Federal Aviation Administration

Categorical Exclusion Declaration

Performance Based Navigation procedure amendments at Minneapolis-St Paul International Airport, Minneapolis, Minnesota

Description of Action:

FAA previously published and implemented Standard Terminal Arrival Routes (STARs), and Required Navigation Performance (RNP) Approaches. The initial STARs procedures were studied and approved by a working group of air traffic controllers and pilots before they were implemented in March 2015.

Several months later, some adjustments were recommended to smooth out different legs and turn points. These adjustments improve the efficiency of arrival and departure streams, smoothing the flow of traffic for pilots and controllers.

Six STARS and two RNPs were included in this screening. STARS: BAINY, BLUEM, KKILR, MUSCL, NITZR, and TOGRY. RNP: RW 12R and RW 30L.

Declaration of Exclusion:

The FAA has reviewed the above referenced proposed action and it has been determined, by the undersigned, to be categorically excluded from further environmental documentation according to Order 1050.1F, "Environmental Impacts: Policies and Procedures". The implementation of this action will not result in any extraordinary circumstances in accordance with Order 1050.1F. See attached Initial Environmental Review (IER). If further adjustments are proposed, they will require additional environmental review.

Basis for this Determination:

This review was conducted in accordance with policies and procedures in FAA Order 1050.1F. An IER from Appendix 5 of FAA Order 7400.2K was completed. The Service Area Environmental Specialist determined no extraordinary circumstances exist that would have the potential to cause significant environmental impacts as a result of implementing the proposed project.

A Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Aviation Environmental Design Tool (AEDT) Environmental Plug-In Tool Noise Report was prepared for this project. The results of the report indicated no significant adverse noise effects would result from implementation of the proposed project.

The findings of the IER and Noise Report were presented to the Minneapolis Noise Oversight Committee on September 21, 2016. This meeting was open to the public to

attend. FAA personnel remained after the meeting ended. No members of the public had any questions or raised any concerns on the project.

The proposed project meets the following categorical exclusion contained in FAA Order 1050.1F:

5.6-5i. Establishment of new or revised air traffic control procedures conducted at 3,000 feet or more above ground level (AGL); procedures conducted below 3,000 feet AGL that do not cause traffic to be routinely routed over noise sensitive areas; modifications to currently approved instrument procedures conducted below 3,000 feet AGL that do not significantly increase noise over noise sensitive areas; and increases in minimum altitudes and landing minima. For Air Traffic modifications to procedures at or above 3,000 feet AGL, the Noise Screening Tool (NST) or other FAA-approved environmental screening methodology should be applied.

The FAA Order 1050.1F identifies the following criteria to evaluate the environmental noise impact of the proposed actions in comparison to the baseline: DNL 45–60 dB ±5 dB, DNL 60–65 dB ± 3 dB, and DNL greater than 65 dB ± 1.5 dB. For example, if the baseline DNL has a value of 62 dB at a particular grid point, a noise change by the proposed project of up to 3 dB is considered acceptable by the regulation. When considering the three criteria ranges with respect to the proposed actions, FAA found no changes at these intervals. See the attached Noise Report.

Recommended by:

_____ Date: 10/18/16
Diane D. Langer – Air Traffic Manager, Minneapolis TRACON

Concurrence/Reviewed by:

_____ Date: 10/13/16
Kristi Regotti, Environmental Specialist, Operations support Group, North Team, Central Service Area, AJV-C21

Approved by:

_____ Date: 10/21/2016
for Robert Scarbrough, Director, Central Service Center

AIR TRAFFIC INITIAL ENVIRONMENTAL REVIEW

Proposed Performance Based Navigation procedures

At Minneapolis –St. Paul International Airport

(Excluding departure procedures)

Facility/Office: Minneapolis TRACON Date: August 17, 2016

Prepared by: Kristi Regotti Phone: 817-222-5763 Fax: 817-222-5771

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I. Project Description

A. Background:

The Next Generation Air Transportation System (NextGen) is the Federal Aviation Administration's (FAA) plan to modernize the National Airspace System (NAS) through 2025. Through NextGen, the FAA is addressing the impact of air traffic growth by increasing NAS capacity and efficiency while simultaneously improving safety, reducing environmental impacts, and increasing user access to the NAS. To achieve its NextGen goals, the FAA is implementing new Performance-Based Navigation (PBN) routes and procedures that leverage emerging technologies and aircraft navigation capabilities. PBN is a framework for defining performance requirements in "navigation specifications." PBN provides a basis for the design and implementation of automated flight paths as well as for airspace design and obstacle clearance. The two main components of PBN framework are Area Navigation (RNAV) and Required Navigation Performance (RNP). Once the required performance level is established, the aircraft's own capability determines whether it can safely achieve the specified performance and qualify for the operation.

RNAV is a method of navigation that enables aircraft to fly on any desired flight path within the coverage of specific navigational aids (NAVAIDS) or within the capable limits of a self−contained system. RNAV can also be a combination of capabilities from a self−contained system and specific NAVAIDS.

RNP refers to RNAV operations that provide navigation containment and have flight monitoring capabilities.

The added flexibility and proliferation of these navigation systems has the potential to affect the human environment. This is due, in part to the introduction of instrument flight rules procedures not previously applied to low altitude aircraft operations, and the anticipated reduction in separation standards.

(RNAV and RNP definitions are found in FAA Order 7400.2, 32-3-5, a.)

FAA previously published and implemented Standard Terminal Arrival Routes (STARs), and RNP AR Approaches. In post-implementation, the FAA is proposing to amend some of the procedures. The FAA's proposed action does not include any departure procedures.

Table 1-1, MSP STARs/RNPs Amendments Modeled

Procedure Name	**Procedure Type**
BAINY RNAV	STAR
BLUEM RNAV	STAR
KKILR RNAV	STAR
MUSCL RNAV	STAR
NITZR RNAV	STAR
TOGRY RNAV	STAR
RW 12R	RNP
RW 30L	RNP

B. Has airspace modeling been conducted using SDAT, TAAM, TARGETS, or other airspace/air traffic design tool? XX Yes Model: TARGETS o No If yes, provide a summary of the output from the modeling.

