

# Notice of Requirement

## NTC 91.263

---

<b>RNP 0.3 Navigation Specification</b>
---

**Revision 1**

### **Preliminary**

The Director of Civil Aviation issues the following requirements (“the requirements”), conditions and restrictions relating to the use of the RNP 0.3 Navigation Specification under section 28(5) of the Civil Aviation Act 1990 and Civil Aviation Rule 91.263(1).

### **Purpose**

The purpose of this notice is to specify the requirements for RNP 0.3 operations, determined by the Director under rule 91.263, regarding:

- i. the application of the RNP 0.3 operations;
- ii. the navigation functionalities the aircraft systems must have;
- iii. requirements for system redundancy, including requirements for conventional navigation equipment
- iv. continuing airworthiness requirements;
- v. operator procedures;
- vi. the operational and training requirements placed on flight crew members; and
- vii. approval by the Director for the RNP 0.3 operations.

Rule 91.263(b) requires compliance with the requirements in this Notice to ensure the safe operation of aircraft using RNP 0.3 procedures.

## General

Civil Aviation Authority (CAA) notices contain approvals and requirements including the detail about the approvals, standards, conditions, procedures and technical specifications that have been approved or determined by the Director under the Civil Aviation Rules. These details must be complied with by parties to whom it applies. They apply in particular circumstances to particular aviation document holders as specified in the notice.

CAA notices are issued under Civil Aviation Rules in accordance with section 28(5) of the Civil Aviation Act. This section permits the Minister of Transport to make ordinary rules, and to specify any terms and conditions within the rules:

- to require a matter to be determined, or undertaken or approved by the Authority, the Director or another person; or
- to empower the Authority, Director, or another person to impose requirements or conditions as to the performance of any activity, including (but not limited to) any procedures to be followed.

Notices support a performance-based approach to regulation and improve the flexibility and responsiveness of the Civil Aviation Rules. They may be used where performance-based regulation is the appropriate way to achieve the desired regulatory outcome, for example, in circumstances where new technological changes or challenges require more flexibility than prescribing requirements in the rules (and rulemaking may get quickly out-dated), or where there is a need to respond to safety issues which the rules do not adequately deal with.

The requirements stated in this notice are mandatory and must be complied with.

## Related Rules

Civil Aviation Rules 91.261, 91.263, 91.263B and 91.263C

## Effective Date

This notice comes into effect on 21 December 2022.

## Issue of CAA Notice



21/12/2022

---

Signed by  
Director of Civil Aviation

---

Date

## Revision History

Revision 1	Original version
------------	------------------

## RNP 0.3 Navigation Specification



### 1. Application

These requirements apply to –

- (a) every operator –
  - (1) of a helicopter operating under instrument flight rules using an RNP 0.3 navigational procedure or route (RNP 0.3 operations); and
  - (2) of a fixed wing aircraft operating under IFR using a RNP 0.3 navigational procedure or route, if the aircraft's functional and accuracy requirements meet the navigation specification set out in this notice for all phases of flight;
- (b) every departure, en-route, arrival including the initial and intermediate approach segments, and to the final phase of the missed approach or procedure;
- (c) continental, remote-continental and offshore operations meeting RNP 0.3; and
- (d) every operation that requires a lateral navigation accuracy (TSE) of 0.3 nautical mile, which is expected to be achieved at least 95 % of the flight time by the population of aircraft operating within the airspace, route or procedure.

### 2. Operational Approval Requirements

- (a) Description of aircraft equipment:

The operator must have a configuration list and, if necessary, a MEL detailing the required aircraft equipment for RNP 0.3 operations.

- (b) Training documentation:

- (1) An air operator certificated under Part 119 must have a training programme addressing the operational practices, procedures and training phases related to RNP 0.3 operations.
- (2) A private operator under Part 91 must be familiar with the practices and procedures referred to in clause 4 of this notice.

