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

Notice of Requirement NTC 91.263

Revision 1

RF Legs Navigation Specification

Preliminary

The Director of Civil Aviation issues the following requirements ("the requirements"), conditions and restrictions relating to the use of the RF Legs 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 RF Legs operations, determined by the Director under rule 91.263, regarding:

i. the application of the RF Legs 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; and

vi. the operational and training requirements placed on flight crew members.

Rule 91.263(b) requires compliance with the requirements in this Notice to ensure the safe operation of aircraft using RF Legs 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

RF Legs Navigation Specification

1. Application

(a) These requirements apply to:

(1) every operator of an aircraft operating under instrument flight rules using ARINC 424 RF path terminators with an RNP navigational procedure or route supporting RF Legs (RF Leg operations); and

(2) every operation supporting RF Legs in the initial and intermediate approach segments, the final phase of the missed approach, SIDs and STARs.

(b) This navigation specification does not apply to RF Legs in the final approach or the initial or intermediate phases of the missed approach, such as RNP AR specification.

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 RNP system with a demonstrated RF Leg capability.

(2) The operator must have a configuration list and, if necessary, a MEL detailing the required aircraft equipment for RF Leg 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 RF Leg 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 operations manuals and checklists address information or guidance on operational procedures referred to in clause 3 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 their manuals and checklists to the Director for review as part of the application process.

(d) MEL considerations:

(1) The operator must adjust the MEL, or equivalent, to allow for RF Leg operations, and specify the required dispatch conditions.

(2) Any MEL revisions necessary to address RF Leg operations must be approved by the Director.

(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 RF Legs navigation procedure or route; and

(2) 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:

(2) The navigation system must have the capability to execute leg transitions and maintain a track consistent with an RF leg between 2 fixes.

(3) The lateral TSE must be within ±1 × RNP of the path defined by the published procedure for at least 95 % of the total flight time for each phase of flight and each autopilot and/or flight director mode requested.

(4) On-board performance and monitoring:

(i) The RNP system must provide a visible alert within the pilot's primary field of view when loss of navigation capability and/or LOI are experienced.

(ii) Any failure modes that have the potential to affect the RF Leg capability must be identified.

(iii) Failure modes referred to in paragraph (ii) may include loss of electrical power, loss of signal reception, RNP system failure, including degradation of navigation performance resulting in a loss of RNP containment integrity.

(iv) The ability of the aircraft to maintain the required FTE after a full or partial failure of the autopilot and/or flight director is to be documented.

(b) RNP system-specific information:

(1) The navigation system may or may not permit the pilot to select a procedure that is not supported by the equipment, either manually or automatically.

(2) For the purposes of paragraph (1), the reference **a procedure is not supported by the equipment** includes a procedure that incorporates an RF Leg but the equipment does not provide leg capability.

(3) The navigation system may prohibit pilot access to procedures requiring RF leg capability if the system can select the procedure, but the aircraft is not otherwise equipped.

(4) For the purpose of paragraph (3), the reference **the aircraft is not otherwise equipped** includes the aircraft does not have the required roll steering autopilot or flight director installed.

(c) Functional Requirements:

The operator must ensure that the following functional requirements are provided in the aircraft for the RF Leg navigation specification -

(1) an autopilot or flight director with at least roll-steering capability that is driven by the RNP system is required;

(2) the autopilot or flight director must operate with suitable accuracy to track the lateral and, as appropriate, vertical paths required by a specific RNP procedure;

(3) an electronic map display depicting the RNP computed path of the selected procedure is required;

(4) the flight management computer, the flight director system, and the autopilot must be capable of commanding and achieving a bank angle up to 25 degrees above 400 ft AGL;

(5) the flight guidance mode is to remain in lateral navigation while on an RF leg, when a procedure is abandoned, or a missed approach/go-around is initiated (through activation of TOGA or other means) to enable display of deviation and display of positive course guidance during the RF leg; and

(6) Despite paragraph (5), flight crew members' procedures may be used to ensure that the aircraft adheres to the specified flight path throughout the RF Leg segment.

4. Operating Procedures

(a) The pilot must use either a flight director or autopilot when flying an RF Leg.

(b) 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.

(c) When the dispatch of a flight is predicated on flying an RNP procedure with an RF Leg, the dispatcher or pilot must determine that the installed autopilot or flight director is operational.

(d) The pilot must not fly a published RNP procedure unless it is retrievable by the procedure name from the aircraft navigation database and conforms to the charted procedure.

(e) The lateral path must not be modified, with the exception of complying with ATC clearances or instructions.

(f) The aircraft must be established on the procedure before beginning the RF Leg.

(g) For normal operations, cross-track error/deviation the difference between the displayed path and the displayed aircraft position relative to the displayed path which is FTE, is to be limited to half the navigation accuracy associated with the procedure, such as 0.5 NM for RNP 1.

(h) The pilot must maintain the centre line of the desired path on RF Legs.

(i) The pilot must not exceed any published maximum airspeeds associated with the flyability or design of the RF Leg.

5. Pilot knowledge and training

(a) Pilots must be trained and have appropriate knowledge of the topics specific to RF Legs operations as contained in AC 91-21, and AC61-17 if applicable, including the limits of their navigation capabilities, the effects of updating, and contingency procedures where specified.

(b) Pilots must be appropriately licensed, rated and endorsed on RF Leg operations, including knowledge of specific organisational standard operating procedures, if applicable.

6. 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 a 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 about the affected SID or STAR;

(3) prohibit the pilots from using the invalidated SID or STAR; and

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

7. Operator to comply with requirements before carrying out RF Leg operations

An operator must not carry out RF Leg operations unless the operator complies with all the applicable requirements of this notice.