Federal Aviation Administration

Memorandum

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From: Edie V. Parish, Acting Director of Airspace Services, AJV-1

Subject: Guidance for Conducting Environmental Review of Proposed Performance Based Navigation (PBN) Flight Procedures

It has come to our attention that there may be some confusion related to the environmental review of some PBN flight procedures.

The attached guidance was developed to clarify when and how categorical exclusions apply to the establishment of new or revised PBN flight procedures and when noise screening is needed.

For further information, please contact, the FAA ATO Mission Support Services, Airspace Management Group, Environmental Programs Office.

Attachment

Guidance for Conducting Environmental Review of Proposed PBN Flight Procedures

Background and Purpose: Establishing and implementing a new or revised Performance Based Navigation (PBN) Instrument Flight Procedure (IFP) constitutes a federal action under the National Environmental Policy Act (NEPA). Accordingly, the Federal Aviation Administration (FAA) must consider environmental impacts before it can take steps to implement a PBN IFP. Under existing FAA policy and procedures, (FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures"), there are several categorical exclusions (CATEX) that may apply to obviate the need to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) for a new or revised PBN IFP.

The purpose of this guidance document is to clarify: (1) how these CATEXes apply to PBN IFPs that either replace (i.e., overlay) or supplement existing conventional IFPs in the immediate vicinity of airports; and (2) when noise screening is needed to determine the appropriate level of review under NEPA.

Categorical Exclusions for PBN IFPs: FAA Order 1050.1E includes several (CATEXes) that normally apply to PBN IFPs (provided no extraordinary circumstances apply). See paragraphs 311g, 311i, and 311p. These CATEXes apply to PBN IFPs that:

- use overlay of existing procedures (paragraph 311g);
- are conducted at 3,000 feet (ft) or more above ground level (AGL); are conducted below 3,000 ft AGL but do not cause traffic to be routinely routed over noise-sensitive areas; are modifications to currently approved IFPs conducted below 3,000 ft AGL that do not significantly increase noise over noise-sensitive areas; or involve increases in minimum altitudes or landing minima (paragraph 311i); or
- are new procedures that routinely route aircraft over non-noise-sensitive areas (paragraph 311p).

FAA Order 1050.1E also recognizes that increasing the concentration of aircraft over existing noise-sensitive areas below 3,000 ft AGL and introducing new traffic on a routine basis over noise-sensitive areas below 3,000 ft AGL may cause a significant noise increase that would preclude use of a CATEX (see paragraphs 311i and 311k).

Additional environmental analysis is needed in some cases to determine the appropriate level of NEPA review for proposed PBN IFPs. A determination of whether a proposed PBN IFP that would normally be categorically excluded requires an EA or EIS depends on whether the proposed action involves "extraordinary circumstances." FAA Order

1050.1E, Para. 304; see also 40 C.F.R. § 1508.4. If additional analysis shows that extraordinary circumstances do not exist, then the PBN IFP can be categorically excluded from further environmental review under NEPA. Conversely, if analysis shows that extraordinary circumstances do exist, then the PBN IFP does not qualify for a CATEX, and an EA or EIS is required. Extraordinary circumstances exist when the proposed action involves any of the conditions described in paragraph 304 and may have a significant effect on the environment. Circumstances listed in FAA Order 1050.1E that are the most likely to require additional analysis with respect to a proposed PBN IFP include:

- An impact on noise levels of noise-sensitive areas (paragraph 304f);
- Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds (paragraph 304i);
- An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended (paragraph 304a); and
- An impact on properties protected under section 4(f) of the Department of Transportation Act (paragraph 304b).

If any of the circumstances described under paragraph 304 exist for a proposed new or modified PBN IFP, additional analysis is required to determine the potential for significant environmental effects.

Noise Focusing: The actual flight tracks of aircraft flown on conventional IFPs using ground based Navigational Aids (NAVAIDs) show broad dispersion around the trajectory of the defined procedures. The dispersion is typically based on the performance characteristics of individual aircraft types and pilot technique. In contrast, FAA's recent experience with satellite-based navigation procedures at DFW, ATL, and other airports shows that actual flight tracks and area navigation (RNAV) PBN procedures converge to a much greater degree (see attached figure). Therefore, aircraft flying RNAV procedures and the associated noise are concentrated over a smaller area than would be the case for the same operations using conventional, non-RNAV IFPs. The term used to characterize this concentration of noise is "noise focusing."

