

# Comparison of On-Site Growler Noise with Modeled Noise at Outlying Field Coupeville

Citizens of Ebeyes Reserve (COER)  
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JGL Acoustics (JGL) recorded EA-18G Growler noise in the area of Outlying Field Coupeville in May 2013, February 2016, and June 2019. A total of 10 discrete sites were sampled, and included recordings data on both Track 32 and 14. The National Park Service (NPS) also recorded Growler noise during 30 days in July and August 2016 at two locations within Ebeyes Landing Historic Preserve, the Ferry House and Rubles Farm<sup>1</sup>. The final Environmental Impact Statement (FEIS) for expanded Growler operations at Naval Air Station Whidbey Island (NASWI) presented modeled Growler noise data (maxSEL and Lmax) for selected sites (*points of interest*) in the Outlying Field area.

The data from these two on-site studies provides a realistic opportunity to check the accuracy of the FEIS modeling. Six JGL/NPS recorded sites were at the same or approximately same location as the FEIS modeled sites. Hence, COER compared noise data at those six recorded sites with the FEIS modeled noise data. That comparison is presented in Table 1.

## **Error: Maximum Noise Levels**

In 9 of 10 discrete JGL/NPS data sets the Lmax exceeded the FEIS modeled data set by an average of 4.6 dBA (range: 1–9 dBA); the tenth data set was the same as the the FEIS (0 difference). Including all 10 discrete data sets, the JGL/NPS average Lmax was 4.2 dBA higher than the FEIS modeling.

In 8 of the 10 discrete JGL/NPS data sets the on-site-recorded MaxSEL exceeded the FEIS modeled data set by an average of 3.7 dBA (range: 0.4–8.1 dBA). One data set was the same (0 difference) as the FEIS, and one was -1.3 dBA below the FEIS. Including all 10 discrete data sets, the JGL/NPS average MaxSEL was 2.8 dBA higher than the FEIS modeling.

Each increase of 3 dBA doubles sound intensity (acoustic energy)

[<http://www.sengpielaudio.com/calculator-levelchange.htm>]. The Navy considers such a 3-dBA increase to be highly significant: <sup>2</sup>

*1.3 Tests, funded by the Office of Naval Research (ONR), were conducted on an F404-GE400 engine at JBMDL during 2009 with prototype chevron nozzles, demonstrated significant noise reduction, 3 dB, without measured loss of thrust, reference 2. The reduction of sound pressure*

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<sup>1</sup> Ebey's Landing National Historical Reserve Acoustical Monitoring Report, Natural Resource Report NPS/ELBA/NRR—2016/1299. <https://irma.nps.gov/DataStore/DownloadFile/560344>

<sup>2</sup> Chevron Seals Annual Update, 1-6-14. NAVAIR Test Plan.

levels by 3 dB is significant as it allows for double the exposure time, table 1-2, and represents a perceived reduction in loudness of 18.8%, table 1-3

*Table 1-2: Exposure Time by Decibel Level*

<i>Decibel Level (dB) Permitted Exposure Time</i>	<i>Decibel Level (dB) Permitted Exposure Time</i>
<i>121</i>	<i>7 sec</i>
<i>118</i>	<i>14.1 sec</i>
<i>112</i>	<i>56.3 sec</i>
<i>109</i>	<i>1 min 52.5 sec</i>
<i>106</i>	<i>3 min 45 sec</i>
<i>103</i>	<i>7 min 30 sec</i>
<i>100</i>	<i>15 min</i>
<i>97 ...</i>	<i>30 min...</i>

The modeling MaxSEL under-estimate of (average, 2.8–3.7 dBA) is, per the Navy, a significant error that increases the acoustic impacts on humans and wildlife. Likewise, given that each increase of 10 dBA doubles loudness, the modeled Lmax under-estimate of 4.2 dBA understates loudness impacts by nearly 50%. Hence the FEIS modeling seems to have understated noise and the impact analysis, all based on that modeled data, falls short.

