Appendix D

Noise Screening Analysis Report

Final Environmental Review Step 1B
Proposed Categorical Exclusion
May 2018

For

The Proposed West Flow Area Navigation Standard Instrument Departure Procedures at Phoenix Sky Harbor International Airport as described in the Memorandum Regarding Implementation of Court Order per *City of Phoenix, Arizona v. Huerta*, 869 F.3d 963 (D.C. Circuit 2017)

Des Moines, WA

1.0 SUMMARY

This report describes the noise screening analysis conducted in support of the Federal Aviation Administration's (FAA) Proposed Action to amend the western flow of aircraft flying the Area Navigation (RNAV) Standard Instrument Departure (SID) procedures at Phoenix Sky Harbor International Airport (Phoenix Sky Harbor), Phoenix, Arizona, as set forth in the agreement stipulated in the Memorandum Regarding Implementation of Court Order per *City of Phoenix, Arizona v. Huerta*, 869 F.3d 963 (D.C. Circuit 2017) ("Memorandum"). Using the FAA-approved noise screening tool, the Terminal Area Route Generation, Evaluation and Traffic Simulation (TARGETS) Aviation Environmental Design Tool (AEDT) Environmental Plug-In, FAA completed a noise screening analysis to screen for potential increases in noise resulting from implementation of the proposed amendments to the western departure procedures.

Screening tools use simplified but conservative modeling assumptions to provide estimates of where noise increases may occur. In general, modeling accuracy is dependent on a range of factors, including 1) how well the fundamental quantity of assumptions to be modeled is understood and calculated, and 2) how accurately the inputs needed by the model are provided. All aircraft noise modeling tools must accurately account for the fundamentals of noise. However, while a comprehensive modeling tool needs detailed inputs, a noise screening tool is optimized to take advantage of simplified inputs to produce results for a more narrowly defined purpose, such as a preliminary assessment of potential noise impacts. As a result, noise screening outputs are not suitable for reporting more detailed or precise noise results at specific locations. This analysis enables the FAA to identify areas that may require additional consideration prior to determining that the Proposed Action falls within the scope of a Categorical Exclusion (CATEX) in accordance with the FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA Order 1050.1F).

2.0 INTRODUCTION TO NOISE METRICS AND IMPACTS

FAA Order 1050.1F provides specific guidance and requirements for assessing the potential aircraft noise impacts on the community with respect to changes to aircraft procedures, airspace, etc. For aviation noise analyses, the FAA has determined that the cumulative noise exposure of individuals resulting from aviation activities is calculated in terms of Yearly Day-Night Average Sound Level (DNL), the FAA's primary noise metric.[1]

The DNL does not measure sound as it occurs in real time, but represents noise as it occurs over an averaged 24-hour period. DNL takes into account the noise level of each individual aircraft event, the number of times those events occur, and the time of day in which they occur. The DNL calculation treats noise occurring at night differently from daytime noise. DNL includes a 10-

[1] FAA Order 1050.1F, Appendix B. Section B-1.

decibel (dB) noise penalty added to noise events occurring from 10:00 p.m. to 7:00 a.m., to reflect the increased sensitivity to noise and lower ambient sound levels at night.

2.1 Threshold Values for Noise Impacts

Noise screening evaluates whether there is a potential change in noise exposure due to the proposed action alternative (e.g., proposed changes to aircraft routes) when compared to the current aircraft routes, considered the "baseline" or No Action Alternative. The potential changes in noise exposure, or noise impacts, are compared with threshold levels above which changes in aircraft noise levels may cause a significant or reportable impact. The FAA uses these thresholds that serve as specific indicators of significant impact for some environmental impact categories, including "Noise." Results of the noise screening identify where noise exposure levels change by the following specified amounts:

2.1.1 Significance Threshold[2]

The threshold for a noise impact to be considered significant is whether the proposed action scenario when compared to the baseline scenario would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level.

2.1.2 Reportable Noise Thresholds

The noise screening tool also identifies certain areas with potential increases in areas exposed to lower levels of noise. Specifically, the FAA refers to changes in noise exposure levels meeting the criteria listed below as "reportable."

- For DNL 60 dB to less than 65 dB: ± 3 dB
- For DNL 45 dB to less than 60 dB: ± 5 dB

Although they do not meet the threshold of significance for most land uses, there may be factors to consider in whether there are extraordinary circumstances rendering a categorical exclusion as applicable. These factors are:

- An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended, 54 U.S.C. §300101 et seq.
- An impact on properties protected under Section 4(f) of the Department of Transportation Act.
- An impact on natural, ecological, or scenic resources of Federal, state, tribal, or local significance.

[2] FAA Order 1050.1F, Appendix B, Section B-1.5.

- An impact on noise levels of noise sensitive areas.[3]
- An impact on air quality.
- Impacts on the quality of the human environment that are likely to be highly controversial on environmental grounds.[4]
- Likelihood to directly, indirectly, or cumulatively create a significant impact on the human environment.

3.0 NOISE AND NOISE COMPATIBLE LAND USES[5]

The compatibility of existing and planned land uses in conjunction with an aviation or aerospace proposal is usually associated with noise impacts. An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land.[6] The study area for noise is the three dimensional geographic area with the potential to be impacted by noise from the proposed action. The study area for the noise analysis of a proposed change in air traffic procedures or airspace redesign may extend vertically from the ground to 10,000 feet Above Ground Level (AGL), or up to 18,000 feet AGL if the proposed action or alternative(s) are over a national park or wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute. [7]

Noise compatibility or non-compatibility of land use is determined by comparing the Proposed Action DNL values to the values in the FAA Order 1050.1f, Desk Reference, Exhibit 11-3*, Land-Use Compatibility with Yearly Day-Night Average Sound Levels*.

4.0 NOISE SCREENING TOOL

FAA's approved screening tool for projects involving air traffic changes uses features available within the TARGETS, a flight procedure design tool, combined with the AEDT Environmental Plug-In. This noise screening tool identifies areas that may be exposed to changes in noise impacts.

[3] An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites.
[4] The term "highly controversial on environmental grounds" means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a proposed action's environmental impacts or over the action's risks of causing environmental harm. FAA Order 1050.1F. Section 5-2.b.(10).
[5] FAA Order 1050.1F. Desk Reference, Chapter 11. Noise and Noise-Compatible Land Use
[6] Refer to FAA Order 1050.1F, Paragraph 11-5. b. (10), for the full definition of noise sensitive areas.
[7] Refer to FAA Order 1050.1F Desk Reference, Section 11.2.

5.0 SCENARIOS EVALUATED

To determine the potential impact(s) from noise, the AEDT Environmental Plug-In for TARGETS compares the baseline scenario to an alternative scenario or scenarios. For the purposes of noise modeling, a scenario is a group of traffic bundles (collections of radar tracks) assigned to one or more procedures or routes. The baseline scenario typically represents the existing procedures as they are flown at the time of the analysis. The alternative scenarios represent the proposed procedures utilizing radar tracks in assigning aircraft, and any other alternative actions that may be considered (refer to Section 7.1).

The Memorandum between the FAA, City of Phoenix, and the historic neighborhood petitioners, proposes a two-step process by which FAA would implement the proposed RNAV SIDs.[8] The changes under Step One of the Memorandum were divided into two actions with independent utility: Step 1A and Step 1B. Separately, the FAA implemented Step 1A, on March 29, 2018, to provide immediate noise relief to the Petitioners. The Proposed Action addressed in this Noise Screening Analysis Report, Step 1B, would complete implementation of Step One in the Memorandum, which would involve replacing the two departure routes in Step 1A and implementing nine new western RNAV SID procedures.

Three scenarios were evaluated for this noise analysis: the No Action Scenario, the Proposed Action Scenario and the Pre-RNAV Western Routes Scenario. In order to present a well-defined noise screening analysis, it was determined to compare the three scenarios to this same baseline track data that was utilized for the Step 1A noise screening. The Step 1A RNAV SID procedures were implemented to provide short-term relief from aircraft noise as expeditiously as possible. Flight track data for the Step 1A procedures is insufficient to support an updated 90 random day data set to establish a new baseline. The simplified method for the baseline data set supports a conservative approach to the noise screening analysis.

5.1 No Action Scenario

The No Action Scenario comprises the current west configuration RNAV SID procedures. Aircraft on a flight path with initial turns to the northwest, and those aircraft on a flight path to the west follow the published procedures implemented under Step 1A. Aircraft on a flight path with the initial turns to the southwest follow the published procedures where aircraft turn at approximately three (3) nautical miles from the west end of the runways. The No Action Scenario represents radar tracks as they are currently flown and is considered the baseline. Noise screening of the No Action Scenario modeled the noise impact(s) of Phoenix Sky Harbor arrivals and departures based on a 90-day sample of radar track data.

[8] Step Two which is described in the final Environmental Review Document, is not considered in this noise analysis

5.2 **Proposed Action Scenario**

Noise screening of the Proposed Action Scenario modeled the noise impact(s) of Phoenix Sky Harbor arrivals and departures, applying the same 90-day sample of radar track data utilized in the No Action Scenario. The Proposed Action scenario models the noise impact if 100% of Phoenix Sky Harbor departure aircraft were assigned one of the proposed RNAV SIDs as appropriate by the route of flight.

The Proposed Action would revise the current western flow of aircraft flying the RNAV SID procedures from Runways 25L, 25R and 26 at Phoenix Sky Harbor. The RNAV SIDs being revised are the ZIDOG, KEENS, WETAL, BNYRD, JUDTH, FTHLS and KATMN consistent with Step One as described in the Memorandum. These nine modified procedures being considered under Step 1B are bi-directional departures; serving departures on the east flow when Phoenix Sky Harbor is in an east flow configuration due to the change in wind direction. There are no proposed changes to east flow operations.

The Step 1B procedure designs allow aircraft to climb to an altitude of 500 feet AGL, or 1,635 feet Mean Sea Level (MSL), to an "engagement point" when the aircraft navigation flight management computer begins providing the pilot with route, altitude and speed guidance.[9] This "engagement point" does not occur at a specific location, but is determined by when the aircraft leaves the runway surface and the aircraft climbs through 1,635 feet MSL.

