



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

June 22, 2023

To: Instrument Flight Procedure Service Providers and Aircraft Operators,

The Advanced Required Navigation Performance (A-RNP) navigation specification takes advantage of select Required Navigation Performance (RNP) capabilities and functions available in modern production aircraft. The Federal Aviation Administration (FAA) intends to implement RNP operations requiring A-RNP capability with a target level-of-safety (TLS) that matches that of RNP with Authorization Required (AR) approach (RNP AR APCH) operations<sup>1</sup>. This target level of safety is in line with the procedure design application of two times RNP (2×RNP) lateral obstacle evaluation area (OEA) without secondary area application.

A-RNP operations include functions of Scalable RNP (i.e., use of RNP 0.30) and Radius to Fix (RF) legs (i.e., RF legs outside the Final Approach Segment (FAS) of the RNP APCH procedure). This provides the Agency with the option to replace many RNP AR APCH procedures with RNP approach (RNP APCH) procedures with specific, identified segments requiring A-RNP capability.

RNP APCH procedures that require A-RNP capability must mitigate the hazard of loss of Global Positioning System (GPS) by requiring that, as a minimum, the aircraft include an alternate, approved means of area navigation (RNAV) that can enable safe execution of a missed approach when GPS is lost. As a potential operational mitigation in the absence of the aircraft having an alternate, approved means of RNAV, the FAA may implement RNP APCH procedures requiring A-RNP capability at airports where the Air Traffic Control (ATC) infrastructure supports full-time surveillance services that provide radar vector capability to ensure compliance with the operational TLS. Automatic Dependent Surveillance-Broadcast (ADS-B), which relies on GPS, does not meet the intent of this paragraph.

With these implementation concepts in mind, and given the FAA-published procedure design criteria for implementation of RNP scalability and RF legs in support of RNP APCH procedures requiring A-RNP capability, the Office of Aviation Safety is developing A-RNP operational guidance with assistance from the Performance Based Operations Aviation Rulemaking Committee (PARC) Navigation Working Group. Until this guidance is published, attachment A outlines interim aircraft and operator eligibility requirements for

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<sup>1</sup> AC 20-138D Appendix 2 A2-2.d (2): The probability of the aircraft exiting the lateral and vertical extent of the obstacle clearance volume must not exceed 10<sup>-7</sup> per approach, including the missed approach.

operators and service providers developing Special RNP APCH procedures requiring A-RNP capability. This guidance will remain in effect until the FAA publishes public operational implementation guidance for RNP APCH procedures requiring A-RNP capability.

Sincerely,

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CHRISTOPHER J HOPE  
Date: 2023.06.22 20:07:11  
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Christopher J. Hope, Manager,  
Flight Technologies and  
Procedures Division

Attachment A:

*Note: The FAA's final guidance and approved means of compliance (AMOC) may be different (less or more restrictive) than the following interim specifications:*

Guidelines for Service providers and operators requesting approval for RNP APCH procedures using A-RNP functions of RNP Scalability (i.e., RNP 0.30) and RF legs IAW the public A-RNP procedure design specs of Order 8260.58(), including use of a 2×RNP lateral OEA. The target level of safety (TLS) for these RNP APCH procedures using A-RNP performance and functionality shall be  $1 \times 10^{-7}$ .

**Aircraft Eligibility Requirements.** Aircraft flight manual documentation of:

- Compliance with the FAA's aircraft eligibility requirements for RNP AR APCH (as a minimum, eligibility for RNP AR APCH using RNP 0.30); or,
- Compliance with requirements for eligibility for use of RNP 0.30 and RF legs IAW the AMOC in AC 20-138D, Change 2, *Airworthiness Approval of Positioning and Navigation Systems*, and include:
  - Compliance with the continuity and development assurance requirements for eligibility to conduct an RNP AR APCH;
  - Equipage with a flight director or autopilot capable of directly coupling to the outputs of the aircraft's RNP system (e.g., coupling directly to the navigation guidance outputs of the aircraft's FMS);
  - Evidence the aircraft provides a means to safely extract from a procedure through use of an alternate, approved means of RNAV guidance when GPS is lost for any reason; and

*Note: As a minimum, when GPS is lost, the aircraft's resulting RNAV performance must show the conditional probability the aircraft exits the 2×RNP lateral OEA is less than one in a thousand (less than 0.001) during the approach and less than one in a hundred during the missed approach (less than 0.01).*

- Evidence the demonstrated software design assurance of the aircraft's RNP system is Level B.

*Note: This software design assurance requirement helps ensure the aircraft supports the operation's  $1 \times 10^{-7}$  TLS.*

## Operator Eligibility Requirements.

- Evidence of aircraft eligibility for RNP AR APCH or RNP operations requiring A-RNP found in the AFM/AFM(S) or other manufacturer documentation. (e.g., approved installation instructions or service bulletin)
- Should the operator's aircraft documentation lack direct statements of compliance for RNP AR APCH or RNP operations requiring A-RNP, then the proponent must provide documentation showing:
  - Aircraft eligibility for performance-based navigation, any limitations associated with PBN operations and evidence of the means to use RNP 0.30 (outside the FAS of an RNP APCH); and;
  - Evidence of eligibility for RNP APCH procedures using RF legs through compliance with AC 20-138D, Change 2; and,
  - Documentation of any aircraft limitations associated with PBN operations.
- Operators that do not meet the operator eligibility requirements listed above may still apply for use of a Special RNP APCH procedure using the A-RNP functions of RNP scalability (i.e., RNP 0.30) and RF legs. In this case, the operator must show that the proposed operation meets a  $1 \times 10^{-7}$  TLS for a Special RNP APCH procedure using a  $2 \times$ RNP semi-width for the lateral OEA and the A-RNP performance and functionality, including consideration for loss of GPS (for any reason).
- Each operator has authorization from FAA Flight Standards to conduct RNP AR APCH operations; or,
- Each air carrier operator has authorization from FAA Flight Standards to conduct RNP APCH procedures using A-RNP; or
- Each operator should have appropriate training and flight crew procedures for conduct of a Special RNP APCH procedure and its design using the A-RNP functions of RNP 0.30 and RF legs when and where the procedure uses a  $2 \times$ RNP semi-width for the lateral OEA.

As a potential operational mitigation in the absence of the aircraft having an alternate, approved means of RNAV, the FAA may implement RNP APCH procedures requiring A-RNP capability at airports where the ATC infrastructure supports full-time surveillance services that provide radar vector capability to ensure compliance with the operational TLS. ADS-B, which relies on GPS does not meet the intent of this paragraph.

Operators or service providers with questions about this interim guidance should contact the Flight Technologies and Procedures Division at [9-AWA-AFS400-COORD@faa.gov](mailto:9-AWA-AFS400-COORD@faa.gov).