



Meeting Packet

Regular Meeting

Jon C. Long Fly Quiet Awards

Meeting No. 318

Wednesday, April 3, 2019 - 7:00 p.m.

David Chetcuti Community Room – Millbrae City Hall
450 Poplar Avenue – Millbrae, CA 94030

Note: To arrange an accommodation under the Americans with Disabilities Act to participate in this public meeting, please call (650) 363-1853 at least 2 days before the meeting date.

AGENDA

1. Call to Order / Roll Call / Declaration of a Quorum Present

ACTION

Elizabeth Lewis, Roundtable Chairperson / James A. Castaneda, AICP, Roundtable Coordinator

2. Jon C. Long Fly Quiet Awards for 2018

Elizabeth Lewis, Roundtable Chairperson
Bert Ganoung, Noise Abatement Manager

1. Awards Recipients

pg. 15

3. Public Comments on Items NOT on the Agenda

INFORMATION

Speakers are limited to two minutes. Roundtable members cannot discuss or take action on any matter raised under this item.

CONSENT AGENDA

All items on the Consent Agenda are approved/accepted in one motion. A Roundtable Representative can make a request, prior to action on the Consent Agenda, to transfer a Consent Agenda item to the Regular Agenda. Any items on the Regular Agenda may be transferred on the Consent Agenda in a similar manner.

4. Roundtable Regular Meeting Minutes for February 6, 2019

ACTION

1. February 6, 2019 Regular Meeting Minutes

pg. 17

5. Airport Director's Reports for January & February 2019 and Fly Quiet Report 4Q 2018

ACTION

1. January 2019 Director's Report
2. February 2019 Director's Report
3. Fly Quiet Report 2018 Q4

pg. 21

pg. 27

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REGULAR AGENDA

6. Discussion with FAA Regarding Questions Provided from Roundtable Chair, email to FAA dated February 7, 2019

INFORMATION

FAA Representative(s)

Justin Cook, Roundtable Technical Consultant

1. Letter from Roundtable Chairperson dated February 7, 2019 pg. 45

7. SFO Updates

INFORMATION

Ivar Satero, Director – San Francisco International Airport

Doug Yakel, Public Information Officer – San Francisco International Airport

8. Update Technical Working Group meeting

INFORMATION

Justin Cook, Roundtable Technical Consultant

9. Update Ground-Based Noise Ad-Hoc Subcommittee

INFORMATION

Ricardo Ortiz, City of Burlingame Representative

10. Upcoming Noise 101

INFORMATION

James Castañeda, Roundtable Coordinator

OTHER MATTERS

11. Aviation Noise News and Updates

INFORMATION

Justin Cook, Roundtable Technical Consultant

12. Member Communications / Announcements

INFORMATION

Roundtable Members and Staff

13. Adjourn

ACTION

Elizabeth Lewis, Roundtable Chairperson

Correspondences / Additional Reports

1. Woodside 1Q 2019 Noise Monitoring Report pg. 49
2. Brisbane 1Q 2019 Noise Monitoring Report pg. 55
3. Portola Valley 1Q 2019 Noise Monitoring Report pg. 65
4. FAA Instrument Flight Procedures (IFP) Information Gateway Review Updates pg. 69



Welcome

The Airport/Community Roundtable is a voluntary committee that provides a public forum to address community noise issues related to aircraft operations at San Francisco International Airport. The Roundtable encourages orderly public participation and has established the following procedure to help you, if you wish to present comments to the committee at this meeting.

- You must fill out a Speaker Slip and give it to the Roundtable Coordinator at the front of the room, as soon as possible, if you wish to speak on any Roundtable Agenda item at this meeting.
- To speak on more than one Agenda item, you must fill out a Speaker Slip for each item.
- The Roundtable Chairperson will call your name; please come forward to present your comments.

The Roundtable may receive several speaker requests on more than one Agenda item; therefore, each speaker is limited to two (2) minutes to present his/her comments on any Agenda item unless given more time by the Roundtable Chairperson. The Roundtable meetings are recorded. Copies of the audio file can be made available to the public upon request. Please contact the Roundtable Coordinator for any request.

Roundtable Meetings are accessible to people with disabilities. Individuals who need special assistance or a disability-related modification or accommodation to participate in this meeting, or who have a disability and wish to request an alternative format for the Agenda, Meeting Notice, Meeting Packet, or other writings that may be distributed at the meeting, should contact the Roundtable Coordinator at least two (2) working days before the meeting at the phone or e-mail listed below. Notification in advance of the meeting will enable Roundtable staff to make reasonable arrangements to ensure accessibility to this meeting.

AIRPORT/COMMUNITY ROUNDTABLE OFFICERS & STAFF

Chairperson:

ELIZABETH LEWIS
Representative, Town of Atherton
elewis@ci.atherton.ca.us

Vice-Chairperson:

RICARDO ORTIZ
Representative, City of BURLINGAME
rortiz@burlingame.org

Roundtable Coordinator:

JAMES A. CASTAÑEDA, AICP
County of San Mateo
Planning & Building Department
jcastaneda@sforoundtable.org



About the Roundtable

The Airport/Community Roundtable was established in May 1981, by a Memorandum of Understanding (MOU), to address noise impacts related to aircraft operations at San Francisco International Airport (SFO). The Airport is owned and operated by the City and County of San Francisco, but it is located entirely within San Mateo County. This voluntary committee consists of 22 appointed and elected officials from the City and County of San Francisco, the County of San Mateo, and several cities in San Mateo County (see attached Membership Roster). It provides a forum for the public to address local elected officials, Airport management, FAA staff, and airline representatives, regarding aircraft noise issues. The committee monitors a performance-based aircraft noise mitigation program, as implemented by Airport staff, interprets community concerns, and attempts to achieve additional noise mitigation through a cooperative sharing of authority brought forth by the airline industry, the FAA, Airport management, and local government officials. The Roundtable adopts an annual Work Program to address key issues. In 2019, the Roundtable is scheduled to meet on the first Wednesday of the following months: February, April, June, August, October and December. Regular Meetings are held on the first Wednesday of the designated month at 7:00 p.m. at **the David Chetcuti Community Room at Millbrae City Hall, 450 Poplar Avenue, Millbrae, California** unless noted. Special Meetings and workshops are held as needed. The members of the public are encouraged to attend the meetings and workshops to express their concerns and learn about airport/aircraft noise and operations. For more information about the Roundtable, please contact Roundtable staff at (650) 363-1853.

POLICY STATEMENT

The Airport/Community Roundtable reaffirms and memorializes its longstanding policy regarding the “shifting” of aircraft-generated noise, related to aircraft operations at San Francisco International Airport, as follows:

“The Airport/Community Roundtable members, as a group, when considering and taking actions to mitigate noise, will not knowingly or deliberately support, encourage, or adopt actions, rules, regulations or policies, that result in the “shifting” of aircraft noise from one community to another, when related to aircraft operations at San Francisco International Airport.”

(Source: Roundtable Resolution No. 93-01)

FEDERAL PREEMPTION, RE: AIRCRAFT FLIGHT PATTERNS

The authority to regulate flight patterns of aircraft is vested exclusively in the Federal Aviation Administration (FAA). Federal law provides that:

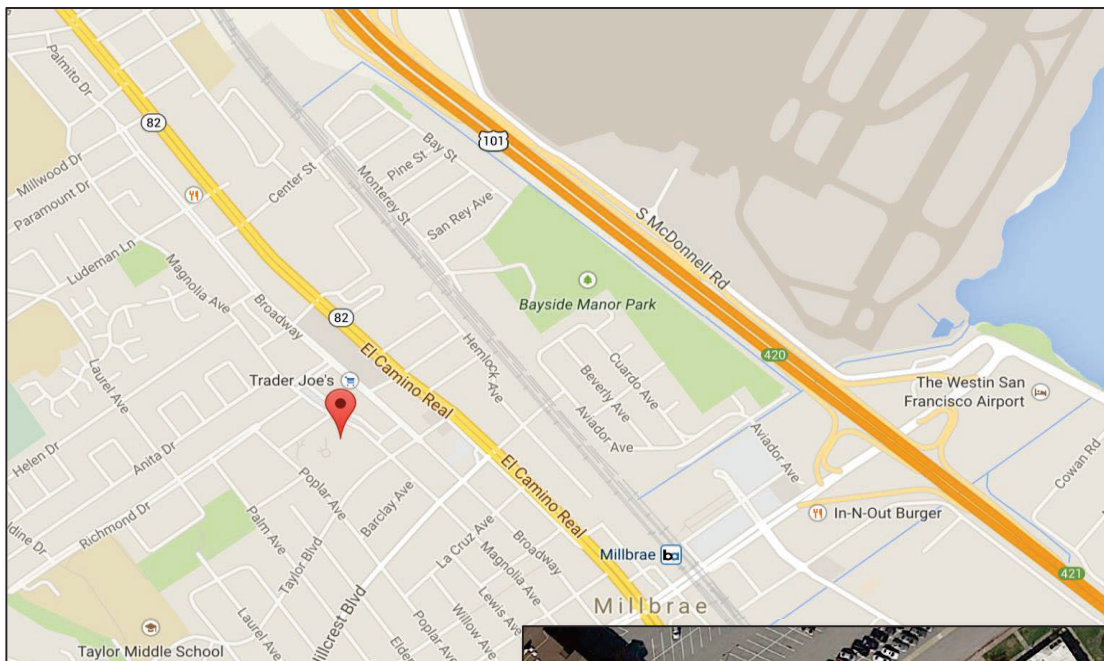
“No state or political subdivision thereof and no interstate agency or other political agency of two or more states shall enact or enforce any law, rule, regulation, standard, or other provision having the force and effect of law, relating to rates, routes, or services of any air carrier having authority under subchapter IV of this chapter to provide air transportation.”

(Source: 49 U.S.C. A. Section 1302(a)(1)).

Meeting Location

**David Chetcuti Community Room
450 Poplar Avenue - Millbrae, CA 94030**

Access through Millbrae Library parking lot on Poplar Avenue





Member Roster

April 2019

**CITY AND COUNTY OF SAN FRANCISCO
BOARD OF SUPERVISORS**
Ahsha Safai, Supervisor

**CITY AND COUNTY OF SAN FRANCISCO MAYOR'S
OFFICE**
David Takashima, (Appointed)

**CITY AND COUNTY OF SAN FRANCISCO AIRPORT
COMMISSION REPRESENTATIVE**
Ivar Satero, Airport Director (Appointed)
Alternate: Doug Yakel, Public Information Officer

**COUNTY OF SAN MATEO
BOARD OF SUPERVISORS**
Dave Pine, Supervisor
Alternate: Don Horsley, Supervisor

**CITY/COUNTY ASSOCIATION OF GOVERNMENTS
AIRPORT LAND USE COMMITTEE (ALUC)**
Carol Ford, ALUC Chairperson (Appointed)

TOWN OF ATHERTON
Elizabeth Lewis, Mayor
Alternate: Bill Widmer, Council Member

CITY OF BELMONT
Julia Mates Council Member
Alternate: Douglas Kim, Council Member

CITY OF BRISBANE
Terry O'Connell, Council Member
Alternate: Madison Davis, Council Member

CITY OF BURLINGAME
Ricardo Ortiz, Council Member

CITY OF DALY CITY
Pamela DiGiovanni, Council Member

CITY OF FOSTER CITY
Sanjay Gehani, Council Member
Alternate: Sam Hindi, Mayor

CITY OF HALF MOON BAY
Adam Eisen, Council Member
Alternate: Harvey Rarback, Council Member

TOWN OF HILLSBOROUGH
Alvin Royse, Council Member
Alternate: Shawn Christianson, Council Member

CITY OF MENLO PARK
Catherine Carlton, Council Member

CITY OF MILLBRAE
Ann Schneider, Council Member
Alternate: Wayne Lee, Mayor

CITY OF PACIFICA
Mike O'Neill, Council Member
Alternate: Deirdre Martin, Council Member

TOWN OF PORTOLA VALLEY
Ann Wengert, Council Member
Alternate: Maryann Derwin, Council Member

CITY OF REDWOOD CITY
Giselle Hale, Council Member

CITY OF SAN BRUNO
Marty Medina, Council Member
Alternate: Rico Medina, Council Member

CITY OF SAN CARLOS
Adam Rak, Council Member
Alternate: Mark Olbert, Council Member

CITY OF SAN MATEO
Diane Papan, Council Member

CITY OF SOUTH SAN FRANCISCO
Mark Addiego, Council Member
Alternate: Mark Nagales, Council Member

TOWN OF WOODSIDE
Thomas Livermore, Council Member

ROUNDTABLE ADVISORY MEMBERS

AIRLINES/FLIGHT OPERATIONS
Captain James Abell, United Airlines
Glenn Morse, United Airlines

FEDERAL AVIATION ADMINISTRATION
Thann McLeod, NORCAL TRACON
Tony DiBernardo, FAA Sierra-Pacific District

ROUNDTABLE STAFF
James A. Castañeda, AICP, Roundtable Coordinator
Gene Reindel, Technical Consultant (HMMH)
Justin Cook, Technical Consultant (HMMH)
Adam Scholten, Technical Consultant (HMMH)

**SAN FRANCISCO INTERNATIONAL AIRPORT
NOISE ABATEMENT STAFF**
Bert Ganoung, Noise Abatement Manager
David Ong, Noise Systems Manager
Nastasja von Conta, Senior Noise Abatement Specialist
Anthony Carpeneti, Noise Abatement Specialist
Anneliese Taing, Noise Abatement Specialist

Aircraft Noise Abatement Office

Glossary of common Acoustic and Air Traffic Control terms

A

ADS-B - Automatic Dependent Surveillance – Broadcast
– ADS-B uses ground based antennas and in-aircraft displays to alert pilots to the position of other aircraft relative to their flight path. ADS-B is a key element of NextGen.

AGL – Above Ground Level, is a height measured with respect to the ground.

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.

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.

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 an aircraft that produces power for ground operations of the electrical and ventilation systems and for starting the engines.

Arrival – The act of landing at an airport.

Arrival Procedure - A series of directions on a published approach plate or from air traffic control personnel, using fixes and procedures, to guide an aircraft from the en route 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.

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 – Air 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 – Aircraft altitude measured in feet above mean sea level.

B

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.

C

CDA - Continuous Descent Approach, see also OPD.

Center – See ARTCC.

Cloud Ceiling – The height above the earth's surface of the lowest layer of clouds that is reported as "broken" or "overcast." Is reported in feet AGL.

CNEL – Community Noise Equivalent Level - A noise metric required by the California Airport Noise Standards for use by airport proprietors to measure aircraft noise levels. CNEL includes an additional weighting for each event occurring during the evening (7:00pm – 9:59pm) and nighttime (10:00pm – 6:59am) periods to account for increased sensitivity to noise during these periods. Evening events are treated as though there were three and nighttime events are treated as though there were ten. This results in a 4.77 and 10 decibel penalty for operations occurring in the evening and nighttime periods, respectively.

CNEL Contour - The "map" of noise exposure around an airport as expressed using the CNEL metric. A CNEL contour is computed using the FAA-approved Integrated Noise Model (INM), which calculates the aircraft noise exposure near an airport.

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

D

Decibel (dB) - In sound, decibels measure a scale from the threshold of human hearing, 0 dB, upward towards the threshold of pain, about 120-140 dB. 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.

Delay Vectors - When ATC assigns an aircraft a heading that takes it off course, before bringing it back on course. Delay vectors may be used for many reasons such as for aircraft traffic or to create spacing between aircraft.

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 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 (airborne and ground) used to measure, in nautical miles, a slant range distance of an aircraft from the DME navigational aid.

DNL - Day/Night Average Sound Level - The daily average noise metric in which that noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by 10 dB. DNL is often expressed as the annual-average noise level.

DNL Contour - The "map" of noise exposure around an airport as expressed using the DNL metric. A DNL contour is computed using the FAA-approved Integrated Noise Model (INM), which calculates the aircraft noise exposure near an airport.

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.

E

En route – The portion of a flight between departure and arrival terminal areas.

Exceedance— Whenever an aircraft overflight produces a noise level higher than the maximum decibel value established for a particular monitoring site, the noise threshold is surpassed and a noise exceedance occurs. An exceedance may take place during approach, takeoff, or possibly during departure ground roll before lifting off.

F

FAA - The Federal Aviation Administration is the agency responsible for aircraft safety, movement and controls. FAA also administers grants for noise mitigation projects and approves certain aviation studies including FAR Part 150 studies, Environmental Assessments, Environmental studies, Environmental Assessments, Environmental Impact Statements, and Airport Layout Plans.

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

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

FAR Part 161 – A Federal Aviation Regulation governing aircraft noise and access restrictions.

Final Approach – The last leg in an aircraft's approach to landing, when the aircraft is lined up with the runway and is descending for landing.

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

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.

FMS – Flight Management System - a specialized computer system in an aircraft that automates a number of in-flight tasks, which reduces flight crew workload and improves the precision of the procedures being flown.

G

GA - General Aviation – Civil aviation excluding air carriers, commercial operators and military aircraft.

GAP Departure – An aircraft departure via Runways 28 at San Francisco International Airport to the west over San Bruno, South San Francisco, Daly City, and Pacifica.

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.

Go-Around - an aborted landing of an aircraft that is on final approach.

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 to power the electrical and ventilation systems on the aircraft.

Ground Effect – The excess attenuation attributed to absorption or reflection of noise by manmade or natural features on the ground surface.

Ground Track – is the path an aircraft would follow on the ground if its airborne flight path were plotted on the ground the terrain.

H

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.

I

IDP - Instrument Departure Procedure - An aeronautical chart designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. IDPs were formerly known as SIDs or Standard Instrument Departure Procedures.

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.

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.

J

K

Knots – A measure of speed used in aerial navigation. One knot is equal to one nautical mile per hour (100 knots = 115 miles per hour).

L

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

Lmax – The peak 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.

LDA – Localizer Type Directional Aid – A facility of comparable utility and accuracy to a localizer, but not part of a complete ILS and not aligned with the runway.

M

Middle Marker - A beacon that defines a point along the glide slope of an 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.

N

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 along the earth's equator. The nautical mile was officially set as 6076.115 feet. (100 nautical miles = 115 statute miles)

Navaid – Navigational Aid.

NCT – Northern California TRACON – The air traffic control facility that guides aircraft into and out of San Francisco Bay Area airspace.

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 FAR Part 150 requirement prepared by airports to depict noise contours. NEMs also take into account potential land use changes around airports.

NextGen – The Next Generation of the national air transportation system. NextGen represents the movement from ground-based navigation aids to satellite-based navigation.

NMS – See RMS

Noise Contour – See CNEL and DNL Contour.

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

O

OAPM - Optimization of Airspace and Procedures in the Metroplex – This is a part of the FAA's Next Generation of air traffic control plans for 21 areas with multiple airports in the United States.

Offset ILS – Offset Parallel Runways – Staggered runways having centerlines that are parallel.

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 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.

OPD – Optimized Profile Descent – An efficient, reduced power method by which aircraft approach airports for landing. It is designed to reduce level off segments during descent, reducing fuel consumption and noise.

P

PASSUR System – Passive Surveillance Receiver - A system capable of collecting and plotting radar tracks of individual aircraft in flight by passively receiving transponder signals.

PAPI – Precision Approach Path Indicator - An airport lighting facility in the terminal area used under VFR conditions. It is a single row of two to four lights, radiating high intensity red or white beams to indicate whether the pilot is above or below the required runway approach path.

PBN –Performance Based Navigation - Area navigation based on performance requirements for aircraft operating along an IFR route, on an instrument approach procedure or in a designated airspace.

Preferential Runways - The most desirable runways from a noise abatement perspective to be assigned whenever safety, weather, and operational efficiency permits.

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

PRM – Precision Runway Monitoring – A system of high-resolution monitors for air traffic controllers to use in landing aircraft on parallel runways separated by less than 4,300'.

Q

R

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

Reliever Airport – An airport for general aviation and other aircraft that would otherwise use a larger and busier air carrier airport.

RMS – Remote Monitoring Site - A microphone placed in a community and recorded at San Francisco International Airport's Noise Monitoring Center. A network of 29 RMS's generate data used in preparation of the airport's Noise Exposure Map.

RNAV – Area Navigation - A method of IFR navigation that allows an aircraft to choose any course within a network of navigation beacons, rather than navigating directly to and from the beacons. This can conserve flight distance, reduce congestion, and allow flights into airports without beacons.

RNP – Required Navigation Performance - A type of performance-based navigation (PBN) that allows an aircraft to fly a specific path between two 3- dimensionally defined points in space. RNAV and RNP systems are fundamentally similar. The key difference between them is the requirement for on-board performance monitoring and alerting. A navigation specification that includes a requirement for on-board navigation performance monitoring and alerting is referred to as an RNP specification. One not having such a requirement is referred to as an RNAV specification.

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.

S

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

Shoreline Departure – Departure via Runways 28 that utilizes a right turn toward San Francisco Bay as soon as feasible. The Shoreline Departure is considered a noise abatement departure procedure.

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

SENEL – Single Event Noise Exposure Level - The noise exposure level of a single aircraft event measured over the time between the initial and final points when the noise level exceeds a predetermined threshold. It is important to distinguish single event noise levels from cumulative

such as CNEL. Single event noise level numbers are generally higher than CNEL numbers, because CNEL represents an average noise level over a period of time, usually a year.

Single Event – Noise generated by a single aircraft overflight.

SOIA – Simultaneous Offset Instrument Approach Is an approach system permitting simultaneous Instrument Landing System approaches to airports having staggered but parallel runways. SOIA combines Offset ILS and regular ILS definitions.

STAR – Standard Terminal Arrival Route is a published IFR arrival procedure describing specific criteria for descent, routing, and communications for a specific runway at an airport.

T

Taxiway – A paved strip 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 TRACON.

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

Threshold – Specified boundary.

TRACON -Terminal Radar Approach Control – is an FAA air traffic control service to aircraft arriving and departing or transiting airspace controlled by the facility. TRACONs control IFR and participating VFR flights. TRACONs control the airspace from Center down to the ATCT.

U

V

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 are 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 IFR flight plan, operating in 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 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.

VMC – Visual Meteorological Conditions - weather conditions equal to or greater than those specified for aircraft operations under Visual Flight Rules (VFR).

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.

W

X

Y

Z

how to reach us

**SFO Aircraft Noise Abatement Office mailing address is:
P.O. Box 8097, San Francisco, CA 94128**

Phone:	650.821.5100
Fax:	650.821.6777
Noise Complaints:	650.821.4736
Toll Free Noise Complaints:	877.206.8290
Noise Complaint E-mail:	sfo.noise@flysfo.com
Airport Web Page:	www.flysfo.com
Noise Abatement Web Page:	www.flyquietsfo.com
Roundtable Web Page:	www.sforoundtable.org

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Jon C. Long Fly Quiet Awards

San Francisco International Airport's Fly Quiet Program is a Roundtable initiative implemented by the Aircraft Noise Abatement Office. Its purpose is to encourage individual airlines to operate as quietly as possible at SFO. The program promotes a participatory approach in complying with noise abatement procedures and objectives by grading an airline's performance and by making the scores available to the public via newsletters, publications, and public meetings.

Fly Quiet offers a dynamic venue for implementing new noise abatement initiatives by praising and publicizing active participation rather than a system that admonishes violations from essentially voluntary procedures. The overall goal of the Fly Quiet Program is to influence airlines to operate as quietly as possible in the San Francisco Bay Area. A successful Fly Quiet Program can be expected to reduce both single event and total noise levels around the airport.