The proposed Step 1B RNAV SIDs would replace the Step 1A RNAV SIDs, and the four current RNAV SIDs that serve departures to the south, southwest and southeast. The Step 1B RNAV SIDs incorporate the routes from Step 1A, however have additional routing that no longer requires air traffic control vectoring to join an RNAV route. The four proposed RNAV SIDs with the initial turn to the northwest would retain the Step 1A ZIDOG RNAV SID runway transitions then head north until the proposed procedures intersect the ZIDOG fix. These proposed procedures would then split to join the appropriate common route to continue to the en route airway structure for flights to the north, northwest and northeast. The four proposed RNAV SIDs with the initial turn to the southwest would replace the current RNAV SID procedures. The proposed RNAV SID for destinations to the west would replace the current KEENS RNAV SID.

Nine proposed RNAV SID procedures were included in the Proposed Action Scenario:

- The ZEPER RNAV SID would depart to the northwest and service aircraft en route to the northwest. Figure 5.2-1 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

[9]The "engagement point" refers to Lateral Navigation (LNAV) engagement where aircraft navigate over a ground track with guidance from an electronic device that gives the pilot (or autopilot) error indications in the lateral direction only and not in the vertical direction.

- The QUAKY RNAV SID would head north until it intersects the CARTL fix, at which point it splits into three transitions. One transition heads north, and two transitions head northeast. Figure 5.2-2 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The MRBIL RNAV SID would head north until it intersects the YOTES fix, at which point it splits into three transitions. One transition heads north, and two transitions head northeast. Figure 5.2-3 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The FORPE RNAV SID would head to the northeast until it intersects the FORPE fix then intersects the ST JOHNS VORTAC (SJN), at which point it splits into two transitions. It serves aircraft en route to the east. Figure 5.2-4 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The BROAK RNAV SID would replace the current FTHLS RNAV SID. After the initial turn to the southwest, the procedure heads east to the BROAK fix then intersects the JSSUA fix, at which point it splits into two transitions. It serves aircraft en route to the northeast and southeast. Figure 5.2-5 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The ECLPS RNAV SID would replace the current KATMN RNAV SID. After the initial turn to the southwest, the procedure heads southeast towards the BOXXR fix and services aircraft en route to the southeast. Figure 5.2-6 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The STRRM RNAV SID replaces the current BNYRD RNAV SID. After the initial turn to the southwest, the procedure heads south towards the STANFIELD VORTAC (TFD) and serves aircraft en route to the south and southeast. Figure 5.2-7 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The FYRBD RNAV SID replaces the current JUDTH RNAV SID. After the initial turn to the southwest, the procedure heads southwest towards the MOHAK fix and serves aircraft en route to the southwest. Figure 5.2-8 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

- The KEENS RNAV SID would be amended to include departures from the east flow runways 7 Left, 7 Right and 8. The name of this RNAV SID would be retained. Figure 5.2-9 below depicts the proposed procedure and the 2017 flight tracks associated with the departure route.

