December 12, 2016

Re: Comments on the "Environmental Impact Statement for EA-18G "Growler" Airfield Operations at Naval Air Station Whidbey Island Complex"

EA-18G Growler EIS Project Manager
Naval Facilities Engineering Command Atlantic
6506 Hampton Boulevard
Norfolk, VA 23508
Attn: Code EV21/SS

Dear EIS Project Manager,

This letter of comments is an expanded version of my signed letter, dated Dec 5, 2016, that I submitted in person to the comment box at the Navy's Dec 7, 2016 Open House public meeting on Lopez Island. Having had the opportunity to talk to the Navy officers and others at various info stations at the meeting, I have additional comments and questions, which are presented here along with my previous comments. An "*" at the beginning of a paragraph denotes that the paragraph is new comments, not previously presented in the Dec 5, 2016version.

My comments and questions in response to the draft EIS for EA-18G Growler airfield operations at NASWI complex are as follows:

1. **Use of outdated and flawed noise simulation model**

Aircraft noise levels represented in this draft EIS are "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville" (page 3-16). The computer modeling program used for this EIS is "NOISEMAP Version 7.2 (October 29, 2015), developed by Wyle Laboratories…. The U.S. Department of Defense (DOD) uses NOISEMAP as the accepted standard noise modeling program for assessing potential noise exposure from fixed-wing aircraft NOISEMAP is routinely updated and validated through extensive study (Lundberg, 1991; Speakman, 1989; Lee, 1982; Seidman and Bennett, 1981; Rentz and Seidman, 1980; Bishop et al., 1977; and Dundoradale, Horonjeff, and Mills, 1976) to provide the best possible noise modeling results for these applications." [1]

Firstly, the date "October 29, 2015" in parenthesis after NOISEMAP Version 7.2 is misleading. What does the date refer to? When was NOISEMAP Version 7.2 first released? In my quick research, NOISEMAP Version 7.2 was used in a study completed in August 2004.[2] This evidence suggested that version 7.2 is at least 12 years old. Based on the latest "routine updates" cited above (Lundberg 1991) in the draft EIS, the last update may have been in 1991, over 25 years ago?

[1] Draft EIS, p. 3-16.

[2] Wyle Laboratories, *Aircraft Noise Study for Naval Air Station Joint Reserve Base Fort Worth Fort Worth, Texas,* August 2004, p. 1-3. Accessed on 12/3/2016 from http://www.nctcog.org/trans/aviation/jlus/noisestudy04.pdf

It is true the U.S. DOD has used NOISEMAP in the past, but a newer better tool called the Advanced Acoustic Model, was developed in 2010 to replace NOISEMAP.[3] The DOD Strategic

Environmental Research and Development Program (SERDP) found that NOISEMAP was outdated and might not be able to "provide legally defensible noise assessments of current and future aircraft operations." [4] Specifically, the SERDP project WP-1304, led by Principal Investigator Dr. Kenneth Plotkin of Wyle Laboratories (the same company that developed NOISEMAP) issued a final report titled "Advanced Acoustic Models for Military Aircraft Noise Propagation and Impact Assessment" in August 2010.[5] The project summary states that "Classic Department of Defense (DOD) noise models are based on NOISEMAP technology, using linear acoustics and an integrated formulation…. The acoustic environments in the vicinity of newer aircraft such as … the F/A-18E/F [which uses the same jet engine GE F414 as the Growlers] differ from those of most prior aircraft, with high noise levels associated with higher thrust engines. At those high levels, acoustic propagation cannot be modeled using the same simple linear theories employed in the classic noise models…. Moreover, the segmented flight path modeling approach typical of integrated noise models do not properly account for the complex operational and noise characteristics of the new aircraft…. A new aircraft noise model, the Advanced Acoustic Model (AAM), has been developed for the assessment of noise from military aircraft operations. It is a time simulation model that produces more physical realism and detail than traditional integrated model."