2018 Fly Quiet Awards

Most Improved
VIRGIN ATLANTIC AIRWAYS

Quietest Overall Airline
AIR CHINA

Chairperson's Awards
INTERJET AIRLINES

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SFO Airport/Community Roundtable

Meeting No. 317 Action Minutes

Wednesday, February 6, 2019

1. Call to Order / Roll Call / Declaration of a Quorum Present

Roundtable Chairperson, Elizabeth Lewis, called the Regular Meeting of the SFO Airport/Community Roundtable to order, at approximately 7:01 p.m., in the David Chetcuti Community Room at the Millbrae City Hall. James A. Castañeda, AICP, Roundtable Coordinator, called the roll. A quorum (at least 12 Regular Members) was present as follows:

REGULAR MEMBERS PRESENT

Doug Yakel – City and County of San Francisco Airport Commission
Dave Pine – County of San Mateo Board of Supervisors
Elizabeth Lewis – Town of Atherton
Julia Mates – City of Belmont
Terry O’Connell – City of Brisbane
Ricardo Ortiz – City of Burlingame
Pamela DiGiovanni – City of Daly City
Adam Eisen – City of Half Moon Bay
Shawn Christianson – Town of Hillsborough
Ann Schneider – City of Millbrae
Mike O’Neill – City of Pacifica
Ann Wengert – Town of Portola Valley
Janet Borgens – City of Redwood City
Marty Medina – City of San Bruno
Mark Nagales – City of South San Francisco
Tom Livermore – Town of Woodside

REGULAR MEMBERS ABSENT

City and County of San Francisco Board of Supervisors
City and County of San Francisco Mayor’s Office
C/CAG Airport Land Use Committee (ALUC)
City of Foster City
City of Menlo Park
City of San Carlos
City of San Mateo

ROUNDTABLE STAFF

James A. Castañeda, AICP – Roundtable Coordinator
Justin Cook – Roundtable Consultant (HMMH)

SAN FRANCISCO INTERNATIONAL AIRPORT STAFF

Bert Ganoung, Noise Abatement Manager
David Ong, Noise Abatement Systems Manager
Nastasja von Conta, Senior Noise Abatement Specialist
Anthony Carpeneti, Noise Abatement Specialist

2. Elections of Roundtable Chairperson for Calendar Year 2019

3. Elections of Roundtable Vice-Chairperson for Calendar Year 2019

ACTION: Supervisor Dave Pine **MOVED** to nominate Town of Atherton representative Elizabeth Lewis for the position of Chairperson and City of Burlingame representative Ricardo Ortiz for the position of Vice-Chairperson. Julia Mates seconded the nomination. Hearing no additional nominations, a vote was taken, and the acceptance of Elizabeth Lewis as Roundtable Chairperson and Ricardo Ortiz as Roundtable Vice-Chairperson was **CARRIED**, unanimously.

4. Approval of Resolution 19-01: Designating Roundtable Meeting Dates, Time and Place for Calendar Year 2019

ACTION: Mike O'Neill **MOVED** approval of the resolution. The motion was seconded by Ann Schneider and **CARRIED**, unanimously.

5. Public Comments on Items NOT on the Agenda

A total of six members of the public spoke during public comments:

Rosie Hayes
Jim Woodworth
Mark Boslet
Elizabeth Lopez
Charlie Wombeck
Mark Shull

6. Review of Roundtable Meeting Overview for October 3, 2018 and December 5, 2018

7. Airport Director's Reports for November & December 2018, Fly Quiet Report Q3 2018

Millbrae representative Ann Schneider noted that Ground-Based Noise should be captured and reflected in future Airport Director reports.

ACTION: Janet Borgens **MOVED** approval of the Roundtable Meeting Overview for October 3, 2018 & December 5, 2018, Airport Director's Reports for November & December 2018, and Fly Quiet Report Q3 2018. The motion was seconded by Dave Pine and **CARRIED**, unanimously.

8. Discussion with FAA Regarding Questions Provided from Roundtable Chair, email to FAA dated November 9, 2018

Raquel Girvin, Regional Administrator of the FAA Western-Pacific Region, and Mindy Wright, Manager - NAS Analytics & Environmental with the Air Traffic Organization of the FAA Western Service Center, we're present to give an overview and response to three of the four questions included in the November 9, 2018 from the Roundtable Chairperson. Questions were provided by the Roundtable members, as well as some members of the public.

9. SFO Updates

Airport Public Information Officer Doug Yakel provided an overview of the general operations at SFO, status of Ground-Based Augmentation System (GBAS) installation process, and an update on the Second Chance and Replacement Noise Insulation Program. Mr. Yakel took questions from Roundtable members regarding the noise insulation program.

10. Title 21 Update

Bert Ganoung, Noise Abatement Manager, provided an overview of California Title 21 requirements for certification of noise monitors.

11. Update Ground-Based Noise Ad-Hoc Subcommittee

Roundtable Vice-Chairperson Ricardo Ortiz provided an overview of the Ground-Based Noise Ad-Hoc Subcommittee meeting held in January and discussed next steps for the group.

12. Subcommittee Appointments

Roundtable Chairperson Elizabeth Lewis solicited volunteers for the various subcommittees. Roundtable Coordinator James Castañeda will follow-up members after the meeting.

13. Upcoming Noise 101

Roundtable Coordinator James Castañeda announced that a Noise 101 will be offered this spring and will be contacting new Roundtable members to coordinate a date that works best for them. Once a date is selected, an announcement will be made to other Roundtable members to attend if they wish.

14. Aviation Noise News and Updates

Roundtable Technical Consultant Justin Cook provided a brief recap of relevant aviation noise news to the Roundtable.

15. Member Communications / Announcements

None

16. Adjourn

Chairperson Lewis adjourned the meeting at 9:29 p.m.

Roundtable action minutes are considered draft until approved by the Roundtable at a regular meeting. A video recording of this meeting is available on the Roundtable's website.

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Airport Director's Report

Presented at the April 3, 2019
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
January 2019



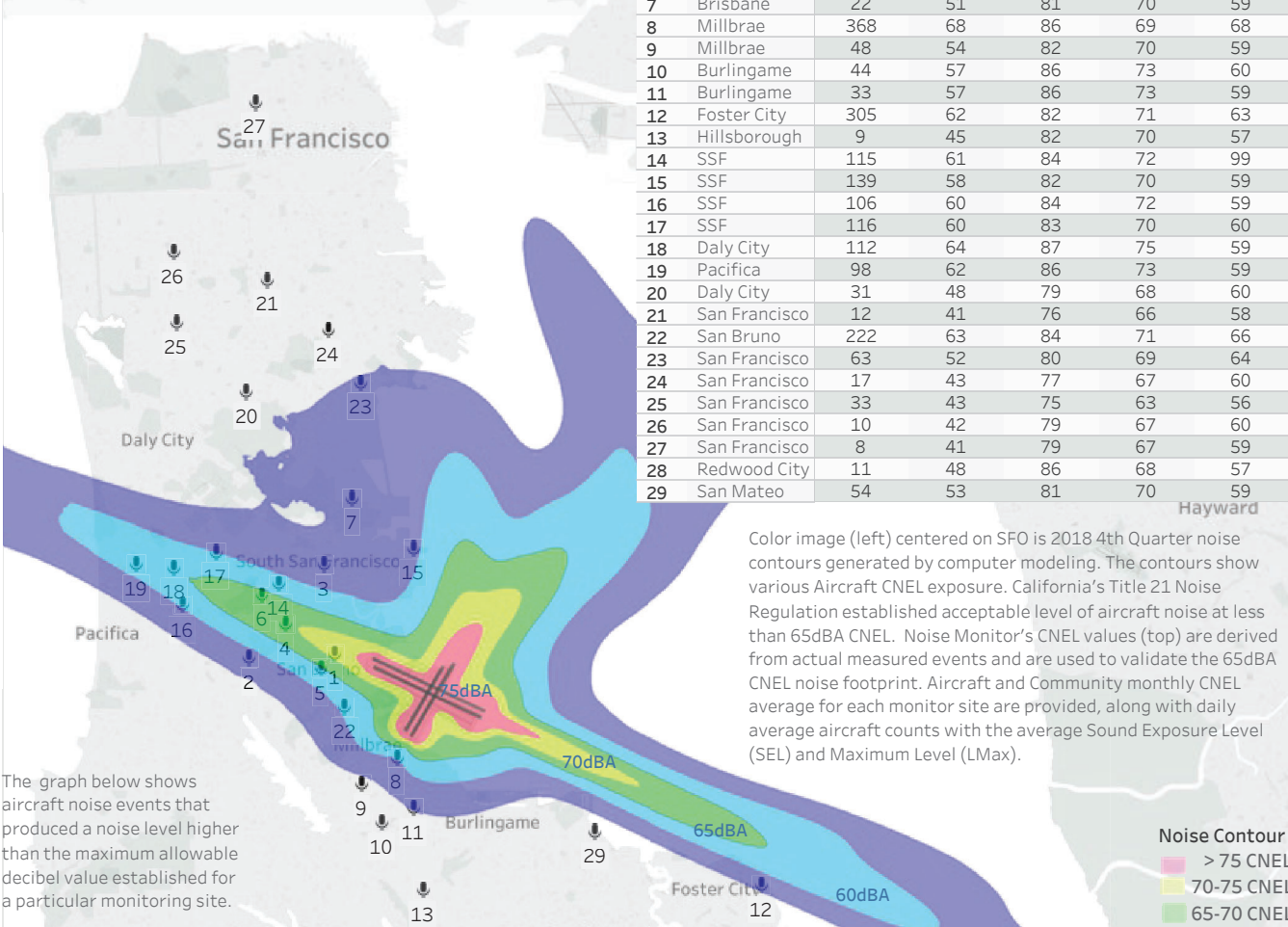
San Francisco
International
Airport

Aircraft Noise Monitoring System

January 2019

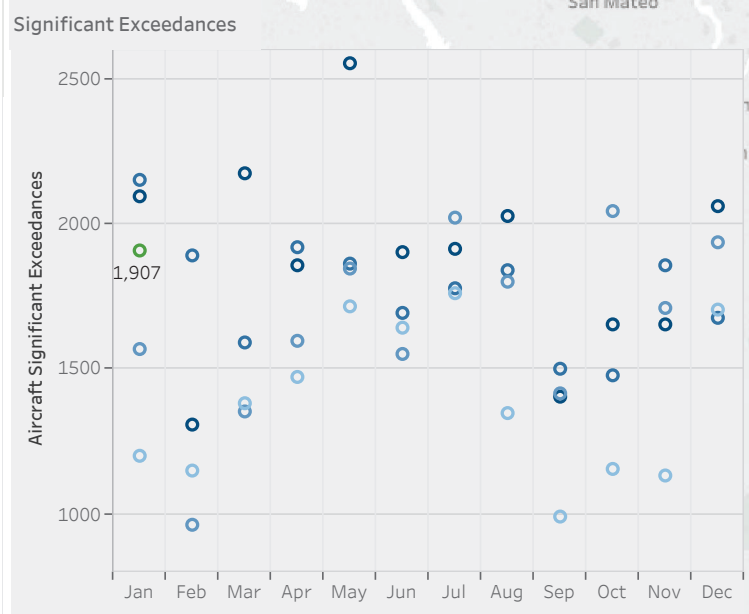
The map shows 29 aircraft noise monitoring locations that keep track of noise levels in the communities around the airport. Image centered on SFO airport shows quarterly aircraft noise levels (dBA) exposure. The green zone marks 65dBA Community Noise Exposure Level (CNEL). The CNEL metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport.

Site	City	Noise Events (AVG Day)	Aircraft			City
			CNEL (dBA)	SEL (dBA)	LMax (dBA)	
1	San Bruno	220	74	93	76	69
3	SSF	68	56	80	68	64
4	SSF	127	69	91	78	61
5	San Bruno	155	67	88	75	65
6	SSF	119	66	88	76	58
7	Brisbane	22	51	81	70	59
8	Millbrae	368	68	86	69	68
9	Millbrae	48	54	82	70	59
10	Burlingame	44	57	86	73	60
11	Burlingame	33	57	86	73	59
12	Foster City	305	62	82	71	63
13	Hillsborough	9	45	82	70	57
14	SSF	115	61	84	72	99
15	SSF	139	58	82	70	59
16	SSF	106	60	84	72	59
17	SSF	116	60	83	70	60
18	Daly City	112	64	87	75	59
19	Pacifica	98	62	86	73	59
20	Daly City	31	48	79	68	60
21	San Francisco	12	41	76	66	58
22	San Bruno	222	63	84	71	66
23	San Francisco	63	52	80	69	64
24	San Francisco	17	43	77	67	60
25	San Francisco	33	43	75	63	56
26	San Francisco	10	42	79	67	60
27	San Francisco	8	41	79	67	59
28	Redwood City	11	48	86	68	57
29	San Mateo	54	53	81	70	59



Color image (left) centered on SFO is 2018 4th Quarter noise contours generated by computer modeling. The contours show various Aircraft CNEL exposure. California's Title 21 Noise Regulation established acceptable level of aircraft noise at less than 65dBA CNEL. Noise Monitor's CNEL values (top) are derived from actual measured events and are used to validate the 65dBA CNEL noise footprint. Aircraft and Community monthly CNEL average for each monitor site are provided, along with daily average aircraft counts with the average Sound Exposure Level (SEL) and Maximum Level (LMax).

The graph below shows aircraft noise events that produced a noise level higher than the maximum allowable decibel value established for a particular monitoring site.

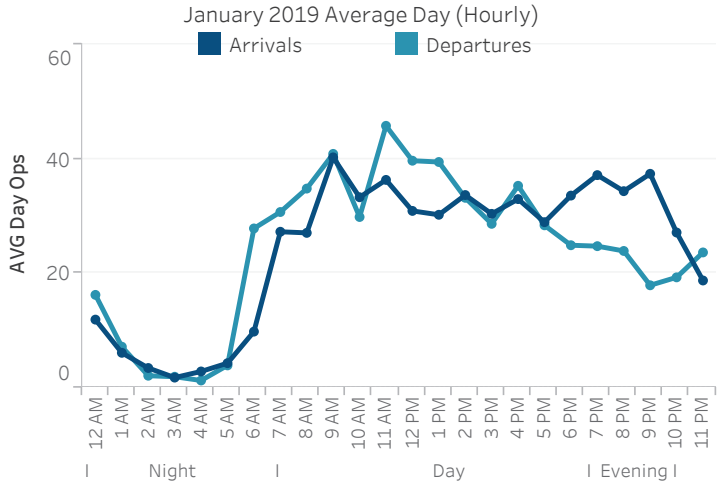


Note: Site 2 is currently not operational.

Monthly Operations Summary

January 2019

35,859	1,157	38,040	-2.0%
Monthly Operations	Average Daily Operations	12 Month AVG	YOY Growth



Major Arrival and Departure Route Pattern (West Flow)



West Flow is depicted in the above image and is a predominate flow at SFO.

Departures

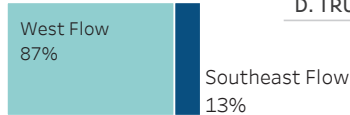
A. GAP	23%
B. SSTIK	30%
C. NIITE	6%
D. TRUKN RWY 01	38%
D. TRUKN RWY 28	2%

Arrivals

1. BDEGA	26%
2. DYAMD	40%
3. SERFR	28%
4. OCEANIC	6%

Top Destinations

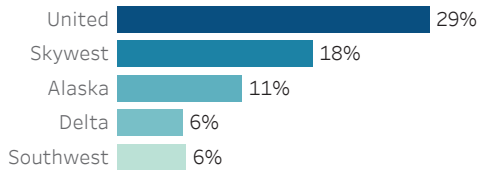
Los Angeles	Seattle
8%	6%



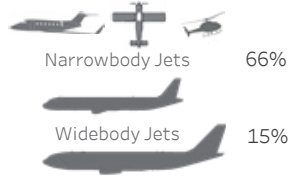
Down the Bay vs Peninsula

1.1 BDEGA East	28%
1.2 BDEGA West	72%

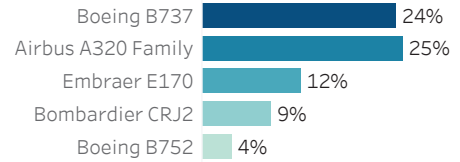
Airlines with the Most Operations



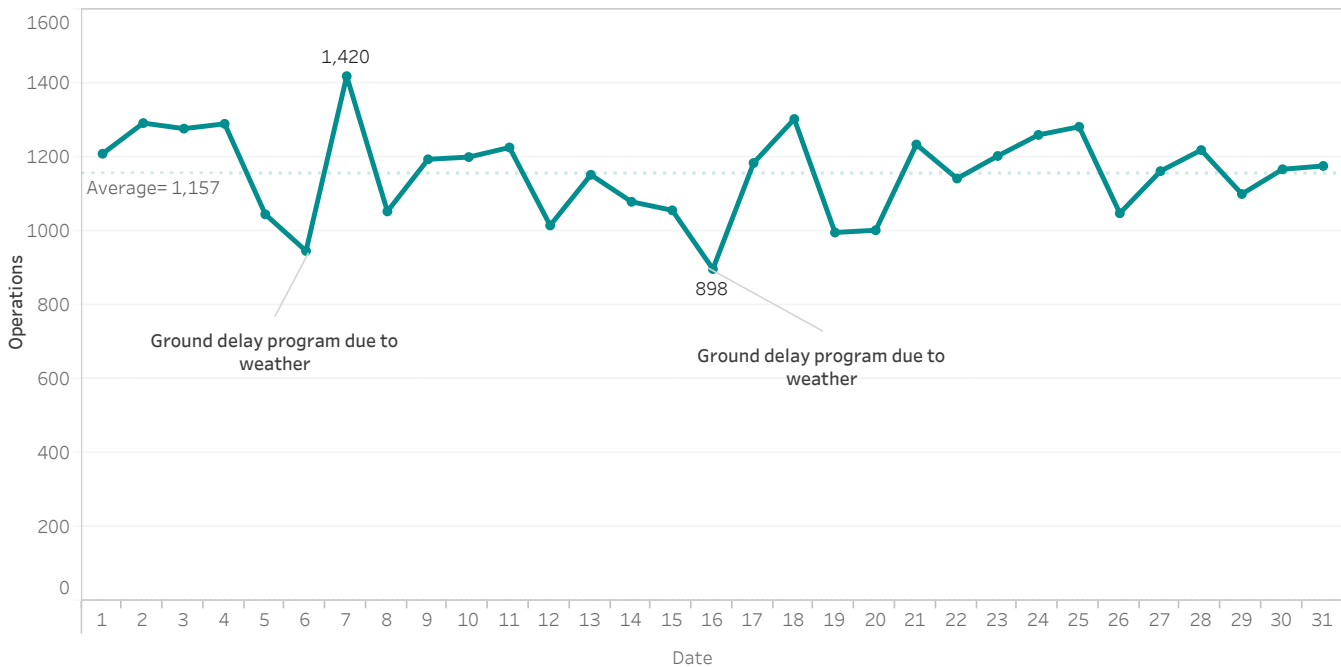
Business Jets / Helicopters / GA 19%



Most Utilized Aircraft Types



Daily Aircraft Operations



Runway Usage and Nighttime Operations

Monthly runway usage is shown for arrivals and departures, further categorized by all hours and nighttime hours. Graph at the bottom of the page shows hourly nighttime operations for each day. Power Runup locations are depicted on the airport map with airline nighttime power runup counts shown below. (Percent [%] rounded to nearest whole number)

Runway Utilization (all hours)

	Arrivals	Departures
01 L/R		66% 10,957
10 L/R	0% 44	11% 1,825
19 L/R	13% 2,186	3% 499
28 L/R	86% 14,286	20% 3,342

Late Night Preferential Runway Use (1 am - 6 am)

	Departures
10 L/R	13% 54
01 L/R	37% 158
28 L/R	46% 197
19 L/R	4% 16

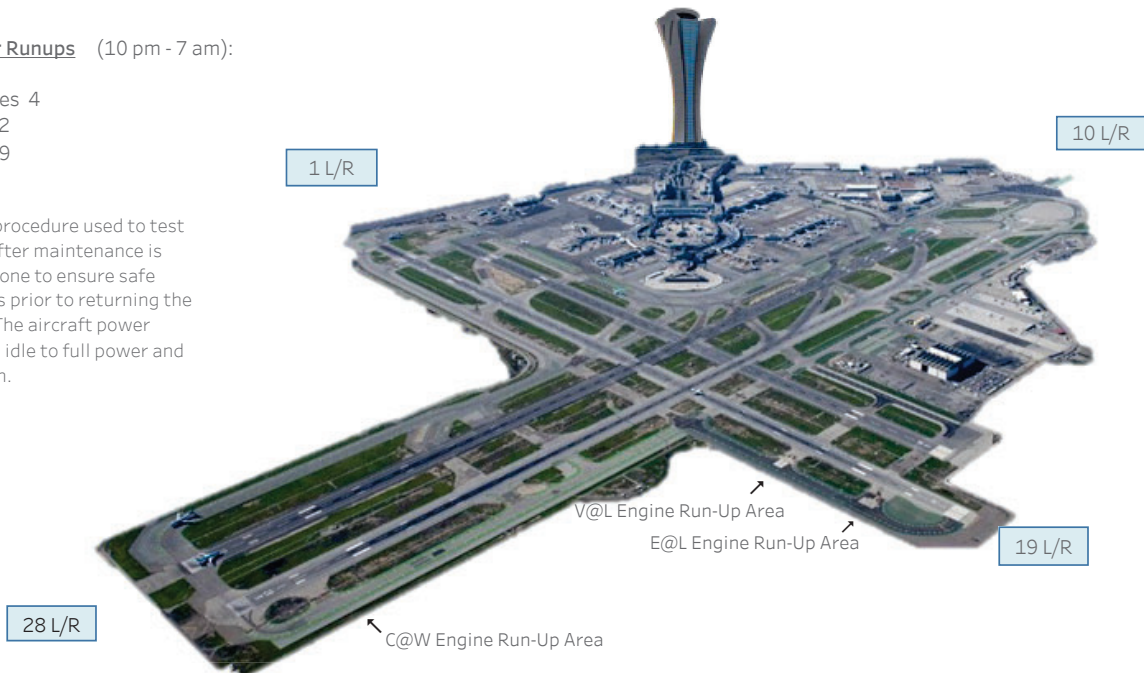
28 L vs R

Arrivals	
28L	28R
47%	53%
Night (10 pm - 7 am)	
31%	69%

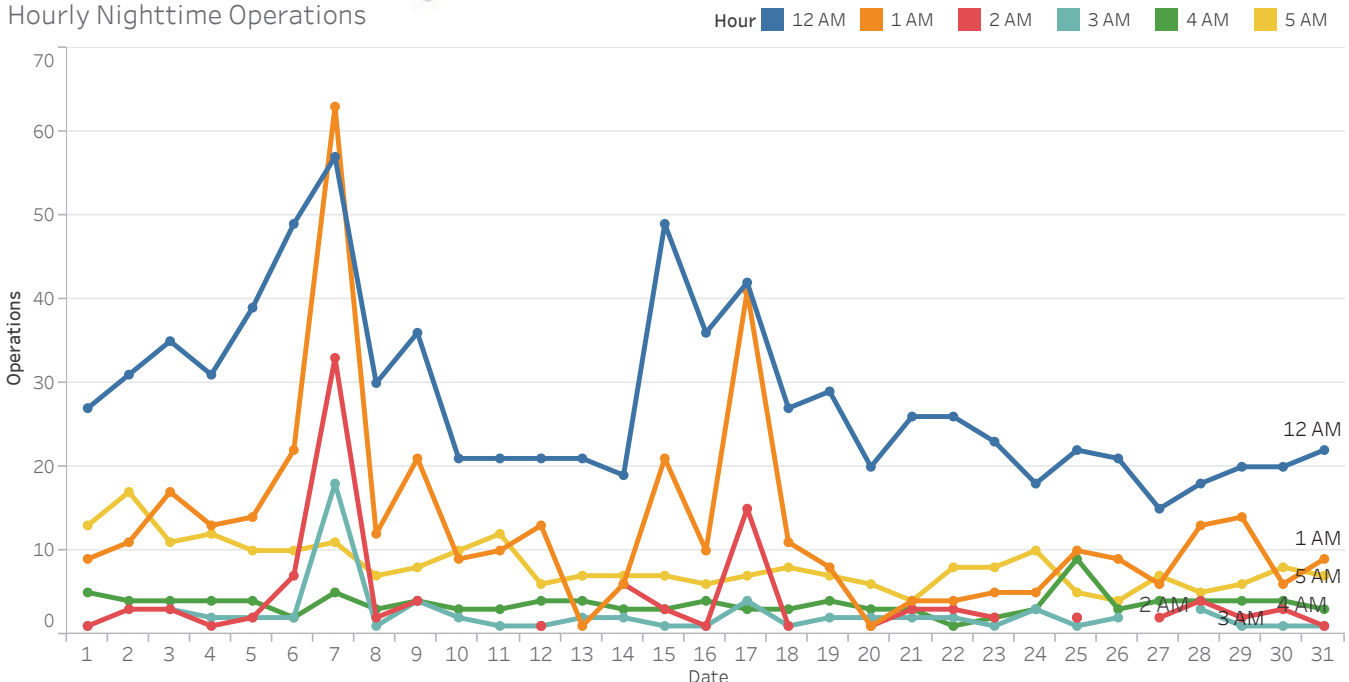
Nighttime Power Runups (10 pm - 7 am):

- American Airlines 4
- Alaska Airlines 2
- United Airlines 9

A power runup is a procedure used to test an aircraft engine after maintenance is completed. This is done to ensure safe operating standards prior to returning the aircraft to service. The aircraft power settings range from idle to full power and may vary in duration.