Figure 5.2-1: ZEPER RNAV SID Procedure

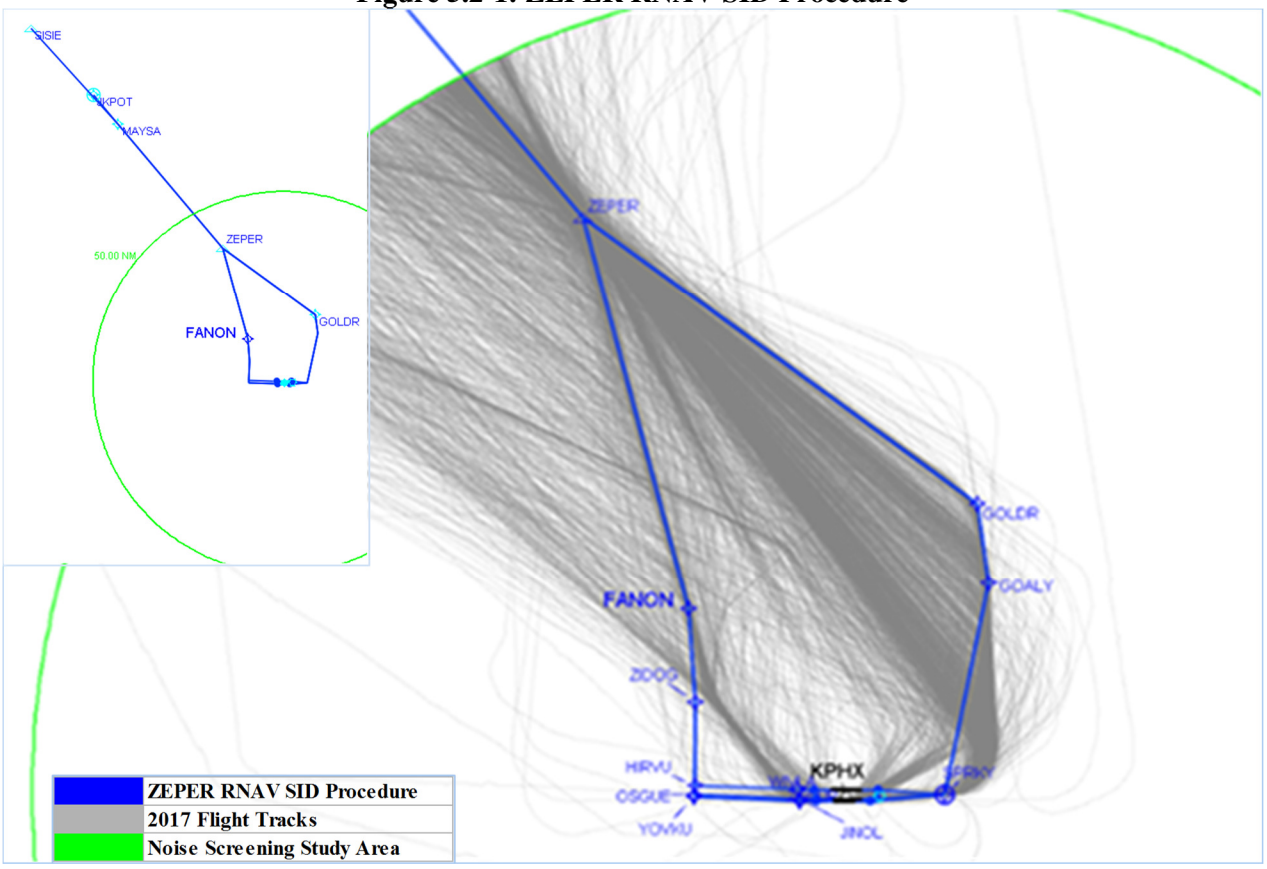


Figure 5.2-2: QUAKY RNAV Procedure

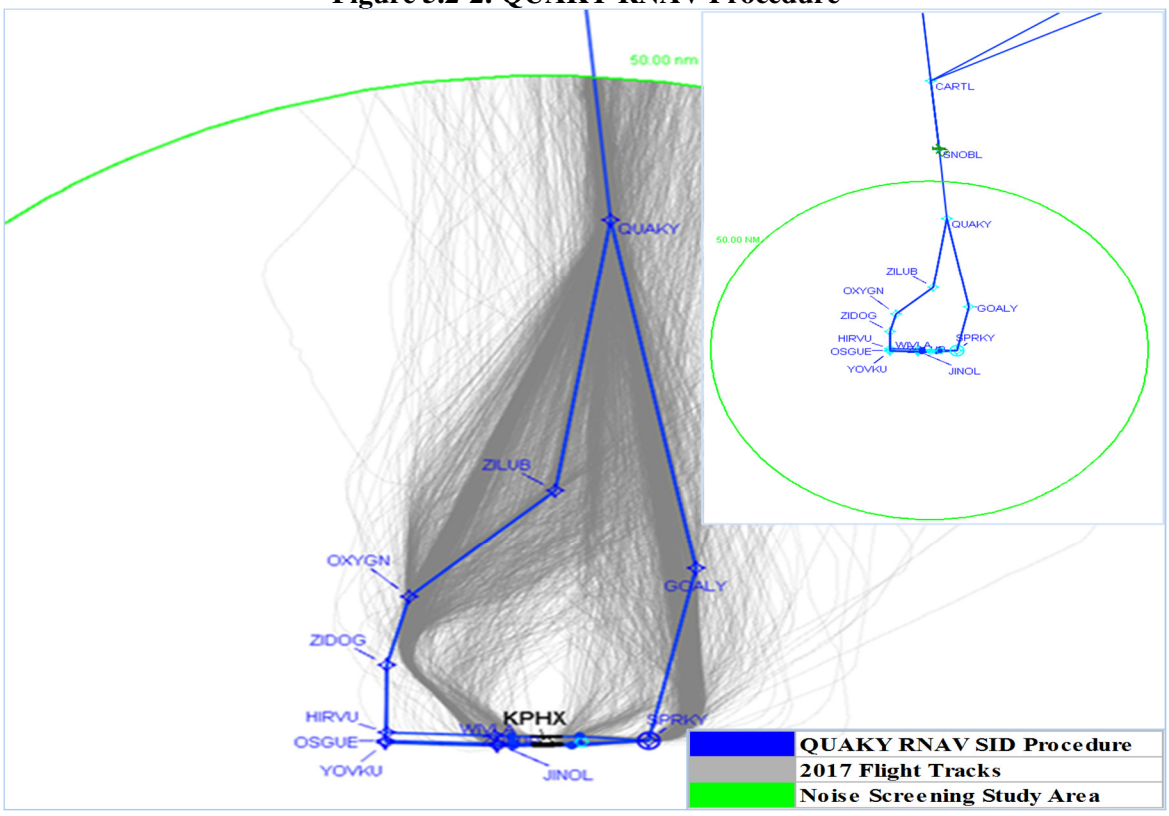


Figure 5.2-3: MRBIL RNAV SID Procedure

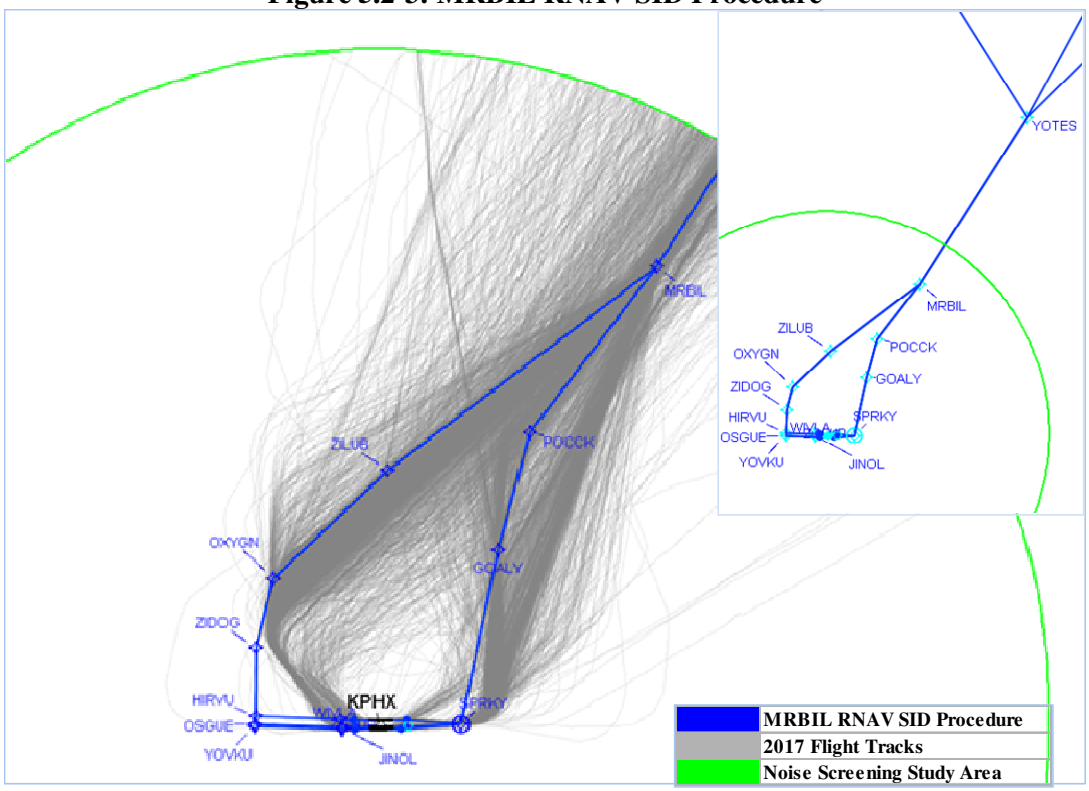


Figure 5.2-4: FORPE RNAV SID Procedure

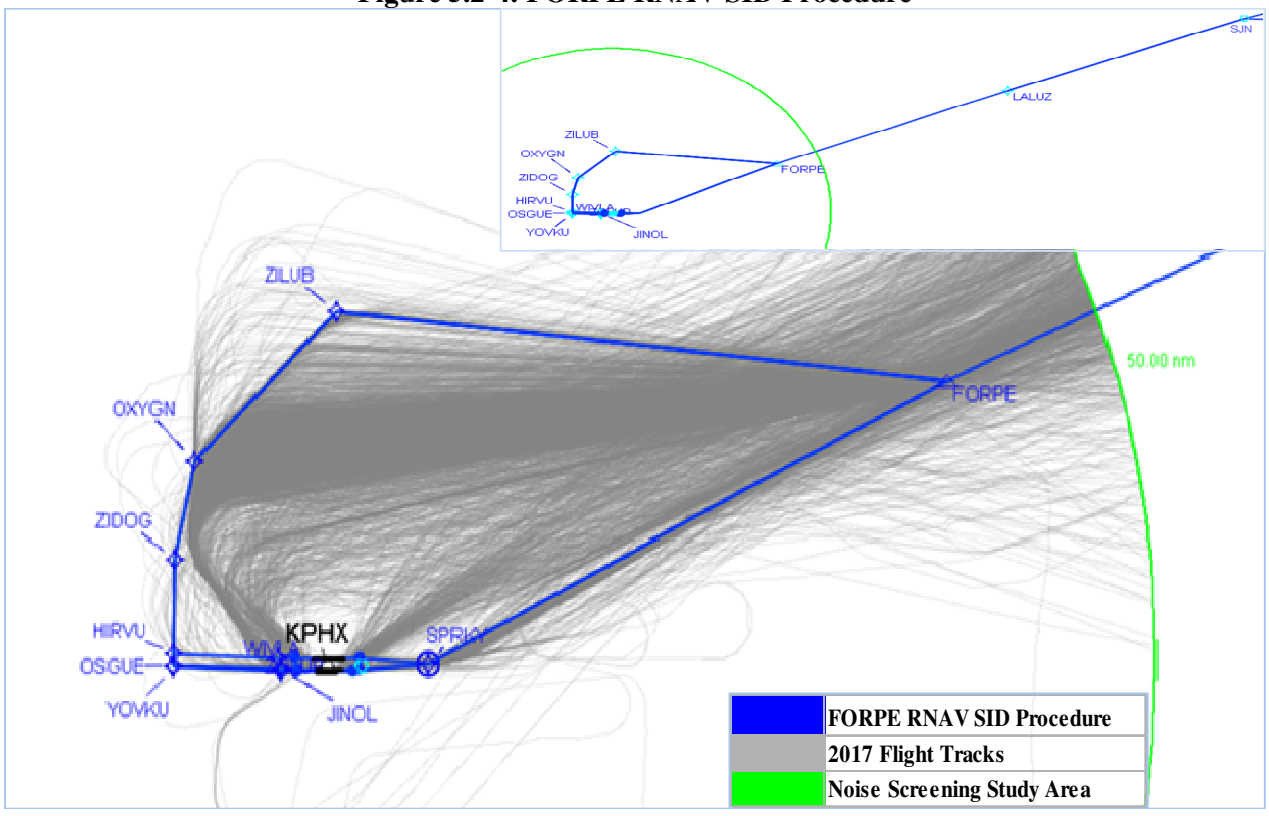


