 1 DME/DME/IRU | 1286 | 20.53% | 241 | 5.18% |
| **RNP 1 (any Ox)** | **2280** | **36.40%** | **2004** | **43.03%** |
| O1 - Basic RNP 1 all permitted sensors | 1982 | 31.64% | 1876 | 40.28% |
| O2 - Basic RNP 1 GNSS | 598 | 9.55% | 128 | 2.75% |
| O3 - Basic RNP 1 DME/DME | 34 | 0.54% | 0 | 0.00% |
| O4 - Basic RNP 1 DME/DME/IRU | 9 | 0.14% | 1 | 0.02% |
| **RNP APCH – Any means (S1 or S2 or B)** | **3884** | **62.01%** | **2710** | **58.19%** |
| **RNP APCH (S1 or S2)** | **3884** | **62.01%** | **2710** | **58.19%** |
| **RNP APCH – LNAV only (S1 and not S2 and not B)** | **1102** | **17.59%** | **532** | **11.42%** |
| S1 - RNP APCH | 1934 | 30.87% | 801 | 17.20% |
| S2 - RNP APCH with BARO-VNAV | 2782 | 44.41% | 2178 | 46.77% |
| B - LPV (APV with SBAS) | 0 | 0.00% | 0 | 0.00% |
| **RNP AR APCH (T1 or T2)** | **200** | **3.19%** | **413** | **8.87%** |
| T2 - RNP AR APCH without RF (special authorisation required) | 129 | 2.06% | 0 | 0.00% |
| T1 - RNP AR APCH with RF (special authorisation required) | 199 | 3.18% | 413 | 8.87% |
| **A - GBAS landing system** | **50** | **0.80%** | **645** | **13.85%** |

# COMPLIANCE WITH THE REQUIREMENTS

PBN Checklist of implementation is provided within Appendix 1 of this document in order to verify compliance with the transition planning requirements.

## Implementation of IAPs

### Requirements

AUR.PBN.2005 (1) or (2) or (3):

* RNP APCH at IREs without Precision Approach (PA) by 03 DEC 2020;
* RNP APCH at all IREs (with PA) by 25 JAN 2024.

### Fulfilment

The status of compliance with the requirements of the PBN IR is presented in Table 15.

#### LYPG

RWY 18

PBN IR requirements are not applicable to RWY 18 as it has been classified as non-Instrument approach RWY.

However, IAP for RWY 30 enables transition to the point from which circling approach to RWY 18 is to be commenced.

RWY 36

All requirements have been fulfilled in accordance with the PBN IR.

#### LYTV

RWY 14

PBN IR requirements are not applicable to RWY 14 as it has been classified as non-instrument approach RWY.

However, IAP for RWY 32 enables transition to the point from which circling approach to RWY 14 is to be commenced.

RWY 32

Implementation of 3D RNP APCHs may be considered as not applicable in terms of the PBN IR because implementation is characterized as excessively difficult due to terrain after preliminary IFP design was made (it is not possible to construct any type of standard non-aligned straight-in approaches in line with criteria defined in PANS-OPS[[8]](#footnote-8)).

Considering moderate volumes of traffic at LYTV, implementation of 3D approach procedure in accordance with the requirements of the RNP authorisation required (RNP AR APCH) specification is not planned in the short term.

Requirement about implementation of 2D RNP APCH to LNAV minimum was confirmed by the clarifications on the applicability of the PBN regulation, given at EASA ATM/ANS TeB meeting, held on 7th Dec 2020.

For that reason implementation is postponed to no later than 25 JAN 2024 (the second planning period). Exact implementation date will be determined in the following period.

#### Additional notes

Implementation of radius to fix (RF) legs currently is not considered because it is not required due to traffic density or traffic complexity on any of the subject aerodromes.