Hourly Nighttime Operations



Noise Reports



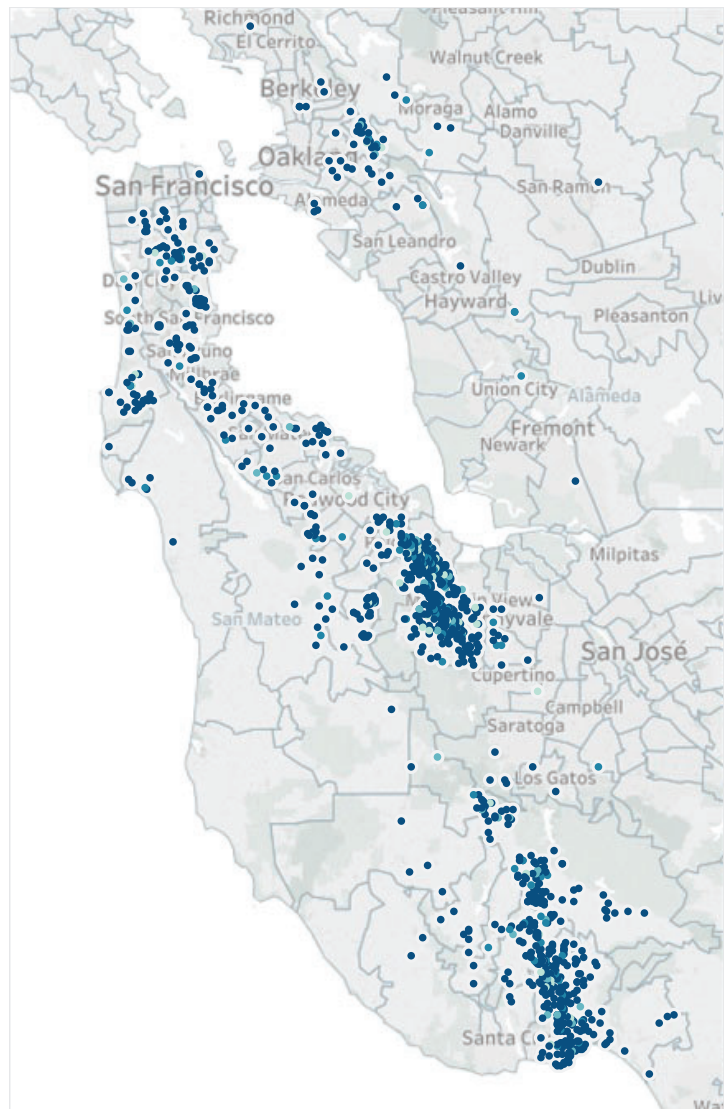
January 2019

Noise Reporters / Noise Reports

Noise Reporters Location Map

Community	Noise Reporters	Noise Reports
Atherton	5	1,273
Belmont	4	572
Brisbane	28	1,591
Burlingame	12	147
Daly City	9	1,116
El Granada	3	336
Foster City	11	196
Half Moon Bay	4	138
Hillsborough	7	283
Menlo Park	24	1,601
Millbrae	7	20
Pacifica	38	4,310
Portola Valley	28	6,249
Redwood City	19	2,732
San Bruno	8	622
San Carlos	5	232
San Francisco	54	6,728
San Mateo	14	1,624
South San Francisco	15	190
Woodside	12	882
Alameda	3	76
Aptos	13	487
Ben Lomond	6	88
Berkeley	6	216
Bonny Doon	2	67
Boulder Creek	4	95
Brookdale	1	4
Capitola	21	2,036
Carmel	3	57
Castro Valley	1	7
Cupertino	1	2,299
Danville	1	2
East Palo Alto	1	10
Felton	9	550
Fremont	1	2
Hayward	2	382
Los Altos	140	18,547
Los Altos Hills	26	7,723
Los Gatos	113	15,241
Moraga	3	318
Morgan Hill	2	45
Mountain View	40	5,909
Oakland	38	8,218
Orinda	3	666
Palo Alto	209	44,072
Piedmont	1	7
Pinole	1	321
Richmond	3	1,656
Santa Clara	1	2
Santa Cruz	128	17,148
Saratoga	6	505
Scotts Valley	73	9,554
Soquel	77	7,764
Sunnyvale	10	1,355
Union City	1	392
Watsonville	1	195
Total	1,258	176,858

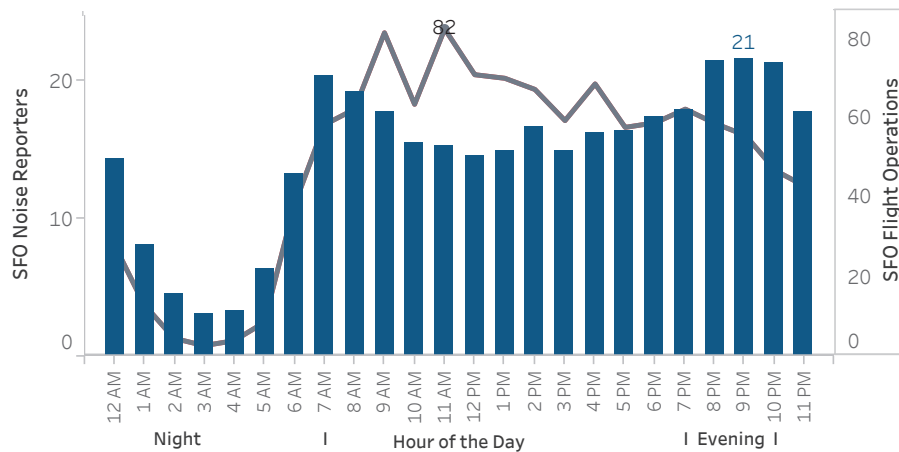
- 1,397 Noise Reporters (12 month AVG)
- 204,515 Noise Reports (12 Month AVG)
- 60 New Reporters
- San Francisco New Reporters Top City
- 86 Miles Furthest Report
- 4 Reports per SFO Operation
- B737 A320 Top Aircraft Type
- ASA1213 ASA1963 GTI2838 Top Flight Number



Roundtable Communities

Other Communities

Hourly Noise Reporters vs. Flight Operations (AVG Day)



99% of noise reports correlate to a flight origin/destination airport.

Source: SFO Intl Airport Noise Monitoring System

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Airport Director's Report

Presented at the April 3, 2019
Airport Community Roundtable Meeting

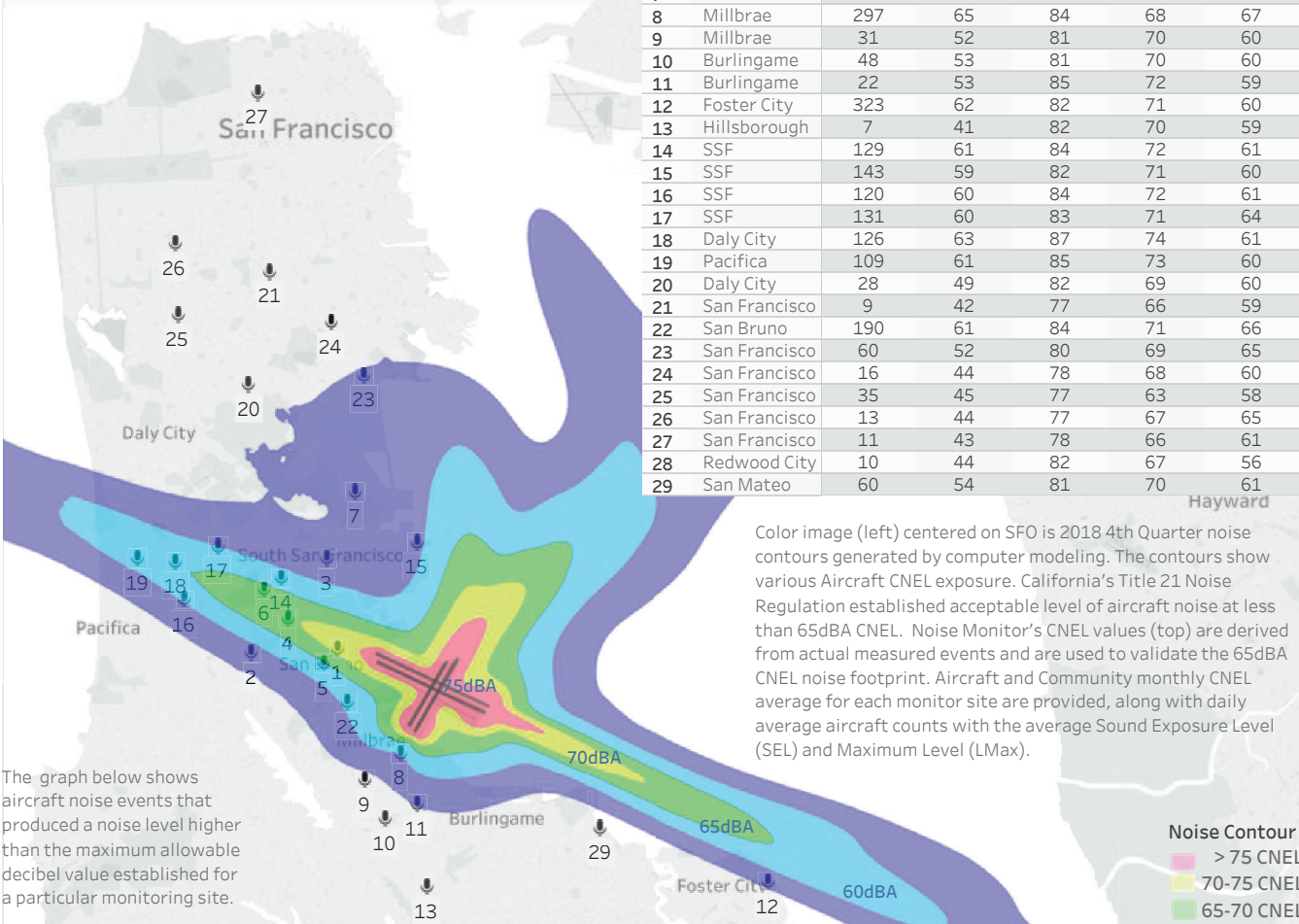
Aircraft Noise Abatement Office
February 2019



San Francisco
International
Airport

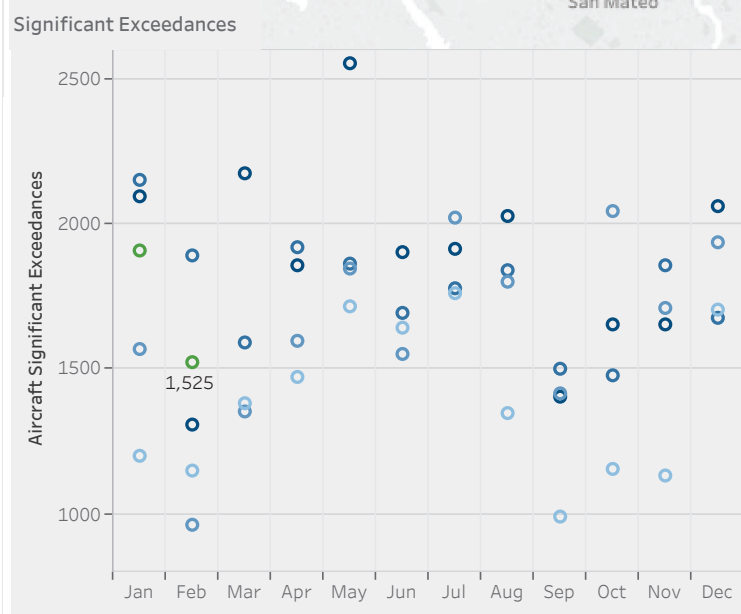
The map shows 29 aircraft noise monitoring locations that keep track of noise levels in the communities around the airport. Image centered on SFO airport shows quarterly aircraft noise levels (dBA) exposure. The green zone marks 65dBA Community Noise Exposure Level (CNEL). The CNEL metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport.

Site	City	Noise Events (AVG Day)	Aircraft			City
			CNEL (dBA)	SEL (dBA)	LMax (dBA)	
1	San Bruno	259	72	92	75	68
3	SSF	82	54	80	69	63
4	SSF	144	67	90	77	63
5	San Bruno	175	66	88	75	64
6	SSF	134	65	88	75	59
7	Brisbane	33	51	80	70	60
8	Millbrae	297	65	84	68	67
9	Millbrae	31	52	81	70	60
10	Burlingame	48	53	81	70	60
11	Burlingame	22	53	85	72	59
12	Foster City	323	62	82	71	60
13	Hillsborough	7	41	82	70	59
14	SSF	129	61	84	72	61
15	SSF	143	59	82	71	60
16	SSF	120	60	84	72	61
17	SSF	131	60	83	71	64
18	Daly City	126	63	87	74	61
19	Pacifica	109	61	85	73	60
20	Daly City	28	49	82	69	60
21	San Francisco	9	42	77	66	59
22	San Bruno	190	61	84	71	66
23	San Francisco	60	52	80	69	65
24	San Francisco	16	44	78	68	60
25	San Francisco	35	45	77	63	58
26	San Francisco	13	44	77	67	65
27	San Francisco	11	43	78	66	61
28	Redwood City	10	44	82	67	56
29	San Mateo	60	54	81	70	61



Color image (left) centered on SFO is 2018 4th Quarter noise contours generated by computer modeling. The contours show various Aircraft CNEL exposure. California's Title 21 Noise Regulation established acceptable level of aircraft noise at less than 65dBA CNEL. Noise Monitor's CNEL values (top) are derived from actual measured events and are used to validate the 65dBA CNEL noise footprint. Aircraft and Community monthly CNEL average for each monitor site are provided, along with daily average aircraft counts with the average Sound Exposure Level (SEL) and Maximum Level (LMax).

The graph below shows aircraft noise events that produced a noise level higher than the maximum allowable decibel value established for a particular monitoring site.

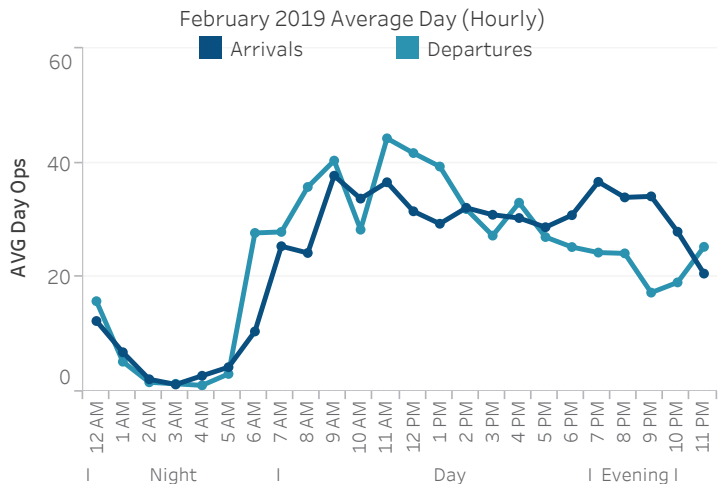


Note: Site 2 is currently not operational.

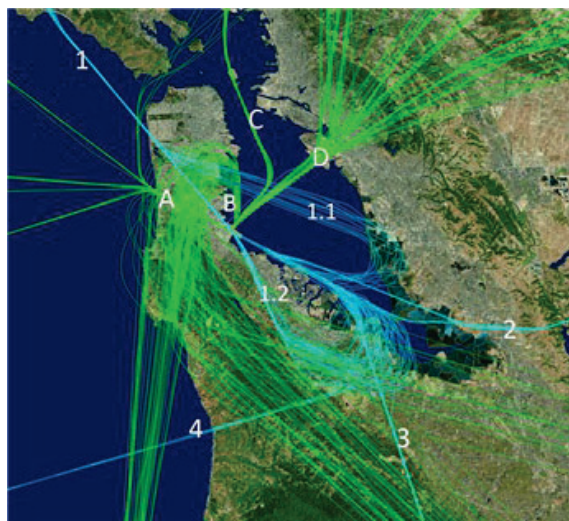
Monthly Operations Summary

February 2019

31,683	1,132	37,906	-5.1%
Monthly Operations	Average Daily Operations	12 Month AVG	YOY Growth



Major Arrival and Departure Route Pattern (West Flow)



West Flow is depicted in the above image and is a predominate flow at SFO.

Departures

A. GAP	28%
B. SSTIK	28%
C. NIITE	6%
D. TRUKN RWY 01	31%
D. TRUKN RWY 28	7%

Arrivals

1. BDEGA	31%
2. DYAMD	36%
3. SERFR	28%
4. OCEANIC	5%

Top Destinations

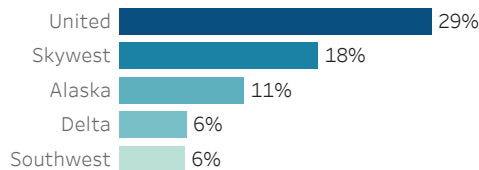
Los Angeles	Seattle
8%	5%



Down the Bay vs Peninsula

1.1 BDEGA East	30%
1.2 BDEGA West	70%

Airlines with the Most Operations



Business Jets / Helicopters / GA 19%



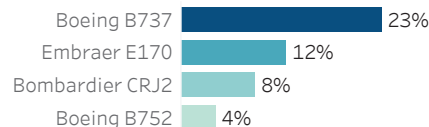
Narrowbody Jets 66%



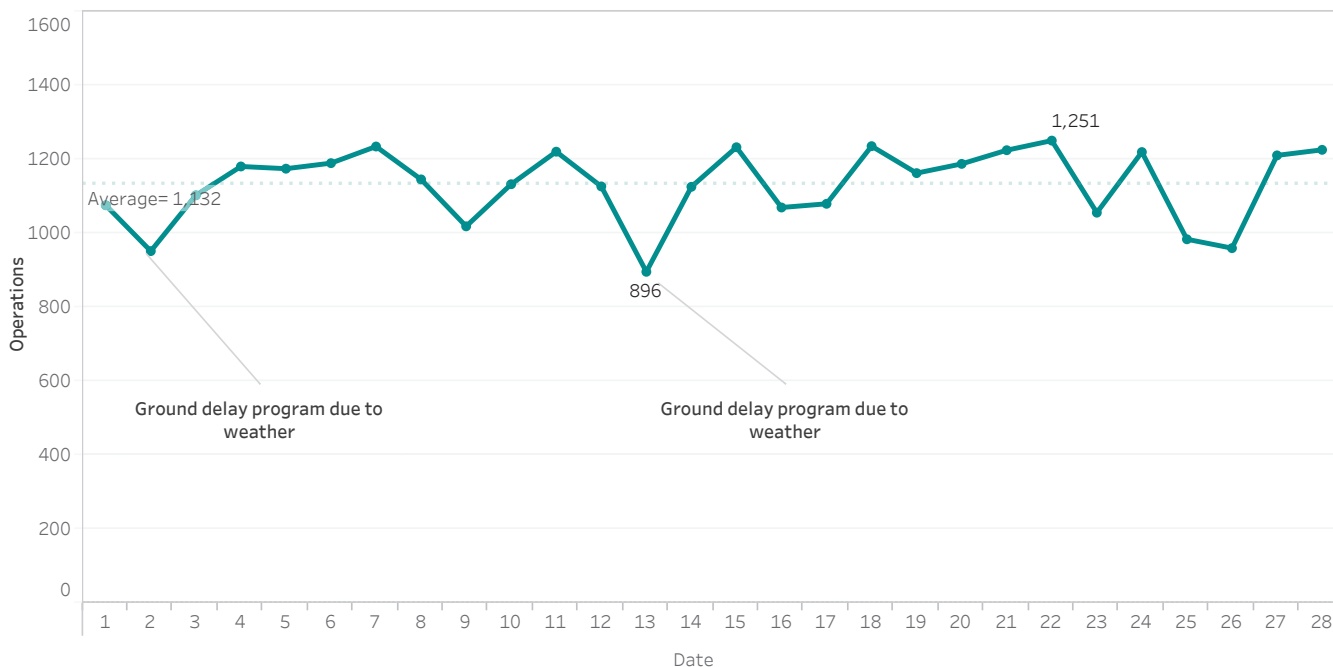
Widebody Jets 15%



Most Utilized Aircraft Types



Daily Aircraft Operations



Runway Usage and Nighttime Operations

Monthly runway usage is shown for arrivals and departures, further categorized by all hours and nighttime hours. Graph at the bottom of the page shows hourly nighttime operations for each day. Power Runup locations are depicted on the airport map with airline nighttime power runup counts shown below. (Percent [%] rounded to nearest whole number)

Runway Utilization (all hours)

	Arrivals	Departures
01 L/R		55% 8,154
10 L/R	0% 1	18% 2,618
19 L/R	18% 2,738	1% 134
28 L/R	82% 12,077	27% 4,029

Late Night Preferential Runway Use (1 am - 6 am)

	Departures
10 L/R	30% 88
01 L/R	38% 110
28 L/R	30% 88
19 L/R	1% 3

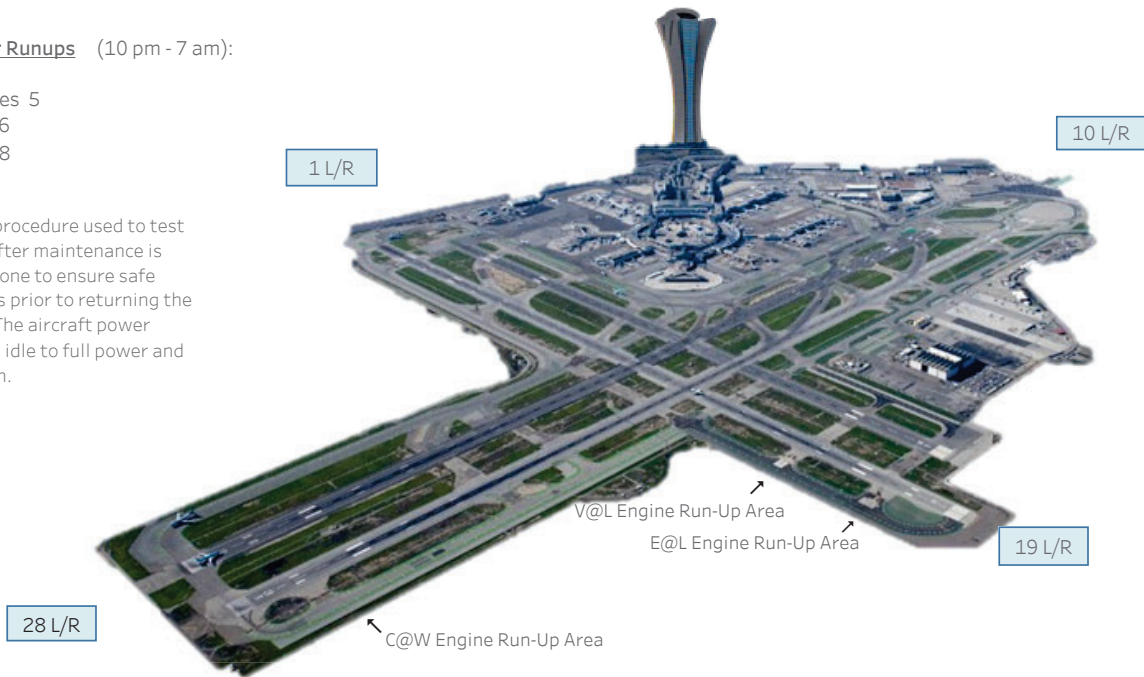
28 L vs R

Arrivals	
28L	28R
45%	55%
Night (10 pm - 7 am)	
27%	73%

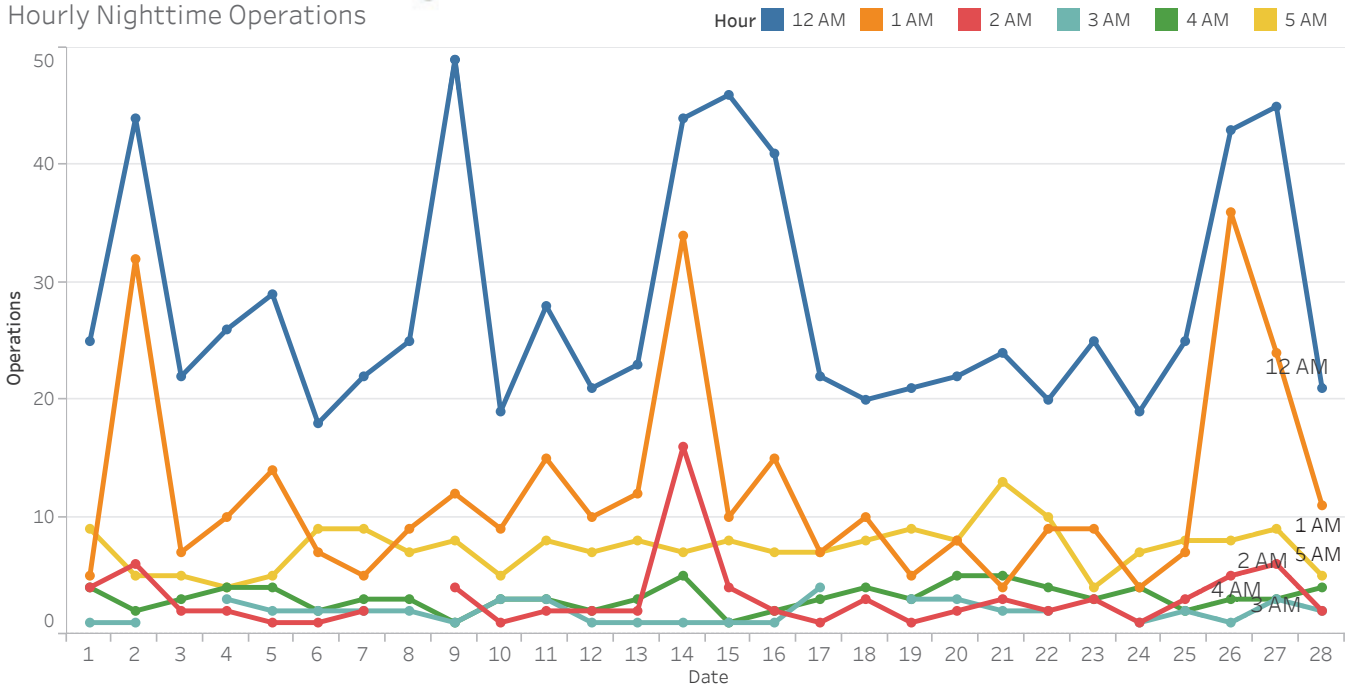
Nighttime Power Runups (10 pm - 7 am):

- American Airlines 5
- Alaska Airlines 6
- United Airlines 8

A power runup is a procedure used to test an aircraft engine after maintenance is completed. This is done to ensure safe operating standards prior to returning the aircraft to service. The aircraft power settings range from idle to full power and may vary in duration.



