CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Notice of Requirement NTC 91.263

RNAV 10 (RNP 10) Navigation Specification

Revision 1
5 April 2025

Preliminary

The Director of Civil Aviation issues the following requirements ("the requirements"), conditions and restrictions relating to the use of the RNAV 10 navigation specification under section 64(5) of the Civil Aviation Act 2023 and Civil Aviation Rule 91.263.

Purpose

The purpose of this notice is to specify the requirements for using a RNAV 10 (RNP 10) navigational procedure or route RNAV 10 (RNP 10) operations), determined by the Director under rule 91.263, in relation to the following:

i. the application of the RNAV 10 (RNP 10) 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 for flight crew members; and

vii. approval by the Director for RNAV 10 (RNP 10) operations.

Rule 91.263(b) requires compliance with the requirements in this Notice to ensure the safe operation of aircraft using RNAV 10 (RNP 10) 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 64(5) of the Civil Aviation Act 2023. This section permits the Minister of Transport or the Governor-General to specify any terms and conditions within the rules:

- To require or provide for a matter to be determined, undertaken or approved by the CAA, the Director, or another person; or
- to empower the CAA, Director, or any 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 Dates

This CAA Notice comes into effect on 5 April 2025 and replaces the Notice dated 16 August 2022.

Issue of CAA Notice

13.1.25

Signed by
Director of Civil Aviation

Date

Revision History

Versions	Amendment	Effective date
Revision 1	Original issue under Civil Aviation Act 2023	5 April 2025

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1. Application

These requirements apply to:

(1) every operator of an aircraft operating under instrument flight rules using a RNAV 10 (RNP 10) navigational procedure or route (RNAV 10 (RNP 10) operations);

(2) every operation in oceanic or remote airspace with little or no ATS surveillance, and no ground-based navigation aid infrastructure; and

(3) every operation that requires a lateral navigation accuracy full term of TSE (TSE) of 10 nautical miles, 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:

(1) The operator must ensure that relevant documentation acceptable to the Director is available to establish that the aircraft is equipped with an RNAV system with a demonstrated RNAV 10 (RNP 10) capability.

(2) The operator must have a configuration list and, if necessary, a MEL detailing the required aircraft equipment for RNAV 10 (RNP 10) 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 RNAV 10 (RNP 10) operations.

(2) A private operator under Part 91 must be familiar with the practices and procedures referred to in clause 6 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 the operational procedures referred to in clause 5 of this notice.

(2) The operator must ensure that appropriate manuals contain navigation operating instructions and contingency procedures, where specified.

(3) The operator must submit to the Director their manuals and checklists for review as part of the application process.

(d) Minimum Equipment List (MEL) considerations:

(1) Any MEL revisions necessary to address RNAV 10 (RNP 10) operations must be approved by the Director.

(2) Operators must adjust the MEL, or equivalent, and specify the required dispatch conditions.

(e) Continuing airworthiness:

The operator must submit to the Director –

(1) the continuing airworthiness instructions applicable to the aircraft's configuration and the aircraft's qualification for RNAV 10 (RNP 10) operations; and

(2) their maintenance programme, including a reliability programme for monitoring the equipment.

(f) The operator must ensure that the following aircraft requirements are met:

(1) For RNAV 10 (RNP 10) operations in oceanic or remote airspace, at least 2 fully serviceable and independent Long Range Navigation Systems (LRNSs), comprising an INS, an IRS FMS or a GNSS, with an integrity such that the navigation system does not provide misleading information, must be fitted to the aircraft and form part of the basis upon which RNAV 10 (RNP 10) operational approval is granted.

(2) The equipment configuration used to demonstrate the required accuracy must be identical to the configuration specified in the MEL or flight manual.

3. On-board Performance Monitoring and Alerting

(a) The operator must ensure that the following requirements regarding accuracy are met:

(1) During operations in airspace or on routes designated as RNAV 10 (RNP 10) –

(i) the lateral TSE must be within ±10 NM for at least 95% of the total flight time; and

(ii) the along-track error must be within ±10 NM for at least 95% of the total flight time.