FAA used the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Aviation Environmental Design Tool (AEDT) Environmental Plug-In tool for this analysis. Please reference the TARGETS AEDT Environmental Plug-in Report for Minneapolis-St Paul International Airport MSP Minneapolis, MN dated 07-01-2016. (Referenced as 2016 Noise Screen)

Describe the present (no action alternative) procedure in full detail. Provide the necessary chart(s) depicting the current procedure. Describe the typical fleet mix, quantifying (if possible) the number of aircraft on the route and depict their altitude(s) along the route.)

The present conditions are shown in the 2016 Noise Screen.

D. Describe the proposed project, providing the necessary chart(s) depicting changes.

Describe changes to the fleet mix, numbers of aircraft on the new route, and their altitude(s), if any.

FAA is not anticipating any changes in fleet mix nor numbers of aircraft between existing conditions and future conditions. The RNAV STARs do not present any significant changes in routes and altitudes profiles when compared with the existing arrivals.

1. Will there be actions affecting changes in aircraft flights between the hours of 10 p.m. – 7 a.m. local? X Yes o No

2. Is a preferential runway use program presently in effect for the affected airport(s), formal or informal? X Yes No Will airport preferential runway configuration use change as a result of the proposed project? o Yes X No

3. Is the proposed project primarily designed for Visual Flight Rules (VFR), Instrument Flight Rules (IFR) operations, or both? o VFR X IFR o Both If this specifically involves a charted visual approach (CVA) procedure, provide a detailed local map indicating the route of the CVA, along with a discussion of the rationale for how the route was chosen.

4. Will there be a change in takeoff power requirements? o Yes X No If so, what types of aircraft are involved, i.e., general aviation propeller-driven versus large air carrier jets?

5. Will all changes occur above 3,000 feet above ground level (AGL)? X Yes o No What is the lowest altitude change on newly proposed routes or on existing routes that will receive an increase in operations?

All amendments are above 3,000 feet.

6. Will there be actions involving civil jet aircraft (heavier than 75,000 pounds gross weight) arrival procedures between 3,000-7,000 feet AGL or departures between 3,000-10,000 feet AGL? X Yes o No Attach a copy of the completed Air Traffic Noise Screening (ATNS) Model report. (Please note that FAA has replaced the ATNS with a Noise Screening Tool.) FAA uses Aviation Environmental Design Tool (AEDT) Environmental Plug-In tool for these analyses.

See the 2016 Noise Screen.

7. If noise analysis was already performed using the FAA's Integrated Noise Model (INM) or Noise Integrated Routing System (NIRS), provide a summary of the results.

The 2016 Noise Screen identifies grid points at the following intervals for the base line and the proposed actions: 45 dB or less, 45–50 dB, 50–55 dB, 55–60 dB, 60–65 dB, 65–70 dB, 70–75 dB, and 75 dB or more. The FAA Order 1050.1F identifies the following criteria to evaluate the environmental noise impact of the proposed actions in comparison to the baseline: DNL 45–60 dB ±5 dB, DNL 60–65 dB ± 3 dB, and DNL greater than 65 dB ± 1.5 dB. For example, if the baseline DNL has a value of 62 dB at a particular gridpoint, a noise change by the proposed project of up to 3 dB is considered acceptable by the regulation. When considering the three criteria ranges with respect to the proposed actions, FAA found no changes at these intervals.

There are no increases or decreases in noise that are significant enough to meet the standards given in the FAA Order 1050.1F.

II. Purpose and Need

A. Describe the purpose and need for the proposed project. If detailed background information is available, summarize here and provide a copy as an attachment to this review.

See Project Description.

B. What operational/economic/environmental benefits will result if this project is implemented?

RNAV and RNP specifications facilitate more efficient design of airspace and procedures which collectively result in improved safety, access, capacity, predictability, operational efficiency, and environment. Specifically, improved access and flexibility for point-to-point operations help enhance reliability and reduce delays by defining more precise terminal area procedures. They also can reduce emissions and fuel consumption. RNAV procedures can provide benefit in all phases of flight, including departure, en route, arrival, approach, and transitioning airspace.

For example, Standard Terminal Arrivals (STARs) can: Increase predictability of operations, Reduce controller/aircraft communications, Reduce fuel burn with more continuous vertical descents, Reduce miles flown in Terminal Radar Approach Control (TRACON) airspace, Reduce interaction between dependent flows in multiplex airspace (Citation: Fact Sheet – NextGen Goal: Performance-Based Navigation, April 2009)

1. If a delay reduction is anticipated, can the reduction be quantified? o Yes X No

2. Can reduced fuel costs/natural energy consumption be quantified? o Yes X No

C. Is the proposed project the result of a user or community request or regulatory mandate? o Community Request o Regulatory Mandate If not, what necessitates this action?

The Next Generation Air Transportation System (NextGen) is the Federal Aviation Administration's (FAA) plan to modernize the National Airspace System (NAS) through 2025. Through NextGen, the FAA is addressing the impact of air traffic growth by increasing NAS capacity and efficiency while simultaneously improving safety, reducing environmental impacts, and increasing user access to the NAS. To achieve its NextGen goals, the FAA is implementing new Performance-Based Navigation (PBN) routes and procedures that leverage emerging technologies and aircraft navigation capabilities.
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III. Describe the Affected Environment

A. Provide a description of the existing land use in the vicinity of the proposed project.

Please see the maps contained in the 2016 Noise Screen.

B. Will the proposed project introduce air traffic over noise sensitive areas not now affected? o Yes X No Will they be affected to a o greater or o lesser extent?

Based on the results contained in the 2016 Noise Screen, FAA has determined the noise impacts to be similar as to those existing today with no increases or decreases in noise.

Have these areas been mitigated?

MAC has an aggressive noise mitigation program. Please reference to MAC's ongoing mitigation program.