Figure 5.2-5: BROAK RNAV Procedure

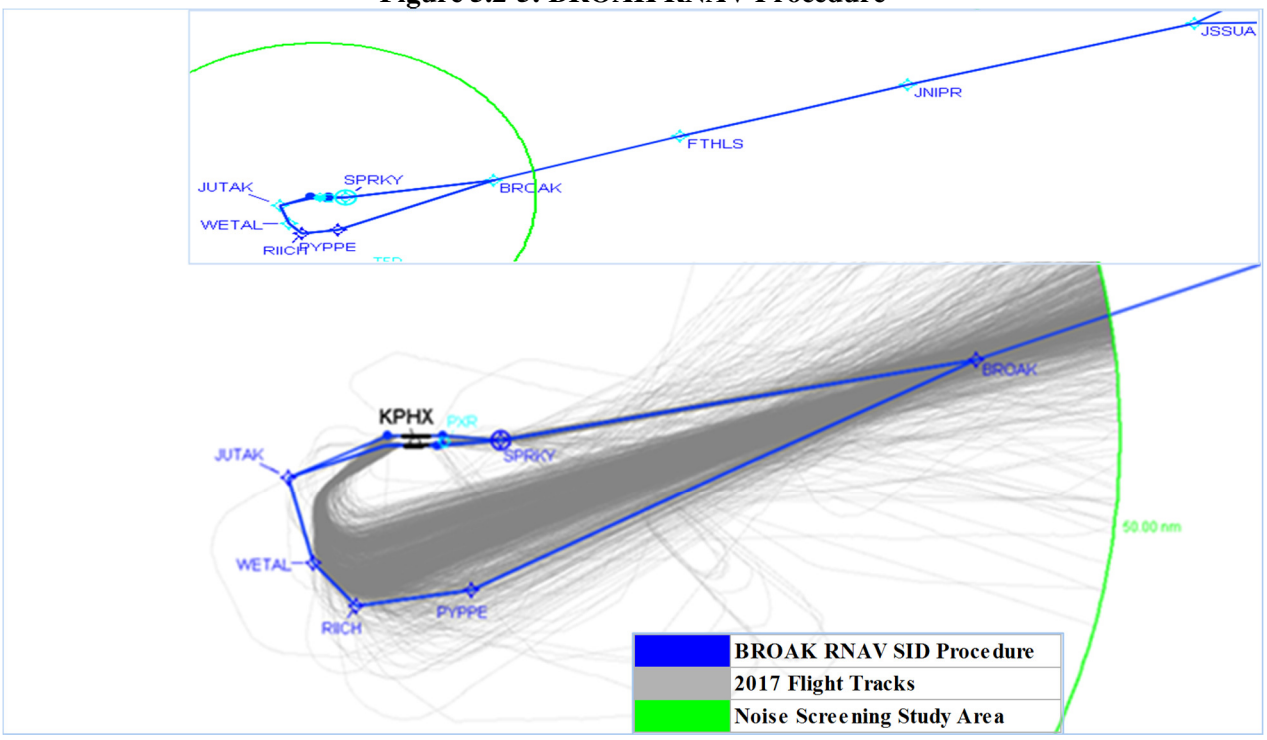


Figure 5.2-6: ECLPS RNAV Procedure

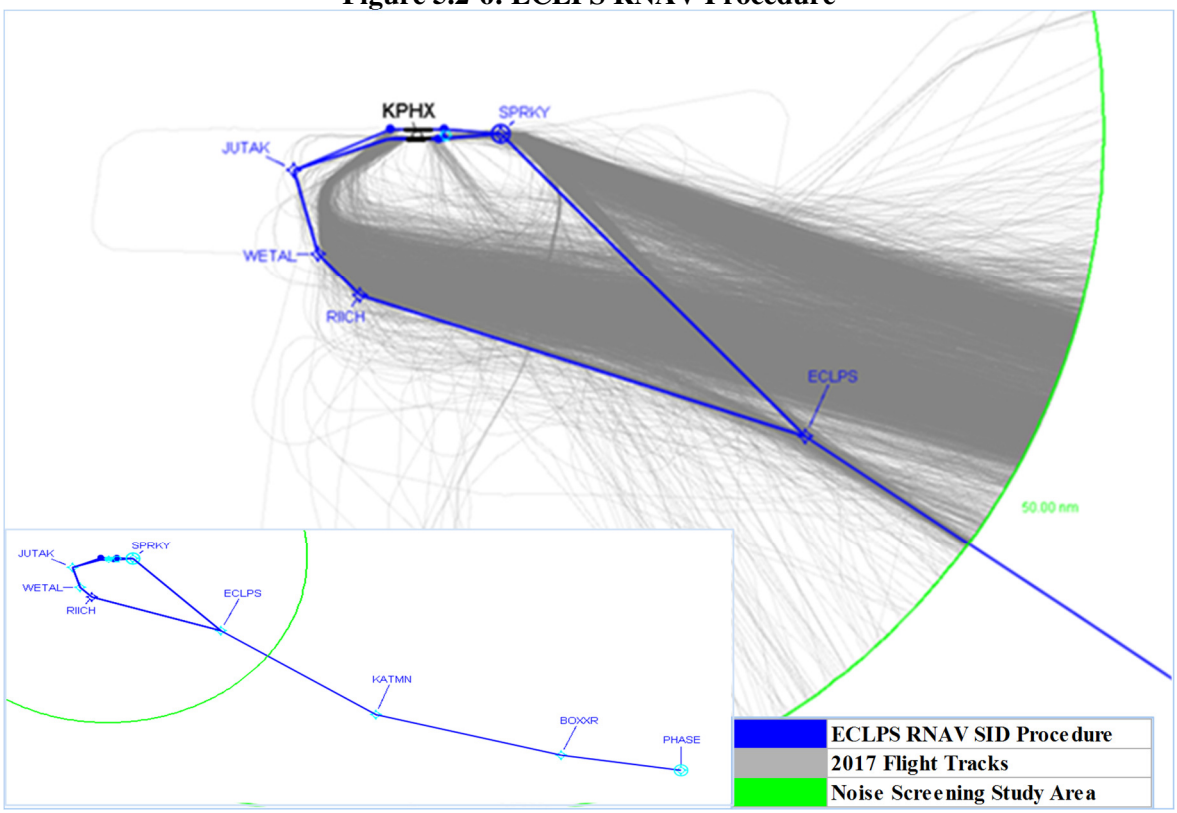


Figure 5.2-7: STRRM RNAV Procedure

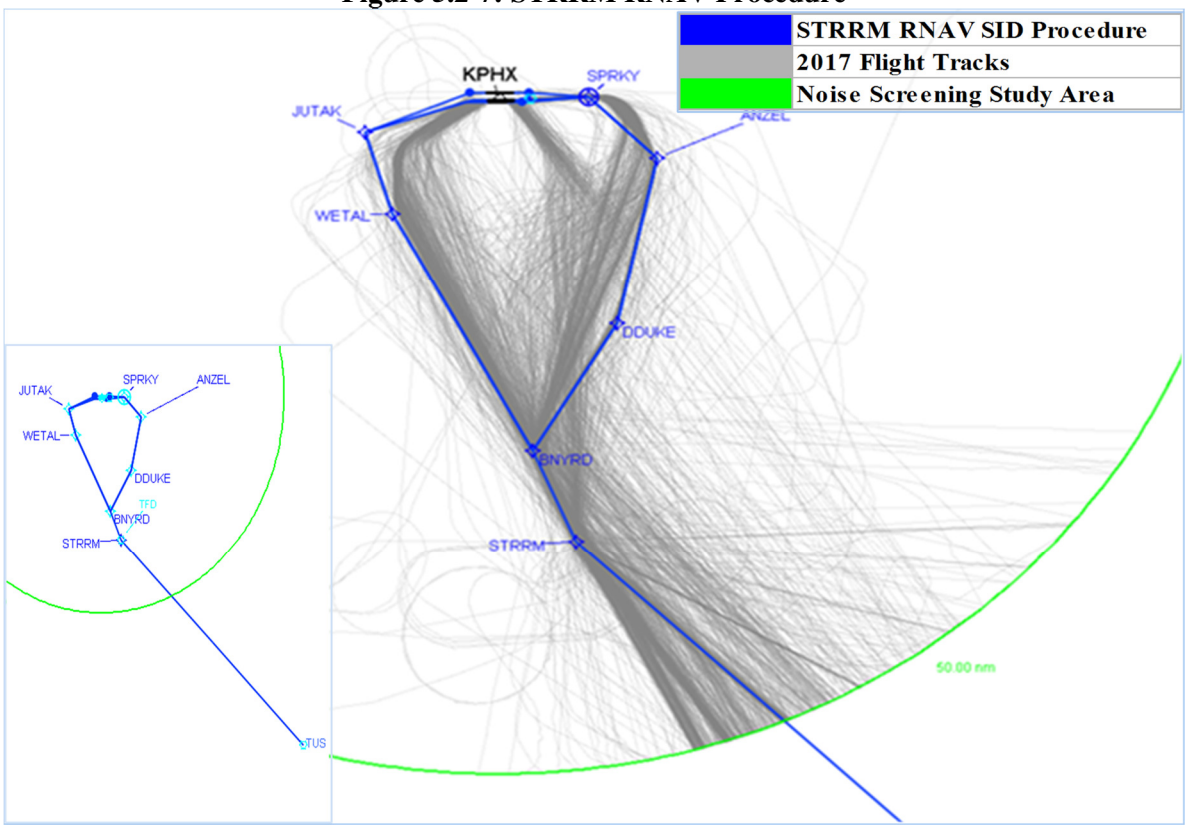


Figure 5.2-8: FYRBD RNAV SID Procedure

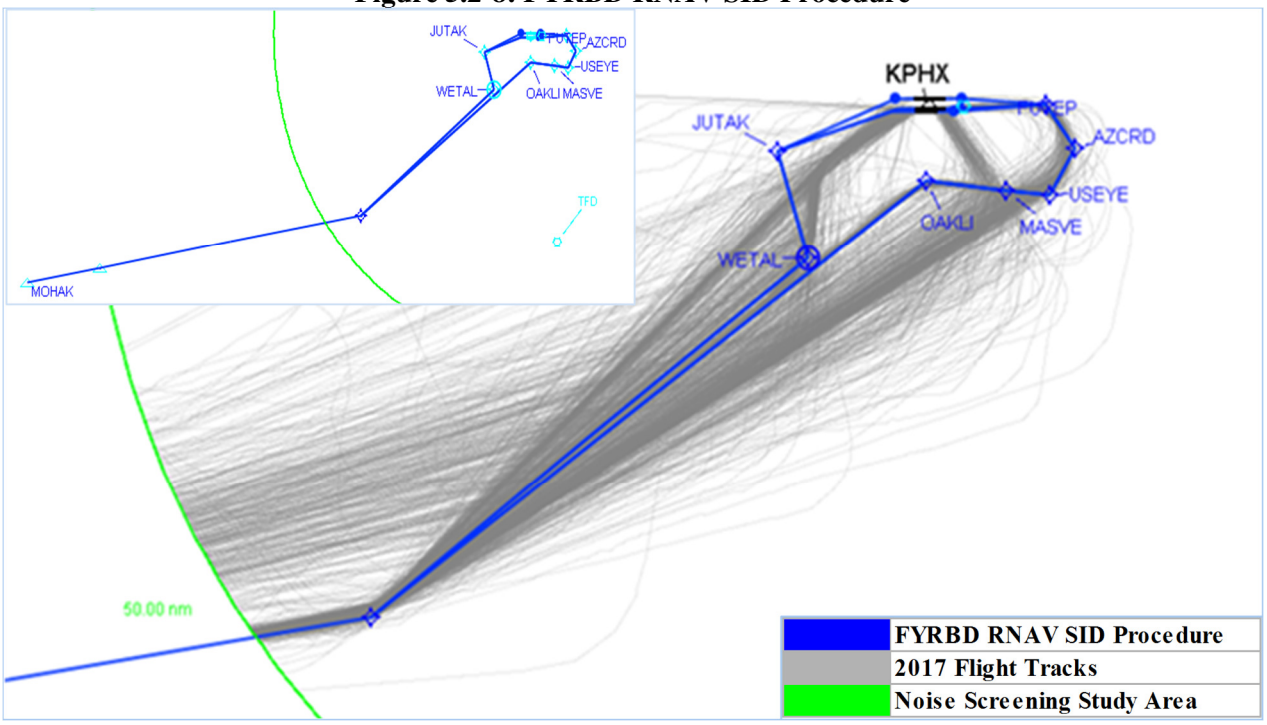
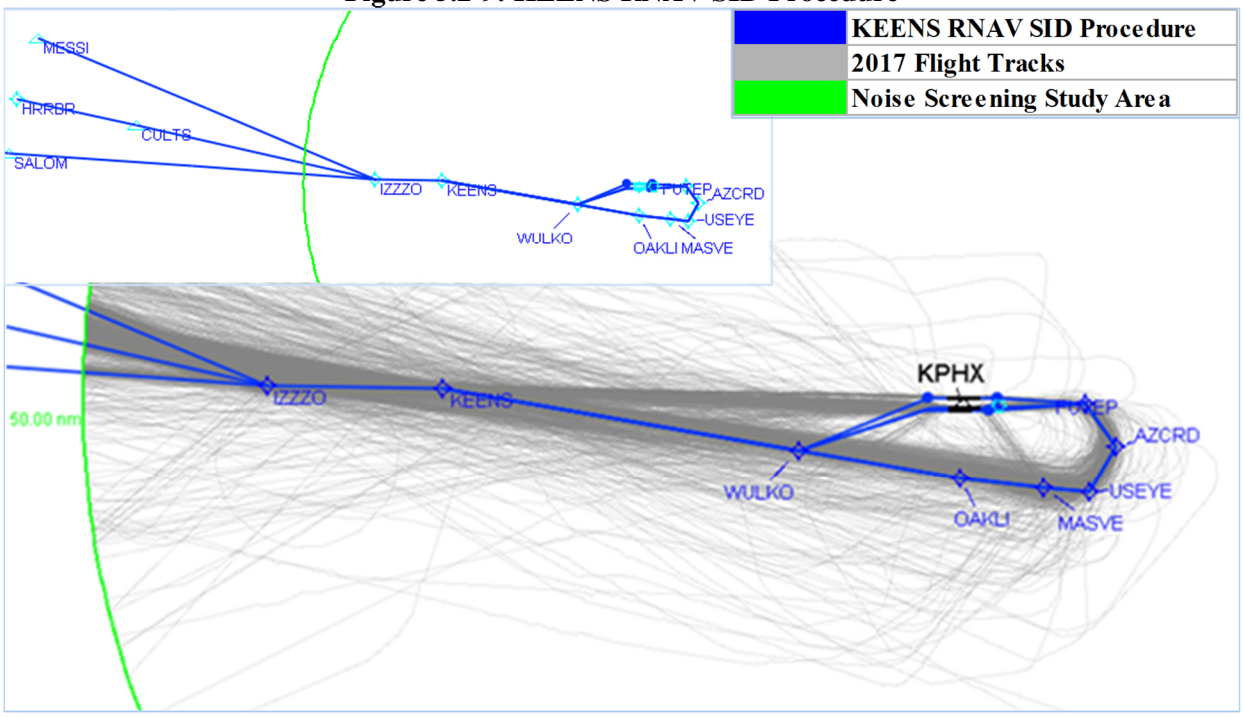


