GHANA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR
AC 08-002

APPLICATION & PROCESS:
APPROVAL TO OPERATE IN MNPS AIRSPACE

SECTION 1 GENERAL

1.1 PURPOSE

This advisory circular (AC) provides a means for air operators to obtain operational authority to operate within the airspace over the North Atlantic Ocean designated as Minimum Navigation Performance Specifications (NAT-MNPS) Airspace.

No person may operate a civil aircraft of Ghana registry in NAT-MNPS without a written authorization issued by the GCAA.

1.2 STATUS OF THIS AC

This AC is an original issuance.

1.3 BACKGROUND

A. The basic system used for traffic flow in the North Atlantic became so congested during the 1970s that a more stringent system was designed to alleviate the problem. This newer system included Minimum Navigation Performance Specifications (MNPS), the North Atlantic Organised Track System (OTS), and the North Atlantic Track Structure (NATS).

B. Two traffic flows were developed; a westbound flow departing Europe in the morning and an eastbound flow departing North America in the evening. The effect of these flows has been to concentrate most of the traffic unidirectionally, peak westbound traffic operating between 1130 UTC and 1900 UTC and peak eastbound traffic between 0100 UTC and 0800 UTC.

C. The primary requirement for operation in MNPS is the approval of the CAA based on a determination that the operator is capable of maintain the specified operating standards and is fully aware of the inherent obligations of the MNPS requirements..

Operators without this authorization are excluded from flying within MNPS airspace.

1.4 APPLICABILITY

The requirement for GCAA-SRD approval before operations in the North Atlantic MNPS airspace applies to operators of Ghana-registered aircraft involved in general aviation, aerial work and commercial air transport.

1.5 RELATED DIRECTIVES

The following Ghana Civil Aviation Directive (GCAD) are applicable to the MNPS requirements—

- Part 07 – RVSM, PBN and RNP requirements
- Part 08– Operations in RNP, MNPS or RVSM Airspace

1.6 RELATED PUBLICATIONS

These ICAO publications are source documents for this advisory circular—

- ICAO Doc 7030/4, Regional Supplementary procedures.
- North Atlantic MNPS Manual (9th edition) can be downloaded from the North Atlantic Program Coordination Office (NAT PCO) website at the following address: www.nat-pco.org.

Copies may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

1.7 DEFINITIONS & ACRONYMS

1.7.1 DEFINITIONS

The following definitions apply to the text of this circular—

1) Aircraft group – A group of aircraft that are of nominally identical design and build with respect to all details that could influence the accuracy of height keeping performance**.**

2) **Applicant –** Any Ghana AOC Holder or Aircraft Operator seeking to operate its aircraft in MNPS airspace.

3) **Height-keeping capability –** Aircraft height-keeping performance which can be expected under nominal environmental operating conditions with proper aircraft operating practices and maintenance.

This list of definitions is applicable in the context of this advisory circular only. Words, such as "Applicant" may be found in other publications with a different definition.

4) **Non-group aircraft –** An aircraft for which the operator applies for approval on the characteristics of the unique airframe rather than on a group basis.

5) **Supplemental type certificate –** A certificate approving the change in the type design of an aircraft. An STC is a type certificate issued when an applicant has received State of Design approval to modify an aircraft from its original design. The STC, which incorporates by reference the related TC, approves not only the modification but also how that modification affects the original design.

1.7.2 ACRONYMS & ABBREVIATIONS

The following acronyms and abbreviations are used in this circular—

1) **AC** – Advisory Circular
2) **AOC –** Air Operator Certificate
3) **GCAA** – Ghana Civil Aviation Authority
4) **GCAA-SRD –** GCAA Safety Directives Department
5) **GCADs –** Ghana Civil Aviation Directives
6) **GMU –** GPS Monitoring Unit
7) **GPS** – Global Positioning System

8) **ICAO** – International Civil Aviation Organization

9) **INS** – Inertial Navigation System

10) **IRS** – Inertial Reference System

11) **LOA** – Letter of Authorization

12) **LRNS** – Long Range Navigation System

13) **MEL** – Minimum Equipment List

14) **MMEL** – Master Minimum Equipment List

15) **NAT** – North Atlantic Tracks

16) **Ops Specs** – Operations Specifications

17) **PASI** – Pre-Application Statement of Intent

18) **RNP** – Required Navigation Performance

1.8 NAT-MNPS DEFINED AREA

A. MNPS vertical dimension airspace is that portion of the North Atlantic airspace between FL275 and FL400.

B. The MNPS lateral dimensions are between the latitudes 27° N to the North Pole. MNPS airspace is bounded in the east by the eastern boundaries of control areas (CTA) Santa Maria Oceanic, Shanwick Oceanic, Reykjavik, and in the west by the western boundary of CTA's Reykjavik, Gander Oceanic and New York Oceanic excluding the area west of 60° W and south of 38° N.