**Table 1.--Comparison of the EIS modeled Lmax and MaxSEL data at points of interest compared with on-site noise recordings taken for the National Park Service and by JGL Acoustics for Citizens of Ebeys Reserve. <sup>a</sup>**

FEIS Point of Interest Site [site#]	Track #	FEIS: Modeled Data (dBA)	JGL or NPS site (dBA) [Difference: FEIS minus JGL or NPS]			
			JGL: May 2013	NPS: Summer 2015	JGL: Feb. 2016	JGL: June 2019
<b>Sites where FEIS and JGL or NPS (2015) are about the same location</b>						
Rhododendron Park [FEIS: P04]	32	Lmax: 105 MaxSEL: 111	114 [+9] 118 [+7]	--	113 [+8] 119.1 [+8.1]	--
Admirals & Byrd <sup>b</sup> [FEIS: R06]	32	Lmax: 117 MaxSEL: 120	--	--	118 [+1] 120.4 [+0.4]	119 [+2] 122.7 [+2.7]
Long Pt. Manor [FEIS: PR15]	14	Lmax: 103 MaxSEL: 109	--	--	--	111 [+8] 109.0 [0]
Reuble Farm [FEIS: PP17]	32	Lmax: 110 MaxSEL: 115	115 <sup>c</sup> [+5] 117.9 [+2.9]	113 [+3] 117.2 [+2.2]	--	110 <sup>c</sup> [0] 113.7 [-1.3]
Ferry House [FEIS: PP18]	32	Lmax: 82 MaxSEL: 91	--	85 [+3] 96.6 [+5.6]	--	--
Island Transit [FEIS: PR19]	14	Lmax: 108 <sup>d</sup> MaxSEL: 115	--	--	--	111 <sup>d</sup> [+3] 115.6 [+0.6]

<sup>a</sup> The FEIS data was taken from the FEIS Table 4.2-3, page 4-47. The JGL data were extracted from his 2019 report, which examined noise monitoring in 2013, 2016, and 2019. The National Park Service data were taken from the Natural Resource Report NPS/ELBA/NRR—2016/1299, Ashley Pipkin, U.S. Department of the Interior National Park Service, Natural Resource Stewardship and Science Natural Sounds and Night Skies Division, Fort Collins, Colorado.  
<https://irma.nps.gov/DataStore/DownloadFile/560344>

<sup>b</sup> JGL recorded noise levels in Admirals Cove at three different locations. All three sites were within 300 yards of the corner of Admirals and Byrd and all had very similar noise recordings, so from those three sites the highest overflight from all samples was selected, which is consistent with the practice used at other sites, i.e., to use the noisiest overflight to calculate Lmax and maxSEL.

<sup>c</sup> Rosehip Farm is about 3000 feet northwest of Reuble Farm. Whereas Ruble Farm is directly under the flight path, Rosehip Farm is about 1500 feet to the northwest of the flight track. Given that 1500-foot noise attenuation distance, Rosehip Farm should be less noisy than Ruble Farm, not more noisy.

<sup>e</sup> The Island Transit FEIS site is not exactly specified because the transit center covers a lineal area spanning a distance of about 2000 to 3800 feet east of the Track 14 final approach (see FEIS Figure A4-26). The JGL recording site was at the far eastern edge of the Transit Center property. If the FEIS modeling used the Transit Center entrance, then the JGL station was approximately 1800 feet east of the FEIS site. If so and given an 1800-foot noise-attenuation distance, the JGL station should be less than the FEIS site, not 3 dBA more (Lmax).

## Error: Events Exceeding 100 dBA

We also compared the JGL/NPS on-site data with FEIS modeled counts of times when noise levels at FEIS points of interest would exceed 100 dBA. That comparison is presented in Table 2. Based on the ROD there will be 24,100 annual Growler operations at Outlying Field, or 12,050 overflights, of which there are to be 8435 overflights (70%) on Track 32 and 3615 overflights (30%) on Track 14. Table 2 examines whether the ROD planned operations at the Outlying Field are realistic, and finds they understate the actual Growler noise significantly.