(b) Integrity:

The operator must ensure that the aircraft navigation equipment is designed and installed in a manner that the probability of a major failure condition such as a malfunction of the equipment occurring is less than 1×10^{-5} per hour.

(c) Continuity:

(1) Loss of function is classified as a major failure condition for oceanic and remote navigation.

(2) The continuity requirement is satisfied by the carriage of dual independent long-range navigation systems, excluding Signal-In-Space (SIS).

(d) Signal-In-Space:

If using GNSS, the operator must ensure that the aircraft navigation equipment provides an alert if the probability of SIS errors causing a lateral position error greater than 20 NM exceeds 10^{-7} per hour.

4. Criteria for specific navigation services

(a) Aircraft incorporating dual GNSS:

(1) Aircraft approved to use GNSS as a primary means of navigation for oceanic and remote operations, in accordance with the appropriate aviation authority's requirements, meet the RNAV 10 (RNP 10) requirements without time limitations.

(2) Multi-sensor systems integrating GNSS with FDE that are approved using the guidance contained in FAA AC 20-130A, or an equivalent standard acceptable to the Director, meet RNAV 10 (RNP 10) requirements without time limitations.

(b) Aircraft incorporating dual INS or IRUs:

(1) Aircraft equipped with dual INS or IRU systems approved in accordance with any of the following standards meet RNAV 10 (RNP 10) requirements for up to 6.2 hours of flight time:

(i) 14 CFR 121 Appendix G or an equivalent standard acceptable to the Director;

(ii) MNPS; and

(iii) approved for RNAV operations in Australia.

(2) The timing starts from when the systems are placed in navigation mode or at the last point at which the systems are updated.

(3) The 6.2 hours of flight time are based on an inertial system with a 95 % radial position error rate (circular error rate) of 2.0 NM/h, which is statistically equivalent to individual 95 % cross-track and 95 % along-track position error rates (orthogonal error rates) of 1.6015 NM/h each, and 95 % cross-track and 95 % along-track position error limits of 10 NM each, such as 10 NM/1.6015 NM/h = 6.2 hours.

(c) Aircraft incorporating dual INS or IRUs — extended time limit:

(1) Subject to paragraph (2), for aircraft with INS certified under FAA 14 CFR 121 Appendix G or an equivalent standard acceptable to the Director, additional certification is only necessary for operators who choose to certify INS

accuracy to better than 2 NM per hour radial error, or 1.6015 NM per hour cross-track error.

(2) The following conditions apply to any additional certification referred to in paragraph (1) -

(i) the certification of INS performance must address all issues associated with maintaining the required accuracy, including accuracy and reliability, acceptance test procedures, maintenance procedures and training programmes; and

(ii) the operator must identify the standard against which the INS performance is to be demonstrated; and

(iii) a statement must be added to the flight manual identifying the accuracy standard used for certification.

(d) Aircraft equipped with a single INS or IRU and a single GPS approved for primary means of navigation in oceanic and remote areas:

(1) Aircraft equipped with a single INS or IRU and a single GNSS meet the RNAV 10 (RNP 10) requirements without time limitations.

(2) The INS or IRU must be approved to the standard specified in FAA 14 CFR 121, Appendix G or an equivalent standard acceptable to the Director.

(3) The GNSS must be TSO-C129a-authorised and must have an approved FDE availability prediction programme.

(4) The maximum allowable time for which the FDE capability is projected to be unavailable is 34 minutes on any one occasion.

(5) The maximum outage time must be included as a condition of the RNP 10 approval.

(6) The flight manual must indicate that the particular INS, IRU or GPS installation meets the appropriate aviation authority's requirements.

5. Operating Procedures:

(a) Requirements for pre-flight planning:

During flight planning, the pilot must assess the conditions affecting operations in RNAV 10 (RNP 10) airspace (or on RNAV 10 (RNP 10) routes), including -

(1) verifying that the RNAV 10 (RNP 10) time limit has been accounted for;

(2) verifying the requirements for GNSS, such as FDE, if appropriate for the operation; and

(3) accounting for any operating restriction related to RNAV 10 (RNP 10) approval, if required for a specific navigation system.