- (c) Operations manuals and checklists:
  - (1) An air operator certificated under Part 119 must ensure that its operations manuals and checklists address information or guidance on operational procedures referred to in clause 4 of this notice.
  - (2) The air operator must ensure that the appropriate manuals contain navigation operating instructions and contingency procedures, if applicable.
  - (3) The operator must submit their manuals and checklists to the Director for review as part of the application process.
- (d) MEL considerations:
  - (1) Operators must adjust the MEL or equivalent, to allow for RNP 0.3 operations, and specify the required dispatch conditions.
  - (2) Operators must ensure that any MEL revisions necessary to address RNP 0.3 operations is approved by the Director.
- (e) Continuing airworthiness:

The operator must -

  - (1) submit to the Director the continuing airworthiness instructions applicable to the aircraft's configuration and the aircraft's qualification for RNP 0.3 navigation procedure or route; and
  - (2) submit to the Director their maintenance programme, including a reliability programme for monitoring the equipment.

### 3. Aircraft Requirements

- (a) The operator must ensure that the following requirements regarding on-board performance monitoring and alerting are met:
  - (1) Accuracy:

During operations in airspace or on routes or procedures designated as RNP 0.3 –

- (i) the lateral TSE must be within  $\pm 0.3$  NM for at least 95% of the total flight time;
- (ii) the along-track error must be within  $\pm 0.3$  NM for at least 95 % of the total flight time; and
- (iii) to meet the performance requirement, an FTE of 0.25 NM may be assumed.
  - (A) For all RNP 0.3 operations, the use of a coupled FGS is an acceptable means of complying with this FTE assumption.
  - (B) Any alternative means of FTE bounding (other than coupled FGS) may require FTE substantiation though an airworthiness demonstration.

(2) Integrity:

The aircraft navigation equipment must be designed and installed to ensure that the probability of the malfunction of the equipment occurring is less than  $1 \times 10^{-5}$  per hour.

(3) Continuity:

- (i) for remote continental and offshore operations loss of function is a major failure condition. The carriage of dual independent long-range navigation systems may satisfy the continuity requirement.
- (ii) for other RNP 0.3 operations loss of function is classified as a minor failure condition if the operator can revert to an alternative means of navigation.

(4) On-board performance and monitoring:

The RNP system, or the RNP system and pilot in combination, must provide an alert if the accuracy requirement is not met, or if the probability that the lateral TSE exceeds 0.6 NM is greater than  $1 \times 10^{-5}$ .

(5) Signal-In-Space:

The aircraft navigation equipment must provide an alert if the probability of signal-in-space (SIS) errors causing a lateral position error is greater than 0.6 NM exceeds  $1 \times 10^{-7}$  per hour.

- (b) The operator must ensure that the following requirements regarding bounding FTE for equipment not monitoring TSE performance are met:
- (1) RNP 0.3 operations require coupled FGS to meet the allowable FTE bound unless the manufacturer demonstrates and obtains airworthiness approval for an alternate means of meeting the FTE bound.
  - (2) The following is one operational means to monitor the FGS FTE -
    - (i) FTE is to remain within half-scale deflection (unless there is other substantiated FTE data);
    - (ii) pilots must manually set systems without automatic CDI scaling to not greater than 0.3 NM full-scale prior to commencing RNP 0.3 operations; and
    - (iii) aircraft with electronic map display, or another alternate means of flight path deviation display, must select appropriate scaling for monitoring FTE.
  - (3) Automatic monitoring of FTE is not required if the necessary monitoring can be achieved by the pilot using available displays without excessive workload in all phases of flight.
- (c) The operator must ensure that the following functional requirements are met:

The following navigation displays and functions installed per FAA Advisory Circular AC 20-130A and AC 20-138A or equivalent airworthiness installation recommended practices apply:

- (1) Navigation data, including a failure indicator, must be displayed on a lateral deviation display such as CDI or EHSI and/or a navigation map display.