Hourly Nighttime Operations



Noise Reports



February 2019

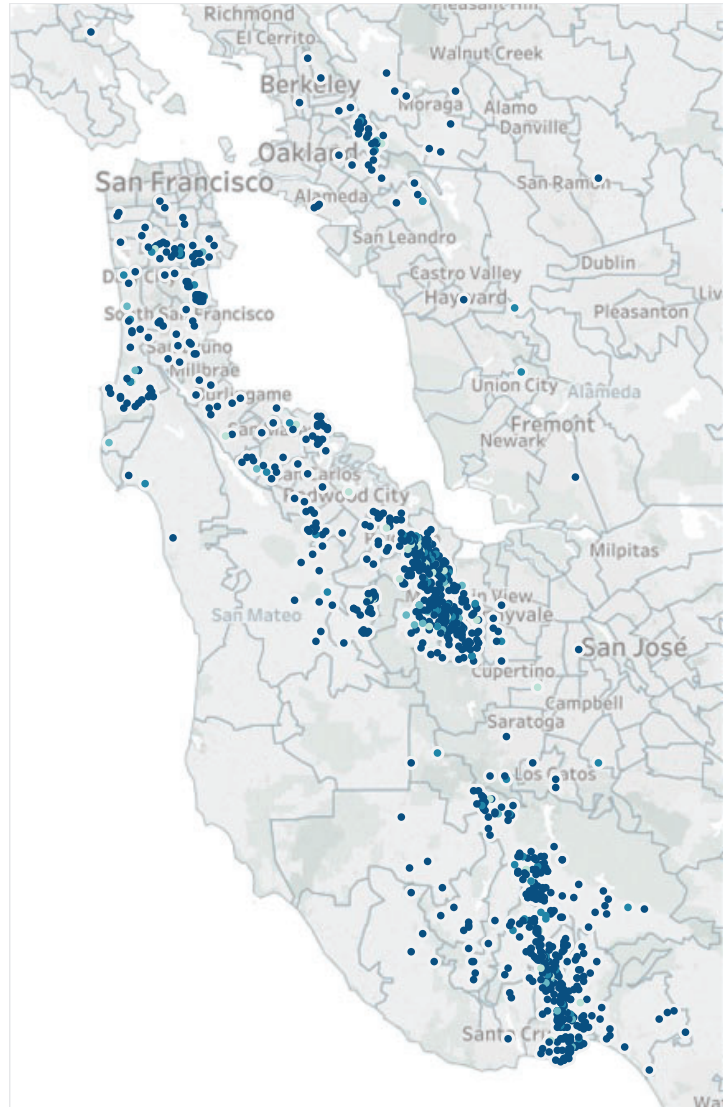
Noise Reporters / Noise Reports

	Noise Reporters	Noise Reports
Atherton	6	1,122
Belmont	7	461
Brisbane	22	1,386
Burlingame	5	23
Daly City	6	1,011
El Granada	1	350
Foster City	17	139
Half Moon Bay	3	759
Hillsborough	2	1,308
Menlo Park	21	924
Millbrae	3	6
Pacifica	31	3,108
Portola Valley	30	6,137
Redwood City	23	2,272
San Bruno	6	311
San Carlos	5	163
San Francisco	43	5,348
San Mateo	14	2,184
South San Francisco	10	68
Woodside	9	819
Alameda	3	129
Aptos	11	326
Ben Lomond	6	80
Berkeley	4	75
Bonny Doon	2	60
Boulder Creek	4	111
Brookdale	1	5
Capitola	16	1,264
Carmel	3	253
Cupertino	1	1,632
Danville	1	3
East Palo Alto	2	71
Felton	11	478
Fremont	1	2
Hayward	2	349
Kensington	1	1
Lafayette	1	25
Los Altos	124	14,780
Los Altos Hills	26	7,669
Los Gatos	114	11,171
Moraga	3	268
Morgan Hill	1	5
Mountain View	34	3,525
Oakland	32	8,090
Orinda	3	406
Palo Alto	187	39,283
Piedmont	1	45
Pinole	1	295
Richmond	2	1,813
Santa Clara	1	1
Santa Cruz	115	12,393
Saratoga	5	473
Scotts Valley	65	6,912
Soquel	72	5,513
Sunnyvale	7	741
Union City	1	378
Watsonville	1	111
Total	1,129	146,635

Roundtable Communities

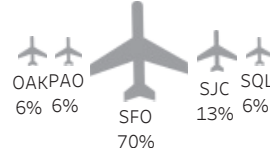
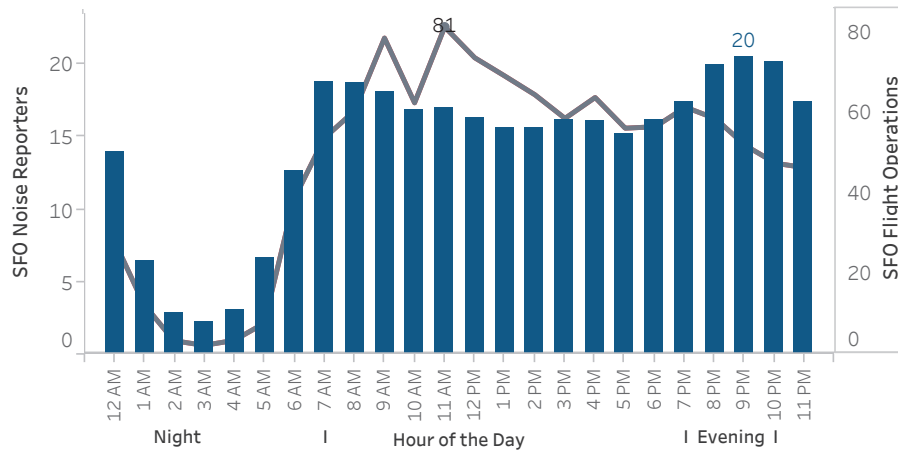
Other Communities

Noise Reporters Location Map



- 1,368 Noise Reporters (12 month AVG)
- 203,387 Noise Reports (12 Month AVG)
- 46 New Reporters
- Foster City New Reporters Top City
- 86 Miles Furthest Report
- 4 Reports per SFO Operation
- B737 A320 Top Aircraft Type
- ASA1213 ASA1963 UAL2159 Top Flight Number

Hourly Noise Reporters vs. Flight Operations (AVG Day)



99% of noise reports correlate to a flight origin/destination airport.

Source: SFO Intl Airport Noise Monitoring System

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Fly Quiet Report

Presented at the April 3, 2019
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
Fourth Quarter 2018



San Francisco
International
Airport

Airline Fly Quiet Summary Report - 4th Quarter 2018

October 1 to December 31, 2018

Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline	Arrivals Gap Foster City	Final Score	Airline Fly Quiet Rating				
AIR CHINA	CCA	10.00	9.80	-	-	7.47	-	9.09				
WESTJET	WJA	5.90	10.00	-	10.00	-	-	8.63				
virgin atlantic	VIR	7.88	10.00	-	-	7.91	-	8.60				
ANA	ANA	7.15	10.00	-	-	7.79	-	8.31				
JAPAN AIRLINES	JAL	7.15	10.00	-	-	7.73	-	8.29				
JAZZ	JZA	10.00	9.92	-	7.22	5.28	-	8.10				
Scandinavian Airlines	SAS	8.17	9.93	-	-	5.18	-	7.76				
Emirates	UAE	10.00	10.00	-	-	3.26	-	7.75				
SkyWest	SKW	9.99	9.91	3.78	9.02	6.24	5.61	7.43				
AIR NEW ZEALAND	ANZ	7.06	9.93	-	-	5.21	-	7.40				
WOW	WOW	4.05	10.00	-	-	8.13	-	7.39				
AIR CANADA	ACA	7.17	9.58	6.67	7.95	5.68	6.92	7.33				
AIRFRANCE	AFR	7.76	9.89	-	-	4.21	-	7.29				
HONGKONG AIRLINES 香港航空	CRK	9.50	9.89	-	-	2.14	-	7.18				
中國東方航空 CHINA EASTERN	CES	5.82	10.00	-	-	5.57	-	7.13				
DELTA	DAL	6.47	9.71	4.10	7.77	7.26	7.17	7.08				
SWISS	SWR	7.15	9.87	-	-	4.21	-	7.07				
FRONTIER AIRLINES	FFT	4.96	9.64	4.39	9.52	5.25	7.88	6.94				
BRITISH AIRWAYS	BAW	5.85	9.71	-	-	5.23	-	6.93				
Aer Lingus	EIN	4.05	9.93	-	-	6.62	-	6.87				
Frenchbee	FBU	9.50	9.66	0.83	-	9.19	5.00	6.84				
FINNAIR	FIN	4.61	10.00	-	-	5.68	-	6.76				
Southwest	SWA	5.95	9.61	3.37	9.41	5.47	6.60	6.73				
UNITED	UAL	5.90	9.52	3.35	7.80	6.83	5.98	6.56				
TURKISH AIRLINES	THY	7.15	9.94	-	-	2.19	-	6.42				
中國南方航空 CHINA SOUTHERN AIRLINES	CSN	7.15	6.31	-	-	5.72	-	6.39				
Lufthansa	DLH	9.15	9.12	6.67	0.00	6.75	-	6.34				
sun country airlines	SCX	5.82	9.81	3.33	8.75	3.75	6.50	6.33				
								6.18	SFO AVERAGE			
FedEx	FDX	3.84	8.58	-	8.33	4.64	5.31	6.14				
American Airlines	AAL	4.89	9.55	3.94	8.29	2.21	7.28	6.03				
Alaska	ASA	5.13	9.57	3.33	8.51	3.63	5.70	5.98				
Thomas Cook Airlines	TCX	4.05	10.00	-	-	3.75	-	5.93				
Compass Airlines	CPZ	4.73	9.54	2.89	7.50	5.89	4.96	5.92				
ATLAS AIR	GTI	4.36	6.90	5.00	6.67	7.55	4.92	5.90				
volaris	VOI	4.85	7.38	3.33	-	8.75	5.00	5.86				
jetBlue	JBU	4.75	9.58	3.33	7.63	2.99	6.70	5.83				
interjet	AIJ	4.85	8.85	3.33	-	6.88	5.00	5.78				
KLM Royal Dutch Airlines	KLM	3.97	10.00	-	0.63	7.71	-	5.58				
HAWAIIAN AIRLINES	HAL	4.04	8.11	-	-	5.10	5.00	5.56				

Airline Fly Quiet Summary Report - 4th Quarter 2018







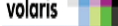































October 1 to December 31, 2018

Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline	Arrivals Gap Foster City	Final Score	Airline Fly Quiet Rating												
 ICE	4.00	9.88	-	1.67	6.25	-	5.45													
 IBE	4.05	10.00	-	-	2.06	-	5.37													
 TAI	4.91	7.49	3.23	-	6.17	4.94	5.35													
 CPA	7.65	6.89	0.80	-	5.45	5.00	5.16													
 AMX	5.82	7.22	3.48	-	4.17	4.72	5.08													
 KAL	8.02	4.28	0.63	-	5.60	5.00	4.70													
 CMP	7.18	7.80	0.92	5.00	2.25	5.00	4.69													
 SIA	8.40	5.45	0.00	-	4.15	-	4.50													
 QFA	3.43	2.70	-	-	7.12	-	4.42													
 AIC	7.15	3.61	1.97	0.91	6.43	5.00	4.18													
 EVA	7.15	3.99	0.33	-	3.87	5.00	4.07													
 AAR	6.87	0.00	1.00	-	6.06	5.00	3.79													
 FJI	4.05	5.61	0.00	-	5.30	-	3.74													
 CAL	5.60	2.95	0.19	-	4.87	5.00	3.72													
 PAL	7.17	2.34	0.61	-	2.96	-	3.27													
 CKS	3.43	2.36	3.85	3.00	3.54	-	3.23													
SFO Average		6.28	8.22	2.71	6.46	5.42	5.60	6.18												

Fleet Noise Quality - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Nationwide		San Francisco		Fleet Noise Quality Rating
	Fleet Noise Quality Rating	Average Daily Jet Operations	Score		
CCA	6.90	1	10.00		
UAE	7.20	1	10.00		
JZA	8.90	4	10.00		
SKW	8.50	56	9.99		
CRK	6.50	1	9.50		
FBU	6.50	1	9.50		
DLH	6.60	2	9.15		
SIA	7.30	2	8.40		
SAS	4.90	1	8.17		
KAL	6.60	3	8.02		
VIR	6.10	1	7.88		
AFR	7.00	1	7.76		
CPA	7.30	2	7.65		
CMP	5.50	2	7.18		
PAL	6.90	1	7.17		
ACA	6.60	6	7.17		
ANA	7.80	1	7.15		
CSN	7.30	1	7.15		
JAL	7.80	1	7.15		
SWR	4.90	1	7.15		
THY	5.70	1	7.15		
EVA	6.90	3	7.15		
AIC	7.30	1	7.15		
ANZ	7.90	1	7.06		
AAR	6.90	2	6.87		
DAL	5.80	40	6.47		
			6.28	SFO AVERAGE	
SWA	5.50	41	5.95		
WJA	5.70	1	5.90		
UAL	5.70	174	5.90		
BAW	7.30	2	5.85		
AMX	7.90	3	5.82		
SCX	5.30	2	5.82		
CES	4.90	1	5.82		
CAL	6.40	2	5.60		
ASA	5.20	70	5.13		
FFT	5.20	3	4.96		

Airline	Nationwide		San Francisco		Fleet Noise Quality Rating
	Fleet Noise Quality Rating		Average Daily Jet Operations	Score	
 TAI	5.18		2	4.91	
 AAL	5.50		35	4.89	
 AUJ	5.00		1	4.85	
 VOI	5.20		0	4.85	
 JBU	5.80		14	4.75	
 CPZ	5.30		0	4.73	
 FIN	3.80		0	4.61	
 GTI	5.60		2	4.36	
 EIN	4.50		1	4.05	
 IBE	5.20		0	4.05	
 WOW	5.00		0	4.05	
 FJI	4.40		0	4.05	
 TCX	3.80		0	4.05	
 HAL	5.60		2	4.04	
 ICE	6.90		1	4.00	
 KLM	6.60		0	3.97	
 FDX	5.10		1	3.84	
 CKS	5.60		0	3.43	
 QFA	5.80		1	3.43	
AVERAGE	6.12		9	6.28	











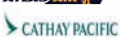




















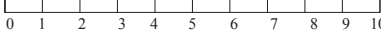




Noise Exceedance Rating Report - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Noise Exceedances				Noise Exceedance Quality Rating
	Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	
ANA	0	178	0	10.00	
CHINA EASTERN	0	254	0	10.00	
FIN	0	39	0	10.00	
IBE	0	34	0	10.00	
JAL	0	179	0	10.00	
KLM	0	205	0	10.00	
TCX	0	16	0	10.00	
UAE	0	181	0	10.00	
VIR	0	342	0	10.00	
WJA	0	105	0	10.00	
WOW	0	43	0	10.00	
THY	1	178	6	9.94	
EIN	1	176	6	9.93	
SAS	1	172	6	9.93	
ANZ	1	168	6	9.93	
JZA	5	704	7	9.92	
SKW	157	19,308	8	9.91	
CRK	1	105	10	9.89	
AFR	2	202	10	9.89	
ICE	1	96	10	9.88	
SWR	2	180	11	9.87	
SCX	5	306	16	9.81	
CCA	3	175	17	9.80	
BAW	9	356	25	9.71	
DAL	188	7,416	25	9.71	
QXE	18	623	29	9.67	
FBU	4	134	30	9.66	
FFT	15	477	31	9.64	
SWA	258	7,589	34	9.61	
ACA	51	1,406	36	9.58	
JBU	93	2,535	37	9.58	
ASA	483	12,853	38	9.57	
AAL	258	6,678	39	9.55	
CPZ	74	1,842	40	9.54	
UAL	1,429	34,098	42	9.52	
DLH	27	353	76	9.12	
AIJ	20	200	100	8.85	
FDX	32	260	123	8.58	
					SFO AVERAGE
					8.25

Noise Exceedance Rating Report - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Noise Exceedances				Noise Exceedance Quality Rating
	Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	
 HAL	64	391	164	8.11	
 CMP	69	362	191	7.80	
 TAI	76	349	218	7.49	
 VOI	20	88	227	7.38	
 AMX	133	552	241	7.22	
 GTI	82	305	269	6.90	
 CPA	140	519	270	6.89	
 CSN	62	194	320	6.31	
 FJI	19	50	380	5.61	
 SIA	153	388	394	5.45	
 KAL	262	529	495	4.28	
 EVA	277	532	521	3.99	
 AIC	129	233	554	3.61	
 CAL	190	311	611	2.95	
 QFA	153	242	632	2.70	
 CKS	43	65	662	2.36	
 PAL	136	205	663	2.34	
 AAR	278	321	866	0.00	
TOTAL	5,425	105,802			
SFO AVERAGE			152	8.25	
















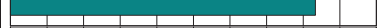



















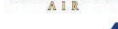







Nighttime Preferential Runway Use - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Nighttime Departures (1:00 am to 6:00 am)						Nighttime Runway Use Rating	
	Total	10L/R	28L/R Shoreline	01L/R	28L/R Straight	Score		
AIR CANADA ACA	2	50%	0%	50%	0%	6.67		
Lufthansa DLH	1	0%	100%	0%	0%	6.67		
FRONTIER AIRLINES GTI	2	50%	0%	0%	50%	5.00		
DELTA FFT	76	5%	21%	74%	0%	4.39		
AAL DAL	13	0%	23%	77%	0%	4.10		
KALITTA AIR CKS	26	12%	38%	4%	46%	3.85		
SkyWest SKW	15	7%	0%	93%	0%	3.78		
AEROMEXICO AMX	23	9%	0%	78%	13%	3.48		
Southwest SWA	101	2%	3%	89%	6%	3.37		
UNITED UAL	372	4%	4%	80%	12%	3.35		
interjet AIJ	3	0%	0%	100%	0%	3.33		
Alaska ASA	6	0%	0%	100%	0%	3.33		
jetBlue JBU	28	0%	7%	86%	7%	3.33		
sun country airlines SCX	4	0%	0%	100%	0%	3.33		
volaris VOI	7	0%	0%	100%	0%	3.33		
Avianca TAI	67	7%	0%	75%	18%	3.23		
Compass Airlines CPZ	83	1%	0%	83%	16%	2.89		
							2.71	SFO AVERAGE
AIR INDIA AIC	39	3%	26%	0%	72%	1.97		
ASIANA AIRLINES AAR	40	10%	0%	0%	90%	1.00		
Copa Airlines CMP	87	7%	3%	0%	90%	0.92		
Frenchbee FBU	4	0%	0%	25%	75%	0.83		
CATHAY PACIFIC CPA	75	8%	0%	0%	92%	0.80		
KOREAN AIR KAL	80	6%	0%	0%	94%	0.63		
Philippines PAL	33	6%	0%	0%	94%	0.61		
EVA AIR EVA	91	3%	0%	0%	97%	0.33		
CHINA AIRLINES CAL	52	2%	0%	0%	98%	0.19		
FIJI AIRWAYS FJI	2	0%	0%	0%	100%	0.00		
SINGAPORE AIRLINES SIA	36	0%	0%	0%	100%	0.00		
TOTAL							1,533	
SFO AVERAGE			7%	8%	44%	41%	2.71	



































































Shoreline Departure Rating - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Shoreline Departures					Shoreline Departure Rating
	Total	Successful	Marginal	Poor	Score	
 WJA	7	100%	0%	0%	10.00	
 FFT	21	90%	10%	0%	9.52	
 SWA	34	88%	12%	0%	9.41	
 SKW	82	84%	12%	4%	9.02	
 SCX	8	75%	25%	0%	8.75	
 ASA	124	71%	28%	1%	8.51	
 FDX	6	67%	33%	0%	8.33	
 AAL	111	68%	29%	3%	8.29	
 ACA	22	64%	32%	5%	7.95	
 UAL	182	65%	26%	9%	7.80	
 DAL	92	66%	23%	11%	7.77	
 JBU	40	53%	48%	0%	7.63	
 CPZ	2	50%	50%	0%	7.50	
 JZA	9	44%	56%	0%	7.22	
 GTI	3	33%	67%	0%	6.67	
					6.46	
 CMP	3	0%	100%	0%	5.00	
 CKS	10	20%	20%	60%	3.00	
 ICE	3	0%	33%	67%	1.67	
 AIC	11	0%	18%	82%	0.91	
 KLM	8	0%	13%	88%	0.63	
 DLH	1	0%	0%	100%	0.00	
TOTAL	779					
SFO AVERAGE		49%	30%	20%	6.46	
