Figure 5.2-9: KEENS RNAV SID Procedure



Using the AEDT Environmental Plug-In, backbones for each departure procedure were created, accounting for the proposed Step 1A procedures as well as the typical dispersion of RNAV SID procedures. To ensure a consistent number of operations and a consistent fleet mix across alternatives, the same flights that were used for the No Action scenario were applied to these backbones. This ensured that differences across scenarios were attributable to flight path changes only.

5.2.1 BROAK RNAV SID Re-Design

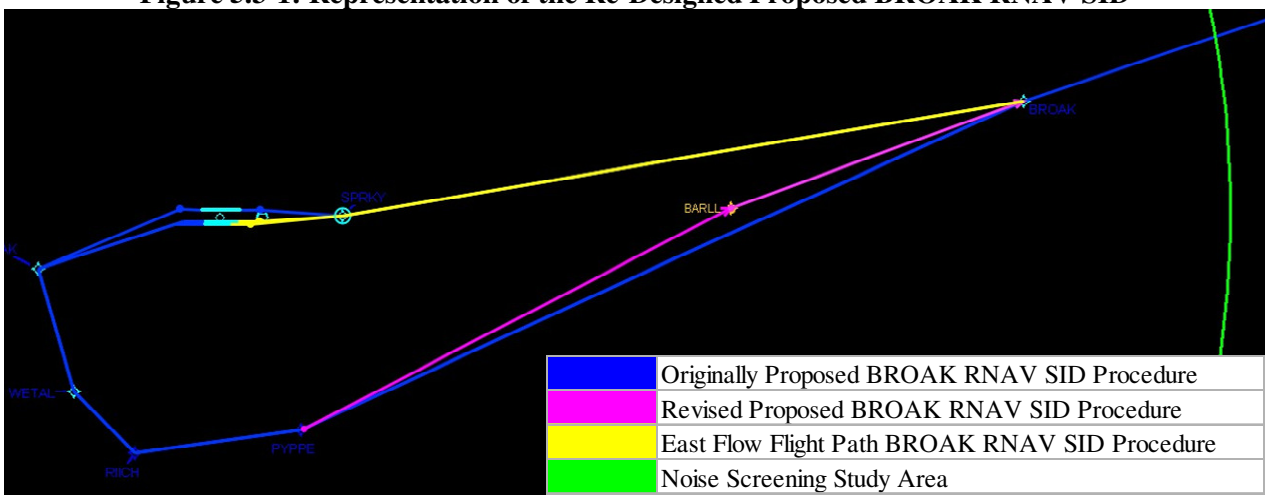
As originally proposed in the draft Environmental Review document dated January 2018, the proposed BROAK RNAV SID was designed to service aircraft with destinations to the northeast and southeast. As part of the design validation process, the FAA evaluated procedure design criteria to verify the required airspace separation of the proposed procedure in relationship to an established Military Operations Area (MOA) type of special use airspace known as the *OUTLAW* MOA. The *OUTLAW* MOA is subdivided into three sections, *OUTLAW-A, OUTLAW-B,* and *OUTLAW*-C to aid in the segregation of the types of military operations contained within the MOA.

The results of the evaluation indicated the BARLL fix needed to be added in order for the proposed BROAK RNAV SID to avoid the *OUTLAW-B* and *OUTLAW-C* portions of the MOA by the required three (3) nautical miles airspace separation criteria. The proposed re-designed west flow flight path from the PYPPE fix to the new BARLL fix was designed to transition through the northernmost *OUTLAW-A* portion of the MOA. This portion of the MOA is rarely used and the

proposed transition through this portion is acceptable as per an inter-facility agreement with the FAA and the Arizona Air National Guard.

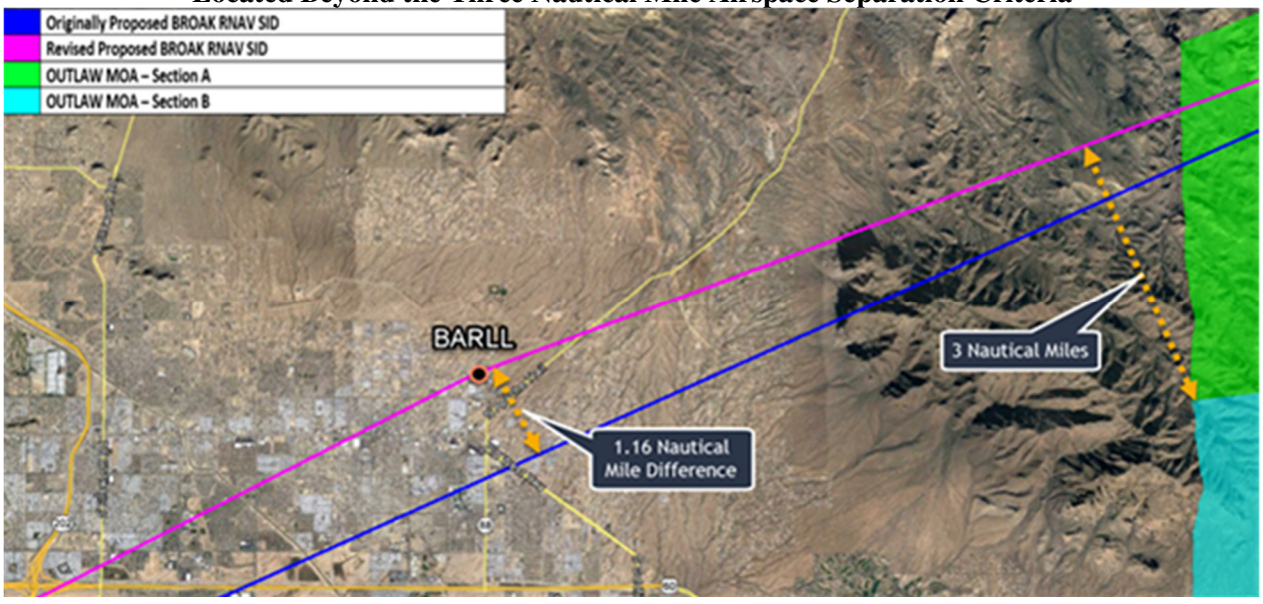
As shown in Figure 5.3-1 below, the magenta line from the PYPPE fix to the BARLL fix represents the re-designed west flow flight path of the proposed BROAK RNAV SID. The re-designed flight path would connect to the new BARLL fix, which would keep the flight path outside of the required airspace buffer from the *Outlaw-B* MOA. The yellow line on the northern portion of the proposed BROAK RNAV SID from Phoenix Sky Harbor to the BROAK fix represents the east flow flight path, and would not be affected by the procedure re-design.

Figure 5.3-1: Representation of the Re-Designed Proposed BROAK RNAV SID



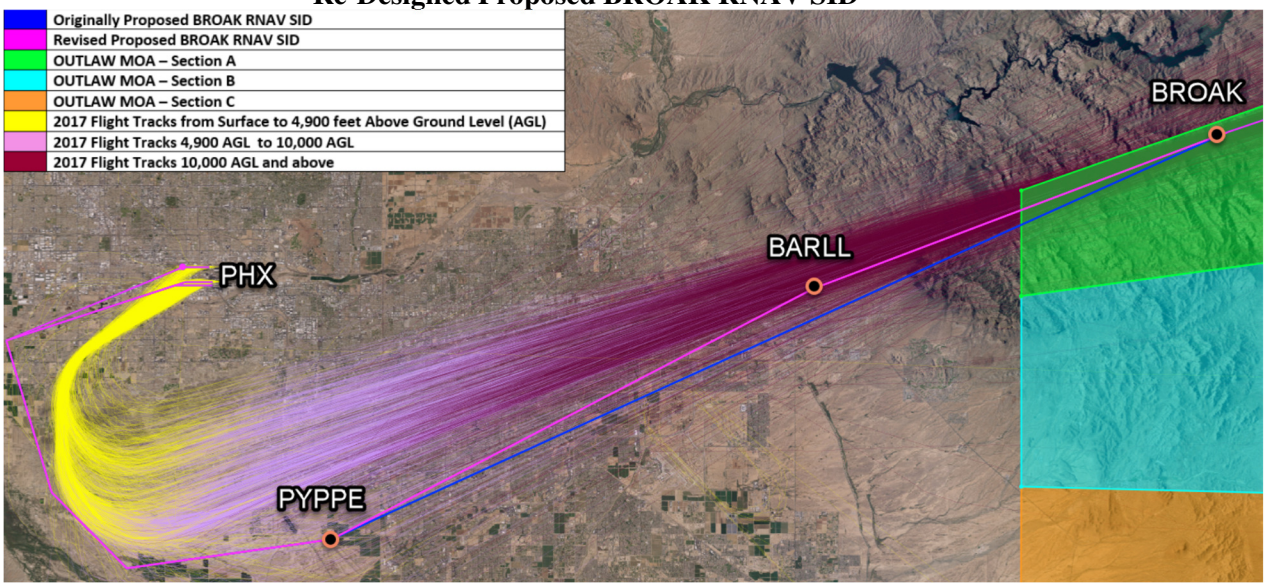
The proposed re-design procedure would follow the west flow flight path of the existing FTHLS RNAV SID and would move the proposed flight path north approximately 1.16 nautical miles to comply with the airspace separation criteria as shown in Figure 5.3-2.

