|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **APPLICATION FOR REQUIRED NAVIGATION PERFORMANCE (RNP) 1** | | | | | | |  | |
| **INSTRUCTIONS**  1 The applicant will tick (√) the appropriate Yes/No boxes and as applicable insert references from the AFM or Ops Manual with sample pages attached as appendix.  2 Applicant must obtain and submit manufacturer’s written confirmation with regard to continuing maintenance.  3 Operating policy and procedures, training syllabus and lesson plan must be submitted for approval before commencement of flight crew / dispatcher training. | | | | | | | | |
| **PARTICULARS** | | | | | | | | |
| **Operator:** | Click or tap here to enter text. | **AOC No:** | Click or tap here to enter text. | **Rep’s Name:** | Click or tap here to enter text. | **Position:** | | Click or tap here to enter text. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Aircraft manufacturer,  Model and series | Serial number | Registration | No. of INS / IRS / IRU manufacturer and model | No. of GNSS manufacturer and model | No. of FMS / FMGC manufacturer and model | TSO Spec / Ref |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |
| Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. | Click or tap here to enter text. |

| **Title of Paragraph** | **Operator’s compliance reference** | **CAAS Use**  *(All line items are to be initialed and dated)* | | | |
| --- | --- | --- | --- | --- | --- |
| **Acceptable** | **Unacceptable** | **Not Applicable** | **Remark(s)** |
| **ICAO Doc 9613**  **AIRWORTHINESS REQUIREMENTS**  **1 AIRCRAFT ELIGIBILITY**  1.1 Aircraft with AFM, STC or manufacturer’s documentation, such as service letters, attesting to RNP 1 airworthiness compliance are acceptable by the Authority. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 1.2 The following systems meet the accuracy, integrity and continuity requirements of these criteria:  (a) aircraft with E/TSO-C129a sensor (Class B or C), E/TSO- C145() and the requirements of E/TSO-C115b FMS, installed for IFR use in accordance with FAA AC 20-130A;  (b) aircraft with E/TSO-C129a Class A1 or E/TSO-C146() equipment installed for IFR use in accordance with FAA AC 20-138 or AC 20-138A; and  (c) aircraft with RNP capability certified or approved to equivalent standards. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 1.3 For preparation of application for RNP 1 operational approval the operator may wish to refer to the following best practice documents:  (a) ICAO PBN Manual Document 9613  (b) CASA AC91.U-01 | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **2 FUNCTIONALITY**  2.1 Navigation data, including a failure indicator, must be displayed on a lateral deviation display (CDI, EHSI) and/or a navigation map display. These must be used as primary flight instruments for the navigation of the aircraft, for maneuver anticipation and for failure/status/integrity indication. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 2.2 The following system functions are required as a minimum within any RNP 1 equipment: |  |  |  |  |  |
| (a) The means to display the following items, either in the pilot’s primary field of view, or on a readily accessible display page. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) The capability to execute a “direct to” function. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (c) The capability for automatic leg sequencing with the display of sequencing to the pilot. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (d) The capability to load and execute an RNP 1 SID or STAR from the on-board database, by procedure name, into the RNP system. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (e) The aircraft must have the capability to automatically execute leg transitions and maintain tracks consistent with the following ARINC 424 path terminators, or their equivalent:   * IF * CF * DF * TF | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (f) The aircraft must have 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. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (g) The aircraft must have the capability to automatically execute leg transitions consistent with CA and FM ARINC 424 path terminators, or the RNP system must permit the pilot to readily designate a waypoint and select a desired course to or from a designated waypoint. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (h) The capability to display an indication of the RNP 1 system failure, in the pilot’s primary field of view. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **3 NAVIGATION DATABASE INTEGRITY**  3.1 The navigation database integrity must comply with RTCA DO-200A / EUROCAE ED-76 standards. The operator must ensure that the navigation database supplier or vendor to the operator hold valid Type LOA (Letter of Approval) issued in accordance with FAA AC 20-153 or EASA LOA in accordance with EASA Opinion Nr. 01/2005. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 3.2 Discrepancies that invalidate a SID or STAR must be reported to the navigation database supplier, and the affected SID and STAR must be prohibited by the operator’s note to its pilots. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 3.3 Aircraft operator should consider the need to conduct periodic checks of the operational databases in order to meet existing quality systems requirements | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 3.4 Notwithstanding paragraph 3.1 above, the operator shall assume sole responsibility for the safety of the operation. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **4 CONTINUING AIRWORTHINESS**  4.1 Maintenance programme reference. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **5 OPERATIONAL REQUIREMENTS**  5.1 To meet RNP 1 requirements, the aircraft must maintain track-keeping accuracy of +/-1nm for 95% of flight time and for RNP specification, the functionality must include monitoring and alerting. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 5.2 On-board performance monitoring and alerting: |  |  |  |  |  |
