

**Comments on Expanded Growler Environmental Impact Statement for
Naval Air Station Whidbey Island
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1. Adequacy of EIS Disclosure of Information About Aircraft Noise-Induced Annoyance

Section A1.3.1 of the EIS (Appendix A1, page A1.23) states that

“Schultz’s original synthesis included 161 data points. Figure A-8 compares revised fits of the Schultz data set with an expanded set of 400 data points collected through 1989 (Finegold et al., 1994). The new form of the curve is the preferred form in the U.S., endorsed by FICAN (1997). Other forms have been proposed, such as that of Fidell and Silvati (2004), but these have not gained widespread acceptance.”

The Navy is correct that the so-called FICON (1992) curve is the dosage-response relationship preferred for policy reasons in the U.S., but its EIS misleads readers by claiming that the FICON curve “has gained widespread acceptance.” To the contrary, the FICON curve has been known for years to be obsolete and demonstrably incorrect. The dated boilerplate text of Appendix A mis-states and mis-informs readers of the Navy’s EIS about the relationship between aircraft noise exposure and the prevalence of a consequential degree of aircraft noise-induced annoyance.

Appendix A of the Navy’s EIS proffers only obsolete and incorrect information, while ignoring the last quarter century of technical progress in understanding and predicting aircraft noise effects. The cited dosage-response relationship, derived from information available prior

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to 1989 and favored by the Navy for self-interested policy reasons², has long since been superseded by subsequent research and analysis. The latter efforts include a recent revision of an international technical consensus standard (the International Organization for Standardization's ISO 1996-1:2016), about which the Navy's dated boilerplate text is silent.

An accurate description of the technical literature on aircraft noise-induced annoyance more current than that of Appendix A would reveal that both the European Union's and ISO's dosage-response relationships demonstrate that the prevalence of high annoyance with aircraft noise is far greater than FICON's 1992 relationship at a noise exposure level of $L_{dn} = 65$ dB³. In fact, a relationship published only a year after the U.S. Federal Interagency Committee on Aircraft Noise endorsed the 1992 FICON relationship (that of Miedema and Vos, 1998), has long been a European Union standard.

The information of which readers of the Navy's obsolete boilerplate text are *not* informed directly contradicts and makes a mockery of the Navy's claim that "*...this EIS uses the best available science as required under NEPA to develop an accurate analysis of potential noise impacts from the Proposed Action.*" The Navy's repeated claims on pages M12-13 of the EIS that:

² The Federal Interagency Committee on Noise ("FICON"), as well as its predecessor and successor organizations (FICUN and FICAN, respectively) are self-appointed committees of agencies with administrative interests in transportation noise policy. The committees lack a direct Congressional charter to coordinate national policy for aircraft noise regulation. FICON's predecessor committee, FICUN, was founded primarily to advance the policy interests of its member agencies, in part by supplanting the role of the Committee on Hearing, Bioacoustics, and Biomechanics of the National Academies of Science as an authoritative source of information about environmental noise impacts. The Federal Aviation Administration, an agency chartered in 1958 specifically to promote the interests of civil aviation, is a prominent member of FICON. So is the U.S. Department of Defense, whose interests include minimizing potential restrictions on Air Force and Navy flight activity due to adverse community reaction to aircraft noise exposure.

³ $L_{dn} = 65$ dB is of particular interest because it serves as the Navy's definition of "significant" noise exposure. FICON's dosage-response relationship predicts that 12.3% of the population describes itself as highly annoyed at a level of $L_{dn} = 65$ dB. As described later, it has long been known that this percentage is a substantial under-estimate of the actual prevalence of high annoyance with aircraft noise exposure.

The definition of a threshold of "significance" of noise exposure is nonetheless useful to the Navy, for reasons having nothing to do with the actual prevalence of aircraft noise-induced annoyance in communities. By arbitrarily defining $L_{dn} = 65$ dB as a threshold of significance of noise impacts, the Navy can avoid disclosure and description of aircraft noise impacts at lower exposure levels in NEPA-mandated disclosure documents.

“The EIS analysis was prepared using the best available data available at the time of preparation...” and

“While the Navy recognizes that best available data have the potential to be updated at any time, the information presented in this analysis is sufficient for decision makers to accurately assess the impacts for each alternative at this time”

are both demonstrably incorrect. In reality, the Navy’s EIS is based on outdated (1992-vintage) and incorrect technical information that greatly under-estimates the prevalence of aircraft noise-induced annoyance associated with the Proposed Action. The failure of the EIS to disclose accurate technical information to decision-makers renders the document unfit for NEPA purposes.

