



# Advisory Circular

**Subject: En Route Area Navigation Operations RNAV 5 (Formerly B-RNAV)**

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## 1.0 INTRODUCTION

This Advisory Circular (AC) is provided for information and guidance purposes. It may describe an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

### 1.1 Purpose

The purpose of this AC is to inform Canadian air operators that they may now obtain an authorization to operate in accordance with the navigation performance requirements of RNAV 5, previously known as B-RNAV, via an amendment to their air operator certificate with Operation Specification 613.

### 1.2 Applicability

- (1) This AC applies to Canadian air operators holding an Air Operator Certificate issued under Part VII of the *Canadian Aviation Regulations* (CARs) who wish to operate in en route airspace requiring RNAV 5 navigation performance. RNAV 5 certification is mandatory for operations within some RNAV airspace.
- (2) This document is also applicable to all Transport Canada Civil Aviation (TCCA) employees, to individuals and organizations when they are exercising privileges granted to them under an External Ministerial Delegation of Authority. This information is also available to the aviation industry at large for information purposes.

### 1.3 Description of Changes

This AC replaces Commercial and Business Aviation Advisory Circular (CBAAC) 0154. Authorization for B-RNAV operations previously done via Operations Specification 077 for operations conducted under subpart 5 of Part VII of the CARs with regard to B-RNAV, will now be provided via Operations Specification 613 for subpart 4 and subpart 5 of Part VII of the CARs. With the publication of the International Civil Aviation Organization (ICAO) *Manual on Performance-Based Navigation (PBN)*, Third Edition, 2008, European B-RNAV has been harmonized with the ICAO PBN RNAV 5 specification. This publication reflects this change.

## 2.0 REFERENCES AND REQUIREMENTS

### 2.1 Reference Documents

It is intended that the following reference materials be used in conjunction with this document:

- (a) *Aeronautics Act*;
- (b) Part V of the *Canadian Aviation Regulations* (CARs) – *Airworthiness*;
- (c) Part VI Subpart 04 of the CARs – *Private Operator Passenger Transportation*;
- (d) Part VII Subpart 02 of the CARs — *Aerial Work*;
- (e) Subpart 704 of the CARs – *Commuter Operations*;
- (f) Subpart 705 of the CARs – *Airline Operations*;
- (g) Subpart 722 of the *Commercial Air Services Standards* (CASS) – *Aerial Work*;
- (h) Subpart 724 of the CASS – *Commuter Operations*;
- (i) Subpart 725 of the CASS – *Airline Operations*;
- (j) Operations Specification 613, En Route Area Navigation Operations (RNAV 5);

- (k) Federal Aviation Administration Advisory Circular (FAA AC) 90-96A, 2005-01-13 — *Approval of U.S. Operators and Aircraft to Operate Under Instrument Flight Rules (IFR) in European Airspace Designated for Basic Area Navigation (B-RNAV) and Precision Area Navigation (P-RNAV)*;
- (l) FAA AC 90-100A, 2007-03-01 — *U.S. Terminal and En Route Area Navigation (RNAV) Operations*;
- (m) International Civil Aviation Organization (ICAO) Document 9613, Edition 03, 2008 — *Manual on Performance-Based Navigation (PBN)*;
- (n) Joint Aviation Authorities (JAA) GAI-20 ACJ 20X4, JAA Guidance Material on the Airworthiness and Operational Criteria for the use of navigation systems in European Airspace Designated for Basic RNAV Operations;
- (o) European Aviation Safety Agency (EASA) AMC 20, Amendment 4, 2008-09-05, B-RNAV— *Airworthiness Approval and Operational Criteria for the Use of Navigation Systems in European Airspace Designated for Basic RNAV Operations*.

## 2.2 Cancelled Documents

As of the effective date of this document, the following document is cancelled:

- (a) CBAAC 0154, 1999-03-30 — *European Airspace Basic Area Navigation (RNAV) Operations*.

## 2.3 Definitions and Abbreviations

The following definitions and abbreviations are used in this document:

- (a) **AC:** means Advisory Circular.
- (b) **NAA:** means National Aviation Authority.
- (c) **Navigation Specification:** A set of aircraft and flight crew requirements needed to support performance based navigation operations within a defined airspace. There are two kinds of navigation specification:
  - (i) **RNP specification:** A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH;
  - (ii) **RNAV specification:** A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

*Note: The ICAO Manual on Performance Based Navigation (Doc 9613) contains detailed guidance on navigation specifications.*

- (d) **Performance Based Navigation (PBN):** Area navigation based on performance requirements for aircraft operating along an Air Traffic Service (ATS) route, on an instrument approach procedure or in a designated airspace. Performance requirements are expressed in navigation specification (RNAV specification or RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.
- (e) **RNAV:** A method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these. Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