C. The area south of 51° to the south west of Ireland is designated as the Shannon Oceanic Transition area (SOTA) and is part of the MNPS airspace.

SECTION 2 MNPS AIRSPACE ACCURACY REQUIREMENTS

2.1 NAVIGATION

A. Aircraft conducting flights within the volume of airspace specified shall have a navigation performance capability such that—

1) The standard deviation of later track errors shall be less than 6.3 NM (11.7 km). This can be interpreted as a need for aircraft to remain within 12.6 NM (23 km) off track for 95% of the time (RNP 12.6).

2) The proportion of the total flight time spent by aircraft between 30 NM (55.6 km) off the cleared track, shall be less than one hour per 2000 flight hours.

3) The portion of the total flight time spent by aircraft between 50 and 70 NM (92.6 and 129.6 km) off the cleared track shall be less than one hour per 8000 flight hours.

B. Such navigation performance capability shall be verified by the State of Registry or the State of the aircraft operator.

2.2 ALTIMETRY

A. The separation requirements are 1000 ft (305 metres) vertical to FL 290 and 2000 ft (610 metres) vertical above FL 290 in opposite directions.

B. Where RVSM airspace is in force, the operator must be approved for RVSM operations before entering that airspace.

SECTION 3 APPLICATION & APPROVAL PROCESS

3.1 GENERAL

A. All UAE registered aircraft, which plan to fly across the North Atlantic require an approval by GCCA for flight in MNPS airspace. This approval is granted to the operator by a letter of approval, which must be carried in the aircraft library and produced on demand.

B. This paragraph gives detailed guidance on the required content of operational practices and procedures. It also describes the steps in the operational approval process and the granting of approval to operate in MNPS airspace.

For commercial air transport operations, the AOC holder's operations specification will be amended to include MNPS. as well as the issuance of a letter of approval.

C. To process an application the GCAA needs to be satisfied that—

1) Operational programmes are adequate which will include flight crew training as well as operations manuals with approval required for each operator and each aircraft group; and

2) Airworthiness issues are satisfactorily addressed and will included approval for each aircraft group, and non-group aircraft, to be used in MNPS operations.

3.2 CONTENT OF AN OPERATOR MNPS APPLICATION

The following describes the material that an operator should provide to the GCAA for evaluation, preferably at least 60 days before the intended start of MNPS operations.

3.2.1 AIRWORTHINESS

A. Airworthiness Documents. Documentation such as the Aircraft Flight Manual (or supplement), should be available to show that the aircraft has been approved either for MNPS or to RNP-10 by the appropriate airworthiness authorities (State of Manufacture).

B. Description of Aircraft Equipment. A description of the aircraft navigation equipment appropriate to operations in an MNPS environment.

C. Acceptable aircraft navigation equipment that—

1) Consists of two fully serviceable Long Range Navigation Systems (LRNs), which consist of either;

(a) Two Inertial Navigation Systems, or

(b) Two Flight Management Systems (FMS) with two Inertial Reference Systems (IRS); or

(c) Two approved Global Positioning Systems (GPS), or

(d) One INS and one FMS/IRS, or

(e) One INS and one approved GPS, or

(f) One FMS/IRS and one approved GPS.

2) Must be capable of providing a continuous indication to the flight crew of the aircraft position relative to track, and

3) Should be coupled to the automatic pilot.

D. Maintenance. At the time application is made for operational approval, the operator should submit a maintenance programme for approval (if applicable).

E. Minimum Equipment List. A minimum equipment list (MEL), adapted from the master minimum equipment list (MMEL), should include items pertinent to operating in MNPS airspace.

3.2.2 NAVIGATION ACCURACY RECORDS

A. As a guide all navigation equipment approved for RNP-10 or better would normally be acceptable to the GCAA.

- The operator of an aircraft, for which there is not a specific RNP limitation or approval in the Aircraft Flight Manual, must compile navigation accuracy data as outlined for RNP-10 approval.
- This data will be evaluated by the GCAA to determine that the accuracy limits of RNP-10 are met.

3.2.3 TRAINING PROGRAMMES & STANDARD OPERATING PROCEDURES (SOP'S)

A. All operators should submit training syllabi and other appropriate material to the GCAA to show that the operating practices, procedures and training items related to MNPS operations are incorporated in training programmes.

B. Guidance on the content of training programmes and operating practices and procedures is given in Sections 5 and 6.

C. In broad terms, this covers flight planning, pre-flight procedures, aircraft procedures for entry, in-flight and contingency procedures, and flight crew training procedures.

3.2.4 OPERATIONS MANUALS & CHECKLISTS

A. The appropriate manuals and checklists should be revised to include information/guidance on standard operating procedures as detailed in Section 5.