The Navy’s claim that *“DNL has been determined to be a reliable measure of long-term community annoyance with aircraft noise...”* is also misleading. DNL-based predictions of aircraft noise-induced annoyance prevalence rates in communities are known to account for less than half of the variability from community to community in annoyance prevalence rates (Fidell *et al.*, 2011). The Navy’s further claim that *“a consistent relationship exists between DNL and the level of annoyance experienced”* is merely dated and self-referential truth by assertion. At noise exposure levels lower than $L_{dn} = 65$ dB, the correlation between DNL and the prevalence of high annoyance in communities is non-existent (*cf.* Figure 6 of Fidell, 2003).

2. Navy Claims About Average Busy Day Noise Estimates

Section 3.1.2.2.1 of the EIS asserts that the Average Busy Day *“measure of operational levels is highly conservative by accounting for noise only when flight operations occur and concentrating on those days when flight operations exceed the average number of flights for that airfield.”* This assertion is logically equivalent to noting that *“the Annual Average Day measure of operational levels is highly misleading by including noise on days when few flight operations occur, including days when flight operations are far fewer than the average number of flights for that airfield.”*

In the context of an environmental impact disclosure document, what the Navy refers to as *“accounting for noise”* properly means *“disclosing the effects of noise on people.”* Sleep and speech interference are immediate, not cumulative, effects of aircraft noise exposure. People do not wait for the end of the year to awaken; they are awakened by aircraft noise when it occurs, not after the cumulative noise exposure created by a year’s worth of FCLP flight operations. Similarly, individual FCLP flight operations interfere with speech in real time, not during some mathematical fiction of an annualized noise exposure period.

By analogy, a pedestrian’s odds of being struck by a car while crossing a busy street against a red traffic light cannot be meaningfully reduced simply by including in the calculation

the odds of being struck in a crosswalk while protected by a green light. This is because it makes no sense to combine the probabilities of being struck by a car while pedestrians cross the street with and against the traffic light. The critical issue is *not* the total time pedestrians spend in crosswalks, but whether traffic stops while they cross.

Similarly, the probability of awakening due to the noise of FCLP operations cannot be meaningfully reduced by including time periods in the odds calculation during which no FCLP operations occur. To paraphrase the Navy's illogic in terms of the above analogy, *"estimating the odds that a pedestrian will be struck by a car in a crosswalk only while traffic is flowing through the intersection is highly conservative, because it concentrates on those times when both pedestrians and cars are present in crosswalks."* It is not "highly conservative" to calculate the odds of being struck by a car in a crosswalk only at times when both cars and pedestrians are present in a crosswalk; it is the most appropriate way to estimate the odds of being struck while crossing a street against a red light.

Given that the proper goal of an environmental impact assessment document is to disclose environmental impacts, it is misleading to under-estimate immediate impacts by averaging them over inappropriately long time periods which include lengthy periods when no aircraft noise is present. For example, it defies logic to hold that the odds of being awakened by the noise of FCLP operations can be reduced by including time periods during which no FCLP operations occur. If the point of this practice is to caution readers of the EIS that FCLP practice does not occur on all nights of the year, it would be more forthright and logical for the Navy to calculate and disclose such noise impacts on nights that FCLP operations actually occur, and then point out that "...such operations only occur a small number of times a year." Instead, the Navy chose to mislead readers of its EIS about a major noise impact.

3. Spurious Distinction Between AICUZ and EIS Purposes

The Navy seeks to justify its reliance on annual average day estimates of noise exposure (rather than annual busy day noise exposure estimates of noise exposure) by drawing an irrelevant distinction between the purposes of AICUZ and NEPA documentation. The Navy maintains that it has adopted Average Busy Day calculations for routine use in AICUZ documentation for the purpose of making "the most conservative assumptions regarding projected airfield operations", while the intent of its EIS "is to support informed decision-making regarding the Proposed Action." Such a distinction is legalistic persiflage that undermines the intent of the National Environmental Policy Act.

The Navy argues that conservative assumptions about predicted noise exposure levels are appropriate in the case of AICUZ studies to preclude potential future community

development from encroaching on its airfields. It simultaneously asserts that such assumptions are somehow inappropriate for preventing the noise of airfield operations from encroaching on communities. The common underlying issue in both cases is encroachment. The purpose of an EIS, unlike that of an AICUZ study, is *not* to support the Navy's flying mission, but to disclose foreseeable noise impacts of proposed actions.

The Navy's argument about the inappropriateness of noise modeling assumptions is a disingenuous one. The argument is tantamount to an admission that the Navy adopts conservative noise exposure assumptions when it wishes to produce aircraft noise exposure contours that are as large as possible, but that it prefers other assumptions when it wishes to produce aircraft noise exposure contours that are as small as possible. Decision makers reviewing environmental impact disclosure documents require accurate and unbiased information, even when noise modeling assumptions that the Navy characterizes as "conservative" (*i.e.*, average busy day) do not suit the Navy's preferences for gaming the system by manipulating the size of aircraft noise exposure contours.