Figure 5.3-2: Re-Designed Proposed BROAK RNAV SID Flight Path Located Beyond the Three Nautical Mile Airspace Separation Criteria



Supplementary analysis of west flow flight track data was completed to compare 2017 flight tracks with the proposed re-designed BROAK RNAV SID. The analysis indicated that west flow departures on the proposed re-designed BROAK RNAV SID would be above 10,000 feet AGL prior to the BARLL fix and continuing beyond the BROAK fix. As shown in Figure 5.3-3 below, the flight tracks are colored by altitude, where the flight tracks change to dark magenta as the aircraft cross 10,000 feet AGL.

Figure 5.3-3: 2017 Flight Track Data Compared to the Re-Designed Proposed BROAK RNAV SID



Additional noise screening is not required for instrument flight procedure departures above 10,000 feet AGL where there are no identified noise sensitive areas in accordance with FAA Order 1050.1F.[10] However, the noise screening analysis was re-run to take into account the lateral change of the flight path for the proposed BROAK RNAV SID. The results of the noise screening analysis indicated that there would be no measurable change in noise exposure levels as a result of the procedure re-design.

5.3 Pre-RNAV Western Routes Scenario

This scenario complies with Section 5.b, in the Memorandum that requires FAA to conduct a noise analysis to compare differences in noise between (1) the Pre-RNAV Western Routes[11] and the Proposed Action Scenario. To develop this scenario, track data from a sample set of 90 random days was obtained (prior to the September 2014 RNAV implementation). Using the AEDT Environmental Plug-In, backbones for each departure procedure were created, accounting for the

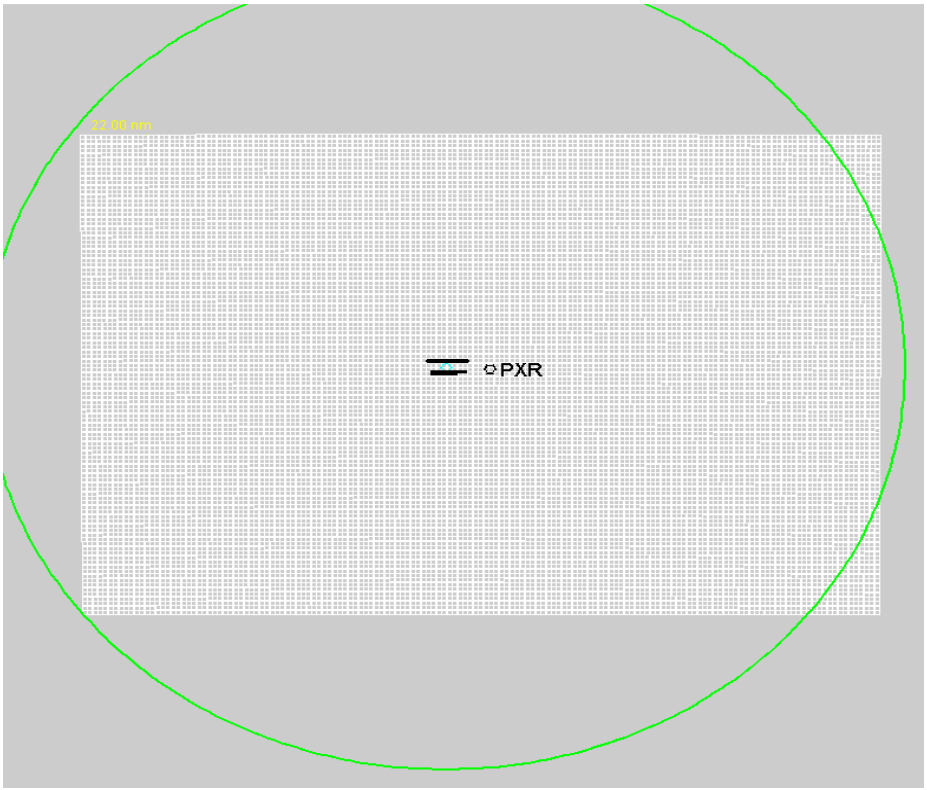
[10] FAA Order 7400.2L Chapter 32, Section 2, Paragraph d.2.(b).
[11] The "Pre-RNAV Western Routes" are defined in the Memorandum as the Standard Instrument Departures (SIDs) for Runways 25L, 25R, and 26 that were in pace prior to September 18, 2014. These SIDs are named the CHILY, ST. JOHN'S, SILOW, MAXXO, STANFIELD, and BUCKEYE.

pre-RNAV procedures as well as the increased dispersion of conventional SIDs. To ensure a consistent number of operations and a consistent fleet mix across alternatives, the same flights that were used for the No Action scenario were applied to these backbones. This ensured that differences across scenarios were attributable to flight path changes only.

6.0 DEVELOPMENT OF THE NOISE SCREENING ANALYSIS STUDY AREA

The study area for the noise screening analysis is considered to be the geographic area where the potential to be impacted by noise from the Proposed Action exists. The noise screening analysis focused on a change-in-exposure analysis, which examined the change in noise levels at a set of grid points. The noise study area, the area covered by the grid, was established to include all areas in which the No Action screening produced a DNL result of greater than 45 dB (see Figure 6.1). Noise exposure calculations were based on a rectangular grid (receptor set) at airport field elevation with evenly spaced grid points (receptors). Grid points were spaced evenly at 0.25 nautical mile (NM) intervals.

Figure 6.1: Noise Screening Grid Points
(The green ring is set at 22 NM is for distance reference only).



7.0 NOISE SCREENING INPUTS AND ASSUMPTIONS

To determine projected noise levels, it is necessary to determine the frequency of aircraft operations and the position of the aircraft in space (laterally and vertically). Arrival and departure direction to and from an airport are generally a function of the geometry of the airport's runways, procedures used to manage air traffic, and weather conditions.

Noise modeling accounts for several types of input data including:

- Airport/runway geometry
- Number of aircraft operations
- Aircraft fleet mix
- Day/night time distributions
- Flight tracks
- Track dispersion information
- Flight track utilization
- Flight profiles
- Runway usage
- Typical operational procedures

Other than airport/runway geometry, the above information can be determined by analysis of historical radar track data. Track data provides information regarding demand levels, fleet mix, lateral/vertical path definitions, path utilization, and runway usage, all broken down by departure/arrival streams and day/night traffic distributions.

7.1 Collection of Radar Track Data

Historical radar track data was obtained from the FAA's National Offload Program (NOP)[12] . Track data was collected for 90 randomly selected days (using a random day generator) during calendar year 2017 ("2017 Track Data"). The selection of 90 random days is considered to best represent average traffic counts and traffic flows accounting for seasonal variations and peak travel times for Phoenix Sky Harbor.[13]

The individual flight tracks were taken directly from the radar system, ensuring accurate representation of runway use and time of day. While the flight trajectories were not modified in any way, they were filtered to remove overflights, incomplete track segments, and other anomalous data, which could have reduced the accuracy of the noise screening analysis. After filtering tracks, 96,110 tracks (47,933 departures and 48,277 arrivals) remained in the 2017 Track Data set

[12] All traffic data was obtained using the Phoenix Terminal Radar Approach Control as the radar source facility.

[13] As noted earlier, in order to present a well-defined noise screening analysis, it was determined to compare the three scenarios to this same baseline track data that was utilized for the Step 1A noise screening. Flight track data for the Step 1A procedures is insufficient to support an updated 90 random day data set to establish a new baseline. The simplified method for the baseline data set supports a conservative approach to the noise screening analysis.

providing the aircraft operations and fleet mix that were used to consistently model aircraft operations for the three scenarios. The 2017 Track Data provides the trajectories for the No Action Scenario, i.e., operational information based on current flight procedures and flight tracks. Annual operations and runway use were obtained from the Performance Data Analysis Reporting System (PDARS) using the Phoenix Terminal Radar Approach Control as the radar source facility.

7.2 Other Considerations in Screening Input and Assumptions

- Altitude calculations were based on "above field elevation" (AFE) using the Phoenix Sky Harbor Airport's reference elevation.
- As the proposed procedures are not expected to change the vertical profiles of the Phoenix Sky Harbor arrivals and departures, default AEDT climb and descent profiles were assumed.
- Track dispersion around the Proposed Action backbones was based on an examination of the RNAV dispersion in the 2017 Track Data, while dispersion around the Pre-RNAV Western Routes backbones was based on an examination of radar data prior to September 2014.
- In the three scenarios, the 2017 Track Data was used to represent arrivals, as changes to arrivals are not being proposed.

The 2017 Track Data provided the demand levels, fleet mix, runway use, day/night splits used to model the three scenarios, and the same arrival track data was used to represent arrivals the three scenarios as well.

7.3 Scenario Specific Assumptions

7.3.1 Proposed Action Scenario

The proposed procedures were represented by noise modeling backbones, with dispersion based on an examination of the RNAV dispersion in the 2017 Track Data. For the Proposed Action, the flight tracks were redistributed and reassigned to backbones as necessary to best represent the alternative flight paths of the individual aircraft. Aircraft operations were reassigned to the procedures to model aircraft as flying the proposed Step 1B procedures. Track assignments were based on historic flight paths, assigning the existing tracks to the path of the nearest proposed procedure.