| (a) Accuracy: During operations in airspace or on routes designated as RNP 1, the lateral TSE must be within ±1 NM for at least 95 per cent of the total flight time. The along-track error must also be within ±1 NM for at least 95 percent of the total flight time. To satisfy the accuracy requirement, the 95 per cent FTE should not exceed 0.5 NM.  *Note. — The use of a deviation indicator with 1 NM full-scale deflection has been found to be an acceptable means of compliance. The use of an autopilot or flight director has been found to be an acceptable means of compliance (roll stabilization systems do not qualify).* | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) Integrity: Malfunction of the aircraft navigation equipment is classified as a major failure condition under airworthiness regulations (i.e., 1 × 10–5 per hour). | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (c) Continuity: Loss of function is classified as a minor failure condition if the operator can revert to a different navigation system and proceed to a suitable airport. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (d) On-board performance monitoring and alerting: The RNP system, or the RNP system and pilot in combination, shall provide an alert if the accuracy requirement is not met, or if the probability that the lateral TSE exceeds 1 NM is greater than 1 × 10–5. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (e) SIS: If using GNSS, the aircraft navigation equipment shall provide an alert if the probability of SIS errors causing a lateral position error greater than 2 NM exceeds 1 × 10–7 per hour. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **6 OPERATING PROCEDURES**  6.1 Operators with RNP experience generally meet the basic requirements. The operating procedures shall focus RNP SIDs and STARS: |  |  |  |  |  |
| (a) Verify that the aircraft and crew are approved for RNP 1 ops. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) Verify RAIM availability. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (c) Verify that the navigation database is current. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (d) Cross-check flight against nav-system textual and map displays for discrepancy. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (e) Prior to take-off, check the RNAV system, the aerodrome and procedure loaded and the displayed position. If GNSS, signal must be acquired before start of takeoff roll. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (f) Cross-check with conventional NAVAIDS to monitor for navigational reasonableness. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (g) Verify that the correct STAR is loaded and displayed. Verify the correct operation of the navigation system and that the correct procedure, transition and runway are loaded. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 6.2 In-flight procedures should include: |  |  |  |  |  |
| (a) where possible, check of flight navigation data using ground aids. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) as a minimum, arrival checks using suitable of map display. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (c) review of conventional procedures for possible reversion. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (d) Advise ATC if unable to comply with the requirements for RNP 1. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **7 OPERATIONS MANUAL**  7.1 Flight Planning:  (a) Verify RNP 1 Operational Approval. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) Confirm adequacy of normal and contingency procedures. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 7.2 Pre-flight procedures:  (a) Verify flight plan entry (appropriate flight plan suffixes). | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (b) Verify navigation database for validity and currency. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (c) Availability of Navaid infrastructure required for intended routes including any non- RNAV contingencies. must be confirmed for the period of intended operations using all available information. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (d) RNP 1 SIDs requirements and procedures and contingency preparations. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| (e) RNP 1 STARs requirements and procedures and contingency preparations. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 7.3 En-route ABAS:  (a) Check RAIM, through prediction information services or NOTAM. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 7.4 General operating procedures:  (a) At system initialization, provisions for pilots to verify aircraft position, ATC assigned route, waypoint sequence of navigation system that match assigned route and appropriate charts. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| 7.5 Contingency procedure:  (a) Provisions for loss of RNP capability, or unable to comply with RNP 1 SID or STAR and to notify ATC and proposed course of action. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **8 PILOT KNOWLEDGE AND TRAINING**  8.1 Operators holding PBN operational approval will need to familiarize with the monitoring and alerting functionality of RNP operations and to ensure that flight crew are familiar with the principles and operations of GNSS. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **9 MEL**  9.1 Revisions to address RNP 1 provisions, and to specify the required dispatch conditions in the MEL. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **10 HMI**  10.1 Human / Machine Interface review. | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |
| **11 QSRA**  11.1 Qualitative Safety Risk Assessment | Click or tap here to enter text. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text.  Click or tap to enter a date. | Click or tap here to enter text. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **“Warning:   Notice is given that the operator shall accept full responsibility for all information given in this application form. Any attempt to provide false information will result in rejection of the application and, if already granted, the withdrawal of the Operational Approval. In addition, the operator may render himself liable to prosecution under section 29C(1)(b) of the Air Navigation Act.”** | | | | |
| “I declare to the best of my knowledge and belief that the statements made and the information supplied in this form are complete and correct.  I understand that any false representations made by me for the purpose of procuring the Singapore aviation safety instrument is an offence under section 29C(1)(b) of the Air Navigation Act and I may be subject to the penalties stipulated thereunder and any Singapore aviation safety instrument granted pursuant to the application will be revoked.” | | | | |
| **Signature / Name of person representing the operator** | |  | | |
| **Signature / Name of FS Officer accepting this form** | |  | | |
| **Revision history:** | | | | |
| **Version** | **Date** | | **Paragraph(s)** | **Details** |
| 1.0 |  | |  |  |
| 2.0 | 30 November 2021 | | All | * signature columns added * Changed formatting |

|  |  |
| --- | --- |
| **REFERENCES** | |
| Regulatory | : (1) ANR 98 Regulations 10-13 |
| Compliance | : (1) ICAO Doc 9613 AN/937 (2) CASA AC91.U-01 |