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Information for Operators

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An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

SUBJECT: Navigation Database Information vs. Printed and Electronically-Generated Aeronautical Charts

Purpose: This InFO describes the differences of information presented on printed and electronically-generated aeronautical charts and electronic navigation depictions enabled by an installed (ARINC 424) navigation database. It has been developed in response to National Transportation Safety Board (NTSB) safety recommendation A-96-99 and supersedes Flight Standards Information Bulletin for Air Transportation (FSAT) 01-08.

Background: The National Transportation Safety Board (NTSB) investigated an air carrier accident near Cali, Columbia in 1995. As a result the NTSB issued safety recommendation A-96-99, which states that the Federal Aviation Administration (FAA) should "...require the Jeppesen-Sanderson Company to inform airlines operating Flight Management System (FMS)-equipped aircraft of each difference in the naming and/or portrayal of navigation information on FMS-generated and approach chart information, and require airlines to inform their pilots of these differences." (Some of the information in this InFO was excerpted from Jeppesen Briefing Bulletin DEN 01-D.)

Discussion:

A. Both operators and pilots need to be aware of the possibility that some instrument flight procedures may not be coded into a navigation database.

(1) While the vast majority of the departure procedures, STAR, and approach procedures can be coded, other procedures can not be adequately translated to computer code within the industry-recommended standards. These "uncodeable" procedures are not included in the commercial navigation databases and are therefore unavailable to avionics systems that use a navigation database.

(2) Further, FMS and Global Positioning System (GPS) navigation database-enabled displays (i.e., ARINC 424 databases) are not a substitute for current published or electronically-generated aeronautical charts, as amended by Notices to Airmen (NOTAM). The pilot needs to

always confirm that the waypoint or navaid retrieved from the navigation database is at the location intended. “Trust, but verify.”

B. Avionics systems, flight planning computer systems, and associated navigation databases may not provide all of the applicable information needed to conduct a legal and safe flight.

(1) 14 CFR part 121, section 121.549 states that, “The pilot-in-command (PIC) shall ensure that appropriate aeronautical charts containing adequate information concerning navigation aids and instrument approach procedures are aboard the aircraft for each flight.”

(2) 14 CFR part 135, section 135.83 requires pertinent aeronautical charts in current and appropriate form be accessible to the pilot while conducting flight operations. For part 135 instrument flight rules (IFR) operations, “pertinent” refers to navigational en route, terminal area, approach, and letdown charts.

C. Presently, step-down fixes between the final approach fix (FAF) and missed approach point (MAP) are not coded in the navigation databases because not all systems are capable of handling step-down fixes.

D. Point-to-point navigation systems are generally not able to use en route legs that are not defined by geographic points on the ground. In general, those legs are dropped in the process that converts the ARINC 424 navigation database data to the unique configuration required for each specific navigation unit. It is critical that all legs of an instrument procedure be flown as designed or published.

E. The pilot(s) may not be authorized to fly all procedures available in the navigation database. If the pilot does not have an appropriate depiction for a procedure, even though various supporting fixes may be in the navigation database, the pilot may not be authorized to fly it.

F. Some categories of controlled airspace are also not in the commercial FMS database. Generally, the most restrictive airspace is included in the database, e.g., Class B and C airspace. Class A, D, E, and F airspace is not included. Consequently, the appropriate aeronautical charts (as amended by applicable NOTAMs) should be consulted before conducting flight operations in these types of airspace.

G. Not all specific IFR altitudes may be available in the navigation databases. Some examples of IFR altitudes not available in the navigation databases are minimum obstruction clearance altitudes, airway altitudes, approach minimum descent altitudes, approach decision altitudes, etc.

H. Every navigation system or FMS operates differently. Please refer to the Airplane Flight Manual (AFM), the Airplane Flight Manual Supplement (AFMS), or the Pilot’s Operating Handbook (POH) for specific information on the features, capabilities and limitations of the avionics system installed on your aircraft.

I. NOTAMs. Operators and flightcrews are cautioned that any published or electronically-depicted procedure, including electronic en route, terminal area, or airport moving map depiction, are subject to NOTAMs that may amend or cancel a specific route segment, procedure, or chart. Having electronic depictions of aeronautical charts or similar paper products of the same material does not relieve the pilot from checking NOTAMs prior to departure, and also, upon reaching the destination airport, ensuring that all applicable NOTAMs have been received.

Recommended action: Directors of safety and directors of operations (Part 121); directors of operations (part 135); training managers; and pilots need to be aware of the information contained in this InFO in order to achieve the highest level of safety.