7.3.2 Pre-RNAV Western Routes Scenario

Pre-RNAV Western Route departures followed radar vectors issued by air traffic control after take-off to the first or succeeding common waypoint on the departure procedure. To create the Pre-RNAV Western Routes Scenario, flight track data from 90 random days in the year preceding September 2014 were compiled. This track data was used to create backbones to depict the dispersion and tracks of the conventional (ground-based) SIDs in effect prior to implementation of

the RNAV SIDs. The 2017 Track Data was superimposed on the backbones that were based on the 2014 radar tracks, and track bundles were assigned to the individual backbone most closely aligned with the track bundles.

8.0 NOISE SCREENING RESULTS

FAA conducted a separate noise screening analysis for each scenario, and then compared the Proposed Action Scenario to the No Action Scenario, and the Proposed Action Scenario to the Pre-RNAV Western Routes Scenario in accordance with Section 5 of the Memorandum. The TARGETS AEDT Environmental Plug-In graphically displays the noise exposure levels for each scenario in a grid point map.

8.1.1 Comparison: Proposed Action Scenario and No Action Scenarios

The change in noise exposure levels when comparing the Proposed Action Scenario to the No Action Scenario is illustrated in Figures 8.1 and 8.2. The results of the noise screening analysis indicate that the Proposed Action would not increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level. However, the noise screening analysis did identify an area of reportable change of DNL 5 dB or more between the DNL 45 dB and DNL 60 dB noise exposure level. The area is located approximately three nautical miles southwest of Phoenix Sky Harbor.

Figure 8.1: Grid Point Depiction of the Reportable Change in Noise Exposure Level Comparison of the Proposed Action Scenario to the No Action Scenario

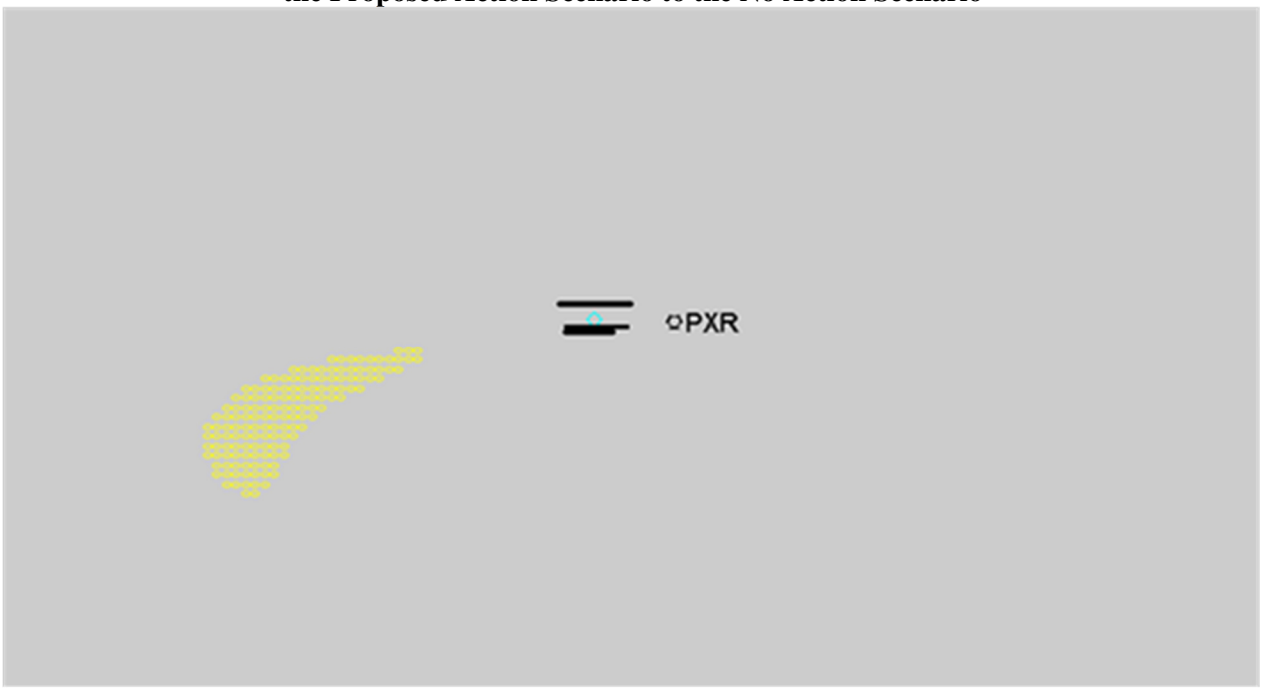
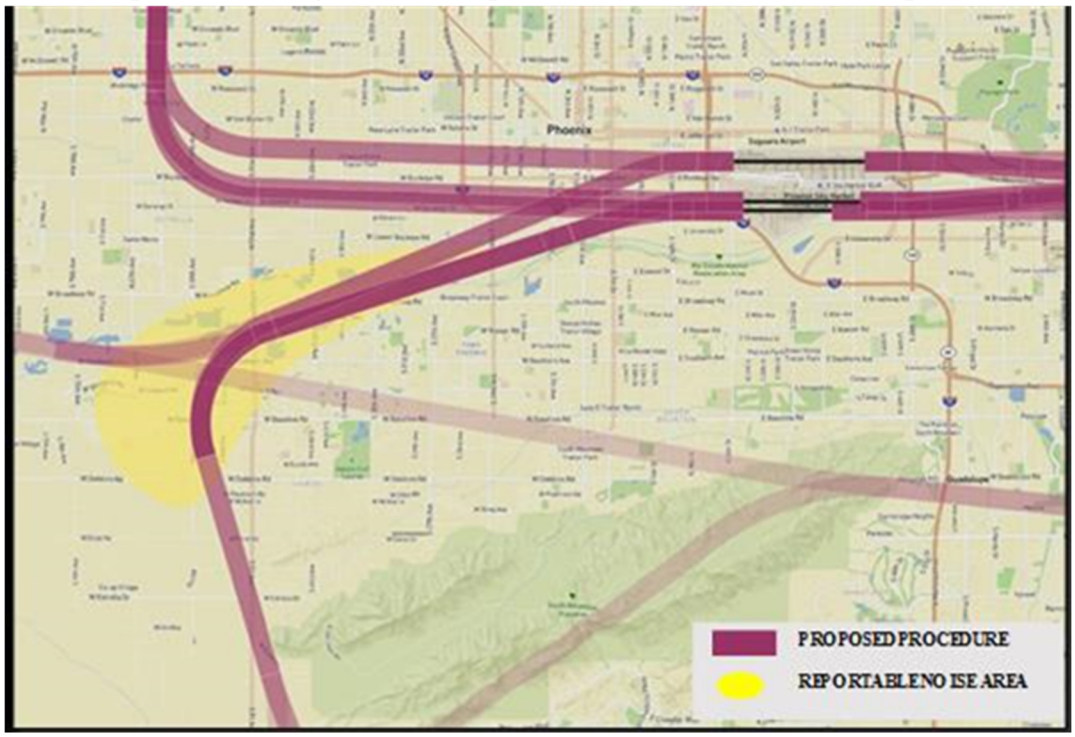


Figure 8.2: Reportable Change in Noise Exposure Level with Overlay of Proposed Procedures



8.1.2 Comparison: Proposed Action and Pre-RNAV Western Routes Scenarios

The change in noise exposure levels when comparing the Proposed Action Scenario to the Pre-RNAV Western Routes is illustrated in Figures 8.3 below. The results of the noise screening analysis indicate that the Proposed Action would not increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level. However, the noise screening analysis did identify two areas of reportable change of DNL 5 dB or more between the DNL 45 dB and DNL 60 dB noise exposure level. One area is located approximately twelve nautical miles southwest of Phoenix Sky Harbor, and the second area is located approximately 12 nautical miles east of Phoenix Sky Harbor.

Figure 8.3: Grid Point Depiction of the Reportable Change in Noise Exposure Level Comparison of the Proposed Action Scenario to the Pre-RNAV Western Routes

9.0 EVALUATION OF NOISE SCREENING RESULTS

9.1 Proposed Action Scenario Impact Results

The results of the noise screening analysis indicate that the Proposed Action would not result in significant noise impacts relative to the No Action scenario. (Refer to Section 2.1 *Threshold Values for Noise Impacts* above for the noise exposure level thresholds.) However, the noise screening analysis did identify two areas of reportable change of DNL 5 dB or more between the DNL 45 dB and DNL 60 dB noise exposure level. The area to the southwest is located at the area where the proposed BROAK, FYRBD, STRRM and ECLPS RNAV SID procedures begin to diverge at the WETAL waypoint.

The FAA reviewed the City of Phoenix, Planning and Development Department, *City of Phoenix General Plan,* which identifies existing land use within the greater Phoenix area.[14] The FAA further reviewed individual resources within this area, including parks and historic properties, to determine whether the Part 150 land use guidelines are relevant to their value, significance, and enjoyment.

[14] www.phoenix.gov/pdd/pz/general-plan-2002. Accessed December 29, 2017.

As part of this further review, FAA completed consultation with local interested parties having jurisdiction by law or special expertise in order to make a final determination regarding the reportable noise impacts. The FAA considered other factors under Section 4(f) of the Department of Transportation Act (Section 4(f)), and those under Section 106 of the National Historic Preservation Act (Section 106). The consulting parties concurred with the FAA's finding that the Proposed Action presents no adverse effects on resources protected under these special purpose laws. Refer to Section 5.4 and Section 5.5 in the Environmental Review document for Step 1B for the environmental impact analysis under Section 4(f) and Section 106.

Figures 9.1 and 9.2 illustrates the area of the reportable change in noise exposure levels for the Proposed Action scenario when compared to the No Action scenario. An overlay of the Proposed Action procedures is represented by simulated tracks based on aircraft flying the centerlines of the proposed procedures.

