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AIC

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The following circular is hereby promulgated for information, guidance and necessary action

OPERATION OF IFR ACFT (APPROVAL TO USE GPS FOR ENROUTE OPS AND RNAV PROCEDURES) IN BOTSWANA.

INTRODUCTION

This Aeronautical Information Circular (AIC) specifies the terms and conditions associated with the approval to use the Global Positioning System (GPS) for en – route and RNAV (GNSS) Procedures for Instrument Flight Rules (IFR) operations in Botswana. The applicable airports and Procedures are as published in AIRAC AIP SUP S45/02 and S46/02.

International standard for the use of GPS for the above IFR operations are published in ICAO Annex 10 and in the ICAO PANS – OPS Volume II. All terminal and approach procedures authorized by this AIC meet these ICAO standards.

Proposed GNSS national regulations pertaining to requirements for:

1. Airworthiness
2. Maintenance
3. Pilot License
4. Operations
5. Air Traffic Service
6. Aeronautical Telecommunication

are described in the Draft Model Legislation and can be obtained from the AIS Office, Civil Aviation Authority of Botswana Headquarters.

TERMS AND CONDITIONS

Enroute operations

GPS may be used for IFR guidance for en – route operations subject to the following provisions and limitations:

- a) The GPS navigation equipment must be approved in accordance with the requirements specified in Technical Standard Order (TSO) C129 or C129a (Class A1, A2, B1, B2, B3, B4,

C1, C2, C3 or C4, installed and approved in accordance with the appropriate sections of the Airworthiness Manual, and operated in accordance with the aircraft flight manual or flight manual supplement.

- b) Aircraft using GPS equipment under IFR must be equipped with another approved and operational means of navigation. Should GPS navigation capability be lost, this equipment must allow navigation along the planned route or suitable alternate route.
- c) For flight plan purposes, the COM/NAV equipment suffix “G” must be used to indicate area navigation (RNAV) capability.

RNAV (GNSS) Terminal and Approach Operations

GPS shall be used for IFR flight guidance during RNAV(GNSS) Procedures subject to the following terms and conditions:

- a) All aircraft operators shall be authorized by the State of Registry to conduct terminal and approach procedures using the GPS.
- b) The GPS avionics shall meet FAA TSO C129 or C129A (Class A1, B1, B3, C1 or C3) or C1456/C146 requirements or equivalent criteria and shall be installed and approved in accordance with accepted standards and regulations.
The GPS avionics shall be operated in accordance with aircraft flight manual or applicable flight manual supplement, both of which take precedence over the terms and conditions specified in this AIC.
- c) The avionics navigation database shall be current. All RNAV (GNSS) Procedures shall be retrieved from the avionics navigation database, which shall store the location of all waypoints required to define the procedure and present them in the order depicted on the published procedure chart. Pilots shall verify procedure waypoints either by verifying coordinates or by ensuring that bearings and distances between waypoints are consistent with charted data.
- d) Receiver Autonomous Integrity Monitoring (RAIM) shall be available upon commencement of an RNAV (GNSS) Procedure and throughout the Procedure to provide integrity for the navigation guidance. If a RAIM warning is displayed when the aircraft is established on the final approach course, the pilot shall not continue the approach using GPS guidance. Aircraft with integrated GPS/IRS systems may meet this requirement by alternate means if such means are authorized by the State of Registry. In the case of an instrument approach procedure, if an avionics RAIM prediction indicates that RAIM will not be available at the expected approach time, the pilot shall advise ATC of his/her intentions as soon as possible.
- e) Aircraft using GPS equipment under IFR shall be equipped with another approved and operational means of navigation. Should GPS navigation capability be lost, this equipment shall allow navigation along the planned route or a suitable alternate route.
- f) GPS may be used to identify all DME and ADF fixes including fixes that are part of any instrument approach procedure when the applicable named and charted DME or ADF is

selected as a GPS waypoint. Where ATC requests a position based on a distance from a DME facility for separation purposes, the pilot may report GPS distance from the DME facility, stating the DME facility name but omitting the term “DME” (e.g. “30 miles from Gaborone VOR”).

- g) Where a take - off and/or en – route alternate is required, at least one non – GPS based approach procedure is available at the alternate(s).
- h) When communicating with ATC, Pilots shall identify and request a procedure by its published name, omitting the (GNSS) part of the name (e.g. “cleared for an RNAV RWY 08 approach”).

Application for approval to use RNAV (GNSS) should be made to :

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