Screening Requirements: Due to concerns with noise focusing as described above, it is particularly important to conduct appropriate noise screening to determine whether extraordinary circumstances exist that warrant preparation of an EA or EIS for PBN IFPs that would normally be categorically excluded. Accordingly, noise screening must be done for PBN IFPs over noise-sensitive areas below 10,000 ft AGL to determine the potential for extraordinary circumstances that may preclude use of a CATEX.[1] Noise

[1] For PBN IFP that are not over noise-sensitive areas, noise screening is not required, but a categorical exclusion declaration should be prepared in accordance with FAA Order 7400.2, Chapter 32, Paragraph 32-2-1.b.3.

screening is also required between 10,000 ft and 18,000 ft AGL if a PBN IFP would result in operational changes at an altitude that could increase aircraft noise in an area within a national park, national wildlife refuge, historic site (including a traditional cultural property), or similar area where the noise increase is likely to be highly controversial.[2] Such screening is used to determine if aircraft flying PBN IFPs would cause increased noise over noise-sensitive areas and, if so, the magnitude of the increase.

There are several tools that the FAA has developed to screen for the level of change in noise exposure between the existing condition and a proposed PBN IFP.[3] In accordance with FAA's policies and procedures implementing NEPA, ATO and AVN must use the screening tools listed below:

- *Guidance for Noise Screening Air Traffic Actions* – This document provides a spreadsheet-based methodology for a first order screen for proposed IFPs.
- *NIRS Noise Screening Tool (NST)*[4] – This tool uses the FAA's Noise Integrated Routing System to assess changes in noise exposure between a proposed IFP (three procedures or less)[5] and the existing condition.
- *TARGETS Noise Plug-in* – This tool invokes the FAA's Integrated Noise Model to assess changes in noise exposure between any number of proposed IFPs and the existing condition.

For PBN IFPs over noise-sensitive areas, initial screening should be accomplished using the *Guidance for Noise Screening Air Traffic Actions*, indicated above. If the results show further analysis is necessary, then use of NST or TARGETS Noise Plug-in, as appropriate, would be the next step in the screening process.

In their methodologies, all three of these tools account for the difference in dispersion of flight tracks that would occur under conventional versus PBN IFPs. Thus they address the potential impacts of noise focusing.

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[2] See FAA Memorandum, Altitude Cut-Off for National Airspace Redesign (NAR) Environmental Analyses, dated September 15, 2003; FAA Order 1050.1E, Para. 14.3; and FAA Order 7400.2G, Para. 32-2-1.b.2 (e).

[3] FAA Order 1050.1E, paragraph 311i, specifies that for air traffic control procedures at or above 3,000 feet (ft) (AGL), the Air Traffic Noise Screening Procedure (ATNS) should be applied. However, ATNS has been superseded by the Noise Screening Tool (NST) and the other screening tools described in the text. FAA Order 1050.1 is under revision and these references will be updated with issuance of the revised order.

[4] With public use of the Aviation Environmental Dispersion Tool (AEDT), the NIRS tool will no longer be available for use. However, NST will be available until the Aviation Environmental Screening Tool (AEST - the new screening tool) is developed.