Table 15 Current level of compliance with IAPs requirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **RWY Type** | **RNP APCHs** | | |
| **3D approach** | | **2D approach** |
| **LPV** | **LNAV/VNAV** | **LNAV** |
| **LYPG** | 18 | Non-Instrument approach | **Not applicable** | **Not applicable** | Implemented on 25 MAY 2017  **- in accordance with EASA PBN IR clarification:**  approach to RWY 36 with circling minima to allow landing on opposite runway end (RWY 18) |
| 36 | Instrument Precision Approach | Implemented on 26 MAR 2020  **- in accordance with AUR.PBN.2005 (1)** | Implemented on 26 MAR 2020  **- in accordance with AUR.PBN.2005 (1)** | Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (1)** |
| **LYTV** | 14 | Non-Instrument approach | **Not applicable** | **Not applicable** | Planned  TBD  **- in accordance with EASA PBN IR clarification:**  approach to RWY 32 with circling minima to allow landing on opposite runway end (RWY 14) |
| 32 | Non-Precision Instrument Approach | Not implemented  **- in accordance with AUR.PBN.2005 (2)**:  implementation is excessively difficult due to terrain | Not implemented  **- in accordance with AUR.PBN.2005 (2)**:  implementation is excessively difficult due to terrain | Planned  TBD  **- late in accordance with Article 7 2** |

## Implementation of SIDs and STARs

### Requirements

AUR.PBN.2005 (4) or (5):

* RNAV 1 or RNP 1(+) SID and STAR - one per IRE by 25 JAN 2024;
* RNAV 1 or RNP 1(+) for all SID and STARs by 06 JUN 2030.

### Fulfilment

The status of compliance with the requirements of the PBN IR is presented in Table 16.

#### LYPG and LYTV (all RWYs)

All requirements have been fulfilled in accordance with the PBN IR.

In order to maintain air traffic safety in environment with high terrain and obstacle features at LYPG (TMA Podgorica) and in addition to that, no radar service provision at LYTV (TMA Tivat), SID and STAR routes with higher performance requirements than RNAV 1 navigation specification have been implemented - RNP 1 specification, including additional navigation functionalities regarding operations along a vertical path and between two fixes and with the use of:

1. An ‘AT’ altitude constraint; or
2. An ‘AT OR ABOVE’ altitude constraint; or
3. An ‘AT OR BELOW’ altitude constraint; or
4. A ‘WINDOW’ constraint.

Implementation of RF legs is not currently planned on any of the subject aerodromes.

Table 16 Current level of compliance with SIDs/STARs requirements

| **ICAO Code** | **RWY** | **SIDs** | **STARs** |
| --- | --- | --- | --- |
| **RNAV 1 or RNP 1** | **RNAV 1 or RNP 1** |
| **LYPG** | 18 | RNP 1 + vertical constraints to all SIDs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**  higher performance are required in order to maintain air traffic safety in environments with high terrain features | RNP 1 + vertical constraints to all STARs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**  higher performance are required in order to maintain air traffic safety in environments with high terrain features |
| 36 | RNP 1 + vertical constraints to all SIDs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**  higher performance are required in order to maintain air traffic safety in environments with high terrain features | RNP 1 + vertical constraints to all STARs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**  higher performance are required in order to maintain air traffic safety in environments with high terrain features |
| **LYTV** | 14 | RNP 1 + vertical constraints to all SIDs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**  higher performance are required in order to maintain air traffic safety in environments with high terrain features | RNP 1 + vertical constraints to all STARs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**:  higher performance are required in order to maintain air traffic safety in environments with high terrain features |
| 32 | RNP 1 + vertical constraints to all SIDs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**:  higher performance are required in order to maintain air traffic safety in environments with high terrain features | RNP 1 + vertical constraints to all STARs Implemented on 25 MAY 2017  **- in accordance with AUR.PBN.2005 (5)**:  higher performance are required in order to maintain air traffic safety in environments with high terrain features |

## Implementation of ATS routes

### Requirements

AUR.PBN.2005 (6):

* RNAV 5 ATS routes at and above FL150 by 03 DEC 2020;
* RNAV 5 ATS routes below FL150 by 25 JAN 2024.

### Fulfilment

All requirements have been fulfilled in accordance with details presented in the table below.