(b) Operators must –

(1) use the appropriate ICAO flight plan designation specified for the RNP route flown;

(2) ensure that the letter "R" is placed in block 10 of the ICAO flight plan indicating that the pilot has reviewed the planned route of flight to determine RNP requirements and the aircraft and operator have been approved on routes where RNP is a requirement for operation;

(3) ensure that additional information is displayed in the remarks section indicating the accuracy capability, such as RNAV 10 (RNP 10) versus RNP 4;

(4) ensure that adequate NAVAIDs are available en-route to enable the aircraft to navigate to RNP 10 for the duration of the planned RNAV 10 (RNP 10) operation; and

(5) for GNSS systems, ensure that during dispatch or flight planning, adequate navigation capability is available en route for the aircraft to navigate to RNAV 10 (RNP 10),

including the availability of FDE, if appropriate for the operation.

(c) Operator requirements:

The operator must:

(1) review maintenance logs and forms to ascertain the condition of the equipment required for flight in RNAV 10 (RNP 10) airspace or on routes requiring RNAV 10 (RNP 10) navigation capability;

(2) ensure that maintenance action has been taken to correct defects in the required equipment;

(3) be familiar with the contingency procedures for operations in RNAV 10 (RNP 10) airspace or on routes requiring an RNAV 10 (RNP 10) navigation capability; and

(4) be able to recognise, and advise ATC, when the aircraft fails to navigate to its RNAV 10 (RNP 10) navigational capability.

(d) En-route:

(1) The operator must -

(i) before entering oceanic airspace, check the position of the aircraft as accurately as possible by using external NAVAIDs;

(ii) ensure that in-flight operating drills include mandatory cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from ATC-cleared routes;

(iii) advise ATC of any deterioration or failure of the navigation equipment below the navigation performance requirements or of any deviations required for a contingency procedure;

(iv) use a lateral deviation indicator, flight director, or autopilot in lateral navigation mode on RNAV 10 (RNP 10) operations;

(v) maintain route centre lines, as depicted by on-board lateral deviation indicators and/or flight guidance, during all RNAV 10 (RNP 10) operations unless authorised to deviate by ATC or under emergency conditions;

(vi) for normal operations, cross-track error/deviation (the difference between the RNAV system computed path and the aircraft position relative to the path) to be limited to ±½ the navigation accuracy associated with the route at 5 NM.

(2) The pilot may briefly deviate from the standard referred to in paragraph (1)(vi) during and immediately after route turns, up to a maximum of one times the navigation accuracy which is 10 NM.

(e) Route evaluation for RNAV 10 (RNP 10) time limits for aircraft equipped only with INS or IRU:

(1) An RNAV 10 (RNP 10) time limit must be established for aircraft equipped only with INS or IRU.

(2) For operations in areas where RNAV 10 (RNP 10) is applied, the operator must establish that the aircraft will comply with the time limitation on the routes that it intends to fly.

(3) In evaluating whether the aircraft will comply with the time limitation, the operator must consider the effect of headwinds and, for aircraft not capable of coupling the navigation system or flight director to the autopilot, the operator may choose to make this evaluation on a one-time basis or on a per-flight basis.

Route evaluation:

(4) The operator must establish the capability of the aircraft to satisfy the RNAV 10 (RNP 10) time limit established for dispatch or departure into RNAV 10 (RNP 10) airspace.

(5) Start point for calculation:

The calculation must start at the point where the system is placed in navigation mode or the last point at which the system is expected to be updated.

(6) Stop point for calculation:

The stop point may be one of the following:

(i) the point at which the aircraft will begin to navigate by reference to ICAO standard NAVAIDs (VOR, DME, NDB) and/or comes under ATS surveillance; or

(ii) the first point at which the navigation system is expected to be updated.

