

Glossary of Commonly Used Acoustic and Air Traffic Control Terms

Acoustic Terms

Decibel (dB) is the unit of sound pressure used to measure noise. Decibel means 1/10 of a Bell, after Alexander Graham Bell (thus the capital B). Because decibels are such a small measure, they are computed logarithmically and cannot be added arithmetically. An increase of ten dB is perceived by human ears as a doubling of noise.

dBA or A weighted decibels adjusts the sound pressure to conform with the frequency responses of the human ear. Airport noise is almost always measured in dBA.

dBC or C weighted decibels adjusts the sound pressure to reflect the lower frequency bands. C weighting can be used to measure such things as engine run ups and reverse thrust noise.

DNL is day/night noise level which was previously known as Ldn. This is a 24 hour average hourly noise level with a 10 decibel (dB) penalty for nighttime noise events between 10 PM and 7 AM.

DNL contour is the "map" of noise exposure around an airport. It is computed through an FAA model called the Integrated Noise Model (INM) which calculates the annual noise exposure from an input consisting of the actual fleet operated at the airport, the runway use, number of operations, and time of day. FAA defines significant noise exposure as any area within the 65dB DNL contour; that is the area within an annual average noise exposure of 65 decibels or higher.

Single Event Noise is the total noise emitted by one overflight or aircraft. Each single event will have a total noise energy over the duration of the event called SEL (sound exposure level) and a peak noise level, which is the highest noise level reached by that event. It is important to distinguish single event noise levels from cumulative noise levels such as DNL. Single event noise level numbers are often higher than DNL numbers, because DNL represents an average noise level over a period of time, generally a whole year.

Time Above is an expression of the amount of time noise exceeds a threshold level. The threshold can be set at any point, for instance, 65 or 75 dBA. Generally time above is expressed in minutes per day that the threshold is exceeded.

Air Traffic Control Terms

Instrument Landing System (ILS) is a precise landing aid consisting of several components giving the pilot vertical and horizontal electronic guidance. Elements usually include: 1. an **outer marker**, a radio beam 4 to 6 miles from the touchdown point where the electronic signal begins; 2. an **approach lighting system** at the runway end; 3. a **localizer** radio beam which provides the horizontal guide; and 4. a **glide slope** which provides vertical guidance on the angle of descent for landing.

Instrument Flight Rules (IFR) govern flight procedures during limited visibility or other operational constraints. Under IFR pilots must file a flight plan and fly under the guidance of radar.

Visual Flight Rules (VFR) allow pilots to land by sight without relying solely on instruments. VFR conditions require good visibility.

North Flow refers to the pattern of air traffic at Sea-Tac when departures head north. Departures follow the Duwamish/Elliott Bay Corridor before turning either east or west. Arrivals also land to the north.

South Flow refers to the pattern of air traffic at Sea-Tac when departures head south. In this case aircraft also land to the south passing over the city of Seattle and to the extent possible over Puget Sound before reaching the Airport.

Part 36 refers to the Federal Aviation Regulation which stipulates the noise standards for the manufacture of aircraft. Three stages of aircraft are defined: stages 1, 2 and 3. Stage 1 aircraft are the noisiest and have been banned in the U.S. for many years. Stage 2 aircraft are being phased out of service in the U.S. and will be retrofitted with hush kits, fitted with quieter engines or replaced by the year 2000.

Part 91 refers to the Federal Aviation Regulation which sets the schedule for the phase out of stage 1 and 2 aircraft.

Part 161 refers to the Federal Aviation Regulation which defines the process and requirements for an airport to adopt new noise rules and regulations affecting access to the Airport by airlines and private operators. Except for grandfathered rules (those in existence before the adoption of these regulations), new rules must undergo a rigorous economic analysis and if the proposed rules affect stage 3 aircraft, they must be approved by FAA. No airport has successfully adopted a new stage 3 rule under this regulation. Seattle-Tacoma International Airport's rules and regulations are grandfathered.