- (2) The following must be used as primary flight instruments for the navigation of the aircraft, for manoeuvre anticipation and for failure/status/integrity indication.
- (i) Non-numeric lateral deviation display (e.g. CDI, EHSI), with a to/from indication and a failure annunciation, for use as primary flight instruments for navigation of the aircraft, for manoeuvre anticipation, and for failure/status/integrity indication, with the following 6 attributes:
- (A) The capability to continuously display to the pilot flying, on the primary flight instruments for navigation of the aircraft (primary navigation display), the computed path and aircraft position relative to the path. For operations where the required minimum flight crew is 2 pilots, the means for the pilot not flying to verify the desired path and the aircraft position relative to the path must also be provided.
- (B) Each display must be visible to the pilot and located in the primary field of view ( $\pm 15^\circ$  from the pilot's normal line of sight) when looking forward along the flight path.
- (C) The lateral deviation display scaling should agree with any implemented alerting and annunciation limits.
- (D) The lateral deviation display must also have a full-scale deflection suitable for the current phase of flight and must be based on the required track-keeping accuracy.
- (E) The display scaling may be set automatically by default logic: automatically to a value obtained from a navigation database, or manually by pilot



procedures. The full-scale deflection value must be known or must be available for display to the pilot commensurate with the required track-keeping accuracy.

- (F) The lateral deviation display must be automatically slaved to the computed path. The course selector of the deviation display should be automatically slewed to the computed path.
  - (G) As an alternate means of compliance, a navigation map display can provide equivalent functionality to a lateral deviation display as described in paragraphs (A) to (F), with appropriate map scales and giving equivalent functionality to a lateral deviation display. The map scale is to be set manually to a value appropriate for the RNP 0.3 operation.
- (3) The following system functions are required as a minimum within any equipment to be used in RNP 0.3 operations:
- (i) the capability to continuously display to the pilot flying, on the primary flight instruments for navigation of the aircraft (primary navigation display), the computed path and aircraft position relative to the path;
  - (ii) for operations where the required minimum flight crew members is 2 pilots, the means for the pilot not flying to verify the desired path and the aircraft position relative to the path must also be provided;
  - (iii) a navigation database, containing current navigation data officially promulgated for civil aviation, which can be updated in accordance with the AIRAC cycle and from which IFR procedures and ATS routes or waypoint data corresponding to the coordinates of

- significant points on ATS routes, can be retrieved and loaded into the RNP system;
- (iv) the stored resolution of the data must be sufficient to achieve negligible PDE;
  - (v) the database must be protected against pilot modification of the stored data;
  - (vi) the means to display the validity period of the navigation data to the pilot;
  - (vii) the means to retrieve and display data stored in the navigation database relating to individual waypoints and NAVAIDs, to enable the pilot to verify the ATS route to be flown; and
  - (viii) capacity to load from the database into the RNP system the entire IFP and the ATS route to be flown.
- (4) The means to display the following items, either in the pilot's primary field of view, or on a readily accessible display page:
- (i) the active navigation sensor type;
  - (ii) the identification of the active (To) waypoint;
  - (iii) the ground speed or time to the active (To) waypoint; and
  - (iv) the distance and bearing to the active (To) waypoint.
- (5) The capability to execute a "Direct to" function.
- (6) The capability for automatic leg sequencing with the display of sequencing to the pilot.
- (7) The capability to execute RNP 0.3 terminal procedures extracted from the on-board navigation database, including the capability to execute flyover and fly-by turns.

- (8) The capability to automatically execute leg transitions and maintain tracks consistent with the following ARINC 424 path terminators, or their equivalent -
  - (i) IF;
  - (ii) CF;
  - (iii) CA;
  - (iv) DF;
  - (v) TF.
- (9) The capability to automatically execute leg transitions consistent with VA, VM and VI ARINC 424 path terminators, or must be able to be manually flown on a heading to intercept a course or to go direct to another fix after reaching a procedure-specified altitude.
- (10) The capability to automatically execute leg transitions consistent with CA and FM ARINC 424 path terminators, or the RNAV system must permit the pilot to readily designate a waypoint and select a desired course to or from a designated waypoint.
- (11) The capability to load an ATS route from the database, by name.
- (12) The capability to display an indication of the RNP 0.3 system failure, in the pilot's primary field of view.
- (13) The system must be capable of loading numeric values for courses and tracks from the on-board navigation database.