Table 17 Current level of compliance with ATS routes requirements

|  |  |
| --- | --- |
| **Vertical limits** | **ATS routes** |
| **Above FL150** | RNAV 5 spec established from route MNM ALT to FL205 within BEOGRAD FIR/UIR (in the airspace of Montenegro)  Implemented on 01 FEB 2018 in line with the SECSI FRA initiative  **- in accordance with AUR.PBN.2005 (6)** |
| **Below FL150\*** |

\* Conditions from **AUR.PBN.2005 (6)** and requirements for RNAV 5 implementation in ICAO Doc 9613 Vol II, Part B, paragraph 2.2.1 are already met. Further improvements of DME/DME coverage are planned.

NOTE: ATS routes (U)W36 and A482 have formal designators for routes that are not area navigation routes (in accordance with ICAO Annex 11 Air Traffic Services) because they are integral part of the trilateral agreement regulating the delegation of the ATS provision to Brindisi ACC signed in October 1999. ATS route designators will be changed together with revision or cancelation of the trilateral agreement.

## Implementation of SID/STAR/ATS routes for rotorcraft operations

### Requirements

AUR.PBN.2005 (7):

* Helicopter RNP 0.3/RNAV 1/RNP 1 SID/STAR - one per IRE by 25 JAN 2024;
* Helicopter RNP 0.3/RNAV 1/RNP 1 for all SID/STAR by 06 JUN 2030;
* Helicopter RNP 0.3/RNAV 1/RNP 1 ATS routes below FL150 by 25 JAN 2024.

### Fulfilment

All requirements may be considered as fulfilled (or not applicable) in terms of the PBN IR because routes and procedures for rotorcraft operations have not been established at the moment and currently there is no demand for their implementation (see the table below).

Table 18 Current level of compliance with rotorcraft operations requirements

|  |  |
| --- | --- |
| **NAV Specification** | **SID / STAR / ATS routes** |
| **RNP 0.3 or**  **RNAV 1 or**  **RNP 1** | Not implemented  **- in accordance with AUR.PBN.2005 (7)**:  SID / STAR or ATS routes for rotorcraft operations have not been established yet |

## Exclusive use of PBN and establishment of contingency measures

### Requirements

Article 5 and Article 6:

* Exclusive use of PBN by 06 JUN 2030;
* Contingency measures for each phase of Transition Plan.

### Fulfilment

Fulfilment of Article 5 and 6 requirements is planned in accordance with the Section 5 - Transition plan. Up to that moment contingency measures are ensured through the means of procedures/routes multiple redundancy supporting all phases of operations as stated within Section 2.

# IMPLEMENTATION OBJECTIVES

## Achieved level of compliance with PBN IR

The current level of compliance with the requirements of the PBN IR within SMATSA llc AoR within Montenegro territory is as follows:

* IAPs requirements:
* LYPG – fully implemented;
* LYTV – not implemented;
* SID/STARs requirements:
* LYPG and LYTV – fully implemented;
* ATS routes – fully implemented;
* SID / STAR / ATS routes for rotorcraft operations – no requirements.

## Planned measures

In order to make full compliance with the PBN IR the following general measures have been defined for future implementation:

* Implementation of missing PBN IAP;
* Gradually withdrawal of conventional procedures (SIDs/STARs/IAPs);
* Implementation of contingency measures, including retention of necessary minimum operational network of conventional NAVAIDs:
* ILS Cat I (where available) - Will be used only as contingency approach procedure in case of a reversion from GNSS;
* All DMEs (aerodrome, TMA, en-route):
* Should be modernised and retained in order to make DME/DME backup infrastructure to support en-route and TMA PBN operations (if possible);
* New DME installations may be expected, if required by the DME/DME coverage analysis;
* Aerodrome VORs:
* Should be modernised and retained to support backup and contingency approach procedures (installation of additional VOR/DME facility at LYTV aerodrome should be considered);
* Will be retained as contingency NAVAIDs for TMA and en-route operations in case of a reversion from GNSS or PBN unavailability;
* Will be retained as support to backup COM failure procedures and for use by airlines to define internal engine-out and other emergency procedures;
* NDBs and markers - Will be withdrawn from operational use (GAT);
* SIDs/STARs - Minimum one conventional SID/STAR procedure will be retained as contingency procedures.
* Expansion of DME/DME network as a backup infrastructure for en-route (RNAV 5) and ТМА (LYPG) operations, in case of a reversion from GNSS, in line with results obtained from DME/DME coverage analysis and cost-benefit analysis.