As the existing tracks show, these neighborhoods currently have aircraft overflights. The proposed changes will concentrate the tracks; however, the results from the noise screen indicate that there is neither an increase nor decrease in noise impacts.

C. Are wildlife refuge/management areas within the affected area of the proposed project? oYes X No

D. Are there cultural or scenic resources, of national, state, or local significance, such as national parks, outdoor amphitheaters, or stadiums in the affected area? o Yes X No

E. Has there been communication with air quality regulatory agencies to determine if the affected area is a non-attainment area (an area which exceeds the National Ambient Air Quality Standards for ozone, carbon monoxide, lead, particulate matter, sulfur dioxide, or nitrogen dioxide) or maintenance area (an area which was in non-attainment but subsequently upgraded to an attainment area) concerning air quality? o Yes X No

F. Are there reservoirs or other public water supply systems in the affected area? o Yes X No

IV. Community Involvement

Formal community involvement or public meetings/hearings may be required for the proposed project. Make a determination if the proposed project has the potential to become highly controversial. The effects of an action are considered highly controversial when reasonable disagreement exists over the project's risks of causing environmental harm. Opposition on environmental grounds by a Federal, State or local government agency or by a Tribe, or by a substantial number of the person affected by the action should be considered in determining whether reasonable disagreement regarding the effects of a proposed action exists.

A. Have persons/officials who might have some need to know about the proposed project due to their location or by their function in the community been notified, consulted, or otherwise informed of this project? X Yes o No

The MAC established the MSP Noise Oversight Committee (NOC) in August 2002 to bring industry and community representatives together to address aircraft noise issues at MSP and to bring policy recommendations to the Metropolitan Airports Commission.

1. Are local citizens and community leaders aware of the proposed project?
X Yes o No o Unsure

Are any opposed to or supporting it? If so, identify the parties and indicate the level of opposition and/or support.

a. If they are opposed, what is the basis of their opposition?

b. Has the FAA received one or more comments objecting to the proposed project on environmental grounds from local citizens or elected officials?

o Yes X No If so, state the nature of the comment and how the FAA was notified (e.g. resolution, Congressional, Public meeting/workshop, etc.).

1. Are the airport proprietor and users providing general support for the proposed project? X Yes o No

2. Is the proposed project consistent with local plans and development efforts? X Yes o No

3. Has there been any previous aircraft-related environmental or noise analysis, including contours? Yes. Refer to the airport for noise contours.

V. Extraordinary Circumstances

The determination of whether a proposed action may have a significant environmental effect is made by considering any requirements applicable to the specific resource (see 1050.1F, Appendix A).

A. Will implementation of the proposed project result in any of the following? As stated in 1050.1F, extraordinary circumstances exist when a proposed action involves any of the following circumstances AND may have a significant effect (40 CFR 1508.4).

1. An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended.
o Yes X No Possibly

Because of the existing track data and the proposed altitudes coupled with the distance from this area and the lack of increase in noise expected from these proposed procedures. FAA believes there is no impact to any cultural resources protected under the National Historic Preservation Act of a1966, as amended.

2. An impact on properties protected under section 4(f) of the Department of Transportation Act (see paragraph 304b). o Yes X No o Possibly

3. An impact on natural, ecological (e.g. invasive species) or scenic resources of Federal, Tribal, State, or local significance (for example, Federally listed or proposed endangered, threatened, or candidate species or proposed or designated critical habitat under the Endangered Species Act); resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; prime, unique, State, or locally important farmlands; energy supply and natural resources; wild and scenic rivers, including study or eligible river segments; and solid waste management. o Yes X No o Possibly

4. A division or disruption of an established community; a disruption of orderly, planned development; or an inconsistency with plans or goals that have been adopted by the community in which the project is located.
o Yes X No o Possibly

5. An increase in congestion from surface transportation, by causing a decrease in the Level of Service below the acceptable level determined by the appropriate transportation agency (i.e., a highway agency). o Yes X No o Possibly

6. An impact on noise levels of noise-sensitive areas.
o Yes X No o Possibly

Comment: 2016 Noise Screen indicates no significant changes over noise sensitive areas.

7. An impact on air quality or a violation of local, State, Tribal, or Federal air quality standards under the Clean Air Act amendments of 1990.
o Yes X No o Possibly

8. An impact on water quality, sole source aquifers, a public water supply system, or State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act. o Yes X No o Possibly

9. Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds.
o Yes X No o Possibly

10. Likelihood of an inconsistency with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action.
o Yes X No o Possibly

11. Likelihood of directly, indirectly, or cumulatively, creating a significant impact on the human environment. o Yes X No o Possibly

VI. Alternatives

A. Are there alternatives to the proposed project? o Yes X No If yes, describe any alternatives to the proposed action.

B. Please provide a summary description of alternatives eliminated and why.
During the development of these procedures, alternative procedures were culled out that did not meet the user or the facility's operational needs.

VII. Mitigation

Are there measures, which can be implemented that might mitigate any of the potential impacts, i.e., GPS/FMS plans, NAVAIDS, etc.? o Yes X No o N/A

VIII. Cumulative Impacts

What other projects (FAA, non-FAA, or non-aviation) are known to be planned, have been previously implemented, or are ongoing in the affected area that would contribute to the proposed project's environmental impact?

IX. References/Correspondence

Attach written correspondence, summarized phone contacts using Memorandums for the File, etc.

XI. Facility/Service Area Conclusions

Facility/Service Area Conclusions

This initial review and analysis indicates that no extraordinary circumstances or other reasons exist that would cause the responsible federal official to believe that the proposed project might have the potential for causing significant environmental impacts.

The undersigned have determined that the proposed project qualifies as a categorically excluded action in accordance with FAAO 1050.1F, and on this basis, recommend that no further environmental review be conducted before the proposed project is implemented.