In other words, higher velocity jet exhaust (from higher thrust aircraft like Growlers) produce more non-linear turbulence and greater sound intensities than older, less powerful aircraft. The fact that NOISEMAP was based on linear acoustics means that it does not properly simulate the non-linear sound dynamics characteristic of the Growlers. In addition, NOISEMAP can only model one or more aircraft as an "integrated" monolith object. So it does a poor job of modeling complex flight operations where multiple aircrafts fly simultaneously in different patterns. AAM, on the other hand, does include the effects of nonlinear sound propagation, as well as terrain, weather and other features, resulting in time simulation that produces more physical realism and detail than NOISEMAP. Also, AAM allows each aircraft to be modeled separately as a 3D noise source and produce composite results of these individual units.

Given the existence of newer computer models with superior capabilities and more accurate noise assessment like AAM since 2010, why did the Navy use the flawed and dated NOISEMAP as the modeling tool for this draft EIS? The unfortunate choice of NOISEMAP has thus rendered the noise analysis in the entire draft EIS scientifically inaccurate and potentially legally indefensible with respect to the requirements of the National Environmental Policy Act of 1969 (NEPA).

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[3] SERPD, "Advanced Acoustic Model Technical Reference and User Manual" Project WP-1304, August 2010. Accessed on 12/3/2014 from https://www.serdp-estcp.org/content/download/9133/109364/file/WP-1304-TR.pdf

[4] https://www.serdp-estcp.org/Program-Areas/Weapons-Systems-and-Platforms/Noise-and-Emissions/Noise/WP-1304

[5] Ibid.

*My understanding of the limitations of NOISEMAP was confirmed by Mr. Patrick Kester of Wyle Laboratories at the December 7 public meeting on Lopez Island. In addition, I learned that all noise levels reported in the draft EIS were done based on NOISEMAP simulation of one aircraft. This assumption, a consequence of NOISEMAP's limitations, is very different from the actual planned flight operations of multiple (up to 5) Growlers taking off in quick succession and flying together in a formation. This means the reported noise levels and duration of noise exposure were grossly inaccurate and underestimated, particular for single event noise metrics. Mr. Kester also confirmed that the AAM would have had no problem simulating Growlers' noise emissions as coming from 5 separate noise sources.

*When asked about why Wyle's noise study for the draft EIS used the flawed, outdated NOISEMAP despite the availability of AAM, also created by Wyle Laboratories, Mr. Kester informed that AAM was still under review by the Defense Noise Working Group and is not officially endorsed by the DOD as the official choice of noise simulation model for doing noise assessments yet, despite known limitations and disadvantages of NOISEMAP. (Wyle developed both NOISEMAP and AAM). Is the information I received from Mr. Kester accurate? If so, what is the DOD Noise Working Group's time line for reviewing and approving the AAM? What explains the long deliberation process by the Working Group, considering that the AAM was completed since April 2009, over 7 years ago? Are there legal provisions that prohibit the Navy from using improved noise models that are not officially sanctioned by the DOD? If the delay in approving the AAM is due to neglect or negligence on the DOD's part, are the public and affected communities supposed to be subject to sub-standard, untrustworthy noise assessments? The DOD's failure to act in a timely manner to review the AAM is not a legally defensible justification for not using the best available science to conduct noise assessment for the draft EIS.

Recommendation: All the noise assessments in the draft EIS should be redone using a more accurate noise simulation model such as AAM.

2. Lack of noise data (transparency)

Even if the choice of noise simulation model were scientifically and legally defensible, the quality of data used as inputs into the model would still be questionable.

First, it is unclear what kind of noise data were used as a basis for noise assessment calculations in the noise simulation program (NOISEMAP). The draft EIS states on page 3-16 that aircraft noise levels represented in this draft EIS are "generated by a computer model and not actual noise measurements at Ault Field or OLF Coupeville." But has there ever been any actual noise measurements of a Growler anywhere? If not, what types of aircraft were used as proxies and how are they different than a Growler? If so, when and where were the noise measurements taken? By whom? What were the positions of the microphones? Under what operating conditions? The 716-page draft EIS Volume I inadequately describes the specifics of the noise measurement data used as a basis for the noise exposure modeling. Without this information, readers have little basis upon which to judge the validity and relevance of the data and noise assessments. The only mention found was that the computer model draws from "a library of actual noise measurements" (page 4-20) with no details provided.

On page 24 of Appendix A in Volume II of the draft EIS, the reader is informed that the only data inputs into the NOISEMAP model were "the data described in Sections 4.1 through 4.3." However, sections 4.1

through 4.3 contain no noise data, only the number and types of flight operations, runway and flight track patterns, and frequency and durations of maintenance "run-ups".