**TABLE 2. --Estimates of the number of annual Growler overflights (incidents) greater than 100 dBA at FEIS points of interest, as derived by modeling, compared with estimates derived from JGL Acoustics on-site noise recordings at those sites. The reported NPS data for Reuble's Farm and Ferry House were not available to facilitate such estimates.**

Number of incidents per year of noise levels greater than (>) 100 dB				
Point of interest	Navy's modeled projection <sup>a</sup>	Percent of JGL overflights >100 dBA as derived from Table 3 <sup>b</sup>	Overflights >100 dBA <sup>c</sup>	Number of incidents FEIS underestimated and [% error]
R06 Admirals & Byrd	7,712	Track 32: 99% Track 14: not recorded	8,351 <u>+ &lt;?&gt;</u> Total = 8,351 <+?>	639 <+?> [error 8% +]
R19 Island Transit Center	4,315	Track 32: 80% Track 14: 18%	6748 <u>+ 651</u> Total = 7399	3084 [error 72%]
P04 Rhododendron Park	4,315	Track 32: 80% Track 14: 0%	6748 <u>+ 0</u> Total = 6748	2433 [error 56%]
[P17] Reuble Farm	5,606	d	d	d

<sup>a</sup> The FEIS estimate is from FEIS Table 4.2-12 (Alternative 2, Scenario A, which is the ROD).

<sup>b</sup> The JGL data were derived from the total number of overflights recorded at that site and the tally of those flights that were at or above 100 dBA, as enumerated from the graph peaks presented for those sites. A graph point that appeared to be within about 0.5 dBA of 100 dBA was rounded to 100 and counted. Also, the arrival flights, which are at a higher elevation, not in the full FCLP pattern, and

hence always quieter, were readily discernible at the start of an FCLP session; they were not counted because the FEIS modeling excluded arrivals in their calculations.

<sup>c</sup> The percentage of overflights >100 dBA were multiplied by the FEIS projected overflights under the ROD for the Outlying Field (i.e., 12,050), which are to be allocated as 70% on Track 32 (i.e., 8,435) and 30% on Track 14 (i.e., 3,615).

<sup>d</sup> The NPS study did not provide this data. However, because Reuble Farm is directly under Track 32 it should be close to Rhododendron Park, which is about 1500 feet south of the Track 32 but at the takeoff portion of the FCLP pattern. Reubles is under the downwind leg, so jets are higher in the air but directly overhead which exacerbates noise levels compared with off-track Rhododendron. We assign no error value to Reuble but note that clearly 5606 is too low, probably understating the true value by 1000 to 2000 overflights.

**TABLE 3. --Total number of overflight events recorded by JGL in 2013, 2016, and 2019 by recording site and by track.**

Site and Date	Fight Track	Number of			Percentage of Events >100 dBA
		Sessions	Total Events	Events >100 dBA	
<b>Rhododendron</b>					
May 2013	32	1	25	20	80%
June 2019	14	1	54	0	0%
<b>Keystone</b>					
June 2019 + Feb. 2016	32	7.5	321	317	99%
June 2019	14	2	74	0	0%
<b>Admirals/Byrd</b>					
June 2019	32	12	551	547	99%
<b>Lockwood/Stark</b>					
June 2019 + Feb. 2016 + June 2013	32	8	312	292	94%
June 2019	14	2	49	4	8%
<b>Island Transit Center</b>					
June 2019	14	1.5	60	11	18%
May 2013 <sup>a</sup>	32	a	a	a	80%

<sup>a</sup> JGL did not record any Track 32 overflights at the Transit Center but did record Track 32 overflights at the Rhododendron Park, which aligns with the Transit Center, both sites being equidistant from the jet track and at the same location on the track. Rhododendron Park is just to the south of Track 32 and the Transit Center is just to the north, so they are right-hand/left-hand mirror images. Consequently, the

noise should be about the same at both, and we applied the Track 32 percentages from Rhododendron to the Center. The legitimacy of that is strongly underlined by the fact that the FEIS assumed the same number of overflights >100 dBA for the Center as for the Park, i.e., 4315 for both (see Table 2).