Facility Manager Review/Concurrence

Signature: _____ Date: 10/18/16

Name: Diane D. Langer

Service Area Environmental Specialist Review/Concurrence

Signature: _____ Date: 10/13/16

Name: Kristi Regotti

Service Area Director Review/Concurrence, if necessary

Signature: _____ Date: 10/21/16

Name: Robert Scarbrough

TARGETS

AEDT Environmental Plug-in Report

For

Minneapolis–Saint Paul International Airport

KMSP

Minneapolis, MN

Prepared by:

FAA Office: ATO, AJV-114, Environmental Policy Team Office

Date: 07/1/2016

Minneapolis–Saint Paul International Airport **(**KMSP**)**

TARGETS Environmental Analysis Process

1. Purpose

The purpose of this report is to document the process used to analyze the noise impact of a proposed air traffic action at Minneapolis-Saint Paul International Airport (MSP). Figure 1-1 shows the airport diagram for MSP. This report shows the analysis of instrument flight procedures at MSP using the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Aviation Environmental Design Tool (AEDT) Environmental Plug-In tool. Table 1-1 shows the procedure name and type. Figure 1-2 and Figure 1-3 show the location of the arrival procedures (STARS) and location of the RNPs with respect to MSP.

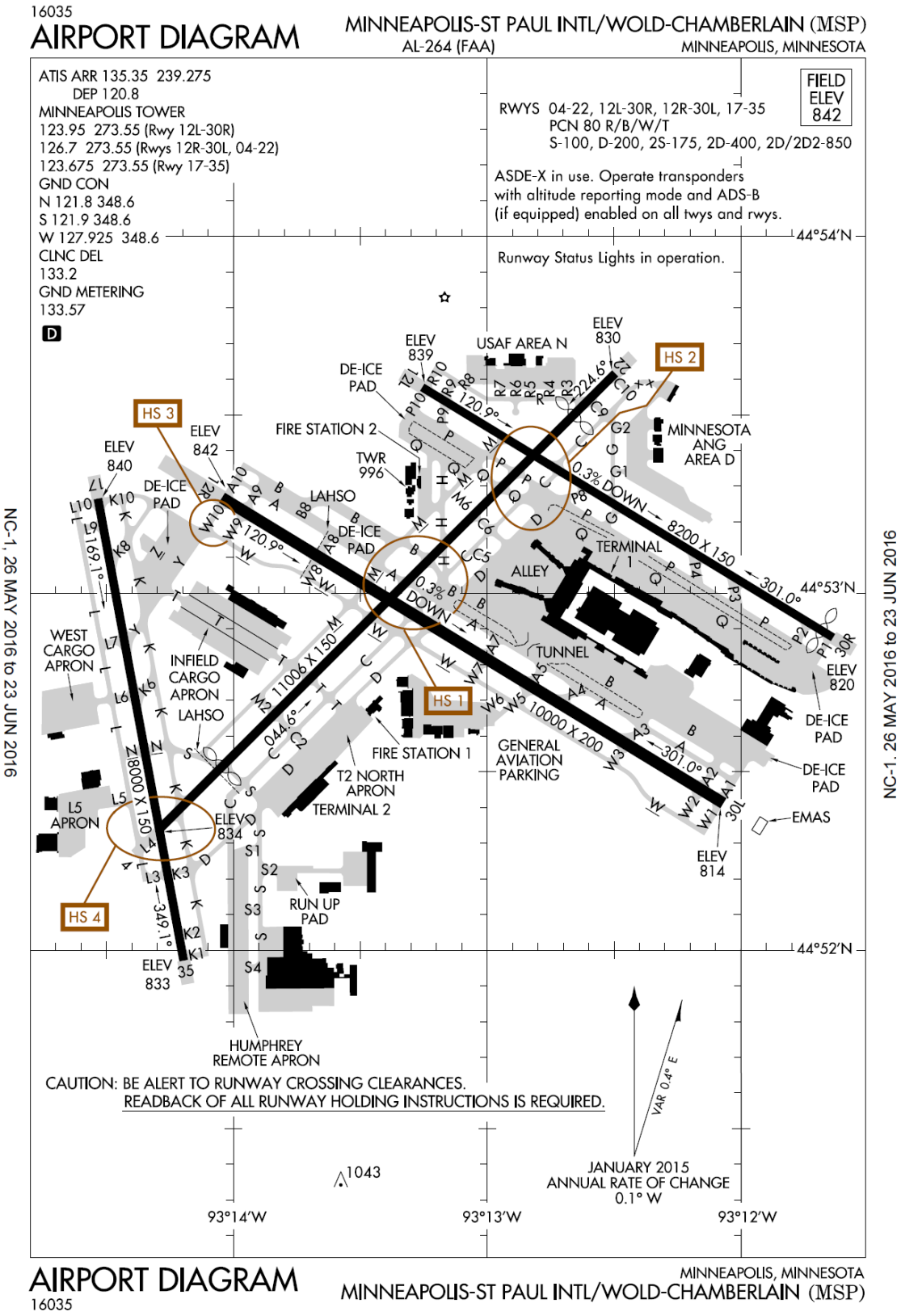

Figure 1-1: Airport Diagram of MSP

Procedure Name	Procedure Type
BAINY RNAV	STAR
BLUEM RNAV	STAR
KKILR RNAV	STAR
MUSCL RNAV	STAR
NITZR RNAV	STAR
TOGRY RNAV	STAR
RW 12R	RNP
RW 30L	RNP