This means that NOISEMAP is treated by the draft EIS as a "black box". Flight operational data and other pertinent non-sound data are the only transparent inputs into the NOISEMAP model. The entire 1,500 pages of the two-volume draft EIS has nothing to offer to the readers regarding the quality of the aircraft jet noise measurement data used by NOISEMAP to simulate Growlers' jet noise impacts. This lack of data transparency makes it difficult to assess the credibility of the noise exposure simulation in the draft EIS. If the Navy is confident about the quality and scientific rigor of the noise data it used to do the sound exposure modeling, it should transparently share this information. Otherwise, we cannot trust the black box simulation-based noise assessments in the draft EIS. The onus is on the Navy to prove that the existing data are of good enough quality to justify the lack of taking actual near-field and far-field noise measurements on site.

*At the December 7, 2016 public meeting on Lopez Island, I was directed to ask Mr. Patrick Kester of Wyle Laboratories regarding noise measurement data. Mr. Kester reassured me that NOISEMAP draws from a library of noise measurement data, called NOISEFILE, that were done based on actual tests of various types of aircraft under different operational conditions, including from run-up to take-off, to landing. The tests were performed in a quiet desert environment to ensure accurate measurements. If the information provided by Mr. Kester is true, the draft EIS should have included such important details. When asked why such information was missing from the draft EIS, Mr. Kester said there was an indirect reference to the noise data, cited in one of the references on p. A-143 of Volume II, namely "Czech, J.J. and K.J. Plotkin. 1998. NMAP 7.0 User's Manual. Wyle Research Report WR 98-13." When I looked up this reference later, I found it to be a user's manual that "describes the features of the NOISEMAP (NMAP) 7.0 computer program and its operation,"[6] nothing about the details of noise measurement data and how they were obtained. Though my questions remained unanswered, Mr. Kester's response confirmed my observation that the draft EIS lacks transparency of empirical noise data, and likely lacks empirical noise measurement data as well.

Moreover, several communities have done actual far-field noise measurements and provided the data to the Navy to be included in the noise assessment. It is unclear if and why the draft EIS did not include these noise measurement data.

Recommendations: The draft EIS must provide details of assumptions and noise measurement data used or not used in noise simulation. Details should include types of aircraft, time and place of measurements, positions of microphones, aircraft operational conditions during measurements, etc. It should also take the community measurement data into consideration and compare and contrast different sources of data.

3. Need for actual noise measurement data

Once the details of noise measurement data are provided, the public and affected communities should have the opportunity to determine whether or not "the library of noise measurement data" the

[6] Page 1 of the same reference, accessed on 12/9/2016 from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA406645

computer model draws from is scientifically adequate as a basis for all calculations to evaluate noise impacts. If not, the Navy needs to conduct actual near-field and far-field noise measurements of Growlers under varying operation conditions on site and nearby.

Though objectionable, the fact that the draft EIS did not provide data transparency on jet noise was not surprising. In April 2009, the blue ribbon Naval Research Advisory Committee (NRAC) panel on jet engine noise reduction found that "[t]here has never been a requirement for engine noise in the design of engines for tactical jet aircraft, nor does the Navy measure or maintain an engine noise data base for tactical aircraft. The Air Force does maintain the only known acoustic database which includes both tactical and transport aircraft, including many Navy aircraft. This database has flyover measurements and some near-field measurements from engine run-ups. There have not been Navy requirements for similar measurements other than providing an environmental impact statement for the surrounding community."[7]

The NRAC went on to recommend that while "[t]here are currently standards for outdoor far-field noise measurements established by the American Society for Testing and Materials and the American National Standards Institute which are applicable to commercial type aircraft, [s]tandards must be established for acquiring near-field, far-field ground run-up, and flyover noise for tactical jet aircraft. Tactical jet aircraft can have higher noise directivity variations that existing far-field measurement standards for commercial aircraft do not address, and there are no standards for acquiring near-field aircraft noise data. Methods for quantifying near-field, high-amplitude sound levels for sources that vary in time and space will need to be defined. Emphasis should be given on developing methods to enable valid comparisons of noise levels among aircraft."[8]

In sum, NRAC's findings highlighted the Navy's lack of jet noise data measurements, lack of consistent measurement methodology and standards, and lack of jet noise database and its proper maintenance. NRAC's insightful assessments and sensible recommendations were made to the Navy since April 2009. If the Navy has not acted on the NRAC's recommendations, it could start now with taking proper Growler noise measurements as a key input into preparing a scientifically and legally defensible draft EIS.

