Trinidad and Tobago
Civil Aviation Authority

TTCAA Advisory Circular

Subject: GUIDANCE FOR OPERATIONS IN SPECIAL AIRSPACES AND RNAV ROUTES AND PROCEDURES
TTCAA Advisory Circular TAC-008B
Date: 07/05/09

PURPOSE

1. (1) The purpose of this TTCAA Advisory Circular (TAC) is to provide information to operators from which they can obtain guidance for operations in RVSM, MNPS, RNP Type airspaces or Area Navigation (RNAV).

(2) TAC-008B replaces and supercedes TAC-008A which is now cancelled and should be destroyed.

GENERAL

2. There are special requirements and procedures relating to flights in the following airspaces and routes:

(a) Defined portions of airspace or on routes where RNP Type has been prescribed;

(b) Defined portions of airspace where, based on Regional Air Navigation Agreement, minimum navigation performance specifications (MNPS) are prescribed;

(c) Defined portions of airspace where, based on Regional Air Navigation Agreement a vertical separation minimum of 1000 feet is applied above FL 290 (RVSM);

(d) Area navigation (RNAV) routes and procedures.

GUIDANCE SOURCE REFERENCES

3. The following documents provide guidance for operators on the special requirements and procedures for operations in the airspaces shown and include information on use of RNAV routes and procedures:

(a) RNP – Information on RNP and associated procedures and guidance concerning the approval process are contained in the Manual on Required Navigation Performance (RNP), DOC 9613. TAC-033 as amended gives guidance for operations in European airspace designated for Basic Area Navigation (B-RNAV) and Precision Area Navigation (P-RNAV);

(b) MNPS – The prescribed minimum navigation performance specifications and the procedures governing their application are published in the Regional Supplementary Procedures, DOC 7030 also the North Atlantic MNPSA operation manual which is primarily for the information of pilots and flight operations officers planning and conducting operations in North Atlantic (NAT) Minimum Navigation Performance (MNPS) airspaces;

(c) RVSM - ICAO DOC 9574- Manual on Implementation of a 300 m (1000 ft) Vertical Separation Minimum between FL 290 and FL 410 Inclusive, is the source guidance reference for RVSM operations. The RVSM Minimum Aircraft System Performance Specification (MASPS) include specifications and procedures for the separate aspects of type approval, release from production and continued airworthiness and is included in the following documents for global application:

(i) Joint Aviation Authority (JAA) Temporary Guidance Leaflet (TGL) No.6 – Guidance Material on the Approval of Aircraft and Operators for Flight in Airspace above FL 290 where a 300 m (1000 ft) Vertical Separation Minimum is Applied – or any subsequent version thereof; or

(ii) Federal Aviation Administration (FAA) Document 91-RVSM, Interim Guidance Material on the Approval of Operators/Aircraft for RVSM Operations. Document 91 RVSM is used as the principal guidance document for the approval of Trinidad and Tobago operators for operations in RVSM airspace.

(d) Federal Aviation Administration (FAA) Advisory Circular AC No. 90-100 as amended Area Navigation operations is used to provide operational and airworthiness guidance for operation on US Area Navigation routes, Instrument Departure procedures (DP's) and Standard Terminal Arrivals (STARs). Operators and pilots may use this AC for guidance on RNAV authorization and to determine their eligibility for similar RNAV routes and procedures. The Appendix gives additional guidance on the Issue of Operations Specifications C063 authorizing RNAV operations.

4. National air operators may be guided by the documents referred to in paragraph 3, for meeting the requirements and procedures for operations in the applicable defined portions of airspace referred to in Paragraph 2.

Ramesh Lutchmedial
Director General of Civil Aviation

APPENDIX

ADDITIONAL GUIDANCE ON OPSPEC CO63 FOR RNAV AUTHORIZATION

1. TAC-08 gives general guidance on operations in special airspaces, including guidance on RNAV routes and procedures. This Appendix gives guidance on the issue of Operations Specifications C063 for the authorization of RNAV operations.

OPERATIONS SPECIFICATION C063

General

2. (1) OpSpec C063 for AOC holders is issued to authorize RNAV "Type A" or "Type B" DPs and STARs.

(2) If an operator's aircraft is not eligible or its flightcrews are not appropriately trained to conduct RNAV "Type A" or "Type B" DPs and STARs, OpSpec C063 will not be issued.

(3) The following guidance apply to the issue of Operations Specification C063:

(a) Operations specification (OpSpec) C063 is used to authorize operators to conduct IFR terminal and en route RNAV departure procedures (DP), RNAV routes, and RNAV standard terminal arrivals (STAR). The term RNAV DP includes Standard Instrument Departures (SID) and Obstacle Departure Procedures (ODP);

(b) If an operator's aircraft is not eligible (properly equipped) or its flightcrews are not appropriately trained to conduct RNAV "Type A" or "Type B" DPs and STARs, then OpSpecc C063 shall not be issued. Advisory Circular (AC) 90-100, (as amended) - U.S. Terminal and En Route Area Navigation (RNAV) Operations - provides guidance for operators regarding operations on RNAV routes, RNAV DPs, and RNAV STARs;

(c) Current and new terminal RNAV DPs and STARs are charted as either "Type A" or "Type B" to reflect the track-keeping accuracy requirements specified in AC 90-100, as amended.