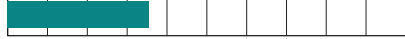
















Gap Departure Climb Rating - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Gap Departures		Gap Departure Quality Rating
	Total	Score	
 FBU	65	9.19	
 VOI	1	8.75	
 WOW	2	8.13	
 VIR	43	7.91	
 ANA	85	7.79	
 QXE	20	7.75	
 JAL	77	7.73	
 KLM	6	7.71	
 GTI	55	7.55	
 CCA	84	7.47	
 DAL	120	7.26	
 QFA	106	7.12	
 AIJ	2	6.88	
 UAL	3321	6.83	
 DLH	168	6.75	
 EIN	82	6.62	
 AIC	95	6.43	
 ICE	7	6.25	
 SKW	360	6.24	
 TAI	16	6.17	
 AAR	150	6.06	
 CPZ	49	5.89	
 CSN	95	5.72	
 ACA	11	5.68	
 FIN	11	5.68	
 KAL	249	5.60	
 CES	120	5.57	
 SWA	174	5.47	
 CPA	246	5.45	
			SFO AVERAGE
 FJI	25	5.30	
 JZA	9	5.28	
 FFT	5	5.25	
 BAW	146	5.23	
 ANZ	82	5.21	
 SAS	83	5.18	








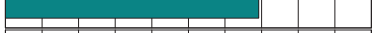

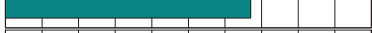

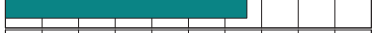

































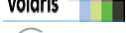









Gap Departure Climb Rating - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Gap Departures		Gap Departure Quality Rating
	Total	Score	
 HAL	13	5.10	
 CAL	147	4.87	
 FDX	7	4.64	
 AFR	87	4.21	
 SWR	85	4.21	
 AMX	15	4.17	
 SIA	180	4.15	
 EVA	255	3.87	
 SCX	4	3.75	
 TCX	4	3.75	
 ASA	436	3.63	
 CKS	18	3.54	
 UAE	84	3.26	
 JBU	28	2.99	
 PAL	89	2.96	
 CMP	166	2.25	
 AAL	337	2.21	
 THY	85	2.19	
 CRK	48	2.14	
 IBE	17	2.06	
TOTAL	8275		
SFO Average		5.44	

Foster City Arrival Rating - 4th Quarter 2018

October 1 to December 31, 2018

Airline	Foster City Arrivals					Foster City Arrival Rating
	Total	Successful	Marginal	Poor	Score	
 FFT	80	58%	43%	0%	7.88	
 AAL	372	46%	54%	0%	7.28	
 DAL	237	45%	53%	2%	7.17	
 ACA	39	38%	62%	0%	6.92	
 JBU	235	34%	66%	0%	6.70	
 SWA	288	34%	64%	2%	6.60	
 SCX	10	30%	70%	0%	6.50	
 UAL	1,271	21%	78%	1%	5.98	
 ASA	497	16%	83%	2%	5.70	
 SKW	155	17%	79%	5%	5.61	
					5.60	
 FDX	49	6%	94%	0%	5.31	
 AAR	45	0%	100%	0%	5.00	
 AIC	34	0%	100%	0%	5.00	
 AIJ	3	0%	100%	0%	5.00	
 CAL	16	0%	100%	0%	5.00	
 CMP	67	0%	100%	0%	5.00	
 CPA	1	0%	100%	0%	5.00	
 EVA	8	0%	100%	0%	5.00	
 FBU	1	0%	100%	0%	5.00	
 HAL	11	0%	100%	0%	5.00	
 KAL	77	0%	100%	0%	5.00	
 QXE	12	0%	100%	0%	5.00	
 VOI	7	0%	100%	0%	5.00	
 CPZ	126	0%	99%	1%	4.96	
 TAI	79	0%	99%	1%	4.94	
 GTI	59	0%	98%	2%	4.92	
 AMX	18	0%	94%	6%	4.72	
TOTAL	3,797					
SFO AVERAGE		13%	86%	1%	5.60	



February 7, 2019

TO: Roundtable Members and Interested Parties

FROM: Justin W. Cook – INCE, LEED GA
Roundtable Technical Consultant - HMMH

SUBJECT: Questions for the FAA at the March 7, 2019 SFO Airport/Community Roundtable
Technical Working Group (TWG) Meeting

The following are four (4) items for the Federal Aviation Administration (FAA) to answer at the March 7, 2019 SFO Airport/Community Roundtable Technical Working Group (TWG) Meeting. While these are specific items that we would like the FAA to answer, we are also hoping that the FAA will come prepared to discuss possible alternate solutions should they deem any of these not feasible.

Item 1:

Problem Statement: At the February 6, 2019 SFO Airport/Community Roundtable Regular Meeting, the FAA stated that they would be able to input, on behalf of the SFO Airport/Community Roundtable, a new procedure (similar to the decommissioned DUMBARTON) with a possible 085 heading into the FAA's IFP Information Gateway. For context, please see the previously submitted Item 1 in our letter dated November 5, 2018 (revised on November 9, 2018).

Questions: Can the FAA describe the information needed (from the SFO Airport/Community Roundtable and/or Airport) to input this into the gateway? What is the expected timeframe for the FAA to input this? What is the overall process for inputting, review, and possible implementation?

Also, can the FAA model any adverse impact this new procedure may have in the form of additional ground based noise specifically affecting the City of Millbrae on the departure of aircraft using this new procedure?

Item 2:

Problem Statement: At the February 6, 2019 SFO Airport/Community Roundtable Regular Meeting, the FAA provided graphics for the following item as previously requested but noted that the questions related to the item were on hold.

Previously Submitted Problem Statement: The SFO SSTIK DP brings an extremely large volume of flights over the densely populated middle and Northern San Francisco Peninsula. Previously, the PORTE and OFFSHORE DPs split the volume based on destination with a substantial amount crossing directly across the peninsula with the OFFSHORE DP, south over the Pacific Ocean. The concentration of these two previous procedures under the SSTIK DP has proved problematic.

Questions for the FAA at the March 7, 2019 SFO Airport/Community Roundtable TWG Meeting

February 7, 2019

Page 2 of 3

Questions: Utilizing the graphics provided, please answer the previously submitted questions related to this item, restated below.

Previously Submitted Questions: What would be required to achieve converting the OFFSHORE DP into an RNAV DP and 1) change the angle to stay over the Pacific Ocean and not over or near the Peninsula, 2) repeat to the extent possible the geographical path of the OFFSHORE from takeoff to the Pacific Ocean and 3) connect at FFOIL or another similar offshore waypoint while remaining clear of Special Use Airspace (SUA)? If the OFFSHORE DP cannot be turned into a RNAV with the above considerations, can a DP be constructed that achieves the same basic ground track as the existing OFFSHORE DP with the above considerations?

For discussion purposes the Technical Working Group would appreciate the FAA providing Google Earth or similar graphics including waypoints, the SSTIK, EUGEN, PORTE, OFFSHORE DPs with transitions, SUAs (floor, ceiling and hours of operation) and any other procedures that may impact an OFFSHORE RNAV overlay or similar procedure creation. (Added Note: Graphics have been provided by the FAA)

Additional Clarification: As charted, the OFFSHORE departure directs aircraft from Runways 1L/R to SEPDY, WAMMY, SEGUL. As charted, the OFFSHORE departure directs aircraft from Runways 28L/R to SENZY, WAMMY, SEGUL.

If aircraft flew over WAMMY and SEGUL – they would remain over ocean and not over the Peninsula. In our question, we discuss creating an RNAV departure procedure that takes a path from takeoff to the ocean (WAMMY) and then connect at FFOIL (close to SEGUL) while remaining clear of the Special Use Airspace).

In looking at actual flights utilizing the OFFSHORE departure procedure, they turn and cut across the Peninsula instead of staying over the ocean. Our question applies to both sets of runways utilized. The goal is for aircraft to remain over the ocean and not cross over the Peninsula.

Item 3:

Problem Statement: At the February 6, 2019 SFO Airport/Community Roundtable Regular Meeting, the FAA stated that this item was being shelved.

Previously Submitted Problem Statement: Continuing with the SSTIK DP though focusing on the waypoint SSTIK - The November 2017 Phase II Final document included the Airport/Community Roundtable's ask stating in Appendix D, 2.38 "Move SSTIK N + E as much as feasible to allow maximum altitude gain before turning to fly over land using the historic SEPDY waypoint as a guide." The FAA responded somewhat cryptically, "Due to a change in criteria, the SSTIK waypoint is in the process of being moved 0.44 NM to the East-Southeast of its present position. The FAA does not support moving SSTIK north due to the close proximity to OAK procedures." When requesting more information, we received the following: "AFS 8260.58 criteria has changed since this SID (Standard Instrument Departure) was originally implemented. RNAV SID criteria now requires that when successive Direct to a Fix (DF) is used, it must be within 15 degrees of the runway centerline. The current location of SSTIK is 22.95 degrees from the departure end of Runway 01R." On September 13, 2018 the charting release date we had been informed by the FAA to expect the SSTIK waypoint move, it did not. We were informed that only the YYUNG transition changed adding and dropping waypoints. This revision did not include the SSTIK move.

Questions for the FAA at the March 7, 2019 SFO Airport/Community Roundtable TWG Meeting

February 7, 2019

Page 3 of 3

Questions: Why is it being shelved? What is the reasoning behind not being able to answer the previously submitted questions regarding this item?

Previously Submitted Questions: Can the FAA overlay the proposed new SSTIK waypoint with the current SSTIK waypoint in the same image and provide both current and proposed SSTIK DPs in Google Earth KML files? This will include the ground track for the procedure as it is today as well as the procedure as it would look with the new SSTIK waypoint. We request modeled flight track information for these two waypoints on the SSTIK procedure as well as the new charting date. Please provide the design notes for the change in the SSTIK waypoint location.

Item 4:

Problem Statement: For the December 5, 2018 SFO Community/Airport Roundtable Regular Meeting, the FAA was not able to attend but provided slides on the steps forward for "NIITE – HUSSH SIDs".

Questions: Can the FAA please present these slides at the Roundtable's Technical Working Group (TWG) meeting scheduled for March 7, 2019, and provide their explanation on the best way forward? It would be beneficial if the FAA can be prepared for an open discussion after the presentation so that the TWG can best determine how they can assist the FAA in making progress on this recommendation.

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From: Dave Ong (AIR)
To: ["t.livermore@woodsidesidetown.org"](mailto:t.livermore@woodsidesidetown.org)
Cc: [Bert Ganoung \(AIR\)](#); ["James A Castañeda"](#)
Subject: RE: 1Q 2019 Aircraft Noise Monitoring Results for Woodside VOR
Date: Friday, March 22, 2019 5:37:00 PM
Attachments: [image001.png](#)

I apologize, the subject was incorrect in my previous email. It is correct above.

From: Dave Ong (AIR)
Sent: Friday, March 22, 2019 5:35 PM
To: 't.livermore@woodsidesidetown.org' <t.livermore@woodsidesidetown.org>
Cc: Bert Ganoung (AIR) <bert.ganoung@flsfo.com>; 'James A Castañeda' <jcastaneda@sforoundtable.org>
Subject: 4Q 2018 Aircraft Noise Monitoring Results for Woodside VOR

Dear Honorable Thomas Livermore,

Please find attached aircraft noise monitoring results for First Quarter 2019, for noise measurements collected in the Town of Woodside. Past reports are also available online at [link](#), located under the Quarterly Portable Noise Monitoring section, then Woodside. If you have any questions or like to discuss the information provided, please don't hesitate to call our office at (650) 821-5100.

Thank you,



David Ong
Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flsfo.com

[Facebook](#) | [Twitter](#) | [YouTube](#) | [Instagram](#) | [LinkedIn](#)

MEMORANDUM

TO: WOODSIDE COMMUNITY

**FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE
ABATEMENT OFFICE**

SUBJECT: 1Q 2019 WOODSIDE NOISE MONITORING REPORT

DATE: MARCH 22, 2019

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the Town of Woodside to determine noise levels within the community from aircraft operations at SFO. The monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from February 2, 2019, to February 19, 2019. The monitoring is made possible with the assistance of the Federal Aviation Administration (FAA) San Jose Technical Operations team. They continue to provide support and participate in our efforts to collect noise data by allowing us access to their facility to monitor aircraft noise.

The overall average daily noise level from all aircraft was 37dBA CNEL. The Community daily noise level was 57dBA CNEL, higher than usual, due to the generator noise which ran continuously during the power outage. Other non-aircraft noise sources included wind and rain. Noise from all aircraft over this location increased the total average daily noise level by 0.4dBA.

The Town of Woodside is a quiet suburban community with ambient noise levels of 42dBA. On an average day of this study, Woodside had 138 overflights out of which 7 exceeded the 65dBA noise monitor threshold and recorded a noise event. Aircraft destined to SFO typically overfly Woodside during high traffic conditions or inclement weather days with aircraft vectoring. Also known as delay vectoring, it is when an FAA Air Traffic Controller instructs the pilot to fly specific headings. These headings are not the most direct path to the runways. Reasons for aircraft vectoring may include adjusting the arrival sequence in order to maintain safe separation between all aircraft, maximizing use of available airspace, achieving an expeditious flow of aircraft traffic, avoiding areas of known hazardous weather or known severe turbulence, and maneuvering an aircraft into a suitable position to accommodate a visual approach and landing.

Due to inclement weather conditions during the noise monitoring period, we see a greater mix of aircraft from other airports, including San Jose arrivals and San Carlos. Typically, as flights to SFO cross over the peninsula, they represent about 60 percent of all aircraft noise events over Woodside. During this monitoring period, there were less SFO aircraft (36%) and a greater percentage of departures due to the use of Southeast Flow (see Figure 1 and 2 on the next page for traffic pattern comparison).

During the noise-monitoring period, SFO ANAO received noise reports from 8 individuals. The Town of Woodside is a quiet suburban community with ambient noise in the quiet 40-45dB range; any aircraft noise level above the background may become a nuisance for the residents.

dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for a frequency range of human hearing. An increase of ten decibels is perceived by the human ear as a doubling of noise.

SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold, and its energy is compressed into one second.

LMax - The maximum noise level is a measurement of the peak level of a noise event.

CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established the acceptable level of aircraft noise of 65dBA CNEL.

Short Term Noise Monitoring Report - Site 969

Woodside 1Q 2019

February 2 - February 19

Aircraft CNEL: 37dBA

Community CNEL: 57dBA

Total CNEL: 57dBA

SEL: 79dBA

LMax: 67dBA

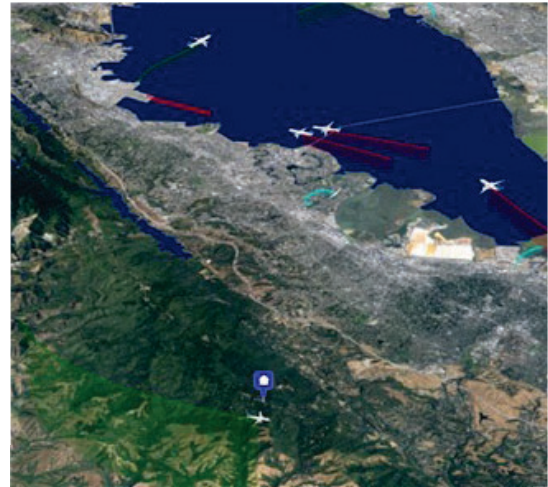
Ambient Noise: 42dBA

Noise Monitor Treshold: 65dBA

SFO Aircraft Noise Events: 6 per day

SFO Operations Flow: Due to inclement weather conditions SouthEast Flow was used on Feb 2, 3, 4, 7, 8, 12, 13, 14

Cause of Aircraft Overflights: SFO Oceanic Arrival Route, San Jose Arrivals, delayed vectoring, SFO Departures and general aviation-small aircraft



Daily Noise Event Averages

Date	SFO			Non-SFO			Community		
	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)
2				3	74	67	4	78	70
3	2	80	75				3	75	67
4	2	76	70	2	73	67	9	84	70
5				1	76	72	1	78	68
6				1	76	69	1	77	67
7				1	76	70	1	81	76
8	3	76	68						
9	3	81	71				37	79	69
10	12	83	66	26	79	66	198 *	83	66
11	16	86	67	24	86	67	834 *	86	66
12	9	85	66	40	86	67	709 *	87	67
13	2	84	67	2	77	69	58	84	68
14							55	82	68
15				5	81	71	12	78	68
16	2	78	69				8	82	69
17				2	75	70	4	80	68
18				6	78	71			
19				3	75	68			
Daily AVG	6	81	67	9	78	67	129	81	67

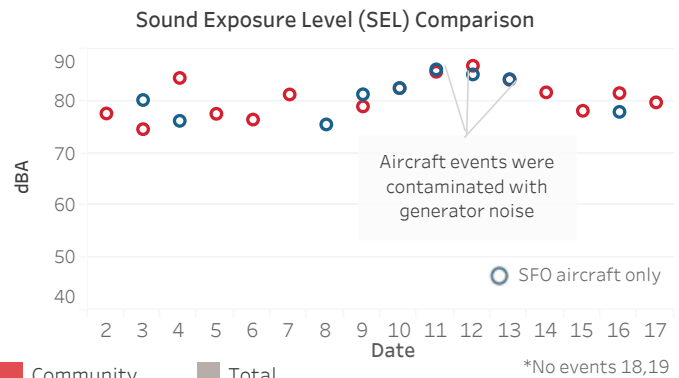
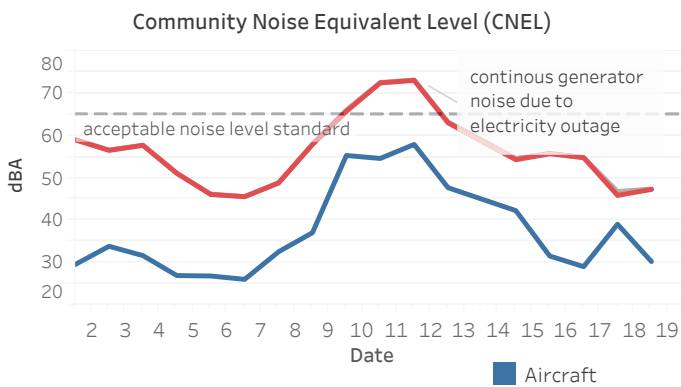
* Generator

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.

SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.

Lmax - The maximum noise level is a measurement of the peak level of a noise event.

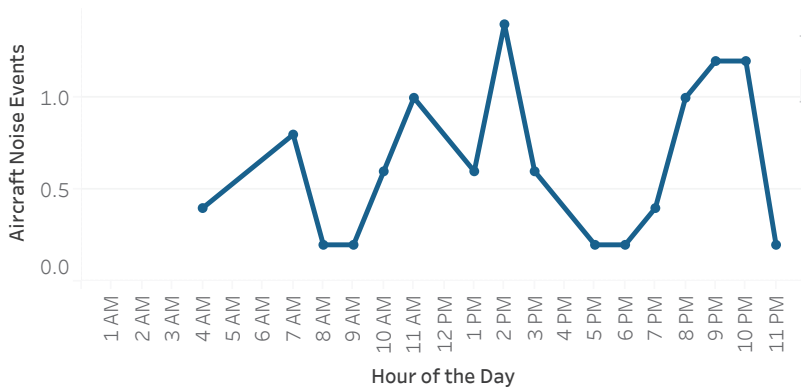
CNEL - This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

Day	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	29	57%	84	66	87	68	65	75	57	1	120
Evening	13	25%	85	72	87	67	65	69	78	5	120
Night	9	18%	84	73	87	66	65	67	59	7	120

SFO Noise Events by Hour of the Day

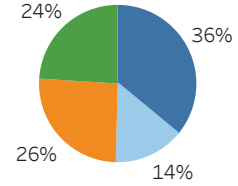


SFO Aircraft Altitude

	<6000ft	≥6000ft	≥7000ft	≥8,000ft	≥9,000ft
Arrivals	19%	33%	39%	8%	
Departures	44%				56%

Only aircraft that registered a noise event on the monitor are considered.

- Airport
- SFO
- San Carlos
- San Jose Intl
- Other Airports



Noise Reporters

	Noise Reporters	Noise Reports
2	4	22
3	5	42
4	4	59
5	4	24
6	3	31
7	3	18
8	6	40
9	4	67
10	6	47
11	3	20
12	4	9
13	3	5
14	4	30
15	3	31
16	3	32
17	2	35
18	3	16
19	2	6
Total	8 *	534

* Individual Reporters

There were no SFO nighttime events between midnight and 6am.

20%

of overflights registered a noise event. (138 avg daily overflights of which 7 created a noise event)

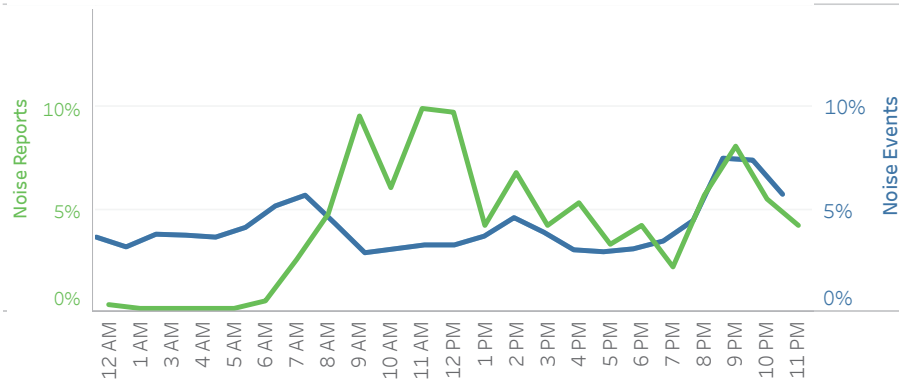
Operation Type



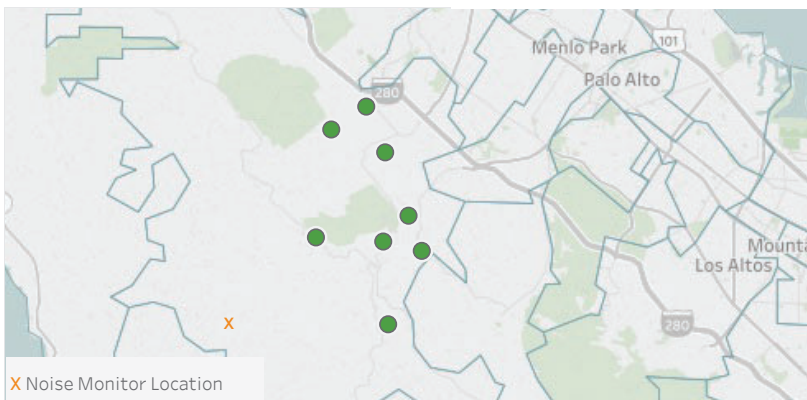
Aircraft Type



Noise Reports vs Noise Events



Noise Reporters Location



Hour

Noise Monitor on Location



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From: Dave Ong (AIR)
To: [Terry O'Connell](#)
Cc: [Holstine, Clay](#); [Bert Ganoung \(AIR\)](#); ["James A Castañeda"](#)
Bcc: [Anneliese Taing \(AIR\)](#); [Anthony Carpeneti \(AIR\)](#); [Nastasja von Conta \(AIR\)](#)
Subject: 1Q 2019 Aircraft Noise Monitoring Results for Brisbane
Date: Friday, March 22, 2019 5:31:00 PM
Attachments: [1Q 2019 Brisbane Noise Monitoring Report.pdf](#)
[image001.png](#)

Dear Honorable Terry O'Connell,

Please find attached aircraft noise monitoring results for First Quarter 2019, for noise measurements collected in the City of Brisbane at two locations. Past reports are also available online at [link](#) in the Quarterly Portable Noise Monitoring section, then Brisbane. If you have any questions or like to discuss the information provided, please don't hesitate to call Nastasja von Conta, a Senior Noise Abatement Specialist with our office or me at (650) 821-5100

Thank you,



David Ong

Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flysfo.com

[Facebook](#) | [Twitter](#) | [YouTube](#) | [Instagram](#) | [LinkedIn](#)



MEMORANDUM

TO: BRISBANE COMMUNITY

FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE ABATEMENT OFFICE

SUBJECT: 1Q 2019 BRISBANE NOISE MONITORING REPORT

DATE: MARCH 22, 2019

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the City of Brisbane, California to determine noise levels within the community from aircraft operations at SFO. Noise monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from January 19, 2019, to February 1, 2019. The monitoring is made possible with the assistance of the City Manager, resulting in two temporary sites in Brisbane. The first site was located above the Brisbane Community Pool (Site 1001) at the end of Trinity Road and the second site was located at the Mission Blue Center (Site 966 and 1002). Two monitors were used at the Mission Blue Center to compare the results of monitoring with varying noise thresholds.

