

Ted Stevens Anchorage International Airport FAR Part 150 Study Update

Glossary of Common Acoustic and Air Traffic Control Terms

ADOT&PF (Alaska Department of Transportation and Public Facilities): The owner and operator of the Ted Stevens Anchorage International Airport and the preparer of this FAR Part 150 Study Update.

Air Carrier: A commercial airline with published schedules operating at least five round trips per week.

Air Taxi: An aircraft certificated for commercial service available for hire on demand.

Airspace: Space above the ground in which aircraft travel. It is divided into corridors, routes, and restricted zones.

ALP (Airport Layout Plan): The official, FAA approved map of an airport's facilities.

ALS (Approach Lighting System): Radiating light beams guiding pilots to the extended centerline of the runway on final approach and landing.

Ambient Noise Level: The existing background noise level characteristic of an environment.

ANC: The Airport Identifier Code for Ted Stevens Anchorage International Airport.

Approach Lights: High intensity lights located along the approach path at the end of an instrument runway. Approach lights aid the pilot as he transitions from instrument flight conditions to visual conditions at the end of an instrument approach.

APU (Auxiliary Power Unit): A self-contained generator in aircraft producing power for ground operation and for starting the engines.

Arrival: The act of landing at an airport.

Arrival Procedure: A series of directions from air traffic control, using fixes and procedures, to guide an aircraft from the enroute environment to an airport for landing.

Arrival Stream: A flow of aircraft that are following similar arrival procedures.

ARTCC (Air Route Traffic Control Center): A facility providing air traffic control to aircraft on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

ASR (Airport Surveillance Radar): A radar system, which allows air traffic controllers to identify an arriving or departing aircraft's distance and direction from an Airport.

ATC (Air Traffic Control): The control of aircraft traffic, in the vicinity of airports from control towers, and in the airways between airports from control centers.

ATCT (Airport Traffic Control Tower): A central operations tower in the terminal air traffic control system with an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe, expeditious movement of air traffic.

Avionics: Airborne navigation, communications, and data display equipment required for operation under specific air traffic control procedures.

Altitude MSL (Mean Sea Level): Aircraft altitude measured in feet above mean sea level.

ASNA (Aviation Safety and Noise Abatement Act): Act of Congress requiring the FAA to select one metric for describing aircraft noise levels. The FAA selected the use of the Day/Night Noise Level (DNL), which is required for use in Part 150 Noise Compatibility Planning and environmental evaluations under the National Environmental Policy Act (NEPA).

Backblast: Low frequency noise and high velocity air generated by jet engines on takeoff.

Base Leg: A flight path at right angles to the landing runway. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

Center: See ARTCC.

Commuter Airline: Operator of small aircraft (maximum size of 30 seats) performing scheduled service between two or more points.

Controlled Airspace: Airspace in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.

Decibel (dB): In sound, decibels are a measure sound pressure level on a scale from the threshold of human hearing, 0 dB, upward towards the threshold of pain, about 120 dB. Because sound pressures range over such a large range of pressure, they are computed logarithmically and cannot be added arithmetically. An increase of ten dB is generally perceived by human ears as a doubling of perceived loudness.

dBA: A-weighted decibels adjust sound pressure towards the frequency range of human hearing.

dBC: C-weighted decibels adjust sound pressure towards the low frequency end of the spectrum. Although less consistent with human hearing than A-weighting, dBC can be used to consider the impacts of certain low frequency operations.

Decision Height: The height at which a decision must be made during an instrument approach either to continue the approach or to execute a missed approach.

Departure: The act of an aircraft taking off from an airport.

Departure Procedure: A published Instrument Flight Rule (IFR) departure procedure describing specific criteria for climb, routing, and communications for a specific runway at an airport.

Displaced Threshold: A threshold that is located at a point on the runway other than the physical beginning. Aircraft can begin departure roll before the threshold, but cannot land before it.

DME (Distance Measuring Equipment): Equipment used to measure, in nautical miles, the distance of an aircraft from the DME navigational aid located on the airport.