# TRANSITION PLAN

Regarding the current level of compliance with the PBN IR requirements and identified future objectives three periods for further implementation steps have been determined:

* Short-term (next 3 years);
* Medium-term (from 4 to 7 years);
* Long-term (beyond 7 years).

**All transitional measures need to be yet confirmed within consultation process that shall involve all relevant stakeholders.**

Table 19 shows approximately determined transitional measures with planned implementation timing.

Detailed future operational concept planned after transition period is presented in Section 6.

Table 19 Overview of transitional measures

|  |  |  |  |
| --- | --- | --- | --- |
| **Transition period** | | **Location** | **Operational requirement** |
| Exclusive use of PBN and establishment of contingency measures |
| **Short-term** | 2020 | / | / |
| 2021 | / | / |
| 2022 | TMA Tivat - LYTV | Rationalisation of RWY 14/32 conventional SIDs and STARs |
| LYTV | Implementation of RWY 32 RNP APCH down to LNAV minimum |
| **Medium-term** | 2023 | LYPG | Withdrawal of NDB IAPs |
| LYTV | Withdrawal of NDB IAPs |
| 2024 | LYTV | Installation of new aerodrome VOR/DME to support contingency procedures and withdrawal of NDB TAZ and NDB RO |
| 2025 | / | / |
| 2026 | TMA Podgorica – LYPG | Rationalisation of RWY 18/36 conventional SIDs and STARs |
| **Long-term** | 2027 | TMA Tivat - LYTV | Withdrawal of conventional procedures (transition to contingency procedures) |
| TMA Podgorica - LYPG | Withdrawal of conventional procedures (transition to contingency procedures) |
| 2028 | En-route | Implementation of DME/DME backup infrastructure for RNAV 5 ATS routes network |
| 2029 | TMA Podgorica, - LYPG | Implementation of DME/DME backup infrastructure for LYPG SIDs/STARs (if possible) |
| 2030 | / | / |

Detailed PBN implementation roadmap presenting identified transitional measures is given in Appendix 2.

## Short-term plan

### TMA Tivat – LYTV RWY 14/32

* Rationalisation of conventional SIDs and STARs by 2022:
* Only selected arrival and departure routes will be retained in order to provide services to non-equipped aircraft at this stage.

### LYTV RWY 32

* Implementation of RNP APCH down to LNAV minimum by 2022:
* 2D RNP APCH down to LNAV minimum with excessive OCA/H values (as previously assessed) will be implemented.

## Medium-term plan

### LYTV RWY 32

* Withdrawal of NDB IAPs by 2023:
* Redundancy will be maintained (RNP APCH and LOC/DME);
* NDB considered for withdrawal (for GAT) is TAZ;
* Combining this measure with previous one should be considered.

### LYPG RWY 36

* Withdrawal of NDB IAPs by 2023:
* Multiple redundancy will be maintained (ILS, RNP APCH, VOR);
* NDBs considered for withdrawals (for GAT) are: DAN, (L) GO and POD;
* Combining this measure with previous one should be considered.

### LYTV RWY 14/32

* Installation of new aerodrome VOR/DME by 2024:
* Installation of a VOR/DME at aerodrome location;
* Design of all routes should be based on a new VOR/DME instead of NDB TAZ (if possible); VOR/DME POD and other NDBs (RO, POD, NIK) should be withdrawn from the procedure design;

### TMA Podgorica - LYPG RWY 18/36

* Rationalisation of conventional SIDs/STARs by 2026:
* Only few routes in addition to radar vectoring will be retained in order to provide services to non-equipped aircraft at this stage;
* Design of these routes should be based on VOR/DME POD mainly with the goal to exclude the use NDBs wherever possible;
* If possible, withdrawal of NDBs MOJ and NIK (for GAT).

