

Growler EIS Questions and Answers

Noise

Q. What is sound?

A. Sounds are vibrations transmitted through air, water or solids. Sound has two key characteristics – frequency and loudness.

Q. What is noise?

A. Noise is a sound that is loud or unpleasant or that causes disturbance.

Q. What are potential impacts of noise?

A. The combinations of loudness and extended exposure to noise can cause hearing loss. Other potential responses include annoyance, sleep deprivation, nervous, hormonal and vascular changes. Strong low frequency noise can have deleterious impacts even if there is not a loud hearing sensation.

Q. What is frequency?

A. Frequency, or pitch, is the number of cycles per second of the sound vibration. The measurement unit is Hertz (Hz). Higher frequency sounds are measured in kilohertz (kHz) or 1,000 Hz. Most sounds, whether a human voice or a jet plane, are complex and contain multiple frequencies at different loudness levels.

Q. What range of frequencies can humans hear?

A. The commonly stated range of human hearing, or bandwidth, is 20 Hz to 20 kHz. Humans are most sensitive to frequencies between 2 kHz and 5 kHz. Individual hearing range varies according to the general condition of a human's ears and nervous system.

Q. How is sound measured?

A. Sound pressure is the local pressure change from the ambient atmospheric pressure, caused by a sound wave. It varies with the distance from the sound source and other factors. A calibrated microphone and sound level meter are used to measure **Sound Pressure Level (SPL)**. SPL is a logarithmic measure of the sound pressure relative to a reference value. The unit of measure is the **decibel**, abbreviated **dB**. In this system, an increase of 3 dB corresponds to a doubling of the SPL. For example, increasing a sound from 65 dB to 68 dB indicates that the SPL is doubled.

Q. What are typical sound levels?

A.	
Quietest outdoor place in Olympic National Park	10 dBA
Quiet rural area	30 dBA
Quiet suburb or conversation at home	50 dBA
Vacuum cleaner	70 dBA
Boeing 707 at one nautical mile before landing	100 dBA
Military jet takeoff from carrier with afterburner at 50 ft.	130 dBA

Q. How do humans perceive loudness?

A. While the human ear and brain respond to the Sound Pressure Level, its perception is also linked to frequency, bandwidth and duration of the sound. If the measured Sound Pressure Level is doubled, it will be perceived as louder, but not necessarily twice as loud.

Q. What is Frequency Weighting?

A. Weighting emphasizes the contribution of some aspects of a phenomenon to a final effect or result. In the measurement of loudness a weighting filter is commonly used to emphasize certain frequencies.

Q. What is A-Weighting?

A. The A-Weighting curve emphasizes the frequency band where the human ear is most sensitive, while attenuating high and low frequencies to which the ear is less sensitive. Results are measured in units of **dBA** Sound Pressure Level. A-Weighting significantly deemphasizes frequencies below 500 Hz, called the -3dB point. Environmental and workplace noise is typically measured with an A-weighting since it focuses where hearing damage occurs and is linked in studies to annoyance.

Q. What is C-Weighting?

A. The C-Weighting curve extends to lower frequencies, with the -3dB point at 31 Hz. Results are measured in units of **dBc** Sound Pressure Level. C-Weighting is sometimes used in situations where the noise has a significant low frequency content, such jet engine noise, where adverse biological impacts may occur even if the hearing perception is not significant.

Q. What is Sound Averaging?

A. In industrial noise measurement, time-averaged values over some interval (seconds, minutes or hours) are typically used. This is called the “equivalent continuous sound level.”

Q. What is Day-Night Average Sound Level?

A. The **day-night average sound level** (Ldn or DNL) is the average noise level over a 24-hour period. The noise between the hours of 10 pm and 7 am is increased by 10 dB to take into account the decrease in community background noise of 10 dB during this period. The Federal Aviation Administration has established this measure as a community noise exposure metric to aid airport noise analyses under FAA Regulation Part 150. The FAA says that a maximum day-night average sound level of 65 dB is incompatible with residential communities.