Table 1-1: MSP Procedures to Be Modeled

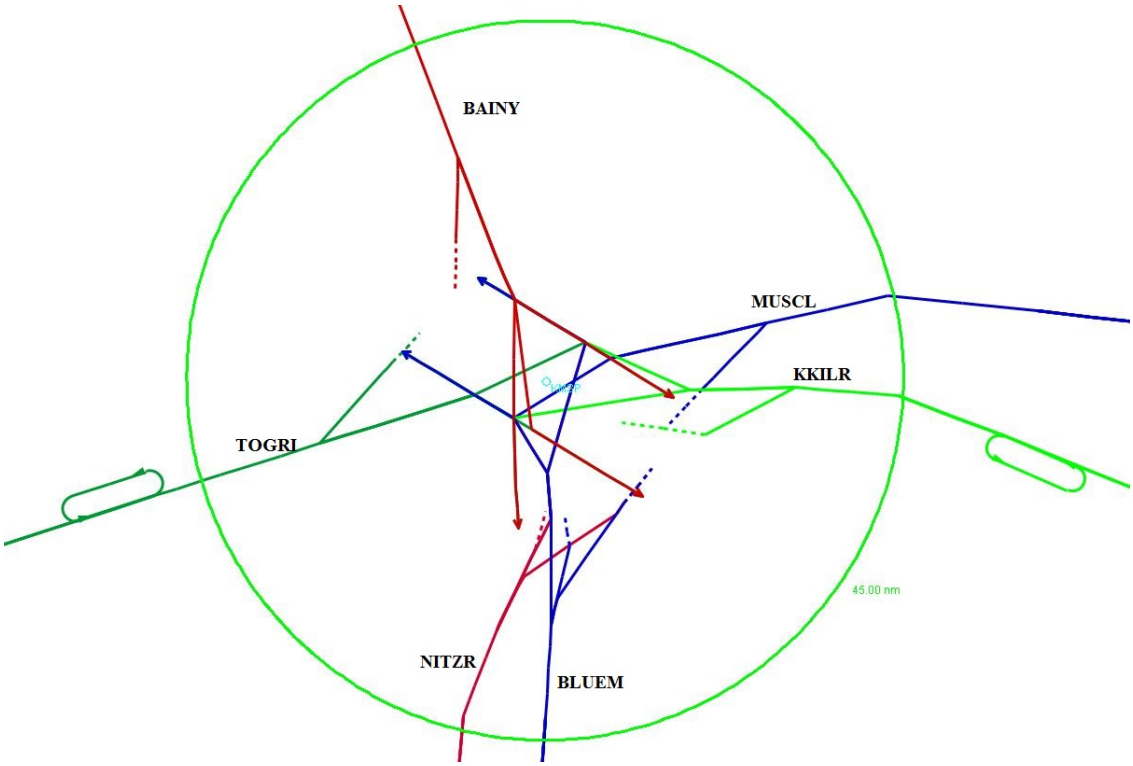

Figure 1-2: STARS at MSP

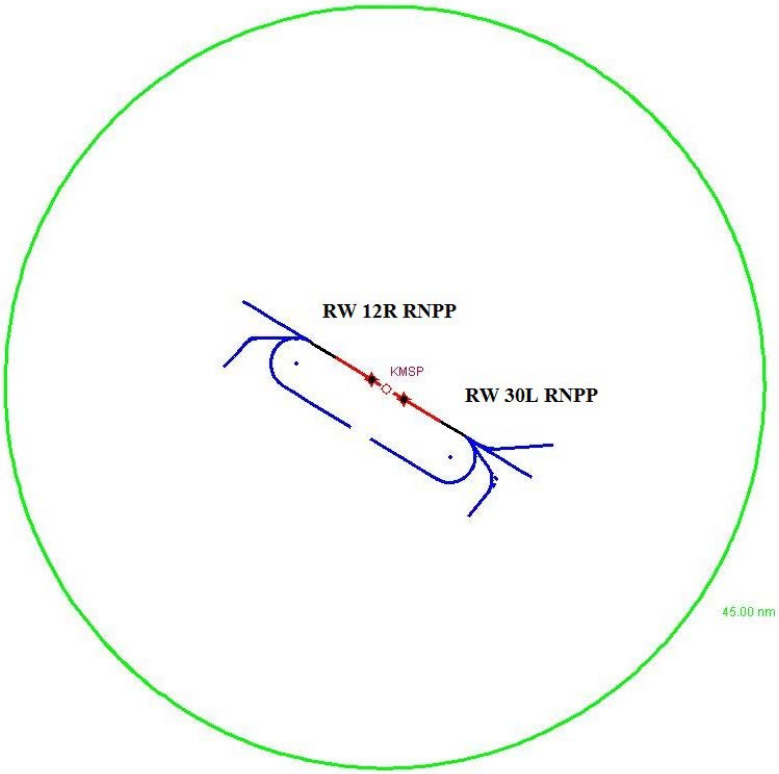

Figure 1-3: RNPs at MSP

2. Methodology

Historic radar track data for MSP was obtained from the FAA's National Offload Program (NOP) after receiving the dates from the environmental specialist.

Twenty eight days of radar track data totaling 31,165 tracks were selected for the MSP analysis representing a range of temperature and wind conditions as well as being representative of the average runway usage. The dates selected for this project were the following:

June 14 -20, 2015
October 18 - 24, 2015
December 13 - 19, 2015
March 13 - 19, 2016

These dates represent average traffic counts and traffic flows through various seasons and peak travel times for MSP. There were no significant runway outages or significant conditions that would otherwise result in abnormal traffic counts or traffic flows.

For this analysis, only six STARS and two RNPs were being modified and needed screening. In the correspondence between the facility and the environmental specialist, the facility indicated the following changes to each existing procedure (Table 2-1):

