

REGULAR MEETING ANNOUNCEMENT

MEETING No. 282

Wednesday, October 3, 2012 - 7:00 p.m.

David Chetcuti Community Room at Millbrae City Hall 450 Poplar Avenue - Millbrae, CA 94030 (Access from Millbrae Library parking lot on Poplar Avenue) (See attached map)

AGENDA

- I. <u>Call to Order / Roll Call / Declaration of a Quorum Present</u> -Jeff Gee, Roundtable Chairperson / James A. Castañeda, AICP, Roundtable Coordinator
- II. Public Comment on Items NOT on the Agenda –

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

CONSENT AGENDA

Note: All items on the Consent Agenda are approved / accepted by 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 item on the Regular Agenda may be transferred to the Consent Agenda in a similar manner.

III.	Conse	nt Agenda Items –	ACTION
	A.	Review of Airport Director's Report for May 2012	Pgs. 21-28
	B.	Review of Airport Director's Report for June 2012	Pgs. 29-36
	C.	Review of Airport Director's Report for July 2012	Pgs. 37-44
	D.	Review of Airport Director's Report for August 2012	Pgs. 45-52
	E.	Review of SFO Fly Quiet Report Q2 2012	Pgs. 53-66
	F.	Review of Roundtable Regular Meeting Overview for June 6, 2012	Pgs. 67-76

Note: Public records that relate to any item on the open session Agenda (Consent and Regular Agendas) for a Regular Airport/Community Roundtable Meeting are available for public inspection. Those records that are distributed less than 72 hours prior to a Regular Meeting are available for public inspection at the same time they are distributed to all Roundtable Members, or a majority of the Members of the Roundtable. The Roundtable has designated the San Mateo County Planning & Building Department, at 455 County Center, 2nd Floor Redwood City, California 94063, for the purpose of making those public records available for inspection. The documents are also available on the Roundtable website at: www.sforoundtable.org.

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.



REGULAR AGENDA

IV. Presentation Items:

A. Airport Director's Comments

 John Martin, Director, San Francisco International Airport (Verbal Report)

 B. Program Coordinator Introduction / Roundtable Modernization Efforts

 James A. Castañeda, Roundtable Coordinator (Verbal Report)

 C. Introduction of the NorCal Optimization of Airspace and Procedures in the Metroplex (OAPM) process

 Patty Daniel, Project Manager, Federal Aviation Administration

V. FY 2011 – 2012 Roundtable Work Program Items:

A. SFO Construction Update and Departure/Arrival affects: INFORMATION - Roundtable Chairperson (Verbal Report) **B.** Update on FAA's PORTE THREE Departure Analysis: INFORMATION Roundtable Chairperson (Verbal Report) C. Update on the Crossing Altitude of Oceanic Arrivals Over the Woodside VOR: **INFORMATION** Ad Hoc Committee Report on Mr. Lyon's Four Recommendations – Pgs. 79-108 David Burow (Verbal Report) D. Roundtable Budget for FY 2012-2013 **ACTION** Roundtable Chairperson Pgs. 109-113 E. Status of Roundtable Work Program Items **INFORMATION** James A. Castañeda (No updates) F. Committee Reports - Roundtable Chairperson (Verbal Report) INFORMATION a. An outcome of this effort will be additional committee assignments i. Operations and Efficiency Subcommittee

ii. Legislative Subcommittee

1. Develop basis for a letter to the California Congressional delegation opposing CatEx for NextGEN

1. Consulate CNEL White Papers from Technical Support candidates

iii. Work Program Subcommittee

- 1. Initiate development of the FY 2012-2013 Roundtable Work Program
- 2. Recommendation of Aviation Consultant for Technical Support ACTION Pgs. 123-193

INFORMATION Pgs. 115-122

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- VI. <u>Member Communications / Announcements</u> Roundtable Members
- VII. <u>ADJOURN</u> Roundtable Chairperson

ACTION

NOTE: Next Regular Roundtable Meeting Date: Wednesday, December 5, 2012 Roundtable Web Site: www.sforoundtable.org

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Glossary of Common Acoustic and Air Traffic Control Terms

Α

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.

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.

В

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.

С

Center - See ARTCC.

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;00 PM – 9:59 PM) and nighttime (10 pm – 6:59 am) 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 thought there were ten. This results in a



Glossary of Common Acoustic and Air Traffic Control Terms Page 2 of 6

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 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.

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.

Ε

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

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 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.

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.

Glossary of Common Acoustic and Air Traffic Control Terms Page 3 of 6

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.

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 terrain.

Н

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.

ı

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.

- 1

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).

ī

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

Glossary of Common Acoustic and Air Traffic Control Terms Page 4 of 6

not established at authorized minimums or instructions from air traffic control, or for other reasons.

Ν

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

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.

Р

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

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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 onboard 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.

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 noise levels 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.

Significant Exceedance – As defined by the Airport Community Roundtable, is a noise event more than 100 dB SENEL outside of the 65 CNEL contour.

SOIA – Simultaneous Offset Instrument Approach II 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 $\[1 \]$ is a published IFR arrival procedure describing specific criteria for descent, routing, and communications for a specific runway at an airport.

Т

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.

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.

Glossary of Common Acoustic and Air Traffic Control Terms Page 6 of 6

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.

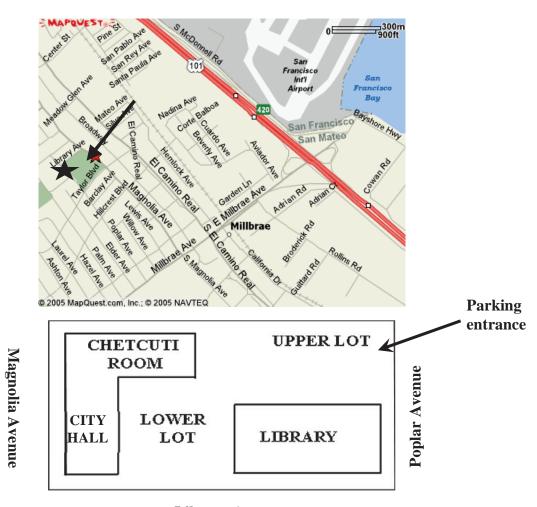
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Χ			
Υ			
Z			



AIRPORT/COMMUNITY ROUNDTABLE REGULAR MEETING PLACE

David Chetcuti Community Room 450 Poplar Avenue ~ Millbrae, CA 94030 (access through Millbrae Library parking lot on Poplar Avenue) (650) 259-2363

Roundtable Web Site: www.sforoundtable.org



Library Avenue



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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 meeting tapes can be made available to the public upon request. Please contact the Roundtable office if you would like a copy of the meeting tapes.

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, Agenda Packet, or other writings that may be distributed at the meeting, should contact Connie Shields at least two (2) working days before the meeting at the phone, fax, 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/ CONSULTANTS

~ October 2012 ~

Chairperson: JEFFREY GEE

Representative, City of Redwood City

Phone: (650) 780-7221

Roundtable Coordinator:
JAMES A. CASTAÑEDA, AICP

County of San Mateo Planning & Building Department

Phone: (650) 363-1853

Vice-Chairperson: SEPI RICHARDSON

Representative, City of Brisbane

Phone: (415) 467-6409

ROUNDTABLE WEB SITE ADDRESS:

www.sforoundtable.org





^{*} City/County Association of Governments of San Mateo County





ABOUT THE AIRPORT/COMMUNITY ROUNDTABLE

OVERVIEW

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. The Roundtable is scheduled to meet on the first Wednesday of the following months: February, May, September, and November. 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. 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) 363-4417 or (650) 692-6597.

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







MEMBERSHIP ROSTER OCTOBER 2012 REGULAR MEMBERS

(See attached map of Roundtable Member Jurisdictions)

CITY AND COUNTY OF SAN FRANCISCO BOARD OF SUPERVISORS

Representative: Vacant

Alternate: Vacant

CITY AND COUNTY OF SAN FRANCISCO

MAYOR'S OFFICE

Julian C. L. Chang, (Appointed) Alternate: Edwin Lee, Mayor

CITY AND COUNTY OF SAN FRANCISCO AIRPORT COMMISSION REPRESENTATIVE

John L. Martin, Airport Director (Appointed)

Alternate: Mike McCarron, Director, Bureau of Community Affairs

COUNTY OF SAN MATEO BOARD OF SUPERVISORS

Dave Pine, Supervisor

Alternate: Don Horsley, Supervisor

C/CAG* AIRPORT LAND USE COMMITTEE (ALUC)

Richard Newman, (Appointed) ALUC Chairperson

Alternate: Carol Ford, (Appointed) Aviation Representative

TOWN OF ATHERTON

Elizabeth Lewis, Council Member Alternate: Bill Widmer, Council Member

CITY OF BELMONT

Coralin Feierbach, Council Member

Alternate: David Braunstein, Council Member

CITY OF BRISBANE

Sepi Richardson, Council Member/Roundtable Vice-Chairperson

Alternate: Vacant

CITY OF BURLINGAME

Michael Brownrigg, Council Member Alternate: Ann Keighran, Council Member



^{*} City/County Association of Governments of San Mateo County

MEMBERSHIP ROSTER OCTOBER 2012 (Continued)

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CITY OF DALY CITY

TBA

Alternate: TBA

CITY OF FOSTER CITY

Charlie Bronitsky, Council Member

Alternate: Steve Okamoto, Council Member

CITY OF HALF MOON BAY

Naomi Patridge, Council Member

Alternate: Allan Alifano, Council Member

TOWN OF HILLSBOROUGH

Larry May, Council Member

Alternate: Marie Chuang, Council Member

CITY OF MENLO PARK

Richard Cline, Council Member

Alternate: Kirsten Keith, Council Member

CITY OF MILLBRAE

Robert Gottschalk, Council Member Alternate: Wayne Lee, Council Member

CITY OF PACIFICA

Sue Digre, Council Member

Alternate: Pete DeJarnatt, Council Member

TOWN OF PORTOLA VALLEY

Ann Wengert: Council Member

Alternate: Maryann Derwin, Council Member

CITY OF REDWOOD CITY

Jeffrey Gee, Council Member/Roundtable Chairperson

Alternate: Vacant

CITY OF SAN BRUNO

Ken Ibarra, Council Member

Alternate: Rico Medina, Council Member

CITY OF SAN CARLOS

Matt Grocott: Council Member

Alternate: Bob Grassilli, Council Member

MEMBERSHIP ROSTER OCTOBER 2012 (Continued)

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CITY OF SAN MATEO Representative: Vacant

Alternate: Vacant

CITY OF SOUTH SAN FRANCISCO

Kevin Mullin, Council Member

Alternate: Richard Garbarino, Council Member

TOWN OF WOODSIDE

David Burow, Council Member

Alternate: Dave Tanner, Council Member

ROUNDTABLE ADVISORY MEMBERS

AIRLINES/FLIGHT OPERATIONS

Captain Andy Allen, United Airlines

FEDERAL AVIATION ADMINISTRATION

Airports District Office, Burlingame

Elisha Novak

SFO Air Traffic Control Tower

Greg Kingery

Northern California Terminal Radar Approach Control (NORCAL TRACON)

Dennis Green

ROUNDTABLE STAFF/CONSULTANTS

James A. Castañeda, AICP, Roundtable Coordinator

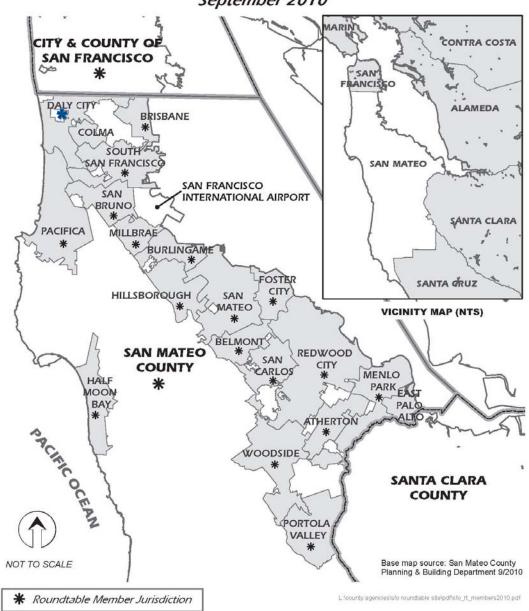
SAN FRANCISCO INTERNATIONAL AIRPORT NOISE ABATEMENT STAFF

Bert Ganoung, Noise Abatement Manager
David Ong, Noise Abatement Systems Manager
Ara Balian, Noise Abatement Specialist
John Hampel, Noise Abatement Specialist
Joyce Satow, Noise Abatement Office Administration Secretary
Barbara Lawson, Noise Abatement Office Senior Information Systems Operator



ROUNDTABLE MEMBER JURISDICTION MAP

Location of Airport/Community Roundtable Member Jurisdictions September 2010





CONSENT AGENDA

Regular Meeting # 282 ~ October 3, 2012 ~

Agenda Items III. A - F

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airport director's report

Presented at the October 3, 2012

Airport Community Roundtable Meeting

SFO Aircraft Noise Abatement Office

May 2012

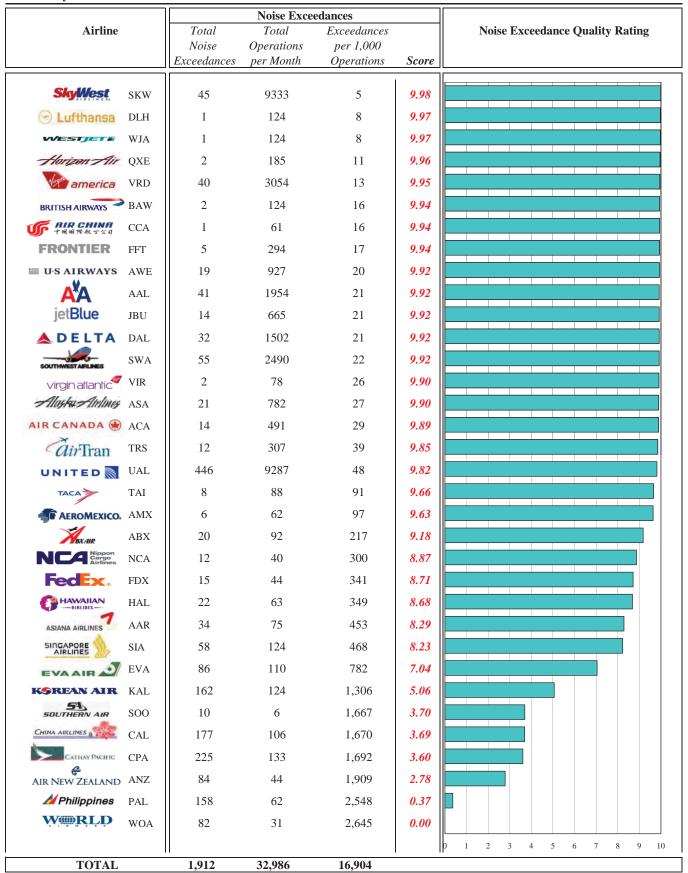


Monthly Noise Exceedance Report

San Francisco International Airport -- Director's Report

Period: May 2012





Source: SFO Noise Abatement Office

Historical Significant Exceedances Report

San Francisco International Airport -- Director's Report

Period: May 2012

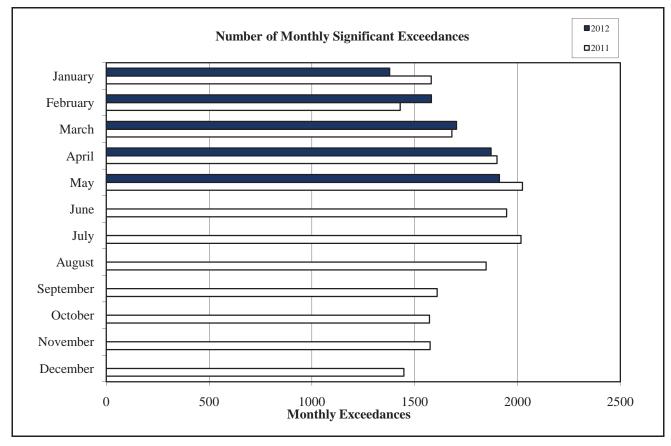


San Francisco International Airport

Month	Number of M	onthly Signif	icant Exceed	lances		Change from
	2008	2009	2010	2011	2012	Last Year
Ionuomy	1321 (1)	1459	1312**	1580	1378	-202
January	` /		1297**			
February	1366	1161 (2)		1429	1581	152
March	1757	1991	1778	1681	1703	22
April	1694 (3)	2258	1449	1900	1871	-29
May	2039 (1)	1917	2042	2024	1912	-112
June	2154 (1)*	2428	2177	1947		
July	1974*	2039	1743	2017		
August	2067*	1725	2090	1847		
September	1470	1554	1636	1609		
October	1474	1724	1537	1572		
November	1635	1400**	1599	1575		
December	1821	1494**	1411	1447		
Annual Total	20772	21150	20071	20628	8445	
Year to Date Trend	20772	21150	20071	20628	8445	-169

^(#) Number of new noise monitors - EMUs

^{**} Revised with correct amount of exceedance - 4/30/10



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Meeting 282 - Oct 3, 2012
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^{*} Amount of exceedance corrected due to new monitors.

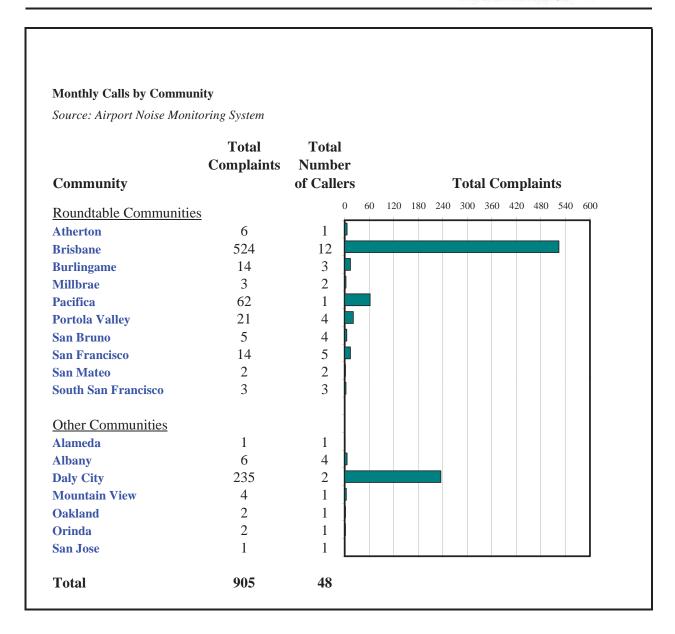
Monthly Noise Complaint Summary

San Francisco International Airport -- Director's Report

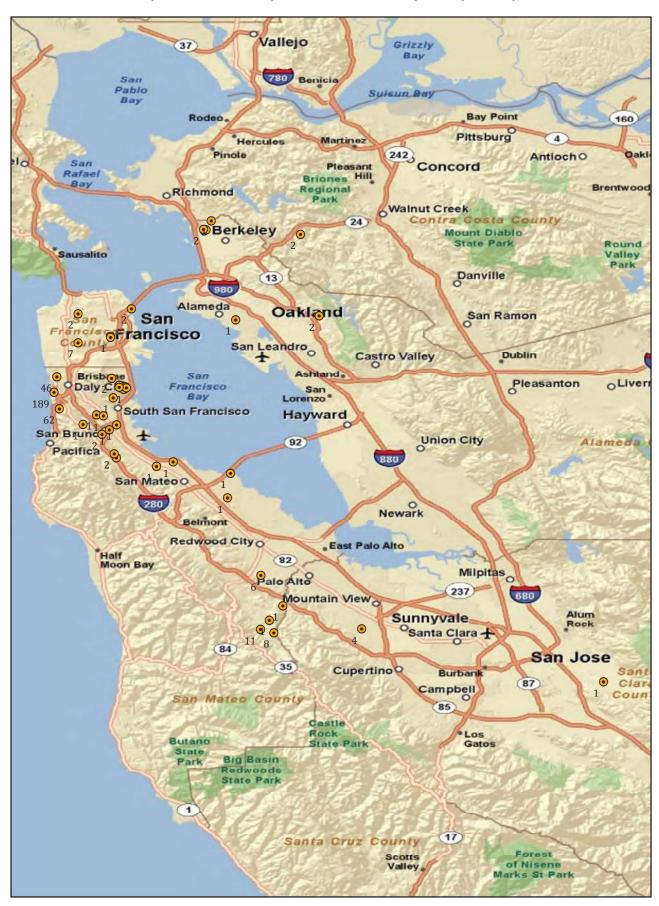
Period: May 2012



San Francisco International Airport



Monthly Noise Complaint Summary Map May 2012



• Caller Location and Amount of Complaints

Monthly Nighttime Power Runups Report (85-06-AOB)

San Francisco International Airport -- Director's Report

Period: May 2012

Time of Day: From 10 pm through 7 am



Airline	Code	Number of Runups	Runups Per 1,000 Departures	Percentage of Runups
▲ DELTA	DAL	2	2.7	9%
UNITED	UAL	8	1.7	36%
AYA	AAL	12	12.2	55%
Total		22		0 10 20 30 40 50 60 70 80 90 100

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 power settings tested range from idle to full power and may vary in duration.

Late Night Preferential Runway Use Report

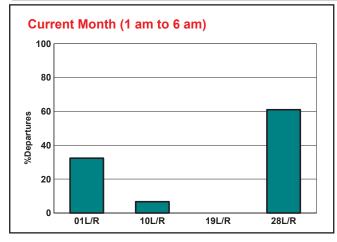
San Francisco International Airport -- Director's Report

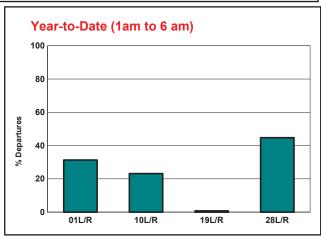
Period: May 2012

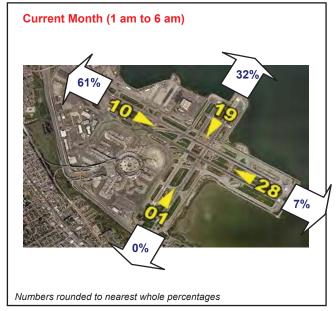
Time of Day: Late Night (1 am to 6 am)

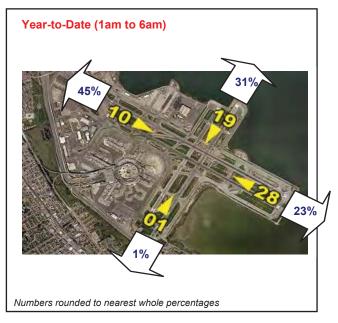


Monthl	y Jet Dep	artures											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	91	89	81	75	112	-	-	-	-	-	-	-	448
10L/R	86	52	107	63	23	-	-	-	-	-	-	-	331
19L/R	10	1	-	-	-	-	-	-	-	-	-	-	11
28L/R	46	46	126	210	211	-	-	-	-	-	-	-	639
Total	233	188	314	348	346	-	-	-	-	-	-	-	1,429
01L/R	39%	47%	26%	22%	32%	0%	0%	0%	0%	0%	0%	0%	31%
10L/R	37%	28%	34%	18%	7%	0%	0%	0%	0%	0%	0%	0%	23%
19L/R	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
28L/R	20%	24%	40%	60%	61%	0%	0%	0%	0%	0%	0%	0%	45%









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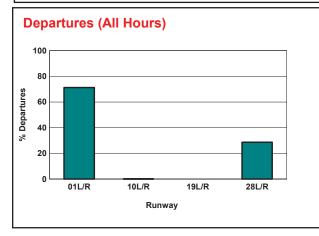
Air Carrier Runway Use Summary Report

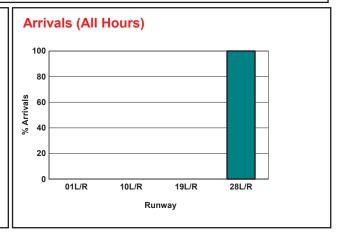
San Francisco International Airport -- Director's Report

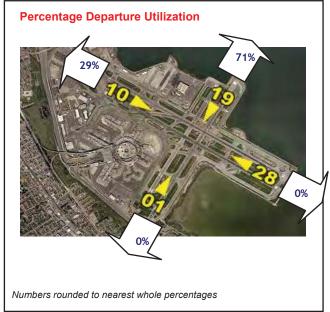
Period: May 2012 Time of Day: All Hours

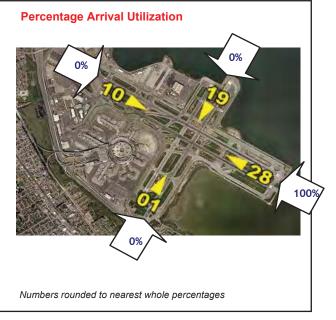


_		Runway I	Jtilization		Total
	01L/R	10L/R	19L/R	28L/R	
Total Monthly Operati	ons				
Departures	12,179	22	0	4,900	17,101
Arrivals	0	0	0	16,859	16,859
Percentage Utilization					
Departures	71.2%	0.1%	0.0%	28.7%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%













airport director's report

Presented at the October 3, 2012

Airport Community Roundtable Meeting

SFO Aircraft Noise Abatement Office

June 2012

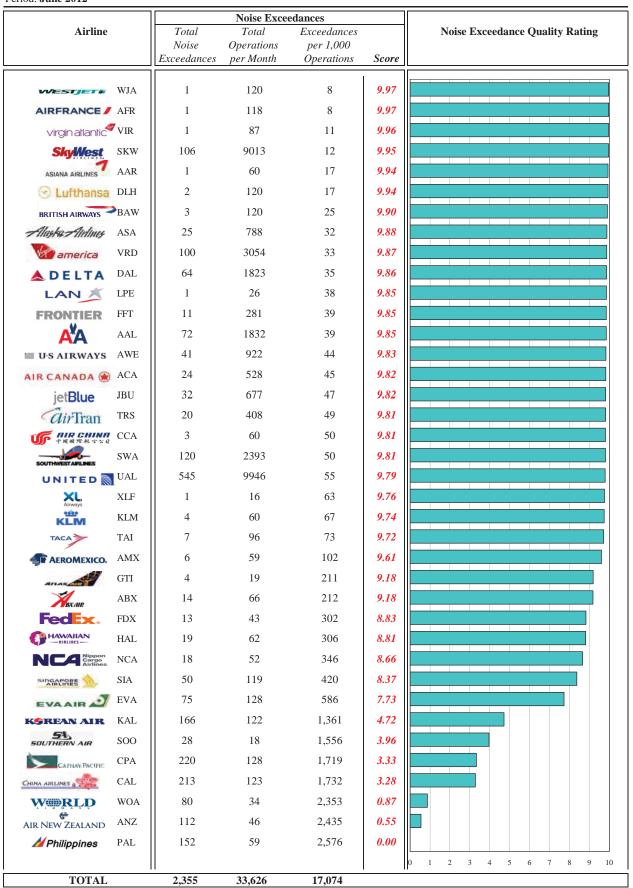


Monthly Noise Exceedance Report

San Francisco International Airport -- Director's Report







Historical Significant Exceedances Report

San Francisco International Airport -- Director's Report

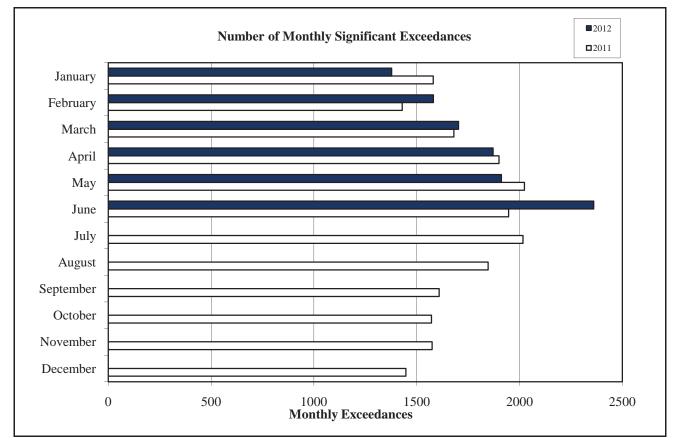
Period: June 2012



San Francisco International Airport

Month	Number of Mo	onthly Signif	icant Exceed	lances		Change from
	2008	2009	2010	2011	2012	Last Year
January	1321 (1)	1459	1312**	1580	1378	-202
February	1366	1161 (2)	1297**	1429	1581	152
March	1757	1991	1778	1681	1703	22
April	1694 (3)	2258	1449	1900	1871	-29
May	2039 (1)	1917	2042	2024	1912	-112
June	2154 (1)*	2428	2177	1947	2361	414
July	1974*	2039	1743	2017		
August	2067*	1725	2090	1847		
September	1470	1554	1636	1609		
October	1474	1724	1537	1572		
November	1635	1400**	1599	1575		
December	1821	1494**	1411	1447		
Annual Total	20772	21150	20071	20628	10806	
Year to Date Trend	20772	21150	20071	20628	10806	245

- (#) Number of new noise monitors EMUs
- * Amount of exceedance corrected due to new monitors.
- ** Revised with correct amount of exceedance 4/30/10



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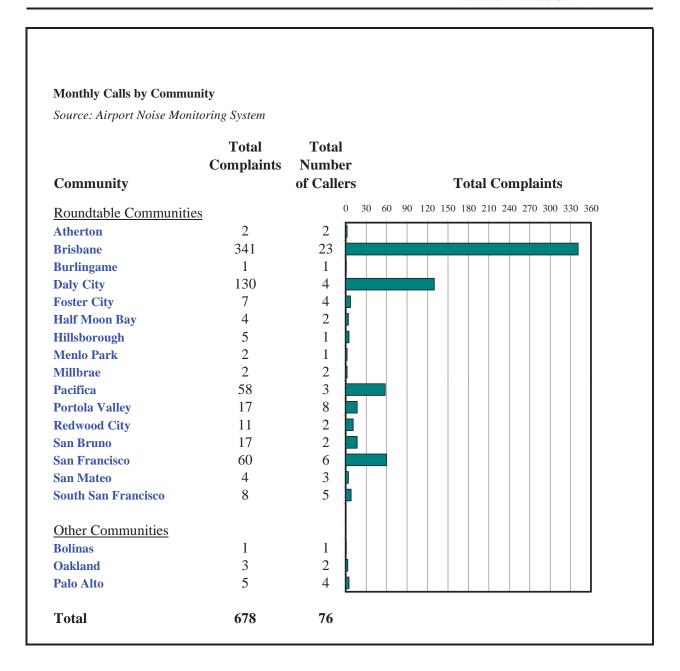
Monthly Noise Complaint Summary

San Francisco International Airport -- Director's Report

Period: June 2012



San Francisco International Airport



Monthly Noise Complaint Summary Map July 2012



Caller Location and Amount of Complaints

Monthly Nighttime Power Runups Report (85-06-AOB)

San Francisco International Airport -- Director's Report

Period : June 2012

Time of Day: From 10 pm through 7 am



Airline	Code	Number of Runups	Runups Per 1,000 Departures	Percentage of Runups
jetBlue	JBU	1	2.9	2%
DELTA	DAL	2	2.2	4%
UNITED	UAL	20	4.0	43%
AYA	AAL	23	25.1	50%
Total		46		0 10 20 30 40 50 60 70 80 90 100

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 power settings tested range from idle to full power and may vary in duration.

Late Night Preferential Runway Use Report

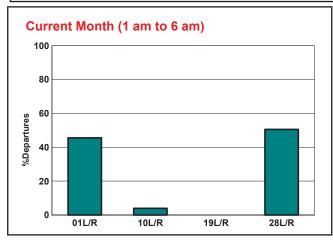
San Francisco International Airport -- Director's Report

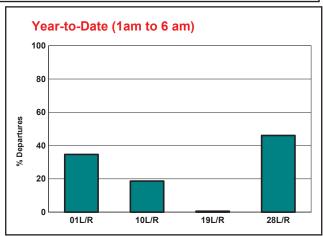
Period: June 2012

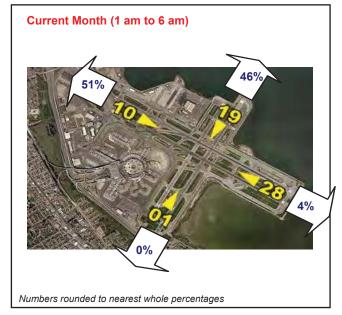
Time of Day: Late Night (1 am to 6 am)

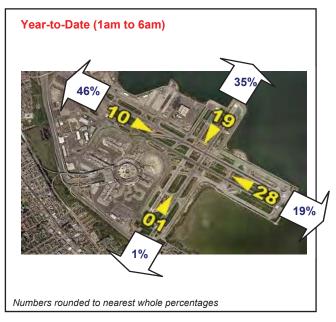


	y Jet Dep	artures											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	91	89	81	75	112	199	-	-	-	-	-	-	647
10L/R	86	52	107	63	23	17	-	-	-	-	-	-	348
19L/R	10	1	-	-	-	-	-	-	-	-	-	-	11
28L/R	46	46	126	210	211	221	-	-	-	-	-	-	860
Total	233	188	314	348	346	437	-	-	-	-	-	-	1,866
01L/R	39%	47%	26%	22%	32%	46%	0%	0%	0%	0%	0%	0%	35%
10L/R	37%	28%	34%	18%	7%	4%	0%	0%	0%	0%	0%	0%	19%
19L/R	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
28L/R	20%	24%	40%	60%	61%	51%	0%	0%	0%	0%	0%	0%	46%









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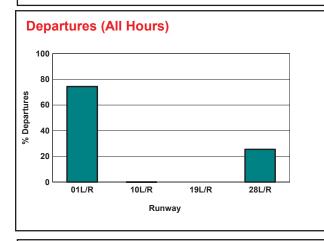
Air Carrier Runway Use Summary Report

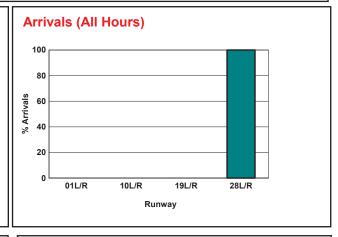
San Francisco International Airport -- Director's Report

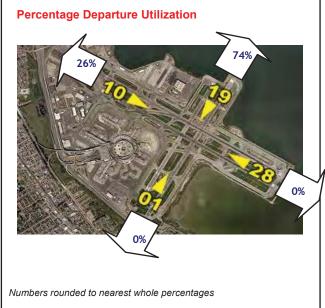
Period: June 2012 Time of Day: All Hours

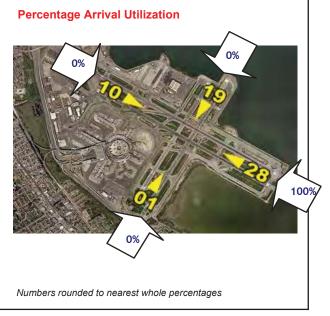


		Runway l	Jtilization		Total
	01L/R	10L/R	19L/R	28L/R	
Total Monthly Operat	ions				
Departures	12,910	20	0	4,436	17,366
Arrivals	0	0	0	17,210	17,210
Percentage Utilization	n				
Departures	74.3%	0.1%	0.0%	25.5%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%













airport director's report

Presented at the October 3, 2012

Airport Community Roundtable Meeting

SFO Aircraft Noise Abatement Office

July 2012



Monthly Noise Exceedance Report

San Francisco International Airport -- Director's Report

Period: July 2012





Historical Significant Exceedances Report

San Francisco International Airport -- Director's Report

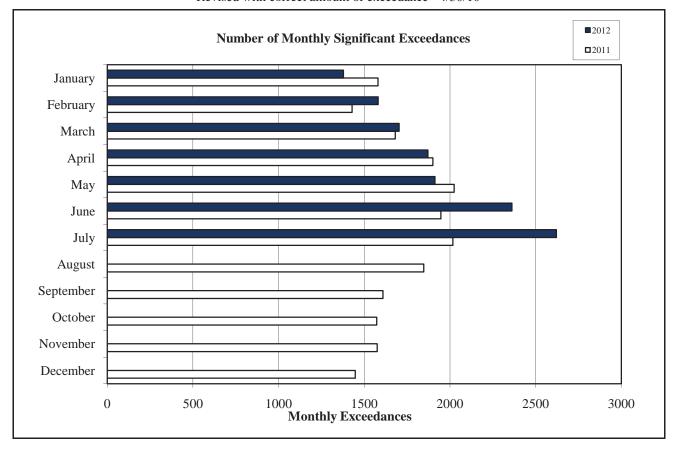
Period: July 2012



San Francisco International Airport

Month	Number of M	onthly Signif	icant Exceed	lances		Change from
	2008	2009	2010	2011	2012	Last Year
Ionnow	1221 (1)	1459	1312**	1580	1378	-202
January	1321 (1)					-
February	1366	1161 (2)	1297**	1429	1581	152
March	1757	1991	1778	1681	1703	22
April	1694 (3)	2258	1449	1900	1871	-29
May	2039 (1)	1917	2042	2024	1912	-112
June	2154 (1)*	2428	2177	1947	2361	414
July	1974*	2039	1743	2017	2621	604
August	2067*	1725	2090	1847		
September	1470	1554	1636	1609		
October	1474	1724	1537	1572		
November	1635	1400**	1599	1575		
December	1821	1494**	1411	1447		
Annual Total	20772	21150	20071	20628	13427	
Year to Date Trend	20772	21150	20071	20628	13427	849

- (#) Number of new noise monitors EMUs
- * Amount of exceedance corrected due to new monitors.
- ** Revised with correct amount of exceedance 4/30/10



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Monthly Noise Complaint Summary

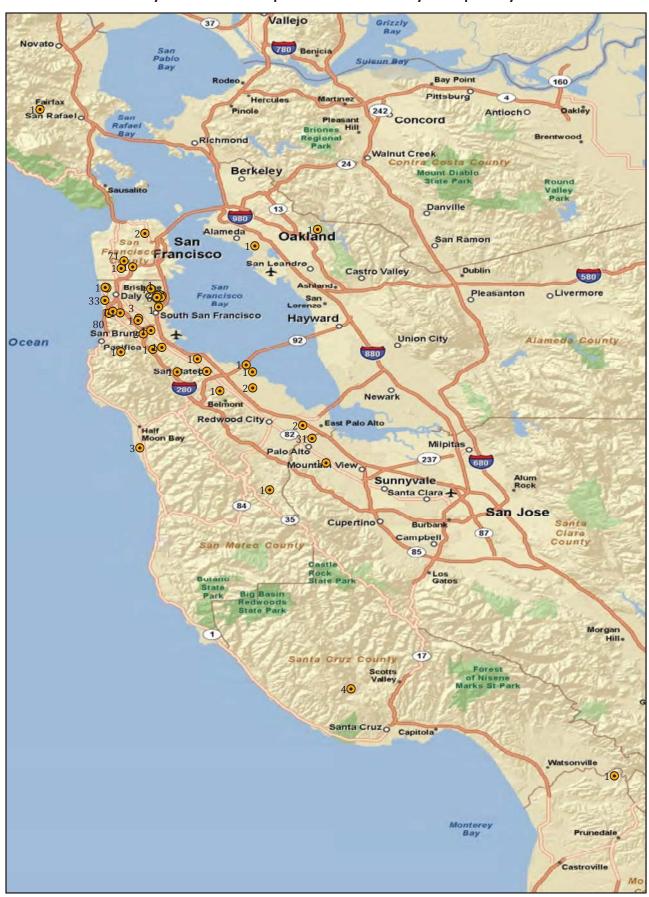
San Francisco International Airport -- Director's Report

Period: July 2012



Monthly Calls by Community Source: Airport Noise Monitoring System **Total Total Complaints** Number Community of Callers **Total Complaints** 60 90 120 150 180 210 240 270 300 **Roundtable Communities** 2 1 **Atherton** 299 **Brisbane** 18 1 1 **Burlingame** 97 4 **Daly City** 2 2 **Foster City** 3 **Half Moon Bay** 1 1 1 Hillsborough 2 2 Millbrae 82 3 **Pacifica Portola Valley** 1 1 2 1 **Redwood City** 3 2 San Bruno 75 4 San Francisco 2 2 San Mateo 5 3 **South San Francisco Other Communities** 1 1 Alameda 1 1 **Aromas** 1 1 **Fairfax** 4 1 **Felton** 1 1 **Oakland** 2 32 **Palo Alto Total** 617 53

Monthly Noise Complaint Summary Map July 2012



Monthly Nighttime Power Runups Report (85-06-AOB)

San Francisco International Airport -- Director's Report

Period: July 2012

Time of Day: From 10 pm through 7 am



Airline	Code	Number of Runups	Runups Per 1,000 Departures	Percentage of Runups
▲ DELTA	DAL	1	1.0	3%
NETJETS	EJA	1	6.3	3%
america	VRD	1	0.6	3%
AYA	AAL	14	14.4	38%
UNITED	UAL	20	3.9	54%
Total		37		0 10 20 30 40 50 60 70 80 90 100

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 power settings tested range from idle to full power and may vary in duration.

Late Night Preferential Runway Use Report

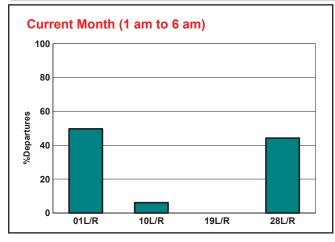
San Francisco International Airport -- Director's Report

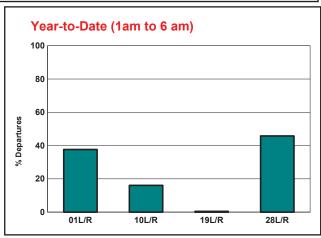
Period: July 2012

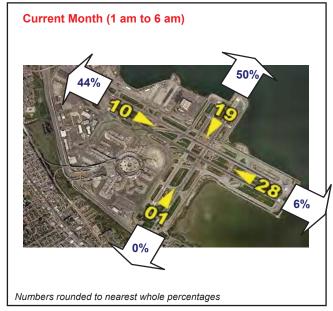
Time of Day: Late Night (1 am to 6 am)

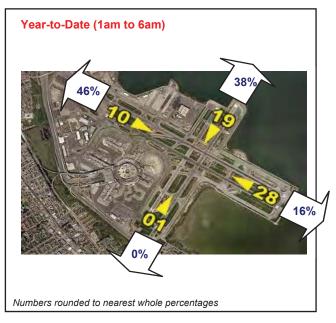


Monthly	y Jet Dep	artures											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	91	89	81	75	111	199	237	-	-	-	-	-	883
10L/R	86	52	107	63	23	17	29	-	-	-	-	-	377
19L/R	10	1	-	-	-	-	-	-	-	-	-	-	11
28L/R	46	46	126	210	212	221	211	-	-	-	-	-	1,072
Total	233	188	314	348	346	437	477	-	-	-	-	-	2,343
01L/R	39%	47%	26%	22%	32%	46%	50%	0%	0%	0%	0%	0%	38%
10L/R	37%	28%	34%	18%	7%	4%	6%	0%	0%	0%	0%	0%	16%
19L/R	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28L/R	20%	24%	40%	60%	61%	51%	44%	0%	0%	0%	0%	0%	46%









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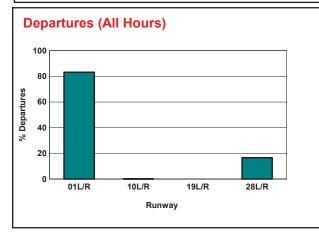
Air Carrier Runway Use Summary Report

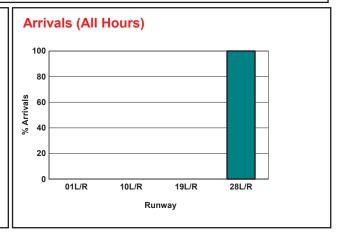
San Francisco International Airport -- Director's Report

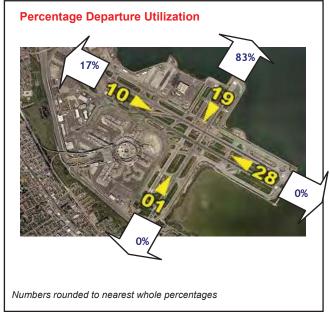
Period: July 2012 Time of Day: All Hours

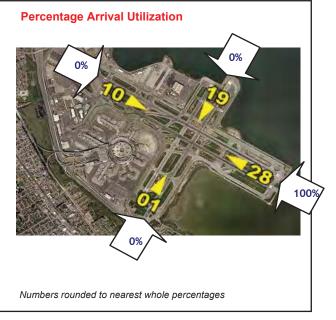


_		Runway I	Jtilization		Total
	01L/R	10L/R	19L/R	28L/R	
Total Monthly Operati	ons				
Departures	15,105	28	0	3,035	18,168
Arrivals	0	0	0	18,028	18,028
Percentage Utilization	1				
Departures	83.1%	0.2%	0.0%	16.7%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%













airport director's report

Presented at the October 3, 2012

Airport Community Roundtable Meeting

SFO Aircraft Noise Abatement Office

August 2012



Monthly Noise Exceedance Report

San Francisco International Airport -- Director's Report

Period: August 2012





Historical Significant Exceedances Report

San Francisco International Airport -- Director's Report

Period: August 2012

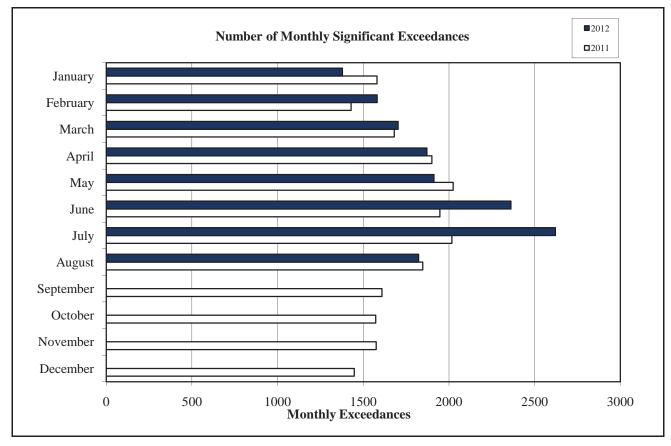


San Francisco International Airport

Month	Number of M	onthly Signif	icant Exceed	lances		Change from
	2008	2009	2010	2011	2012	Last Year
January	1321 (1)	1459	1312**	1580	1378	-202
February	1366	1161 (2)	1297**	1429	1581	152
March	1757	1991	1778	1681	1703	22
April	1694 (3)	2258	1449	1900	1871	-29
May	2039 (1)	1917	2042	2024	1912	-112
June	2154 (1)*	2428	2177	1947	2361	414
July	1974*	2039	1743	2017	2621	604
August	2067*	1725	2090	1847	1823	-24
September	1470	1554	1636	1609		
October	1474	1724	1537	1572		
November	1635	1400**	1599	1575		
December	1821	1494**	1411	1447		
Annual Total	20772	21150	20071	20628	15250	
Year to Date Trend	20772	21150	20071	20628	15250	825

^(#) Number of new noise monitors - EMUs

^{**} Revised with correct amount of exceedance - 4/30/10



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Meeting 282 - Oct 3, 2012
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^{*} Amount of exceedance corrected due to new monitors.

Monthly Noise Complaint Summary

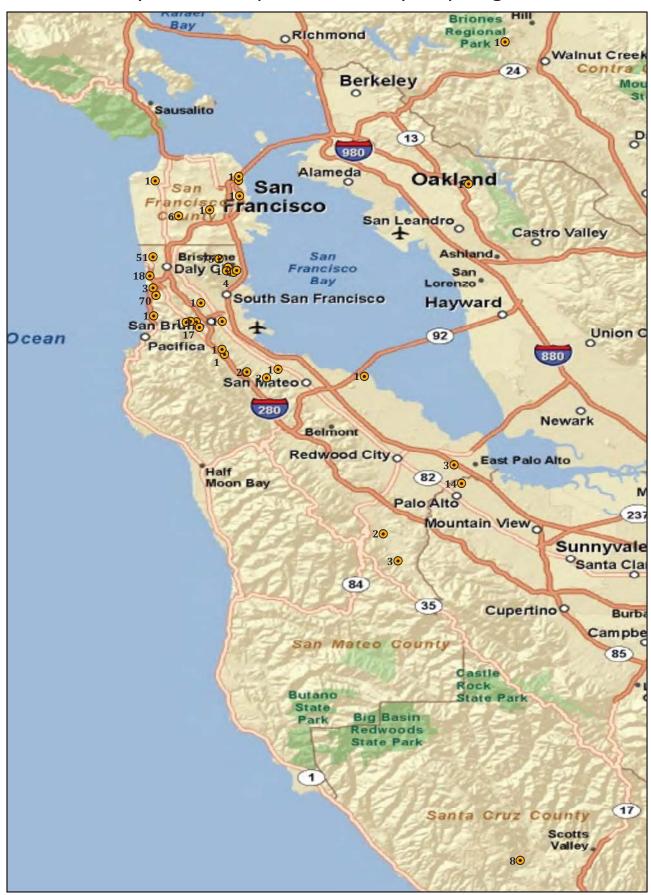
San Francisco International Airport -- Director's Report

Period: August 2012



Monthly Calls by Community Source: Airport Noise Monitoring System **Total Total Complaints** Number **Community** of Callers **Total Complaints** 15 30 45 60 75 90 105 120 135 150 **Roundtable Communities** 132 12 **Brisbane Burlingame** 5 3 72 3 **Daly City** 1 1 **Foster City** 3 1 Hillsborough 3 1 **Menlo Park** 2 2 Millbrae 71 2 **Pacifica** 1 3 **Portola Valley** San Bruno 21 5 6 11 San Francisco 1 1 **South San Francisco** 2 Woodside 1 Other Communities 8 1 **Felton** 2 2 Lafayette 1 1 **Oakland** 14 1 **Palo Alto** 44 **Total** 352

Monthly Noise Complaint Summary Map August 2012



Monthly Nighttime Power Runups Report (85-06-AOB)

San Francisco International Airport -- Director's Report

Period: August a02a

Time of Day: From 10 pm through 7 am



Airline	1 oCe	Numder ob Runups	Runups Per 2f000 , epDrtures	PercentDge obRunups
▲ DELTA	DAL	1	1.1	4%
america	VRD	2	1.2	7%
UNITED	UAL	11	2.1	41%
AYA	AAL	13	13.6	48%
TotDl		а7		0 20 a0 30 40 50 60 70 80 90 200

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 power settings tested range from idle to full power and may vary in duration.

Late Night Preferential Runway Use Report

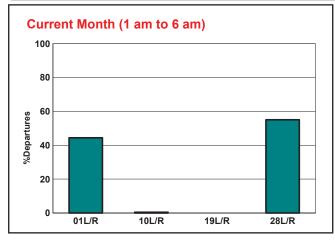
San Francisco International Airport -- Director's Report

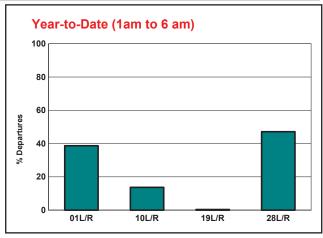
Period: August 2012

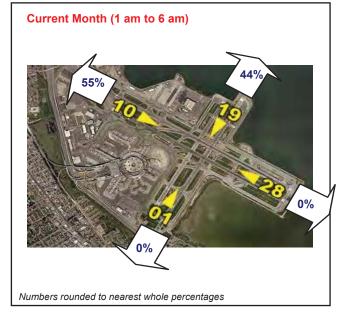
Time of Day: Late Night (1 am to 6 am)

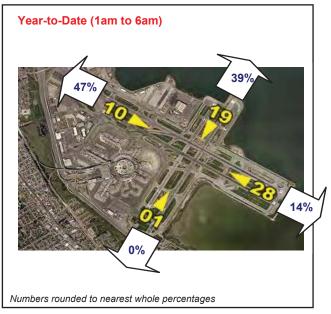


Monthly	y Jet Dep	artures											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	91	89	81	75	111	199	237	187	-	-	-	-	14070
10L/R	87	52	107	63	23	17	29	2	-	-	-	-	380
19L/R	10	1	-	-	-	-	-	-	-	-	-	-	11
28L/R	, 6	, 6	126	210	212	221	212	232	-	-	-	-	14305
Total	234	188	314	348	346	437	478	421	-	-	-	-	2,766
01L/R	39%	, 7%	26%	22%	32%	, 6%	50%	, , %	0%	0%	0%	0%	39%
10L/R	37%	28%	3, %	18%	7%	, %	6%	0%	0%	0%	0%	0%	1, %
19L/R	, %	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28L/R	20%	2, %	, 0%	60%	61%	51%	, , %	55%	0%	0%	0%	0%	, 7%









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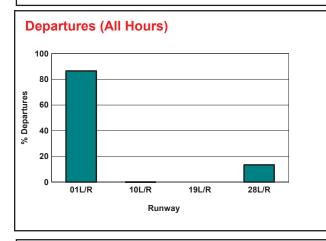
Air Carrier Runway Use Summary Report

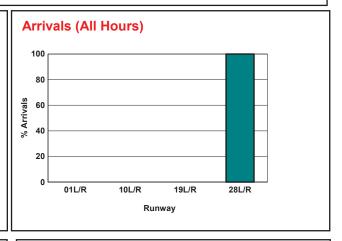
San Francisco International Airport -- Director's Report

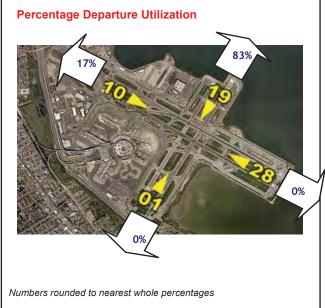
Period: August 2012 Time of Day: All Hours

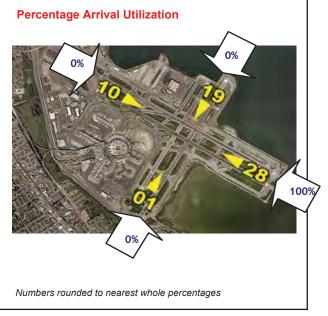


		Runway I	Jtilization		Total
	01L/R	10L/R	19L/R	28L/R	
otal Monthly Operat	ions				
Departures	15,808	1	0	2,453	18,262
Arrivals	0	0	0	18,108	18,108
Percentage Utilization	n				
Departures	86.6%	0.0%	0.0%	13.4%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%











San Francisco International Airport

Fly Quiet Report

Presented at the October 3, 2012

Airport Community Roundtable Meeting

SFO Aircraft Noise Abatement Office

Second Quarter 2012







Fly Quiet Program

San Francisco International Airport's Fly Quiet Program is an Airport Community 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.

Program Goals

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.

Program Reports

Fly Quiet reports communicate results in a clear, understandable format on a scale of 0-10, zero being poor and ten being good. This allows for an easy comparison between airlines over time. Individual airline scores are computed and reports are generated each quarter. These quantitative scores allow airline management and flight personnel to measure exactly how they stand compared to other operators and how their proactive involvement can positively reduce noise in the Bay Area.

Program Elements

Currently the Fly Quiet Program rates jets and regional jets on six elements: the overall noise quality of each airline's fleet operating at SFO, an evaluation of single overflight noise level exceedences, a measure of how well each airline complies with the preferred nighttime noise abatement runways, assessment of airline performance to the Gap and Shoreline Departures, and over the bay approaches to runways 28L and 28R.



SFO's Fly Quiet Ratings



Fleet Noise Quality

The Fly Quiet Program Fleet Noise Quality Rating evaluates the noise contribution of each airline's fleet as it actually operates at SFO. Airlines generally own a variety of aircraft types and schedule them according to both operational and marketing considerations. Fly Quiet assigns a higher rating or grade to airlines operating quieter, new generation aircraft, while airlines operating older, louder technology aircraft would rate lower. The goal of this measurement is to fairly compare airlines—not just by the fleet they own, but by the frequency that they schedule and fly particular aircraft into SFO.



Noise Exceedance

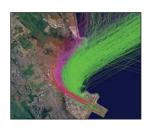
Eliminating high-level noise events is a long-standing goal of the Airport and the Airport Community Round-table. As a result the Airport has established single event maximum noise level limits at each noise-monitoring site. These thresholds were set to identify aircraft producing noise levels higher than are typical for the majority of the operations.

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. Noise exceedances are logged by the exact operation along with the aircraft type and airline name.



Nighttime Preferential Runway Use

SFO's Nighttime Preferential Runway Use program was developed in 1988. Although the program cannot be used 100% of the time because of winds, weather, and other operational factors, the Airport, the Community Roundtable, the FAA, and the Airlines have all worked together to maximize its use when conditions permit. The program is voluntary; compliance is at the discretion of the pilot in command. The main focus of this program is to maximize flights over water and minimize flights over land and populated areas between 1:00 a.m. and 6:00 a.m. Fortunately, because airport activity levels are lower late at night, it is feasible to use over-water departure procedures more frequently than would be possible during the day. Reducing night-time noise—especially sleep disturbance— is a key goal of SFO's aircraft noise abatement program.



Shoreline Departure Quality

Aircraft departing SFO using Runways 28L and 28R are also considered by the Fly Quiet grading system whenever they use the Shoreline Departure Procedure. This predominately VFR (visual flight rules) departure steers aircraft to the northeast shortly after takeoff in an attempt to keep aircraft and aircraft noise away from the residential communities located to the northwest of SFO. By keeping aircraft east of Highway 101 the majority of the overflights will be experienced by industrial and business parks instead of residential areas.

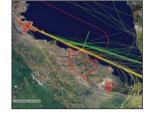
In order to evaluate each airline's performance when flying a Shoreline Departure, a corridor was established using Interstate 101 (green colored flight tracks) as a reference point. The corridor runs north along 101, beginning approximately one-mile north-northwest of the end of Runways 28L and 28R and continuing up into the City of Brisbane. Departures west of 101 are scored marginal or poor depending on their location.



Gap Departure Quality

Aircraft departing SFO using Runways 28L and 28R frequently depart straight out using a procedure known as the Gap Departure. This procedure directs air traffic to fly a route that takes them over the area northwest of the airport over the cities of South San Francisco, San Bruno, Daly City, and Pacifica. In an attempt to mitigate noise in this specific area, the Gap Departure Quality Rating has been included as a category in the Fly Quiet Program.

Since "higher is quieter", aircraft altitudes are recorded along the departure route. Scores are assigned at specified points or gates set approximately one mile apart, with the higher aircraft receiving higher scores.



Foster City Arrival Quality

The Arrival Quality Rating is the latest addition to the Fly Quiet Program. In an effort to further reduce night-time noise in neighboring communities, this rating is designed to maximize over-bay approaches to Runways 28 between 11:00 p.m. and 6:00 a.m. Airlines arriving to Runways 28 during these hours are assessed based on which approach flight path was used. Over-the-bay approaches are rated good (green colored flight tracks), versus over-the-communities which are rated poor.

		<u>, , , , , , , , , , , , , , , , , , , </u>		ter 2012			1		April 1 to June 30, 2012
Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	<u>Depart</u> Shorelin		Arrivals Foster City	Final Score	Airline Fly Quiet Rating
DHL	DHL	6.15	10.00	-	-	9.40	-	8.52	
VVESTJET	WJA	5.82	9.97	-	9.84	7.50	-	8.28	
JAPAN AIRLINES	JAL	5.64	10.00	-	8.75	8.48	-	8.22	
SkyWest	SKW	10.00	9.97	6.11	9.63	6.83	5.73	8.05	
BXAIR	ABX	4.87	9.14	_	10.00	8.44	6.89	7.87	
Lufthansa	DLH	9.09	9.96	_	7.50	4.59	_	7.78	
Emirates	UAE	7.15	10.00	-	-	5.93	_	7.69	
ANA	ANA	7.15	10.00	-	5.00	8.20	_	7.59	
airberlin	BER	4.05	10.00	-	8.75	7.22	_	7.51	
edEx	FDX	4.09	8.82	-	10.00	7.68	6.69	7.46	
U·S AIRWAYS	AWE	4.78	9.87	4.17	9.55	8.29	7.92	7.43	
SOUTHWEST AIRLINES	SWA	5.72	9.87	5.00	9.78	7.17	6.76	7.38	
Sun Country Airlines	SCX	5.82	10.00	-	9.86	3.75		7.36	
DELTA	DAL	6.60	9.89	4.52	9.03	6.38	7.61	7.34	
jetBlue	JBU	4.85	9.88	4.22	9.01	8.10	7.52	7.26	
AYA	AAL	5.76	9.88	5.50	9.44	4.07	7.70	7.06	
america	VRD	5.21	9.91	4.29	9.40	6.75	6.49	7.01	
Aluşku Airlineş	ASA	5.30	9.89	6.67	9.88	4.81	5.29	6.97	
AIR CANADA 🛞	ACA	7.24	9.86	3.33	9.74	4.86	6.77	6.97	
AEROMEXICO	AMX	5.82	9.65	3.71	10.00	4.90	7.68	6.96	
TACA	TAI	5.30	9.68	3.65	10.00	6.25	6.82	6.95	
NITED	UAL	5.94	9.79	3.98	9.43	4.78	7.10	6.84	
KLM	KLM	3.43	9.82	-	8.24	5.63	_	6.78	
ãir Tran	TRS	5.82	9.82	3.33	9.16	4.69	7.82	6.77	
AIRFRANCE /	AFR	4.11	9.95	-	8.18	4.64	-	6.72	
irgin atlantic	VIR	4.57	9.95	-	-	5.43	-	6.65	
RIR CHINA	CCA	3.47	9.87	-	-	6.18	-	6.51	
								6.25 SFO	AVERAGE
ASIANA AIRLINES	AAR	5.33	8.38	1.25	10.00	5.46	6.79	6.20	
Nippon Cargo Airlines	NCA	3.43	8.77	-	-	5.82	6.43	6.11	
Airways	XLF	4.05	9.78	-	0.00	10.00	-	5.96	
LAN	LPE	3.84	9.95	-	-	4.02	-	5.94	
TLAS AIR	GTI	4.87	9.16	-	5.00	4.38	-	5.85	
RONTIER	FFT	6.30	9.90	0.00	9.84	0.42	8.13	5.76	
AIRLINES	SIA	7.15	8.23	0.44	-	6.79	-	5.65	
4 SWISS	SWR	8.17	10.00	-	0.00	4.12	-	5.57	
EVA AIR 🎒	EVA	6.24	7.44	0.36	-	6.56	6.67	5.45	
KSREAN AIR	KAL	5.93	5.15	1.67	5.00	5.78	6.14	4.94	
HAWAIIAN — BIRLIBES.—	HAL	4.04	8.88	0.00	-	4.05	.	4.24	
BRITISH AIRWAYS	BAW	3.43	9.91	-	0.00	3.02	-	4.09	

San Francisco International Airport Fly Quiet Program

Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Usa	<u>Depar</u> e Shorelin		Arrivals Foster City	Final Airline Fly Quiet Rating Score
54 SOUTHERN AIR	soo	3.43	3.69	0.00	-	4.38	6.82	3.66
CATHAY PACIFIC	CPA	3.59	3.15	0.33	-	3.88	6.33	3.46
AIR NEW ZEALAND	ANZ	4.18	1.21	-	-	3.73	-	3.04
WIRLD	WOA	3.43	0.59	0.81	-	1.72	7.08	2.73
CHINA AIRLINES	CAL	3.43	3.27	0.36	0.00	5.92	-	2.59
A Philippines	PAL	3.43	0.00	0.74	-	4.40	-	2.14
								0 1 2 3 4 5 6 7 8 9 10
SFO Average		5.29	8.51	2.68	7.74	5.67	6.92	6.25

Airline	-	Nationwide	San Fra Average Daily	ncisco	Fleet Noise Quality Rating
		Fleet Noise Quality Rating	Jet Operations	Score	
SkyWest	SKW	10.00	90	10.00	
Lufthansa	DLH	6.09	2	9.09	
A SWISS	SWR	5.17	1	8.17	
AIR CANADA 🏵	ACA	6.75	8	7.24	
ANA	ANA	5.43	1	7.15	
SINGAPORE S	SIA	5.93	2	7.15	
Emirates	UAE	7.89	1	7.15	
DELTA	DAL	4.92	26	6.60	
FRONTIER	FFT	6.41	5	6.30	
EVAAIR 🎒	EVA	5.05	2	6.24	
PHL.	DHL	1.77	0	6.15	
UNITED	UAL	5.83	154	5.94	
KSREAN AIR	KAL	4.05	2	5.93	
AEROMEXICO	AMX	5.54	1	5.82	
Sun Country Airlines	SCX	5.82	1	5.82	
<i>air</i> Tran	TRS	6.97	5	5.82	
WESTJETE	WJA	5.82	1	5.82	
AYA	AAL	3.94	31	5.76	
SOUTHWEST APLINES	SWA	5.70	40	5.72	
JAPAN AIRLINES	JAL	4.20	1	5.64	
ASIANA AIRLINES	AAR	3.93	1	5.33	
TACA	TAI	5.18	1	5.30	
Alaşku Airlineş	ASA	5.10	13	5.30	
				5.29	SFO AVERAGE
Wa america	VRD	5.31	50	5.21	
BXAIR	ABX	1.52	1	4.87	
ATLAS AIR	GTI	0.93	0	4.87	
jetBlue	JBU	6.13	11	4.85	
■ U·S AIRWAYS	AWE	5.67	15	4.78	
virgin atlantic	VIR	5.84	1	4.57	
AIR NEW ZEALAND	ANZ	4.00	1	4.18	
AIRFRANCE /	AFR	5.49	1	4.11	
FedEx	FDX	2.80	1	4.09	
airberlin	BER	5.92	0	4.05	
XL Airways	XLF	0.00	0	4.05	
HAWAJIAN — nirtings—	HAL	6.21	1	4.04	
LAN	LPE	4.38	0	3.84	

		Nationwide	San Fra	ncisco	
Airline		Fleet Noise Quality Rating	Average Daily Jet Operations	Score	Fleet Noise Quality Rating
CATHAY PACIFIC	CPA	4.18	2	3.59	
FIR CHIMA	CCA	3.46	1	3.47	
BRITISH AIRWAYS	BAW	4.34	2	3.43	
CHINA AIRLINES	CAL	3.62	2	3.43	
KLM	KLM	4.67	1	3.43	
Nippon Cargo Airlines	NCA	3.90	1	3.43	
	PAL	5.09	1	3.43	
51\ SOUTHERN AIR	SOO	0.60	0	3.43	
WIRLD	WOA	4.72	1	3.43	0 1 2 3 4 5 6 7 8 9 10
AVERAGE		4.81	11	5.29	

		Keport - 2nd Qua	Noise Exceeda	inces		April 1 to June 30, 2012
Airline		Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	Noise Exceedance Quality Rating
* 1 × 01 × 01 × 1		Executives	I Operations	ı	1	
ANA	ANA	0	182	0	10.00	
airberlin	BER	0	45	0	10.00	
exercise	DHL	0	77	0	10.00	
JAPAN AIRLINES	JAL	0	182	0	10.00	
Sun Country Airlines	SCX	0	204	0	10.00	
SWISS	SWR	0	182	0	10.00	
Emirates	UAE	0	181	0	10.00	
SkyWest	SKW	113	16,388	7	9.97	
WESTJETE	WJA	2	252	8	9.97	
Lufthansa	DLH	4	364	11	9.96	
AIRFRANCE /	AFR	3	252	12	9.95	
virgin atlantic	VIR	3	240	13	9.95	
LAN	LPE	1	78	13	9.95	
BRITISH AIRWAYS	BAW	8	365	22	9.91	
america a	VRD	205	9,014	23	9.91	
FRONTIER	FFT	22	858	26	9.90	
▲ DELTA	DAL	132	4,737	28	9.89	
AlaskuAtrlines	ASA	66	2,322	28	9.89	
AXA	AAL	168	5,639	30	9.88	
jetBlue	JBU	60	1,970	30	9.88	
■ U·S AIRWAYS	AWE	83	2,642	31	9.87	
FIR CHINA	CCA	6	183	33	9.87	
SOUTHWESTAPLINES	SWA	240	7,318	33	9.87	
AIR CANADA	ACA	49	1,410	35	9.86	
air Tran	TRS	43	975	44	9.82	
KLIM	KLM	8	181	44	9.82	
UNITED	UAL	1,466	28,074	52	9.79	
Airways	XLF	1	18	56	9.78	
TACA	TAI	22	270	81	9.68	
AEROMEXICO	AMX	16	181	88	9.65	
ATLAS AIR	GTI	4	19	211	9.16	
BXAIR	ABX	52	241	216	9.14	
HAWAJIAN — MIRLINES —	HAL	53	188	282	8.88	
redEx	FDX	38	128	297	8.82	
Nippon Cargo Airlines	NCA	44	142	310	8.77	
-					8.51	SFO AVERAGE
ASIANA AIRLINES	AAR	86	212	406	8.38	
SINGAPORE MARLINES	SIA	161	363	444	8.23	
EVAAIR	EVA	213	331	644	7.44	

			Noise Exceed	lances		
Airline		Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	Noise Exceedance Quality Rating
KSREAN AIR	KAL	443	364	1217	5.15	
51 SOUTHERN AIR	SOO	38	24	1583	3.69	
CHINA AIRLINES	CAL	563	333	1691	3.27	
CATHAY PACIFIC	CPA	669	389	1720	3.15	
AIR NEW ZEALAND	ANZ	289	131	2206	1.21	
WIRLD	WOA	234	99	2364	0.59	
M Philippines	PAL	452	180	2511	0.00	0 1 2 3 4 5 6 7 8 9 10
TOTAL		6,060	87,928	•	•	
SFO AVERAGE				374	8.51	

A in It		Ni	ghttime Dep	oartures (1:0	00 am to 6:0	00 am)		Nighttime Runway Use Rating
Airline		Total	10L/R	28L/R Shoreline	01L/R	28L/R Straight	Score	
Aluşku Airlineş	ASA	2	50%	0%	50%	0%	6.67	
SkyWest	SKW	6	33%	17%	50%	0%	6.11	
AYA	AAL	37	27%	11%	62%	0%	5.50	
SOUTHWEST APLINES	SWA	4	25%	0%	75%	0%	5.00	
▲ DELTA	DAL	42	7%	21%	71%	0%	4.52	
america a	VRD	21	10%	10%	81%	0%	4.29	
jetBlue	JBU	15	7%	13%	80%	0%	4.22	
\equiv U·S AIRWAYS	AWE	8	13%	0%	88%	0%	4.17	
UNITED	UAL	191	10%	10%	70%	10%	3.98	
AEROMEXICO	AMX	89	9%	7%	71%	13%	3.71	
TACA	TAI	95	8%	6%	72%	14%	3.65	
AIR CANADA 🏵	ACA	1	0%	0%	100%	0%	3.33	
<i>Air</i> Tran	TRS	10	0%	0%	100%	0%	3.33	
							2.68	SFO AVERAGE
KSREAN AIR	KAL	90	17%	0%	0%	83%	1.67	
ASIANA AIRLINES	AAR	16	13%	0%	0%	88%	1.25	
WIRLD	WOA	37	8%	0%	0%	92%	0.81	
A Philippines	PAL	27	7%	0%	0%	93%	0.74	
SINGAPORE S	SIA	90	4%	0%	0%	96%	0.44	
EVAAIR 2	EVA	111	4%	0%	0%	96%	0.36	
CHINA AIRLINES	CAL	93	2%	2%	0%	96%	0.36	
CATHAY PACIFIC	CPA	92	3%	0%	0%	97%	0.33	
FRONTIER	FFT	1	0%	0%	0%	100%	0.00	
HAWAJIAN — RIRLINES.—	HAL	1	0%	0%	0%	100%	0.00	
51 SOUTHERN AIR	SOO	11	0%	0%	0%	100%	0.00	0 1 2 3 4 5 6 7 8 9 10
TOTAL		1,090						
SFO AVERAGE			11%	4%	40%	45%	2.68	

Airline			Sh	oreline Depar	rtures		Shoreline Departure Rating
Attille		Total	Successful	Marginal	Poor	Score	Shorenne Departure Rating
ASIANA AIRLINES	AAR	1	100%	0%	0%	10.00	
BXAIR	ABX	24	100%	0%	0%	10.00	
AEROMEXICO	AMX	6	100%	0%	0%	10.00	
FedE x	FDX	27	100%	0%	0%	10.00	
TACA	TAI	6	100%	0%	0%	10.00	
Aluşku Airlineş	ASA	164	98%	2%	0%	9.88	
Sun Country Airlines	SCX	35	97%	3%	0%	9.86	
WESTJET	WJA	32	97%	3%	0%	9.84	
FRONTIER	FFT	91	97%	3%	0%	9.84	
SOUTHWESTAPLINES	SWA	116	97%	1%	2%	9.78	
AIR CANADA	ACA	136	95%	5%	0%	9.74	
SkyWest	SKW	1,122	93%	6%	1%	9.63	
■ U·S AIRWAYS	AWE	154	92%	6%	1%	9.55	
AYA	AAL	399	90%	9%	1%	9.44	
UNITED	UAL	1,996	90%	9%	1%	9.43	
america	VRD	452	89%	10%	1%	9.40	
<i>air</i> Tran	TRS	89	85%	12%	2%	9.16	
▲ DELTA	DAL	375	83%	15%	2%	9.03	
jetBlue	JBU	106	81%	18%	1%	9.01	
airberlin	BER	4	75%	25%	0%	8.75	
JAPAN AIRLINES	JAL	4	75%	25%	0%	8.75	
KLM	KLM	17	65%	35%	0%	8.24	
AIRFRANCE /	AFR	11	73%	18%	9%	8.18	
						7.74	SFO AVERAGE
Lufthansa	DLH	16	56%	38%	6%	7.50	
ANA	ANA	1	0%	100%	0%	5.00	
ATLAS AIR	GTI	2	50%	0%	50%	5.00	
KSREAN AIR	KAL	2	0%	100%	0%	5.00	
BRITISH AIRWAYS	BAW	1	0%	0%	100%	0.00	
CHINA AIRLINES	CAL	3	0%	0%	100%	0.00	
A SWISS	SWR	1	0%	0%	100%	0.00	
Airways	XLF	1	0%	0%	100%	0.00	0 1 2 3 4 5 6 7 8 9 10
TOTAL		5,394			<u> </u>	<u> </u>	IL.
SFO AVERAGE			70%	14%	15%	7.74	

Airline		Gap De	partures	Gap Departure Quality Rating			
Airinic		Total	Score	Gap Departure Quanty Kating			
Airways	XLF	2	10.00				
Airways Park Land	DHL	21	9.40				
JAPAN AIRLINES	JAL	74	8.48				
BXAIR	ABX	8	8.44				
■ U·S AIRWAYS	AWE	121	8.29				
ANA	ANA	88	8.20				
jetBlue	JBU	104	8.10				
FedEx	FDX	7	7.68				
WESTJETE	WJA	1	7.50				
airberlin	BER	9	7.22				
SOUTHWEST APLINES	SWA	752	7.17				
SkyWest	SKW	835	6.83				
SINGAPORE MARLINES	SIA	173	6.79				
america	VRD	547	6.75				
EVAAIR 🎒	EVA	161	6.56				
▲ DELTA	DAL	243	6.38				
TACA	TAI	18	6.25				
AIR CHINA	CCA	90	6.18				
Emirates	UAE	89	5.93				
CHINA AIRLINES	CAL	161	5.92				
Nippon Cargo Airlines	NCA	70	5.82				
KSREAN AIR	KAL	162	5.78				
emo			5.67	SFO AVERAGE			
KLM 1	KLM	32	5.63				
ASIANA AIRLINES	AAR VIR	101	5.46				
virgin atlantic	AMX	111 12	5.43 4.90				
AIR CANADA	ACA	9	4.86				
Alastu Airlines	ASA	106	4.81				
UNITED	UAL	3193	4.78				
<i>air</i> Tran	TRS	4	4.69				
AIRFRANCE /	AFR	111	4.64				
Lufthansa	DLH	162	4.59				
∠ Philippines	PAL	86	4.40				
ATLAS AIR	GTI	2	4.38				
51 SOUTHERN AIR	SOO	12	4.38				

Airline		Gap De	epartures	Con Departure Quality Poting			
		Total Score		Gap Departure Quality Rating			
A SWISS	SWR	89	4.12				
AYA	AAL	283	4.07				
HAWAIIAN —nirlines.—	HAL	29	4.05				
LAN	LPE	32	4.02				
CATHAY PACIFIC	CPA	188	3.88				
Sun Country Airlines	SCX	1	3.75				
AIR NEW ZEALAND	ANZ	64	3.73				
BRITISH AIRWAYS	BAW	173	3.02				
WIRLD	WOA	45	1.72				
FRONTIER	FFT	3	0.42	0 1 2 3 4 5 6 7 8 9 10			
TOTAL		8584		<u> </u>			
SFO Average			5.67				

Airline			F	oster City Arr	ivals		Foster City Arrival Rating
Annie		Total	Successful	Marginal	Poor	Score	Foster City Arrivai Kating
FRONTIER	FFT	48	63%	38%	0%	8.13	
\equiv U·S AIRWAYS	AWE	118	59%	40%	1%	7.92	
<i>air</i> Tran	TRS	117	56%	44%	0%	7.82	
AYA	AAL	239	55%	44%	1%	7.70	
AEROMEXICO	AMX	84	55%	44%	1%	7.68	
▲ DELTA	DAL	238	52%	48%	0%	7.61	
jetBlue	JBU	103	50%	50%	0%	7.52	
UNITED	UAL	1,079	43%	56%	1%	7.10	
WIRLD	WOA	36	42%	58%	0%	7.08	
						6.92	SFO AVERAGE
BXAIR	ABX	61	39%	59%	2%	6.89	
TACA	TAI	96	38%	61%	1%	6.82	
51\southern Air	SOO	11	36%	64%	0%	6.82	
ASIANA AIRLINES	AAR	14	36%	64%	0%	6.79	
AIR CANADA 🛞	ACA	31	35%	65%	0%	6.77	
SOUTHWESTARLNES	SWA	298	36%	63%	1%	6.76	
Fed Ex	FDX	59	36%	63%	2%	6.69	
EVA AIR 🎒	EVA	3	33%	67%	0%	6.67	
america	VRD	211	30%	69%	0%	6.49	
NCA Nippon Cargo Airlines	NCA	14	29%	71%	0%	6.43	
CATHAY PACIFIC	CPA	15	27%	73%	0%	6.33	
KSREAN AIR	KAL	88	23%	77%	0%	6.14	
SkyWest	SKW	144	18%	78%	3%	5.73	
Aluşku Airlineş	ASA	34	6%	94%	0%	5.29	0 1 2 3 4 5 6 7 8 9 10
TOTAL		3,141				<u> </u>	
SFO AVERAGE		-	39%	60%	1%	6.92	

Airport / Community Roundtable Meeting No. 281 Overview Wednesday, June 6, 2012

I. Call to Order / Roll Call / Declaration of Quorum Present

Roundtable Chairperson Jeffrey Gee called the Regular Meeting of the Airport/Community Roundtable to order, at approximately 7:06 PM, in the David Chetcuti Community Room at Millbrae City Hall. Steve R. Alverson, Roundtable Coordinator called the roll. A quorum (at least 12 Regular Members) was present as follows:

REGULAR MEMBERS PRESENT

John L. Martin, City and County of San Francisco Airport Commission

Julian Chang, City and County of San Francisco Mayor's Office

Elizabeth Lewis, Town of Atherton

Sepi Richardson, Vice Chairperson/City of Brisbane

Michael Brownrigg, City of Burlingame

Steve Okamoto, City of Foster City (Alternate)

Naomi Patridge, City of Half Moon Bay

Larry May, Town of Hillsborough

Wayne Lee, City of Millbrae (Alternate)

Sue Digre, City of Pacifica

Ann Wengert, Town of Portola Valley

Jeffrey Gee, Chairperson/City of Redwood City

David Burow, Town of Woodside

REGULAR MEMBERS ABSENT

City and County of San Francisco Board of Supervisors (Vacant)

County of San Mateo Board of Supervisors

C/CAG Airport Land Use Committee (ALUC)

City of Belmont

City of Menlo Park

City of San Bruno

City of San Carlos

City of San Mateo (Vacant)

City of South San Francisco

ADVISORY MEMBERS PRESENT

Airline/Flight Operations

Glen Morse, United Airlines

Alex Bell, Emirates

Mij Bolyard, Mesa Airlines

Josh Birlew, Horizon

Federal Aviation Administration

David Dodd, Manager - Northern California TRACON

ROUNDTABLE STAFF / CONSULTANTS

Steve Alverson, Roundtable Coordinator

Phil Wade, Roundtable Support Staff

SAN FRANCISCO INTERNATIONAL AIRPORT STAFF

Mike McCarron, Bureau of Community Affairs John Bergener, Planning and Environment Bert Ganoung, Noise Abatement Manager Ara Balian, Noise Abatement Specialist John Hampel, Noise Abatement Specialist

Prior to resumption of the Agenda Items, Chairperson Jeff Gee suggested that Items III and VI.F. be moved up on the agenda to ensure that the votes were conducted while there was still a quorum present. Hearing no objections, Items III and VI.F. were moved ahead of Item II for Roundtable action.

III. Consent Agenda Items

- A. Review of Airport Director's Report for January 2012
- **B.** Review of Airport Director's Report for February 2012
- C. Review of Airport Director's Report for March 2012
- **D.** Review of Airport Director's Report for April 2012
- E. Review of SFO Fly Quiet Report Q1 2012
- **F.** Review of Roundtable Regular Meeting Overview for February 1, 2012
- **G.** Review of Roundtable Regular Meeting Overview for March 7, 2012
- H. Review of Roundtable Regular Meeting Overview for May 2, 2012
- I. Review/Approval of Correspondence/Information Items for February 2012
- J. Review/Approval of Correspondence/Information Items for March 2012
- **K.** Review/Approval of Correspondence/Information Items for May 2012

Comments/Concerns/Questions: None.

Action: Julian Chang **MOVED** the approval of the Consent Agenda Items. The motion was **SECONDED** by Larry May and **CARRIED, UNANIMOUSLY**.

VI.F. Approval of City of Daly City Membership in the Roundtable

The Roundtable considered the City of Daly City's formal request to join the Roundtable. At the March 2012 Regular Roundtable meeting, Roundtable Coordinator Steve Alverson reported that the City of Daly City had completed all of the steps required by the Roundtable Bylaws to become eligible for membership in the Roundtable.

Action: Vice Chairperson Richardson **MOVED** the approval of the City of Daly City's membership request. The motion was **SECONDED** by Michael Brownrigg and **CARRIED, UNANIMOUSLY**.

Comments/Concerns/Questions: Vice Chairperson Richardson commented that the Roundtable welcomes the City of Daly City back to the Roundtable and looks forward to its participation.

Chairperson Gee covered the remaining Agenda Items in their original order.

II. Public Comments of Items Not on the Agenda

Portola Valley resident Vic Schachter Thanked the Roundtable for its time and effort in addressing the community's aircraft noise concerns. He said that during the past week Portola Valley

experienced the worst aircraft noise in the past twenty years. He said that residents were not able to go outside all day Sunday and well into the evening on Monday. People could not work at home due to the aircraft noise. He then read an e-mail from a Portola Valley resident who is particularly sensitive to noise who wrote that noise was bad for the past week especially from 5 pm to 12 midnight. The resident indicated that they moved from Palo Alto to Portola Valley and are now experiencing the worst aircraft traffic they've experienced.

Mr. Schachter added the he did not move to Portola Valley to be under the extended flight path to SFO and that the noise this past weekend was intolerable. Roundtable Coordinator Steve Alverson asked SFO Airport Noise Abatement Manager Bert Ganoung to explain the construction work at SFO this past weekend that caused this increase in aircraft noise over Portola Valley.

Mr. Ganoung explained that Runways 28R and 28L were impacted this past weekend by preparatory work related to the federally-mandated Runway Safety Area project. Runway 28L was shortened by 1,300 feet and Runway 28R was closed. Airport Director John Martin added that on top of that, the weather came in on Sunday further impacting arrival operations. The wind caused all-west operations. Mr. Ganoung added that with one of the east-west Runways closed, the arrival rate dropped to 30 per hour and arrivals got backed up. Mr. Marin added that forced the FAA to vector aircraft over Portola Valley. Mr. Ganoung added that under normal (non-construction) conditions, arrivals from the east use Runway 28R and arrivals from the west use Runway 28L,

Member David Burow said that a pilot had reported that he had been directed to fly lower than normal. Mr. Ganoung said he would need specific information about the flight including the flight number, date, and time in order to comment on it. However, during the weekend air traffic was above the minimum vectoring altitude of 4,000 feet, but they were likely below 8,000 feet due to the required vectoring.

Member Anne Wengert asked if SFO could be more specific about how the construction activity is going to be heavy in 2014? Mr. Ganoung said that SFO will brief the Roundtable as the construction dates get closer.

Member Elizabeth Lewis said that the information that SFO shared tonight on how the runway construction combined with the weather to affect overflights of Portola Valley was very helpful. She suggested that perhaps SFO could inform people more thoroughly about when future construction work is scheduled to occur. SFO's Mike McCarron said that SFO had issued a press release about the construction activity on Friday. He did several briefings with the media on Saturday. He said that SFO they had notified everyone they could, Elizabeth Lewis remarked that the people affected fall within a narrow band.

Vice Chairperson Richardson said that it's not briefings, it's educating. She added that SFO needs to tell the community what you are doing and how it will impact the community. She suggested that issuing a press release is only one method. For example, you can put it on the City of Brisbane's website. Bert Ganoung said that the message was on the "crawl" on the SFO Noise Abatement webpage. Bert added that SFO went "28-28" (all west) two weekends in a row. He said SFO was blindsided the first weekend, but caught it on the second weekend.

Member Naomi Patridge said that the County has the San Mateo County Alert System that SFO could use to notify resident of changes in activity at SFO. Mr. Ganoung asked if it was for emergencies only. Member Patridge said no, the system can be used for other announcements that are of general interest to residents. Member Michael Brownrigg said that for example the system is used for traffic alerts, road closures, etc. He added that it could be used to alert Portola Valley and Woodside to increased overflights.

Member Wayne Lee suggested that SFO use Facebook to post the notices. Mike McCarron said that SFO had posted this past weekend's construction activity on Facebook and Twitter. Member Larry May said that the San Mateo County Alert works well. He added it can be used as a reverse 911. He suggested that SFO notify the various City Manager's about impending airport activity and let them distribute it.

Chairperson Gee said he would like to add airport construction to the Roundtable agenda.

Barry Corlett, a resident of Brisbane, said that he is an optimist at heart, so he expects improvements in the noise environment. He said that the FAA had said at its presentation a month ago that air traffic controllers were more aware of the community's noise concerns. He said, however, the so far the results have been disappointing. He said Brisbane is still being bombarded by flights before 7 am and after 11 pm. He added that aircraft noise complaints from community remain high.

IV. Presentation of the 2010-2011 John C. Long Fly Quiet Awards

Roundtable Coordinator Steve Alverson provided an overview of the Award Recipients' achievements. He indicated that Mesa Airlines received the "Most Improved Airline" award due to its 2.40 improvement in its overall Fly Quiet score. He said that Horizon Airline received the "Quietest Overall Airline" by having the quietest rating in each of the six Fly Quiet Categories. Horizon had an overall Fly Quiet score of 9.44. He stated that Emirates was awarded the "Chairperson's Award" due to its exceptional commitment to all aspects of the Fly Quiet program and for going above and beyond mere participation in the program. Emirates has worked closely with SFO Noise Abatement Staff to improve its Fly Quiet Scores and placed second in the most improved category out of 44 operators.

Chairperson Gee presented the Fly Quiet Awards to each of the airlines

Comments/Concerns/Questions: Each of the airline representatives thanked the Roundtable for the awards. Roundtable members thanked the airlines for their performance on behalf of the surrounding communities.

V. Airport Director's Comments

Airport Director John Martin thanked the residents for coming to the Roundtable meeting to share their concerns. He said he was surprised by their comments because he had thought the Roundtable was making progress. He said that SFO has received good feedback on the 3-D webbased flight tracking software. He noted that this week FAA started using Precision Runway Monitoring (PRM) to allow simultaneous offset independent approaches (SOIA) with cloud ceilings down to 1,600 feet, which helps reduce delays. He said SFO continues to work with each of the airlines that are not flying the shoreline departure properly. He noted that the portable noise monitors will remain in Woodside and Portola Valley as had been requested by the Roundtable through the end of the month. Mr. Martin said that United Airlines is adding 35 flights this summer and that SFO has seen a 12 percent year-over-year growth.

Comments/Concerns/Questions: None.

VI. PORTE THREE Flight Track Analysis

Chairperson Jeff Gee said that the Roundtable had received two reports from the FAA that were posted on the Roundtable website. One addressed a specific question from Brisbane resident

Peter Grace regarding flights between 6 and 7 am on the morning of May 14th. The other report compared a week of 2005 Brisbane overflights to a week of 2012 overflights since the FAA has increased its efforts to address the Brisbane noise issue. He asked David Dodd from the Northern California TRACON to run through FAA's presentation on the May 14 analysis.

David Dodd, FAA's Manager of Airspace and Procedures in the Northern California TRACON said that he had personally downloaded the radar data and plot/controller communications from May 14th, sat at the radar scope, watched the activity, and analyzed the data. He said that there are large departure banks at both SFO and OAK from 10 to 11 pm and from 6 to 7 am.

Mr. Dodd said that between 6:15 and 6:30 am on May 14th there were 11 departures off of OAK. He then stepped through the 6 to 7 am data in detail noting that at 6:10 the air traffic controller at NCT gets several flight strips indicating that there are a number of flights about to enter his/her air space. As a result, he/she begins to think about keeping the traffic flow moving to get safely through the next half hour to 45 minutes and makes a plan. He/she knows that there is a plane right on the heels of the very first departure, so he/she wants to turn the lead aircraft to avoid the departures for OAK and SFO getting strung out.

Mr. Dodd pointed out that he had placed three-nautical mile rings around each aircraft, which shows the initial required horizontal separation between aircraft. He also pointed out that as the aircraft are climbing south of SFO they must be placed in a line crossing the same point with all of them at 19,000 feet and separated by five-nautical miles. As a result, the air traffic controllers need to turn the SFO departures to avoid the OAK flights.

Vice Chairperson Richardson said that FAA knows SFO flights are overflying the Brisbane community, why can't the OAK flights go father to the north? Mr. Dodd responded that there numerous reasons why the OAK flights cannot go further to the north. He said that sending the OAK flights further to the north would create air traffic conflicts with other arrival streams. The aircraft would need to level off, which would create more noise they begin to climb again.

Vice Chairperson Richardson suggested that the FAA need s to look at the Brisbane issue in a deeper way. Chairperson Gee said that the people who had attended the meeting at Jackie Speier's office heard that the Northern California Metroplex project, which has been initiated, will look at air traffic improvements on a regional basis. He said he has a Metroplex briefing by FAA on the Work Program for next year.

Brian Perkins from Congresswoman Jackie Speier's office said that FAA had promised they would try to make improvements in the midnight to 6 am and 10 pm to Midnight timeframes. Data is being collected, analyzed, and reported, which takes a great deal of time. FAA is going to continue to work on it.

David Dodd reviewed several more of the SFO departures in the 6 to 7 am timeframe with most of them having a conflicting OAK departure. He said the point he wants to make is that the FAA is handling a lot of aircraft in a very short amount of time.

Member Brownrigg asked if NextGEN allows for closer spacing between aircraft. Mr. Dodd replied that NextGEN will allow aircraft to fly by themselves, which is more fuel efficient and quieter.

Chairperson Gee asked Mr. Dodd about the nighttime flights. Mr. Dodd reported that there were no Brisbane overflights between midnight and 6 am. Chairperson Gee observed that it sounded as though there has been some progress and reminded the Roundtable of his comment at an earlier meeting that we need to eat the elephant one bite at a time.

Mr. Dodd said that in his review of the data, if he sees one flight that does not follow the procedures, he will be doing performance modification with the controllers.

Member Anne Wengert said she appreciated Mr. Dodd's analysis. She asked if NextGEN will be able to keep up with the growth in aircraft operations. Mr. Dodd said that FAA always tries to keep noise in mind, but they need to manage the air traffic. He added the idea is to work hand-in-hand with the airlines to try to improve efficiency. Member Wengert asked if he expects that they will deconflict the OAK and SFO traffic. Mr. Dodd said that is one of the goals. Member Brownrigg asked why doesn't OAK take off on another runway for the 6 to 7 am hour. Roundtable Coordinator Steve Alverson responded that OAK only has one air carrier runway.

Jackie Speier's representative Brian Perkins asked Mr. Dodd how many person hours have been put into this effort. Mr. Dodd said that there were numerous hours that went into the analysis of the alternative flight tracks as well as one-on-one briefings with over 150 air traffic controllers. Brian Perkins said so over 200 people have been or are working on this issue. Mr. Dodd responded that is correct.

Brisbane Resident Peter Grace thanked Mr. Dodd very much for his presentation. Mr. Grace said that the vertical distances are still difficult to understand and asked if Mr. Dodd would be willing to meet with the residents to go through this type of analysis in detail to get a better understanding. Mr. Grace said that this is a much more complex issue than the Brisbane residents understood. Mr. Grace asked if there is any coordination between the SFO and OAK tower on the timing of departing aircraft. Mr. Dodd responded no, that NCT speaks to both towers, but they don't talk to each other. Mr. Dodd added that the controller knows from the flight strips when the aircraft are going to be in his/ner airspace and has to plan for creating the proper separations.

Member Julian Chang said that each tower controls the takeoffs at their airport. David Dodd said that between the hours of Midnight and 6 am traffic is lighter, so FAA doesn't need to jam the flights out of SFO during this time.

Brisbane resident Peter Grace suggested that FAA extend the time that it is working to reduce overflights of Brisbane from 6 am to 7 am. Mr. Grace said that while the FAA has done a good job reporting on the flights within the one-nautical mile cylinder over Brisbane, FAA should also measure the noise associated with flights near Brisbane and show the reduction in noise events between 6 and 7 am as agreed to at the meeting in Jackie Speier's office. He is looking for a win-win situation.

Brisbane resident Barry Corlett said that it was great to have the person who did the analysis at tonight's Roundtable meeting. He added that while a one-nautical mile circle is better than no circle at all, but the circle is not big enough. FAA needs to include room on the edges for those aircraft that are near, but not over Brisbane. He asked if the Metroplex will solve the dependencies between SFO and OAK. Mr. Dodd replied that the Metroplex process is designed to deconflict the traffic and deconflict the routes. He added that it will always be an evolving process, but that is what the FAA is aiming for. The first step is RNP approaches. FAA faces the same issues with the three airports in the New York metropolitan area.

He said the current situation with respect to airspace usage is like having 15 cars traveling together on a freeway. The freeway gets backed up and the drivers experience delays. The idea of NextGEN is to smooth out those delays.

Chairperson Gee said that the 2012-2013 Work Program will include an update on the Northern California Metroplex project.

Mr. Corlett concluded his comments by saying that when SFO gets busy, Brisbane residents suffer. He added that the Metroplex improvements will run into the limits of increasing traffic, which will compound the suffering experienced now. Roundtable Coordinator Steve Alverson said that newly manufactured aircraft are continually getting quieter and quieter. The goal is combine the benefits of NextGEN with the improving aircraft fleet to minimize aircraft noise exposure.

B. Update on the Crossing Altitude of Oceanic Arrivals Over the Woodside VOR: Ad Hoc Committee Report on Mr. Lyon's Four Recommendations –

Chairperson Gee asked if there had been any movement on the permanent noise monitors. Member Burow said that the committee had information on the cost of the monitors, but no action had been taken. Chairperson Gee mentioned that there is partial data from the portable noise monitors on the web site and what struck him about the data is that not all of the flights are going into SFO. Member Burow said that he had just received the data yesterday and hasn't had time to review the data. He said he would do so by the next meeting. Chairperson Gee asked Bert Ganoung if he wanted to add any comments about the portable noise monitoring data from Woodside and Portola Valley. Mr. Ganoung observed that Portola Valley is much quieter than Woodside. The aircraft Community Noise Equivalent Levels (CNELs) in Portola Valley are in the mid 30s and the mid 40s in Woodside, which is well below the State level of 65 CNEL. He will prepare a complete report at the end of July. Chairperson Gee asked when the measurements will be done. Mr. Ganoung said that the measurements will end at the end of June and he will have a report by July 15th. Bert added that the monitoring effort is very time intensive for SFO Noise Abatement Office staff as they have to visit each monitor weekly to check on and download the data.

Comments/Concerns/Questions: Portola Valley resident Vic Schachter commented that the noise measurement data collection effort is praiseworthy, but he couldn't understand the data. He said there are a limited number of flights causing noise events, yet there are many more overflights during the same period. Bert Ganoung commented that the data is in its raw form and that he will prepare a report that will be more understandable over the summer. Mr. Schachter commented if the noise levels are in compliance than what solace is there? Member Lewis said that she too had looked at the data and could not determine its significance. Member Burow said that they could have Bert put the data into context. Mr. Schachter asked why the number of "events" was so low. Bert Ganoung explained that the "events" are aircraft overflights that have been correlated with a noise event using the radar flight track data. Bert said there are many aircraft operations that do not cause noise events because they are too distant from the noise monitors to cause an event. Bert said the noise monitors are set with threshold levels that when exceeded record an event. Member Lewis asked if the monitors were set a 65, then event below 65 would not be recorded? Bert said that is correct. Bert further indicated that because the individual events are low, the CNEL will be well below the 65 CNEL standard. He added the 65 CNEL is the Federal and State standard that SFO and other airports throughout the state are required to use. Mike McCarron added that CNEL is more stringent than the Federal DNL metric in that the CNEL includes an additional penalty for evening operations where each evening operation is treated as though it was three operations. Bert said that CNEL is still considered most reliable way to quantify aircraft noise to assess human annoyance. Bert said that after the report is released in July he would be happy to meet with Roundtable members to explain it.

Brisbane resident Peter Grace suggested that the noise event data be correlated with the flights over the Brisbane VOR. Roundtable Coordinator Steve Alverson stated that SFO had correlated the noise events with the aircraft flight tracks.

VI. C. Roundtable Budget for FY 2011/2012

Chairperson Gee reported that the 2011-2012 budget issues had finally been resolved. He said that it took a great deal of work by a number of people and organizations to finalize the budget including member Pine, San Mateo County, SFO Staff, and the consultant. Chairperson Gee said it is now time for the Roundtable to turn its attention to the 2013-2014 budget.

VI. D. Status of Roundtable Work Program Items

Chairperson Gee stated he was glad the subcommittees were able to meet last Friday. He thanked the participants, and stated that he tried to structure the subcommittee meetings to be as efficient as possible and encouraged people to make time to participate.

Comments/Concerns/Questions: None.

VI. E. Committee Reports

Operations and Efficiency. Chairperson Gee stated that the only item on agenda was the issue of advocating the lowering of the 65 dB CNEL standard to 60 dB CNEL. Chairperson Gee indicated that the conversation focused on understanding of the issue, and the approach that was arrived at was developing a white paper that could assess the impacts of lowering the standard. The white paper would be shared with the Roundtable and the communities at the September meeting, where everyone could discuss the ramifications of this issue.

Comments/Concerns/Questions: None.

Legislative. – Chairperson Gee stated that the only item on agenda for the Legislative Committee was on potentially approaching the congressional delegation about removing the categorical exemption for NextGEN. He indicated that the committee felt it was not informed enough to recommend a position. Chairperson Gee acknowledged that the Roundtable needs to become better informed about the issue of NextGEN and the categorical exemption it has been granted. He likened the process to streamlining the CEQA process for high speed rail. Chairperson Gee reiterated that the Roundtable needs to educate itself on how NextGEN is going to affect the community, and prepare so they know how to respond to certain issues associated with flying aircraft on a "rail". He continued by saying that the Roundtable may need to advocate an artificial fanning of aircraft on arrival, so people can share the burden of aircraft overflights. Chairperson Gee stated that NextGEN is a big deal, and that they need to learn from other experiences and build upon that.

Comments/Concerns/Questions: None.

Member Chang added that NextGEN is a community balancing project. The faster NextGEN is implemented, he stated, the more relief there will be and the more efficient the airport will be. Member Chang continued by saying that people's homes and lives are important, so this needs to be balanced against these benefits. We need to educate the Roundtable and our neighbors; what are the options and what does it mean to us?

Vice-Chairperson Richardson stated that she appreciated the education part, because there is concern about NextGEN. If it is so good, she asked, why are they exempting it from the NEPA process? Member Chang added that education includes learning about the Categorical Exemption process. Chairperson Gee noted that there are only certain things can be categorically exempted.

Member Lewis asked how this education is going to occur. Chairperson Gee responded that he will work with Bert Ganoung and Steve Alverson on this issue, and will try and come up with a program that is effective.

Work Program. Chairperson Gee discussed a budget for FY 2012/2013. He stated that the Work Program Committee recommended keeping six meetings a year. Chairperson Gee continued by stating that San Mateo County will provide administrative staff support located at County Government Center, and a planner will be provided to provide the support previously provided by Dave Carbone. Chairperson Gee further added that SFO has a lease for an RT office that they will be getting out of. Based on those two additional staff, the Roundtable is now able to review a Request for Qualifications for an aviation consultant; a contract with whom needs to be updated every three years. Understanding all these issues, he stated, can help shape an appropriate budget. Chairperson Gee stated that the timeline to have this done by the September meeting. He also added that they looked at the website and how to enrich it; indicating that it's third-party hosted, which the Roundtable has to take into account for budget reasons.

Chairperson Gee stated that he wanted a budget by the first fiscal quarter and to stay within budget. Chairperson Gee further added that he wanted to improve the partnership with the airlines; stating that this partnership needs to be strengthened and the Roundtable needs to encourage their partnership with the community. He concluded by saying that the Roundtable also

needs to improve its relationship with other airports; OAK has their own noise forum, which the SFO Roundtable does not interact with.

Comments/Concerns/Questions: None.

Member Lewis asked if another Northern California TRACON tour could be offered. Bert Ganoung replied that SFO would be happy to arrange one.

Chairperson Gee highlighted a few items that the Roundtable needs to focus on, including noise issues in North and South County as well as Brisbane. The Roundtable needs to continue to gathering data, he stated, and put it in a format that is understandable. Chairperson Gee also indicated that the Roundtable has to get smarter on the issue of NextGEN, so it could know how to deal with it. He added that Roundtable members also needed to educate themselves on the Metroplex issue. Chairperson Gee concluded by saying that the Roundtable needs to continue to track construction at SFO and understand how it's going to affect arrivals and departures.

Member Lewis asked for more upfront notice on future subcommittee meetings.

Vice-Chairperson Richardson asked that the letters to the airlines regarding the Fly Quiet Awards be added to the September meeting packet.

Member Brownrigg thanked Chairperson Gee for arranging a teleconference for the subcommittee meetings noting that a teleconference is a convenient way to meet.

Member Chang stated that the budget planning process is year around, and that now there is a two-year budget planning process. The sooner you ask for funds, he indicated, the better chance you have of getting them.

Barry Corlett stated that he asked about getting access to additional radar data, and asked that Chairperson Gee follow-up with that. Chairperson Gee asked that Mr. Corlett send him an email with specifics of his request.

XIII. Member Communications / Announcements

Steve Alverson thanked the Roundtable for the last three years, stating that it's been a delight working with the Roundtable. Member Lewis asked if Steve Alverson's firm would respond to the RFQ; which he responded that it would.

Glenn Morse from United stated that with respect to NextGen, he has a copy of the NextGen implementation plan. He also noted that the FAA website has a wealth of info on NextGen and encouraged members to educate themselves prior to the September meeting.

Comments/Concerns/Questions: None.

XIV. Adjourn

The meeting was adjourned at approximately 8:48 PM.

REGULAR AGENDA

Regular Meeting # 282 ~ October 3, 2012 ~

Agenda Items IV - VII

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Technical Report

Aircraft Noise Analysis

Portola Valley and Woodside, California

July 2012

Prepared by:

Aircraft Noise Abatement Office

San Francisco International Airport P.O. Box 8097 San Francisco, California 94128 (650) 821-5100

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Introduction

In response to growing community and the San Francisco International Airport/Community Roundtable (ACR) concerns of increased aircraft noise and overflight altitudes over the Towns of Portola Valley and Woodside. Following a presentation from Mr. James Lyons at the February 2, 2012 ACR meeting in which specific data requests were made, Chairman Jeff Gee requested the San Francisco International Airport (SFO) Aircraft Noise Abatement Office conduct a four month noise measurement survey at two locations, one location in each town to determine the noise levels from aircraft overflights. Noise data was collected from March 6, 2012 through July 8, 2012 near the intersection of Portola Drive and Westridge Road in Portola Valley and at the Federal Aviation Administration's (FAA) Woodside Very High Frequency Omni—directional Radio Range (VOR) navigation beacon two miles west/northwest of the Skyline Boulevard and La Honda Road intersection, near Woodside. Data from these temporary monitors along with altitude data are presented in this report.

Mr. Lyons' presentation concluded with specific requested action items which included:

- 1. Request SFO to provide reports of Woodside VOR overflights by altitude, time and flight number covering the entire 24-hour period from 2009 to date.
- 2. Request SFO to install noise monitoring equipment at Woodside VOR and in Portola Valley for a period of at least four months and report the results to the Roundtable.
- 3. Request SFO to provide Single Event Exceedance Reports for Woodside VOR and Portola Valley while noise monitoring equipment is in place.
- 4. Request NorCal TRACON¹ and the FAA to state whether they intend to comply with the Eshoo Agreement and NCT 7110.65 and if not, why not.

¹NorCal TRACON – The Federal Aviation Administration's Northern California Terminal Radar Approach Control (NCT) located in Mather, CA controlling arriving and departing flights into and out of the Bay Area.

The Aircraft Noise Abatement office agreed to complete the first three of the four requests as they directly involved SFO. It was agreed that Single Event Level (SEL) would be provided though it should be noted that this noise metric is not a State or Federal standard. The fourth request was deferred to the FAA as it applied specifically to them.

2. Noise Standards

The State of California uses a Federal Government approved 24 hour, time-weighted, cumulative noise metric known as the Community Noise Equivalent Level (CNEL) to assess and regulate airport noise levels. This metric represents a standard measure of noise averaged over a 24 hour period where each aircraft noise event occurring between 7:00 p.m. and 9:59 p.m. is weighted an additional 4.77 decibels (dB), and each aircraft noise event occurring between 10:00 p.m. and 6:59 a.m. is weighted an additional 10 dB. An exterior noise climate that is greater than 65 dB CNEL within a residential area is incompatible to airport operations.

3. Summary

Aircraft operations detected at these locations resulted in a 24 hour daily average CNEL well below the State of California and Federal noise impact standard level of 65 dBA CNEL. These results are highly

consistent with aircraft noise levels well outside of the 65 dBA CNEL noise contour. During this measurement period, a daily average of 22 aircraft were correlated to noise events at the Woodside location while an average of 8 were correlated to aircraft at the Portola Valley location. These aircraft consisted of commercial and general aviation aircraft that departed to and from any of the San Francisco Bay Area airports, or are considered overflights not originating at any of the Bay Area airports. The majority of the flights observed were destined for San Francisco International Airport (SFO).

4. Weather Conditions and Runway Use

Weather conditions at SFO are an important factor in the safe operational flow of aircraft arriving and departing the airport. Cloud cover is frequently an issue with arrivals and causes aircraft to be delayed due to heavy arrival flows and congestion. Typically during these times, air traffic controllers need to take aircraft off of their assigned flight plan and vector or maneuver them around in open airspace to provide separation.

SFO experiences winds predominately from the west (270°) which allows the airport to operate in the optimal configuration of arrivals on Runway 28L and 28R and departures on Runway 01L and 01R. This configuration is referred to as "West Plan." The West Plan configuration is maintained until the airport reaches a sustained crosswind wind component of 20 knots (23 miles per hour) on a dry runway or 15 knots (17 miles per hour) on a wet runway. Once the crosswind components have been reached the runway configuration for arrivals and departures will switch to allow for continued safe aircraft operation at the airport. The configuration that follows utilizes Runway 28L and 28R for both arrivals and departures. This reduces the amount of flights that the airport can handle since the available runways have been reduced by 50 percent.

When a storm system moves through the area, it usually brings with it winds from the southeast (135°) or south direction (180°). The airport uses another runway configuration, referred to as the Southeast Plan. The standard Southeast Plan has aircraft arriving on Runway 19L and 19R, while departing aircraft use Runway 10L and 10R. During this configuration the crosswind component is 15 knots (17 miles per hour). When this threshold is exceeded, Runway 19L and 19R are utilized for both arrivals and departures and the arrival traffic over the Towns of Portola Valley and Woodside is typically non-existent being routed in a northerly direction parallel to the coast of southern San Mateo County area.

The final configuration that the airport can use, although it is very rare, is departing and landing on Runway 01L and 01R. This only occurs when the airport experiences a strong sustained wind blowing from the north (0° or 360°). Please refer to Appendix III which contains flight track maps of these configurations.

5. BACKGROUND

5.1 Noise Monitor Equipment

The equipment used to measure the noise level was an Environmental Monitor Unit (EMU) 2200 noise monitors and Type 41DM-2 microphones manufactured by Bruel & Kjaer. The measurements consisted of monitoring the A-weighted decibel in accordance with procedures and equipment which

comply with International Electrotechnical Commission, and measurement standards established by the American National Standards Institute for Type I instrumentation. The EMU and microphone were calibrated prior to deployment. The EMU is housed in a weatherproof case and powered by on-site electrical outlet or batteries. The microphone was mounted on a tripod at a height of seven feet. The noise levels at the sites were continuously monitored and the results stored on the onboard memory and periodically transferred to a removable memory media for decoding. The decoded noise data were then processed in ANOMS for identification, noise to flight track matching and CNEL calculations.

5.2 Measurement Site Descriptions

Site	Description/Address	Latitude	Longitude	Elevation (feet)	Start Date	End Date
913	Woodside VOR - OSI	37.392948	122.269848	2,188	3/6/2012	7/8/2012
	Town of Portola Valley					
968	(Portola and Westridge)	37.394870	122.215530	364	3/6/2012	7/8/2012

Each location used for this monitoring has been used in previous noise monitoring for southern San Mateo County aircraft noise monitoring on at least one other occasion allowing staff to use precedence in setting the threshold for each site that allow for the equipment to better separate community noise from aircraft noise. The threshold for Site #913 Woodside was set at 58 decibels, A-weighted (dBA) while the threshold for Portola Valley, Site #968 was set at 60 dBA.

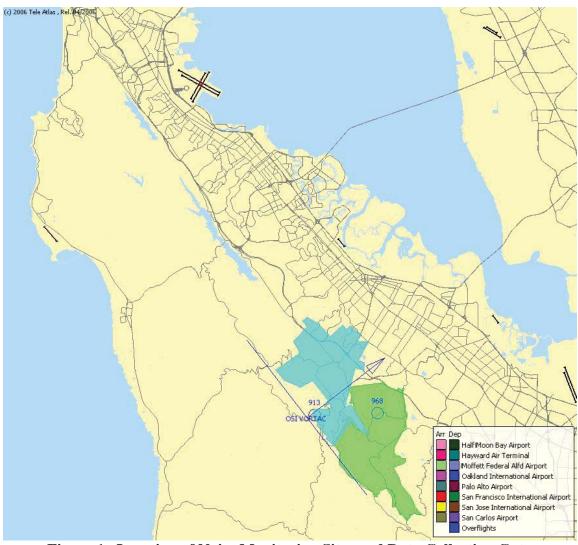


Figure 1. Location of Noise Monitoring Sites and Data Collection Gate

6. Noise Measurements

Noise data was collected on-site from Tuesday March 6, 2012 through Wednesday July, 8, 2012. For this particular project noise monitoring thresholds of 58 dBA and 60 dBA along with noise to flight track matching parameters resulted in monthly average of All Aircraft CNEL at Woodside between 39.6 dBA and 42.8 dBA while Portola Valley ranged between 35.0 dBA and 38.1 dBA. The SFO monthly Aircraft CNEL at Woodside was below the overall aircraft CNEL value ranging between 37.5 dBA and 41.3 dBA while Portola Valley varied between 32.5 dBA and 36.2 dBA

While reading the data tables (Table 1a and 1b) and the associated graph it should be noted that the community noise level is almost totally obscured by the total noise level line. This occurred as the two values for each month are extremely close. The Aircraft CNEL and the SFO Aircraft CNEL values are well below the Community CNEL and therefore are not significant enough to move the total CNEL line.

Table 1a. Monthly Average Community Noise Equivalent Level (dBA) – Town of Portola Valley

	March*	April	May	June	July*
Aircraft	38.1	38.1	37.6	36.2	35.0
SFO Aircraft Only	36.5	35.7	32.6	33.5	32.2
Community	52.6	56.7	62.0	55.8	50.4
Total	52.8	56.8	62.0	55.8	50.5

^{*}Note: incomplete month of data due to March 6, 2012 start and July 8, 2012 end.

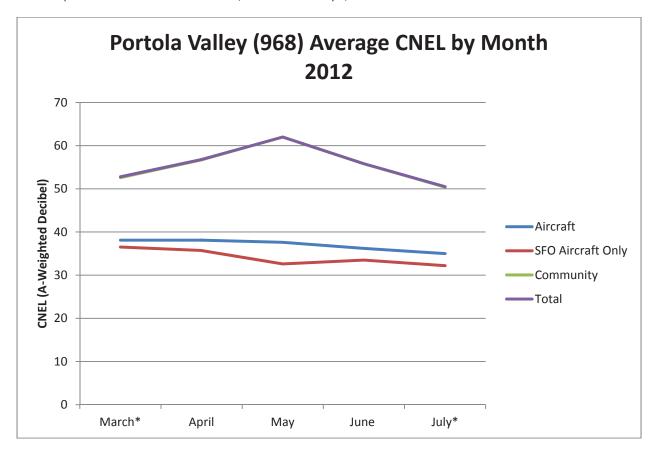
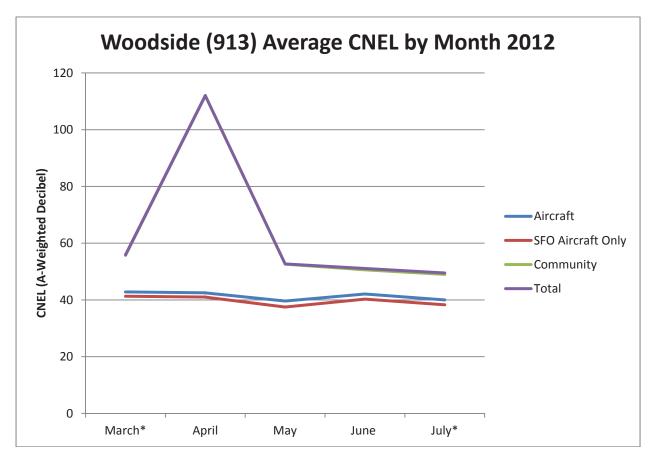


Table 1b. Monthly Average Community Noise Equivalent Level (dBA) - Woodside VOR

	March*	April	May	June	July*
Aircraft	42.8	42.5	39.6	42.1	40.0
SFO Aircraft Only	41.3	41.0	37.5	40.3	38.3
Community	55.7	112.0	52.6	50.6	49.0
Total	55.9	112.0	52.7	51.1	49.5

^{*}Note: incomplete month of data due to March 6, 2012 start and July 8, 2012 end.



Note: On 4/12/2012, the facility's backup diesel generator ran from 10:12 p.m. to 10:58 p.m. This nighttime noise caused the higher Community CNEL for this 24 hour period. Additionally, the presence of rain and wind noise contributed to the Community CNEL noise, totaling 283 events.

7. Oceanic Arrivals

Four percent of the arrivals into SFO are Oceanic Arrivals. These flights are typically those that have originated from Asia, Hawaii or the south Pacific. They are assigned to fly one of the Pacific Ocean tracks and are given a charted instrument arrival into the Bay Area that typically includes flying over the Woodside VOR as a part of the procedure for arrival to Runways 28 at SFO or Runway 29 at Oakland International Airport. In an effort to ease the communities concern over aircraft noise in the Southern San Mateo County area the NorCal TRACON (NCT) included the staff instruction in their procedure manual:

"Traffic permitting, control room personnel shall apply the following Noise Abatement procedures: SFO. Arrivals:

Runways 28:

All oceanic jet arrivals inbound from the west shall cross OSI at or above 8,000 feet MSL. Do not descend this traffic below 6,000 feet until east of V25 centerline."

The SFO Noise Abatement Office has been observing and working with the NCT staff on crossing the navigation beacon at 8,000 feet particularly in the night to early morning hours. In March 2012 NCT management heightened their commitment to this policy and retrained staff on noise abatement procedures. Since the retraining the crossing altitudes have consistently been above 7,700 feet and are regularly at or above 8,000 feet. The understood exception would be two to four daily Oceanic Tailored Arrivals (OTA). These arrivals have similar routing to the Oceanic except for receiving special clearance to fly a continuous descent approach under low power from top of descent approximately 200 miles out down to the MENLO Intersection. MENLO is a navigation point in space above Palo Alto (near Highway 101 and Embarcadero Road). This descent is tailored by aircraft type and aircraft are approximately 2,000 feet lower over the Woodside VOR. These do not include audible power and speed changes associated with a stepped down approach. The OTA was designed to reduce fuel use, emissions and noise. To date the trials are working well though they are not widely used.

8. Case Study

The largest single user of the Oceanic route to SFO is United Airlines (UAL). United's flight 396 from Honolulu, Hawaii to SFO is a scheduled daily arrival into SFO. The scheduled arrival time of UAL396 into SFO is 4:45 a.m. The flight was crossing the Woodside VOR at 4:54 a.m. during the March 6, 2012 to July 8, 2012 monitoring period and counted 108 times with an average altitude of 7,811 feet. Of these 22 created noise events with 9 correlated to the Oceanic Tailored Arrival log. Table 2 below shows energy averages and altitudes for the 10 high altitude crossing UAL396 flights and the 9 OTA flights. The OTA flights were lower in altitude and slightly lower in noise levels than the conventional approaches.

Table 2. United Airlines Flight 396 Tailored Arrival vs. Non Tailored Arrival Noise Levels

	Peak Noise Level	Single Event Level	Average Altitude Feet
	(LMAX) dBA	(SEL) dBA	Mean Sea Level
Non-Tailored Arrival	65.2	74.2	7,954
Tailored Arrival	64.0	72.3	5,505

Daily Level Summary

Town of Portola Valley (Portola and Westridge)

Period: March 2012

Threshold: 60)dBA ²				Correlated Aircraft Operations							
	Communi	ity Noise Eq	uivalent Leve	l (CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date						Energy			Energy		Average	Amount
	SFO Aircraft	All Aircraft	Community	Total	Minimum	Average	Maximum	Minimum	Average	Maximum	Duration	of Events
3/1/2012												
3/2/2012												
3/3/2012												
3/4/2012												
3/5/2012 1												
3/6/2012	36.1	36.5	48.9	49.2	61.4	62.7	63.7	68.7	70.3	73.1	10	8
3/7/2012	0.0	31.7	47.6	47.8	62.9	65.8	68.4	70.5	75.0	78.4	20	4
3/8/2012	28.4	31.4	46.4	46.5	62.7	64.2	65.5	69.8	74.8	77.8	17	4
3/9/2012	22.2	30.8	50.5	50.5	61.2	63.1	64.5	68.8	71.1	72.8	9	8
3/10/2012	29.3	40.1	47.2	48.0	61.5	68.9	78.1	69.2	77.5	86.3	18	16
3/11/2012	32.7	35.5	46.3	46.6	60.3	63.6	65.5	67.4	73.2	77.8	15	13
3/12/2012	30.6	31.9	51.4	51.5	61.1	63.2	64.6	68.4	71.1	73.8	10	5
3/13/2012	39.0	39.2	55.2	55.3	65.2	69.9	73.6	74.9	80.8	83.6	37	6
3/14/2012	41.2	41.2	57.2	57.3	61.5	64.7	68.6	69.1	75.4	78.0	25	13
3/15/2012	37.8	37.9	57.1	57.2	60.1	64.0	67.9	66.8	74.5	80.2	17	17
3/16/2012	40.7	40.7	54.8	54.9	60.5	66.2	71.1	66.8	76.6	82.3	21	13
3/17/2012	37.6	37.6	48.4	48.8	60.4	62.3	63.8	67.3	71.9	74.9	14	11
3/18/2012	38.9	39.4	48.9	49.4	61.0	66.6	72.7	69.2	75.7	80.8	19	12
3/19/2012	23.8	38.1	50.1	50.4	61.1	67.4	73.5	67.7	76.7	81.9	14	12
3/20/2012	35.6	38.4	47.4	47.9	61.8	67.2	73.5	68.7	76.6	83.8	16	9
3/21/2012	27.2	34.4	50.0	50.2	61.3	65.7	72.3	68.4	73.9	79.1	12	9
3/22/2012	34.3	37.7	48.2	48.6	58.2	64.1	66.9	66.8	73.8	77.5	16	15
3/23/2012	20.1	42.3	50.5	51.2	60.7	71.2	80.7	68.9	80.0	89.7	18	15
3/24/2012	38.7	38.8	55.0	55.1	60.4	64.2	67.8	68.5	74.3	80.1	16	11
3/25/2012	33.7	34.3	50.9	51.0	61.7	62.9	65.4	67.6	72.9	77.9	15	10
3/26/2012	36.6	38.2	51.3	51.5	61.0	63.8	67.1	67.8	73.0	77.0	15	15
3/27/2012	41.9	42.3	56.3	56.4	63.7	67.4	71.9	71.4	78.0	83.7	27	7
3/28/2012	30.0	30.8	52.0	52.0	61.8	64.7	66.5	68.6	73.1	75.4	13	5
3/29/2012	32.1	35.6	52.0	52.1	60.3	65.0	68.6	68.4	73.3	77.2	13	14
3/30/2012	30.2	32.7	50.5	50.6	60.4	62.4	64.4	68.5	71.0	73.2	11	10
3/31/2012	39.5	40.4	57.5	57.6	60.8	66.4	74.1	69.1	76.3	83.7	18	18
Energy Average	36.5	38.1	52.6	52.8	61.5	66.0	72.0	69.1	75.5	81.5	17	11

¹ Monitoring start date 3/5/2012. First complete 24 hour period 3/6/2012.

² All levels are in decibels A-weighted.

Daily Level Summary

Town of Portola Valley (Portola and Westridge)

Period: April 2012

Threshold: 60	nreshold: 60dBA ²					Correlated Aircraft Operations						
	Communi	ity Noise Eq	uivalent Level	(CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date	SFO Aircraft	All Aircraft	Community	Total	Minimum	Energy Average	Maximum	Minimum	Energy Average	Maximum	Average Duration	1
4/1/2012	39.0	41.4	49.2	49.9	61.8	66.9	76.1	68.3	74.7	81.1	14	26
4/2/2012	30.0	36.5	50.7	50.9	63.7	67.2	70.1	70.9	76.3	79.9	17	9
4/3/2012	33.5	33.7	48.1	48.3	60.9	63.0	65.4	68.6	72.7	76.1	16	3
4/4/2012	32.8	34.3	47.7	47.9	58.6	63.1	66.3	66.1	72.4	77.1	11	9
4/5/2012	34.1	38.6	47.4	47.9	60.5	64.1	69.4	68.0	72.4	75.7	14	13
4/6/2012	18.9	37.0	48.6	48.9	59.7	67.7	71.9	66.5	75.6	80.9	13	12
4/7/2012	0.0	37.8	45.6	46.3	60.6	67.3	74.5	67.9	74.9	81.2	12	12
4/8/2012	24.9	32.5	46.6	46.8	65.3	69.7	73.0	74.3	77.1	79.1	18	3
4/9/2012	33.9	36.2	48.4	48.6	60.6	65.0	67.5	68.4	73.7	78.6	12	7
4/10/2012	38.0	38.0	49.5	49.8	59.7	62.7	65.2	66.8	72.0	76.7	14	13
4/11/2012	43.4	43.6	52.1	52.6	60.5	65.1	70.0	68.4	74.1	80.7	15	19
4/12/2012	28.9	31.2	61.6	61.6	59.5	65.6	71.0	67.0	72.8	77.1	12	6
4/13/2012	42.9	43.0	54.4	54.7	61.6	65.2	72.0	68.4	74.3	81.3	13	20
4/14/2012	32.1	39.0	48.7	49.2	60.7	66.5	73.0	66.5	75.8	84.2	16	18
4/15/2012	27.9	33.6	49.6	49.7	61.0	63.5	66.0	68.2	73.5	77.9	15	9
4/16/2012	0.0	34.2	48.4	48.6	60.8	68.9	72.9	67.6	76.6	80.1	14	5
4/17/2012	34.0	34.5	50.4	50.5	59.4	64.0	68.8	67.9	72.3	77.2	12	11
4/18/2012	37.4	40.7	50.4	50.9	61.3	66.5	70.1	69.1	74.4	79.3	11	18
4/19/2012 ¹	34.1	35.7	70.0	70.0	61.6	64.5	68.3	67.3	74.6	80.0	18	8
4/20/2012	34.6	38.3	49.8	50.1	60.2	66.6	72.3	66.0	76.0	82.9	16	14
4/21/2012	22.9	33.1	48.0	48.2	61.3	64.8	69.2	68.3	72.9	78.6	10	9
4/22/2012	25.5	31.4	49.0	49.1	60.6	63.5	65.2	67.5	72.3	74.9	11	7
4/23/2012	32.4	34.9	50.5	50.7	61.8	67.4	70.0	67.9	75.5	78.8	15	6
4/24/2012	34.1	35.4	48.6	48.8	63.2	65.7	68.7	70.4	74.6	78.2	14	6
4/25/2012	35.0	36.2	49.1	49.3	61.0	64.7	70.0	68.1	73.1	78.1	11	11
4/26/2012	35.1	36.4	49.0	49.2	60.4	65.1	69.1	67.9	73.0	77.9	12	8
4/27/2012	33.0	44.3	51.2	52.0	64.2	75.2	79.7	74.2	85.0	89.9	29	6
4/28/2012	35.1	38.3	50.9	51.2	61.2	65.0	69.6	68.3	74.0	79.6	13	21
4/29/2012	32.7	36.8	49.0	49.2	61.0	65.7	70.3	67.6	74.1	80.4	12	16
4/30/2012	0.0	32.3	50.2	50.3	61.6	68.1	72.0	68.7	74.4	77.7	10	3
Energy Average	35.7	38.1	56.7	56.8	61.4	66.9	71.7	68.9	75.7	80.8	14	11

¹On 4/19, a gas powered garden tool ran from 1:40 p.m. to 1:42 p.m. This noise caused the higher Community CNEL for this 24 hour period.

² All levels are in decibels A-weighted.

Daily Level Summary

Town of Portola Valley (Portola and Westridge)

Period: May 2012

Threshold: 60	reshold: 60dBA ²				Correlated Aircraft Operations							
	Communi	ity Noise Eq	uivalent Level	(CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date	SFO Aircraft	All Aircraft	Community	Total	Minimum	Energy Average	Maximum	Minimum	Energy Average	Maximum	Average Duration	Amount of Events
5/1/2012	33.6	36.1	56.6	56.7	60.8	65.1	70.1	67.4	73.3	78.2	12	14
5/2/2012	32.2	35.8	50.8	50.9	61.5	69.9	73.1	66.9	79.2	82.0	21	4
5/3/2012	36.8	36.9	52.4	52.5	60.2	63.1	65.4	67.3	70.8	73.2	10	17
5/4/2012	27.0	29.8	49.7	49.8	60.7	63.4	65.3	67.1	71.7	74.5	11	5
5/5/2012	33.2	36.2	49.9	50.0	61.7	67.4	74.4	69.1	75.6	82.0	14	10
5/6/2012	37.1	39.9	48.6	49.1	61.6	68.5	73.7	69.1	75.9	81.2	15	11
5/7/2012	0.0	29.6	48.6	48.7	60.0	62.9	66.0	65.7	71.7	73.9	10	6
5/8/2012	0.0	28.4	50.2	50.2	63.1	63.8	64.7	70.4	73.0	74.9	14	3
5/9/2012	23.4	32.2	50.7	50.8	63.5	67.0	68.9	69.7	73.5	75.9	9	3
5/10/2012	30.4	33.1	52.4	52.5	62.7	66.1	71.0	68.8	73.4	78.7	11	8
5/11/2012	32.1	34.3	50.8	50.9	62.0	65.3	67.6	71.0	73.6	75.6	15	7
5/12/2012	0.0	27.3	48.8	48.8	61.0	63.6	66.4	67.8	72.0	75.3	10	3
5/13/2012	28.6	33.6	50.6	50.7	62.0	65.3	67.6	69.0	74.0	76.9	16	8
5/14/2012	32.3	38.2	48.2	48.6	60.8	67.3	70.9	69.8	76.0	79.7	17	9
5/15/2012	33.2	35.3	50.0	50.1	62.8	65.8	67.6	72.3	76.2	79.9	20	7
5/16/2012	31.0	31.1	52.0	52.0	61.1	63.0	64.1	68.6	73.5	75.2	17	5
5/17/2012	38.8	41.1	54.1	54.3	62.0	65.5	69.8	68.8	74.3	77.4	25	16
5/18/2012	0.0	33.1	51.4	51.4	61.0	63.2	66.3	67.3	74.0	78.6	16	7
5/19/2012	21.4	34.8	57.8	57.8	47.2	65.9	70.1	64.0	74.6	77.8	14	9
5/20/2012	24.9	33.5	48.3	48.4	61.4	64.0	68.4	68.8	72.9	75.9	12	10
5/21/2012 ¹	32.4	32.9	76.5	76.5	59.9	59.9	72.6	68.2	72.4	75.7	12	5
5/22/2012	31.3	33.9	50.9	51.0	62.3	66.0	70.7	69.8	74.2	77.9	14	6
5/23/2012	35.0	35.7	48.9	49.1	62.4	63.6	65.2	68.8	72.1	74.0	12	6
5/24/2012	19.0	41.3	50.6	51.1	61.5	74.1	81.1	68.2	82.9	89.6	26	6
5/25/2012	34.1	34.5	51.9	52.0	60.2	65.2	70.5	66.6	72.9	76.9	13	12
5/26/2012	35.3	36.0	49.4	49.6	60.7	64.8	70.8	67.5	74.0	80.8	14	13
5/27/2012	22.4	38.3	47.8	48.3	61.3	70.8	79.9	67.8	77.3	85.3	14	11
5/28/2012	29.0	47.9	49.2	51.6	61.8	78.2	88.0	67.8	87.2	97.1	16	10
5/29/2012	26.7	39.1	50.9	51.2	61.3	70.0	77.2	68.7	79.4	86.6	17	7
5/30/2012	33.4	35.2	50.0	50.2	62.2	65.2	67.4	70.0	74.1	76.3	13	6
5/31/2012	26.3	30.0	50.5	50.5	62.2	63.9	64.6	70.5	73.3	75.7	14	3
Energy Average	32.6	37.6	62.0	62.0	61.5	68.3	75.7	68.8	77.0	84.4	15	8

¹ On 5/21, bird chirping from 6:59 a.m. to 7:00 a.m. This noise caused the higher Community CNEL for this 24 hour period.

² All levels are in decibels A-weighted.

Daily Level Summary

Town of Portola Valley (Portola and Westridge)

Period: June 2012

Threshold: 60)dBA ²				Correlated Aircraft Operations							
	Communi	ity Noise Eq	uivalent Level	(CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date	SFO Aircraft	All Aircraft	Community	Total	Minimum	Energy Average	Maximum	Minimum	Energy Average	Maximum	Average Duration	Amount of Events
6/1/2012	23.1	31.0	52.5	52.6	61.3	63.7	67.1	67.7	72.1	76.2	11	6
6/2/2012	33.8	38.0	54.5	54.6	60.6	66.3	73.6	66.9	75.8	84.0	14	11
6/3/2012	41.6	41.9	50.8	51.3	58.4	64.1	69.2	67.2	72.9	76.7	13	17
6/4/2012	42.4	42.5	56.7	56.9	59.8	65.8	75.7	67.4	75.0	85.8	14	21
6/5/2012 ¹	27.4	33.1	68.1	68.1	61.3	64.1	66.5	67.3	71.6	74.3	12	11
6/6/2012	28.9	30.0	49.3	49.4	57.4	62.7	65.3	66.8	72.3	76.6	11	4
6/7/2012	32.0	36.7	48.8	49.0	61.3	64.3	68.0	67.9	72.0	76.1	11	8
6/8/2012	0.0	30.0	60.2	60.2	62.4	65.7	67.2	69.5	73.4	75.2	12	4
6/9/2012	22.0	32.2	51.4	51.5	61.6	64.7	65.6	71.4	73.8	75.4	14	6
6/10/2012	0.0	31.1	49.0	49.1	60.9	64.2	66.9	67.5	72.7	75.8	11	6
6/11/2012	0.0	31.6	48.5	48.6	60.7	64.1	67.0	68.5	74.0	77.0	15	5
6/12/2012	27.8	31.8	48.9	49.0	61.2	63.2	66.9	68.3	71.1	73.0	10	7
6/13/2012	20.7	34.0	49.7	49.8	63.5	67.1	70.7	71.0	75.6	79.8	14	6
6/14/2012	20.4	30.5	49.3	49.4	62.3	65.8	69.1	69.8	73.9	77.6	9	4
6/15/2012	28.4	31.8	51.7	51.7	59.5	64.7	67.4	68.4	72.7	76.4	10	7
6/16/2012	22.4	32.7	49.6	49.7	60.9	62.7	64.0	68.1	72.6	75.5	14	5
6/17/2012	0.0	34.8	47.3	47.6	61.7	67.2	71.2	68.4	75.1	80.0	12	8
6/18/2012	27.3	29.6	49.3	49.4	60.5	65.2	67.5	67.7	72.9	75.4	9	4
6/19/2012	25.9	29.0	48.3	48.3	61.4	63.1	64.8	69.7	71.4	73.9	10	5
6/20/2012	0.0	27.7	49.3	49.3	61.7	63.7	65.0	68.7	71.1	73.0	8	4
6/21/2012	35.3	36.4	51.3	51.4	61.1	66.9	72.6	69.2	75.3	78.5	16	9
6/22/2012	37.9	38.7	53.4	53.6	61.5	65.5	70.0	69.3	73.7	78.7	14	10
6/23/2012	27.5	31.8	49.6	49.7	60.9	65.0	68.4	70.4	72.5	75.7	13	6
6/24/2012	29.3	33.0	47.7	47.9	61.8	65.3	68.2	69.2	73.9	76.8	16	7
6/25/2012	27.6	31.7	51.0	51.0	60.6	64.2	67.4	69.1	73.5	77.8	16	5
6/26/2012	22.9	29.0	51.8	51.9	64.4	66.3	67.6	72.3	75.3	77.1	16	2
6/27/2012	28.2	34.4	55.8	55.8	63.4	66.0	68.2	72.0	74.7	76.3	15	6
6/28/2012	27.5	42.2	50.5	51.1	61.4	66.1	68.7	70.3	75.9	80.9	17	8
6/29/2012	30.5	32.1	52.3	52.3	61.2	63.3	65.5	69.5	71.7	73.9	12	8
6/30/2012	31.5	42.4	49.2	50.0	61.9	70.4	76.3	69.3	78.7	84.3	18	14
Energy Average	33.5	36.2	55.8	55.8	61.4	65.4	69.7	69.2	73.9	78.7	13	7

¹ On 6/5, bird chirping from 9:43 a.m. to 9:44 a.m. This noise caused the higher Community CNEL for this 24 hour period.

² All levels are in decibels A-weighted.

Daily Level Summary

Town of Portola Valley (Portola and Westridge)

Period: July 2012

Threshold: 60)dBA ²						Correla	ted Aircra	aft Oper	ations		
Date	Communi	ity Noise Eq	uivalent Leve	l (CNEL)	Maximun	n Noise Le Energy	vel (Lmax)	Sound E	xposure Le	evel (SEL)	Average	Amount
	SFO Aircraft	All Aircraft	Community	Total	Minimum	Average	Maximum	Minimum	Average	Maximum	Duration	of Events
7/1/2012	39.7	39.9	48.5	49.0	60.1	64.7	66.5	68.6	73.4	75.7	15	7
7/2/2012	20.5	30.4	48.8	48.8	61.5	63.2	64.0	69.9	72.4	73.3	12	3
7/3/2012	28.3	34.6	48.9	49.1	62.6	65.0	66.2	70.5	74.0	77.7	14	6
7/4/2012	26.8	33.9	50.4	50.5	64.2	66.7	69.0	71.8	75.5	78.7	15	6
7/5/2012	24.2	35.0	49.7	49.9	60.9	67.6	71.4	68.8	77.4	81.8	22	4
7/6/2012	0.0	33.5	54.6	54.6	62.8	65.9	68.8	71.1	75.9	78.9	21	5
7/7/2012	27.1	32.9	49.1	49.2	62.5	65.8	69.6	70.7	74.4	77.1	13	5
7/8/2012 ¹	24.4	32.7	48.5	48.6	62.2	67.3	71.4	71.2	75.1	78.1	15	5
Energy Average	32.2	35.0	50.4	50.5	62.3	66.0	69.0	70.5	75.0	78.3	16	5

¹Monitoring end date 7/9/2012. Last complete 24 hour period 7/8/2012.

² All levels are in decibels A-weighted.

Daily Level Summary Woodside VORTAC - OSI

Period: March 2012

Threshold: 58	nreshold: 58dBA ²					Correlated Aircraft Operations						
	Communi	ity Noise Eq	uivalent Leve	l (CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date	SFO Aircraft	All Aircraft	Community	Total	Minimum	Energy Average	Maximum	Minimum	Energy Average	Maximum	Average Duration	Amount of Events
3/1/2012												•
3/2/2012												
3/3/2012												
3/4/2012												
3/5/2012 1												
3/6/2012	33.6	40.5	56.8	56.9	59.5	68.0	73.6	65.5	76.6	82.0	18	12
3/7/20124	32.0	37.3	58.3	58.3	59.3	66.4	70.8	66.3	75.1	80.4	16	9
3/8/2012	27.6	38.7	42.3	43.9	58.5	64.3	67.3	67.0	75.2	82.5	21	19
3/9/2012	28.5	33.5	42.1	42.6	59.7	63.5	66.3	67.7	73.3	77.6	14	9
3/10/2012	34.0	38.1	43.7	44.8	58.4	64.0	70.3	66.6	72.3	76.0	14	18
3/11/2012	39.0	41.6	44.6	46.4	58.3	64.7	70.4	66.1	74.2	79.3	18	29
3/12/2012	38.6	41.3	51.5	52.0	60.0	66.4	72.7	67.0	76.0	80.3	21	17
3/13/2012	36.6	40.6	59.5	59.5	59.1	62.3	68.6	66.7	72.1	76.9	16	34
3/14/20125	43.2	43.9	62.3	62.3	58.5	63.5	70.5	66.9	74.3	82.9	22	44
3/15/2012	43.1	43.8	55.4	55.7	59.7	64.8	71.2	66.0	74.6	80.9	19	39
3/16/2012	45.0	45.8	57.1	57.4	58.6	65.9	79.0	66.2	75.5	87.3	20	52
3/17/2012	43.6	44.0	57.9	58.1	59.9	64.5	68.7	67.2	75.5	82.6	23	21
3/18/2012	43.7	43.7	61.2	61.3	59.6	64.9	69.4	66.3	73.6	78.7	23	28
3/19/2012	38.4	41.0	46.1	47.2	59.3	65.0	69.8	65.6	74.7	80.2	17	17
3/20/2012	40.5	43.7	46.1	48.1	58.2	64.9	70.0	67.6	75.1	81.0	19	25
3/21/2012	36.5	39.3	44.7	45.8	58.6	64.2	68.8	66.3	72.1	78.5	14	27
3/22/2012	43.3	44.2	49.0	50.2	58.7	64.5	69.9	66.3	70.8	81.6	18	39
3/23/2012	35.8	39.2	47.1	47.7	58.8	63.5	68.6	66.5	69.8	76.9	14	38
3/24/2012	45.7	46.0	54.6	55.1	58.6	65.1	73.4	65.2	75.6	83.0	21	47
3/25/2012	43.0	44.6	53.4	53.9	56.9	66.0	75.3	65.1	76.2	84.9	19	39
3/26/2012	44.2	45.3	48.6	50.2	58.1	66.6	74.1	64.1	75.6	81.0	19	33
3/27/2012	42.9	44.5	58.0	58.2	58.9	64.0	69.3	66.7	74.6	80.7	22	25
3/28/2012 ³												
3/29/2012												
3/30/2012												
3/31/2012												
Energy	41.3	42.8	<i>55.7</i>	55.9	58.9	65.1	72.0	66.4	74.5	81.5	19	28
Average	41.3	42.0	33.7	33.5	36.5	65.1	/2.0	00.4	74.5	81.5	15	20

¹ Monitoring start date 3/5/2012. First complete 24 hour period 3/6/2012.

² All levels are in decibels A-weighted.

³ Due to technical difficulties with the monitor equipment, data collected from 3/28 through 4/4/2012 will not be reported.

⁴ On 3/7, the facility's backup diesel generator ran from 10:00 a.m. to 11:00 a.m.

 $^{^{5}}$ On 3/14, the facility's backup diesel generator ran from 10:00 a.m. to 11:37 a.m.

Daily Level Summary Woodside VORTAC - OSI

Period: April 2012 Threshold: 58dBA²

Threshold: 58	BdBA ²				Correlated Aircraft Operations								
Date			uivalent Leve	(CNEL)	<i>Maximun</i> Minimum	Energy	vel (Lmax) Maximum	Sound E	Energy	evel (SEL) Maximum	Average Duration	Amount of Events	
4/1/2012	or or morare	7111711161416	community		1	Menage	- Triaziniani		7 Cruge	- Transition	Duration	or Events	
4/2/2012													
4/3/2012													
4/4/2012 ¹													
4/5/2012	40.5	41.8	51.5	52.0	58.8	66.6	74.8	66.1	75.0	81.7	17	20	
4/6/2012	35.6	39.8	43.8	45.3	59.4	67.6	77.2	66.3	75.5	84.6	16	16	
4/7/2012	42.8	44.1	44.0	47.0	58.3	65.7	71.7	65.3	74.4	80.7	13	25	
4/8/2012	26.7	34.1	43.3	43.8	54.5	65.3	71.4	64.3	73.1	77.8	11	9	
4/9/2012	37.7	39.6	49.7	50.1	58.9	64.3	70.2	66.6	72.9	77.8	15	23	
4/10/2012	44.2	45.0	56.3	56.6	58.6	64.4	69.6	66.7	74.5	81.8	20	44	
4/11/2012	45.8	46.3	54.6	55.2	59.3	66.8	74.7	66.2	75.9	82.6	19	30	
4/12/2012 ³	39.0	39.3	126.1	126.1	59.7	64.5	72.0	67.1	73.6	81.0	15	21	
4/13/2012	44.1	44.6	59.8	59.9	58.9	65.8	73.0	66.4	74.8	81.0	19	46	
4/14/2012	40.2	41.6	55.6	55.7	59.2	64.1	69.3	67.7	73.5	77.2	19	25	
4/15/2012	46.0	47.2	44.7	49.2	57.8	69.6	78.3	65.0	82.2	93.9	19	25	
4/16/2012	36.6	40.5	52.4	52.6	58.0	66.5	74.3	65.7	74.5	79.5	16	21	
4/17/2012	37.9	39.7	45.2	46.3	59.9	64.2	68.3	67.0	74.0	80.5	18	26	
4/18/2012	43.9	45.9	52.0	53.0	58.8	65.8	74.4	65.6	75.0	83.5	17	37	
4/19/2012	40.2	41.9	47.8	48.8	59.4	64.4	68.6	67.4	74.0	78.9	18	28	
4/20/2012	42.8	44.1	49.5	50.6	57.9	66.6	73.9	66.6	76.8	85.7	19	28	
4/21/2012	37.3	40.2	44.8	46.1	58.8	64.3	70.0	66.3	73.5	80.0	15	24	
4/22/20124	37.5	40.4	62.6	62.6	57.8	64.9	73.2	65.1	73.7	81.1	15	30	
4/23/2012	32.9	35.3	51.8	51.9	59.3	64.7	70.4	66.1	72.3	78.9	12	12	
4/24/2012	42.9	44.0	47.1	48.8	59.4	66.5	75.0	67.7	76.4	84.7	18	25	
4/25/2012	42.8	43.1	48.6	49.7	60.0	66.1	70.5	68.4	76.0	80.7	20	23	
4/26/2012	40.5	43.6	54.4	54.7	58.6	66.2	73.6	64.5	75.8	83.9	17	25	
4/27/2012	25.3	33.5	46.3	46.5	58.9	64.3	68.5	66.4	72.8	76.8	13	9	
4/28/2012	38.6	40.8	46.3	47.4	59.0	67.7	79.1	65.5	75.3	83.9	17	26	
4/29/2012	30.3	39.4	45.2	46.2	61.0	70.1	78.9	66.5	78.1	86.2	18	11	
4/30/2012	37.5	39.5	51.4	51.6	59.5	66.8	75.5	66.9	75.6	83.7	18	16	
Energy Average	41.0	42.5	112.0	112.0	59.0	66.2	74.1	66.4	75.6	84.0	17	24	

¹ Due to technical difficulties with the monitor equipment, data collected from 3/28 through 4/4/2012 will not be reported.

² All levels are in decibels A-weighted.

³ On 4/12, the facility's backup diesel generator ran from 10:12 p.m. to 10:58 p.m. This nighttime noise caused the higher Community CNEL for this 24 hour period. Additionaly, presence of rain and wind noise also contributed to "Community" noise, totalling 283 events.

⁴ On 4/22, the facility's backup diesel generator ran from 4:41 a.m. to 5:17 a.m. This nighttime noise caused the higher Community CNEL for this 24 hour period.

Daily Level Summary Woodside VORTAC - OSI

Period: May 2012 Threshold: 58dBA²

Threshold: 58	dBA ²				Correlated Aircraft Operations								
	Communi	ity Noise Eq	uivalent Leve	(CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	evel (SEL)			
Date						Energy			Energy		Average	Amount	
	SFO Aircraft	All Aircraft	Community	Total	Minimum	Average	Maximum	Minimum	Average	Maximum	Duration	of Events	
5/1/2012	32.9	37.5	56.5	56.6	59.6	63.7	67.3	68.4	72.0	75.4	14	12	
5/2/2012 ¹	32.3	34.2	58.9	58.9	60.0	66.0	70.3	69.3	73.6	77.7	14	6	
5/3/2012	43.1	44.0	49.1	50.3	59.0	65.4	72.7	65.6	75.3	83.6	19	37	
5/4/2012	36.6	39.0	48.4	48.8	57.1	66.4	69.6	66.3	75.0	79.4	17	16	
5/5/2012	28.4	36.8	46.0	46.5	57.9	65.6	72.8	66.0	73.7	79.8	15	17	
5/6/2012	29.5	36.8	46.8	47.2	57.8	64.0	70.6	64.0	72.9	78.3	15	20	
5/7/2012	27.4	33.2	44.3	44.6	58.2	63.9	68.6	65.0	72.3	75.4	13	10	
5/8/2012	34.4	37.1	43.6	44.5	59.8	65.4	70.1	69.9	73.7	79.4	16	8	
5/9/2012	0.0	27.5	44.4	44.5	60.8	62.9	65.3	68.0	70.9	74.5	10	4	
5/10/2012	34.7	37.6	44.2	45.1	56.2	65.8	70.9	64.6	74.6	79.3	15	13	
5/11/2012	32.0	37.2	44.7	45.4	58.6	64.8	69.2	67.5	74.0	78.5	14	15	
5/12/2012	38.3	40.8	43.8	45.5	59.5	64.9	69.3	68.5	75.0	78.8	19	21	
5/13/2012	37.5	39.2	51.1	51.4	55.2	63.7	70.8	63.8	73.3	79.6	15	23	
5/14/2012	33.8	36.4	48.4	48.7	58.5	65.1	69.7	67.4	74.1	79.0	17	12	
5/15/2012	41.1	42.1	46.5	47.9	58.7	64.4	69.8	67.3	74.4	80.4	19	28	
5/16/2012	29.4	35.0	44.0	44.6	61.6	68.6	74.9	68.5	76.6	81.5	16	6	
5/17/2012	43.2	43.3	53.2	53.7	58.3	64.3	69.3	66.0	73.9	80.9	17	34	
5/18/2012	27.2	35.0	45.0	45.4	59.6	64.6	68.6	68.4	72.7	77.1	12	14	
5/19/2012	23.5	35.0	43.2	43.8	60.6	66.3	71.6	68.5	74.3	80.1	13	10	
5/20/2012	38.9	40.7	45.0	46.4	58.7	63.3	70.5	66.3	73.1	78.8	17	28	
5/21/2012	41.7	42.4	46.3	47.8	57.4	62.6	68.1	65.8	70.8	77.4	12	28	
5/22/2012	32.5	36.2	52.7	52.8	59.0	62.8	66.8	66.2	71.4	75.2	13	20	
5/23/2012	28.9	35.7	48.9	49.1	59.0	63.4	67.0	65.3	72.5	76.9	16	12	
5/24/2012	36.7	40.8	59.9	59.9	59.4	64.5	71.4	67.2	74.2	81.0	18	15	
5/25/2012	44.7	45.2	62.4	62.4	58.2	65.4	73.5	64.2	75.3	82.2	21	42	
5/26/2012	39.6	40.6	52.5	52.7	58.2	63.2	69.0	65.2	72.8	79.1	16	33	
5/27/2012	38.6	39.9	48.3	48.9	57.4	63.1	67.2	64.2	72.8	77.7	16	23	
5/28/2012	36.8	42.5	46.8	48.2	58.6	69.7	83.3	64.9	76.6	88.8	17	32	
5/29/2012	28.0	41.4	46.1	47.4	57.6	67.3	74.7	64.6	75.0	83.2	13	19	
5/30/2012	23.6	35.3	43.6	44.2	59.1	65.1	70.0	67.9	73.9	78.6	14	11	
5/31/2012	23.5	34.8	43.2	43.8	59.8	64.3	66.9	68.1	74.1	77.7	15	5	
Energy Average	37.5	39.6	52.6	52.7	58.9	65.2	72.5	66.9	73.9	80.4	15	19	

¹ On 5/2, the facility's backup diesel generator ran from 10:00 a.m. to 11:00 a.m.

² All levels are in decibels A-weighted.

Daily Level Summary Woodside VORTAC - OSI

Period: June 2012 Threshold: 58dBA²

Threshold: 58dBA ²					Correlated Aircraft Operations							
	Communi	ity Noise Eq	uivalent Leve	(CNEL)	Maximun	n Noise Le	vel (Lmax)	Sound E	xposure Le	vel (SEL)		
Date						Energy			Energy		Average	Amount
	SFO Aircraft	All Aircraft	Community	Total	Minimum	Average	Maximum	Minimum	Average	Maximum	Duration	of Events
6/1/2012	39.8	40.5	46.0	47.1	59.2	64.4	68.9	66.6	73.3	78.8	16	17
6/2/2012	44.8	47.2	57.1	57.5	58.3	67.7	76.6	63.7	77.6	88.1	20	46
6/3/2012	44.0	44.8	48.2	49.8	52.8	64.4	71.0	65.2	73.9	80.5	17	41
6/4/2012	42.0	42.7	49.4	50.3	59.7	65.7	73.4	66.9	74.5	82.7	17	27
6/5/2012 ¹	37.6	40.0	56.3	56.4	58.9	64.3	72.1	65.2	73.7	81.6	16	20
6/6/2012	35.7	37.5	45.6	46.3	59.2	63.9	69.9	67.4	72.5	78.0	14	16
6/7/2012	39.8	42.5	51.1	51.7	58.3	64.0	69.4	64.6	72.6	79.6	14	34
6/8/2012	31.8	34.0	49.7	49.8	59.0	63.3	66.4	66.3	71.7	74.7	11	7
6/9/2012	31.4	35.4	47.9	48.1	60.0	62.8	64.8	66.3	71.9	77.4	15	13
6/10/2012	29.1	37.8	50.7	50.9	58.8	65.1	70.1	66.0	73.7	78.9	16	18
6/11/2012	42.5	43.7	44.4	47.1	59.5	68.0	75.8	65.3	77.5	84.3	20	17
6/12/2012	43.1	44.0	57.1	57.3	58.7	63.8	68.8	67.5	74.0	81.6	17	22
6/13/2012	37.3	41.7	51.5	51.9	58.7	68.4	77.8	65.8	76.8	84.4	16	22
6/14/2012	35.8	36.0	48.3	48.5	59.0	62.5	65.1	67.1	72.1	76.1	15	10
6/15/2012	35.3	38.0	49.0	49.4	59.1	64.7	69.9	66.1	73.4	78.4	14	20
6/16/2012	35.8	37.9	45.0	45.8	60.8	64.8	68.7	68.0	74.0	76.8	18	17
6/17/2012	35.5	37.3	47.3	47.7	57.6	63.8	66.2	66.9	72.2	73.5	12	8
6/18/2012	30.5	35.1	47.8	48.0	58.6	59.8	61.2	65.8	68.6	71.1	9	5
6/19/2012	33.9	35.1	46.3	46.6	59.1	62.7	66.3	65.2	72.3	76.4	14	12
6/20/2012	33.4	37.2	43.5	44.4	59.6	65.4	68.9	66.3	73.4	77.7	13	13
6/21/2012	34.0	34.6	49.9	50.0	58.2	64.9	68.1	65.4	75.0	79.3	16	7
6/22/2012	45.2	45.7	49.4	51.0	58.5	65.2	71.1	66.9	75.2	80.2	21	32
6/23/2012	44.0	45.2	53.9	54.5	58.9	66.0	76.3	67.6	75.3	84.4	19	44
6/24/2012	39.4	40.4	49.2	49.7	60.8	66.6	71.9	68.2	75.9	80.9	18	16
6/25/2012	41.4	42.3	47.9	48.9	58.7	64.4	70.5	66.3	73.4	78.6	16	30
6/26/2012	33.6	35.1	44.3	44.8	59.6	63.7	68.9	69.1	72.2	78.4	12	10
6/27/2012	31.9	36.5	45.2	45.7	59.0	64.9	70.2	68.4	73.7	79.1	15	12
6/28/2012	42.8	43.4	47.5	48.9	60.0	65.7	74.7	68.7	75.7	85.5	19	24
6/29/2012	44.7	45.0	48.1	49.8	59.5	64.0	68.0	66.7	73.4	77.9	18	33
6/30/2012	42.9	48.3	47.4	50.9	58.6	70.0	84.6	67.9	77.2	90.5	17	43
Energy Average	40.3	42.1	50.6	51.1	59.0	65.3	73.8	66.8	74.3	82.1	16	21

 $^{^{1}}$ On 6/5, the facility's backup diesel generator ran from 10:00 a.m. to 11:15 a.m.

² All levels are in decibels A-weighted.

Daily Level Summary Woodside VORTAC - OSI

Period: July 2012 Threshold: 58dBA²

Threshold: 58	BdBA ²						Correla	ted Aircr	aft Oper	ations		
Date			uivalent Leve	(CNEL)	<i>Maximun</i> Minimum	n Noise Le Energy Average	vel (Lmax) Maximum	Sound E	xposure Le Energy Average	evel (SEL) Maximum	Average Duration	Amount of Events
7/1/2012	42.0	42.9	45.9	47.7	59.2	63.8	67.1	67.3	73.7	76.5	17	22
7/2/2012	36.3	39.9	48.8	49.3	59.3	64.6	69.8	67.6	73.7	78.0	15	17
7/3/2012	34.8	36.1	49.3	49.5	58.7	61.8	66.4	66.4	70.3	73.3	12	9
7/4/2012	24.4	37.3	44.6	45.4	59.7	67.4	75.1	68.1	76.2	83.7	18	10
7/5/2012	42.4	42.8	55.2	55.4	61.0	66.2	71.9	69.0	78.8	87.0	27	19
7/6/2012	28.5	36.6	44.3	45.0	60.6	63.8	69.5	69.2	72.3	77.0	13	22
7/7/2012	36.9	39.8	42.9	44.6	60.5	65.1	70.1	68.5	74.3	78.9	16	16
7/8/2012 ¹	38.5	39.2	45.0	46.0	59.3	63.1	66.0	68.9	72.2	74.2	15	13
Energy Average	38.3	40.0	49.0	49.5	59.9	64.8	70.5	68.2	74.7	81.0	17	16

¹ Monitoring end date 7/9/2012. Last complete 24 hour period 7/8/2012.

² All levels are in decibels A-weighted.

Town of Portola Valley (Portola and Westridge)

Threshold: 60dBA

Amount of Noise Events by Classification

2012	1	2	3	4	5	Total
3/1						
3/2						
3/3						
3/4						
3/5						
3/6	6		2		6	14
3/7			4		4	8
3/8	1		3		2	6
3/9	1		7		14	22
3/10	4		12		6	22
3/11	7		5	1	7	20
3/12	3		2		29	34
3/13	5		1		88	94
3/14	12		1		51	64
3/15	16		1		85	102
3/16	13				57	70
3/17	11				1	12
3/18	9		3		7	19
3/19	2		10		16	28
3/20	4		4	1	8	17
3/21	3		6		11	20
3/22	11		4		7	22
3/23	1		14		17	32
3/24	10		1		15	26
3/25	6		4		1	11
3/26	9		6		17	32
3/27	3		4		128	135
3/28	4		1		3	8
3/29	6		8		8	22
3/30	3		7		19	29
3/31	14		4		215	233
Average	7	-	5	1	32	42

2012	1	2	3	4	5	Total
4/1	10		16		8	34
4/2	3		5	1	14	23
4/3	2		1		4	7
4/4	5		4		2	11
4/5	5		8		3	16
4/6	1		11		6	18
4/7			12			12
4/8	1		2		11	14
4/9	1		6		10	17
4/10	12		1		3	16
4/11	13		6		48	67
4/12	3		3		62	68
4/13	18		1	1	19	39
4/14	3		12	3	2	20
4/15	4		5		6	15
4/16			5			5
4/17	9		2		27	38
4/18	7		11		22	40
4/19	4	1	2	1	8	16
4/20	7		7		8	22
4/21	2		7		14	23
4/22	1		6		10	17
4/23	3		3		6	12
4/24	2		3	1	6	12
4/25	8		3		7	18
4/26	4		4		2	10
4/27	2		4		7	13
4/28	7		14		5	26
4/29	5		11			16
4/30			3		2	5
Average	5	1	6	1	12	22

Town of Portola Valley (Portola and Westridge)

Threshold: 60dBA

Amount of Noise Events by Classification

2012	1	2	3	4	5	Total
5/1	4		10		40	54
5/2	1		3		4	8
5/3	16		1		86	103
5/4	2		3		3	8
5/5	2		8		3	13
5/6	4		7		7	18
5/7			6		3	9
5/8			3		3	6
5/9	1		2		12	15
5/10	3		5		8	16
5/11	3		4		11	18
5/12			3		4	7
5/13	2		5	1	14	22
5/14	4		4	1	4	13
5/15	4		3		6	13
5/16	4			1	48	53
5/17	9	1	6		61	77
5/18			7		20	27
5/19	1		8		4	13
5/20	1		9		4	14
5/21	4		1		6	11
5/22	3	1	2		6	12
5/23	3		3		3	9
5/24	1		5		20	26
5/25	10		2		15	27
5/26	10		3		18	31
5/27	2		9		5	16
5/28	4		6		12	22
5/29	1		5	1	7	14
5/30	2		4		11	17
5/31	1		2		6	9
Average	4	1	5	1	15	23

2012	1	2	3	4	5	Total
7/1	5		2		7	14
7/2	1		2		1	4
7/3	1		5		2	8
7/4	1		5		4	10
7/5	1		3		10	14
7/6			5		15	20
7/7	1		4		1	6
7/8	1		4		2	7
Average	2	-	4	-	5	10

2012	1	2	3	4	5	Total
6/1	1		5		21	27
6/2	5		6		5	16
6/3	13		4		8	25
6/4	19		1	1	34	55
6/5	2		9		31	42
6/6	2		2		10	14
6/7	4		4		8	16
6/8			4		16	20
6/9	1		5		34	40
6/10			6		4	10
6/11			5		3	8
6/12	2		4	1	3	10
6/13			5	1	11	17
6/14	1		3		8	12
6/15	5		2		13	20
6/16	1		4		1	6
6/17			8		5	13
6/18	2		2		7	11
6/19	2		3		3	8
6/20			4		8	12
6/21	6		2	1	9	18
6/22	6		4		25	35
6/23	2		4		7	13
6/24	2		5		4	11
6/25	2		3		14	19
6/26	1		1		22	24
6/27	2		4		5	11
6/28	2		6		13	21
6/29	4		3	1	15	23
6/30	4		10		1	15
Average	4	-	4	1	12	19

Woodside VORTAC - OSI

Threshold: 58dBA

Amount of Noise Events by Classification

2012	1	2	3	4	5	Total
3/1						
3/2						
3/3						
3/4						
3/5						
3/6	3	1	8		151	163
3/7	2		7		45	54
3/8	3		16			19
3/9	3		6		3	12
3/10	7	1	10			18
3/11	12		16	1	1	30
3/12	8		9		17	34
3/13	10		24		262	296
3/14	25		19		136	180
3/15	35		4		10	49
3/16	37		15		111	163
3/17	19		2		235	256
3/18	26	1	1		282	310
3/19	9		8		3	20
3/20	17		8		5	30
3/21	12		15			27
3/22	29		9	1	4	43
3/23	14		23	1	16	54
3/24	43		4		16	63
3/25	26		12	1	5	44
3/26	25		7	1	2	35
3/27	7		18		397	422
3/28						
3/29						
3/30						
3/31						
Average	17	1	11	1	90	106

2012	1	2	3	4	5	Total
4/1						
4/2						
4/3						
4/4						
4/5	16		3	1	59	79
4/6	8		8		2	18
4/7	9		16		5	30
4/8	2		7		2	11
4/9	12		11		35	58
4/10	28		16		12	56
4/11	20		10		38	68
4/12	17		4		283	304
4/13	37		9		180	226
4/14	12		11	2	37	62
4/15	10		14	1	1	26
4/16	6		14	1	39	60
4/17	17		8	1	4	30
4/18	21		16		5	42
4/19	17		11		17	45
4/20	13		13	2	12	40
4/21	9		15		1	25
4/22	12		15	3	22	52
4/23	7		5		23	35
4/24	19		5	1	1	26
4/25	19		4		14	37
4/26	13		11	1	24	49
4/27	2		6	1	1	10
4/28	15		10	1	5	31
4/29	2		9		3	14
4/30	7		9		27	43
Average	13	-	10	1	33	57

Woodside VORTAC - OSI

Threshold: 58dBA

Amount of Noise Events by Classification

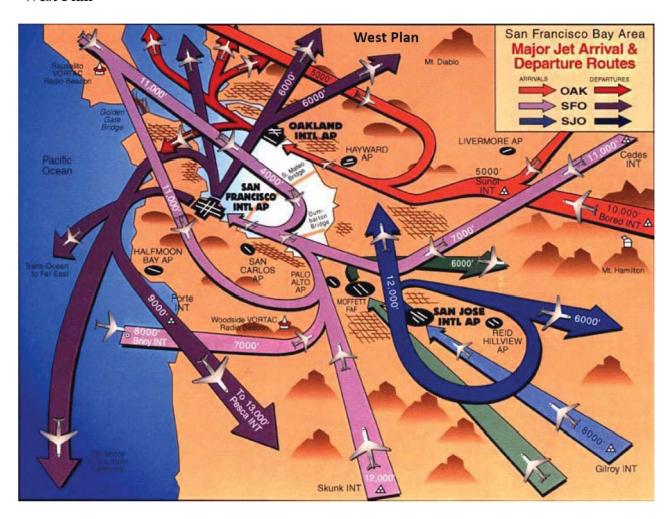
2012	1	2	3	4	5	Total
5/1	6		6		236	248
5/2	3		3		70	76
5/3	27		10		6	43
5/4	7		9		5	21
5/5	4		13		8	25
5/6	6	1	13		10	30
5/7	3		7		5	15
5/8	2		6		1	9
5/9			4			4
5/10	7		6		5	18
5/11	5		10		3	18
5/12	10		11		6	27
5/13	16		6	1	7	30
5/14	7		4	1	2	14
5/15	21		7		3	31
5/16	3		2	1	6	12
5/17	30		3	1	84	118
5/18	4		10		1	15
5/19	1		9			10
5/20	13		14	1		28
5/21	22		6		1	29
5/22	9		10	1	136	156
5/23	2		10		23	35
5/24	5		10		405	420
5/25	35		7		380	422
5/26	24		9		93	126
5/27	15		8		1	24
5/28	21		11		4	36
5/29	5		14		1	20
5/30	1		10		3	14
5/31	1		4		1	6
Average	11	1	8	1	54	67

2012	1	2	3	4	5	Total
7/1	12		10		1	23
7/2	8		9		1	18
7/3	4		4	1	1	10
7/4	1		8	1	1	11
7/5	13		6		36	55
7/6	3		19			22
7/7	6		10			16
7/8	7		6			13
Average	7	-	9	1	8	21

2012	1	2	3	4	5	Total
6/1	12		5			17
6/2	28		17	1	72	118
6/3	28		13		2	43
6/4	23		4		8	35
6/5	13		7		34	54
6/6	5		9	2		16
6/7	19		15		13	47
6/8	2		5		19	26
6/9	4		8	1		13
6/10	4		14		1	19
6/11	6		11			17
6/12	10		11	1	215	237
6/13	10		11	1	2	24
6/14	7	1	2		4	14
6/15	9		11			20
6/16	10		7			17
6/17	2	1	5		1	9
6/18	1		4			5
6/19	8		4		12	24
6/20	2		11			13
6/21	6		1		18	25
6/22	23		8	1	9	41
6/23	25		16	3	222	266
6/24	10		6			16
6/25	18		10	2	1	31
6/26	4		6			10
6/27	2		10			12
6/28	14		9	1	4	28
6/29	21	1	10	1	3	36
6/30	25		18			43
Average	12	1	9	1	36	43

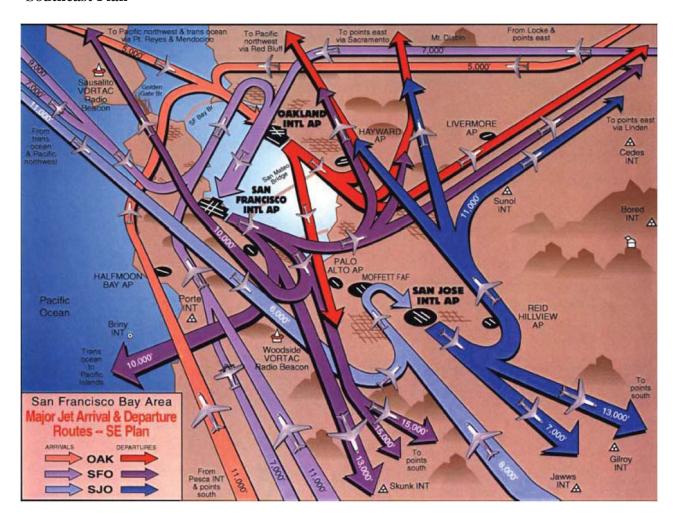
Weather Conditions and Runway Use

West Plan



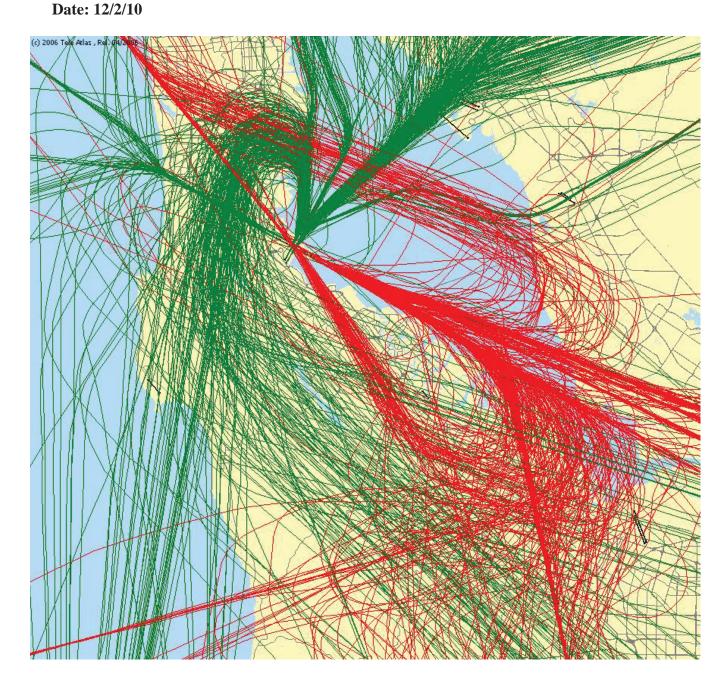
Weather Conditions and Runway Use

Southeast Plan



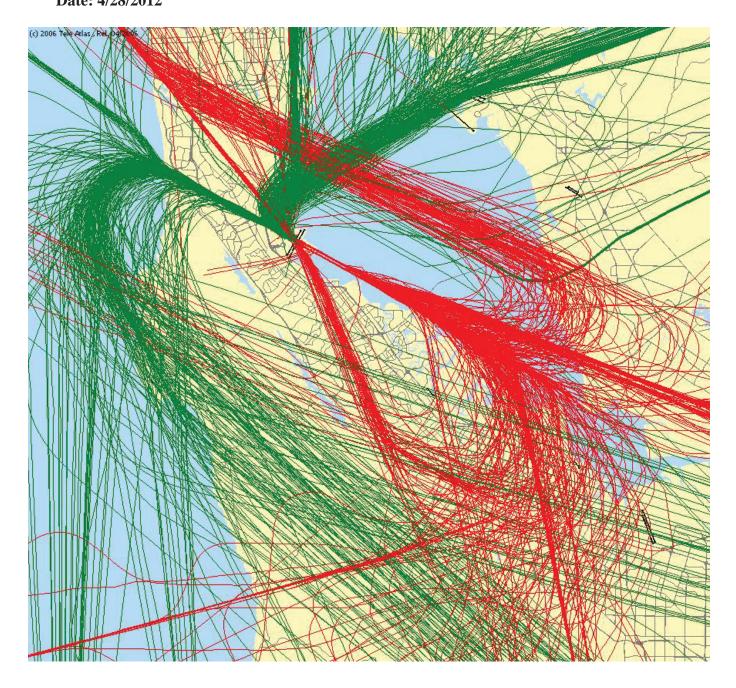
Weather Conditions and Runway Use

28/01 Runway Configuration – 28L/R Arrivals (Red), 01L/R Departures (Green)



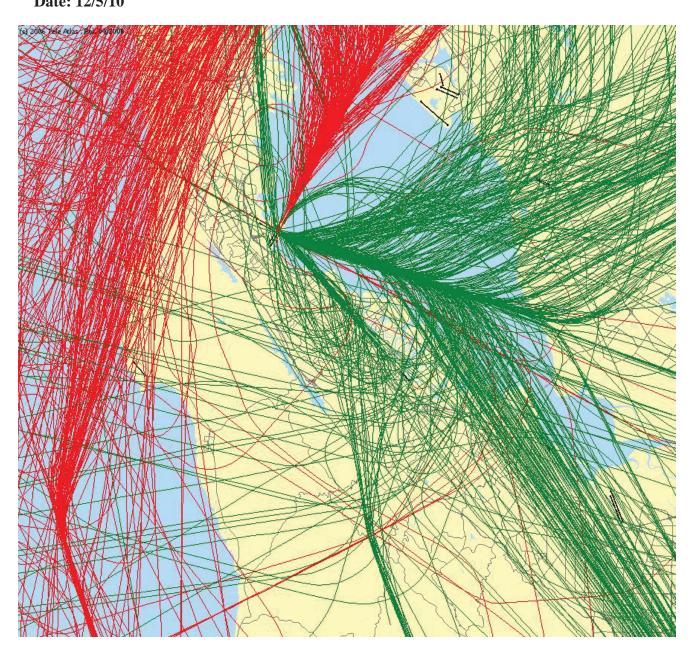
Weather Conditions and Runway Use

 $28/28\ Runway\ Configuration - 28L/R\ Arrivals\ (Red),\ 28L/R\ Departures\ (Green)$ Date: 4/28/2012



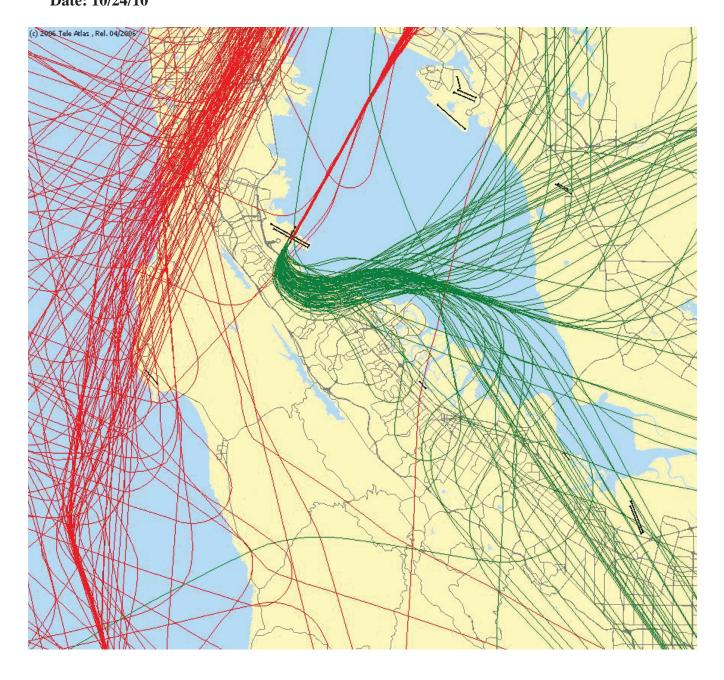
Weather Conditions and Runway Use

19/10 Runway Configuration – 19L/R Arrivals (Red), 10L/R Departures (Green) Date: 12/5/10



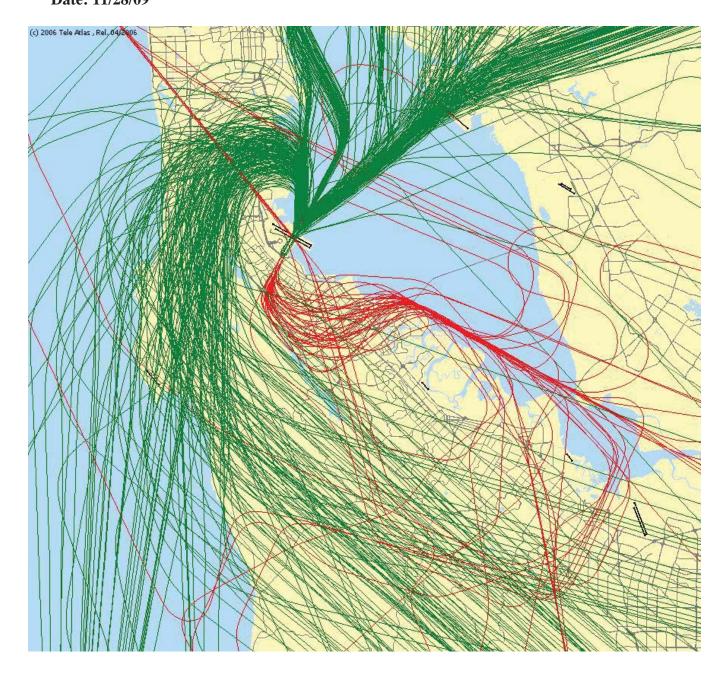
Weather Conditions and Runway Use

19/19 Runway Configuration – 19L/R Arrivals (Red), 19L/R Departures (Green) Date: 10/24/10

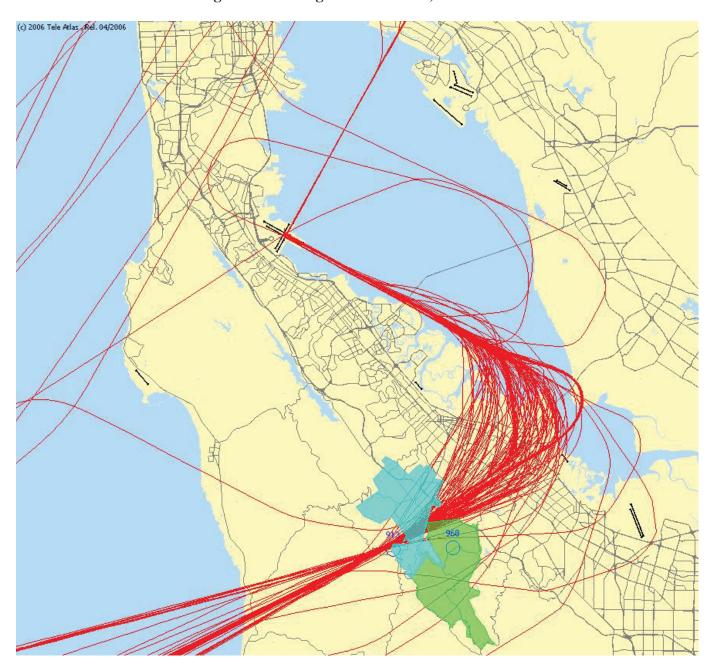


Weather Conditions and Runway Use

01/01 Runway Configuration – 01L/R Arrivals (Red), 01L/R Departures (Green) Date: 11/28/09



APPENDIX IV
United Airlines Flight 396 arriving from Honolulu, Hawaii 3/6/2012 to 7/8/2012







455 County Center, 2nd Floor Redwood City, CA 94063 T (650) 363-1853 F (650) 363-4849 www.sforoundtable.org

October 3, 2012

TO: Roundtable Representatives, Alternatives, and Interested Persons

FROM: James A. Castañeda, AICP, Roundtable Coordinator

SUBJECT: Consideration/Approval of a Roundtable Budget for FY 2012-2013

RECOMMENDATION:

Approve a final Roundtable Budget for FY 2012-2013, per attached, based on the recommendations of the Work Programs Subcommittee, and allow a one-time 50% reduction of memberships fees from Roundtable member cities, County of San Mateo, and the City/County Association of Governments of San Mateo County for FY 2012-2013.

BACKGROUND

The Airport/Community Roundtable is funded by its membership. The annual membership contributions are maintained in a Roundtable Trust Fund. The County of San Mateo Planning and Building Department, on behalf of the Roundtable, administer the Fund. All Roundtable expenses, such as staff support, technical support consultant contracts, office supplies/equipment, mailing/photocopying costs, etc. are paid from that Fund. Any monies that are not spent each year (Roundtable Fund Balance) are added as revenue to the budget for the following fiscal year.

Based on the way the Roundtable was created (via a Memorandum of Understanding (MOU)), the Roundtable does not have the ability to directly employ its own staff or to contract for professional consultant services. Therefore, all staff support and professional consultant services are provided to the Roundtable through the County of San Mateo Planning and Building Department. The amounts for these support services are shown as budgeted expenditures in the annual Roundtable budget.

DISCUSSION

The expected funding sources for the FY 2012-2013 include the following: 1) the San Francisco Airport Commission, 2) Roundtable member cities (18 cities), 3) the County of San Mateo, and 4) the City/County Association of Governments of San Mateo County (C/CAG), for a representative of the C/CAG Airport Land Use Commission (ALUC), and 5) the estimated Roundtable fund balance from FY 2011-2012.

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Consideration/Approval of a Roundtable Budget for FY 2012-2013 October 3, 2012 Page 2 of 4

With the approval of the FY 2001-2002 budget, the Roundtable established fees for member cities, the County of San Mateo, and C/CAG's contribution as the following:

Member Cities (18 cities): \$1,500 County of San Mateo: \$12,000 C/CAG: \$1,500

This had been maintained through FY 2009-2010. At its October 6, 2010 Regular Meeting, the Roundtable approved a one-time 50% reduction in annual Roundtable membership fees for all member agencies, except the San Francisco Airport Commission. This was done in order to provide some minor finance relief to those agencies and encourage active Roundtable membership and participation. The contributions were reflected as the following:

Member Cities (18 cities): \$750 County of San Mateo: \$6,000 C/CAG: \$750

At that time, member cities and C/CAG had already paid the full membership fees of \$1,500, so for FY 2011-2012, the Roundtable elected to waive fees and considered dues for FY 2011-2012 paid forward at a same 50% reduction from the FY2010-2011. The County of San Mateo paid \$6,000 both during FY 2010-2011 and FY 2011-2012.

In developing the current propose budget for FY 2012-2013, the Work Program Subcommittee is recommending a one-time 50% reduction in annual Roundtable membership fees for all member agencies, except the San Francisco Airport Commission, for FY 2012-2013. Those amounts are reflected in the expected funding sources in the propose budget.

Expected Funding Sources

A. Annual Funding from the San Francisco Airport Commission

The Commission's contribution for FY 2012-2013 is \$220,000.

B. Annual Funding from Other Roundtable Members

The annual funding amounts from the other Roundtable members (18 cities, the County of San Mateo, and C/CAG for the C/CAG Airport Land Use Committee (ALUC)) will be at the aforementioned 50% reduction from normal fees, resulting in the following dues: Cities - \$750 each; County - \$6,000, and C/CAG - \$750.

C. Estimated Roundtable Fund Balance from the Prior Fiscal Year

The estimated Roundtable fund balance from the prior fiscal year (2011-2012) is \$2,124. This is the balance after closeout of all prior contract obligations from that fiscal year.

Potential Funding Allocations for FY 2012-2013

A. Staff and Consultant Support Services - \$190,016

Funding for staff support to the Roundtable will consist of the following:

- 1. Roundtable Coordinator (\$113,620). This amount represents a reimbursement to the County of San Mateo to provide half-time Planner support to the Roundtable.
- 2. Administrative Support to Coordinator (\$6,396). This amount represents a reimbursement to the County of San Mateo to provide administrative assistant support to the Roundtable Coordinator when needed.
- Roundtable Aviation Consultant for Technical Support (\$70,000). This is not to exceed contract amount to provide the Roundtable with Aviation Technical Support.

B. Roundtable Administration/Operations - \$4,800

- 1. Postage/Photocopying (\$3,500). This amount represents a reimbursement to the County of San Mateo for costs associated with reproduction of meeting materials and postage. This amount is considerate of electronic distribution of materials to offset costs when possible.
- 2. Website (\$200). This amount represents a reimbursement to the County of San Mateo for costs associated with paying website hosting dues only. Maintenance of the website will be performed by the Roundtable Coordinator, and costs absorbed as part of that line item for staff support.
- 3. Data Storage Services (\$300). This amount represents a reimbursement to the County of San Mateo for the cost associated with moving and maintaining all of the Roundtable's files and archives to Internet based storage ("cloud storage").
- **4. Supplies/Equipment (\$800)**. This amount represents a reimbursement to the County of San Mateo to provide supplies and equipment to the Roundtable Coordinator and administrative support staff when needed.

Consideration/Approval of a Roundtable Budget for FY 2012-2013 October 3, 2012 Page 4 of 4

C. Contingency Funds - \$47,558

This category of funds are those of which are not committed for specific projects, activities, or other purposes. This amount will be reserved as a contingency for any unforeseen costs associated with any work that is unanticipated/out-of-scope for Roundtable staff and Aviation consultants for Technical Support. The estimated amount is \$47,558, which is split between a contingency for the Aviation Consultant (\$20,000) with the remaining (\$27,558) as an General Contingency.

ATTACHED: Proposed Roundtable Budget for FY 2012-2013

San Francisco International Airport/Community Roundtable Proposed Budget for FY 2012-2013

A. EXPECTED FUNDING

	FUNDING SOURCE				
	1.	San Francisco Airport Commission	\$220,000		
	2.	Roundtable Member Cities (18 Cities @ \$750)*	\$13,500		
	3.	County of San Mateo*	\$6,000		
	4.	C/CAG Airport Land Use Committee (ALUC)*	\$750		
	5.	Fund Balance from Previous Year	\$2,124		
			TOTAL	\$242,347	
В.	POTENTIAL FUNDING ALLOCATIONS				
	ST	AFF AND CONSULTING SUPPORT		\$190,016	
	1.	Roundtable Coordinator	\$113,620		
	2.	Administrative Support to Coordinator	\$6,396		
	3.	Aviation Consultant for Technical Support	\$70,000		
	RO	UNDTABLE ADMINISTRATION/OPERATIONS		\$4,800	
	1.	Postage/Photocopying	\$3,500		
	2.	Website	\$200		
	3.	Data Storage Services	\$300		
	4.	Supplies/Equipment	\$800		
	CO	NTINGENCY FUND		\$47,558	
	1.	Aviation Consultant Contingency	\$20,000		
	2.	General Contingency	\$27,558		
			TOTAL	\$242,374	

^{*} Represents one-time 50% reduction of normal membership fees.

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Introduction

At an airport, sound from aircraft and ground equipment is the byproduct of aircraft operations. The definition of 'sound' is any unwanted noise, which can be different for each person hearing the sound. For some it is not an annoyance at all, for others it can be highly annoying. In order to create a common measurement tool in 1985 the Federal government decided to choose one metric for measuring aircraft noise effects on the surrounding communities.

Through the Aviation Safety and Noise Abatement Act (ASNA) of 1985, Congress required the FAA to select one metric for describing aircraft noise levels. The FAA required a single metric that represented the effect of aircraft operations because various jurisdictions around the country were using their own methodology, creating a patchwork of different metrics to describe the effects of aircraft noise on communities. It became clear that one standard needed to be applied across the country to standardize how aircraft noise was reported.

Noise Measurement

Noise is measured using the decibel scale (dB) which uses a weighting system that most closely reflects the human ear, specifically using the A-weighted decibel of dBA. Decibels are logarithmic because the range of sound pressures that occur in the environment are so large that using a log is the most convenient way to express it.

The FAA selected the use of the Day-Night Noise Level (DNL), which is referred to as the Community Noise Equivalent Level (CNEL) in California to model aircraft noise. The CNEL is the accumulation of each noise event at an airport for a select period in time; airports generally report CNEL for a quarter or a year time period. CNEL takes into account the number of aircraft operations by the specific aircraft type, the flight track used by that aircraft, as well as the time of day. The CNEL metric divides a 24-hour day into three segments; day, evening, and night. Daytime is considered 7:00 a.m. – 7:00 p.m., evening is 7:00 p.m. – 10 p.m.; any event during this time period is weighted by 5 dB, and night is 10:00 p.m. – 7:00 a.m. and any event during this time period is weighted by 10 dB. The evening and nighttime weighting penalty accounts for lower ambient or background noise levels that makes aircraft noise seem louder than it is during daytime hours. Typical noise during the day such as roadway traffic can mask some other noises that are readily heard during the quieter evening and nighttime





hours. Once the CNEL is determined, it is plotted on a map and shows lines of the same noise level, similar to a topographic map.

Utilizing CNEL is required for use in any environmental evaluations under the National Environmental Policy Act (NEPA). Federal agencies have also selected the DNL (used throughout the rest of the Country instead of CNEL) for describing the compatibility of various land uses with aircraft noise exposure. The FAA, with the support of the EPA, DOD, and HUD agencies, has developed land use compatibility guidelines that identify the acceptability of various land uses with aircraft noise, as measured in CNEL.

That compatibility has been based on scientific research concerning public reaction to noise exposure. The Schultz curve, as shown in **Figure 1**, predicts approximately 14% of the exposed population would be highly annoyed with exposure to the 65 CNEL. At 60 CNEL, it decreases to approximately 8% of the population highly annoyed. However, recent updates to the Schultz curve, done by the U.S. Air Force, indicate that even a higher percentage of residents may experience annoyance with 65 CNEL.

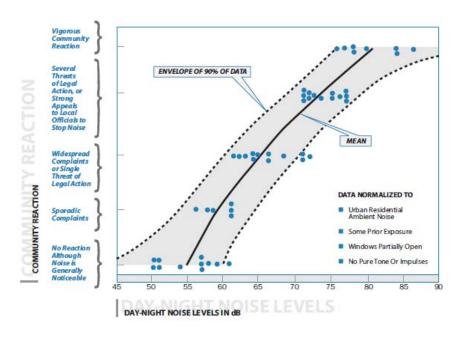


Figure 1, Example of Community Reaction to Noise

Source: EPA Levels document, 1974

Transitioning to the 60 CNEL

Airports within the state of California operate using a state permit issued by the CalTrans division of Aeronautics. The permit requires the user to comply with Title 21 of the state Public Utilities Code (Title 21, Division 2.5, Chapter 6) that, in part, requires airports to have compatible land uses within the 65



Request for Qualifications for the San Francisco International Airport/Community Roundtable

September 10, 2012

CNEL. If that airport has incompatible land uses within the 65 CNEL, it must apply for and operate under a variance to its permit until all land uses within the 65 CNEL are compatible.

The use of the CNEL metric criteria has been criticized by various interest groups concerning its usefulness in assessing aircraft noise impacts. As a result, at the direction of the EPA and the FAA, the Federal Interagency Committee on Noise (FICON) was formed to review specific elements of the assessment on airport noise impacts and to recommend procedures for potential improvements. FICON included representatives from the Departments of Transportation, Defense, Justice, Veterans Affairs, Housing and Urban Development, the Environmental Protection Agency, and the Council on Environmental Quality. The FICON review focused primarily on the manner in which noise impacts are determined, including whether aircraft noise impacts are fundamentally different from other transportation noise impacts; how noise impacts are described; and, whether impacts outside of Community Equivalent Noise Level (CNEL) 65 decibels (dB) should be reviewed in a NEPA document.

The committee determined that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present CNEL cumulative noise exposure metric. FICON determined that the CNEL method contains appropriate expected community reaction for a given noise level to determine the noise impact is properly used to assess noise impacts at both civil and military airports. The report does support agency discretion in the use of supplemental noise analysis, recommends public understanding of the CNEL and supplemental methodologies, as well as aircraft noise impacts.

Summary

As airports and communities are well aware, noise does not suddenly disappear from the community at the 60 CNEL. Until the FAA determines that lowering the annoyance threshold is in the interest of the majority, airports and community groups have created innovative, collaborative efforts to abate noise on a local level.

Many airports are taking proactive steps with their surrounding jurisdictions to promote compatible land use beyond the 65 CNEL through educational programs with local cities and counties, using key references such as the California Airport Land Use Handbook, published by CalTrans. These steps to be inclusive of the surrounding communities can lead to increased collaboration on future projects on and off the airfield.





Drawing the Line on Aircraft Noise Impacts:

The Origin of the 65 CNEL Standard and How it Might Be Changed

Most sources of pollution are subject to some form of state and federal limits that are intended to protect the public from their harmful effects. Noise pollution is no exception, as federal and state limits have been established for noise sensitive land uses (e.g., homes, schools, and churches) exposed to aircraft noise.

Federal and state regulators have deemed a Community Noise Equivalent Level (CNEL) of 65 decibels or greater to be incompatible with noise sensitive land uses. The 65 CNEL boundary is designated by a line or contour surrounding an airport. The size and shape of the 65 CNEL contour is determined by many factors including the number and type of aircraft operations, how the runways are laid out relative to the noise sensitive land uses, how the runways are used, where the aircraft fly over the ground, and even the time of day the aircraft operations occur. (Evening and nighttime flights are acoustically penalized to account for human sensitivity to noise during these periods.) A home on the inside of the 65 CNEL contour is "impacted", while the home across the street outside the 65 CNEL contour line is not impacted. The impacted home may be eligible for federal sound insulation funds, while the home across the street is not.

So why was the 65 CNEL chosen by federal and state regulators as the dividing line? In a word: economics. While research indicates that the 65 CNEL represents a level at which about 14 percent of people are "highly annoyed", the 65 CNEL also represented a level at which the cost of addressing the nationwide impact through federally-funded sound insulation and land acquisition programs was feasible over a period of many years. That is, a lower CNEL would cover a much larger land area making it infeasible to mitigate nationwide aircraft noise impacts in a reasonable amount of time. The 65 CNEL contour was also chosen because it represented a noise level commonly found in urbanized areas where many of the nation's busiest airports are located. Finally, extensive research indicated that the using 65 CNEL would account for other issues associated with aircraft noise including speech interference, sleep disturbance, and hearing loss.

California's Aircraft Noise Standards indicates that 65 CNEL is the "level of noise acceptable to a reasonable person residing in the vicinity of an airport. . ."; however, people's tolerance of aircraft noise varies greatly as does their background noise environment. As a result, a community's response to aircraft noise may not be consistent with the 65 CNEL standard. In fact, nationwide research has shown that more aircraft noise complaints come from outside the 65 CNEL than inside it. Which raises the question, "Is it time to lower the 65 CNEL standard?"

The potential for establishing a lower limit is provided for in federal and state aircraft noise regulations. For example, the California's Aircraft Noise Standards states that the 65 CNEL standard, "... does not have a degree of precision which is often associated with engineering criteria for a physical phenomenon (e.g., the strength of a bridge, building, et cetera). For this reason, the state will review the criterion periodically, taking into account any new information that might become available."

Similarly, when drafting Federal Aviation Regulation (FAR) Part 150, the federal government acknowledged that the 65 CNEL standard may need to be reexamined as newer, quieter aircraft

came into the national fleet and the areas impacted by aircraft noise became smaller. FAR Part 150 and the Caltrans *Airport Land Use Planning Handbook* also provide for local municipalities to select a lower CNEL standard for compatible land use planning purposes, but that does not obligate the federal government to provide funding for sound insulation or property acquisition for existing noise sensitive uses in those areas. Some airports in rural parts of California have adopted a lower CNEL standard for compatible land use planning purposes (e.g., Sacramento County adopted 60 CNEL), which have effectively prevented the conflicts between residents and airport operators experienced at airports in the more highly urbanized areas.

The federal government has examined the appropriateness of the 65 CNEL standard several times and has concluded each time that CNEL is the appropriate metric to assess aircraft noise impacts and 65 CNEL is the appropriate noise level at which noise sensitive land uses are deemed incompatible.

Although lowering the 65 CNEL standard may seem like daunting task, there has been a growing movement among community airport noise roundtables and advocacy groups calling for a new review of the 65 CNEL standard. The federal government has responded to those concerns and a new round of federal research is currently underway. The results should be available in the near future.

In addition, the number of impacted noise sensitive land uses has become smaller as newer, quieter aircraft enter the national fleet and older, noisier aircraft are retired. Also, many sound insulation and land acquisition programs have been completed under the 65 CNEL standard, which means the federal financial obligation of addressing the remaining areas within the 65 CNEL contours is getting smaller. However, the Federal Aviation Administration recently release guidance on funding for sound insulation programs that affirmed the use of the 65 CNEL standard and added an interior standard of 45 CNEL, which could signal that a change to national 65 CNEL standard is not likely any time soon.

In the meantime, community advocacy groups like the San Francisco International Airport Community Roundtable will continue to work with state and federal elected representatives to seek aircraft noise standards that ensure the impact of noise from SFO's aircraft operations are minimized and the quality of life for San Mateo County residents is improved.

Want to learn more about the 65 CNEL standard? Here are some useful links to explore:

Caltrans Aviation Noise Programs: http://www.dot.ca.gov/hg/planning/aeronaut/avnoise.html

The Aviation Safety and Noise Abatement Act of 1979: http://airportnoiselaw.org/usc475-1.html

Federal Aviation Administration Program Guidance Letter 12-09 AIP Eligibility and Justification Requirements for Noise Insulation Projects:

http://www.faa.gov/airports/aip/guidance letters/media/pgl 12 09 NoiseInsulation.pdf

FAR Part 150 – Noise Compatibility Planning: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title14/14cfr150_main_02.tpl

California Airport Land Use Planning Handbook:

http://www.dot.ca.gov/hq/planning/aeronaut/documents/AirportLandUsePlanningHandbook.pdf

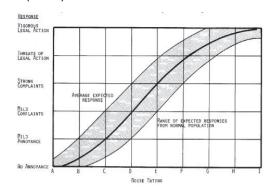
Demonstration of Written Communication Capabilities and Technical Expertise

The following is Wyle's response to the RFQ's topic "How did the community standard of 65 CNEL become the national standard and what level of effort will be required to reduce this standard to a lower threshold?"

Long-term annoyance is the primary effect of aircraft noise on exposed communities. Noise annoyance has been defined by the Environmental Protection Agency (EPA) in 1974 as any negative subjective reaction on the part of an individual or group. The scientific community adopted the use of long-term annoyance as a primary indicator of community response because it attempts to account for all negative aspects of effects from noise, e.g., interference with everyday conversation and increased annoyance due to being awakened the previous night by aircraft.

The study of how noise annoys people is part and parcel with the evolution of noise metrics. Early work in the 1930s by researchers Fletcher and Munson determined frequency dependent curves that defined equal loudness levels as a function of frequency. These curves were used to define the three weightings, A, B and C. Of these three, A-weighting was found to best correlate with human perceptions of the loudness of an aircraft noise event. A more complicated metric, Perceived Noise Level (PNL) correlated even better.

In the 1950s, a cumulative metric, the Composite Noise Rating (CNR), was developed that could relate both annoyance and community reaction (complaints, legal action, etc.) to aircraft noise. The CNR included both the number of aircraft events and noise level (using PNL), and was correlated with annoyance and community response. CNR began in a form where aircraft noise spectra were compared to reference spectra at various levels, in a manner similar to Noise Criteria (NC) curves used for assessment of interior



ventilation system noise, and noise was quantified by a letter rank as shown in the accompanying figure by Kryter. The process included adjustments for time of day (effectively a 5 dB penalty for nighttime noise), ambient conditions, season, and various physical characteristics of the noise. CNR was supported by surveying community response to measured noise, and it was noted even then that factors other than noise had a role in response.

When adopted by the DOD in 1964, the CNR rating had moved from letter scale to numbers and zones as follows:

Zone	CNR	Acceptability
1	< 100	Normally Acceptable
2	100 - 115	Normally Unacceptable
3	≥115	Clearly Unacceptable



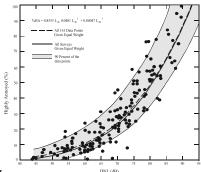
The basic concepts in CNR evolved into forms with more detail and an understanding of underlying effects. By the 1960s this evolution led to use of Noise Exposure Forecast (NEF), which represented the frequency content of noise by perceived noise level PNL. NEF was computed from the Effective Perceived Noise Level (EPNL) which, in turn, used PNL with adjustments for event duration and pure tone content. Multiple events were combined via an energy summation basis. NEF included a 10 dB adjustment for nighttime events, an early change from CNR's initial 5 dB. The Department of Housing and Urban Development (HUD) linked acceptability for residential development to NEF values. It is not a coincidence that the HUD NEF guidelines also equate to CNR values as the HUD work built upon earlier guidelines issued by the DOD in 1964.

In the late 1960s and early 1970s, with the tones produced by most jet aircraft significantly reduced, tone corrections were less important, and A-weighted levels became widely used, in part because, unlike NEF or EPNL, they could be easily determined through direct measurement with available sound monitoring equipment. The Community Noise Equivalent Level (CNEL), based on A-weighted levels, was developed by Wyle and used by the State of California in 1970 to establish noise standards in residential communities. Like CNR, the California implementation of CNEL included correction factors to "normalize" community reactions.

In response to the Noise Control Act of 1972, the EPA, in its now well-known 1974 'Levels Document', identified "noise levels requisite to protect public health and welfare with an adequate margin of safety," and established a variant of CNEL known as the Day-Night Average Sound Level, DNL, with no evening weighting. Like CNR, the EPA Levels Document related DNL to community reactions.

In the 1970s, EPA led the effort to replace the use of NEF for airport noise contours with DNL as part of its mandate. This was a consolidation of metrics between government agencies, seeking one which applied to all community noise sources, and accepting compromise in details for particular sources. The agencies formed the Federal Interagency Committee on Urban Noise (FICUN) to develop Federal policy and guidance on noise. After prodding by Congress in the form of the Quiet Committees Act of 1978 and the Aviation Safety and Noise Abatement Act of 1979 (ASNA), FICUN selected DNL as the best metric for measuring noise for land use planning, thus endorsing the EPA's earlier work and making it applicable to all Federal agencies. The FICUN issued its report in June 1980 that established the Federal government's 65 dB DNL standard for land use compatibility and related guidelines.

Social surveys of community response to noise have allowed the development of general dose-response relationships that can be used to estimate the proportion of people who will be "highly annoyed" by a given noise level, gauging the intrusion and disturbance to speech, sleep, audio/video entertainment, and outdoor living. In 1978, Schultz published his synthesis with the dose-response relationship shown in the accompanying figure. The concept of "percent highly annoyed" has provided the most consistent response of a community to a particular noise environment. The "highly annoyed" terminology



was derived from a combination of two of Schultz's descriptors "very annoyed" and "extremely annoyed" in his social surveys.



After Schultz published his synthesis, "percent highly annoyed," (%HA), became the way to view airport noise impact¹. Thus, aircraft noise became judged more by its effects on the public than on public reactions to aircraft noise. It should be noted that, contrary to occasionally expressed opinions, 65 dB DNL as a land use compatibility guideline pre-dated the Schultz %HA relationship. While Schultz's work was published in the Journal of the Acoustical Society of America (JASA) during the federal agencies deliberations on noise metrics, the FICUN report makes no mention of it. It seems clear from the FICUN report that the choice of 65 dB DNL as the significant impact threshold is based on the land use planning precedents set by DOD and HUD, decisions made years before Schultz's work. In other words, 100 CNR begat 30 NEF, which begat 65 dB DNL.

The scatter of data supporting the Schultz curve is large partly because the original curve and the subsequent updates assumed that the relationship between percent highly annoyed and DNL was independent of the noise source, whether road, rail or aircraft. In the years after the Schultz analysis, additional social surveys have been conducted, most notably by Miedema and Vos, to better understand the annoyance effects of various transportation sources. This later data shows aircraft noise exhibiting a higher percentage of the community highly annoyed than the other modes for the same DNL. For example, the data shows that 28% are highly annoyed with aircraft noise at an exposure of 65 dB DNL – more than twice that predicted by the FICON relationship. With such a high percentage of HA, it is questionable as to whether 65 dB DNL represents an appropriate 'threshold of significance' for aircraft noise assessment.

There is no strong technical basis for the selection of 65 dB CNEL/DNL (or 100 CNR, or 30 NEF) as the standard; it represents a compromise involving technical feasibility and economical reasonableness. After all, EPA identified a DNL of 55 dB as the level to "protect public health and welfare with an adequate margin of safety" and a large number of the complaints about aircraft noise come from people exposed to CNEL/DNL less than 65 dB CNEL/DNL. An additional factor to be considered is the increasing perception that the CNEL/DNL metric with its equal energy equivalence between level and number of events, may not best represent annoyance, and that number of events may be more important than level.

Clearly, modifying the threshold requires a better understanding of community response to aircraft noise. More research is needed and FAA has recently funded such research. The results (probably available in about two years) can be used to evaluate both the metric and an appropriate level to better protect the community from aircraft noise. More than likely, unless very strong evidence appears, there will be a reluctance to change the metric/threshold.

Furthermore, lowering the threshold from 65 dB CNEL/DNL will have financial and legal implications to AIP-funded abatement and mitigation programs, Part 150/AICUZ studies, and NEPA studies, and will need to be thoroughly examined by stakeholders such as airports, FAA, CEQ and DOD for feasibility, especially from a technical acoustic perspective. The task of coordinating such an effort would most likely be given to FICAN.

-

¹ The relationship of %HA to DNL has been reworked several times since Schultz, the latest endorsed by the Federal Interagency Committee on Noise (FICON) in 1992. The FICON curve was the result of an USAF analysis of data using logistic curve fit.





455 County Center, 2nd Floor Redwood City, CA 94063 T (650) 363-1853 F (650) 363-4849 www.sforoundtable.org

October 3, 2012

TO: Roundtable Representatives, Alternatives, and Interested Persons

FROM: Jeffrey Gee, Roundtable Chairperson

SUBJECT: Consideration/Approval of a Recommendation from the Roundtable Work

Program Committee for Aviation Consultant for Technical Support

RECOMMENDATION

The Roundtable Work Program Subcommittee recommends that the full Roundtable approve BridgeNet International as Aviation Consultant for Technical Support to the Roundtable, via a one-year contract with the County of San Mateo.

BACKGROUND

On July 1, 2012, the San Francisco International Airport Commission re-entered into contract with the County of San Mateo to provide staffing support to the Roundtable by providing the following: 1) a Planner to provide half-time Roundtable oversight, 2) a consultant to provide technical support to the Roundtable, and 3) administrative support.

Since 2009, the Roundtable's support structure consisted of 1) a Roundtable Coordinator to provide support to conduct meetings and provide technical support via a consultant, 2) an administrative support position to assist the Coordinator in conducting meetings, and 3) a Program Manager who oversaw all operations of the Roundtable's support and any other contracted roles. With the adoption of the aforementioned contract, the County of San Mateo Planning & Building Department has elected a support structure that similarly existed prior to 2009 which consisted a Roundtable Coordinator (staffed by a County of San Mateo Planner half-time), administrative support assistance (provided by the County of San Mateo Planning & Building Department's administrative staff at the discretion of the Coordinator), and technical support via a contracted consultant.

This contract also coincides with the need to renew and redistribute a Request for Qualifications (which occurs every three years). This provides an opportunity to establish the new support structure by revising scope-of-work for the technical consultant role, and the expectations of such.



Consideration/Approval of a Recommendation from the Roundtable Work Program Subcommittee for Aviation Consultant for Technical Support Page 2 of 3

James A. Castañeda, AICP, a Planner III with the County of San Mateo, will assist the Roundtable as Program Coordinator who will manage all support activities and oversee technical support consultants and any other staff necessary to support the Roundtable. BridgeNet International will serve as Aviation Technical Consultant and provide technical assistance to the Roundtable.

DISCUSSION

Preparation/Distribution of a Request for Qualifications (RFQ)

As required by the County of San Mateo, Roundtable staff prepared a Request for Qualifications (RFQ) to solicit interest from qualified consultants. The RFQ included a not-to-exceed contract amount of \$70,000 and a distribution list with the names of 10 consultants. Distribution of a RFQ to a select list of qualified consultants is the usual way by which public agencies initiate solicitation for professional consultant services.

Roundtable Coordination Selection Subcommittee

As part of the process to retain a consultant to serve as Aviation Technical Consultant, the Roundtable's Work Program Subcommittee oversaw the selection process. The following Roundtable Representatives served on the Roundtable Work Program Subcommittee:

Jeffrey Gee, Roundtable Chairperson / City of Redwood City Sepi Richardson, Roundtable Vice-chairperson / City of Brisbane Sue Digre, City of Pacifica Elizabeth Lewis, Town of Atherton David Pine, County of San Mateo Larry May, Town of Hillsborough

Others appointed to serve on the subcommittee included the following:

John Bergener, SFO Airport Planning Manager

Consultant Selection Process

Roundtable staff distributed the RFQ to 10 consultants and received three responses from the following (in no particular order):

ESA Airports
BridgeNet International
Wyle Laboratories, Inc.

After careful and deliberate review of the RFQ responses, the Subcommittee members decided to invite all three respondents to a formal interview. The consultant interviews were held on September 20, 2012 with all three candidates.

Consideration/Approval of a Recommendation from the Roundtable Work Program Subcommittee for Aviation Consultant for Technical Support Page 3 of 3

Based on the process described herein and after considerable discussion of the three candidates that were interviewed, the Roundtable Work Program Subcommittee recommends that the full Roundtable approve BridgeNet as the Aviation Consultant for Technical Support to the Roundtable. After acceptance and approval of the recommendation, Roundtable staff will initiate the process to retain BridgeNet as Technical Support to the Roundtable, via a contract with the County of San Mateo. Attached is BridgeNet's response to the RFQ.

Attachments: BridgeNet International's Response Proposal

ESA Airports' Response Proposal

Wyle Laboratories, Inc.'s Response Proposal

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Working together for quieter skies

Request for Qualifications to Retain Consultant Services to Provide

Technical Support to the San Francisco International

Airport/Community Roundtable

September 10, 2012



Submitted by:









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September 7, 2012

James A. Castañeda, AICP Coordinator San Francisco International Airport/Community Roundtable 455 County Center, Second Floor Redwood City, CA 94063

Dear Mr. Castañeda:

Re: Request for Qualifications to Retain Consultant Services to Provide Technical Support to the San Francisco International Airport/Community Roundtable

BridgeNet is pleased to submit its proposal for the San Francisco International Airport/Community Roundtable technical support. BridgeNet International has been privileged to provide airport acoustic and consulting services in the Bay area for the past 15 years, including San Francisco International Airport. Our team is comprised of aviation professionals that specialize in airport noise mitigation issues and have applied these mitigation measures specifically to airport operations in the Bay area. BridgeNet is joined by Harvey Hartmann & Associates to provide air traffic technical support.

Our employees have worked in the field of acoustics and public meeting facilitation for over 30 years. Our firm was founded on the principal that "the data has a story to tell." It will be incumbent on us to give data meaning for Roundtable stakeholders. This foundation was recently awarded with Aviation Week & Space Technology's Innovation Award in Software, awarded in March 2012 for our Volans 3D software platform. This symbolizes our focus on innovation and providing the necessary tools to bring complex issues into the public fold. BridgeNet looks forward for the opportunity to provide our award-winning technical services to the San Francisco International Airport/Community Roundtable.

Sincerely,

Cynthia Gibbs BridgeNet International



Section 1. Executive Summary

BridgeNet International is pleased to present our team's response to the San Francisco International Airport/Community Roundtable (SFO Roundtable) request for qualifications for technical support of the organization. Our team is proud to offer our services as described in the following sections. BridgeNet International is joined by Hartmann & Associates, a firm with unparalleled expertise in Bay area air traffic issues.

In order to support the continued efforts of the Work Program, our team will utilize two key methods – educate and innovate. These two words support the Roundtable's mission of ..." attempts to achieve noise mitigation through a cooperative sharing of authority among the aviation industry, the Federal Aviation Administration (FAA), SFO management and local government." The ability to cooperate comes through educating each stakeholder as well as finding innovative solutions to noise mitigation issues.

As the Roundtable enters its 31st year, the efficacy of the group will remain strong by including new Work Program items that are timely to the issues at SFO that will affect operations for years to come, and look to ever-evolving new technology to solve long-standing noise abatement issues. With the Work Program guiding the fulfillment of the Roundtable mission, the group can focus on the best way to approach each Work Program item.

Each of the task items conducted by BridgeNet, should we fulfill the technical support role for the SFO Roundtable, should keep the Work Program in everything from the meeting agendas to working with key stakeholders such as TRACON, the SFO noise abatement office, and SFO Roundtable members.

BridgeNet has experience bringing together individuals and organizations of varying backgrounds to reach a consensus utilizing our facilitation capabilites. We have accomplished this through our work on Part 150 and Noise Exposure Map updates, as well as previous work by Cynthia Gibbs as Assistant Coordinator the Francisco at San Airport/Community Roundtable from 2000-2003 under the leaderships of the Honorable Gene Mullin and Marland Townsend.

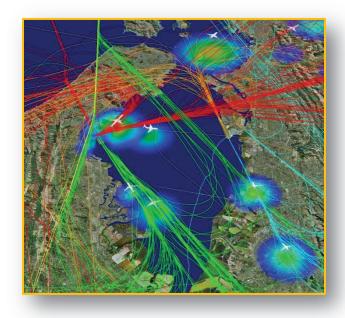




Our proposal succinctly outlines our approach to technical support and is organized as follows:

- Section 1 Executive Summary
- Section 2 Project Approach
- Section 3 Key Personnel & Qualifications
- Section 4 Experience
- Section 5 Communications Capabilities

The SFO Roundtable has served for decades as the preiminent model of an airport and community working together for a common goal of mitigating noise. This is due to the willingness of each participant to share knowledge, push to innovate, and know that by working on key strategic issues each year, each stakeholder will realize the power of this structured organization. Our team goal is that each of the tasks we accomplish keep the Roundtable's character present as a model organization.





Section 2. Project Approach

The approach for this project is to provide services that fulfill the Roundtable's goal of achieving noise mitigation in the member cities and the County of San Mateo. There are four key tasks in the Scope of Work as described in the Request for Qualifications. In accordance with Section II of the RFP for technical support, BridgeNet International will provide outstanding service to Roundtable in the form of:

- Preparing meeting agendas, meeting minutes, and reports as required,
- Meeting facilitation, including subcommittees and workshops,
- Conducting Roundtable member outreach,
- Acting as Roundtable representative at meetings key stakeholders,
- Providing technical guidance, and
- Prepare correspondence and white papers.

Task 1 – Agenda Planning and Coordination

BridgeNet will provide specific agenda support by planning a draft and final agenda for approval by the Coordinator and Roundtable Chairman. As the agenda evolves, we will keep in contact with the Coordinator to meet key publication deadlines. As the primary coordinator for meeting preparation for individual meetings, we will ensure each agenda prepared reflects the Program Year items including Work Program goals, current state and federal actions related to airport noise and air traffic, and airport updates to ensure each meeting is productive and results in actionable items.

Task 2 – Prepare Reports and Correspondence for Roundtable Work Program items and as needed or requested by the Roundtable Coordinator

Using our technical background, BridgeNet will prepare reports that are timely and applicable to the issues related to airport noise locally in the Bay Area and as well at the state and federal level. Each of the reports and correspondence will be written with the Roundtable members in mind, BridgeNet regularly presents presenting key facts and actionable items. technical reports and memoranda to its clients, which requires us to know the technical capabilities of our audience, as well as what key items they need to know and how each item affects their agency. These affects will be quantified relative to the applicable statute; for example, to determine if a Work Program item being studied such as a flight track change at SFO would





be considered a "project" that is subject to NEPA or CEQA regulations. We will use the same approach to preparing correspondence for the SFO Roundtable.

In addition to preparing correspondence, BridgeNet can prepare additional materials that can educate new members on aircraft noise, or go in depth to explain a more complex issue such as the need for an Environmental Assessment for the Runway Safety Area upgrades currently underway at SFO. These skills are vital in preparing correspondence from the Roundtable to other key stakeholders such as CalTrans and the FAA. We will ensure letters written to these organizations maintain the integrity of the and presenting factual, accurate documentation of Roundtable the Roundtable's position on an issue.

Task 3 – Assist with Meeting Packets and Annual Budget

BridgeNet staff will prepare each meeting packet for distribution. Preparation is anticipated to include preparation of the previous meeting's notes for approval, coordination with SFO's noise abatement office required reports for the consent agenda items, as well as coordination with other agencies that have information of importance to the Roundtable. meeting packet will also contain industry information that support related agenda items, as well as how to find out more information on a topic.

As part of our existing portfolio, BridgeNet has extensive experience forecasting budgets for clients to determine key items to focus on for the following fiscal or program year. Specific to the SFO Roundtable, this could include special, one-time expenditures such as a member trip to the NorCal TRACON, attendance at an industry conference for the Chairman or Vice Chairman, special reports, or additional technical support to be provided by a third-party consultant.

Task 4 – Attend Roundtable, Subcommittee and Workshop Meetings

BridgeNet is prepared to attend and conduct each Roundtable meeting as well as special meetings for subcommittee meetings, meetings with the Airport staff, as well as CalTrans and TRACON.

In addition to maintaining the Work Program as center to the Roundtable, it's important to bring each of the key stakeholders together to ensure we understand the needs of the members. This can be accomplished through creation of a subcommittee to enhance member communications, a tour of





the SFO noise abatement office, or even touring another airport to view their operations.

Section 3. Project Team Information

We are pleased to present the following biographies and resumes for our key staff members. While the team members shown in this qualification are responsible for the day to day operations of the project, we have the use of our entire staff, including graphic artists for assisting with preparation of white paper graphics, as well as acoustic engineers who have worked in the Bay Area and are familiar with operations in the area that can assist with technical reports and interpretation of federal regulations for presentation at Roundtable meetings.

Section 3.1 BridgeNet International Information

BridgeNet's headquarters are based in Newport Beach, California. This office location will provide all of the support and staff for the Roundtable. We are joined by Hartmann & Associates to assist on air traffic services.

Primary Representative: Paul Dunholter, P.E., President

Project Manager: Cynthia Gibbs

BridgeNet International, Incorporated 20201 SW Birch Street, Suite 250 Newport Beach, California 92660

Phone: 949-250-1222 | Fax: 949-250-1225

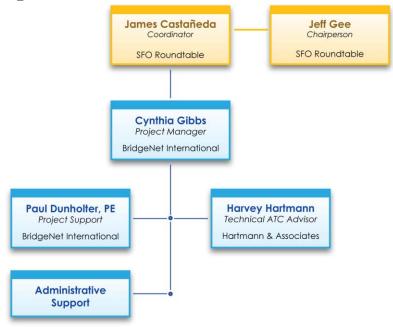
Email: cindyg@airportnetwork.com



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Section 3.2 Organization Chart



Section 3.3 Key Personnel Biographies

Cynthia Gibbs is a Project Manager at BridgeNet International; she works with airports, consulting partners and government agencies on airport noise issues. She has worked with airports, airlines, study advisory committees, and the general public to create usable noise recommendations. Her experience includes project managing numerous FAR Part 150 Noise Exposure Map Updates including the currently-underway NEM update at SFO, and served as the SFO Assistant Roundtable Coordinator under the direction of the Honorable Gene Mullin, City of South San Francisco councilman and Marland Townsend, Mayor of Foster City.

In these roles Cynthia successfully works with clients and technical staff, keeping the project on task and on budget. As a result of the project's Cynthia has managed, recommendations have resulted in assisting airports with the implementation phase of the recommendations, including Fly Quiet programs and ground-based mitigation, such as ground run up enclosures. Cynthia holds a Bachelor of Science in Aviation Management from California State University at Los Angeles, is an active member and Vice President of Toastmasters International Club 231-F and a member of the Project Management Institute. Cynthia's role in the project will be as the project manager, serving as the coordinator for the technical support.





Paul Dunholter, P.E. is President of BridgeNet International; his vision drives the firm's continuing innovation, new product development, and increasing application of software to new technology. He has over 30 years of experience in airport noise and airspace analysis. Under Paul's leadership, BridgeNet International has been first to market with noise office management tools such as near-live public radar displays, Fly Quiet, 3-dimensional aircraft flight tracking and remote noise office management tools. Paul's vision drives BridgeNet's specialty of taking complex aviation technology and through visualization making it understandable to non-technical audiences. Current emphasis has been on applying new generation navigation technology to noise abatement planning. Paul holds a Bachelor of Science degree in Engineering from the University of California at Irvine and is a registered Professional Engineer. **Paul's role in the project will be as the technical support, assisting the project manager in producing white papers for the Roundtable and providing technical opinions.**

Harvey Hartmann is the primary consultant with Hartmann & Associates. Harvey specializes in air traffic management consulting, currently working in Aviation Safety Analysis at NASA/Ames. Harvey is adept at addressing community groups, including his involvement as a consultant for the Oakland International Airport Noise Forum and as the past TRACON representative for the SFO Roundtable. Harvey's role in the project will be as the technical advisor for air traffic, assisting with air traffic issues related to SFO and the bay area, as well as addressing air traffic issues at Roundtable meetings and working groups.

Section 3.4. Qualifications

Section 3.4 presents the full background for each of the key personnel included in this proposal. Additional resumes for support staff may be provided upon request.



Cynthia Gibbs

Project Manager BridgeNet International

Cynthia is a Project Manager at BridgeNet International. In this role, she is responsible for the preparation and planning of FAR Part 150 Studies, Noise Exposure Map Updates, Airport Fly Quiet/Fly Clean Programs, and environmental documents including Environmental Assessments (EA) and Environmental Impact Statements (EIS).



California State University at Los Angeles B.S., Aviation Management

Private Pilot

Toastmasters International Club 231-F, VP, Membership Competent Communicator awarded August 2012

Project Management Institute, Member











Cynthia Gibbs is a project manager at BridgeNet International, concentrating on environmental projects including EIS, EA, and EIRs, FAR Part 150 Studies, and general acoustic consulting for airports of all sizes. Cynthia's focus in these studies is to use modern technology-based solutions for airports with mature noise programs and apply this knowledge to airports creating new noise mitigation programs, including the implementation of Fly Quiet-type programs at both large-hub and general aviation airports throughout the United States.

Cynthia is adept at meeting client needs through establishing efficient communications at the start of the project, and using her experience of over 15 years in airport noise mitigation to solve mitigation issues. Cynthia cultivates a positive team environment with the client and fellow teaming consultants to ensure seamless management of projects. Cynthia excels in her ability to communicate technical issues to stakeholders, engaging them in productive discussions to educate and ultimately lead to a successful mitigation strategy.

FAR Part 150 Study Management & Acoustic Consulting

- San Francisco International Airport NEM Update San Francisco, California
- Detroit Metropolitan Wayne County Airport FAR Part 150 Study– Detroit, Michigan
- Willow Run Airport FAR Part 150 Study– Ypsilanti, Michigan
- Republic Airport NEM Update Farmingdale, New York
- San Diego International Airport Quieter Home Program Acoustic Reporting San Diego, California

Website Management & Acoustic Reporting

- San Francisco International Airport Noise Abatement Office Website Update www.flyquietsfo.com San Francisco, California
- Oakland International Airport Noise Abatement Office Launch www.flyquietoak.com – Oakland, California
- Air Services Australia Volans 3D User Manual Canberra, Australia
- BridgeXtreme User's Manual Multiple Locations
- Mineta San Jose International Airport Fly Quiet Program Launch San Jose, California
- Hong Kong International Airport Noise 101 Training Guide for the International Air Transportation Association Hong Kong, China

Paul Dunholter, P.E.

President BridgeNet International

Paul is President of BridgeNet International. In this role, he is responsible for guiding the firm's staff and resources to exceed client needs. As President, Paul leads BridgeNet's innovation efforts to provide solutions for airport noise offices through software.



University of California at Irvine B.S., Civil Engineering

Professional Engineer











Paul Dunholter is the founder and president of BridgeNet International. Since the founding of BridgeNet International, Paul has focused on creating real world software solutions to issues facing airport noise abatement offices, including data management and airline performance tracking. Using his extensive airport consulting knowledge, Paul leads BridgeNet's efforts at airports throughout the world to equip noise offices with tools to correlate aircraft activity to noise and emissions. This includes the first wireless and solar airport noise management system, as well as the first 3D flight track viewer available to the public on the Internet.

Paul has served as program manager for propriety software programs including BridgeXtreme, BridgeINM, Bridge Explorer and our new 3D award winning software, Volans. BridgeNet has software that allows the import and analysis of radar data from multiple radar data sources and from airport noise monitoring systems for which historical data is available.

Airport Noise Monitoring Systems

- Jackson Hole Airport Jackson, Wyoming
- South Lake Tahoe Airport South Lake Tahoe, California
- Lyon Saint-Exupery Airport Lyon, France
- Nantes Atlantique Airport Nantes, France

Noise Abatement Software Solutions

- Chicago O'Hare International and Midway International Airports BridgeExplorer Reports – Chicago, Illinois
- Chicago O'Hare International and Midway International Airports GIS-based public address look-up Chicago, Illinois
- Milan Linate Airport remote noise office management Milan, Italy
- San Francisco International Airport Fly Quiet Program launch and quarterly report San Francisco, California

Software Solutions

- Volans 3D rapid flight procedure creator Air Services Australia, Canberra, Australia
- Volans 3D Internet flight tracking software San Francisco International Airport
- Volans 3D rapid flight creator & viewer Direction Générale de l'Aviation Civil, Paris, France

Software Visualizations

 3D airspace visualization videos – Federal Aviation Administration NextGen, ADS-B, and GNSS Program Offices – multiple locations & Washington, DC

HARTMANN & ASSOCIATES

HARVEY L. HARTMANN

3092 Lester Road Martinez, CA 94553 925-285-4622

HartmannAssoc@aol.com

SUMMARY

Nine years as an aviation consultant for air traffic/airspace matters for the Port of Oakland and various other clients. Nine years of experience with NASA as a Senior Analyst for the Aviation Safety Reporting System. Three years as Director of Aviation Programs Metis Technology Solutions. Twenty-eight years as a senior level manager including Air Traffic Manager, Programs Manager, and Supervisor with the Federal Aviation Administration (FAA), primarily at Bay TRACON (now Northern California TRACON (NCT)), one of the busiest radar approach control facilities in the world. Extensive experience with noise abatement, administration, management, strategic planning, community relations, procedure development, quality control, training, organization leadership, contract administration and compliance with federal, state, local and union laws, rules and regulations.

AVIATION CONSULTANT - 1/2003 to present

- Contract with the Port of Oakland to provide expertise and advice on ATC, airspace and noise issues.
- Contract with Ricondo & Assoc to provide as needed consulting for evaluation of proposed ILS systems for Oakland International Airport (OAK).
- Member of team sent to China to analyze ATC equipment and procedures.
- Strategy Consultant for ATC Procedures involving land use litigations near Christ Church Airport, New Zealand.

AVIATION SAFETY REPORTING SYSTEM (ASRS) – 1/2003 to present:

- Analyze incident reports submitted by pilots, maintenance personnel and cabin crew of air carrier and corporate flights. Use publications, flight manuals and telephone callbacks to ASRS reporters, as necessary, to complete the coding and analysis of incident reports.
- Prepare alert messages for discussion and review for presentation at bi-monthly teleconferences with the FAA.
- Serve as the NASA/ASRS Alert Coordinator, notifying the FAA of aviation safety issues.
- Serve as the NASA ASRS "Air Traffic Procedures Advisory Committee" (ATPAC) representative.

ACTING ASSISTANT AIR TRAFFIC MANAGER - 10/2000 - 10-2002

- With general direction managed all operations aspects of Bay TRACON, the fifth largest radar approach control facility in the world. Provided work direction and handled union and employee issues for 105 managers, supervisors, controllers and administrative staff.
- Responsible for Air Traffic and facility compliance with union, federal, state and local laws and regulations.
- Worked directly with regional airports, community groups and aircraft noise advocates on noise abatement issues to educate, and where possible, resolve aircraft noise disputes.
- Managed union and other employee issues, including negotiating and resolving employee disputes and union grievances.

ASSISTANT MANAGER FOR PROGRAMS - 12/1990 to 10/2000 and 10/2002 to 1/2003

- Responsible for training, automation, quality assurance, development and implementation of procedures, interfacing with community and airports on aircraft noise issues and complaints.
 Managed staff of 7 direct reports and 8 contract employees.
- Approved changes to all flight procedures affecting air traffic in the Bay Area including impact assessment of aircraft noise to the community.

HARVEY L. HARTMANN



HARTMANN & ASSOCIATES

3092 Lester Road Martinez, CA 94553 925-285-4622

HartmannAssoc@aol.com

- Served as FAA representative for noise issues at public forums including the San Francisco Airport Community Roundtable, the Oakland Airport Noise Forum, the San Jose Airport Noise Advisory Committee and the Regional Airport Planning Commission and with airline reps and pilots, federal and state officials, elected officials and community members.
- Served as FAA liaison with airline representatives and pilots, federal and state officials, elected
 officials and community members.
- Acted as air traffic liaison for all Bay Area aviation demonstrations, including the Fleet Week air show.
- Managed contracts, ensuring compliance with all contract provisions.

AREA MANAGER / AREA SUPERVISOR - 1/1974 to 12/1990

Area Supervisor at Bay TRACON, Brown Tower in San Diego and Los Angeles Tower, responsible
for operational supervision of up to 20 controllers for these high visibility facilities. Responsibilities
included training, staffing, scheduling and all day-to-day operations issues.

OTHER EXPERIENCE

- Seven years' experience as FAA representative for noise abatement issues, working directly with airports, airlines, community groups and forums, individual community members, federal, state and local officials and elected officials.
- Detailed to Washington DC as FAA headquarters liaison with NASA Langley and Volpe staff on closely spaced runway and related "wake turbulence" issues.
- SOIA/PRM, LDA/DME and RNP representative. Served as liaison / committee chairperson for new procedures for San Francisco Airport including, Localizer DME Approach, Required Navigation Procedure (RNP) and Simultaneous Offset Instrument Approaches / Precision Runway Monitor (SOIA/PRM) Approach development.
- Experience as an aviation safety analysis with the NASA Aviation Safety Reporting System (ASRS), identifying and notifying industry of trends and potential problems in aviation.
- Civilian pilot's license #1818456 (private), plus aircraft simulator time and several hundred hours of cockpit time, flying with major carriers as an air traffic representative, in the FAA "familiarization/ training flight" program.

WORK HISTORY

Aviation Consultant	Various Clients	01/2003 to present
Aviation Safety Analysis (NASA)	Batelle / Booz, Allen, Hamilton	01/2003 to present
Manager, Programs and Procedures	No Cal TRACON (NCT)	10/2002 to 01/2003
Acting Air Traffic Manager	Bay TRACON	10/2000 to 10/2002
Manager, Training and Procedures	Bay TRACON	12/1990 to 10/2000
Area Manager/Supervisor	Bay TRACON, Lax SDM Tower,	01/1974 to 12/1990
Journeyman Controller	Bay TRACON, SFO, CCR Tower,	12/1968 - 08/1974
	USAF	

References on request



Section 4. Experience

BridgeNet International is known throughout the aviation industry as a company to turn to when in need of quality, trustworthy noise consulting. Our hard-won reputation over the past 20 years is based in action and is substantiated in our quality interaction with clients as well as the general public. Our focus has remained solely on providing one-on-one, custom solutions for acoustic issues at airports and surrounding communities. Never one to follow the trends, BridgeNet has been a leader and game changer, continually upgrading our technology and capabilities. We are proud of our team of airport and acoustic experts. In our organization, the principal members of the staff are not simply figure heads, but are personally involved with each client. BridgeNet's consulting and airspace visualization services concentrate on assisting airports in reducing the effects of aircraft operations on the surrounding communities. BridgeNet International continues to be on the fore-front of creating tools for airport staff and executive offices, including:

- First near-live web display of flight tracks, 2000, SFO launch customer
- Fly Quiet Airline Report Card Program, 2001, ORD launch customer
- GIS and noise management system software integration, 1998, SFO launch customer
- Public web display of noise insulation information, 2001, ORD launch customer
- Remote noise office operations, 2000, Milan, Italy launch customer
- Wireless/solar Internet-based noise monitoring system, 2003, Jackson Hole launch customer
- 3D Global flight tracks, 2003, French Civil Aviation Authority launch customer

The BridgeNet team is well-equipped to provide facilitation services to the San Francisco International Airport/Community Roundtable. We take great pride in all aspects of our professional and technical capabilities and our approach to the sensitive, and at times, emotional issue that is noise generated by aircraft operations. We have had the fortune to work on many Part 150, Part 161, EIS and EA studies that required the utmost professionalism and creativity to research and solve issues related to aircraft noise. We will bring this same professionalism, imagination and quality communications to facilitating the Roundtable activities.





Section 4.1 Detailed Project Experience

San Francisco International Airport Noise Abatement Office On-Call Acoustic Services

1998 - Present

Contact: Bert Ganoung, Noise Abatement Manager

Phone: 650-821-5117

Email: Bert.Ganoung@flysfo.com

Scope: BridgeNet International has been providing noise support

services to the San Francisco International Airport Noise Abatement Office since 1998. These services include acoustical consulting and software development, utilizing the software products of BridgeNet including Volans 3D to assist SFO in the evaluation and development of noise abatement programs. The project includes the development of CNEL noise contours for submittal to the State of California to maintain compliance with its Title 21 noise variance. These contours are completed quarterly and are based upon actual flight operations and flight tracks with the results correlated to the measured noise levels. BridgeNet began work on the Noise Exposure Map update as requested by the FAA to represent a true picture of existing and

future aircraft operations.

BridgeNet provided briefings to the Roundtable and supported its efforts to launch the Fly Quiet Program through data collection, analysis, and reporting. These efforts were presented to the Roundtable, and the feedback was used to ensure the Fly Quiet Program accurately reflected the Roundtable's work program, as well as the concern of the elected officials representing each of their districts.

Mineta San José International Airport San Jose, California Fly Quiet Program

2009-2010

Contact: Craig Simon (Airfield Operations)

Phone: 408-392-3600 Email: CSimon@sjc.org





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Scope:

BridgeNet International was chosen to assist the Airport in the implementation of a Fly Quiet Program for use by its Noise Abatement Office and Airport Noise Advisory Committee (ANAC). Through the creation of this Program, BridgeNet guided the ANAC to determine the key issues at the airport related to how aircraft and airlines performed against the published noise The early, detailed scoping of the abatement procedures. project helped the airport readily pick the most troublesome approach and departure procedures to be graded in the Fly Quiet Program. The airport published its Fly Quiet Program guarterly reports for two consecutive years in 2009 and 2010. BridgeNet staff presented the initial concepts to the ANAC and noise abatement office staff, as well as the final product, ensuring all Fly Quiet-related materials were written to be disseminated to a broad audience with varying degrees of knowledge about aircraft operations and aircraft noise characteristics.

Airport Cooperative Research Program (ACRP) Washington, DC

ACRP Report 15: Aircraft Noise: A Toolkit for Managing Community Expectations

2009

Contact: Jon Woodward, Landrum & Brown (Prime)

Phone: 913-451-3311

Email: jwoodward@landrum-brown.com

Scope: BridgeNet International was tasked with translating single event

and cumulative metrics into 3D videos for use in the ACRP-15 manual, a toolkit for airport management. The target audience and users of the manual are airports without a dedicated noise abatement office, who need an understanding of aircraft noise metrics. The ARCP-15 manual contains narrated 3D videos created by BridgeNet that explain how the most commonly used noise metrics are derived. The video and text for the narration were created by BridgeNet, and collaborated with Landrum &

Brown to complete.





Hong Kong International Airport Hong Kong, China Integrated Noise Model and Noise 101 Training

2009

Contact: Richard Lanthier (International Air Transportation Association)

Phone: 512-874-0202 extension 3519

Email: lantheirr@iata.org

Scope: BridgeNet International, as a sub consultant to the International

Air Transportation Association (IATA), conducted a Noise 101 and Integrated Noise Model (INM) training for the Hong Kong International Airport's Planning Office and executive staff. The training material was created for an audience with a general knowledge operations and of airport aircraft noise A late addition to the audience included characteristics. executive staff with limited knowledge of aircraft noise. BridgeNet staff quickly tailored their presentation to account for each stakeholder, providing the ability for each audience member to leave the training with working knowledge of aircraft

noise.

Section 5. Communication Capabilities

This section contains BridgeNet's white paper on the following topic:

"How did the community standard of 65 CNEL become the national standard and what level of effort will be required to reduce this standard to a lower threshold?"





Introduction

At an airport, sound from aircraft and ground equipment is the byproduct of aircraft operations. The definition of 'sound' is any unwanted noise, which can be different for each person hearing the sound. For some it is not an annoyance at all, for others it can be highly annoying. In order to create a common measurement tool in 1985 the Federal government decided to choose one metric for measuring aircraft noise effects on the surrounding communities.

Through the Aviation Safety and Noise Abatement Act (ASNA) of 1985, Congress required the FAA to select one metric for describing aircraft noise levels. The FAA required a single metric that represented the effect of aircraft operations because various jurisdictions around the country were using their own methodology, creating a patchwork of different metrics to describe the effects of aircraft noise on communities. It became clear that one standard needed to be applied across the country to standardize how aircraft noise was reported.

Noise Measurement

Noise is measured using the decibel scale (dB) which uses a weighting system that most closely reflects the human ear, specifically using the A-weighted decibel of dBA. Decibels are logarithmic because the range of sound pressures that occur in the environment are so large that using a log is the most convenient way to express it.

The FAA selected the use of the Day-Night Noise Level (DNL), which is referred to as the Community Noise Equivalent Level (CNEL) in California to model aircraft noise. The CNEL is the accumulation of each noise event at an airport for a select period in time; airports generally report CNEL for a quarter or a year time period. CNEL takes into account the number of aircraft operations by the specific aircraft type, the flight track used by that aircraft, as well as the time of day. The CNEL metric divides a 24-hour day into three segments; day, evening, and night. Daytime is considered 7:00 a.m. – 7:00 p.m., evening is 7:00 p.m. – 10 p.m.; any event during this time period is weighted by 5 dB, and night is 10:00 p.m. – 7:00 a.m. and any event during this time period is weighted by 10 dB. The evening and nighttime weighting penalty accounts for lower ambient or background noise levels that makes aircraft noise seem louder than it is during daytime hours. Typical noise during the day such as roadway traffic can mask some other noises that are readily heard during the quieter evening and nighttime





hours. Once the CNEL is determined, it is plotted on a map and shows lines of the same noise level, similar to a topographic map.

Utilizing CNEL is required for use in any environmental evaluations under the National Environmental Policy Act (NEPA). Federal agencies have also selected the DNL (used throughout the rest of the Country instead of CNEL) for describing the compatibility of various land uses with aircraft noise exposure. The FAA, with the support of the EPA, DOD, and HUD agencies, has developed land use compatibility guidelines that identify the acceptability of various land uses with aircraft noise, as measured in CNEL.

That compatibility has been based on scientific research concerning public reaction to noise exposure. The Schultz curve, as shown in **Figure 1**, predicts approximately 14% of the exposed population would be highly annoyed with exposure to the 65 CNEL. At 60 CNEL, it decreases to approximately 8% of the population highly annoyed. However, recent updates to the Schultz curve, done by the U.S. Air Force, indicate that even a higher percentage of residents may experience annoyance with 65 CNEL.

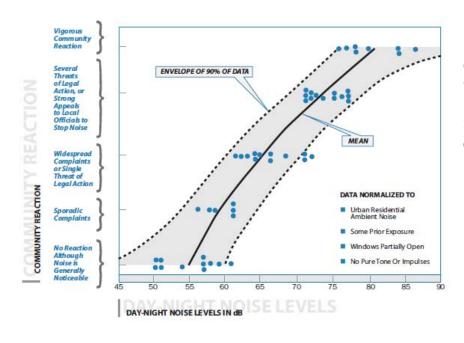


Figure 1, Example of Community Reaction to Noise

Source: EPA Levels document, 1974

Transitioning to the 60 CNEL

Airports within the state of California operate using a state permit issued by the CalTrans division of Aeronautics. The permit requires the user to comply with Title 21 of the state Public Utilities Code (Title 21, Division 2.5, Chapter 6) that, in part, requires airports to have compatible land uses within the 65



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CNEL. If that airport has incompatible land uses within the 65 CNEL, it must apply for and operate under a variance to its permit until all land uses within the 65 CNEL are compatible.

The use of the CNEL metric criteria has been criticized by various interest groups concerning its usefulness in assessing aircraft noise impacts. As a result, at the direction of the EPA and the FAA, the Federal Interagency Committee on Noise (FICON) was formed to review specific elements of the assessment on airport noise impacts and to recommend procedures for potential improvements. FICON included representatives from the Departments of Transportation, Defense, Justice, Veterans Affairs, Housing and Urban Development, the Environmental Protection Agency, and the Council on Environmental Quality. The FICON review focused primarily on the manner in which noise impacts are determined, including whether aircraft noise impacts are fundamentally different from other transportation noise impacts; how noise impacts are described; and, whether impacts outside of Community Equivalent Noise Level (CNEL) 65 decibels (dB) should be reviewed in a NEPA document.

The committee determined that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present CNEL cumulative noise exposure metric. FICON determined that the CNEL method contains appropriate expected community reaction for a given noise level to determine the noise impact is properly used to assess noise impacts at both civil and military airports. The report does support agency discretion in the use of supplemental noise analysis, recommends public understanding of the CNEL and supplemental methodologies, as well as aircraft noise impacts.

Summary

As airports and communities are well aware, noise does not suddenly disappear from the community at the 60 CNEL. Until the FAA determines that lowering the annoyance threshold is in the interest of the majority, airports and community groups have created innovative, collaborative efforts to abate noise on a local level.

Many airports are taking proactive steps with their surrounding jurisdictions to promote compatible land use beyond the 65 CNEL through educational programs with local cities and counties, using key references such as the California Airport Land Use Handbook, published by CalTrans. These steps to be inclusive of the surrounding communities can lead to increased collaboration on future projects on and off the airfield.



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QUALIFICATIONS

SAN FRANCISCO INTERNATIONAL AIRPORT/ COMMUNITY ROUNDTABLE

Consultant Services

Prepared for San Francisco International Airport/ Community Roundtable September 10, 2012





Meeting 282 - Oct 3, 2012 Packet Page 149

September 7, 2012

San Francisco International Airport / Community Roundtable c/o San Mateo County Planning and Building Department Attn: James A. Castañeda, AICP 455 County Center, Second Floor Redwood City, California 94063

Subject: Request for Qualifications (RFQ) - Technical Support to the San Francisco

International Airport/Community Roundtable

Dear Mr. Castañeda,

Having served as its Coordinator for the past three years, ESA Airports intimately understands the critical role that the San Francisco International Airport/Community Roundtable (SFO Roundtable) plays as the only independent body addressing community aircraft noise concerns resulting from aircraft operations at San Francisco International Airport (SFO). ESA Airports strongly desires to continue serving the SFO Roundtable as its technical consultant moving forward.

As the technical consultant, we offer the SFO Roundtable, SFO, airlines, FAA, elected representatives and residents a wealth of current and historic technical knowledge regarding aviation noise and its effects on people. Our staff has been involved in every aspect of aviation noise for more than 30 years, including a long relationship working with the SFO Roundtable as a technical consultant that dates to the mid 1990s. We remain on the leading edge of that activity as we assist on issues related to the implementation of NextGen procedures in California and other locations in the United States.

We offer the SFO Roundtable a consulting team that is already up to speed on the issues facing the Roundtable. We have established relationships with the Roundtable Members, concerned residents, SFO Noise Abatement Staff, the FAA, the airlines, municipal staff, and congressional representatives. If selected, we can hit the ground running the day we receive our notice to proceed.

Our staff assigned to the Roundtable's project has been in lead facilitation roles for over 40 combined years on aircraft noise matters as both airport staff and consultants on some of the most contentious projects ever encountered. ESA Airports embraces the challenge to maintain the balance that is required to address community concerns while providing for aviation facilities that meet the demands of the aircraft operators, air carriers, and traveling public.

I will serve as your project manager for this assignment. I will be your primary Roundtable technical consultant and will oversee the delivery of the related consultant services. I will attend regular and special Roundtable meetings to provide technical guidance as needed. My clients at Los Angeles World Airports and the Sacramento County Airport System would be happy to speak with you about my skills communicating technical issues surrounding aircraft noise with honesty, simplicity, and compassion. What is equally, if not more important to the Roundtable, is the confidence that airports and their neighbors across the United States have in my technical abilities.

I will bring the same level of quality and professionalism to the Roundtable Consultant role as you experienced during the past three years as the Roundtable Coordinator, as well as on my previous Roundtable assignments including the Single-Event Noise Level Study, the Supplemental Low-Frequency Noise Study, and the Noise 101 Course I gave to incoming Roundtable members.

I will be supported by Adrian Jones, will serve as ESA Airports' San Francisco-based staff member and deputy project manager on this assignment. Adrian has supported numerous airport noise and land use compatibility efforts including working with large community groups on challenging aircraft noise issues. Phil Wade will provide technical support. Phil attended many Roundtable meetings on our previous contract and was the behind-the-scenes staff support that made kept the Roundtable humming. Both Phil and Adrian will be available to provide the Roundtable additional technical support when needed. The depth of our team truly sets ESA Airports apart from its competition on this assignment.

I sincerely appreciate the opportunity to be considered by the SFO Roundtable for this technical consultant assignment and would welcome the opportunity to continue our support of the Roundtable. I look forward to hearing from you regarding the next step in the selection process. Please do not hesitate to call me should you have any questions regarding our proposal, 916.564.4500.

Sincerely,

Steven R. Alverson, National Director

ESA Airports



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Executive Summary



Former SFO Roundtable Coordinator, Steve Alverson, will serve as your project manager for this assignment. He will be your primary Roundtable technical consultant and will oversee the delivery of the related consultant services. Steve will attend all Roundtable meetings and offer technical support as required. Adrian Jones in our San Francisco office will serve as deputy project manager and backup technical consultant on this assignment.

ESA Airports fully understands and is prepared to carry out the scope of work provided in the RFQ. In June, ESA Airports completed a three-year assignment as the SFO Roundtable Coordinator, which encompassed all of the services listed in Section II – Scope of Work in the RFQ. Since 2011, ESA Airports has also served as the Los Angeles International Airport (LAX) Community Noise Roundtable Facilitator providing consulting services similar to those required by the SFO Roundtable.

The qualifications provided in our proposal demonstrate that ESA Airports exceeds all of the minimum requirements that the SFO Roundtable established for this consulting assignment:

Five Years of Experience in the Facilitation, Coordination, Preparation and Presentation of Materials in Support of Public Forums that Address Aircraft Noise Issues

As indicated in Table E-1, ESA Airports staff assigned to SFO's Roundtable consultant services project has over 40 years of combined experience in the facilitation, coordination, preparation and presentation of materials in support of public aviation noise forums that address aircraft noise issues at airport community noise roundtables, aircraft overflight working groups, FAR Part 150 advisory committees, and other similar forums at general aviation, medium, and large hub airports. For more information on this topic, please refer to page one in Section E.

Knowledge of Federal and State Requirements

ESA Airports staff assigned to SFO's Roundtable consultant services project has over 40 years of combined direct experience and knowledge of federal and state requirements concerning the operation of a large or medium hub airport, including environmental regulations, and airspace utilization processes. For more information on this topic, please refer to page two in Section E.

Knowledge of CEQA/NEPA Requirements

Environmental Science Associates (ESA) was founded in 1969 to provide our clients with the highest level of California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) environmental documentation services in California. Since that time, the firm has prepared over 15,000 environmental documents and has grown to become a nationally recognized leader in the knowledge of the requirements of the CEQA and NEPA regulations as they relate to aviation facilities. For more information on this topic, please refer to page three in Section E.

Knowledge of State Noise Regulations and Caltrans Land Use Handbook

ESA Airports routinely works with the Title 21 State Noise standards including the certification of aircraft noise monitoring systems. ESA Airports is the only proposing firm that prepared and taught the Caltransendorsed Airport Land Use Compatibility Planning Course offered by the University of California at Davis. ESA Airports also updated the Airport Land Use Planning Handbook under contract to Caltrans. For more information on this topic, please refer to page three in Section E.

Working Knowledge of FAA Environmental Orders

In addition to a 41-year history of preparing environmental documents that comply with NEPA and supporting Federal Aviation Administration (FAA) Orders, ESA Airports has frequently been called on to lecture FAA, airport, and consultant staff on issues related to FAA Environmental Orders including Steve Alverson's NEPA Aviation Noise Analysis presentation at the FAA/Airport Consultants Council (ACC)/Airports Council International (ACI)-sponsored NEPA Workshop in Seattle, Washington. For more information on this topic, please refer to page three in Section E.

Working Knowledge of Aircraft and Airport-Related Noise Metrics and Noise Control Methods

Aviation noise analyses comprise the majority of ESA Airports' consulting services. Our practice is based on over 30 years of experience in utilizing all available noise metrics and aircraft noise control methods to assess and minimize aircraft noise impacts for affected neighborhoods. ESA Airports has been utilizing supplemental aircraft noise metrics in environmental documents for aircraft noise studies in for many years prior to other consulting firms doing so. For more information on this topic, please refer to page three in Section E.

Strong Public Speaking Skills and Demonstrated Experience Communicating with the Public and Other Stakeholders on Airport Noise Related Issues

ESA Airports staff's public speaking skills are the absolute best available in the aviation noise consulting industry. As indicated in Table E-1, airport clients throughout the nation have repeatedly turned to ESA Airports' staff when the road ahead was fraught with difficulty and public confidence in the process was at an all time low. In every case when asked to do so, ESA Airports has succeeded in "righting the ship" and getting the noise/aviation planning/environmental processes back on track. For more information on this topic, please refer to page four in Section E.

ESA Airports and its staff have spent their entire professional careers preparing for the Roundtable's technical consultant assignment. Our assigned staff has been in lead facilitation roles on aircraft noise issues as both airport staff and consultants on some of the most contentious projects ever encountered. This experience has given us a great appreciation for the balance that is required to address community concerns, while at the same time providing for aviation facilities that meets the demands of the aircraft operators, air carriers, and the traveling public.





Identification of Key Personnel



Primary Contact:

Steve Alverson
National Director of ESA Airports
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
Phone: (916) 564-4500
Fax: (916) 564-4501
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Headquarters and Business Structure:

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550 Kearny Street, Suite 800 San Francisco, CA 94108 Phone: (415) 896-5900 Fax: (415) 896-0332

Local Area Offices:

Oakland Office 350 Frank H. Ogawa Plaza, Suite 300 Oakland, CA 94612 Phone: (510) 839-5066 Fax: (510) 839-5825

Petaluma Office 1425 N. McDowell Boulevard, Suite 200 Petaluma, CA 94954

Phone: (707) 795-0900 Fax: (707) 795-0902 Sacramento Office 2600 Capitol Avenue, Suite 200 Sacramento, CA 95816 Phone: (916) 564-4500 Fax: (916) 564-4501

Figure D-1: Organizational Chart

SFO COMMUNITY ROUNDTABLE

Jeffrey Gee Chairperson

James Castaneda Program Coordinator



Phil Wade Technical Support





Qualifications and Experience



Technical Consultant's/ Project Manager's Experience

Steve Alverson is National Director of the ESA Airports Group. With over 30 years of aviation noise analyses and control experience, Steve is one of the nation's leading experts in aircraft noise. He specializes in providing on-call aircraft noise consulting services to airport clients in the Western United States. Steve has provided airport noise consulting services to the SFO Roundtable, Los Angeles World Airports (LAWA), the Sacramento County Airport System, the San Diego County Regional Airport Authority, the San Francisco Airport Commission, the Port of Oakland, the March Inland Airport, the Salt Lake City Aviation Department, the Port of Seattle, the Port of Portland, and the State of Alaska. He has managed a range of services that have included aircraft noise measurements, noise measurement analyses, flight track analyses, noise analyses related to airspace changes, evaluation of noise abatement arrival and departure profiles, noise monitoring system design, public meeting facilitation, noise abatement procedure development, noise mitigation implementation, aircraft ground noise studies, noise office staffing, noise office staff training, noise contour development, and temporary airport noise officer services.

He has also served as an expert witness on cases involving aircraft noise.

For the past three years, Steve served as the SFO Roundtable Coordinator providing a wide range of services including but not limited to overseeing the preparation of the Roundtable meeting packets, coordinating with the SFO Aircraft Noise Abatement Office Staff and FAA, organizing Roundtable Subcommittee meetings, preparing meeting agendas, meeting with congressional representatives, attending special Roundtable meetings and workshops, notifying Roundtable Members and Alternates of important meetings and events, coordinating with the airlines on the Jon C. Long Fly Quiet Awards, and providing technical support during all Regular Roundtable meetings.

Recent Project Experience

SFO Community Roundtable Coordinator – County of San Mateo

ESA Airports served as the Coordinator of the 31-year old SFO Community Roundtable, which is one of the most successful airport-community noise roundtables in the United States. ESA Airports initially served as the technical consultant to the Roundtable, but eventually was asked by the County of San Mateo to handle every aspect of the Round-



table's operations when long-time Roundtable Program Manager, Dave Carbone, retired in September 2011. ESA Airports oversaw the preparation of the Roundtable meeting packets, coordinated with the SFO Aircraft Noise Abatement Office Staff and FAA, organized Roundtable Subcommittee meetings, prepared meeting agendas, met with the Congressional representatives, coordinated with municipal staff, and provided technical support during the Regular Roundtable meetings. Steve Alverson served as the SFO Roundtable Coordinator. Phil Wade served as SFO Roundtable Support Staff.

Reference: Mr. Steve Monowitz, Planning Division, 455 County Center, 2nd Floor, Redwood City, CA 94063, (650) 363-1855

Los Angeles International Airport Community Noise Roundtable Facilitator

For the past two years, ESA Airports has served as the Facilitator for the LAX Community Noise Roundtable, a 12-year old airport community noise forum. ESA Airports provides technical consulting support to the LAX Roundtable, assists in setting the LAX Roundtable meeting agendas, facilitates the bimonthly Roundtable meetings, presents on a variety of technical topics at the meetings including but not limited to NextGen, FAA Sound Insulation Guidance, the Airport Cooperative Research Program, and prepares the meeting overviews. The LAX Roundtable serves as a liaison between the communities, LAWA, the FAA, and aircraft operators. ESA Airports led the LAX Roundtable in reorganizing its bimonthly meeting schedule to coincide with its annual work program, so that during the course of the year, every item on the entire work program is reported on.

ESA Airports also provides a bimonthly Aviation Noise News update presentation. Steve Alverson serves as the LAX Community Noise Roundtable Facilitator. Phil Wade serves as LAX Roundtable support staff.

Reference: Ms. Kathryn Pantoja, LAWA Environmental Affairs Officer, 1 World Way PO Box 92216, Los Angeles, CA 92216, (424) 646-6501



2011 California Airport Land Use Planning Handbook Update

Caltrans' official guidance to Airport Land Use Commissions (ALUC) regarding airport land use compatibility planning (2002 Handbook) was nearly a decade old and in need of an update due to numerous changes in state and federal regulations that occurred since the publication of the 2002 Handbook. ESA Airports managed a large team of technical experts to review, develop, and update content relied on by ALUCs and local governments with jurisdiction over land use surrounding airports throughout the state. ESA Airports ensured a broad array of planning challenges were addressed in the 2011 Handbook, and successfully managed the State's first public review process for the Handbook; reviewing and compiling comments for Caltrans. Steve Alverson served as the project director. Brian Grattidge served as the project manager. Phil Wade served as deputy project manager.

Reference: Mr. Ron Bolyard, Associate Transportation Officer, Caltrans, 1120 N Street MS 40, Sacramento, CA 95814, (916) 654-7075





Sacramento County Airport System On-Call Noise Services

Steve Alverson has provided technical noise consulting support to SCAS since 1990. His range of services has included aircraft noise modeling, aircraft noise measurements, development of noise abatement arrival and departure procedures, analysis of radar flight track data, review of NextGen procedures, airport land use compatibility planning, public outreach, meeting facilitation, and preparation of white papers. Some of Steve's recent projects for SCAS have included:

- Technical support of the development of the American River One Standard Terminal Arrival Optimized Profile Descent;
- Analysis of nighttime awakenings and classroom disruption for the Mather Airport Master Plan Environmental Assessment/Environmental Impact Report (EIR);
- Facilitator of the Mather Airport Aircraft Overflight Noise Working Group, which met every other week for nearly two years;
- Aircraft noise analysis for the Sacramento Executive and Franklin Field Master Plans including an examination of the single event noise limit at Executive Airport; and
- Sacramento International Airport's Airport Land Use Compatibility Plan (ALUCP) noise aircraft modeling and technical noise support.

Reference: Mr. Glen Rickelton, Airport Manager, Planning and Environment, 6900 Airport Boulevard, Sacramento, CA 95837, (916) 874-0482

Over the years, even the most vocal community activists have praised Steve for his honesty and integrity to the point of sending an unsolicited letter of commendation to SCAS Airport Director Hardy Acree. Resident Mr. Carmine Forcina wrote to Mr. Acree,

"Many people say they care. Mr. Alverson demonstrates, by his behavior, that he not only cares, but also is willing to take whatever time is necessary to make sure that everyone has a voice on this public issue. I view Mr. Alverson as an extremely valuable asset to the County Staff."

Port of Portland On-call Aviation Noise Consulting Services

Steve Alverson has served the Port of Portland on aircraft noise projects involving extensive public interaction since 1994. His work has included the siting, design, and use of the Portland International Airport (PDX) Ground Run-up



Enclosure; the design and oversight of the installation of a replacement noise and operations monitoring system; and the Hillsboro Airport Master Plan where he was called in by the Port to educate the public and facilitate meetings on aircraft noise issues. Steve also conducted a "Noise 101" course for Port Staff, community representatives, FAA air traffic control personnel, and local planning officials. Steve has also spoken before the PDX Citizen's Noise Advisory Committee several times.

Reference: Mr. Jason Schwartz, Noise Manager, 7000 NE Airport Way, Portland, OR 97218, (503) 415-6068



About the Key Members of the Project Team

ESA Airports offers the County and SFO a technical staff that has successfully provided aviation noise consulting services at over 150 airports throughout the United States. This "depth on the bench" will ensure that service to SFO and the County will be uninterrupted even if key staff become ill shortly before an Airport Community Roundtable meeting. ESA Airports has used this approach with great success on several projects including its role as SFO Roundtable Coordinator and LAX Roundtable Facilitator.

Adrian Jones will serve as the backup technical consultant, if for any reason Steve is unable to attend a Regular SFO Roundtable meeting. Adrian's San Francisco location will also allow him to provide local support when needed. Adrian has more than 15 years of airport noise and environmental consulting experience. Prior to joining ESA, Adrian managed the most recent update of airport land use compatibility plans for the five "urban" airports in San Diego County. He has significant experience in public outreach, managing airport noise assessments, airspace obstruction analyses, FAR Part 150 studies, environmental impact studies prepared in accordance with NEPA and CEQA, and airport land use studies.

Phil Wade has successfully supported SFO and LAX Roundtables over the past several years by preparing Roundtable meeting materials including agendas, meeting notes, and website postings. Phil also attended SFO Roundtable meetings and community workshops. Phil has performed the research and analysis on Roundtable matters and will perform a similar role for the SFO Roundtable on this assignment.

Airport Noise Roundtable/Facilitation/ Presentation Experience

The entire ESA Airports staff assigned to the team to provide technical support to the SFO Roundtable has excellent public presentation skills and is often sought out by airport operators to handle highly controversial public meetings. The ESA Airports' staff has a wealth of experience in the facilitation, coordination, preparation and presentation of materials in support of public forums that address aircraft noise issues such as airport community noise roundtables, aircraft overflight working groups, FAR Part 150 advisory committees and similar forums at general aviation, medium- and largehub airports.

ESA Airports staff member Steve Alverson began providing services to the SFO Roundtable in the mid 1990s by conducting a "Noise 101" course for new Roundtable members. He also prepared and presented a Roundtable commissioned Single-Event Noise Level Study and Supplemental Low-Frequency Noise Study. For the past three years, ESA Airports served as the SFO Roundtable Coordinator providing technical noise consulting expertise to Roundtable members; assisting with organizing and participating in the Regular Roundtable meetings, workshops, and special meetings; meeting with residents, elected officials, and Congressional representatives; and, for the past ten months, handling every aspect of the Roundtable operation including produc-







tion and distribution of the Roundtable meeting agenda packets, posting of resource materials on the Roundtable website, and responding to residents' telephone and written inquiries.

Since January 2011, ESA Airports has served as the LAX Community Noise Roundtable Facilitator. In that role, ESA Airports provides technical noise consulting services, assists in the development of the Roundtable meeting agendas, presents on a variety of topics of interest to the Roundtable, prepares the meeting overviews, and facilitates every LAX Roundtable meeting. ESA Airports also made recommendations to the LAX Roundtable meeting schedule to ensure every item on the Roundtable's Work Program is addressed at least once a year.

In addition to its Roundtable and Noise Forum experience, ESA Airports has experience with more than two dozen FAR Part 150 noise and land use compatibility Studies. Each one of these studies presented unique challenges regarding stakeholder outreach. ESA Airports takes pride in our ability to assess each project and develop a comprehensive outreach program to address the different concerns expressed, not only by the public, but also those concerns expressed by the aircraft operators and other users of the airport. This broad experience gained through our work on FAR Part 150 Studies has allowed our firm to develop an outstanding reputation for developing communication programs for aircraft noise concerns.

With more than 25 years experience in meeting facilitation, ESA Airports' Steve Alverson has developed a seasoned ability to communicate effectively with the concerned public on aircraft noise issues. For example, he was called in by the Port of Portland to educate the public and facilitate meetings on aircraft noise issues related to helicopter training operations during the Hillsboro Airport Master Plan. His work with the community helped to foster an understanding that allowed the Master Plan process

to move forward. As a result of his 31 years of professional experience in aircraft noise control, he has developed the ability to speak with aircraft operators and affected residents with equal ease and gain the confidence of all of the interested stakeholders. For more about Steve's airport-related facilitation experience, please refer to 'Technical Consultant's/Project Manager's Experience' in this section.

Public Speaking Skills

As a result of their extensive experience in effectively communicating with the public, ESA Airports' staff is often called upon to speak on issues regarding aircraft noise at national and international aviation conferences. Table E-1 provides a partial list of presentations ESA Airports staff have developed and presented. Steve Alverson lectured on NEPA aircraft noise analyses at the joint FAA/ACC/ACI NEPA Workshop in Seattle, Washington. He also taught the Noise 101 course, "The Health Effects of Aviation Noise" at the University of California (UC) Davis Aviation Noise and Air Quality Symposium in Palm Springs, California. Steve also served as a lecturer for UC Davis' Airport Land Use Planning Course, which was attended by airport managers, airport land use commission members, local planners, and consultants. Steve has also lectured on aircraft noise and land use compatibility planning issues at the Airport System Planning Course at UC Berkeley.

Knowledge of Federal and State Requirements Concerning Airport Operations

ESA Airports is a specialized, national practice area of the firm that focuses on environmental, planning and noise solutions for airports. ESA Airports' staff has experience in applying Federal and State requirements at more than 180 airports worldwide, including 11 of the nation's top 15 passenger service airports. ESA Airports serves the needs of a wide range of facilities from small single runway general



Table E-1: Representative ESA Airports Staff Experience in Meeting Facilitation and Public Speaking

	PRESENTATION TOPIC						
	Meeting Facility	Aircraft Noise	Land Use Plan	Jeral Aviatio	National Environmental	California Environmental Quality Act (CEQA)	
AUDIENCE	Me	Ajr	Laı	Fe	Pol	200	
2011 Association of California Airports (ACA) Conference			•				
American Association of Airport Executives (AAAE) Resorts Airport Conference, South Lake Tahoe, CA			•		•		
AAAE Resorts Airport Conference, Sun Valley, Idaho							
Anchorage International Airport Part 150 Advisory Committee	•	•	•				
Anchorage International Noise Management Staff		•					
Arnold Palmer Regional Airport FAR Part 150 Study Update		0	•				
Aurora State Airport Noise Study Advisory Committee			•				
Austin-Bergstrom International Airport Part 150 Advisory Committee	0	•	•	•			
Chandler Municipal Airport Part 150 Advisory Committee		•	•	•			
Dayton International Airport FAR Part 150 Study Update	•	•	•				
FAA/ACC/ACI NEPA Workshop, Seattle, WA							
Hillsboro Airport Project Advisory Committee (PAC)		•			•		
Las Vegas McCarran FAR Part 150 Noise Compatibility Study Update		•	0				
LAX Community Noise Roundtable		•			•	•	
Little Rock National Airport FAR Part 150 Study Update							
March Inland Port Airport General Aviation Apron Development EIR		•					
Mather Airport Overflight Noise Working Group		•					
Murray Field Airport Master Plan EA/EIR			•		•	•	
Oakland Airport Community Noise Management Forum		•					
Portland International Airport Aviation Noise Management Staff					•		
Reid-Hillview Part 150 Advisory Committee		•					
Sacramento International Airport On-Call Noise Consulting Services	•	•	•				
San Francisco Airport Community Roundtable							
San Francisco International Noise Management Staff		•					
Santa Maria Public Airport Master Plan Update NEPA/CEQA						•	
Sea-Tac Part 150 Advisory Committee	•	•	•	•			
Stapleton Noise Advisory Committee		•					
Sun Valley Part 150 Advisory Committee	•		•				
The Ohio State University Airport Part 150 Advisory Committee			•				
University of California – Airport System Planning Short Course		•	•	•	•		
UC Berkeley Aviation System Planning Course		•					
UC Davis Aviation Noise and Air Quality Symposium	•	•	•	•			
UC Davis Airport Land Use Planning Course		•					
UC Davis Land Use Compatibility Planning Course		•					





aviation airports to the largest air carrier airports in the nation. ESA Airports' staff has provided aviation noise consulting services to the following airports including, but not limited to, Sacramento, San Diego, John Wayne, Los Angeles, Burbank, San Francisco, Seattle-Tacoma, Portland, Anchorage, Fairbanks, Salt Lake City, Denver, San Antonio, Hartsfield-Jackson Atlanta, Orlando, Fort Meyers, and Miami. ESA Airports is sensitive and responsive to the frequently competing interests and needs of airport personnel, local jurisdictions, aircraft operators, regulatory agencies, and the interested public. We believe that to ensure the success of any noise consulting services project, all concerned stakeholders must be actively involved in the process and have a complete understanding of the limitations imposed by state and federal regulations.

Depth of Knowledge with CEQA/ NEPA, California Noise Standards and California Airport Land Use Handbook

ESA Airports has provided successful public involvement and outreach programs at numerous airports that comply with or surpass NEPA and CEQA requirements. We have prepared more than 3,300 successful CEQA documents prepared with more than 60 airport development project-related Mitigated Negative Declarations and EIRs. We have the in-depth



capability to provide comprehensive and defensible technical analysis of key environmental issues as well as hands-on, working knowledge of CEQA procedures and the guidance and regulations pertaining to land use and the environment. Our team has extensive experience in providing environmental services, in preparing CEQA documentation at airports throughout California, and coordinating with the FAA Airports District Office, Western Pacific Region, and Headquarters.

ESA Airports' staff members receive regular hands-on training to ensure that all are knowledgeable of CEQA policies and procedures, FAA policies and procedures implementing NEPA (FAA Orders 1050.1E and 5050.4B, and FAA's Environmental Desk Reference, and special use laws), California Noise Standards, and California Airport Land Use Handbook. In many cases, ESA Airports' staff are the instructors for these courses. For example, Steve Alverson served as the instructor for the Caltrans-endorsed UC Davis Airport Land Use Planning course and has lectured on the requirements of 1050.1E and 5050.4B at national industry conferences and FAA-sponsored NEPA workshops.

Our project team has comprehensive and recent knowledge of environmental and land use issues facing jurisdictions and airports in California. ESA Airports prepared or supported the development of ALUCPs for several counties, and pioneered approaches for developing aircraft overflight zones and applying theoretic capacity contours, which accounts for the full build out of the airfield, ramps and taxiways as well as the corresponding aircraft operations. Finally, ESA Airports served as Caltrans' lead consultant for the update of the Airport Land Use Planning Handbook that guides the development of all ALUCPs in the state.



Working Knowledge of Airport/Aircraft Noise Metrics and Control Methods

ESA Airports staff also bring an extensive depth of experience in noise contour development; noise modeling; noise measurements; noise impact assessment; public outreach; analysis of noise abatement procedures and noise ordinances; implementation of noise mitigation programs; preparation of FAR Part 150 and 161 Studies; application of FAR Part 36 noise limits and the design, specification, and acquisition of airport noise and operations monitoring systems. Steve Alverson prepared the first FAR Part 161 Study for San Jose International Airport as well as the second for SFO.

Steve Alverson managed airport noise management program at Denver-Stapleton Airport and served as the acting noise program manager for SCAS, which is responsible for the operations at five airports. He was responsible for developing and monitoring aircraft noise abatement program compliance for these airports. He worked with FAA air traffic control personnel, air carrier representatives, cargo carriers, chief pilots, and other aircraft operators on a daily basis to ensure adherence with their airport's noise abatement programs. He also prepared compliance reports and presented them at public forums including but not limited to chief pilots meetings, airline affairs meetings, citizen noise advisory committee meetings, and airport boards.

In addition to our noise abatement program development work within Part 150 studies noise and land use compatibility studies and as airport noise program managers, ESA Airports developed these programs through our more than three dozen on-call aviation noise consulting contracts. Through an on-call contract with SCAS, Steve Alverson had the lead role in developing 33 measures for the noise abatement program at Mather Airport—Sacramento County's air cargo airport. He facilitated the Mather Airport Aircraft Overflight Noise Working Group, which was comprised

of air cargo operators, citizen representatives, chief pilots, air traffic control personnel, and SCAS staff. The group met every other week for nearly a year. Thirty of the 33 program measures were adopted by the County Board of Supervisors. ESA Airports has been assisting SCAS with the implementation of the approved measures including the first Continuous Descent Approach to be flown on a daily basis in the United States.







Demonstration of Written Communication and Technical Expertise



During our three-year assignment as the SFO Roundtable Coordinator, ESA Airports staff has prepared a wide range of written documents on behalf of the Roundtable including memorandums, correspondence, and responses to community members. In addition, ESA Airport staff routinely prepares white papers, technical memorandums, fact sheets, technical reports, noise complaint reports, web pages, and declarations for our clients use. Our staff is equally comfortable and adept at writing highly technical documents such as expert witness declarations as well as writing in a manner that can be easily understood by persons with limited or no aviation noise expertise. The key is to know your audience and write at a level that they will understand. If selected for this assignment, we would collaborate with the SFO Roundtable Chairperson and Roundtable Coordinator to determine the correct level of writing for each audience we are trying to reach.

Based on the description in the RFQ, we have written the example white paper on the origin of the 65 CNEL standard for an audience that has limited or no aviation expertise. We

developed the piece to be used as a one-page handout or fact sheet at Roundtable meetings or for downloading from the SFO Roundtable website. The website version would have hyperlinks to key terms such as "California's Aircraft Noise Standards" and "FAR Part 150", so that readers can click on the link to immediately obtain more information about that topic. We purposely did not include graphics such as the "Schultz Curve" showing the relationship between aircraft noise exposure and annoyance as the meaning of the curve is often lost on a non-aviation noise savvy audience. If we were trying to communicate with a more technically-focused audience, we would include the Schultz Curve, add footnotes, and provide references, which would extend the piece to three pages.

Regardless of the writing assignment required by the SFO Roundtable, ESA Airports is confident that its writing will meet or exceed the Roundtable's expectations and, more importantly, our writing will clearly convey the facts that the intended audience needs to know relative to noise from aircraft operations at SFO.



Drawing the Line on Aircraft Noise Impacts:

The Origin of the 65 CNEL Standard and How it Might Be Changed

Most sources of pollution are subject to some form of state and federal limits that are intended to protect the public from their harmful effects. Noise pollution is no exception, as federal and state limits have been established for noise sensitive land uses (e.g., homes, schools, and churches) exposed to aircraft noise.

Federal and state regulators have deemed a Community Noise Equivalent Level (CNEL) of 65 decibels or greater to be incompatible with noise sensitive land uses. The 65 CNEL boundary is designated by a line or contour surrounding an airport. The size and shape of the 65 CNEL contour is determined by many factors including the number and type of aircraft operations, how the runways are laid out relative to the noise sensitive land uses, how the runways are used, where the aircraft fly over the ground, and even the time of day the aircraft operations occur. (Evening and nighttime flights are acoustically penalized to account for human sensitivity to noise during these periods.) A home on the inside of the 65 CNEL contour is "impacted", while the home across the street outside the 65 CNEL contour line is not impacted. The impacted home may be eligible for federal sound insulation funds, while the home across the street is not.

So why was the 65 CNEL chosen by federal and state regulators as the dividing line? In a word: economics. While research indicates that the 65 CNEL represents a level at which about 14 percent of people are "highly annoyed", the 65 CNEL also represented a level at which the cost of addressing the nationwide impact through federally-funded sound insulation and land acquisition programs was feasible over a period of many years. That is, a lower CNEL would cover a much larger land area making it infeasible to mitigate nationwide aircraft noise impacts in a reasonable amount of time. The 65 CNEL contour was also chosen because it represented a noise level commonly found in urbanized areas where many of the nation's busiest airports are located. Finally, extensive research indicated that the using 65 CNEL would account for other issues associated with aircraft noise including speech interference, sleep disturbance, and hearing loss.

California's Aircraft Noise Standards indicates that 65 CNEL is the "level of noise acceptable to a reasonable person residing in the vicinity of an airport. . ."; however, people's tolerance of aircraft noise varies greatly as does their background noise environment. As a result, a community's response to aircraft noise may not be consistent with the 65 CNEL standard. In fact, nationwide research has shown that more aircraft noise complaints come from outside the 65 CNEL than inside it. Which raises the question, "Is it time to lower the 65 CNEL standard?"

The potential for establishing a lower limit is provided for in federal and state aircraft noise regulations. For example, the California's Aircraft Noise Standards states that the 65 CNEL standard, "... does not have a degree of precision which is often associated with engineering criteria for a physical phenomenon (e.g., the strength of a bridge, building, et cetera). For this reason, the state will review the criterion periodically, taking into account any new information that might become available."

Similarly, when drafting Federal Aviation Regulation (FAR) Part 150, the federal government acknowledged that the 65 CNEL standard may need to be reexamined as newer, quieter aircraft

came into the national fleet and the areas impacted by aircraft noise became smaller. FAR Part 150 and the Caltrans *Airport Land Use Planning Handbook* also provide for local municipalities to select a lower CNEL standard for compatible land use planning purposes, but that does not obligate the federal government to provide funding for sound insulation or property acquisition for existing noise sensitive uses in those areas. Some airports in rural parts of California have adopted a lower CNEL standard for compatible land use planning purposes (e.g., Sacramento County adopted 60 CNEL), which have effectively prevented the conflicts between residents and airport operators experienced at airports in the more highly urbanized areas.

The federal government has examined the appropriateness of the 65 CNEL standard several times and has concluded each time that CNEL is the appropriate metric to assess aircraft noise impacts and 65 CNEL is the appropriate noise level at which noise sensitive land uses are deemed incompatible.

Although lowering the 65 CNEL standard may seem like daunting task, there has been a growing movement among community airport noise roundtables and advocacy groups calling for a new review of the 65 CNEL standard. The federal government has responded to those concerns and a new round of federal research is currently underway. The results should be available in the near future.

In addition, the number of impacted noise sensitive land uses has become smaller as newer, quieter aircraft enter the national fleet and older, noisier aircraft are retired. Also, many sound insulation and land acquisition programs have been completed under the 65 CNEL standard, which means the federal financial obligation of addressing the remaining areas within the 65 CNEL contours is getting smaller. However, the Federal Aviation Administration recently release guidance on funding for sound insulation programs that affirmed the use of the 65 CNEL standard and added an interior standard of 45 CNEL, which could signal that a change to national 65 CNEL standard is not likely any time soon.

In the meantime, community advocacy groups like the San Francisco International Airport Community Roundtable will continue to work with state and federal elected representatives to seek aircraft noise standards that ensure the impact of noise from SFO's aircraft operations are minimized and the quality of life for San Mateo County residents is improved.

Want to learn more about the 65 CNEL standard? Here are some useful links to explore:

Caltrans Aviation Noise Programs: http://www.dot.ca.gov/hg/planning/aeronaut/avnoise.html

The Aviation Safety and Noise Abatement Act of 1979: http://airportnoiselaw.org/usc475-1.html

Federal Aviation Administration Program Guidance Letter 12-09 AIP Eligibility and Justification Requirements for Noise Insulation Projects:

http://www.faa.gov/airports/aip/guidance letters/media/pgl 12 09 NoiseInsulation.pdf

FAR Part 150 – Noise Compatibility Planning: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title14/14cfr150_main_02.tpl

California Airport Land Use Planning Handbook:

http://www.dot.ca.gov/hq/planning/aeronaut/documents/AirportLandUsePlanningHandbook.pdf

Appendix Resumes



STEVEN R. ALVERSON

Primary Technical Consultant / Project Manager

Steve is the National Director of ESA Airports. He has 31 years of experience in aircraft noise analysis and the development of noise control strategies for more than 150 airport studies. He brings substantial experience in the management and preparation of Federal Aviation Regulation (FAR) Part 150 and FAR 161 noise studies, noise elements for airport master plans, noise monitoring system design projects, public involvement programs, environmental impact assessments, litigation support, and expert testimony. As a result of Steve's extensive experience in the field of aviation noise, he is frequently asked to speak at national and international conferences. He has also provided college-level lectures on aircraft noise analysis and land use compatibility. Steve also directs the preparation of National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) for airport projects.

For over 25 years, Steve has specialized in providing technical consulting services to airport community noise roundtables, aircraft noise working groups, and FAR Part 150 advisory Committees. He has served as the Coordinator of the San Francisco International Airport Roundtable, is currently the Facilitator of the Los Angeles International Airport Community Noise Roundtable, and has frequently given technical presentations to the Oakland Noise Forum. He is recognized for his ability to work with a broad range of interested parties ranging from congressional representatives to concerned residents.

Education

B.S., Aeronautics, Dowling College, Dean's List

31 Years Experience Professional Affiliations

Associate, Institute of Noise Control Engineering

Airports Council International – North America

American Association of Airport Executives

Southwest Chapter of the American Association of Airport Executives

Northwest Chapter of American Association of Airport Executives

Relevant Experience

San Francisco International Airport Community Roundtable Coordinator Services. Roundtable Coordinator. For a three-year period, ESA Airports served as the Coordinator for the San Francisco International Airport Community Roundtable, one of the oldest airport-community noise forums in the United States. Steve served as the primary Roundtable Coordinator, providing meeting facilitation, organization, technical support, and strategic guidance. Our team ultimately became responsible for the entire Roundtable operations when the Program Manager retired in September 2011. Under Steve's direction, ESA Airports helped keep the Roundtable moving forward through the end of its contract term in June 2012.

Los Angeles International Airport Community Roundtable Facilitator Services. *Project Director*. Steve serves as the Facilitator for the Los Angeles International Airport (LAX) Community Roundtable, an 12-year old airport-community noise forum. Steve assists in setting the LAX Roundtable meeting agendas, presenting on a variety of technical topics at the meetings, and facilitating the meetings. The Roundtable serves as a liaison between the communities, LAX, the Federal Aviation Administration, and aircraft operators.

Publications & Presentations

Sustainable Aviation Guidance Alliance (SAGA) Peer Review Group Member

"Airport Land Use Compatibility Planning," University of California at Berkeley, Berkeley, CA, November 18, 2010

"Airports and Land Use Compatibility Planning," University of California at Davis, Sacramento, CA, April 3, 2009

Noise 401 course, "FAR Part 150" at the UC Davis Aviation Noise and Air Quality Symposium in Palm Springs, CA, March 1, 2009

"Aircraft Noise and Land Use Compatibility Planning," University of California at Davis, Sacramento, CA, April 17, 2008

Noise 101 course, "The Health Effects of Aviation Noise" at the UC Davis Aviation Noise and Air Quality Symposium in Palm Springs, CA, March 2, 2008

"Aircraft Noise and Land Use Compatibility Planning," University of California at Davis, Sacramento, CA, April 19, 2007 San Francisco International Airport Noise Metric/Single Event Limit Study. *Project Manager*. Prior to joining ESA Airports, Steve prepared study to evaluate aircraft noise metrics and the use of a single event limit to identify aircraft operations that could be annoying to the community. The study evaluated the available noise metrics and recommended several for use by the airport noise office in the regular reports. The study also identified single event limits the airport staff could use to identify high-end noise events that may need further examination. Steve prepared the technical report and presented the results to the San Francisco Airport Community Roundtable.

San Francisco International Airport Low Frequency Noise Supplemental Study. *Project Manager*. Prior to joining ESA Airports, Steve prepared a study examining the effects of low frequency noise on residences near the start of takeoff roll on Runways 01L and 01R at San Francisco International Airport. The study determined levels at which interior surfaces of homes would be perceptibly excited by low frequency noise from aircraft departures. The study allowed airport noise office staff to identify events that may have the potential for low frequency noise caused community concerns. Steve presented the results to the San Francisco Airport Community Roundtable.

Sacramento County Airport System (SCAS) On-Call Noise Support. *Project Director*. Steve has continuously provided aviation noise consulting services to SCAS since 1990. His work for SCAS has covered a wide range of services including, but not limited to, airport land use compatibility planning; noise contour development for all five system airports; aircraft noise measurements; noise and operations monitoring system design, acquisition and installation; public meeting facilitation; presentations to the Board of Supervisors; acting airport noise officer; noise office staff training; litigation support; and analysis of alternative nighttime arrival routes into Mather Airport.

2011 Caltrans Airport Land Use Handbook Update Services. *Project Director.* ESA Airports prepared the update of the 2002 California *Airport Land Use Planning Handbook* for Caltrans' Division of Aeronautics. ESA Airports managed a large multidisciplined consultant team, developed and facilitated the efforts of a Technical Assistance Committee, oversaw technical development of the updated text, and published the revised handbook. The process included public outreach throughout the state.

Publications & Presentations (cont.)

"Noise 101: Noise Metrics and Sources," The 22nd Annual UC Symposium on Aviation Noise and Air Quality, San Francisco, CA, University of California at Davis, March 4, 2007 "Noise Implications of the Repeal of the Wright Amendment," The 22nd Annual UC Symposium on Aviation Noise and Air Quality, San Francisco, CA, University of California at Davis, March 5, 2007

Noise Analyses under NEPA," Presentation at the FAA/ACC/ACI NEPA Workshop, Seattle, WA, Aug. 22, 2006. "Compatible Airport Land Use Planning: Beyond the Noise Contours," Presentation at the Airports Council International Affairs

Committee, Toronto,

Canada, Sept. 18,

2005.

"A Guide to Aircraft

"Evaluating the Effect of Federal Aircraft Noise Policies," Presentation at the Association of American Association of Airport Executive Resorts Airport Conference, Sun Valley, ID, Oct. 14, 2003. Oakland International Airport Corporate Jet Noise Abatement Study. *Project Director*. Steve oversaw the preparation of an evaluation of the compliance with the noise abatement procedures by corporate jet operators at Oakland International Airport. The study quantified the level of pilot performance, identified areas for improvement in the airports monitoring of the program, and provided over two dozen recommendations for the airport to implement. Steve met with the North Field Research Group throughout the study and presented the study results to the Oakland International Airport-Community Noise Management Forum.

Oakland International Airport Noise and Operations
Management System Upgrade. *Project Director*. Steve oversaw
the upgrade of Oakland International Airport's Noise and
Operations Management System (NOMS). ESA Airports evaluated
the condition, location, and effectiveness of all of the remote noise
monitoring terminals, assessed the performance of the NOMS
software as it related to the airport's noise abatement program,
prepared technical specifications for an upgraded NOMS, oversaw
the vendor selection, and oversaw the installation of the upgraded
NOMS.

Los Angeles World Airports Title 21 Noise Monitoring Terminal Threshold Level Analysis. *Project Manager.* ESA Airports assessed the capability of the noise monitoring terminals that are a part of LAWA's ANOMS 8 System to determine if they comply with the requirements of Title 21 of the State of California Aeronautics Act. ESA Airports prepared a Title 21 Compliance Report to the State of California. LAWA's ANOMS system was certified for measuring aircraft noise by the State.

San Francisco International Airport FAR Part 161.205 Study. *Project Manager.* Prior to joining ESA Airports, Steve prepared the second FAR Part 161 study to be prepared under the 1990 Aircraft Noise and Capacity Act. Worked closely with City attorneys, airport staff, and the assistant airport director to ensure the Part 161 study met the City's needs and complied with all of the requirements of FAR Part 161.205. The Study evaluated the noise and economic benefits of a restriction of Stage 2 aircraft operations during the evening period at San Francisco International Airport. The study met all of requirements of FAR Part 161.205 and was the first to be submitted to FAA for their review. The affected carriers decided to voluntarily comply with the restrictions. The study has been used as an example for other FAR Part 161 studies completed to date.

ADRIAN M. JONES

Backup Technical Consultant / Deputy Project Manager

Adrian has more than 16 years of experience in airport noise studies, environmental consulting, and compatible land use planning. He has significant experience managing airport noise and land use compatibility plans, environmental impact studies prepared in accordance with the National Environmental Policy Act (NEPA) and/or California Environmental Quality Act (CEQA), and airport planning assignments.

Adrian has served as project manager on FAR Part 150 Noise and Land Use Compatibility Studies throughout the United States. In each case, he provided technical noise consulting guidance to his airport clients, the aircraft operators, and interested public. He conducted public outreach programs that converyed the technically complex issue of aircraft noise in easily understandable terms. He is an expert user of the Federal Aviation Administration's Integrated Noise model and is a member of the Design Review Group for the Emission and Dispersion Modeling System and Aviation Environmental Design Tool (EDMS/AEDT).

Education

MFA, City and Regional Planning, University of Pennsylvania B.A., Urban Studies

and Sociology, University of Pennsylvania

16 Years Experience

Relevant Experience

FAR Part 150 Noise Compatibility Study Update, Las Vegas, NV. *Project Manager.* Prior to joining ESA Airports, Adrian managed the most recent FAR Part 150 Noise Compatibility Study Update for McCarran International Airport. As part of this project, he provided technical oversight for the noise impact analyses which were conducted by another firm, prepared the Noise Exposure Map and Noise Compatibility Program reports, and supervised the preparation of all report figures, graphics, and maps. He also participated in all of the project committee meetings and public workshops and responded to all written comments submitted regarding project documentation.

FAR Part 150 Noise Compatibility Study Update, Dayton, OH. *Project Manager.* Prior to joining ESA Airports, Adrian managed the most recent FAR Part 150 Noise Compatibility Study Update for James M. Cox-Dayton International Airport. The scope of the study went well beyond the typical scope for FAR Part 150 studies and included additional noise monitoring programs (both A and C-weighted noise measurement data were collected), and the evaluation of more than 20 noise abatement measure using the Federal Aviation Administration's Integrated Noise Model. Adrian made numerous presentations to airport area residents and other key stakeholders that participated on the two project committees established for the study, participated in more than ten town hall meetings, presented project findings to elected officials at the City

of Dayton, and participated in two public hearings. Adrian also served as an expert witness for the City of Dayton Department of Aviation when a neighboring municipality filed an air traffic and noise-related lawsuit.

FAR Part 150 Noise Compatibility Study Update, Little Rock, AR. *Project Manager*. Prior to joining ESA Airports, Adrian managed the most recent FAR Part 150 Noise Compatibility Study Update prepared for Little Rock National Airport. Adrian conducted the noise analyses, prepared report documentation, and participated in all project-related committee meetings and public workshops.

FAR Part 150 Noise Compatibility Study, Westmoreland County, PA. *Project Manager*. Prior to joining ESA Airports, Adrian managed the first FAR Part 150 Noise Compatibility Study prepared for Arnold Palmer Regional Airport in Westmoreland County, Pennsylvania. Adrian conducted the noise analyses, prepared report documentation, and participated in all project-related committee meetings and public workshops.

FAR Part 150 Noise Compatibility Study Update, San Antonio, TX. *Deputy Project Manager*. Prior to joining ESA Airports, Adrian assisted with noise and land use impact analyses conducted in connection with the FAR Part 150 Noise Compatibility Study Update prepared for San Antonio International Airport. He also participated in the public workshops conducted during the FAR Part 150 Study and prepared workshop presentations and handouts.

Environmental Impact Statement, Panama City, FL. *Project Manager*. Prior to joining ESA Airports, Adrian supervised the noise and air quality analyses (operational and construction emission inventories and dispersion modeling) conducted for the EIS for the new Panama City-Bay County International Airport. He also prepared the noise, air quality, and cumulative impact report sections included in the draft and Final EIS, participated in project team meetings with the prime consultant (Kimley-Horn & Associates), attended public meetings and hearings, and prepared written responses to comments submitted on the Draft EIS.

PHILIP WADE

Technical Support

Phil has six years of experience in aircraft noise studies, compatible airport land use planning, the preparation of environmental documentation, and public outreach. He has been involved in the preparation of both NEPA and CEQA environmental documentation for several airports; including, Hayward Executive, Oakland International, Livermore Municipal, March Air Reserve Base, Murray Field, Santa Maria, Brown Field, and Orlando International. Phil prepared the airport land use compatibility plans (ALUCPs) for Oakland International Airport, Hayward Executive Airport, and Livermore Municipal Airport. Phil was also the deputy project manager for the update to Caltrans' California Airport Land Use Planning Handbook, which was completed in 2011.

Phil's recent public outreach experience includes providing administrative support for both the SFO Airport Community Roundtable and the LAX Community Noise Roundtable. In this supportive role to the Community Roundtable Coordinator/Facilitator, Phil's responsibilities included meeting packet preparation, drafting technical memorandums, posting materials to the SFO Roundtable website, and coordinating with Roundtable staff.

Education

B.A., English, UCLA. 6 Years Experience Publications & Presentations

Philip Wade. 2007. "Seeing the 'Big Picture' for California's Big Valley." American Planning Association Sacramento Valley Section, California Chapter

"Airports and Land Use Compatibility Planning," UC Davis Extension, Sacramento, CA, April 3, 2009. Co-instructor

Relevant Experience

San Francisco International Airport Community Roundtable Coordinator Services. Support Staff. ESA Airports served as the Coordinator for the San Francisco International Airport Community Roundtable, one of the oldest airport-community noise forums in the United States. Phil assisted in the preparation for each regular or special Roundtable meeting by drafting technical memorandums, preparing the agendas and associated meeting packets, and coordinating with the Roundtable chair and vice-chairperson.

Los Angeles International Airport Community Roundtable Facilitator Services. *Administrative Support*. ESA Airports serves as the facilitator for the Los Angeles International Airport (LAX) Community Roundtable, an 11-year old airport-community noise forum. Phil provides administrative assistance on this project. The Roundtable serves as a liaison between the communities, LAX, the Federal Aviation Administration, and aircraft operators.

2011 Caltrans Airport Land Use Handbook Update Services. Deputy Project Manager. ESA Airports prepared the update of the 2002 California Airport Land Use Planning Handbook for Caltrans' Division of Aeronautics. ESA Airports managed a large multidisciplined consultant team, developed and facilitated the efforts of a Technical Assistance Committee, oversaw technical development of the updated text, and published the revised Handbook. Phil

coordinated this effort, prepared sections of the revised Handbook, and participated in public outreach efforts.

Oakland International Airport Corporate Jet Noise Abatement Study. Noise Analyst. ESA Airports prepared a technical study of the preferential runway use program at Oakland International Airport. This voluntary program requests that pilots of certain aircraft types limit their operations to approved runways in order to avoid noise-related impacts to the surrounding communities. The primary objective of the study was to boost compliance by providing the Port of Oakland with recommendations for improving the overall operation and management of the program. Phil was responsible for the collection and analysis of airport operational data, with the intent of ascertaining patterns and causes for program non-compliance. Phil utilized this information as he, and other members of the ESA Airports team, developed the technical study and generated recommendations for improving the airport's preferential runway use program.

Sacramento International Airport, Airport Land Use Plan Update. *Technical Analyst*. ESA Airports is assisting Mead & Hunt with the formulation of an ALUCP update for Sacramento International Airport (SMF) for the Sacramento Council of Governments (SACOG). ESA Airports will prepare land use maps utilizing the SACOG GIS database to depict the existing and future land uses in the greater Sacramento region and surrounding jurisdictions, assist in the preparation of aircraft noise contours reflecting the theoretic capacity of SMF, and participate in regular project team meetings to discuss project progress and future deliverables. Phil will be responsible for preparing the appropriate CEQA documentation in order analyze any potential impacts associated with adoption of the SMF ALUCP.

Beale Air Force Base and Yuba County Airport Land Use Compatibility Plan Update. *Technical Analyst.* ESA Airports supported Mead and Hunt in the update to the airport land use compatibility plans for Beale AFB and Yuba County Airport. Phil prepared IS/negative declarations for each airport's plan; reviewing existing and planned land uses and comparing local general and specific plan designations to the policies established in each ALUCP, with the intent of identifying potential displacement issues or other environmental concerns associated with the update of the ALUCPs.

Wyle Proposal in Response to Request for Qualifications (RFQ) to Retain Consultant Services to Provide Technical Support to the San Francisco International Airport/ Community Roundtable

> Wyle Proposal EERC 12.061 September 10, 2012



Submitted by:

Wyle Laboratories, Inc.



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Executive Summary

The SFO/Community Roundtable (Roundtable) was created in 1981 as a forum for stakeholders to identify community noise impacts in the communities surrounding SFO. The Roundtable pursues appropriate and feasible aircraft noise mitigation actions to help enhance the quality of life for impacted residents. The Roundtable consists of 23 members including the affected public residents, appointed/elected officials from the City and County of San Francisco, the county of San Mateo, 18 of the 20 incorporated cities in San Mateo County, the Federal Aviation Administration (FAA) and the airlines serving SFO.

Wyle Environmental and Energy Research & Consulting (EERC) proposes Mr. Joseph J. Czech PE (Joe) serve as Roundtable Consultant, providing the administration and facilitation of the Roundtable activities and meetings. Joe's resume includes numerous Part 150 studies and high-profile EISs for large and small airports and military facilities where he has been the public voice for all noise issues. Through these projects he has gained an intimate knowledge of FAA and State requirements, and of the NEPA/CEQA process. Technically, Joe has been instrumental in applying new metrics to noise studies in order to increase public understanding of noise issues.

Apart from his extensive technical experience, Joe has established a reputation for being an organizer with a strong sense of purpose, and a flair for distilling the content of meeting discussions to highlight the really important issues and achieving consensus – valuable assets in conducting meetings of stakeholders with diverse backgrounds and interests.

As a result of this hands-on experience, he is very familiar with noise issues and the format for addressing them at these meetings. He works out of Wyle's El Segundo office, a mere 90 minute flight from SFO, and is available for impromptu meetings with Roundtable staff at short notice.

The consultant services Joe will be providing can be briefly summarized as follows:

- Preparing for and attending 4-6 Roundtable meetings; agenda planning;
- Assisting the Coordinator in conducting the meetings;
- Defining issues to be discussed;
- Providing technical guidance to the Coordinator and Roundtable members;
- Providing technical analyses as required;
- Developing and maintaining effective working relationships and coordinate technical issues with key Roundtable stakeholders; and
- Preparing meeting recaps and other documents as required

As part of these services, Joe will introduce new ideas that he and his colleagues at Wyle have pioneered in recent years, namely:

 Web-based presentations at Roundtable meetings to provide a broader range of topics and presenters at minimum cost.



- The application of communication tools, such as Dicerno (a Wyle product purchased by several airports) and NMSim (another Wyle product) to provide a real-time demonstration of the pros and cons of alternative operational scenarios.
- The application of supplemental noise metrics (the subject of a previous Wyle presentation at another airport's Roundtable) to increase public understanding of noise issues.
- The power of so-called "non-acoustic" measures to achieve the Airport's goals by fully engaging the public in its decision-making process and in its day-to-day activities.

Joe will be supported in his tasks by the full Wyle staff of experts in technical, regulatory, and land-use issues. Joe will have Wyle's senior staff at his disposal:

- Jawad Rachami Wyle's Director of EERC;
- Dr. Ben Sharp with over 40 years of aviation noise experience;
- Dr. Ken Plotkin Wyle EERC's Chief Scientist, with 40 years of research experience
- Tom Connor -- formerly with the FAA (noise technical branch); and
- Bill Albee formerly with the FAA (noise policy).

Wyle has been providing services in aviation noise to local, state, federal, and international organizations since the mid-1960s, including development of the California State Noise Standards in 1970. Wyle has been serving California airports since the late 1960s preparing nearly 50 individual major reports on subjects such as: sound insulation and acoustic studies of homes, schools, churches and libraries; noise monitoring system design, installation and/or testing; noise measurements; maintenance run-up assessment; run-stream development, and Quarterly Report support and preparation. Recent studies have included modeling flight tracks from radar data, a study of the effects of buildings on Community Noise Equivalent Level (CNEL) contours, and an assessment of interdependencies between noise, emissions, and fuel burn for optimized departure operations from SFO.

In summary, we easily meet the minimum requirements as stated in the RFQ, and believe we are eminently qualified to provide the consultant services necessary for the success of the SFO/Community Roundtable:

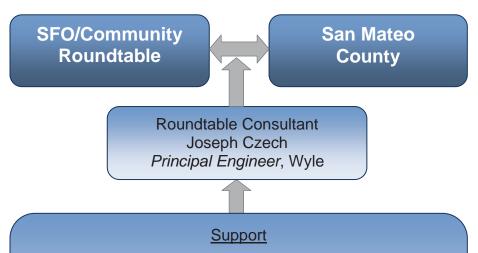
- We are California-based and have a 45-year history of committed support to California airports;
- The proposed administrator, Joe Czech, has an impressive record of achievement in public forums related to noise;
- A support staff of nationally and internationally recognized experts is available to assess technical, regulatory, and implementation issues related to noise and air quality;
- Wyle has a depth of SFO-specific experience from sound insulation to ongoing flight optimization research.



Identification of Key Personnel

Wyle EERC is an operating group within Wyle Laboratories, Inc., a privately held \$1 billion corporation with headquarters in El Segundo, California, with the financial resources to execute the proposed project. Wyle Laboratories, Inc. is one of the nation's leading engineering firms specializing in high tech testing, life sciences and technical support services, and provides a diverse range of services and systems to aerospace, military, commercial and government customers.

The following is an organizational chart showing the names and titles of individuals who will be assigned to this project.



Jawad Rachami - Director
Ben Sharp, PhD - Director, Technology Development
Ken Plotkin, PhD - Chief Scientist
Tom Connor - Senior Airport Analyst
Bill Albee - Consultant, Aviation Noise Policy

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As introduced in the Transmittal Letter and Executive Summary, Mr. Joseph J. Czech PE (Joe) will act as consultant for the Roundtable and Wyle's Project Manager. Joe is based in Wyle's El Segundo office.

Joseph J. Czech, PE

Joe is a Principal Engineer in Wyle's El Segundo office and has a BS degree in Aerospace Engineering and is registered with the State of California as a professional mechanical engineer. Joe has focused on aircraft noise throughout his entire 24-year career, half of which is based in the El Segundo office, just a short flight away from SFO and the Roundtable.



He has been involved in civil aviation noise projects ranging from special studies to Part 150 studies to model development and measurements to airport and airspace EIS/EIRs. He was the project engineer for the Part

150 Noise Compatibility Study Update for McClellan-Palomar Airport in Carlsbad, California, presenting and facilitating at the Palomar Airport Advisory Committee meetings and the study's public meetings. Joe worked with the Technical Advisory Committee for the Noise Exposure Map (NEM) Update for Gerald R. Ford International Airport.

He has been the public voice of the noise analyses for several high-profile projects including the MV-22 and H-1 Basing in Hawaii EIS public meetings, the F-35B West Coast Homebasing EIS public scoping and results meetings, the Washington Dulles International Airport New Runways EIS public meetings and the scoping meetings for the New York/New Jersey/Philadelphia Metropolitan Area Airspace Redesign EIS. Joe has twice been a coinstructor for the Navy's Air Installation Compatible Use Zone Seminar and conducted noise model training classes.

His additional local Southern California airspace and environmental issues experience includes the San Diego International Airport Site Selection Program, MV-22 West Coast Homebasing EIS and Twentynine Palms Range Expansion EIS. Additional major airspace work includes being the co-project manager for the Potomac Consolidated TRACON Airspace Redesign EIS.

Familiar with the local issues, not only has Joe been living and working in the vicinity of a large commercial service airport similar to SFO (Los Angeles International Airport (LAX)) and Southern California for over 20 years, but has worked on numerous large airport projects spanning from the late 1980s to recent years. One of Joe's key early contributions was project management and engineering support for the installation of Los Angeles World Airport's (LAWA) Aircraft Noise Monitoring and Management System (ANMMS) and provided on-call consulting services in the 1990s, helping prepare Quarterly Reports pursuant to the California State Noise Standards. For the ANMMS, Joe supervised system contractor efforts, evaluated aircraft and noise data acquisition and analysis procedures and prepared/executed an extensive system accuracy and evaluation study. Joe was a key reviewer of the noise sections of the Supplement to the Draft EIS/EIR for LAWA's Master Plan for LAX, responding to the EIS/EIR noise comments and addressing CEQA concerns. Joe co-authored the County of San Bernardino's General Plan Noise Element Update with attention to the aircraft noise portion.



In addition to the LAX Master Plan EIS/EIR, Joe's CEQA-related work extends to several non-aviation projects involving pipeline construction, high-speed ferryboats, highways, rail and maglev trains.

In the early 2000s, Joe supported the initial phases of the noise technical report for the EIR/EA for the proposed Pacific Gateway Cargo Center at Ontario International Airport (ONT) and performed a noise study of Palmdale Regional Airport. Recent projects include Integrated Noise Model (INM) flight track development via innovative radar data analysis and a landmark study of the effects of buildings on noise exposure from low-level flight operations at LAX (noise control). Joe has attended many of the recent LAX Roundtable meetings in recent years.

Joe has working knowledge of the California Airport Land Use Handbook, FAA Environmental Orders, aircraft and airport related noise metric and noise control methods. Authoring dozens of reports, he has strong writing skills and public speaking skills. Joe is a member of the Acoustical Society of America (ASA).

As shown on the aforementioned chart, Joe will be fully supported by EERC's senior staff.

- Jawad Rachami Wyle's Director of EERC, with over 10 years of experience with noise, emissions, fuel burn, and GHG modeling of airport and airspace operations, most recently related to NextGen.
- Dr. Ben Sharp with over 40 years experience in aviation noise modeling, measurement, and assessment, including technical representation for FAA at International Civil Aviation Organization (ICAO) meetings.
- Dr. Ken Plotkin Wyle EERC's Chief Scientist, with 40 years of research experience performing measurements and analysis of environmental noise, and developing methodologies and models for analysis of noise systems.
- Tom Connor who brings a unique perspective on aircraft noise issues from his 33 year career with the FAA.
- Bill Albee who also brings an FAA perspective from his 10 year career with the FAA, including facilitation, mediation, and negotiation of noise issues.



Qualifications and Experience

This section provides an overview of Wyle's relevant qualifications and experience in aircraft noise, airspace and environmental issues with descriptions of relevant projects.

Wyle EERC

The EERC practice was established in 1963 and provides applied research and consulting services in acoustics, vibration and their allied technologies to a wide range of clients, including airport authorities, FAA, EPA, DOT, NASA, the Navy, Air Force, and Army, as well as state and local governments and the manufacturing and entertainment industries. A staff of 50 professional and support staff cover a great depth of technical specialties, including acoustics, vibration, noise control, airspace analysis, airway science management, and planning. EERC offices are maintained in El Segundo, CA and Arlington, VA, with local offices providing support to airports in Burbank, CA, Allentown, PA, and Westfield, MA.

Wyle's Range of Professional Services

Since its inception, Wyle has been heavily involved in civil and military aircraft noise studies. Some of our more notable work on national and international levels includes:

- Development of the CNEL noise metric in the late 1960s that was the forerunner of the Day-Night Average Sound Level (DNL) in common use today for the assessment of airport noise,
- Continued development of the DoD NOISEMAP model for the past 20 years, adding the ability to include advanced ground attenuation and reflection off water as well as shielding by topography and artificial barriers – the only airport noise model to contain these capabilities.
- Authorship of "Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations", published by the FAA in 1992 for national use, and
- Development of a US and global airport noise exposure model for FAA and ICAO designed to evaluate the effect of future stringency and operational mitigation measures.



Consulting Support to Airports

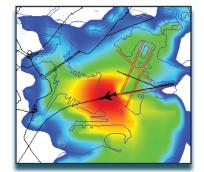
Wyle has provided continuing consulting support to civil airports for the past 40 years. Services have included:

- Analysis of noise impacts from changes in airspace use,
- Evaluation of noise mitigation alternatives,
- Development of alternative flight procedures,
- Noise analysis and siting for heliports,
- Analysis of land use compatibility,
- Noise barrier and berm design,
- Preparation of airline fleet contours,

- Evaluation of engine run-up noise mitigation,
- Preparation of airport noise contours for various noise mitigation scenarios,
- Preparation of airport noise contours for various noise mitigation scenarios,
- Expert witness testimony,
- Briefings for elected officials, and
- Public involvement programs.

Aircraft Noise Modeling

One of Wyle's strongest capabilities is the development of advanced airport noise models to assess noise impacts and design mitigation strategies. Wyle has worked with the Air Force, FAA and NASA to develop supplemental programs that improve the accuracy of the noise predictions offered by INM. Several features that Wyle has developed include:



- The development and implementation of procedures to model aircraft departures and optimize flight tracks for minimum noise exposure, emissions, and fuel burn.
- The development and application of models to assess the environmental implications of proposed NextGen airfield and airspace operations and the introduction of new aircraft types and configurations.
- Original development during the early 1970s of the algorithms used in the INM that
 is now the standard tool for airport noise assessment. More recently, Wyle has
 been a key member of the Volpe/FAA team developing the Aviation Environmental
 Design Tool (AEDT) which will replace INM in 2014, and provides technical support
 to the FAA at ICAO meetings.
- Wyle has pioneered the development and application of supplemental noise metrics designed to make noise exposure more understandable to the public. We have prepared the document "Improving Aviation Noise Planning, Analysis and Public Communication with Supplemental Metrics" that provides guidance in the use of supplemental metrics, such as Sound Exposure Level (SEL), Time Above (TA), maximum sound level (L_{max}), and Number-of-events Above (NA) to analyze noise impacts and communicate them more effectively to the public. The guidelines have



been adopted by the Department of Defense as the recommended procedure for aircraft noise assessment.

- The Advanced Acoustic Model (AAM), a powerful noise simulation model which will
 eventually replace INM/AEDT and the core module of NOISEMAP. AAM computes
 3-dimensional, in-flight, spectral sound pressure levels that can be used to analyze
 the data in any other noise metric including DNL and the supplemental metrics
 outlined below incorporating terrain effects, barriers, wind and temperature gradient
 effects for fixed- and rotary-wing aircraft.
- The development of a Multi-Modal Noise and Emissions Model capable of assessing combined environmental impacts within a single model. The proposed tool will streamline transportation-related environmental analyses by minimizing the redundant input currently required to exercise modal-specific tools.

Noise Abatement Operations

Wyle analyzes aircraft operations and identifies ways that flight procedures can be modified to reduce noise most effectively. By examining the penalties for such procedures, in terms of time, distance, and fuel burn, Wyle can evaluate the cost-benefit of various mitigation measures as well as the noise impact. