Noise Screening Analysis Report

For

Ronald Reagan Washington National Airport

KDCA

Washington, DC

Prepared by:

ATO, AJV-114, Environmental Policy Team

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Summary

Noise analysis was completed to assess potential impacts resulting from proposed air traffic actions at Ronald Reagan Washington National Airport (DCA) in Washington, DC, using the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Environmental Plug-in tool and the Aviation Environmental Design Tool (AEDT).

Historical radar track data was used to create a baseline scenario. After the baseline scenario was built, aircraft operations assigned to the proposed procedure were modeled as flying the proposed procedure, which provides the alternative scenario. Selections for track assignments were made based on historical flight paths, and RNAV capable aircraft were assigned to the procedure nearest to their historical tracks in the alternative scenario.

Once the baseline and alternative scenarios were built, the TARGETS Environmental Plug-in Tool was used to generate noise outputs for both scenarios. In the case of DCA, there was no significant or reportable increase in noise resulting from the proposed action.

Purpose

The purpose of this report is to document the process used to analyze the noise impact of proposed air traffic actions at Ronald Reagan Washington National Airport (DCA) in Washington, DC and to present the results of that analysis. The analysis of the instrument flight procedures at DCA was performed using the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Environmental Plug-in tool and the Aviation Environmental Design Tool (AEDT).

Figure 1 shows the airport diagram for DCA, which provides the runway layout and the airport's field elevation. Table 1 shows the procedure name, type and publication date.

Table 1: Proposed Procedures Modeled for DCA

Procedure Name	Procedure Type
AMEEE ONE	RNAV SID
CLTCH TWO	RNAV SID
DOCTR FIVE	RNAV SID
HORTO THREE	RNAV SID
JDUBB TWO	RNAV SID
REBLL FOUR	RNAV SID
SCRAM FOUR	RNAV SID
SOOKI FIVE	RNAV SID
WYNGS FOUR	RNAV SID

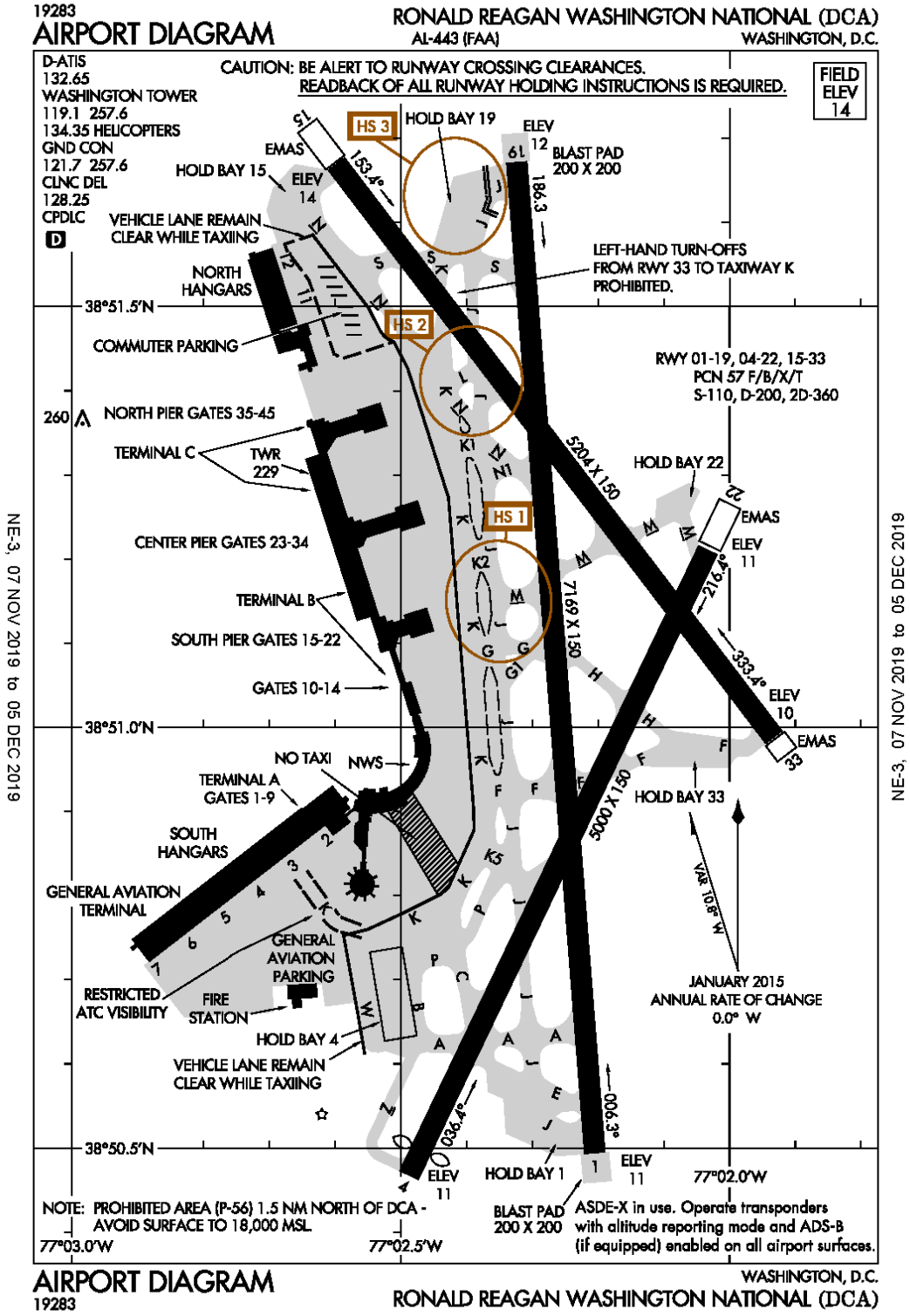

Figure 1: Airport Diagram of DCA

Methods

Noise screening was completed using the TARGETS Environmental Plug-in tool to calculate Day-Night Average Sound Levels (DNL) from existing operations (baseline) and modeled operations to replicate the proposed action (alternative). Historical radar track data for DCA was obtained from the Performance Data Analysis and Reporting System (PDARS). After concurrence of the dates to be used by the environmental specialist and air traffic facility, 60 days of random radar track data were selected for the DCA analysis representing a range of temperature and wind conditions as well as being representative of the average runway usage. A list of the tracks selected for analysis are shown in Appendix A.

After the removal of overflights, incomplete track segments, and other unusable tracks, 24,743 tracks were used for the analysis. The altitude of the historical tracks was considered and a range ring was set to contain the area where most of the tracks reached above 10,000 feet Above Field Elevation (AFE). This established the study area and the tracks outside of the study area were removed from the analysis. In the case of DCA, the study area is a circle with a radius of 40 nautical miles (nm) centered over the airport.

The randomly selected dates are presumed to represent average traffic counts and traffic flows through various seasons and peak travel times for DCA. There were no significant runway outages or significant conditions that would otherwise result in abnormal traffic counts or traffic flows. In order to calculate the Average Annual Day (AAD) impacts, traffic counts for average daily departures and arrivals used for annualization in this analysis were obtained through the FAA's AFS Data Analytics Runway Usage Module.

Historical radar track data 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. The alternative scenario was built by taking aircraft operations and assigning them to the proposed procedure instead of their historical tracks. RNAV capable aircraft were assigned to the procedure based on their historical tracks, proximity to other procedures, and any additional usage information from the Environmental Specialist. In the case of DCA, all operations departing from runways 01 and 03 were assigned to a proposed procedure.

The analysis does not take into account terrain. All calculations were made in reference to the airport's field elevation. The altitude controls were based on AEDT standard aircraft profiles. With respect to lateral distribution, a 0.5 nm dispersion for RNAV procedures was used and a 0.3 nm dispersion for RNP procedures was used based standard methods for noise screening. For tracks near the runway where dispersion is normally less than 0.3 nm, dispersion was based on historical track data.

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 to calculate noise. The noise output files from AEDT for both the baseline and alternative noise exposures consist of a series of equally spaced grid points, each showing the DNL value. The noise grid (receptor set) is a square grid extending 30 nm in each direction of the airport with grid points (receptors) spaced 0.25 nm apart. The noise results of the baseline and alternative scenarios were then compared to test for potential noise impacts.

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 and Chapter 32 of FAA Order 7400.2K. The reportable and significant noise increases and decreases (if any) are then depicted on an aerial map.

Results

1. Noise Exposure

The baseline and alternative noise exposure is shown in Figure 3-1 and Figure 3-2, which depicts the levels and locations of the noise produced by the historical radar track data for arrivals and departures.

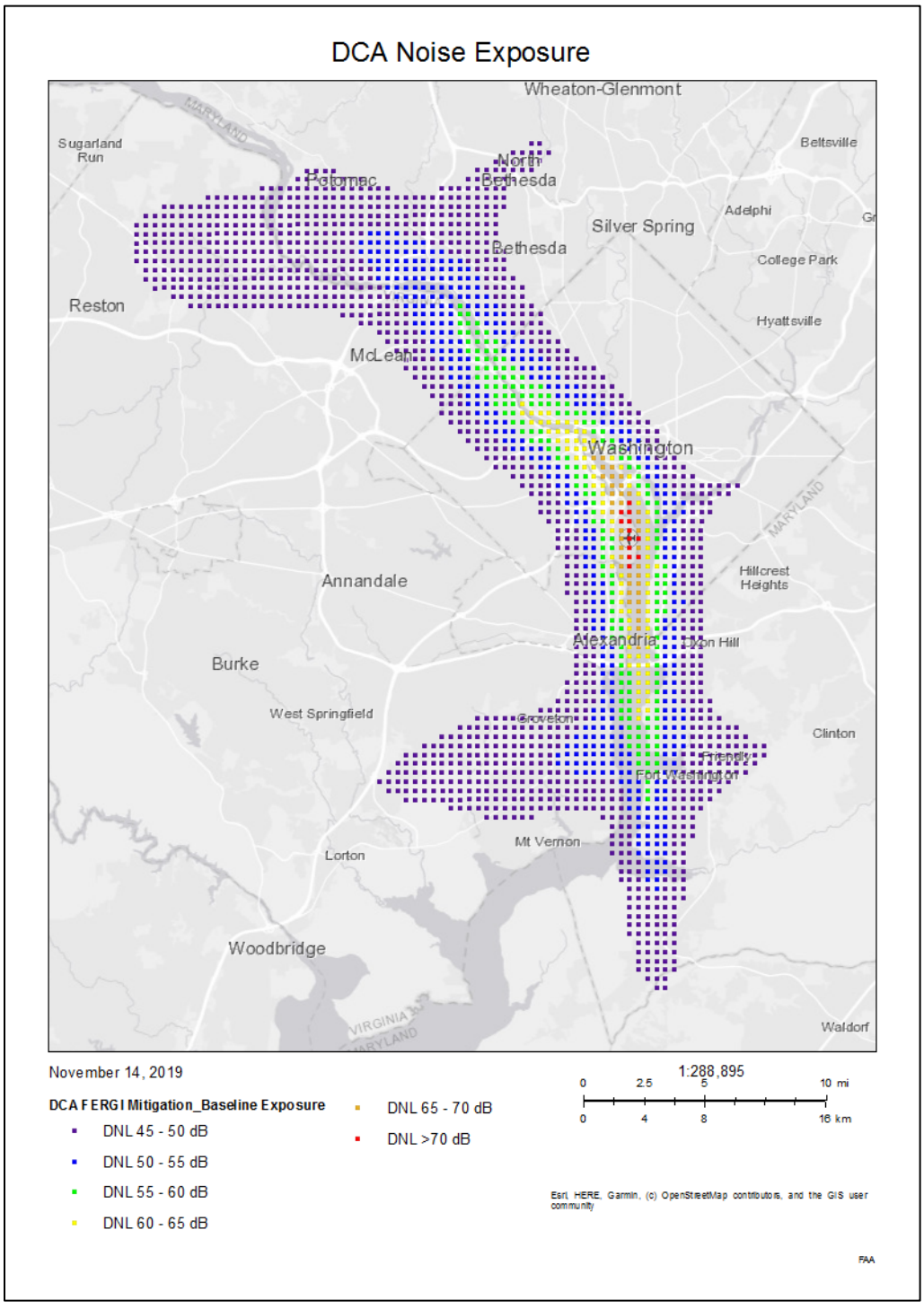

Figure 3-1: Baseline Noise Exposure in TARGETS

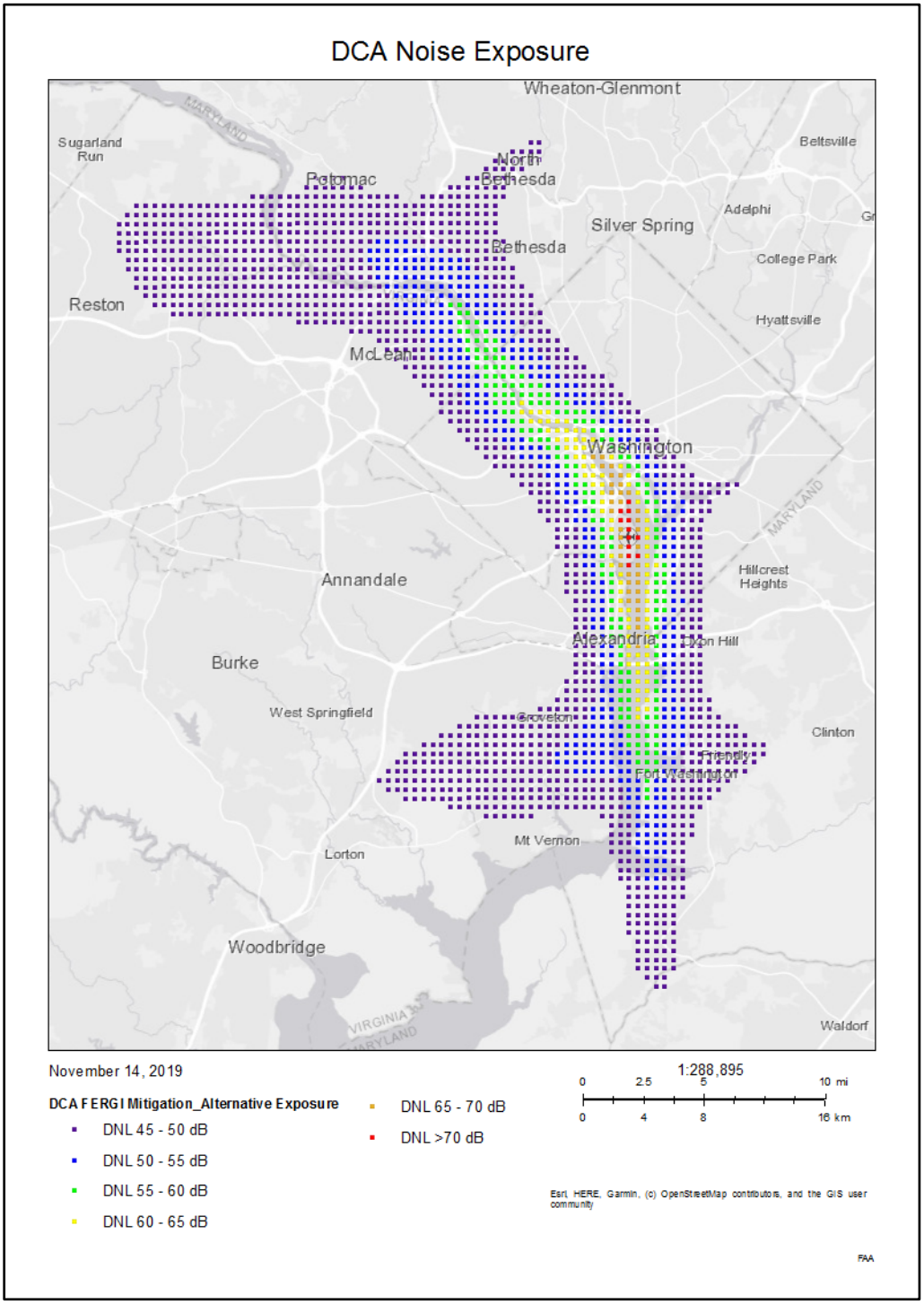

Figure 3-2: Alternative Noise Exposure for the Proposed Procedures in TARGETS

2. Noise Impacts

A comparison of the baseline and alternative scenarios by the TARGETS Environmental plug-in determines the noise impacts of the proposed action. Significance of noise impacts is defined by FAA Order 1050.1F[1] which establishes the threshold for significant increases in noise exposure. Where the proposed action results in a noise impact, TARGETS graphically displays a noise impact layer that indicates the locations of reportable and significant changes. When applicable, these impacts are shown overlaying a map view of the area surrounding the airport. In the case of DCA, there was **no reportable or significant increase in noise resulting from the proposed action.**