Recommendations: The Navy should identify consistent methodology for jet noise measurements and conduct proper measurements for the purpose of completing the draft EIS. The Navy should incorporate in its practices the other recommendations put forward by NRAC to reduce jet noise from its tactical aircraft.

4. **Inclusion of operational strategies for jet noise reduction**

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[7] Naval Research Advisory Committee (NRAC), *Report on Jet Engine Noise Reduction*, April 2009. Accessed on 12/3/2016 from https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20020024448.pdf

[8] Ibid.

In addition to the recommendations mentioned above, NRAC in the same study[9] offered many other useful strategies for the Navy to reduce jet noise from Growlers and other aircraft, including:

- Commercial aircraft use a procedure called "cutback" in which engines are throttled back just after takeoff. The aircraft then climbs at a slower rate until away from the airport community and then resumes a higher climb rate. This procedure is perhaps the most promising and practical for reducing noise near military air fields because it does not require changes to the aircraft – and can reduce jet noise by 10 dB or more.
- Eliminating afterburner during takeoff will also provide a significant noise reduction benefit. Afterburners increase the jet noise levels by 5 to 10 dB above military power.
- Retrofit all F/A-18 F-414 engines with chevrons on the exhaust nozzles to reduce noise by 3 dB.
- The Navy should have a policy to systematically measure or maintain an engine noise data base for all tactical aircraft.

In addition, NAVFAC (Naval Facilities Engineering Command) in its June 2009 study has found that Noise Attenuating Device (NAD) could reduce pollution emissions from both particulates and NOx as well as reduce jet engine noise by more than 20 dB. NAD fabrication also costs only 6% of a typical "hush house" installation, making it very cost-effective.[10] Noise mitigation measures should certainly include NAD for Growlers.

Additional long-term measures relating to the design and procurement of tactical jet aircraft are discussed as an appendix to this letter.

Recommendations: The draft EIS incorporate the operational strategies for effective jet noise reduction as recommended by the NRAC and NAVFAC, as discussed above.

5. More complete and accessible presentation of noise assessment results

The noise metrics used in this draft EIS to present the results of the NOISEMAP modeling are Day-night Average Sound Level (DNL), Equivalent Sound Level (Leq), sound exposure level (SEL), maximum A-weighted sound level (Lmax) and Number of Events above a Threshold Level. These metrics are helpful but incomplete and insufficient. There are other metrics that, if included, would provide a more complete picture of noise exposures. These include C-weighted Sound Exposure Level , Effective Perceived Noise Level (see sample below), and Weighted Equivalent Continuous Perceived Noise Level.

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[9] Ibid.

[10] NAVFAC 2009, *Reduction of Noise from the J052 and F-404 Jet Engines During Static Testing Using the Noise Attenuation Device (NAD)*. Accessed on 12/3/2016 from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA527661