Procedure	Summary of Requested Design Change
RNP Y 12R	Change GREAK to an IF and move .11NM southeast (N44 48 19.398, W93 19 4.573). Alt restriction remains at 8,000, speed max 230KIAS.
	EFEXX AoA 6,000 TIETN AoA 7,500 EEDDN AoA 7,000 WDLND removed from procedure EFEXX AoA 6,000 EFEXX ties in at KRLSN (for RNP only) KRUGG..EFEXX..KRLSN..ZESTY
RNP Y 30L	Create a RNAV Y (RNP) approach to runway 30L off of the KKILR STAR, with GEEQU as an IAF, going to PIGZI, then to AABEZ (IF) to join the final
	Move MAUER to N44 46 54.183, W93 15 51.417. Altitude restriction remains 8,000, speed max 210KIAS
	Change the restriction at HAPTN to AT 7,000, MAX 210 kts
	LEDRZ is added to previous MAUER location LEDRZ AoA 7,500 COATZ removed from procedure AABEZ is IF DBLEM AoA 6,000 DBLEM ties in at BBUCK (for RNP only) HAPTN..DBLEM..BBUCK..AABEZ
BAINY RNAV	Move OSMOH SE to N44 57 49.950, W93 06 34.250, 8k altitude restriction, at 210KIAS
	Move MAUER to N44 46 54.183, W93 15 51.417. Altitude restriction remains at 8,000, speed at 210KIAS.
	Rwy 30L transition - new route PRRPL - MAUER, no altitude change
BLUEM RNAV	Add new fix named CANDD at N44 36 22.81 W93 00 50.94, altitude at 7,000, speed at 230KIAS
	Add ELLKO to the BLUEM STAR, 5.8NM prior to SAVVG, at or above 100, at 250 kts
	Delete AHMIT fix
	Add speed at 280 kts and at or above 110 @ BLUEM
	Change GREAK to an IF and move .11NM southeast (N44 48 19.398, W93 19 4.573). Alt restriction remains at 8,000, speed at 230KIAS.
	Add fix 2.00 NM inside of FARBO named DNDIS on the Rwy 35 transition with an altitude restriction of at 9,000, airspeed restriction at 230KIAS. DNDIS location is N 44 24 37.21, W 93 11 43.55. New routing is FARBO - DNDIS - JAMEZ.
	Change altitude restriction at JAMEZ from at 7,000 to at or above 7,000 JAMEZ is IAF
KKILR RNAV	STUWE--new location is N44, 48', 47.598", W92, 38', 23.708" with altitude restriction of at 7,000.
	New JONZY location is N44, 50', 28.09", W93, 00', 35.66"
	Change altitude @ HUGGI to at or above 10,000
	Change GREAK to an IF and move .11NM southeast (N44 48 19.398, W93 19 4.573). Alt restriction remains at 8,000, speed at 230KIAS.

MUSCL RNAV	Add speed at 280 kts @ MUSCL & JERMN
	Add new fix named KROIX at N44 53 23.697, W92 43 45.431, altitude at 7,000, at 230KIAS
NITZR RNAV	Add new fix named CANDD at N44 36 22.81 W93 00 50.94, altitude at 7,000, speed at 230KIAS
	Move WRSAW 1.5 NM south to N 44 14 53.82, W 93 25 55.06, altitude at or above 11,000
	Connect to ILS Z or LOC 30L, from HAPTN to DBLEM (AoA 5,000), to AABEZ (AoA 4,000), STAR speed AT 210.
TORGY RNAV	Add point 2.00NM from KRUGG (N44 53 54.586, W93 42 15.102) named SPUKI, altitude at 7,000, speed at 230KIAS. This point will only be on the TORGY STAR, not on the RNP (Y 12R).
	Move MAUER to N44 46 54.183, W93 15 51.417. Altitude restriction remains at 8,000, speed at 210KIAS.
	Move OSMOH SE to N44 57 49.950, W93 06 34.250, at 8,000 altitude restriction, speed at 210KIAS.
	Connect to ILS or LOC 12R, from KRUGG to EFEXX (at or above 6,000), to ZESTY (AoA 4,000).
	Tie to RNAV (GPS) 12R,from KRUGG to EFEXX (at or above 6,000), to ZESTY (AoA 4,000)

Table 2-1: Detailed Changes to Procedures

Historical radar track data (figures 2-1 and 2-2) was used to create a baseline noise exposure, which provides lateral path definition, aircraft fleet mix, departure/arrival stream proportions for each runway, and day/night traffic ratios. A legend (Table 2-2) shows, by color, the altitudes of the track data.

After the baseline scenario was built, aircraft operations assigned to the proposed procedure were modeled as flying the proposed procedure instead of their historical tracks, which gives us the alternative scenario.

The analysis does not take into account terrain. All calculations were based on "above field elevation" (AFE) using the airport's reference elevation. The altitude controls of the RNAV procedures were used to adjust the vertical profile for each modeled aircraft flying the proposed procedure. When a range of altitudes was given for a particular waypoint, the lowest point of the range was used in order to model the most conservative environmental case.

The TARGETS Environmental Plug-in uses 0.3 nautical mile dispersion on either side of the centerline of a procedure as its default dispersion value. In cases where the model generated by the TARGETS Flyability function tracks do not line up on the centerline of a procedure, the dispersion value is assigned using 0.3 nautical miles on either side of the outside flyability tracks as the guideline. Where aircraft are vectored on departure and for the final approach, the historic vectoring patterns are used as the guide for the dispersion.

Once the baseline and alternative scenarios were built, the TARGETS Environmental Plug-in Tool was used to generate noise outputs for both scenarios. The Environmental Plug-in Tool uses the Aviation Environmental Design Tool version 2b (AEDT 2b) to calculate noise. The noise output files from AEDT 2b for both the baseline and alternative noise exposures consist of a series of equally spaced grid points, each assigned a day-night average noise level (DNL) value. This data is then loaded back into TARGETS by the Environmental Plug-in Tool, which generates three outputs: baseline noise exposure, alternative noise exposure, and noise impact. The noise impact is a comparison between the baseline and the alternative noise exposure that depicts reportable and significant noise changes at all affected locations per the criteria indicated in FAA Order 1050.1F ("Environmental Impacts: Policies and Procedures") and Chapter 32 of FAA Order 7400.2K ("Procedures for Handling Airspace Matters"). The reportable and significant noise increases and decreases (if any) are then depicted on an aerial photograph using Google Earth as well as on a sectional chart.

