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**AIC
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FRANCE**

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SUBJECT: DME carriage within Metropolitan France Flight Information Regions

1 GENERALITIES AND RECALL

The scope of this AIC is to remind all aircraft operators, flying IFR within Metropolitan France Flight Information Regions of the different cases where it is mandatory to have DME fitted onboard.

It is recalled that the DME equipment, when required, must be approved without any limitation (e.g. equipment approved without any limitation like "special type approval").

Two cases must be considered: one related to the Enroute navigation and the second one related to Terminal area and approaches.

2 RECALL OF AIRSPACE REQUIREMENT

2.1 Enroute navigation.

The amended "French arrêté" dated June 21st 2001 concerning communication, navigation, surveillance and collision-avoidance equipment installed in aircraft operating within mainland France Flight specifies, to fly in upper airspace and in some specified lower airspace sections, that all aircraft shall be equipped with a distance measuring equipment (DME) or with a device giving a longitudinal precision at least equivalent.

For non RNAV routes based on DME, use of RNAV GNSS distance in lieu of DME distance is authorised in the French airspace provided the aircraft is equipped with an approved BRNAV navigation system having GNSS positioning and navigation data base.

For such operations the pilot must select the DME station or the named point, extracted from the navigation data base, as the reference waypoint (WPT). The RNAV/GNSS system will indicate the distance to this station and thus will be considered as a substitute to the DME system.

Limitations associated to the use of the BRNAV system on RNAV routes are also applicable for its use on routes based on DME (e.g. RAIM prediction required).

2.2 Navigation in Terminal area and in approach.

The amended "French arrêté" dated June 21st 2001 concerning communication, navigation, surveillance and collision-avoidance equipment installed in aircraft operating within mainland France Flight specifies for departure, arrival and instrument approaches that all aircraft **must be equipped with adequate airborne equipment able to use information provided by the ground navaid on which the procedure is based.**

Therefore, in IFR, aircraft must be equipped with a DME to be operated on Terminal area procedures and/or approaches based on DME and not promulgated as RNAV.

Analyses were conducted to verify if substitution of a DME distance by a GNSS distance is possible whatever the case and without changing significantly aeronautical publication and aircrew procedure. From this assessment and for Terminal area and approaches such substitution is not easy, is impossible in certain cases and even may lead to hazards (e.g. case of a distance associated to a DME which is not collocated with a VOR)

3 **RECALL OF AIRCRAFT REQUIREMENT**

3.1 **Recall of aircraft requirement associated to General Aviation and applicable to all aircraft including non-French registered aircraft operated in French airspace**

The amended "French arrêté" dated 24 July 1991 concerning operation of civil aircraft in general aviation requires, for IFR flight, all equipment necessary to respect published trajectories and at least one approach procedure published at the destination airport and at the alternate(s)

3.2 **Recall of requirements applicable to commercial air transportation (Airplanes).**

European Commission (E.C) regulation concerning technical requirements and administrative procedures applicable to commercial transportation by aircraft (OPS 1: Commercial air transportation (aeroplanes)) requires, for IFR flight, one DME equipment whatever the ground infrastructure.

3.3 **Recall of requirements applicable to commercial air transportation (Helicopters).**

The "French arrêté" dated 23 September 1999 concerning operation of commercial air transportation helicopters(OPS 3) requires two independent navigation aids appropriate to the route/area to be flown and an approach aid suitable for the destination and alternate heliports.

4 **STATUS OF DME GROUND INFRASTRUCTURE IN FRANCE**

It exists in France many non-RNAV procedures based on DME in terminal area (SID/STAR) and in approach (ILS, LOC/DME, VOR/DME,...).

There is presently no European strategy in place to suppress or replace DME ground station. Furthermore the backup solution to GNSS navigation is proposed to be the DME-DME positioning.

5 **CONCLUSION**

For Enroute navigation and on non-RNAV route based on DME, use of GNSS distance in lieu of DME distance is authorised within Metropolitan France Flight Information Regions.

For Terminal and approach area and due to the large amount of procedures based on DME, to the difficulty to substitute DME distance by GNSS distance and to the different regulations referenced in the previous sections, **in practical terms, DME equipment is necessary for all IFR flight conducted within Metropolitan France Flight Information Regions.**