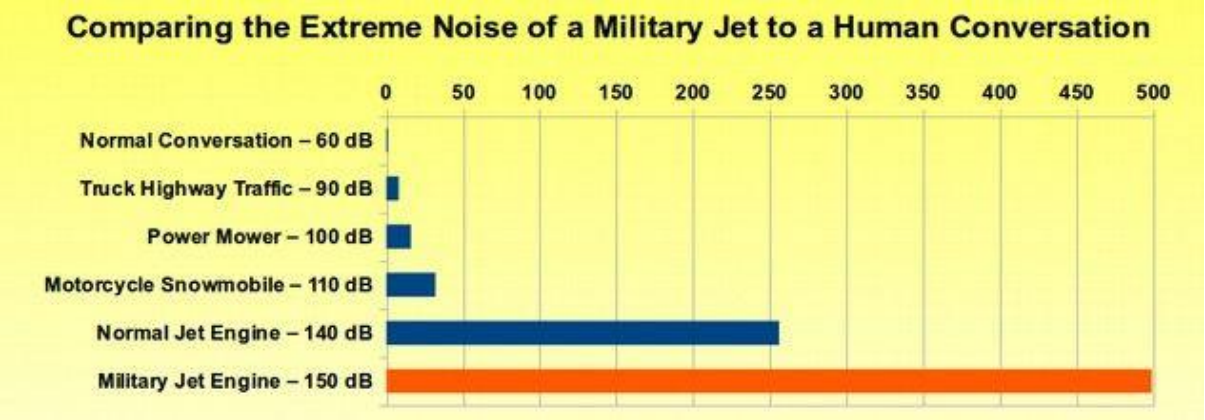

Figure 1 The scale of the bar graph in this figure is based on perceived noise level.

These metrics are part of the featured outputs of the Advanced Acoustic Model (updated version of NOISEMAP) and can be easily created by the program. To make the noise metrics more easily understood by laypeople, the program also provides options of presenting the modeling results in graphical formats that are visual and accessible, such as noise contour animation video (see a sample snapshot below).

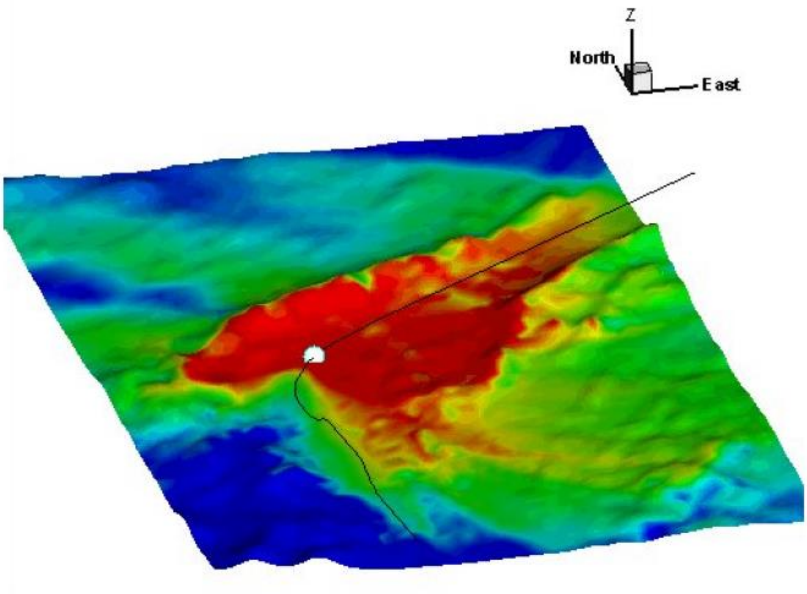

Figure 3-9. Ground Noise at a Single Time in a Video Animation

In addition, it is very important that the public and affected community members know and understand the profile of sound levels across the different frequency spectrums. Different frequency sounds or vibration have different impacts, health or otherwise. The two figures below show equivalent sound levels of different frequency sounds. The results are based on sound measurements from a test of a

F404 jet engines used in fighter jets "Hornets".[11] As seen in the following two graphs (red bars for unattenuated sound, from positions 90 feet and 2 miles away respectively) , high thrust engines not only have audible noise impacts but also inaudible low-frequency "windows rattling" pressure waves.

Notice how the inaudible (below 20 Hz) frequencies may be even "louder" if the graph the continued to the left. It is also worth noting that lower frequency sound waves travel through air much better higher frequency ones (see Figure 4.14). If this kind of detailed visual presentation of noise profile from Growler operations would be very helpful for readers to have a more complete understanding of the noise impacts. It is important that the Navy provide a similar set of frequency spectrum sound levels for Growlers as shown in Figures 4.13 and 4.14 below, but with even wider range for low frequency sound waves. Because F414 engines used in Growlers have about 35% more thrust than F404 engines, the noise impacts, near-field and far-field, are likely to be more pronounced, particularly in the low frequency region?

