GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT

CIVIL AIRWORTHINESS REQUIREMENTS
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Subject :Approval of Airborne Global Positioning Systems (GPS) installations in aircraft.

1. INTRODUCTION

1.1 The purpose of this Civil Airworthiness Requirements is to clarify current policy, and to provide the basic criteria which must be satisfied before a Global Positioning System (GPS) installation may be approved.

1.2 At present, GPS is in a developmental testing phase, and the presently deployed satellite constellation is insufficient to satisfy the coverage and integrity requirements.

1.3 Therefore, GPS is accepted as an AID to navigation only. It is NOT APPROVED as a sole means of navigation of the aircraft in any country. It remains the responsibility of the pilot to determine his position using APPROVED Navigation Aids on board his aircraft.

2. APPROVAL CRITERIA

2.1 Stand alone Airborne GPS equipment.

2.1.1 Stand alone airborne GPS equipment. (i.e. a GPS system which has a dedicated display and provides no signals to any other aircraft system) may be installed as "non required equipment" on a "no-hazard no-interference" basis. In order for the installation to be approved, it must meet the following criteria:

a) The installation must be shown not to interfere with the operation of any other equipment;

b) A means must be provided to indicate to the flight crew when the GPS receiver has failed or is unable to perform position calculations. (any failure warning provided as part of the normal GPS display will satisfy this requirement. This requirement may also be satisfied by the provision of a warning light located in a prominent position in clear view of the pilot).

c) The installation must be in accordance with the manufacturers instructions and limitations, or in a manner acceptable to the Director General of Civil Aviation.

d) The aircraft must be placarded to clearly indicate that navigation MUST NOT be predicated on the use of GPS.

e) A statement must be inserted into the relevant section of the Flight Manual (radio limits page or equivalent) detailing any operating limitations and/or restrictions applicable to the particular

GPS system.

NOTE : Any flight manual supplement provided by the manufacturer must be included in the approved DGCA flight manual.

2.2 Airborne GPS systems which provide signals or navigation information to other aircraft systems.

2.2.1 GPS systems which provide signals or navigation information to other aircraft systems, (including instruments or displays, or auto pilots, but excluding area navigation systems), must, in addition to the above requirements, also comply with the following:

a) There must be a means provided to indicate to the flight crew the source of the navigation system data being supplied. The position of a selector switch is not acceptable.

NOTE : Indications must be unambiguous, and must be provided for ALL sources of navigation data which may be provided by other systems.

b) If the GPS is coupled to the auto pilot, the installation must not compromise the requirements that (i) the Autopilot be quickly disengaged by the pilot to let him control the aircraft (ii) unless there is automatic synchronization, each system must have a means to readily indicate to the pilot the alignment of the actuating device in relation to the control system it operates.

c) An unambiguous means must be provided to indicate to the flight crew when the GPS has failed or has reverted to dead reckoning mode. Where the GPS supplies warning or status output to external annunciators then these annunciators must be installed, and must be located in a prominent position in clear view of the pilot.

d) A statement must be inserted into the relevant section of the Flight Manual detailing normal operating procedures (relating to the interface between the aircraft and the GPS) as well as any operating limitations and/or restrictions applicable to the particular GPS system. As a minimum, this information would include any supplement supplied by the manufacturer, and an entry on the Radio Limitations (or equivalent) page.

2.3 Multi Sensor Area Navigation Systems (RNAV)

2.3.1 A multi sensor area navigations system which utilises a GPS sensor must, in addition to the requirements of para 2.2.1, provide an unambiguous indication when any sensor, including GPS, has failed or cannot provide the accuracy necessary for that phase of flight.

3. APPROVAL PROCEDURE

3.1 GPS installations may be installed by personnel holding appropriate licence, or by an Authorised person. Depending on the installation involved, delegations for Radio, Instrument, Electrical, Structures and Weight and Balance may be required.

Sd/-
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