Brisbane is located approximately 4 miles from the SFO Airport, and aircraft noise events sources include primarily SFO departures utilizing the SSTIK and OFFSHORE departure procedures. During the monitoring period, there were no changes to departure procedures. Aircraft departing SFO from Runways 01L/R for destinations to the west, south, and southeast typically overfly Brisbane. Occasionally when the winds on the airfield are stronger from the west, the TRUKN or NIITE departures will be utilized for destinations to the northeast and east. Departing aircraft from Runways 28L/R will initiate a right turn once the aircraft reaches the minimum altitude of 520 feet, consequently, this may have some aircraft fly over Brisbane. SFO aircraft arrivals from the north (BDEGA) on a typical day (West Plan) overfly Brisbane at 10,000 feet or higher. The ambient levels within Brisbane during the monitoring period were as follows: Site 966 - 48dBA, Site 1002 - 47dBA, and Site 1001- 53dBA. Non-aircraft noise sources included vehicular traffic, maintenance activity and weather-related conditions such as wind.

The overall average daily noise level from all Aircraft at Site 1001 was 53dBA CNEL, and at Site 966 and 1002, it was 50dBA and 51dBA, respectively. Community and Total CNEL values along with other noise metrics are shown in the summary section of the data report. Noise from all aircraft increased the total average daily noise level by 1.5dBA at each of the sites. In comparison, the human ear can detect a 3dB sound change, and a 6dB increase may result in higher annoyance levels.

Aircraft noise monitoring intends to measure aircraft noise levels and not the number of aircraft overflights. Although, flight frequency is an important annoyance factor it is vital to understand that they are two separate metrics. Site 966 threshold was set at 62 dBA while the threshold on the other monitor was 57dBA. When we use lower thresholds, we are likely to measure a larger number of aircraft noise events. Likewise, we are also likely to measure more community noise events. The intent of setting a threshold is to separate aircraft noise events from community events.

The intent is not to exclude the aircraft noise events, but rather to capture the ones that are above the community noise levels and consequently drive the aircraft noise levels higher rather than averaging them out. The number of aircraft overflights is also reported, but separately from the noise levels. As expected, the number of aircraft noise events is higher (112 versus 66 average daily noise events) on the noise monitor with the lower threshold. And while there is significantly more aircraft recorded at noise monitor 1002 the overall energy average is similar to the noise monitor 966 due to the fact that the recorded aircraft noise events are quieter. Other metric comparisons are depicted in a table on the next page.

Table 1: Results Comparison of Noise Monitors with Varying Thresholds at the Mission Blue Center

Category	62dBA threshold (966)	57dbA threshold (1002)
Avg. Aircraft Noise Events per Day	66	112
Aircraft CNEL (dBA)	50	51
Community CNEL (dBA)	53	52
SEL (dBA)	77	76
LMax (dBA)	68	65
Ambient Noise (dBA)	48	47
Aircraft Noise Correlations	15%	29%

During the noise-monitoring period, SFO ANAO received noise reports from 21 individuals in Brisbane. The majority of aircraft noise events at both sites occurred between 7 am and 7 pm. Since the monitoring locations in Brisbane are in an urban area with ambient noise in the low 50 dBA, any aircraft noise above this threshold may become a nuisance for the residents. Additionally, the frequency of flights due to the proximity of the Airport may increase annoyance levels.

dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for the frequency range of human hearing. The human ear perceives an increase of ten decibels as a doubling of noise.

CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established an acceptable level of aircraft noise of 65dBA CNEL.

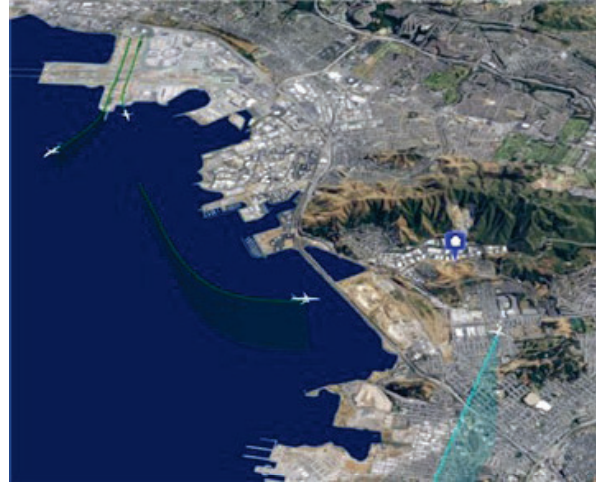
West Plan – Standard operations at the Bay Area International Airports. Aircraft arrive to the west at all three airports. At San Jose and Oakland Airports, aircraft depart to the west. While at San Francisco Airport, aircraft depart either to the north or to the west depending on wind conditions on the airfield.

TRUKN and NIITE – RNAV departure procedures off Runways 28L/R at SFO, has aircraft climb heading of 284° to 520 feet then right turn to initial fix. These procedures replaced the legacy departures procedures SHORELINE and QUIET, respectively.

Mission Blue Center 1Q 2019

January 19 - February 1

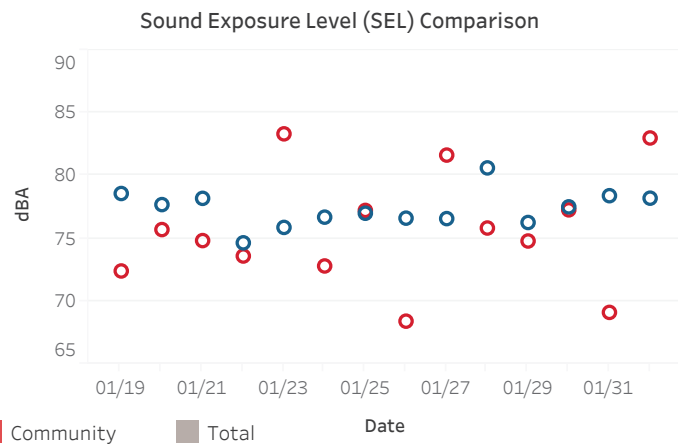
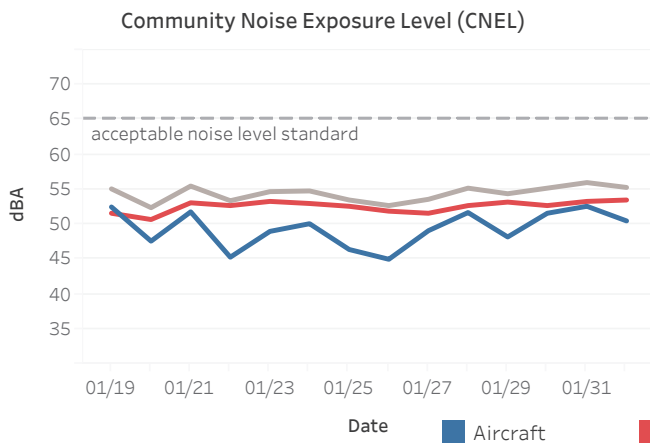
Aircraft CNEL: **50dBA**
 Community CNEL: **53dBA**
 Total CNEL: **55dBA**
 Aircraft SEL: **77dBA**
 Aircraft LMax: **68dBA**
 Ambient Noise: **48dBA**
 Noise Monitor Threshold: **62dBA**
 SFO Aircraft Noise Events: **66 per day**
 SFO Operations Flow: **West Flow except 2/1 (both West and Southeast Flow)**
 Cause of Aircraft Overflights : **SFO SSTIK Departures from Runway 01L/R making the left turn over Brisbane and departures making a right turn from Runways 28L/R performing the TRUKN / NIITE Departure**



Daily Noise Event Averages

Date	SFO			Non-SFO			Community		
	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)
Jan 19	77	79	67	2	74	63	4	72	68
20	47	78	68	1	70	63	1	76	69
21	126	78	68	8	79	71	17	75	68
22	50	75	65	1	82	75	3	74	68
23	55	76	65	3	73	64	6	83	69
24	82	77	66	3	76	67	1	73	69
25	46	77	66	2	76	68	3	77	69
26	34	77	66	1	73	66	1	68	65
27	75	77	66	5	74	65	5	82	74
28	79	81	66	3	77	67	9	76	66
29	63	76	66	2	75	65	2	75	71
30	79	78	67	2	73	64	8	77	66
31	84	78	67	4	73	63	1	69	64
Feb 1	25	78	67	1	83	76			
Daily AVG	66	77	66	3	75	67	4	76	68

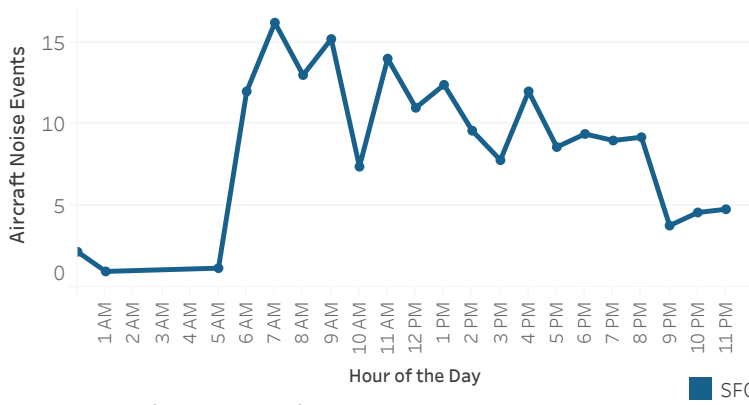
SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL - This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	683	74%	78	67	98	67	62	85	17	5	60
Evening	110	12%	77	69	82	67	62	73	17	5	34
Night	129	14%	77	68	84	66	62	73	17	5	40

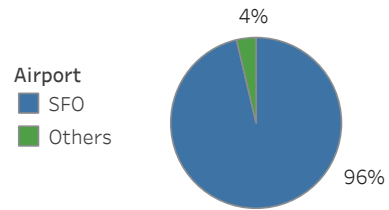
SFO Noise Events by Hour of the Day



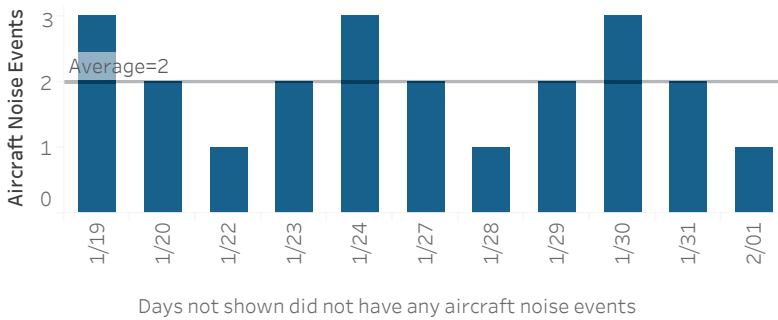
Only aircraft that registered a noise event on the monitor are considered.

SFO Departures Altitude

Altitude	Percentage
3000ft	10%
3500ft	18%
4000ft	23%
4500ft	20%
≥5,000ft	28%

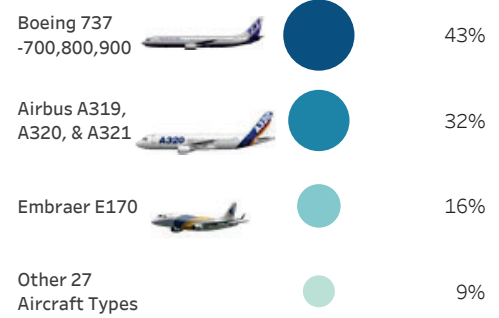


SFO Nighttime (Midnight-6am)



Operation Type	Arrivals	Departures
	1%	99%

Aircraft Type

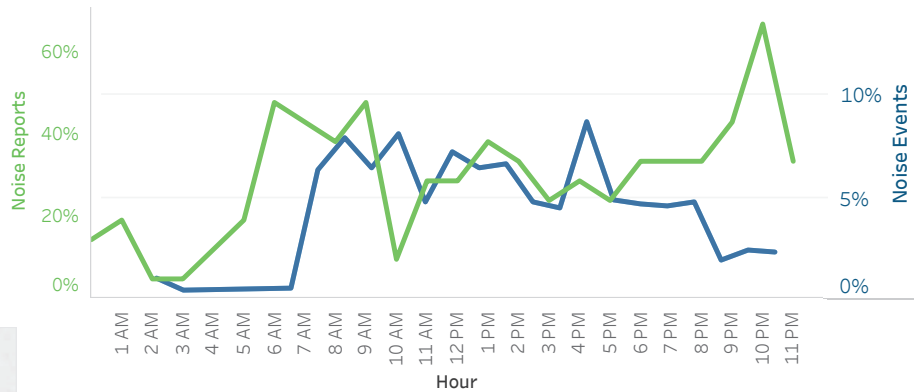


Noise Reporters

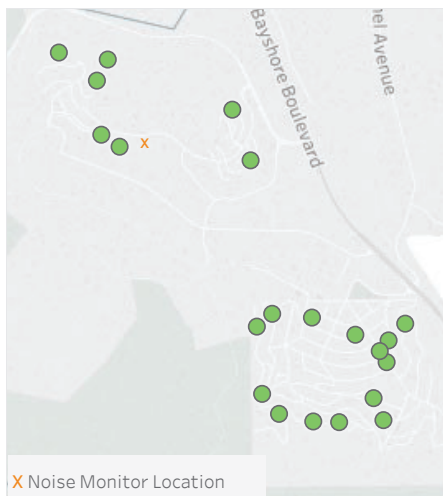
Month	Date	Noise Reporters	Noise Reports
Jan	19	12	44
Jan	20	8	25
Jan	21	13	73
Jan	22	7	58
Jan	23	10	43
Jan	24	10	115
Jan	25	11	37
Jan	26	10	53
Jan	27	10	54
Jan	28	9	78
Jan	29	13	70
Jan	30	10	56
Jan	31	11	74
Feb	1	6	18
Total		21 *	798

15% of overflights registered a noise event.
(433 avg daily overflights of which 66 created a noise event)

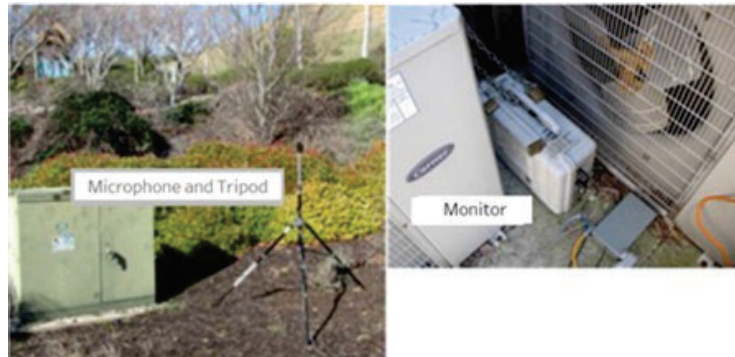
Noise Reports vs Aircraft Noise Events



Noise Reporters Location



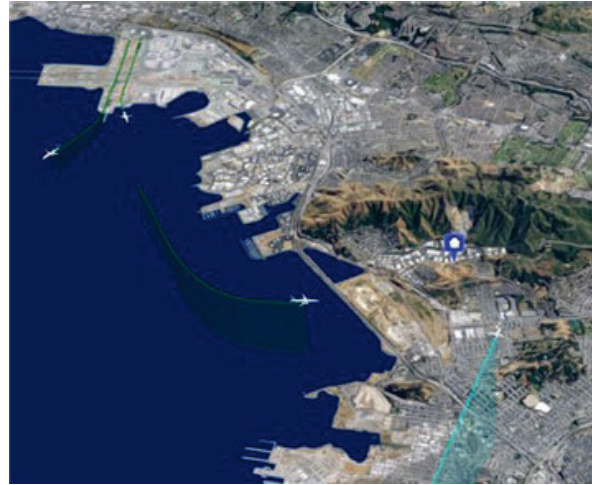
Noise Monitor on Location



Mission Blue Center 1Q 2019

January 19 - February 1

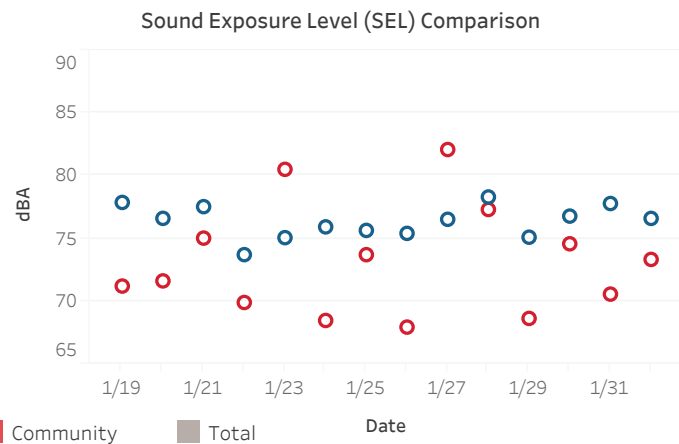
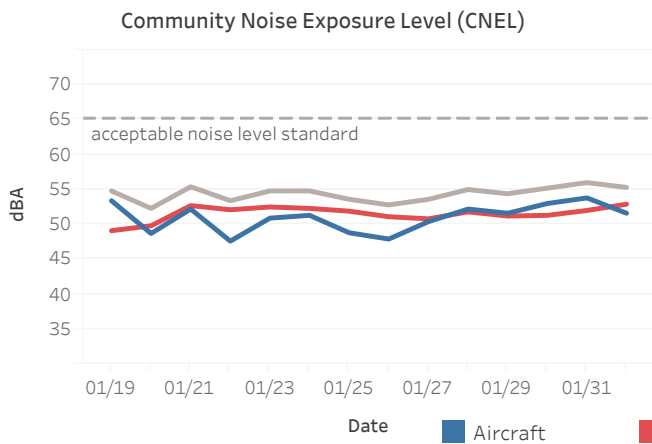
Aircraft CNEL: **51dBA**
 Community CNEL: **52dBA**
 Total CNEL: **55dBA**
 Aircraft SEL: **76dBA**
 Aircraft LMax: **65dBA**
 Ambient Noise: **47dBA**
 Noise Monitor Treshold: **57dBA**
 SFO Aircraft Noise Events: **112 per day**
 SFO Operations Flow: **West Flow except 2/1 (both West and Southeast Flow)**
 Cause of Aircraft Overflights : **SFO SSTIK Departures from Runway 01L/R making the left turn over Brisbane and departures making a right turn from Runways 28L/R performing the TRUKN / NIITE Departure and Oakland westbound departures.**



Daily Noise Event Averages

Date	SFO			Non-SFO			Community		
	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)
Jan 19	107	78	65	15	71	60	6	71	66
20	78	77	65	14	69	60	13	72	64
21	170	78	65	28	75	63	31	75	66
22	122	74	62	13	73	60	15	70	62
23	113	75	63	11	72	61	12	80	65
24	147	76	64	25	70	60	7	68	62
25	93	76	63	14	72	61	11	74	66
26	67	75	63	15	70	61	7	68	62
27	106	77	64	14	72	61	4	82	72
28	130	78	64	10	74	62	15	77	65
29	132	75	63	31	71	61	11	69	62
30	129	77	64	21	71	60	19	75	62
31	122	78	65	35	71	60	8	71	63
Feb 1	49	77	64	6	72	61	13	73	61
Daily AVG	112	76	64	18	72	61	12	73	64

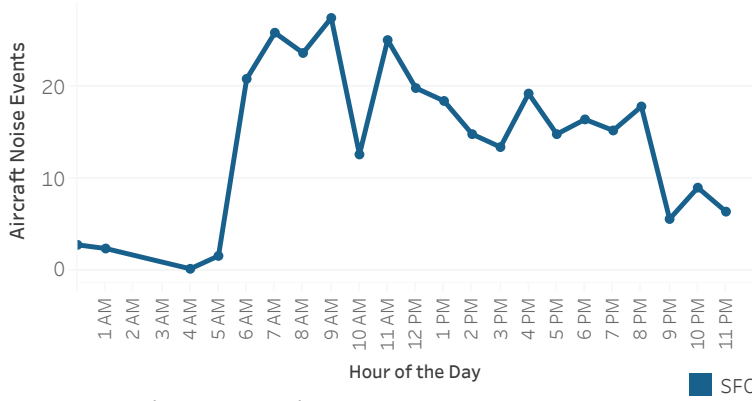
SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL - This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	1,156	74%	77	62	96	64	57	82	25	5	60
Evening	193	12%	76	64	83	64	57	74	26	5	59
Night	216	14%	77	63	84	64	57	73	26	5	52

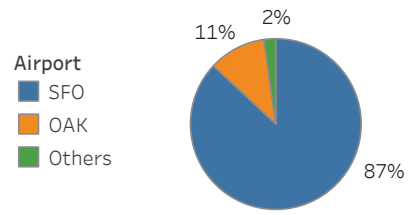
SFO Noise Events by Hour of the Day



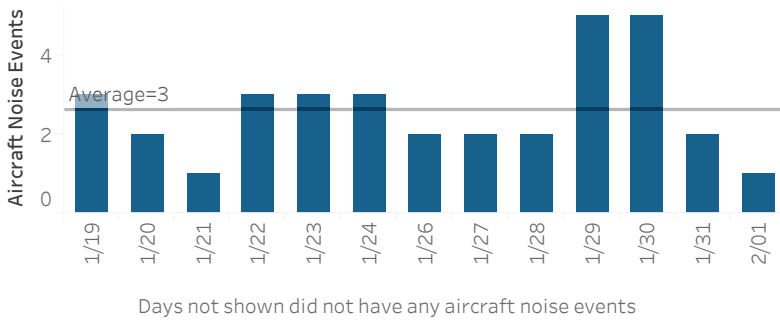
Only aircraft that registered a noise event on the monitor are considered.