[1] According to Exhibit 4-1 of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, a noise impact is significant if *"The action 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, or that will be exposed at or above the DNL 65 dB due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe."*

Appendix A Random Tracks Used for Analysis

1	7/9/2018
2	7/21/2018
3	7/23/2018
4	7/24/2018
5	7/26/2018
6	8/1/2018
7	8/5/2018
8	8/18/2018
9	8/20/2018
10	8/27/2018
11	8/29/2018
12	8/30/2018
13	9/1/2018
14	9/9/2018
15	9/11/2018
16	9/19/2018
17	10/8/2018
18	10/9/2018
19	10/14/2018
20	10/16/2018
21	10/17/2018
22	10/19/2018
23	10/21/2018
24	10/31/2018
25	11/7/2018
26	11/12/2018
27	12/1/2018
28	12/4/2018
29	12/7/2018
30	12/11/2018

31	12/12/2018
32	12/13/2018
33	12/18/2018
34	12/23/2018
35	12/27/2018
36	12/31/2018
37	1/3/2019
38	1/28/2019
39	1/30/2019
40	2/4/2019
41	2/5/2019
42	2/6/2019
43	2/8/2019
44	2/15/2019
45	2/18/2019
46	2/25/2019
47	3/9/2019
48	3/12/2019
49	3/20/2019
50	3/26/2019
51	3/27/2019
52	3/28/2019
53	4/25/2019
54	4/26/2019
55	4/27/2019
56	5/1/2019
57	5/3/2019
58	5/6/2019
59	5/23/2019
60	5/28/2019