Q. How is Peak Noise Measured?

A. Most national industrial hygiene regulations call for the absolute peak value of noise (LCpeak) to be measured to protect workers hearing against sudden large pressure peaks, using either 'C' or 'Z' (flat, no de-emphasis) frequency weighting.

Q. What is Short Leq?

- A. Almost all fixed airport noise monitoring systems, use short L_{eq} as their metric, recording a steady stream of one second measurements. The recorded data can then be processed as desired, for example to present the average sound level over an event such as a takeoff or flyover.

Aircraft Operations

Q. What are Afterburners?

- A. An **afterburner** is an additional component present on some jet engines. Its purpose is to provide an increase in thrust, usually for supersonic flight, takeoff and for combat situations. Afterburning is achieved by injecting additional fuel into the jet pipe after the turbine.

Q. What is Field Carrier Landing Practice (FCLP)?

- A. FCLP is a training exercise to practice landing and takeoff of an aircraft from a simulated carrier landing deck. A normal FCLP consists of about eight to 12 touch-and-goes and lasts about 45 minutes. Up to five aircraft fly during an FCLP. In North Puget Sound these exercises are conducted at the two airfields on Whibey Island.

Q. What is Controlled Carrier Approach (CCA)?

- A. The CCA uses the ship's precision approach radar for landing aircraft during poor visibility. Pilots are told via voice radio where they are in relation to glideslope and final bearing. The pilot then makes a correction and awaits further information from the controller. In North Puget Sound CCAs are practiced at the two airfields on Whibey Island.

Environmental Impact Statement

Q. What is an Environmental Impact Statement?

- A. An **Environmental Impact Statement (EIS)** is a tool for decision making under the National Environmental Policy Act (NEPA). It describes the positive and negative environmental effects of a Proposed Action. The procedures for conducting an EIS are in regulations established by the federal Council on Environmental Quality (CEQ).

Q. What is an Environmental Assessment?

- A. An **Environmental Assessment (EA)** is another tool for decision making under NEPA that briefly provides sufficient evidence and analysis for determining whether to prepare a full EIS. It aids an agency's compliance with NEPA when an EIS is deemed not necessary.

Q. What is Purpose and Need in an EIS or EA?

- A. The **Purpose and Need** section explains what the agency intends to accomplish. It is the basis for implementing a Proposed Action.

Q. What is the Proposed Action?

- A. The "agency's preferred alternative" is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. This may also be the **Proposed Action** before analysis in the EIS.

Q. What Alternatives Must be Considered?

- A. The CEQ regulations include the phrase "range of alternatives." It includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them. Every EIS is required to analyze a No Action Alternative.

Q. What is the No Action Alternative?

- A. The **No Action Alternative** can mean two things. It could be continuing with the present course of action until that action is changed or the proposed activity would not take place.

Q. What Mitigation Measures Must be Considered?

- A. The mitigation measures discussed in an EIS must cover the range of impacts of the proposal. The measures must include such things as alternatives that would decrease impacts. Mitigation measures must be considered even for impacts that by themselves would not be considered "significant."

Q. What is Scoping?

- A. The first meetings and other opportunities for input are held to discuss the process, available information, issues of concern, potential alternatives and the analysis needed.

Q. What is a Draft EIS?

- A. Based on agency expertise, outside experts and issues raised by the public, the agency prepares a **Draft EIS** with a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative. Affected individuals then have the opportunity to provide feedback through written and public hearing statements.

Q. What is a Final EIS?

- A. Based on the comments on the Draft EIS, the agency writes a **Final EIS**, and announces its **Proposed Action**. The public is not invited to comment on this, but if they are still unhappy, or feel that the agency has missed a major issue, they may protest the EIS to the Director of the agency.

Q. What is a Record of Decision?

A. Once the Final EIS is published and all the protests are resolved the agency issues a **Record of Decision** which is its final action prior to implementation. If members of the public are still dissatisfied with the outcome, they may sue the agency in Federal court.