



CIVIL AVIATION DIRECTION GENERAL
AIR NAVIGATION DEPARTMENT
AIS/MAP

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AERONAUTICAL INFORMATION
CIRCULAR

No. 03/A5
Date: 03/01/28

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AIR

**USE OPERATIONAL CRITERIA OF GLOBAL POSITIONING
SYSTEM (GPS) ON COSTA RICA AIRSPACE**

Introduction

The satellite air navigation systems fulfil satisfactorily the requirements of the civil aviation. The satellite technology development and their use in air navigation are such that could be expected in the near future the establishment of several systems with this technology.

The International Civil Aviation Organization (ICAO) has adopted the term Global Navigation Satellite System (GNSS) to identify these systems.

Actually only two systems are in operation:

- a. Global Positioning System (GPS), Developed by the Defense Department of United States of North America.
- b. Global Navigation Satellite System (GLONASS) developed by the Russian Federation.

Additionally, the European countries are developing another system denominated "GPS Galileo".

The Civil Aviation Direction General (DGAC), considering the growing diffusion of GPS as a support to the civil air navigation at world level, has determined the convenience of regulating their use within the air space of Costa Rica, as a **Supplementary Navigation Way**, in two forms:

Supplementary Navigation Way: Definition: Navigation System that must be used jointly with a navigation system of unique way (VOR - DME, NDB, etc)



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1. **AS A VFR NAVIGATION WAY**

1.1 Definition

Visual Navigation System (VFR) dedicated **exclusively** to complement the information or bearings obtained from conventional navigation equipments (VOR-DME-NDB), **and shall not be used as unique way of navigation.**

1.2 **On-board equipment**

The aircraft shall have at least a GPS receptor, with fixed or portable installation, and also navigation equipment such that can receive signals of ground facilities required for destination and alternating airport route.

1.3 **Condition for GPS use under VFR Flight Rules**

GPS receptors ONLY FOR VFR USE with their corresponding indicators shall be used only as a VFR navigation supplementary way, having in consideration the following limitations inherent of those receptors:

- a. Does not have capacity of Autonomous Scanner of the Receptor Integrity (RAIM), for that reason does not indicate if a faulty satellite is emitting erroneous or spurious signals and therefore giving false positions.
- b. They can give erroneous information due to a faulty installation of the antenna, or if are portable receptors these are susceptible to intermittent flaws of signals, because of weakness of the antenna.
- c. The insertion of verification points or fixed (" waypoints ") incorrect is frequent cause of serious navigation errors.

1.4 **Dead Reckoning:**

Dead Reckoning (DR) by visual references, joint with the available ground facilities, will keep using and watching to reach flight safety.



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1.5 Warning

These GPS receptor has in their Flight Manual a note that says: **FOR VFR USE ONLY**. Therefore, they won't be used, under any circumstance, under flight instrument meteorological conditions (IMC). In fixed facilities, an inscription must appear with this warning, properly located in a place that the pilot can see.

1.6 Discretion

The GPS navigation system use under visual flight rules will be performed at pilot in-command discretion and won't be liable, to any special requirement of installation neither previous approval.

2. AS AN IFR NAVIGATION WAY

2.1 Definition

The GPS system use as a navigation way under instrument flight rules (IFR), allows to performed flights without controlling the trajectory by ground facilities, due to the high precision information that certified receptors offers for IFR use, in position, heading and distances terms.

2.2 Minimum conditions for GPS use under IFR flight rules

The GPS system shall be used as an en route IFR navigation way, at terminal areas and on non precision approaches, liable to the execution of minimum conditions that from now on be specified.

A. En Route Navigation and Terminal Areas:

- A (1) The aircraft must be equipped with one or more receptors able to receive GPS signals and certificates for IFR use under the Standardized Technical Order of the Federal Aviation Administration C129a (TSO-C129a Airborne Supplemental Navigation Equipment Using the Global Positioning System"), adopted by Costa Rica.



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- A(2) GPS receptors have been installed according Circular AC 20-138 of FAA, and their respective revisions. (Circular adopted by Costa Rica)
- A(3) Complex facilities (with GPS connections system to external indicators or automatic pilots), had been performed and approved by shops (national or foreigners) or personnel authorized by DGAC, or stations approved by FAA, or by manufacturers.
- A(4) Simple facilities of GPS receptors, not made as above indicated, had been evaluated by inspectors designated by DGAC, to check their operation and precision, on ground or by a verification flight and expedition of 337 formula. The flight shall not be performed if the inspector considers that it is not necessary.
- A(5) The aircraft must have operation manuals of each GPS system on board installed on aircraft and crew-members shall have aptitude to operate each system with safety.
- A(6) The aircrafts must hold conventional ways of navigation on board (VOR-DME-NDB), on good calibration and operation condition and appropriated to the flight. It won't be necessary to follow actively the flight path with the conventional navigation equipment, as far as GPS installed be equipped with RAIM. If RAIM capacity is missed, the crew-members shall verify their position with reference to the conventional navigation equipment.
- A(7) Commercial operators using GPS system as an IFR navigation way, must fulfill the stipulations of their respective Operation specifications and limitations.
- A(8) Previous to any operation using GPS system as an IFR navigation way, the pilot shall review the available " notams " related to GPS system, available at Web Page: www.navcen.uscg.gov, under name of "NANUS"
(NOTICES TO AIR NAVIGATION USERS)



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B. Non precision approaches:

To perform non precision IFR approaches, the operators will fulfill the conditions specified before and also with the following:

- B(1) The aircraft must be equipped with one or more receptors able to receive GPS signals and certificated for IFR use under the Standardized Technical Order of the Federal Aviation Administration C129a (TSO-C129a Airborne Supplemental Navigation Equipment Using the Global Positioning System"), of anyone of Classes A1, B1, B3, C1, or C3.
- B(2) The approach procedure must be properly certified and published by the aeronautical authority.
- B(3) Before starting a non precision approach, the pilot must be sure that the procedure on database of GPS receptor, be up-dated with the last publication or revision.

FLIGHT PLAN: Additional Information.

On stall 18 of Flight Plan "VFR GPS" will be inserted, when a GPS receptor only for VFR USE exist.

The air navigation under IFR flight rules using GPS system is considered as "Area Navigation" (RNAV). Therefore, in the stall 10 of Flight Plan form the character " G " will be inserted, for IFR flights with approved GPS receptors.

REPLACES 96/ AICA04 WITH MODIFICATIONS.