## Long-term plan

### TMA Tivat / LYTV

* Withdrawal of conventional procedures by 2027:
* Will cover SIDs, STARs and IAPs;
* Minimum one SID/STAR/approach procedure will be retained as contingency procedures (SID/STAR based on new VOR/DME / RWY 32 – LOC/DME approach).

### TMA Podgorica / LYPG

* Withdrawal of conventional procedures by 2027:
* Will cover SIDs, STARs and IAPs;
* Minimum one SID/STAR/approach procedure will be retained as contingency procedures (RWY 36 – ILS Cat I / optionally additional VOR approach);
* Radar vectoring will be provided as a backup for TMA operations.

### En-route

* Upgrade of DME/DME coverage\* for ATS routes by 2028:
* Additional DME/DME cover analysis shall be undertaken;
* Analysis will show if additional DME installations are necessary to develop adequate backup infrastructure network which will certainly include new LYTV DME and POD DME;
* Following aerodrome VORs shall be used as contingency NAVAIDs for en-route operations: POD VOR and new LYTV VOR.

\* Conditions from **AUR.PBN.2005 (6)** and requirements for RNAV 5 implementation in ICAO Doc 9613 Vol II, Part B, paragraph 2.2.1 are already met. Further improvements of DME/DME coverage are planned.

### TMA Podgorica – LYPG

* Implementation of DME/DME backup infrastructure for SIDs/STARs by 2029:
* Detailed DME/DME cover and cost-benefit analysis shall be undertaken;
* Analysis will show if additional DME installations are necessary to develop adequate backup infrastructure network which will certainly include new LYTV DME and POD DME.

# FUTURE OPERATIONAL ENVIRONMENT

## Instrument approach procedures

Future approach operations at LYPG and LYTV are planned as shown in the table below and will be enabled for use in the following way:

* Primary (RNP APCHs) approach procedures shall be published in AIP and made fully available 24/7 for operations planning;
* Contingency procedures shall also be published in AIP but not for planning purposes and only available by NOTAM or by ATC clearance (on pilot request - if there is no other measure to be used on tactical basis);
* All NAVAIDs (operational and contingency) shall be published with necessary information available within adequate AIP AD sections.

Table 20 Future approach operations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **IAPs** | | | |
| **NAV specification** | **NAV infrastructure** | **Ground facilities to supplement RNP APCH procedures** | **NAV contingency procedures / infrastructure** |
| **LYPG** | **18** | **Not applicable**  RNP APCH to RWY 36 with circling minima to allow landing on opposite runway end (RWY 18) | The same as for RWY 36 | / | The same as for RWY 36 |
| **36** | **RNP APCH**  down to LPV, LNAV/VNAV and LNAV minima | **GNSS** | / | **ILS Cat I (LOC)**  based on YUI GP/LOC and VOR/DME POD for missed approach |
| **LYTV** | **14** | **Not applicable**  RNP APCH to RWY 32 with circling minima to allow landing on opposite runway end (RWY 14) | The same as for RWY 32 | / | The same as for RWY 32 |
| **32** | **RNP APCH**  down to LNAV minima | **GNSS** | / | **LOC (Offset 20°)**  based on TIV LOC/DME and new aerodrome VOR/DME for missed approach |

## SID and STAR routes

Future TMA operations at LYPG and LYTV are planned as shown in the table below and will be enabled for use in the following way:

* Primary SIDs and STARs (RNP 1) shall be published in AIP and made fully available 24/7 for operations planning;
* Contingency procedures for LYPG **shall be** published in AIP due to high terrain configuration, but not available for planning purposes and to be used only by ATC clearance (on pilot request); radar vectoring as well as DME/DME back up infrastructure (if possible) will be provided; contingency measures will imply only flight to or from VOR/DME POD;
* Contingency procedures for LYTV **shall be** published in AIP because there is no radar service provided and due to high terrain configuration; but not available for planning purposes and to be used only by ATC clearance (on pilot request); contingency measures will imply only flight to or from VOR/DME POD and new LYTV VOR/DME;
* All NAVAIDs (operational and contingency) shall be published with necessary information available within adequate AIP AD sections.