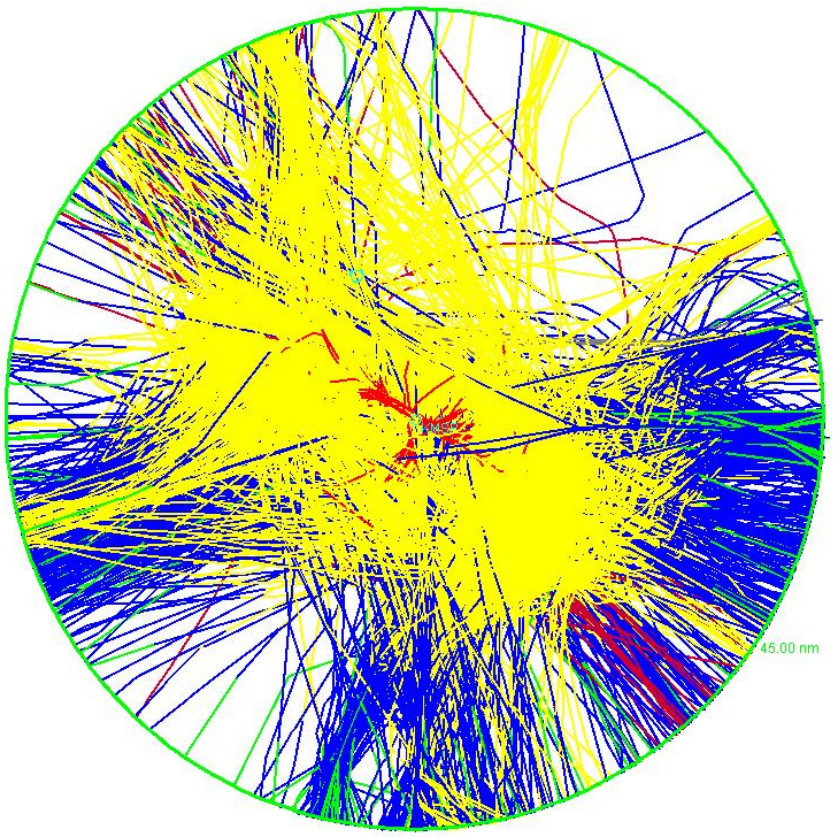

Figure 2-1: MSP Arrival Traffic Used in Analysis

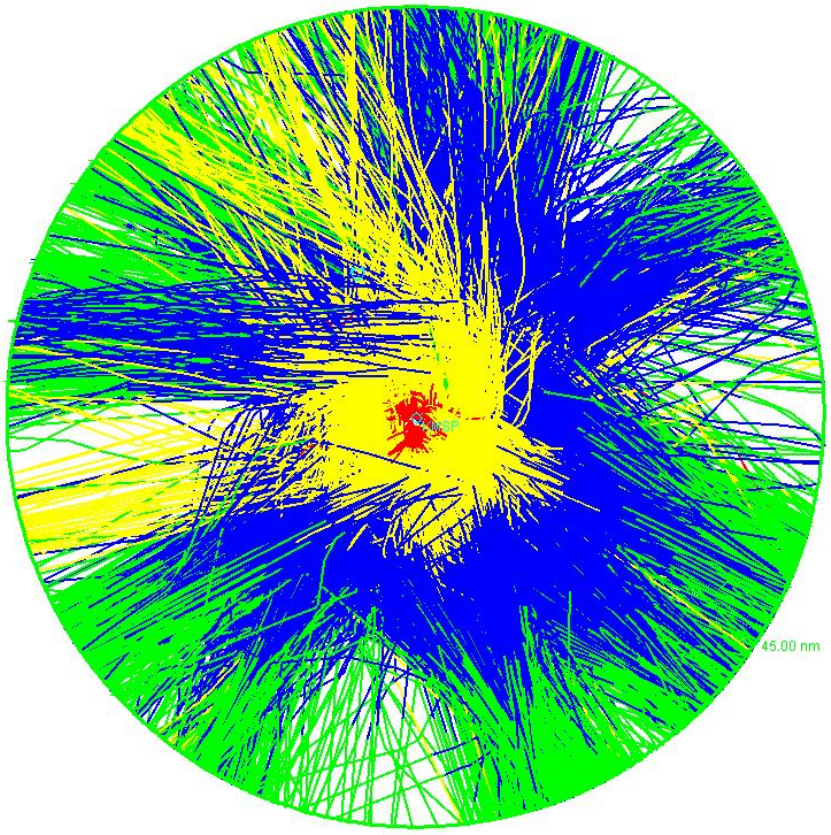

Figure 2-2: MSP Departure Traffic Used in Analysis

Track Data Legend with Field Elevation					
Airport: MSP			***Field Elevation In Feet***		***841***
AGL Altitudes		**MSL Altitudes**		**Legend Colors**	
1000		1841			
2000		2841			
3000		3841			
4000		4841			
5000		5841			
6000		6841			
7000		7841			
8000		8841			
9000		9841			
10000		10841			
11000		11841			
12000		12841			
13000		13841			
14000		14841			
15000		15841			
16000		16841			
17000		17841			
18000		18841			
Above					

Table 2-2: Legend for Baseline Arrival and Departure Traffic

3. Baseline Noise Exposure

The baseline noise exposure is shown in Figure 3-1, which depicts the levels and locations of the noise produced by the historical radar track data for arrivals and departures. Table 3-1 is the legend for the baseline noise exposure figures.