DNL (Day/Night Average Noise Level): The daily average noise metric which describes the noise experienced during an entire 24-hour day. DNL calculations account for the single event noise of aircraft, the number of aircraft operations, and include a penalty for nighttime operations. In the DNL scale, noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by 10 dB to account for higher nighttime sensitivity to noise. DNL is required for the measurement of aircraft noise and evaluating noise during a FAR Part 150 Study.

DNL Contour: The "map" of noise exposure around an airport. A contour is computed through a FAA model called the Integrated Noise Model (INM), which calculates the annual noise exposure.

Downwind Leg: A flight path parallel to the landing runway in the direction opposite the landing direction.

Duration: The length of time in seconds that a noise event lasts. Duration is usually measured in time above a specific noise threshold.

Enroute: The portion of a flight between departure and arrival terminal areas.

FAA (Federal Aviation Administration): The FAA is the federal agency responsible for aircraft safety, movement and controls.

FAR (Federal Aviation Regulations): The rules and regulations, which govern the operation of aircraft, airways, and airmen.

FAR Part 36: A Federal Aviation Regulation defining maximum noise emissions for aircraft.

FAR Part 150: A Federal Aviation Regulation governing noise and land use compatibility studies and programs.

FAR Part 91: A Federal Aviation Regulation governing the phase out of Stage 1 and 2 aircraft as defined under FAR Part 36.

FAR Part 161: A Federal Aviation Regulation governing the ability of airports to implement restrictions based on noise.

FICAN (Federal Interagency Committee on Aviation Noise): A committee which recommended consideration of the "maximum percent of the exposed population expected to be behaviorally awakened."

FICON (Federal Interagency Committee on Noise): A Committee which recommended that sleep disturbance be assessed based on laboratory studies of sleep disturbance.

Fix: A geographical position determined by visual references to the surface, by reference to one or more NAVAIDS, or by other navigational methods.

Fixed Base Operator (FBO): A commercial business granted the right by an airport to operate and provide aeronautical services such as fueling, parking, aircraft maintenance, etc.

Fleet Mix: The mix or differing aircraft types operated at a particular airport or by an airline.

Flight Plan: Specific information related to the intended flight of an aircraft. A flight plan is filed with a Flight Service Station or Air Traffic Control facility.

GA (General Aviation): Civil aviation excluding air carriers, commercial operators and military aircraft.

Glide Slope: Generally a 3-degree angle of approach to a runway established by means of airborne instruments during instrument approaches, or visual ground aids for the visual portion of an instrument approach and landing.

GPS (Global Positioning System): A satellite based radio positioning, navigation, and time-transfer system.

GPU (Ground Power Unit): A source of power, generally from the terminals, for aircraft to use while their engines are off.

Ground Track: The seeming path an aircraft would follow on the ground if its airborne flight path were plotted on the terrain.

GRE (Ground Run-Up Enclosure): A three-sided enclosure with no roof where aircraft taxi to for the purpose of conducting an engine run-up in order to reduce the aircraft noise impacts on surrounding areas.

Hertz (Hz): The frequency of a sound. Normal audible frequency range for young adults is 20 Hz to 20,000 Hz. The human ear is not equally sensitive to all frequencies; some frequencies are judged to be louder than others. To simplify the measurement of sound loudness, frequency-weighted scales are used (See **dBA** and **dBC**).

High Speed Exit Taxiway: A taxiway designed and provided with lighting or marking to define the path of aircraft traveling at high speed from the runway center to a point on the center of the taxiway.

IFR (Instrument Flight Rules): Rules and regulations established by the FAA to govern flight under conditions in which flight by visual reference is not safe.

ILS (Instrument Landing System): A precision instrument approach system which normally consists of a localizer, glide slope, outer marker, middle marker, and approach lights.

INM (Integrated Noise Model): The model required by the FAA for use in FAR Part 150 Noise Compatibility Studies. This model uses physical and operational characteristic of an airport to model aircraft noise including: runway locations and elevations, airfield elevations, runway use, total operations, aircraft type, number of aircraft operations by aircraft type, operations by time of day, flight tracks and track use by aircraft type, flight ascent and decent profiles, average meteorological conditions, and the location of ground run-up activity.

IMC (Instrument Meteorological Conditions): Weather conditions expressed in terms of visibility, distance from clouds, and cloud ceilings during which all aircraft are required to operate using instrument flight rules.