Table 21 Future TMA operations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ICAO Code** | **RWY** | **SIDs/STARs** | | | |
| **NAV specification** | **NAV infrastructure** | **NAV back-up infrastructure** | **NAV contingency infrastructure** |
| **LYPG** | **18** | RNP 1 | GNSS | Radar as required  + DME/DME  (if possible) | VOR/DME POD |
| **36** |
| **LYTV** | **14** | RNP 1 | GNSS | / | VOR/DME POD  + new aerodrome VOR/DME |
| **32** |

## En-route

Future en-route operations are planned as shown in the table below and will be enabled for use in the following way:

* The most operations will be performed within FRA environment;
* Extension of FRA laterally (through the involvement of additional countries in the SECSI FRA initiative) and vertically (below FL205 to the operationally required level) beyond 2030 should be expected and will subsequently affect ATS route network;
* Radar vectoring and DME/DME as a backup infrastructure will be provided;
* RNAV 5 ATS routes will be maintained in order to support operations in non-radar ATC units and to connect FRA and TMA.
* Contingency procedures/routes **shall not** be published in AIP because radar vectoring as well as DME/DME back up infrastructure will be provided; contingency measures will imply only flight to or from VOR(/DME) infrastructure;
* All contingency NAVAIDs shall be published with necessary information available within adequate AIP GEN or ENR sections.

Table 22 Future en-route operations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NAV application** | **Limits** | **NAV specification** | **NAV infrastructure** | **NAV back-up infrastructure** | **NAV contingency infrastructure** |
| **FRA\*** | TBD | RNAV 5 | GNSS | DME/DMEs  + Radar as required | Aerodrome VORs |
| **ATS routes** | TBD |

\* Out of the PBN IR scope.

## NAVAID infrastructure

Necessary minimum operational network of conventional navigation aids within future operational environment framework is planned according to the table below.

Table 23 Future NAVAIDs minimum operational network

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Location** | **Procedure** | **Current NAVAIDs network for IFR GAT** | **Future NAVAIDs network** | | |
| **In ops** | **In ops** | **Contingency** | **Not in ops** |
| **LYPG / TMA Podgorica** | IAPs | GP/LOC: YUI  VOR/DME POD  NDB (L) GO  NDB POD  NDB DAN | DME POD | GP/LOC YUI  VOR/DME POD | NDB (L) GO  NDB POD  NDB DAN |
| SIDs and STARs | VOR/DME POD  NDB POD  NDB (L) GO  NDB DAN  NDB NIK  NDB MOJ | As DME/DME infrastructure backup:  DME POD  +new LYTV aerodrome DME  +additional DMEs, if required | VOR/DME POD | NDB POD  NDB (L) GO  NDB DAN  NDB NIK  NDB MOJ |
| **LYTV / TMA Tivat** | IAPs | LOC TIV  DME TIV  NDB TAZ  NDB RO  VOR/DME POD | / | LOC TIV  DME TIV  VOR/DME POD  + new aerodrome VOR/DME | NDB TAZ  NDB RO |
| SIDs and STARs | NDB TAZ  NDB RO  NDB NIK  DME TIV  VOR/DME POD | / | VOR/DME POD  + new VOR/DME | NDB TAZ  NDB RO  NDB NIK  DME TIV |
| **En-route** | ATS routes | Only as a backup:  NDB MOJ  NDB NIK  NDB POD  NDB TAZ  VOR/DME POD | DME/DME infrastructure backup:  DME POD  +additional, if required | VOR/DME POD  + new LYTV aerodrome VOR/DME | NDB MOJ  NDB NIK  NDB POD  NDB TAZ |
| **Total nb. of NAVAIDs** | | *CURRENT* | *FUTURE* | | *TO BE WITHRAWN* |
| GP/LOCs: 1  LOC/DME: 1  VORs: 1  DMEs: 1  NDBs: 7  Markers: 3  **TOTAL: 14** | GP/LOCs: 0 (1)\*  LOC/DME: 0 (1)  VORs: 0 (1+1 new)  DMEs: 1+1 new  NDBs: 0  Markers: 0  **TOTAL: 2 (2+2 new) = 6** | | GP/LOC: 0  LOC/DME: 0  VORs: 0  DMEs: 0  NDBs: 7  Markers: 3  **TOTAL: 10** |

\* Contingency NAVAIDs shown in brackets.