### 3.0 BACKGROUND

- (1) This RNAV 5 navigation specification is based on ICAO harmonization efforts and encompasses elements of JAA/EASA and FAA B-RNAV guidance. Operations Specification 613 will form the basis upon which a foreign National Aviation Authority (NAA) may authorize a Canadian air operator to operate in RNAV 5 airspace within their jurisdiction.
- (2) B-RNAV approvals have been available for some time in Canada under Operations Specification 077. With the recent publication of the ICAO PBN manual, the existing B-RNAV guidance (FAA and JAA/EASA) has been harmonized under ICAO navigation specification RNAV 5. Operations Specification 613 provides air operators with the ability to acquire operational approval for RNAV 5 by allowing credit for FAA/JAA/EASA/ICAO B-RNAV functional requirements while following Transport Canada operational guidance.
- (3) The RNAV 5 and B-RNAV navigation specifications are equivalent whether they are based on ICAO, JAA, EASA or FAA guidance. The ICAO *Manual on Performance-Based Navigation*, Third Edition, 2008, Volume II, Part B, Chapter 2, defines RNAV 5 aircraft eligibility and aircraft requirements. FAA AC 90-96A is the official United States document that provides means of compliance for B-RNAV (RNAV 5) operations. JAA GAI-20 ACJ 20X4 and EASA AMC 20-4, B-RNAV, both provide means of compliance with B-RNAV (RNAV 5). EASA AMC 20-4 has superseded the JAA guidance due to the JAA ceasing operations in June 2009.

### 4.0 AUTHORIZATION PROCESS

- (1) Canadian air operators may obtain RNAV 5 approval through their Principal Operations Inspector (POI). The air operator should submit to TCCA information which confirms that each of the air operator's RNAV systems and installation meets the aircraft eligibility and aircraft requirements sections of the ICAO Document 9613, *Manual on Performance-Based Navigation* (PBN), and the relevant airworthiness criteria of:
  - (a) FAA AC 90-96A; or
  - (b) JAA GAI-20 ACJ 20X4; or
  - (c) EASA AMC 20-4, B-RNAV.
- (2) During operations in airspace or on routes designated as RNAV 5 (B-RNAV) the total system error, both laterally and along-track, must be within  $\pm 5$  nm for 95% of the total flight time.
- (3) The air operator must submit to TCCA an amendment to their operations manual which provides details on operating procedures within RNAV 5 airspace, including:
  - (a) procedures to be followed in the event of a loss of RNAV capability while in RNAV 5 airspace or prior to entering that airspace;
  - (b) minimum equipment necessary to meet RNAV 5 requirements;
  - (c) any restrictions or limitations imposed on the RNAV equipment being used; and
  - (d) any other information relevant to the company's operations in RNAV 5 airspace.
- (4) The air operator must submit to TCCA an amendment to their training program that addresses operations that meet RNAV 5 requirements.
- (5) The air operator must provide training to operational control personnel, maintenance personnel when applicable and to each flight crew member involved with RNAV 5 operations that addresses at least the following:
  - (a) the operation of the area navigation systems in accordance with the training requirements set out in the subsection of the CASS referred to in section 6 of its Operations Specification; and

- (b) for a flight crew member or operational control personnel to qualify for operations on RNAV 5 routes, an air operator must have initial and recurrent approved training programs that ensure that each individual is proficient in the following areas:
  - (i) flight planning;
  - (ii) navigation performance requirements;
  - (iii) en route procedures; and
  - (iv) contingency procedures.

## 5.0 CONCLUSION

- (1) The POI, with the assistance of the principal maintenance inspector (PMI) or Regional Airworthiness office, should confirm that each of the air operators RNAV systems and installations comply with the above references as appropriate for RNAV 5 operations. New aircraft may have a note or statement in the Aircraft Flight Manual (AFM) that indicates the navigation equipment meets RNAV 5 and/or B-RNAV standards. Some aircraft navigation systems may exceed the requirements for RNAV 5 airspace (e.g. RNP 1).
- (2) Updates to the air operator company operations manual and training program should be done in accordance with the requirements of Sections 705.124, 705.135, 704.115, 704.121 of the CARs and Sections 725.124, 725.135, 724.115, 724.121 of the CASS, as applicable.

## 6.0 CONTACT OFFICE

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Suggestions for amendment to this document are invited, and should be submitted to the Transport Canada Civil Aviation Issues Reporting System (CAIRS) at the following e-mail address: [CAIRS\\_NCR@tc.gc.ca](mailto:CAIRS_NCR@tc.gc.ca) (or Internet address: <http://www.tc.gc.ca/CAIRS>).

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