The Navy's further contention that a "common measure" (that is, a common set of exposure assumptions) is required because of interactions between Ault Field and OLF Coupeville is equally spurious. The Navy could as reasonably have based its noise exposure estimates on average busy day conditions at *both* airfields.

The Navy's concluding argument – that U.S. Air Force policy currently favors annual average day rather than average busy day noise estimates – is likewise unpersuasive. Unlike the Navy, the Air Force does not regularly conduct nighttime field carrier landing practice exercises at its airfields. The purpose of documentation prepared for NEPA is to disclose to decision-makers actual noise impacts, not to suit Air Force or Navy preferences for under- or over-statement of noise exposure, as may be convenient for various other reasons.

4. Other Mis-Statements of Essential Technical Information

Appendix A of the EIS states that "*DNL has been determined to be a reliable measure of long-term community annoyance with aircraft noise and has become the standard noise metric used by the FAA, USEPA, DoD, Federal Interagency Committee on Noise, American National Standards Institute (ANSI), and World Health Organization, among others, for measuring noise impacts...*" The statement is partially correct, but does not begin to inform readers of the limitations of DNL-based predictions of community reaction to short term, intermittent aircraft noise exposure such as that created by nighttime FCLP operations.

For example, the EIS does not inform readers that DNL is only one of the noise metrics that FICON considers relevant. FICON (1992) explicitly states that "*DNL is sometimes*

supplemented by other metrics to characterize specific effects on a case-by-case basis.⁴ This may include the cumulative metric of L_{eq} (Equivalent Sound Level) for varying representative time periods. Single event metrics used for supplemental analysis may include SEL (Sound Exposure Level), Third Octave Band Sound Pressure Level (SPL), L_{max} (A-weighted Maximum Sound Level), and TA (Time Above - expressed in minutes for which aircraft-related noise exceeds specified A-weighted sound levels).” Other DNL-like variants, such as CNEL and DENL, are commonly used in non-federal U.S. jurisdictions and elsewhere for predicting community response to transportation and environmental noise.

More importantly, however, the boilerplate language of the EIS misleadingly fails to inform readers that not all of the cited agencies which rely on DNL “for measuring (*that is, predicting*) noise impacts” agree on the same interpretive criteria for assessing noise impacts. The recent World Health Organization’s “Noise Guidelines for the European Region” (Guski *et al.*, 2018; WHO, 2018), for instance, adopts the equation below for estimating the percentage of the residential population highly annoyed (“%HA”) by aircraft noise exposure:

$$\%HA = -50.9693 + 1.0168 (L_{den}) + 0.0072 (L_{den})^2$$

At an L_{den} value of 65 dB (an exposure level approximately a decibel greater than a DNL value of 65 dB), WHO predicts that about 46% of the residential population is highly annoyed by aircraft noise. FICON, on the other hand, predicts that only 12.3% of the population is highly annoyed at the same noise exposure level. Both the latest revision of the ISO 1996-1:2016 international technical consensus standard and the European Union predict that about 27% - 29% of residential populations are highly annoyed by aircraft noise at the same exposure level.

For NEPA purposes, a forthright defense of reliance on a long-term, cumulative measures of noise exposure to predict adverse community reaction would clearly distinguish between the measure itself, and the interpretive criteria that the sponsor of a proposed action applies to the noise metric.

The Navy’s EIS misleads readers and fails to meet the requirements of NEPA by:

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Recall that for NEPA purposes, noise exposure estimation is merely a means to an end – prediction of noise impacts. It is difficult to imagine a case that merits closer examination than predicting noise impacts for FCLP operations on the basis of annual average day noise exposure calculations. FCLP operations violate all of the conventional assumptions of annual average day noise exposure calculations. They occur episodically, rather than day-in/day-out; are intermittent (on a long-term basis) rather than continuous; are often conducted during nighttime hours; and a principal noise impact of FCLP flights (sleep disturbance) is atypical of the effects of the Navy’s customary weekday/daytime flight operations.

- 1) relying on obsolete and incorrect information to define the significance of aircraft noise impacts, in violation of NEPA requirements for basing impact disclosures on the best available scientific information about aircraft noise effects;
- 2) ignoring that more recent dosage-response relationships indicate far greater annoyance prevalence rates than the 1992 FICON relationship predicts at the same aircraft noise exposure levels; and
- 3) using a definition of “significant” noise impact that is an arbitrary, non-technical one that has nothing to do with any particular dosage response relationship (and in fact, antedates the 1992 FICON relationship by four decades, as explained by Fidell, 2015).

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