## Surveillance and communication systems

TBD

# DEFINITIONS

For the purposes of this document definitions from Article 2 of the PBN IR shall apply.

# ACRONYMS AND ABBREVIATIONS

|  |  |
| --- | --- |
| **AIP** | Aeronautical information publication |
| **ALT** | Altitude |
| **ANS** | Air navigation services |
| **ANSP** | Air navigation service provider |
| **AoR** | Area of responsibility |
| **APCH** | Approach |
| **APV** | Approach procedure with vertical guidance |
| **ATC** | Air traffic control |
| **ATCC** | Air traffic control centre |
| **ATM** | Air traffic management |
| **ATS** | Air traffic services |
| **AUR** | Airspace Usage Requirements |
| **B-RNAV** | Basic area navigation |
| **CAT** | Category |
| **DCT** | Direct |
| **DME** | Distance measuring equipment |
| **EC** | European Commission |
| **ECAC** | European common aviation area |
| **EGNOS** | European geostationary navigation overlay service |
| **ESSP** | European satellite service provider |
| **EU** | European Union |
| **EWA** | EGNOS working agreement |
| **FIR** | Flight information region |
| **FL** | Flight level |
| **FRA** | Free route airspace |
| **GNSS** | Global navigation satellite system |
| **GAT** | General air traffic |
| **IAP** | Instrument approach procedure |
| **ICAO** | International civil aviation organization |
| **IFP** | Instrument flight procedure |
| **ILS** | Instrument landing system |
| **IR** | Implementing rule |
| **IRE** | Instrument runway end |
| **LNAV** | Lateral navigation |
| **LOC** | Localizer |
| **LPV** | Localizer performance with vertical guidance |
| **MNE** | Montenegro |
| **MNM** | Minimum |
| **NAV** | Navigation |
| **NAVAID** | Navigation aid |
| **NDB** | Non-directional beacon |
| **NETOPS** | Network operations team |
| **NPA** | Non-precision approach |
| **PA** | Precision approach |
| **PBN** | Performance based navigation |
| **PCP** | Pilot common project |
| **RF** | Radius to fix |
| **RNAV** | Area navigation |
| **RNP** | Required navigation performance |
| **RWY** | Runway |
| **SID** | Standard instrument departure |
| **STAR** | Standard instrument arrival |
| **TBD** | To be defined |
| **TMA** | Terminal control area |
| **UIR** | Upper flight information region |
| **VNAV** | Vertical navigation |
| **VOR** | Very high frequency omnidirectional radio range |

# APPENDICES

|  |  |  |
| --- | --- | --- |
| **No.** | **Appendix Title** | **No. of pages** |
| 1 | PBN checklist of implementation | 1 |
| 2 | Detailed PBN implementation roadmap | 1 |