(7) Sources of wind component data:

The headwind component to be considered for the route may be obtained from any of the following sources acceptable to the State's aviation authority –

(i) the State's Bureau of Meteorology, National Weather Service;

(ii) Bracknell;

(iii) industry sources such as Boeing Winds on World Air Routes; and

(iv) historical data supplied by the operator.

(8) One-time calculation based on 75% probability wind components:

For a one-time calculation of RNAV 10 (RNP 10) time limit compliance, the operator may use the annual 75% probability level to calculate the effect of headwinds.

(9) Calculation of time limit for each specific flight:

(i) The operator may choose to evaluate each individual flight using flight plan winds to determine whether the aircraft will comply with the specified time limit.

(ii) If it is determined that the time limit will be exceeded, then the aircraft must fly an alternate route or delay the flight until the time limit can be met.

(f) Effect of en-route updates:

(1) Operators may extend their RNAV 10 (RNP 10) navigation capability time by updating.

(2) Approvals for various updating procedures are based upon the baseline for which they have been approved minus the time factors shown below:

(i) automatic updating using DME/DME = baseline minus 0.3 hours (such as an aircraft that has been approved for 6.2 hours can gain 5.9 hours following an automatic DME/DME update);

(ii) automatic updating using DME/DME/VHF omnidirectional radio range (VOR) = baseline minus 0.5 hours; and

(iii) manual updating using a method similar to that contained in FAA Order 8400.12A Appendix 7, or as amended, or approved by the State's aviation authority = baseline minus 1 hour.

(g) Automatic radio position updating:

(1) Pilots must not automatically update the radio position unless:

(i) the procedures for automatic updating are included in an operator's training programme; and

(ii) pilots are knowledgeable of the updating procedures and the effect of the update on the navigation solution.

(2) Data presented to the State's aviation authority for the purpose of automatic updating and an RNAV 10 (RNP 10) approval for an extended time must clearly indicate the accuracy of the update and the effect of the update on the navigation capabilities for the remainder of the flight.

(3) In this notice, **Automatic update** or **updating** refers to any updating procedure that does not require the pilot to manually insert coordinates.

(h) Manual radio position updating:

(1) Except as provided in paragraph (2), operators must not manually update the radio position in RNAV 10 (RNP 10) operations if manual updating is not permitted.

(2) Manual radio updating may be performed by the operator for operations in airspace where RNAV 10 (RNP 10) is applied if:

(i) the procedures for manual updating are reviewed by the State's aviation authority when required;

(ii) an acceptable procedure for manual updating as described in FAA Order 8400.12A Appendix 7 or as amended, is used as the basis for an RNAV 10 (RNP 10) approval for an extended time when supported by acceptable data;

(iii) operators show that their updating and training procedures include measures or cross-checking to prevent human factors errors and the pilot qualification syllabus is found to provide effective pilot training; and

(iv) operators provide data that establish the accuracy with which the aircraft navigation system can be updated using manual procedures and representative NAVAIDs.

6. Pilot knowledge and training

(a) Operators must ensure that pilots are trained and have appropriate knowledge of the topics contained in AC 91-21, and AC 61-17 if applicable, and the limits of their RNAV 10 (RNP 10) navigation capabilities, the effects of updating, and RNAV 10 (RNP 10) contingency procedures where specified.

(b) Pilots must be appropriately licensed, rated and endorsed on the specific equipment to be used for RNAV 10 (RNP 10) operations, including knowledge of specific organisational standard operating procedures, if applicable.

7. Navigation database

(a) The operator must ensure that the 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 the RNAV 10 (RNP 10) route to the navigation database supplier;

(2) inform the pilots of the discrepancies; and

(3) prohibit pilots from using the affected route; and

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

8. Operator to comply with requirements, certain operator be certificated and approved by Director to conduct RNAV 10 operations

An operator must not carry out RNAV 10 (RNP 10) operations unless –

(1) the operator meets all the applicable requirements of this notice; and

(2) for operations under Part 119 or 129, the operator is certificated and approved by the Director to conduct the RNAV 10 (RNP 10) operations.