SFO Departures Altitude

Altitude	Percentage
3000ft	9%
3500ft	16%
4000ft	21%
4500ft	20%
≥5,000ft	35%

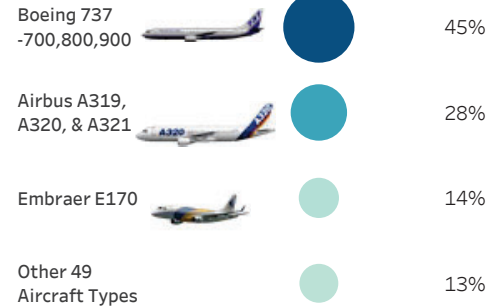


SFO Nighttime (Midnight-6am)



Operation Type	Arrivals	Departures
	1%	99%

Aircraft Type



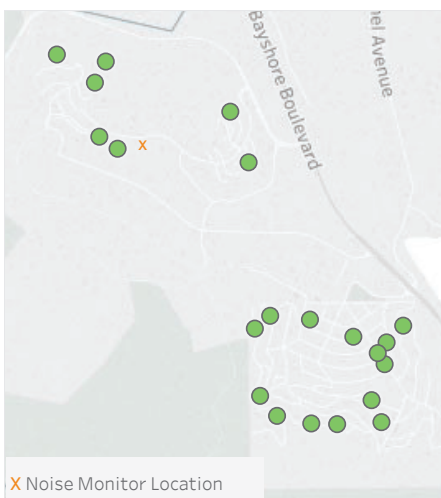
Noise Reporters

	Noise Reporters	Noise Reports
Jan 19	19	44
20	8	25
21	13	73
22	7	58
23	10	43
24	10	115
25	11	37
26	10	53
27	10	54
28	9	78
29	13	70
30	10	56
31	11	74
Feb 1	6	18
Total	21 *	798

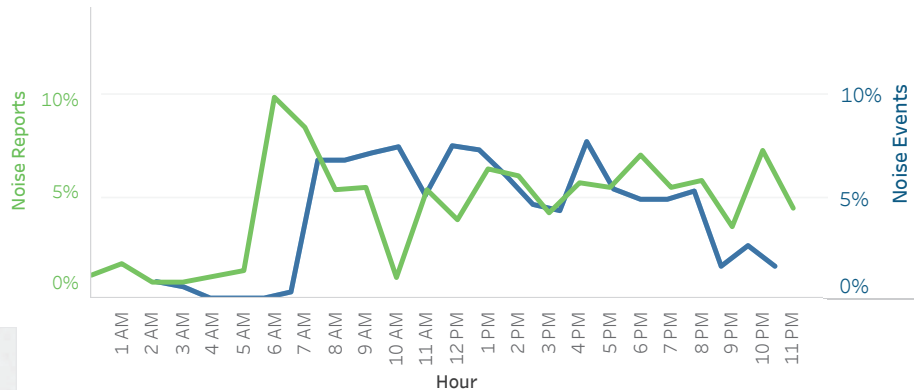
29%
of overflights registered a noise event.
(433 avg daily overflights of which 124
created a noise event)

*Individual Reporters

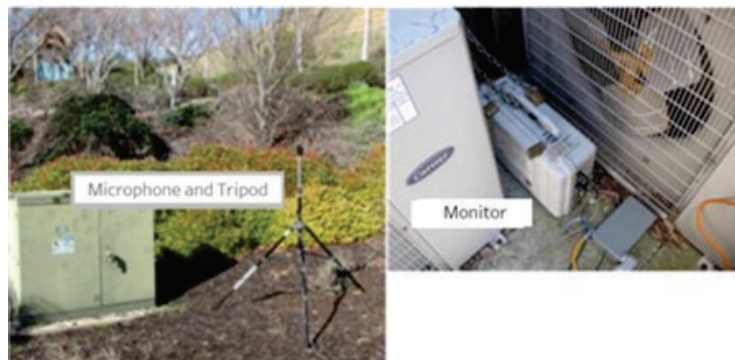
Noise Reporters Location



Noise Reports vs Aircraft Noise Events



Noise Monitor on Location



Trinity Road 1Q 2019

January 19 - February 1

Aircraft CNEL: 53dBA

Community CNEL: 58dBA

Total CNEL: 59dBA

Aircraft SEL: 77dBA

Aircraft LMax: 63dBA

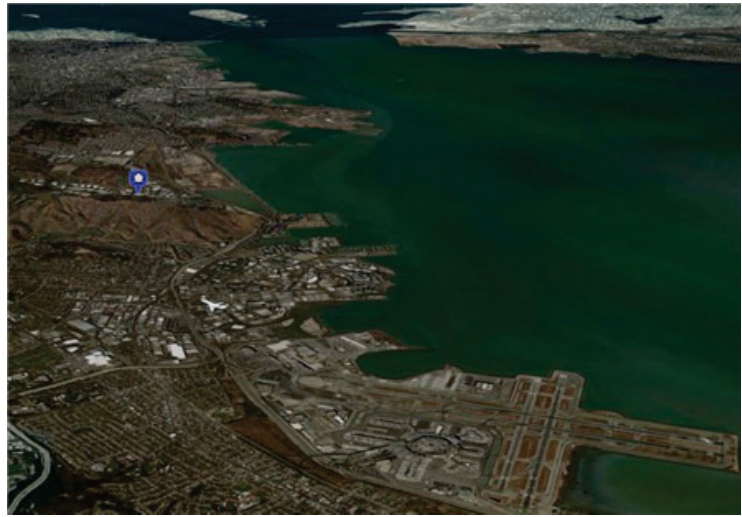
Ambient Noise: 62dBA

Noise Monitor Treshold: 57dBA

SFO Aircraft Noise Events: 127 per day

SFO Operations Flow: West Flow except on 2/1 (both West and Southeast Flow)

Cause of Aircraft Overflights : SFO SSTIK Departures from Runway 01L/R making the left turn over Brisbane, departures making a right turn from Runways 28L/R performing the TRUKN / NIITE Departure and BDEGA arrivals from the north entering the right traffic pattern for Runway 28R.



Daily Noise Event Averages

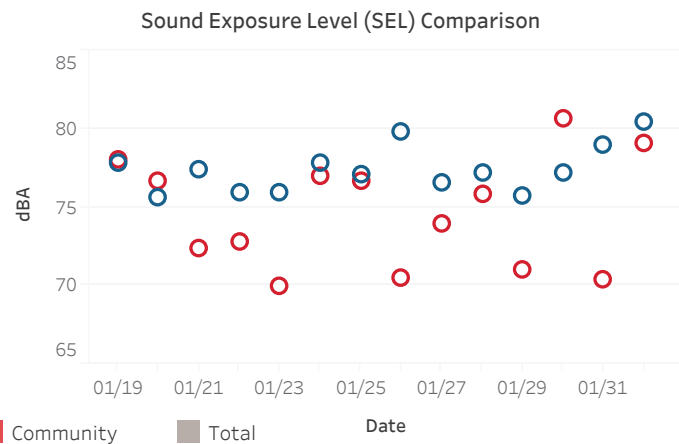
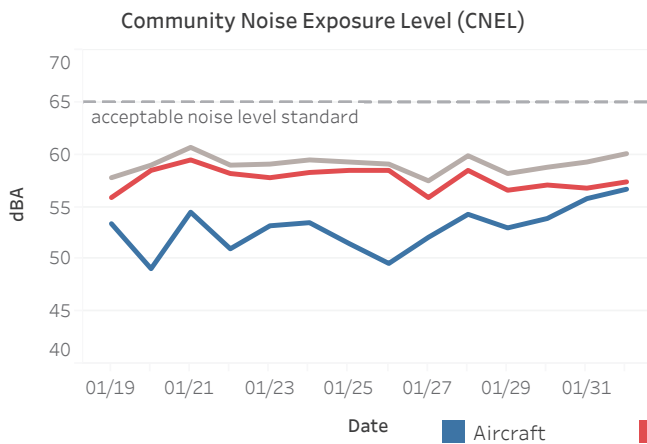
Date	SFO			Non-SFO			Community		
	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)
19	99	78	63	15	74	62	30	78	66
20	92	76	64	21	73	61	308 *	77	64
21	197	77	64	28	73	61	129 *	72	62
22	126	76	63	28	73	60	51	73	61
23	131	76	63	20	71	60	58	70	60
24	192	78	64	33	74	60	163 +	77	61
25	123	77	63	15	73	60	53	77	62
26	73	80	64	21	71	60	43	84	61
27	115	77	64	23	71	60	28	74	65
28	128	77	64	23	75	61	103 +	76	61
29	144	76	63	34	71	60	84	71	62
30	155	77	63	25	73	61	49	81	63
31	144	79	64	29	71	60	53	70	60
Feb 1	60	80	65	7	72	60	56	79	63
Daily Average	127	77	64	23	72	60	86	76	62

* Rain and Wind, + Generator Noise

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.

Lmax - The maximum noise level is a measurement of the peak level of a noise event.

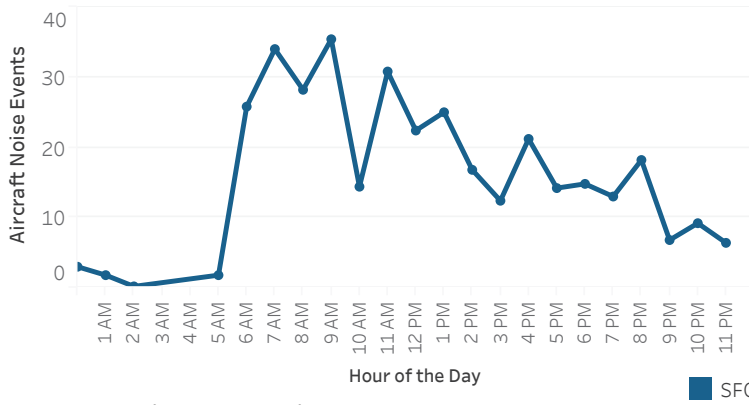
CNEL - This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	1,348	76%	77	58	90	63	57	84	28	1	60
Evening	190	11%	78	57	92	64	57	86	28	1	60
Night	240	13%	78	64	92	65	57	84	32	5	60

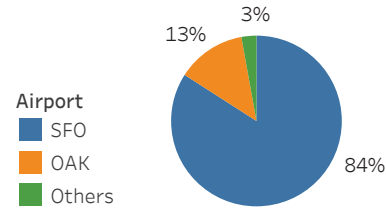
SFO Noise Events by Hour of the Day



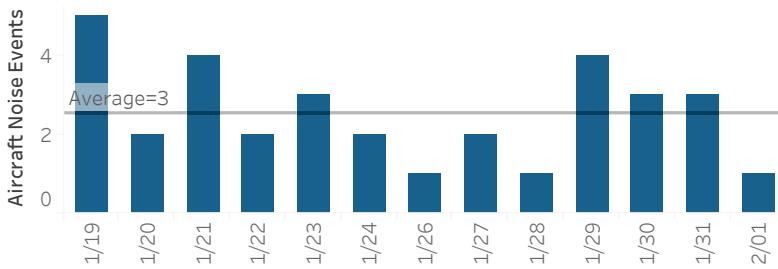
SFO Departures Altitude

Altitude	Percentage
≤3000ft	8%
3000ft	11%
3500ft	20%
4000ft	21%
≥4500ft	40%

Only aircraft that registered a noise event on the monitor are considered.



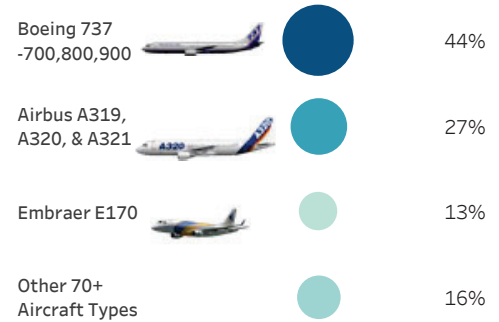
SFO Nighttime (Midnight-6am)



Days that are not shown had zero Aircraft Noise Events.

Operation Type	Arrivals	Departures
	2%	98%

Aircraft Type

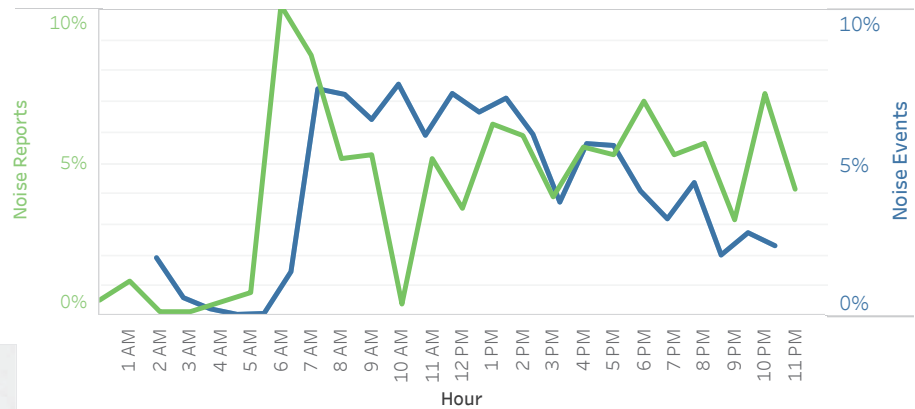


Noise Reporters

Month	Date	Noise Reporters	Noise Reports
January	19	12	44
	20	8	25
	21	13	73
	22	7	58
	23	10	43
	24	10	115
	25	11	37
	26	10	53
	27	10	54
	28	9	78
	29	13	70
30	10	56	
31	11	74	
February	1	6	18
Total		21*	798

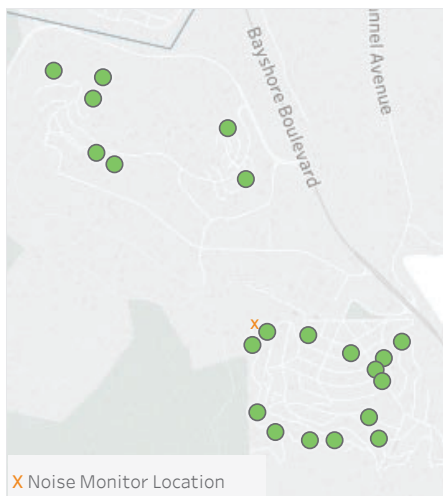
30% of overflights registered a noise event.
(408 avg daily overflights of which 121 created a noise event)

Noise Reports vs Aircraft Noise Events



*Individual Reporters

Noise Reporters Location



Noise Monitor on Location



From: Dave Ong (AIR)
To: ["annwengert@yahoo.com"](mailto:annwengert@yahoo.com); ["jdennis@portolavalley.net"](mailto:jdennis@portolavalley.net)
Cc: ["Sue Chaput"](#); [Bert Ganoung \(AIR\)](#); ["James Castaneda"](#)
Bcc: [Anneliese Taing \(AIR\)](#); [Anthony Carpeneti \(AIR\)](#); [Nastasja von Conta \(AIR\)](#)
Subject: 1Q 2019 Aircraft Noise Monitoring Results for Portola Valley
Date: Friday, March 22, 2019 5:42:00 PM
Attachments: [1Q2019 Portola Valley Noise Monitoring Report.pdf](#)
[image001.png](#)

Dear Honorable Ann Wengert,

Please find attached the aircraft noise monitoring results for 1Q 2019 noise measurements collected in the Town of Portola Valley. Past reports are also available online at [link](#), located under the Quarterly Portable Noise Monitoring section, then Portola Valley. If you have any questions or like to discuss the information provided, please don't hesitate to call our office at (650) 821-5100.

Thank you,



David Ong

Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flysfo.com

[Facebook](#) | [Twitter](#) | [YouTube](#) | [Instagram](#) | [LinkedIn](#)

MEMORANDUM

TO: PORTOLA VALLEY COMMUNITY

**FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE
ABATEMENT OFFICE**

SUBJECT: 1Q 2019 PORTOLA VALLEY NOISE MONITORING REPORT

DATE: MARCH 22, 2019

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the Town of Portola Valley to determine noise levels within the community from aircraft operations at SFO. Noise monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from February 6, 2019 to February 20, 2019. The monitoring was made possible with the assistance of a Portola Valley resident.

The overall average daily noise level from all aircraft was 45dBA CNEL. The Community daily noise level was 49dBA CNEL. Noise from all aircraft over this location increased the total average daily noise level by 1.2dBA. Non-aircraft noise sources included residential noise, wind, rain and thunder.

The Town of Portola Valley is a quiet suburban community with ambient noise levels of 42dBA. On an average day, Portola Valley had 137 overflights out of which 55 exceeded the noise monitor thresholds and recorded a noise event. The thresholds were 55dBA during the daytime and 50dBA for nighttime. Aircraft destined to SFO typically overfly Portola Valley during high traffic conditions or inclement weather days with aircraft vectoring. Also known as delay vectoring, is when a FAA (Federal Aviation Administration) Air Traffic Controller instructs the pilot to fly specific headings. The headings are not the most direct path to the runways. Reasons why aircraft may be vectored include: adjusting the arrival sequence in order to maintain safe separation between all aircraft, maximizing use of available airspace, achieving an expeditious flow of aircraft traffic, avoiding areas of known hazardous weather or known severe turbulence, and maneuvering an aircraft into a suitable position to accommodate a visual approach and landing.

Due to inclement weather conditions during the noise monitoring period, Southeast Flow (see Figure 1 and 2 on the next page for traffic pattern comparison) was used. Because of this we see a greater mix of aircraft operations, and higher number of aircraft flights at night due to delays. As flights to SFO cross over the peninsula, they are typically between 5,000 and 7,000 feet, and represent about 84 percent of all aircraft noise events over Portola Valley. The remaining aircraft noise events are low-flying general aviation traffic using San Carlos and Palo Alto Airport.

An average sound exposure level (SEL) for a single noise event for all aircraft were recorded at 72dBA and maximum noise levels (LMax) at 60dBA. On average, there were four nighttime noise events from SFO aircraft. During the noise-monitoring period, SFO ANAO received noise reports from 28 individuals in Portola Valley primarily during the morning and nighttime hours. During these hours, there is a noticeable spike of noise reports disproportionate with aircraft noise events. In view of the fact that the monitoring location in Portola Valley is located in a quiet suburb with ambient noise in the low 40dB range, any aircraft noise above this threshold may become a nuisance for the residents.

dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for frequency range of human hearing. An increase of ten decibels is perceived by human ear as a doubling of noise.

SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.

LMax - The maximum noise level is a measurement of the peak level of a noise event.

CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Figure 1: West Flow

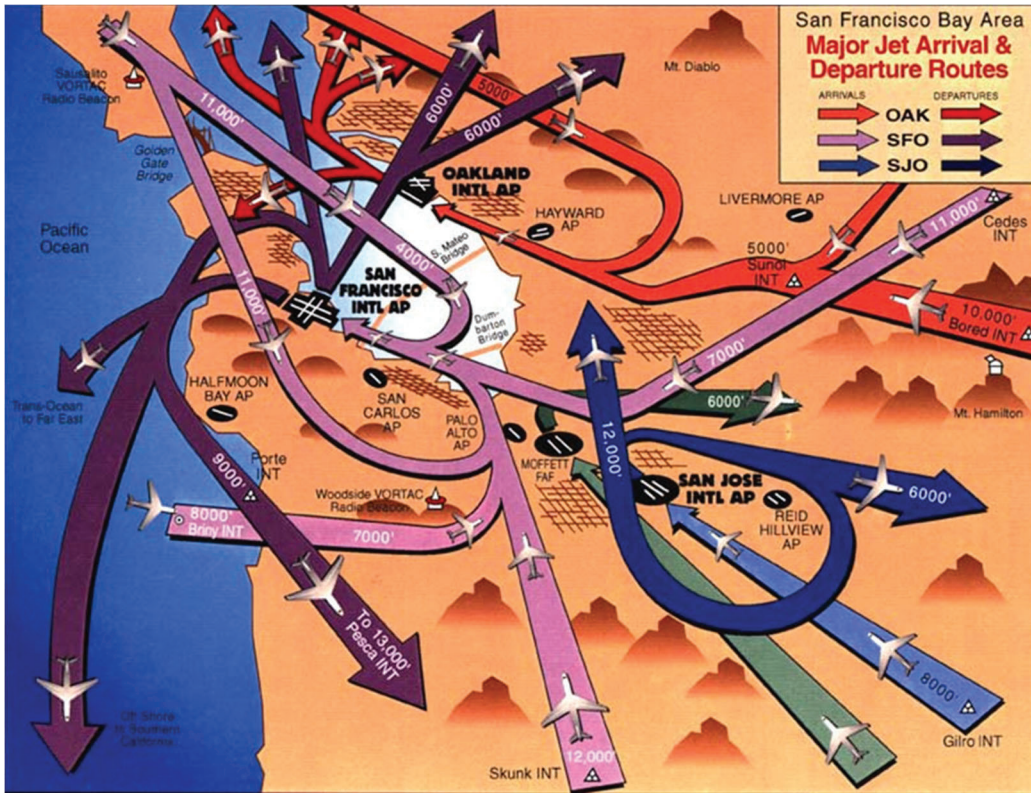
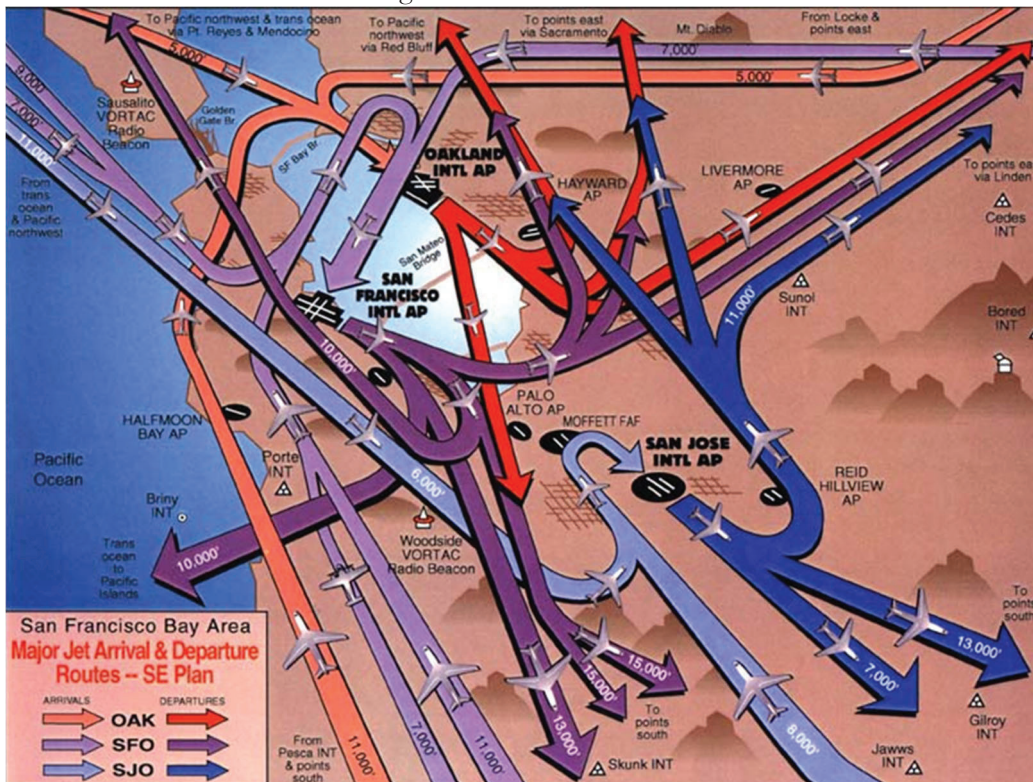


Figure 2: Southeast Flow



Portola Valley 1Q 2019

February 6 - February 20

Aircraft CNEL: **45dBA**
 Community CNEL: **49dBA**
 Total CNEL: **51dBA**
 Aircraft SEL: **72dA**
 Aircraft LMax: **60dBA**
 Ambient Noise: **42dBA**
 Noise Monitor Treshold: **55dBA(Day), 50dBA(Night)**
 SFO Aircraft Noise Events: **48 per day**
 SFO Operations Flow: **Due to inclement weather conditions**
Southeast flow was used on Feb 7, 8, 12, 13, 14
 Cause of Aircraft Overflights: **SFO aircraft arrivals, delayed vectoring and small general aviation aircraft transitioning the area**



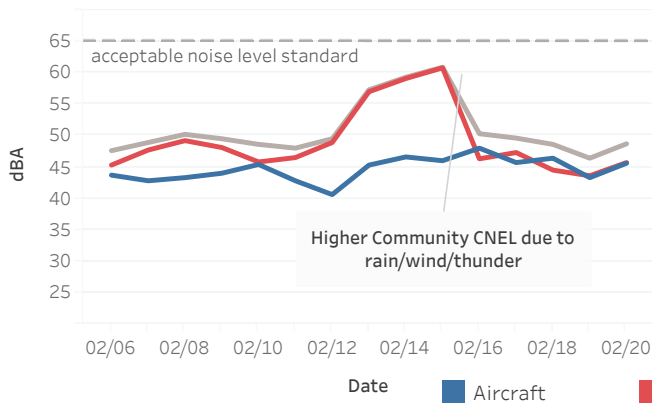
Daily Noise Event Averages

Date	SFO			Non-SFO			Community		
	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)	Noise Events	Avg. SEL (dBA)	Avg. LMax (dB)
6	36	70	58	10	75	64	5	77	61
7	37	71	59	29	72	60	12	75	63
8	50	72	60	4	70	59	13	62	53
9	54	71	60	4	66	54	15	65	53
10	50	71	59	29	72	61	4	64	55
11	25	73	60	12	68	59	4	71	59
12	14	71	58	14	69	58	12	66	56
13	18	76	62	18	74	61	466 *	74	61
14	74	71	60	7	70	59	360 *	72	59
15	87	70	59	11	69	58	12	99	60
16	86	72	60	30	73	60	5	75	57
17	63	71	59	27	72	61	5	82	71
18	40	71	60	36	74	62	3	68	65
19	26	70	58	16	72	61	4	70	62
20	58	70	59	13	72	61	3	82	72
Daily Average	48	71	59	17	71	60	62	73	60

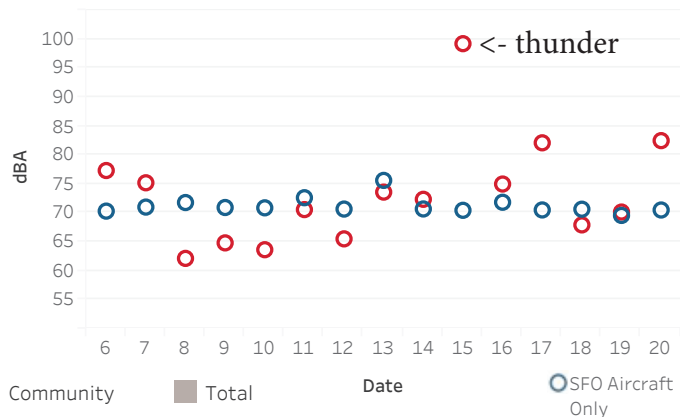
*wind, rain

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL - This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Community Noise Exposure Level (CNEL)



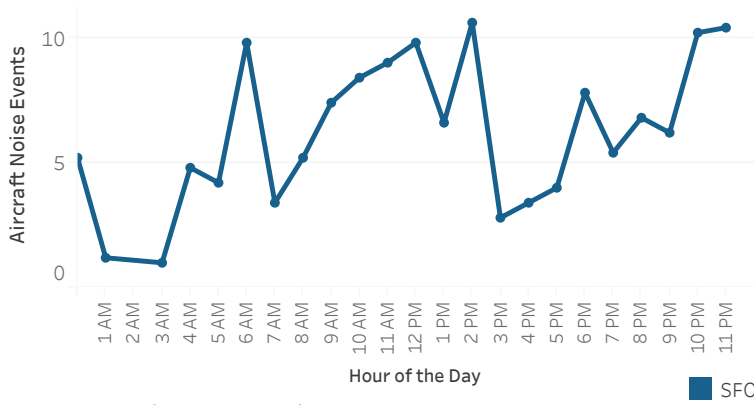
Sound Exposure Level (SEL) Comparison



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

Day	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	392	57%	72	60	83	60	54	74	20	5	60
Evening	92	13%	72	61	78	60	54	67	21	5	52
Night	205	30%	70	56	81	57	50	118	27	5	60

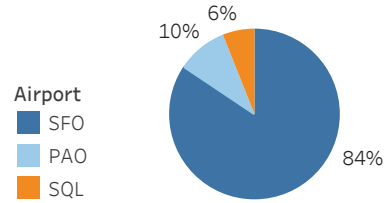
SFO Noise Events by Hour of the Day



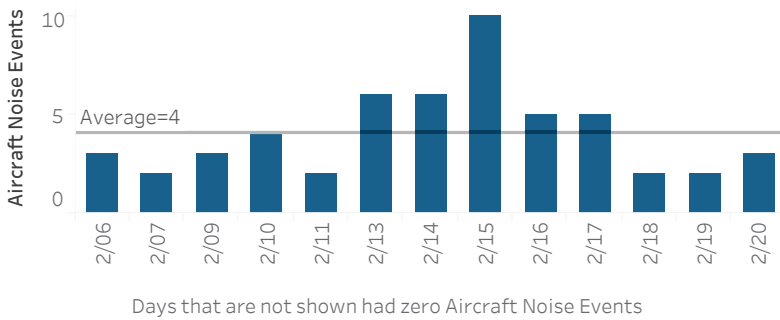
SFO Arrivals Altitude

Altitude	Percentage
4,000ft	7%
5,000ft	33%
6,000ft	38%
>7,000ft	22%

Only aircraft that registered a noise event on the monitor are considered.