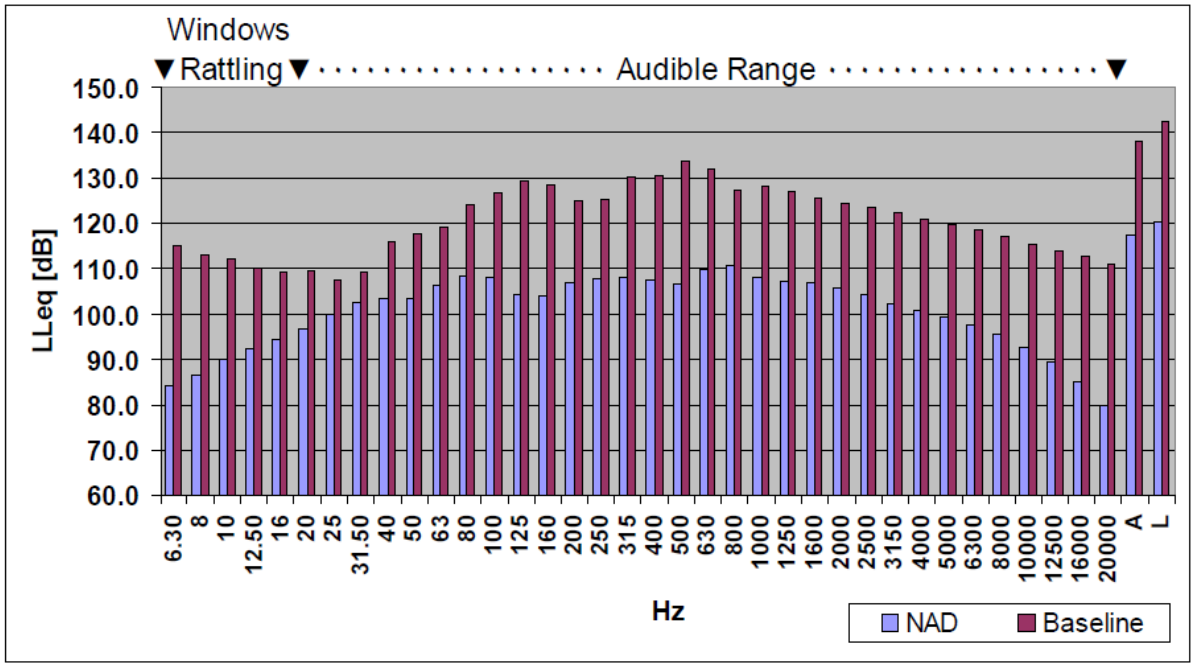

Figure 4.13 Near-Field Noise Reductions with NAD and F-404 Engine @ afterburner at a distance of 90 feet.

[11] NAVFAC 2009, *Reduction of Noise from the J052 and F-404 Jet Engines During Static Testing Using the Noise Attenuation Device (NAD)*. Accessed on 12/3/2016 from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA527661