B. Manuals and checklists should be submitted for review by the GCAA as part of the application process.

3.3 GCAA REVIEW & EVALUATION OF APPLICATION

Once the application has been submitted and the GCAA Airworthiness Division is satisfied with the information provided, the GCAA will continue with the approval process

3.4 VALIDATION FLIGHT(S)

A. The content of the MNPS application and programmes may be sufficient to validate the aircraft.

B. However, the final step of the approval process may require a validation flight through MNPS airspace by a GCAA Flight Operations Inspector to verify that all relevant procedures are applied effectively.

- If the performance is satisfactory, operational approval for MNPS airspace may be granted. If the performance is not adequate, then approval will be delayed.

3.5 LETTER OF APPROVAL

A. Approval to operate in MNPS airspace will be granted by a Letter of Approval issued by the GCAA.

B. Each aircraft for which the operator is granted authority will be listed in the Letter of Approval..

SECTION 4 CONDITIONS FOR REMOVAL OF MNPS AUTHORITY

4.1 EQUIPMENT TOLERANCES

A. The incidence of track keeping errors that can be tolerated in an MNPS environment is small. It is incumbent upon each operator to take immediate action to rectify the conditions that cause an error.

B. The operator should also report the event to the GCAA within 72 hours, through the appropriate channels with initial analysis of causal factors and measures taken to prevent further events. The requirement for follow up reports will be determined by the GCAA.

C. Operators should be aware that the regulatory authorities of the UK, USA and Canada regularly check aircraft tracking accuracy.

4.2 OPERATOR ACTION

A. The operator should make an effective, timely response to each track keeping error.

B. The GCAA may consider removing MNPS operational approval if the operator response to a track keeping error is not effective or timely.

C. The GCAA will also consider the operator's past performance record in determining the action to be taken.

D. If an operator shows a history of operational and/or airworthiness errors, then approval may be removed until the root causes of these errors are shown to be eliminated and MNPS programmes and procedures effective.

E. The GCAA will review each situation on a case-by-case basis.

4.3 RENEWAL

A. Renewal of a MNPS Letter of Approval will be processed upon application.

B. The operator application must—

1) Indicating there has been no modification of the navigation equipment; and

2) Contain records for the previous two years indicating the equipment integrity and navigation accuracy.

SECTION 5 OPERATING PROCEDURES

5.1 FLIGHT PLANNING

A. During flight planning the flight crew should pay particular attention to conditions that may affect operation in MNPS airspace. These include, but may not be limited to—

1) Verifying that the aircraft equipment is approved for MNPS operations.

2) Reported and forecast weather on the route of flight

3) Minimum equipment (MEL) requirements pertaining to track keeping systems;

4) If required for the specific aircraft group, accounting for any aircraft operating restriction related to MNPS airworthiness approval.

B. The use of the letter **"X"** in item 10 will still indicate MNPS approval even after the introduction of RVSM and therefore, should continue to be used.

5.2 IN-FLIGHT PROCEDURES

A. Operating procedures contained in the Operations Manual must contain relevant guidance information for in-flight procedures.

B. Contingency procedures for equipment failure and navigation inaccuracies prior to, and after entry, must be addressed.

5.3 POST FLIGHT PROCEDURES

A. The operator must create a mechanism whereby pilots log the navigation accuracy at the completion of a flight.

B. In making technical entries for a malfunction or inaccuracy in a track keeping system, the pilot should provide sufficient detail to enable an effective and timely repair

SECTION 6 TRAINING REQUIREMENTS

6.1 INTRODUCTION

A. All initial MNPS training courses must be approved by the GCAA prior to use and the syllabus incorporated in the Operators Manual.

- Recurrent training is required on an annual basis.

B. The following items detailed below should be standardised and incorporated into training programmes and operating practices and procedures.

C. This document is written for all users of MNPS airspace, and as such it is recognised that some material may not be necessary for larger commercial air transport aircraft operators as certain items may already be adequately standardised in existing procedures.

D. New technology may also remove the need for certain actions required of the flight crew. If this is so, then the intent of this guidance can be considered to be met.

6.2 FLIGHT CREW TRAINING

In addition to the operating procedures in Section 5, the following items should also be included in flight crew training programmes—

1) Knowledge, understanding and compliance of standard ATC phraseology and track messages used in each area of operations;
2) MNPS procedures for NAT (and other areas when applicable)
3) Changes to charting and documents to reflect MNPS.
4) Navigation equipment required to be operational for flight in designated MNPS airspace, limitations associated with the RNAV equipment;
5) Flight planning requirements;
6) Entry, in-flight and exit requirements and procedures
7) Contingency procedures for system failures or navigation inaccuracies
8) Position error log and notification requirements;
9) Operations Manual information and procedures; and
10) The information in this advisory circular

End of Advisory Circular

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