Instrument Approach: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

Knots: A measure of speed used in aerial navigation. One knot is equal to one nautical mile per hour (1.15 miles per hour = 1 knot).

LEQ (Equivalent Noise Level): The LEQ is the energy average taken from the sum of all the sound that occurs during a certain time period.

Load Factor: The percentage of seats occupied in an aircraft.

Lmax: The maximum noise level reached by a single aircraft event.

Localizer: A navigational aid that consists of a directional pattern of radio waves modulated by two signals which, when receding with equal intensity, are displayed by compatible airborne equipment as an "on-course" indication, and when received in unequal intensity are displayed as an "off-course" indication.

Master Plan: A planning document prepared for an airport which outlines directions and developments in detail for five years and less specifically for 20 years. The primary component of this plan is the Airport Layout Plan (ALP).

Middle Marker: A beacon that defines a point along the glide slope of an Instrument Landing System (ILS), normally located at or near the point of decision height.

Missed Approach Procedure: A procedure used to redirect a landing aircraft back around to attempt another landing. This may be due to visual contact not established at authorized minimums or instructions from air traffic control, or for other reasons.

NAS (National Airspace System): The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, manpower and material.

Nautical Mile: A measure of distance used in air and sea navigation. One nautical mile is equal to the length of one minute of latitude anywhere on earth or longitude along the earth's equator. The nautical mile was officially set as 6076.115'.

NAVAID (Navigational Aid): A ground based visual or electronic device used to provide course or altitude information to pilots.

NCP (Noise Compatibility Program): A noise compatibility program includes a description and analysis of the alternative measures that the airport operator considered, an explanation regarding the reasons that the airport operator rejected any measures, and a description of the measures that the airport operator proposes to adopt to reduce or eliminate present and future non-compatible land uses.

NDB (Non-Directional Beacon): Signal that can be read by pilots of aircraft with direction finding equipment. Used to determine bearing and can “home” in or track to or from the desired point.

NEM (Noise Exposure Map): A Federal Aviation Regulation (FAR) Part 150 requirement prepared by airports to depict noise contours. NEMs also take into account potential land use changes around airports.

Noise: Defined subjectively as unwanted sound. The measurement of noise involves understanding three characteristics of sound: intensity, frequency and duration.

Noise Contour: See DNL Contour.

Noise Monitoring/Measurement: Noise measurements are not required for FAR Part 150 Studies. However, they can be used to show actual aircraft noise levels and ensuring the accuracy of the computer-based modeling. They are primarily used for the identification of single-event noise levels that can be correlated to a variety of aircraft types flying different flight paths.

Non-Compatible Land Use: The FAA and other federal agencies have established federal land use compatibility guidelines based on the Day/Night Noise Level (DNL) to identify land uses that are not compatible with certain levels of aircraft noise exposure. Noise sensitive uses such as residential areas, schools, hospitals, etc. are considered non-compatible with aircraft noise over 65 DNL.

Non-Precision Approach Procedure: A standard instrument approach procedure in which no electronic glide slope is provided.

Operation: A take-off, departure or overflight of an aircraft. Every flight requires at least two operations, a take-off and landing.

Outer Marker: An Instrument Landing System (ILS) navigation facility in the terminal area navigation system located four to seven miles from the runways edge on the extended centerline indicating the beginning of final approach.

Overflight: Aircraft whose flights originate or terminate outside the metropolitan area that transit the airspace without landing.

Preferential Runways: The most desirable runways from a noise abatement perspective to be assigned whenever possible.

Precision Approach Procedure: A standard instrument approach procedure in which an electronic glide slope is provided, such as an Instrument Landing System (ILS). GPS precision approaches may be provided in the future.

Radar Vectoring: Navigational guidance where air traffic controller issues a compass heading to a pilot.

RNAV (Required Navigational Approach): A method of navigational procedures designed to transition aircraft between an airport environment and the enroute system of airspace. RNAV procedures offer the advantages of routings that save time and fuel, reduce dependence on radar vectoring, altitude, and speed assignments, which allows for reduction in required radio transmissions with air traffic control, and more efficient use of airspace.