Figure 9.1. Area of Reportable Change in Noise Relative to the No Action Scenario With Overlay of Proposed RNAV SID Procedures

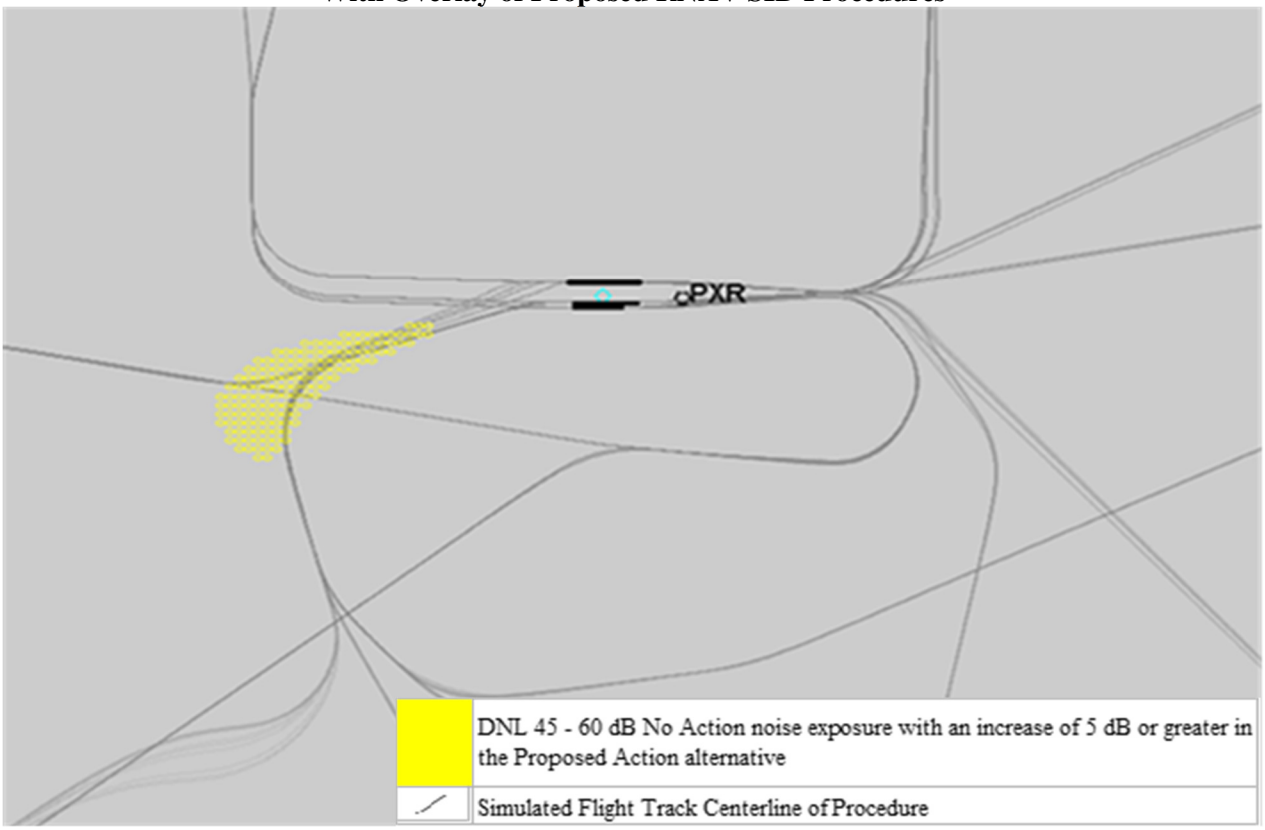
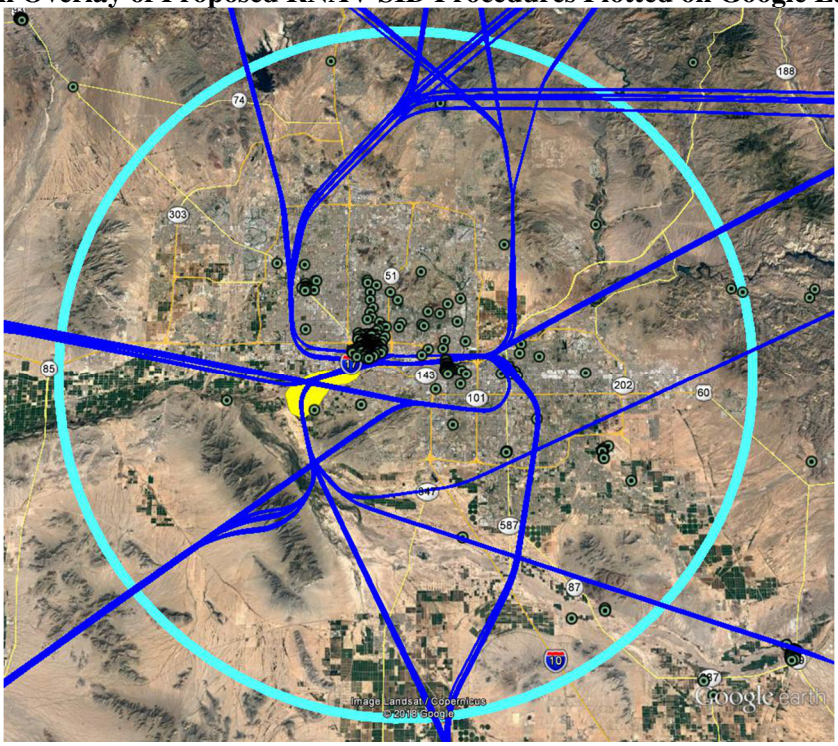


Figure 9.2. Area of Reportable Change in Noise Relative to the No Action Scenario With Overlay of Proposed RNAV SID Procedures Plotted on Google Earth

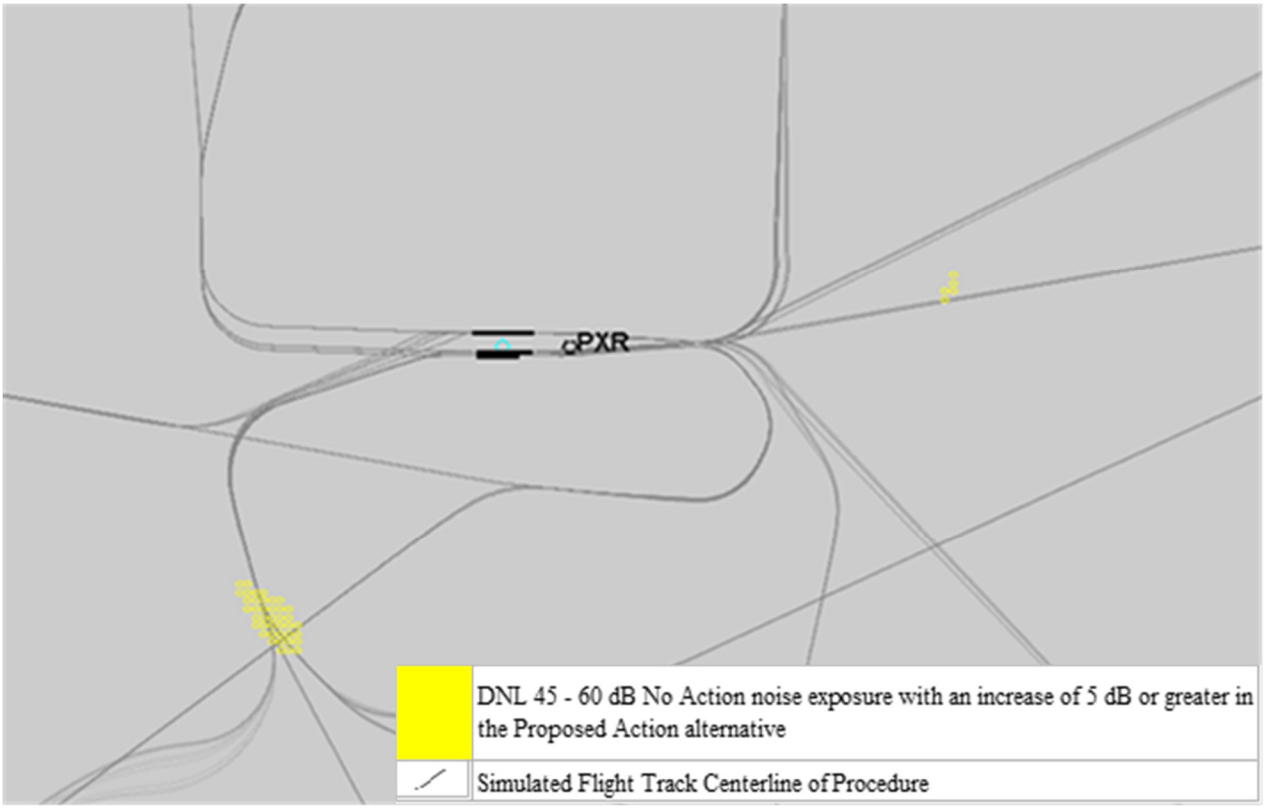


9.1.1 **Pre-RNAV Western Routes Scenario**

The results of the noise screening analysis indicate that the Proposed Action would not result in significant noise impacts relative to the Pre-RNAV Western Routes Scenario. The noise screening analysis did identify two areas of reportable change of DNL 5 dB or more between the DNL 45 dB and DNL 60 dB noise exposure level. The area to the southwest is located at the area where the proposed BROAK, FYRBD, STRRM and ECLPS RNAV SID procedures diverge at the WETAL waypoint. The second area east of Phoenix Sky Harbor where the BROAK RNAV SID departs eastward. The second area spans approximately one nautical mile in length north to south, and 0.5 nautical miles in width east to west. This noise screening is for informational purposes and is not intended to show a potential observed change from the No Action scenario should the proposed procedures be implemented.

Figure 9.2 illustrates the areas of the reportable change in noise exposure levels with an overlay of the Proposed Action procedures. The Proposed Action procedures are represented by simulated tracks based on aircraft flying the centerlines of the proposed procedures.

Figure 9.2. Area of Reportable Change in Noise Relative to the Pre-RNAV Western Routes Scenario with Overlay of Proposed RNAV SID Procedures



10.0 CONCLUSION

FAA has conducted a noise screening analysis of two alternatives: the No Action Scenario representing current conditions, the Proposed Action Scenario representing the proposed procedures under Step 1B of the Memorandum. Results of the noise screening analysis comparing the No Action scenario to the Proposed Action scenario indicate that the proposed RNAV SID procedures would not result in significant noise impacts relative to the No Action Scenario.