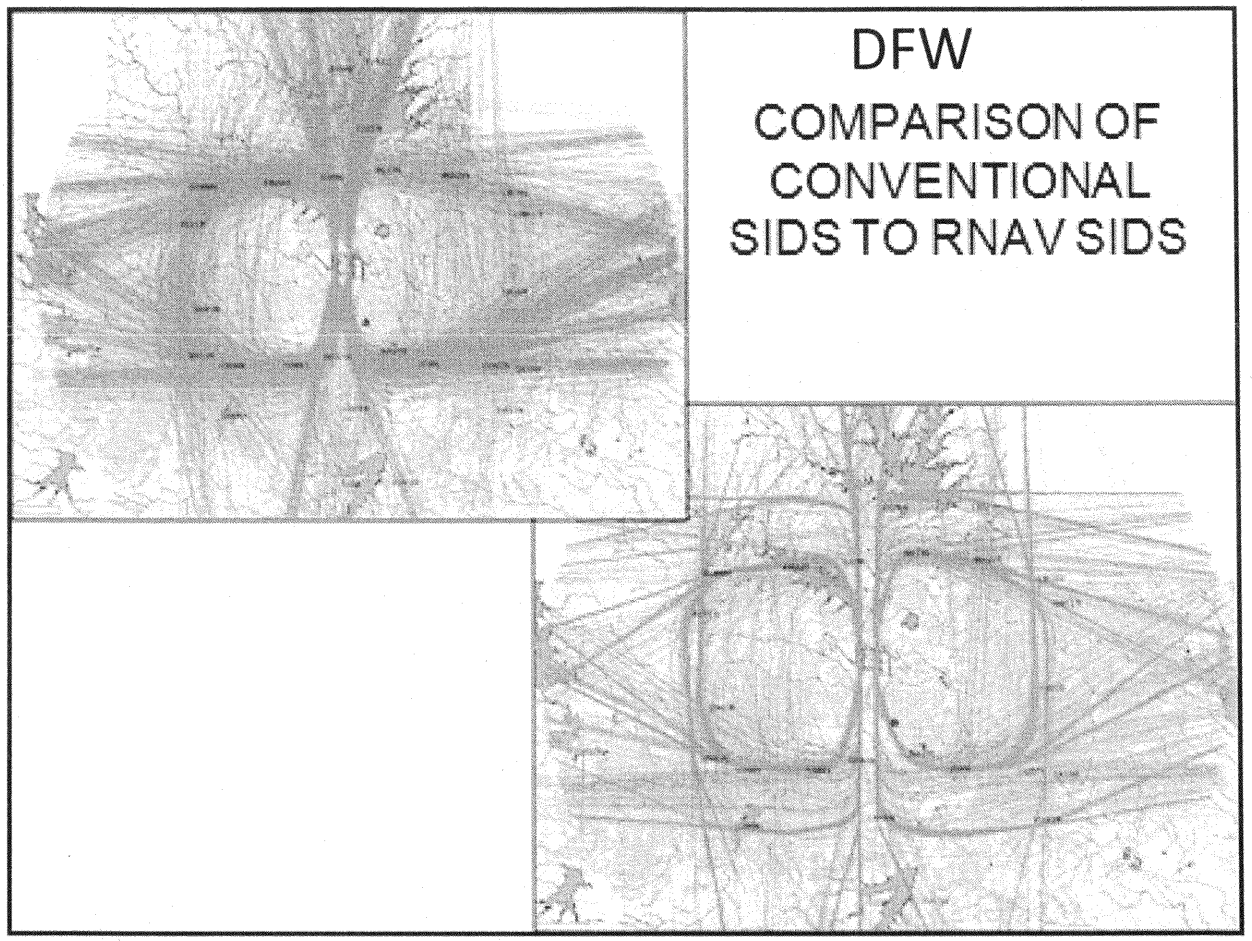
[5] See FAA Memorandum, Guidance Regarding the Number of Procedures for Noise Screening, dated December 8, 2009.

An increase in noise over noise sensitive areas within the 65 day-night sound level (DNL) contour of 1.5 decibels (dB) or more represents a significant noise impact (FAA Order 1050.1E, Appendix A, para, 14.3). If the noise screening "…shows that a PBN IFP would cause such an impact, a CATEX cannot be used, and an EA or EIS must be prepared." If the procedure can be modified to reduce the noise below the significant threshold, an EA and mitigated Finding of No Significant Impact (FONSI) may be prepared (see FAAO 1050.1E, paragraphs 405g and 406b(3)). If the noise screening shows that noise over a noise-sensitive area would increase 5 dB or more within the DNL 45-60 dB noise range or would increase 3 dB or more within the DNL 60-65 dB area, further analysis may be required to determine the potential for the PBN IFP to be highly controversial because of the potential noise impacts. The determination of the appropriate level of additional analysis should be made in consultation with the Air Traffic Organization (ATO), Mission Support Services, Environmental Programs Office at FAA HQ.

Finally, if the noise screening shows that none of the above increases would occur, the results of the noise screening with these conclusions should be attached to the CATEX Declaration (See FAA Order 7400.2, Chapter 32, Appendix 6), resulting in a documented CATEX.

For more information contact:

The FAA, ATO, Mission Support Services, Airspace Management Group, Environmental Programs Office at (202) 267-9205.


DFW
COMPARISON OF
CONVENTIONAL
SIDS TO RNAV SIDS