#### **4. Operating Procedures**

- (a) Pre-flight planning:  
The pilot must ensure that -
  - (1) the on-board navigation data is current and include appropriate procedures; and

- (2) appropriate flight plan suffixes are filed for operations on RNP 0.3 ATS routes, including SIDs and STARs, initial and intermediate approaches.
- (b) ABAS availability:  
The operator must -
- (1) ensure that where SBAS is not usable or available, RAIM availability for the intended route is checked before flight;
  - (2) be familiar with the prediction information available for the intended ATS route;
  - (3) ensure that RAIM availability prediction takes into account the latest GNSS constellation NOTAMs and avionics model when available; and
  - (4) ensure that if a predicted, continuous loss of RNP 0.3 of more than 5 minutes for any part of the RNP 0.3 operation occurs, the flight planning is revised to take into account the temporary loss of RNP 0.3.
- (c) General operating procedures:
- (1) The pilot must comply with any instructions or procedures identified by the manufacturer as necessary to comply with the performance requirements in this navigation specification.
  - (2) If a pilot-in-command of an aircraft that does not meet the requirements of this notice receives a clearance from ATC to conduct an RNP 0.3 procedure, the pilot-in-command must advise ATC that he or she is unable to accept the clearance and must request alternate instructions.
  - (3) The pilot-in-command must follow any alternate instructions referred to in paragraph (2).
  - (4) The operator must confirm the availability of GNSS for the period of intended operations along the intended ATS route using all available information and the availability of NAVAID infrastructure required for any (non-RNAV) contingencies.

- (5) At system initialisation, the pilot -
  - (i) must confirm the navigation database is current and verify that initial position of the aircraft is entered correctly;
  - (ii) must verify proper entry of their desired ATS route, any ATC changes to that ATS route upon initial clearance, and any subsequent change of ATS route; and
  - (iii) must ensure the waypoints sequence depicted by their navigation system matches the ATS route depicted on the appropriate chart(s) and their assigned ATS route.
- (6) The pilot must not fly an RNP 0.3 instrument flight procedure unless it is retrievable by name from the on-board navigation database and conforms to the charted procedure.
- (7) Despite paragraph (6), the pilot may subsequently modify a procedure by inserting or deleting specific waypoints in response to ATC clearances.
- (8) The pilot may select the ATS route to be flown for the en-route section of the flight from the database or may construct the ATS route by means of selection of individual en-route waypoints from the database.
- (9) The pilot must not manually enter or create new waypoints, by manually entering latitude and longitude or rho/theta values.
- (10) The pilot must not change any SID or STAR database waypoint type from a fly-by to a fly-over or vice versa.
- (11) The pilot must cross-check the flight plan clearance by comparing charts or other applicable resources with the navigation system textual display and the aircraft or rotorcraft map display, if applicable.