****APPENDIX 1 - PBN Checklist of implementation****

Table 24 PBN Checklist of implementation

|  |  |  |  |
| --- | --- | --- | --- |
| **Regulatory requirement to be shown in Transition Plan** | | **Compliance (Y/N)** | **Comment** |
| A | AUR.PBN.2005 (1) RNP APCH at IRE without PA (or der. 2 or 3) by 03 DEC 2020 | N | Planned (TBD) - see Subsection 3.1 and Table 15 |
| B | AUR.PBN.2005 (6) RNAV 5 at and above FL150 by 03 DEC 2020 | Y | Implemented - see Subsection 3.3 |
| C | AUR.PBN.2005 (1) RNP APCH at IRE having PA (or der. 2 or 3) by 25 JAN 2024 | Y | Implemented - see Subsection 3.1 |
| D | AUR.PBN.2005 (6) RNAV 5 below FL150 by 25 JAN 2024 | Y | Implemented - see Subsection 3.3 |
| E | AUR.PBN.2005 (4) RNAV 1 or RNP 1 (+) SID/STARs one per IRE by 25 JAN 2024 (or der. 5) | Y | Implemented - see Subsection 3.2 |
| F | AUR.PBN.2005 (7) Helicopter RNP 0.3 SID/STAR – one per IRE by 25 JAN 2024 | Y | Not implemented - see Subsection 3.4  (no requirements) |
| G | AUR.PBN.2005 (7) Helicopter RNP 0.3 ATS routes below FL150 by 25 JAN 2024 | Y | Not implemented - see Subsection 3.4 (no requirements) |
| H | AUR.PBN.2005 (4) RNAV 1 or RNP 1 (+) for all SID/STARs by 06 JUN 2030 | Y | Implemented - see Subsection 3.2 |
| I | AUR.PBN.2005 (7) Helicopter RNP 0.3 for all SID/STAR by 06 JUN 2030 | Y | Not implemented - see Subsection 3.4  (no requirements) |
| J | Transition Plan covering compliance criteria A & B | Y | All criteria A & B already fulfilled except for one IRE which is planned to be fulfilled in the future period |
| K | Transition Plan covering compliance criteria C, D, E, F & G | Y | No need for transition plan because: - criteria C, D & E already fulfilled  - no requirements for criteria F & G exist |
| L | Transition Plan covering compliance criteria H & I | Y | No need for transition plan because: - criteria H already fulfilled  - no requirements for criteria I exist |
| M | Exclusive use of PBN | N | Planned - see Section 5 |
| N1 | Contingency Measures in accordance with Article 6 for each phase of Transition Plan | Y | Implemented for the current phase of the Transition Plan - see Subsection 3.5 |
| N2 | Retention of minimum operational network of conventional navigation aids and related surveillance and communication infrastructure as per Article 6 | Y | Implemented for the current phase of the Transition Plan - see Subsection 3.5; Transition to the minimum operation network of conventional navigation aids (including withdrawal and rationalisation of conventional procedures) in line with criteria M is still to be done in accordance with Transition Plan defined in Section 5 |

****APPENDIX 2 - Detailed PBN implementation roadmap****

TBD

|  |
| --- |
| **END OF THE DOCUMENT** |

1. Please see item 1.1.1 [↑](#footnote-ref-1)
2. Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky (the service provision Regulation) (OJ L 96, 31.3.2004, p. 10-19) transposed into national legislative of Montenegro within Pravilnik o pružanju usluga u vazdušnoj plovidbi u jedinstvenom evropskom nebu i pоbоlјšаnju efikasnosti i оdrživоsti еvrоpskоg vаzduhоplоvnоg sistеmа („Službeni list CG“, broj 22/2013) [↑](#footnote-ref-2)
3. As stated in the latest version of the [AIP Serbia/Montenegro](https://smatsa.rs/en/aip-2/) [↑](#footnote-ref-3)
4. Table is adopted from document - NETOPS23\_Item\_8\_4\_WP\_13\_Sample\_PBN\_Impl\_Plan\_Annex\_final [↑](#footnote-ref-4)
5. Commission Implementing Regulation (EU) 2021/116 of 1 February 2021 on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014 [↑](#footnote-ref-5)
6. Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan (OJ L 190, 28.6.2014, p. 19-44) transposed into national legislative of Montenegro within Pravilnik o zajedničkim projektima i uspostavljanju Probnog zajedničkog projekta za sprovođenje Evropskog ATM Master plana („Službeni list CG“, broj 40/18) [↑](#footnote-ref-6)
7. Final approach track intercepts RCL for 20°, which does not comply with PANS OPS criteria for straight-in approach for Cat C and D ACFT. [↑](#footnote-ref-7)
8. ICAO Doc 8168 Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS), Volume II - Construction of Visual and Instrument Flight Procedures [↑](#footnote-ref-8)