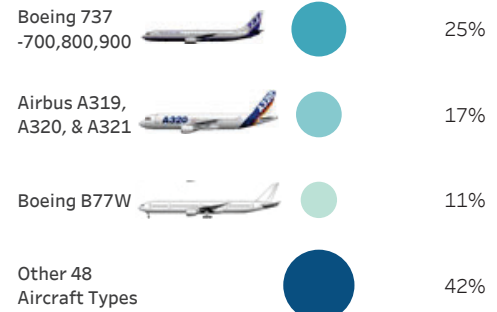
SFO Nighttime (Midnight-6am)



Days that are not shown had zero Aircraft Noise Events

Operation Type	Arrivals	Departures
	78%	22%

Aircraft Type



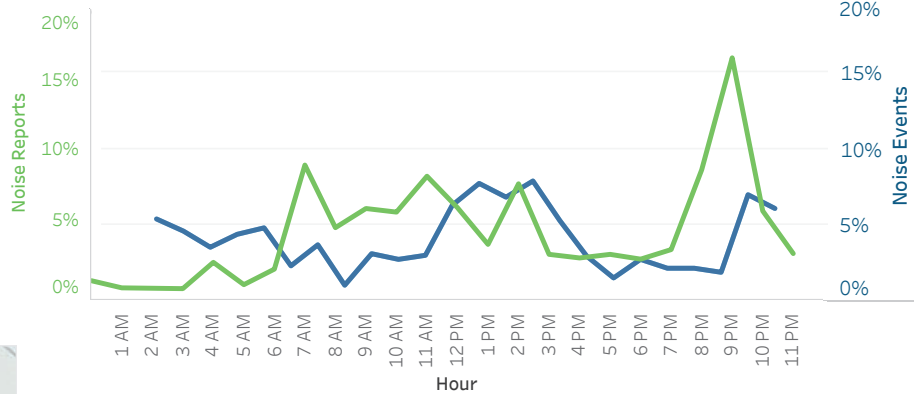
Noise Reporters

Day	Noise Reporters	Noise Reports
6	15	223
7	13	168
8	13	119
9	16	279
10	11	289
11	9	77
12	12	116
13	11	28
14	15	279
15	15	239
16	19	508
17	12	388
18	13	272
19	11	233
20	15	294
Total	28	*3,512

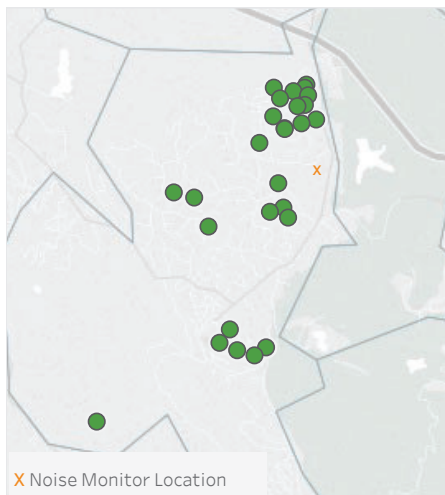
*Individual Reporters

13% of overflights registered a noise event.
(178 avg daily overflights of which 24 created a noise event)

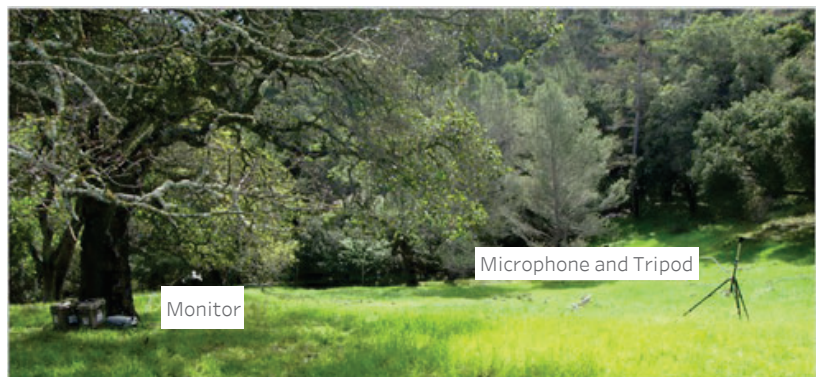
Noise Reports vs Aircraft Noise Events



Noise Reporters Location



Noise Monitor on Location





February 10, 2019

TO: Roundtable Members and Interested Parties

FROM: Justin W. Cook – INCE, LEED GA, Principal Consultant
Roundtable Technical Consultant - HMMH

SUBJECT: Federal Aviation Administration (FAA) Instrument Flight Procedures (IFP) Information Gateway Review

At the request of the Roundtable, Harris Miller Miller & Hanson Inc. (HMMH) is monitoring and reviewing updates to procedures published onto the FAA's IFP Information Gateway in the regions of San Francisco International Airport (SFO), Metropolitan Oakland International Airport (OAK), and Norman Y. Mineta San Jose International Airport (SJC).

After analyzing the documents posted, HMMH determines proposed changes and the reason for the changes. The FAA IFP Information Gateway published updates on January 29 and February 6 of 2019. Two (2) changes are of low importance and there were no changes of high importance. The next publication is expected on February 28, 2019.

Important Terms and Items:

- FAA Stage Definitions
 1. FPT: Procedures are coordinated with Air Traffic, Tech Ops and Airports for feasibility, preparation and priority (FPO)
 2. DEV: Development of the procedures
 3. FC: FAA Flight Inspection of the developed procedures
 4. PIT: Production Integration Team (TS)
 5. CHARTING: Procedures at AeroNav Products Charting for publication (NACO)
- FAA Status Definitions
 1. At Flight Check: At Flight Inspection for procedure validation
 2. Awaiting Publication: At AeroNav Products Charting for publication
 3. Awaiting Cancellation: At AeroNav Products Charting for cancellation
 4. Complete: Procedure development action finished
 5. On Hold: Procedure waiting data/information to allow it to proceed/continue to next stage
 6. Pending: Procedure development work on-going
 7. Published: Procedure charted and published
 8. Under Development: Procedure is being worked on by the FAA
 9. Terminated: Procedure/project terminated
- Glossary

HMMH FAA IFP Information Gateway Review

February 10, 2019

Page 2 of 5

- RNAV: Area Navigation
- IAP: Instrument Approach procedure
- STAR: Standard Terminal Arrival Route
- SID: Standard Instrument Departure
- GPS: Global Positioning System
- ILS: Instrument Landing System
- LOC: Localizer

Low Importance:

- February 6, 2019
 - STAR GOLDEN GATE SEVEN at SFO stage change to Charting with a scheduled publish date of June 20, 2019
 - Status is “Awaiting Cancellation”
- January 29, 2019
 - SID LOUPE FIVE at SJC stage change to Charting with a scheduled publish date of April 25, 2019
 - Change in departure routing for aircraft to fly to BLNCH navigational point prior to the SJC VOR/DME
 - (Figure 1) Existing published LOUPE SID (LOUPE4)
 - (Figure 2) Proposed modifications to LOUPE SID (LOUPE5)
 - Previously identified as a change of “High Importance” in HMMH FAA IFP Information Gateway Review memorandum dated December 7, 2018

High Importance:

- None

Open Comment Periods:

- ILS OR LOC RWY 28L AMDT 27B at SFO comment period ends: February 19, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasId=SFO#searchResultsTop
- STAR GOLDEN GATE - CAN at SFO comment period ends: March 8, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasId=SFO#searchResultsTop

Next Publication:

We expect to see updates for the following on the February 28, 2019 publication:

- SFO
 - ILS OR LOC RWY 28L AMDT 27B

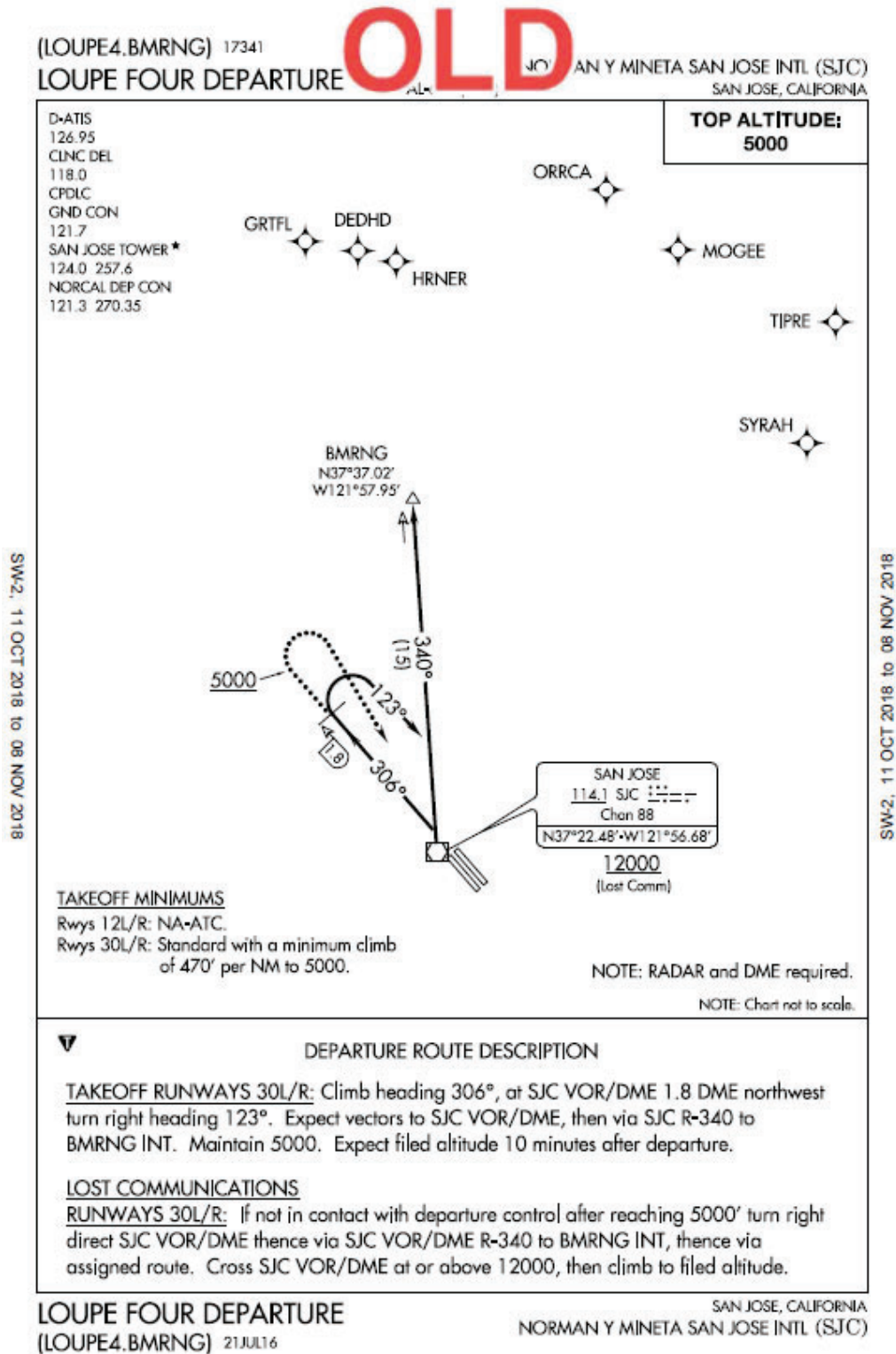
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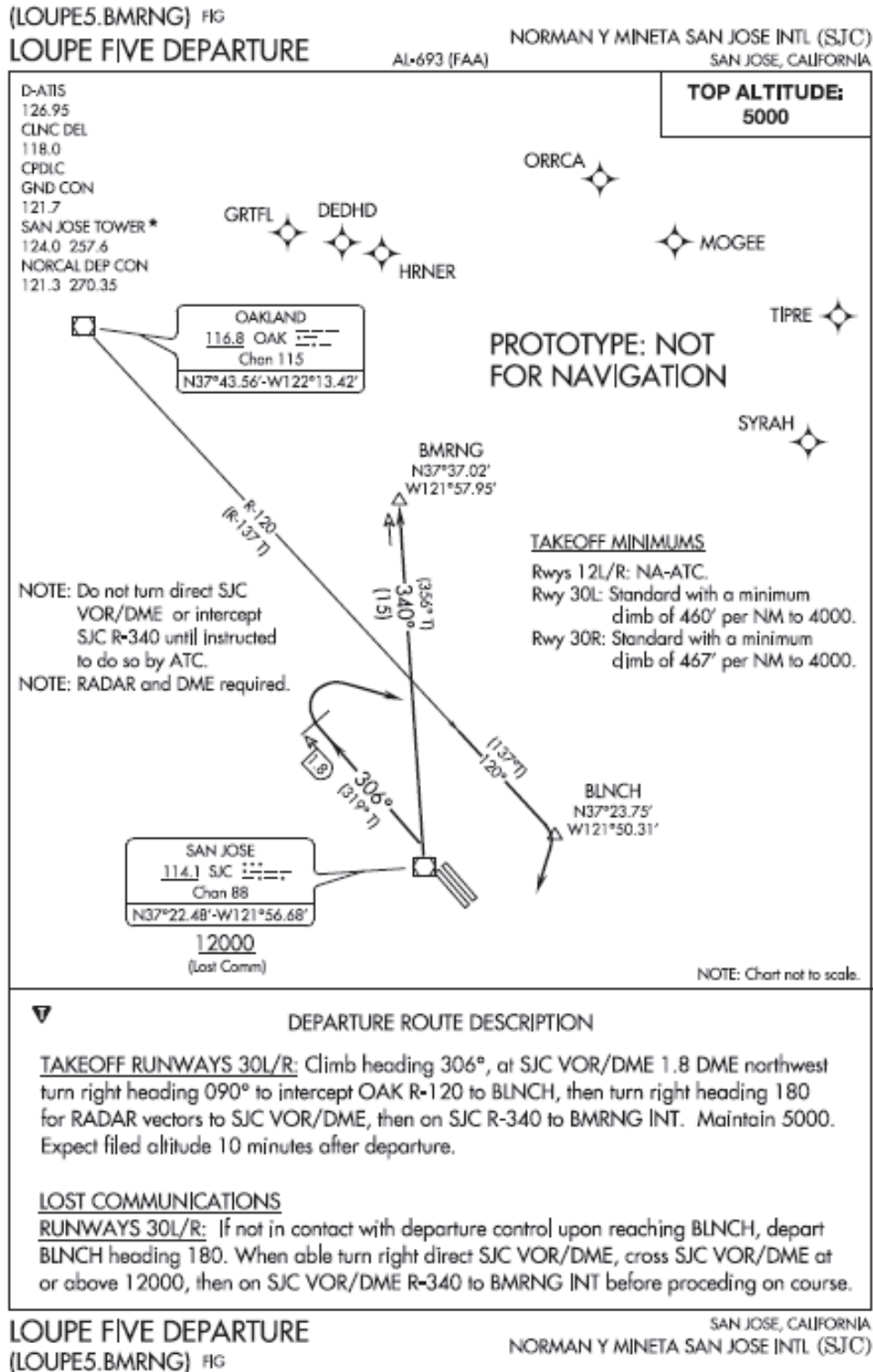
- Currently "Awaiting Publication (NFDC)"
- STAR PIRAT (RNAV) ONE SAN FRANCISCO CA KSFO
 - Currently "Awaiting Publication (NFDC)"

Figure 1. PUBLISHED SID LOUPE FOUR at SJC



Source: https://www.faa.gov/aero_docs/acifp/2017111418560301001-SJC/CA_KSJC_SID_LOUPE%20FIVE_S.pdf

Figure 2. PROPOSED CHANGES SID LOUPE FIVE at SJC



Source: https://www.faa.gov/aero_docs/acifp/2017111418560301001-SJC/CA_KSJC_SID_LOUPE%20FIVE_S.pdf



March 11, 2019

TO: Roundtable Members and Interested Parties

FROM: Bryan Lynch, Consultant
Justin W. Cook – INCE, LEED GA, Principal Consultant
Roundtable Technical Consultant - HMMH

SUBJECT: Federal Aviation Administration (FAA) Instrument Flight Procedures (IFP) Information Gateway Review

At the request of the Roundtable, Harris Miller Miller & Hanson Inc. (HMMH) is monitoring and reviewing updates to procedures published onto the FAA's IFP Information Gateway in the regions of San Francisco International Airport (SFO), Metropolitan Oakland International Airport (OAK), and Norman Y. Mineta San Jose International Airport (SJC).

After analyzing the documents posted, HMMH determines proposed changes and the reason for the changes. The FAA IFP Information Gateway published updates on February 27, February 28, March 5 and March 6 of 2019. 11 changes are of low importance and no changes are of high importance. The next publication is expected on April 25, 2019.

Important Terms and Items:

- FAA Stage Definitions
 1. FPT: Procedures are coordinated with Air Traffic, Tech Ops and Airports for feasibility, preparation and priority (FPO)
 2. DEV: Development of the procedures
 3. FC: FAA Flight Inspection of the developed procedures
 4. PIT: Production Integration Team (TS)
 5. CHARTING: Procedures at AeroNav Products Charting for publication (NACO)
- FAA Status Definitions
 1. At Flight Check: At Flight Inspection for procedure validation
 2. Awaiting Publication: At AeroNav Products Charting for publication
 3. Complete: Procedure development action finished
 4. On Hold: Procedure waiting data/information to allow it to proceed/continue to next stage
 5. Pending: Procedure development work on-going
 6. Published: Procedure charted and published
 7. Under Development: Procedure is being worked on by the FAA
 8. Terminated: Procedure/project terminated
- Glossary

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- RNAV: Area Navigation
- IAP: Instrument Approach procedure
- STAR: Standard Terminal Arrival Route
- SID: Standard Instrument Departure
- GPS: Global Positioning System
- ILS: Instrument Landing System
- LOC: Localizer

Low Importance:

- February 27, 2019
 - STAR PIRAT TWO at SFO stage change to Charting with a scheduled publish date of April 25, 2019
 - Status is “Awaiting Publication (NFDC)”
 - A new altitude restriction was added to the PIRAT navigational point for aircraft to cross PIRAT at or below 15,000 feet Mean Sea Level (MSL). Previously, there was no altitude restriction at PIRAT
- February 28, 2019
 - STAR PIRAT ONE at SFO stage change to Published
 - Status is “Published (NFDC)”
 - Previously identified as a change of “High Importance” in HMMH FAA IFP Information Gateway Review memorandum dated October 18, 2018
- March 5, 2019
 - STAR GOLDEN GATE SEVEN at SFO stage change to Awaiting Cancellation with a scheduled cancellation date of June 20, 2019
 - Status is “Awaiting Cancellation (NFDC)”
 - ILS OR LOC RWY 28L AMDT 27B stage change to Published
 - The minimum Runway visual Range (RVR) for has been reduced by one-thousand (1,000) feet to correct an error in prior publication
- March 6, 2019
 - SID OAKLAND FOUR at OAK stage change to Charting with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Publication (NFDC)”
 - SID SKYLINE ONE at OAK stage change to Charting with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Publication (NFDC)”
 - STAR PANOCHE SIX at OAK stage change to Charting with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Publication (NFDC)”
 - STAR MODESTO NINE at SFO status change to Charting with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Publication (NFDC)”
 - STAR CAPITOL THREE at SJC status change to Awaiting Cancellation with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Cancellation (NFDC)”

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- STAR EL NIDO FIVE at SJC status change to Awaiting Cancellation with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Cancellation (NFDC)”
- STAR ROBIE FIVE at SJC status change to Charting with a scheduled publish date of August 15, 2019
 - Status is “Awaiting Publication (NFDC)”

High Importance:

- None

Open Comment Periods:

- STAR MODESTO NINE at SFO comment period ends: March 12, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=SFO#searchResultsTop
- STAR PIRAT TWO at SFO comment period ends: March 29, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=SFO#searchResultsTop
- SID OAKLAND FOUR at OAK comment period ends: April 4, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=OAK#searchResultsTop
- SID SKYLINE ONE at OAK comment period ends: April 4, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=OAK#searchResultsTop
- STAR PANOCHE SIX at OAK comment period ends: April 4, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=OAK#searchResultsTop
- STAR CAPITOL THREE - CANCELLATION at SJC comment period ends: April 4, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=SJC#searchResultsTop
- STAR EL NIDO FIVE at SJC comment period ends: April 4, 2019
 - Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrlid=SJC#searchResultsTop
- STAR ROBIE FIVE at SJC comment period ends: April 4, 2019

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- Email concerns can be sent here:
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasId=SJC#searchResultsTop

Next Publication:

We expect to see updates for the following on the April 25, 2019 publication:

- SFO
 - STAR PIRAT TWO
 - Currently "Awaiting Publication (NFDC)"
 - SIF OFFSHORE TWO
 - Currently "Awaiting Publication (NFDC)"
- SJC
 - SID LOUPE FIVE
 - Currently "Awaiting Publication (NFDC)"