RNP (Required Navigation Performance): A type of performance based navigation that allows an aircraft to fly a specific path between two specific points in space. RNP requires on-board performance monitoring and alerting.

ROA (Record of Approval): The FAA issues a determination approving or disapproving each airport noise compatibility program action. Portions of a program may be individually approved or disapproved.

Run-up: A procedure used to test aircraft engines after maintenance to ensure safe operation prior to returning the aircraft to service. The power settings tested range from idle to full power and may vary in duration.

Run-up Locations: Specified areas on the airfield where scheduled run-ups may occur. These locations are sited, so as to produce minimum noise impact in surrounding neighborhoods.

Runway: A long strip of land or water used by aircraft to land on or to take off from.

Schultz Curve: The study predicting that approximately 14% of the exposed population would be highly annoyed with exposure to the 65 Day-Night Noise Level (DNL) or higher. At 60 DNL, it decreases to approximately 8% of the population highly annoyed.

SEL (Sound Exposure Level): The metric that integrates all the acoustic energy contained within a single flyover or noise event, calculated by summing the dB level each second during a noise event and compressing that noise energy into one second. This metric takes into account the maximum noise level of the event, as well as the duration of the event.

Sequencing Process: Procedure in which air traffic is merged into a single flow, and/or in which adequate separation is maintained between aircraft.

SIC (Study Input Committee): A committee including representatives from stakeholders, regulators and members of the public that will review Study documents and provide input throughout the FAR Part 150 Study Update.

SID (Standard Instrument Departure): An aeronautical chart designed to expedite clearance delivery and to facilitate transition between takeoff and enroute operations.

Single Event: Noise generated by a single aircraft overflight.

Stage Length: The aircraft departure stage length is the distance the aircraft flies from the Airport to its first destination. For noise modeling, stage length is related weight (how much gas an aircraft carries), which affects the departure climb profile (the rate of climb used to take off). Generally heavier aircraft climb at a slower rate, and this is taken into account in the noise modeling.

STAR (Standard Terminal Arrival Route): A published Instrument Flight Rules (IFR) arrival procedure describing specific criteria for descent, routing, and communications for a specific runway at an airport.

Taxiway: A strip of area (paved, gravel, etc.) that connects runways and terminals providing the ability to move aircraft so they will not interfere with takeoffs or landings.

Terminal Airspace: The air space that is controlled by a Terminal Radar Approach Control (TRACON).

Terminal Area: A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TAF (Terminal Area Forecast): The official forecast of aviation activity at FAA facilities. These forecasts are prepared to meet the budget and planning needs of FAA and provide information for use by state and local authorities, the aviation industries and the public.

Touch-and-Go Operations: An operation where an aircraft does not make a full stop after landing, but proceeds directly to take-off again. These operations are often related to flight training. One touch and go operation is counted as 2 operations, an arrival and a departure.

TRACON (Terminal Radar Approach Control): An FAA air traffic control service to aircraft arriving and departing or transiting airspace controlled by the facility. TRACONs control Instrument Flight Rules (IFR) and participating Visual Flight Rules (VFR) flights

Vector: A heading issued to a pilot to provide navigational guidance by radar. Vectors are assigned verbally by FAA air traffic controllers.

VFR (Visual Flight Rules): Rules governing procedures for conducting flight under visual meteorological conditions, or weather conditions with a ceiling of 1,000 feet above ground level and visibility of three miles or greater. It is the pilot's responsibility to maintain visual separation, not the air traffic controller's, under VFR.

Visual Approach: Wherein an aircraft on an Instrument Flight Rules (IFR) flight plan, operating in Visual Flight Rules (VFR) conditions under the control of an air traffic facility and having an air traffic control authorization, may proceed to destination airport under VFR.

VASI (Visual Approach Slope Indicator): An airport lighting facility in the terminal area navigation system used primarily under Visual Flight Rules (VFR) conditions. It provides vertical visual guidance to aircraft during approach and landing, by radiating a pattern of high intensity red and white focused light beams, which indicate to the pilot that he/she is above, on, or below the glide path.

VOR (Very High Frequency Omni-directional Range): A ground based electronic navigation aid transmitting navigation signals for 360 degrees oriented from magnetic north. VOR is the historic basis for navigation in the national airspace system.