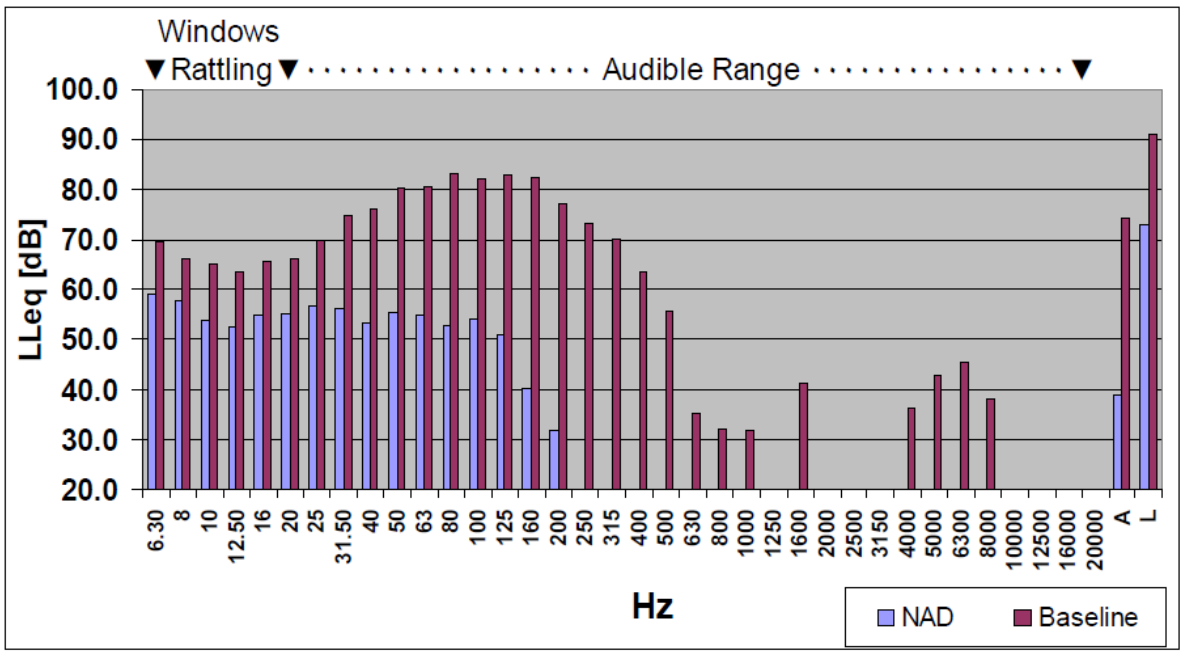

Figure 4.14 Far-Field Noise Reductions with NAD and F-404 Engine @ afterburner & 2 miles.

Recommendations: The draft EIS should include a more comprehensive list of sound metrics (including frequency spectral distribution of sound levels that cover inaudible low-frequency range, and C-weighted Sound Exposure Levels) and present them in more visual and easily accessible formats.

6. Ongoing noise monitoring and reports

In Australia, the Department of Defense has an ongoing sound monitoring and noise report programs as an added measure of accountability to ensure that the actual noise from flight operations do not exceed the levels predicted in the Public Environment Report (the Australian equivalent of EIS).[12]

This is a best practice that the Whidbey NAS could consider incorporating in the EIS and as an ongoing measure if the proposed action is approved.

Recommendations: Incorporate an ongoing noise monitoring and annual Growler noise reports as seen in the Australian example.

7. Page number of the draft EIS report

One of the laws and regulations this draft EIS is supposed to comply with is CEQ Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508). Section 1502.7 of CEQ Regulations on page limits states that "The text of final environmental impact statements…shall

[12] See the 2014 Annual Super Hornet Noise Report for example at http://www.defence.gov.au/AirCraftNoise/_Master/Docs/Environment/2015-11-26%20-%20ASH%20Noise%20Report%202014.pdf

normally be less than 150 pages and for proposals of unusual scope or complexity shall normally be less than 300 pages."

This draft EIS comprises two volumes each over 700 pages. Yet, it fails to provide essential information such as the noise measurement data, as discussed above. Was the EIS written in such a lengthy format in order to obscure the lack of essential data? To be incompliance with pertinent laws and regulations, the final EIS needs to be more substantial yet significantly more succinct. Because the draft EIS is significantly out of compliance with CEQ Regulations on page limits, the Navy should, at the very least, allow more time for citizens to review and comment on the EIS.

Recommendations: The Navy should allow more time for citizens and affected community members to review and comment on the 1,500-page draft EIS. In revising the draft EIS, the Navy should be significantly more succinct to be in compliance with Section 1502.7 of CEQ Regulations for Implementing NEPA.

8. *Total number of Growlers at NASWI

*At the Navy's Open House public meeting on Lopez Island on December 7, 2016, I had a chance to talk to a senior officer in uniform who I learned was from Norfolk, VA (Naval Facilities Engineering Command Atlantic?). He informed me that there were currently over 100 Growlers already stationed at NASWI, and that the number would increase to roughly 160 when all the procured Growlers were manufactured, tested, and flown one by one to Whidbey Island. Based on the draft EIS, there will be a maximum of 118 Growlers in active operations. If the total number of procured Growlers to be stationed at NASWI is 160 as I was informed by the senior officer, this means the remaining 42 Growlers will be "spare"? Given the costs involved, it is difficult to believe that 42 spare Growlers are needed for an active fleet of 118. Is it possible that additional Growlers may be further added to the current proposed addition of 35-36 Growlers to the existing 82 in active operations? If so, why is there no mention in the current EIS process? If not, what kind of maintenance routines would be needed to keep spare Growlers in good working conditions year after year? Do they have to be "run" occasionally to keep engines in working order? At a minimum, the draft EIS should include a description of the maintenance routines of these spare Growlers and an analysis of their potential environmental impacts, including noise and air emissions.