(4) The following are some important definitions as they relate to this authorization:

(a) **Descend Via**. An air traffic control instruction issued to pilots flying RNAV STARs or Flight Management System Procedures (FMSP). The instruction is issued to enable pilots to vertically navigate on an arrival procedure as published;

(b) **Flight Management System Procedure (FMSP).** An RNAV arrival, departure, or approach procedure developed for use by aircraft equipped with a Flight Management System (FMS);

(c) **Instrument Departure Procedure (DP).** Instrument departure procedures are published IFR procedures which provide obstruction clearance from the terminal area to the en route structure. There are two types of DPs, Standard Instrument Departures (SID) and Obstacle Departure Procedures (ODP) as follows:

(i) **Standard Instrument Departure (SID)**. A SID is a published IFR air traffic control (ATC) departure procedure that provides obstacle clearance and a transition from the terminal area to the en route structure. SIDs are primarily designed for air traffic system enhancement to expedite traffic flow and to reduce pilot/controller workload.

(ii) **Obstacle Departure Procedure (ODP)**. A published IFR departure procedure that provides obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstructions clearance unless an alternate departure procedure (such as a SID or radar vector) has been specifically assigned by ATC. The RNAV ODP must be retrievable from the FMS database and included in the filed flight plan.

(d) **Standard Terminal Arrival (STAR)**. An RNAV STAR is a published IFR air traffic control arrival procedure that provides a transition from the en route structure to the terminal area.

(e) **RNAV Type A DPs and STARs**. RNAV terminal procedures requiring system performance by GPS or DME/DME RNAV systems satisfying the criteria in AC 90-100, as amended. Type A procedures require the aircraft's track-keeping accuracy remain bounded by ±2 NM for 95% of the total flight time.

(f) **RNAV Type B DPs and STARs**. RNAV terminal procedures requiring system performance by GPS or DME/DME RNAV systems satisfying the criteria in AC 90-100, as amended.

(i) Type B procedures require the aircraft's track-keeping accuracy remain bounded by ±1 NM for 95% of the total flight time.

(ii) Type B procedures require a higher level of aircraft and operator performance than Type A procedures; as such, those aircraft and operators capable of flying Type B procedures may also fly Type A procedures.

Training

3. An operator's pilot training programme should address the following areas:

(a) Operating procedures in AC 90-100, as amended;

(b) Pilot knowledge requirements and training described in AC 90-100, as amended;

(c) Importance of reducing flight technical error on RNAV procedures via use of equipment such as flight director or autopilot;

(d) Recognition that some manually selectable aircraft bank-limiting functions might reduce the ability to satisfy ATC path expectations, especially during large angle turns;

(e) Procedures for verification that the correct procedure and runway are entered into the navigation system database prior to departure, and

(f) Required climb gradients on RNAV DPs and related aircraft performance requirements.

Aircraft Eligibility

4. (1) Operators and pilots should use the guidance in AC 90-100, as amended, to determine their eligibility for similar RNAV routes and terminal procedures. For the purpose of this authorization, "compliance" means meeting operational and functional performance criteria.

(2) The operator is responsible for providing equipment eligibility documented by the AFM. If the operator is unable to determine that the aircraft is eligible, he must provide the information shown in Table 1, to the TTCAA, as applicable:

Table 1

<table>
<tr><td colspan="2">Type A and Type B, require the following documentation:
• RNAV system make, model, and part number(s)
• Evidence of compliance with AC 90-100 requirements
• Crew operations procedures
• Crew training program
• Any other pertinent information</td></tr>
<tr><td colspan="2">The following describes specific requirements:</td></tr>
<tr><td>Type A specific</td><td>Type B specific</td></tr>
<tr><td>Evidence of ±2 NM track keeping accuracy</td><td>Evidence of ±1 NM track keeping accuracy</td></tr>
<tr><td>Proof the RNAV system meets the required functions for Type A operations</td><td>Proof the RNAV system meets the required functions for Type B operations</td></tr>
<tr><td>Specify GPS or DME/DME</td><td>Specify GPS or DME/DME</td></tr>
</table>

(3) Based on the information supplied by the operator, the flight operations inspector (FOI) must coordinate with the airworthiness inspector (AWI) to determine equipment eligibility for RNAV DPs/STARs and the proper nomenclature of the manufacturer's make/model/software version and the area navigation system installed in accordance with approved data that meets the criteria of the most recent version of AC 90-100, as amended.

(4) Some RNAV systems may not be able to perform multiple STAR runway transitions because of database limitations. Operators of such RNAV systems must either procure a "tailored" database and charts to allow the use of multiple runway transitions or have procedures for the flighcrew to advise ATC regarding their inability to accept a clearance involving a STAR with multiple runway transitions.

(5) After the FOI and AWI agree that the operator's navigation equipment, procedures, and flightcrew training are eligible for RNAV Type A or Type B DPs and STARs operations, OpSpec C063 may be issued indicating the appropriate authorizations.

Authorized European Precision RNAV (P-RNAV) Operations

5. The criteria in AC 90-100, as amended are generally consistent (but there are exceptions) with the criteria for P-RNAV operations in Europe:

(a) P-RNAV terminal and en route operations require a track-keeping accuracy of ±1 nautical mile for 95% of the flight time;

(b) If an operator has met the requirements for and is authorized P-RNAV in OpSpec B034, that operator may also be eligible for RNAV Type additional verification of equipment eligibility. FOIs should also be guided by TAC-033 to evaluate the operator's procedures and training to ensure compliance with AC 90-100, as amended.