- (12) If required, the pilot must confirm exclusion of specific NAVAIDs in compliance with NOTAMs or other pilot procedures.
  - (13) The pilot must -
    - (i) monitor the reasonableness of the navigation solution and report any loss of RNP 0.3 capability to ATC; and
    - (ii) continuously monitor the lateral deviation indicator (or equivalent navigation map display) during all phases of RNP 0.3 operations.
  - (14) The pilot must maintain centre line, as depicted by on-board lateral deviation indicators, during all RNP operations unless authorised to deviate by ATC or under emergency conditions.
  - (15) For normal operations on straight segments or FRTs, the pilot must cross-track error/deviation (the difference between the RNP system computed path and the aircraft position relative to the path) is to be limited to  $\pm\frac{1}{2}$  the navigation accuracy associated with the procedure within 0.15 NM.
  - (16) The pilot may briefly deviate from the standard referred to in paragraph (15) such as overshoots or undershoots during track changes (fly-by and fly-over turns), up to a maximum of one times the navigation accuracy, that is 0.3 NM for RNP 0.3.
  - (17) If ATC issues a heading assignment taking the aircraft/rotorcraft off an ATS route, the pilot must not modify the flight plan in the RNAV system until receiving a new ATC clearance to rejoin the ATS route or the controller confirms a new ATS route clearance. When the aircraft is following an ATC heading assignment, the specified accuracy requirement does not apply.
- (d) Pilot requirements specific to certain phases of flight:
- (1) RNP 0.3 SID specific requirements:

The pilot must -

- (i) before commencing take-off, verify that the aircraft's RNP 0.3 system is available, operating correctly, and that the correct airport or heliport and departure data are loaded and properly depicted;
  - (ii) if assigned an RNP 0.3 departure procedure and subsequently receive a change to the procedure or a transition from the procedure, must verify that the appropriate changes are entered and available for navigation before take-off;
  - (iii) ensure that the GNSS signal is available and acquired by the aircraft's GNSS avionics before take-off; and
  - (iv) be able to engage or couple the FGS before reaching the first waypoint defining a procedure requiring RNP 0.3 as specified in this navigation specification, unless FTE bounding requirements are met by an alternative approved means.
- (2) RNP 0.3 STAR specific requirements:

The pilot -

- (i) before the arrival phase, must verify that the correct terminal route has been loaded;
- (ii) must check that the active flight plan is correct by comparing the charts with the map display (if applicable) and the MCDU, including confirmation of the waypoint sequence, reasonableness of track angles and distances, any altitude or speed constraints, and, where possible, which waypoints are fly-by and which are fly-over or which represent the beginning or end of a radius-to-fix leg segment;
- (iii) must not manually enter new waypoints into the RNP 0.3 system;
- (iv) where the contingency procedure requires reversion to a conventional IFP, must complete necessary

preparations before commencing any portion of the IFP;

- (v) with regards to procedure modifications in the terminal area that may take the form of radar headings or “direct to” clearances, must be able to react in a timely manner, including the insertion of tactical waypoints loaded from the database;
- (vi) must not manually enter or modify the loaded route using temporary waypoints or fixes not provided in the database; and
- (vii) must verify their aircraft navigation system is operating correctly, and the correct arrival procedure (including any applicable transition) are entered and properly depicted.

## **5. Pilot knowledge and training**

- (a) Operators must ensure that pilots are trained and have appropriate knowledge of the topics specific to RNP 0.3 operations as contained in AC 91-21 and AC61-17 if applicable, including the limits of their RNP 0.3 navigation capabilities, the effects of updating, and RNP 0.3 contingency procedures where specified.
- (b) Pilots must be appropriately licensed, rated and endorsed on the specific equipment to be used for RNP 0.3 operations, including knowledge of specific organisational standard operating procedures, if applicable.

## **6. Navigation database**

- (a) The operator must ensure that navigation database complies with RTCA DO 200A/EUROCAE document ED 76, Standards for Processing Aeronautical Data or an equivalent standard acceptable to the Director.
- (b) The operator must –
  - (1) report any discrepancies that invalidate a SID or STAR to the navigation database supplier;
  - (2) inform the pilots of the discrepancies; and
  - (3) prohibit the pilots from using the affected SID or STAR; and



- (c) conduct periodic checks of the operational navigation databases to ensure that existing quality system requirements are met.

### **7. Operator to comply with requirements and RNP 0.3 operations be approved by Director**

An operator must not file flight plans, request, or carry out RNP 0.3 operation unless –

- (a) the operator complies with all the applicable requirements of this notice; and
- (b) the Director has approved the RNP 0.3 operations.