***Recommendations:** The Navy should provide details regarding plans for all the 160 Growlers at NASWI in the draft EIS, at least for the accumulative impact analysis to be complete and meaningful. The draft EIS should also include impact analysis of the maintenance routines of spare Growlers.

In conclusion, the draft EIS is incomplete and has such serious analytical deficiencies—including the usage of flawed, outdated NOISEMAP as the main modeling tool to produce all noise exposure assessments, the lack of transparency around "the library of noise data" from which the NOISEMAP model draws, and the lack of empirical noise measurements of Growler operations—that the noise assessment results are found to be untrustworthy. Such questionable noise exposure results preclude any meaningful review of consequent noise impacts. To achieve compliance with NEPA and other relevant laws, the Navy will need to redo the noise assessment analysis using an improved, updated model like AAM and possibly making necessary empirical noise measurements of Growler operations. Otherwise, the noise exposure and impact analyses are unlikely to be scientifically or legally defensible.

CEQ Regulation 1502.9 (a) states that "If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion." **In light of such inadequacies of this draft EIS as discussed above and the need for a significant revision, the Navy must issue a revised draft EIS, at least for the portions pertaining noise impacts, to be compliant.** Only after a properly revised EIS is issued can citizens and affected community members meaningfully review and comment on the Navy's analysis of noise impacts resulting from the proposed action and alternatives of adding 35 to 36 Growlers.

Thank you for your consideration and action on my questions, comments and recommendations.

Yours sincerely,

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Enclosure Appendix: Long-term strategies for noise reduction

Appendix: Long-term strategies for noise reduction

Beyond the scope of this EIS and Growler operations at Whidbey NAS are issues that the Navy should address in the procurement process for tactical jets for successful long-term reduction in noise. The following recommendations by the NRAC warrant special attention:

- There should be a requirement for engine noise in the design of engines for tactical jet aircraft.
- The development and application of high fidelity prediction tools is critical to the understanding of jet noise source mechanisms and the ability to evaluate noise reduction concepts. This is deemed to be an essential step to reducing jet engine noise beyond 3-5 dB.
- The propulsion community (i.e., government, industry and academia) agree that in order to achieve significant reductions in tactical jet engine noise, a path similar to that followed by commercial aviation must be followed. This involves the airframe prime contractor (e.g. Boeing) having the responsibility for the noise signature of the airplane. Today the engine is developed and procured as government furnished equipment (GFE) to the airframe prime contractor. As a result the airframe prime contractor does not have total system design responsibility. How the engine is integrated into the airframe can have a big impact on the total noise signature of the aircraft. The DOD strategy has been to separately specify and contract for the performance and signature requirements of the aircraft and its propulsion system. This acquisition strategy leaves no one company responsible for successfully meeting the full system of systems requirements.
- Unfortunately, acoustic signatures have not been critical performance parameters in military tactical aircraft system development programs. For future aircraft programs, concern should be paid to acoustic signature effects on the hearing of Navy Sailors and Marines as well as the environmental effects on the local air base communities. The Navy must rethink how to incorporate lower noise signatures into a full system parameter requirement. This new contracting strategy will allow the prime contractor, in concert with the propulsion system contractor, to initially tradeoff the contributions of the various signature elements with the normal system performance elements (e.g., speed, range, and maneuver) and perform a system level optimization taking all elements into consideration. Without integrating all performance and signatures together, there cannot be a system of systems optimization. In order to make significant reductions in aircraft noise, aircraft system contracts need to specify a noise requirement. This can be done by establishing noise as a Key Performance Parameter (KPP) and incentivizing the prime contractor and the propulsion system subcontractor to develop designs which meet this KPP.

Though NRAC's recommendations in 2009 were not yet implemented, it is not too late for the Navy to start now. The draft EIS mentioned more than once that "it is Commanding Officer, NAS Whidbey Island policy to conduct required training and operational flights with as minimal impact as possible, including noise, on surrounding communities." Such a successful long-term implementation of the said policy, it is essential that the Navy take into serious consideration and act upon the recommended strategies for reduction jet noise impacts on its own personnel and surrounding communities.