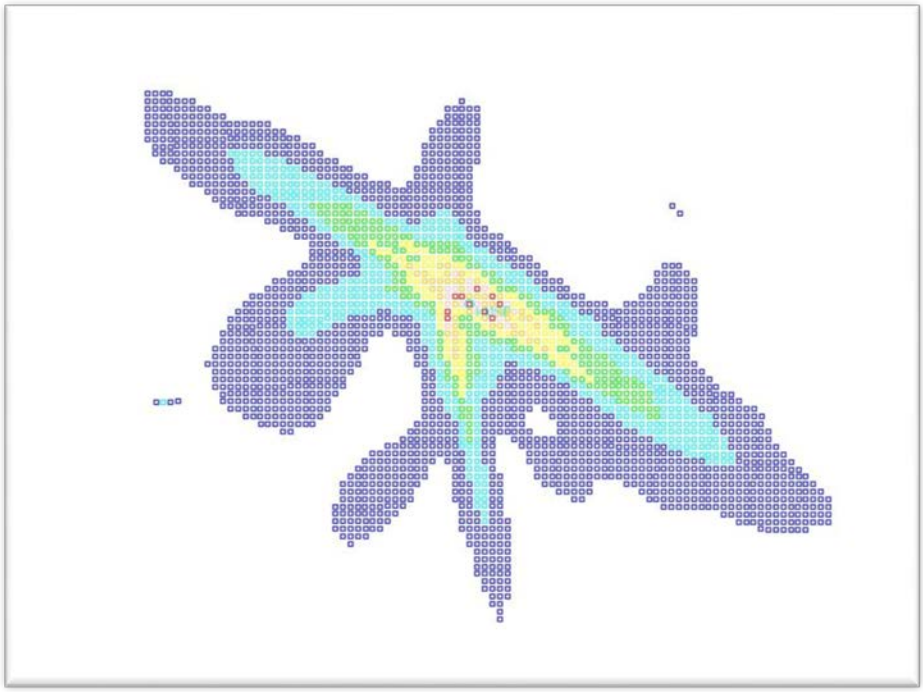

Figure 3-1: Baseline Noise Exposure for the Proposed Procedures in TARGETS

GEOMETRIC SHAPE	COLOR	DNL VALUE
SQUARE	BLUE	45–50 dB
SQUARE	LIGHT BLUE	50–55 dB
SQUARE	GREEN	55–60 dB
SQUARE	YELLOW	60–65 dB
SQUARE	ORANGE	65–70 dB
SQUARE	PINK	70–75 dB
SQUARE	RED	75 dB OR MORE

Table 3-1: Legend for Noise Exposure

4. Alternative Noise Exposure

The alternative noise exposure is shown in Figure 4-1, which depicts the levels and locations of the noise using the proposed procedures. Table 4-1 is the legend for the alternative noise exposure figures.

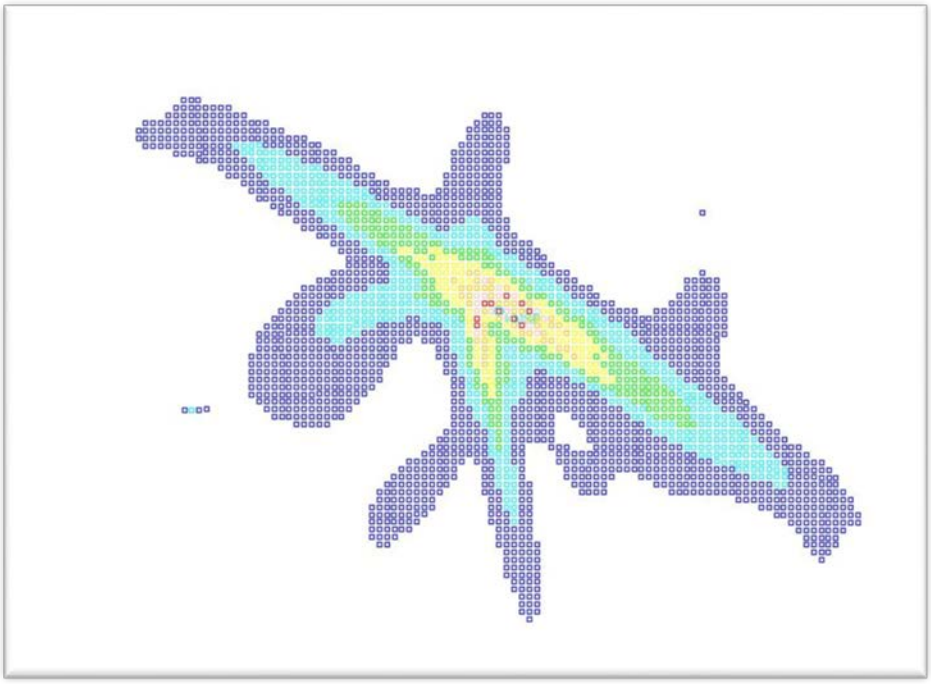

Figure 4-1: Alternative Noise Exposure for the Proposed Procedures in TARGETS

GEOMETRIC SHAPE	COLOR	DNL VALUE
SQUARE	BLUE	45–50 dB
SQUARE	LIGHT BLUE	50–55 dB
SQUARE	GREEN	55–60 dB
SQUARE	YELLOW	60–65 dB
SQUARE	ORANGE	65–70 dB
SQUARE	PINK	70–75 dB
SQUARE	RED	75 dB OR MORE

Table 4-1: Legend for Noise Exposure

5. Comparison of Baseline and Alternative Noise Exposure

In the case of these procedures, the baseline and alternative noise exposures were generated by the TARGETS AEDT Environmental plug-in, and **there are no increases or decreases in noise** that are significant enough to show up per the appropriate criteria in FAA Order 1050.1F (shown in Table 5-1).

GEOMETRIC SHAPE	COLOR	DNL DIFFERENCE
SQUARE	PURPLE	45-60 DB BASELINE WITH A DECREASE OF 5.0 DB OR GREATER IN THE ALTERNATIVE
SQUARE	BLUE	60-65 DB BASELINE WITH A DECREASE OF 3.0 DB OR GREATER IN THE ALTERNATIVE
SQUARE	GREEN	65 DB BASELINE OR GREATER WITH A DECREASE OF 1.5 DB OR GREATER IN THE ALTERNATIVE
OVAL	RED	65 DB OR GREATER ALTERNATIVE WITH AN INCREASE OF 1.5 DB OR GREATER OVER THE BASELINE
OVAL	ORANGE	60-65 DB ALTERNATIVE WITH AN INCREASE OF 3.0 DB OR GRTEATER OVER THE BASELINE
OVAL	YELLOW	45-60 ALTERNATIVE DB WITH AN INCREASE OF 5.0 DB OR GREATER OVER THE BASELINE

Table 5-1: Legend for Noise Impact

Table 5-2 shows the results of the impact report generated by TARGETS AEDT Environmental Plug-in, showing no change in noise exposure between the baseline and alternative scenarios.

% Red	% Orange	% Yellow	% NoChange	% Green	% Blue	% Purple
0	0	0	100	0	0	0

Table 5-2: Targets Noise Impact Report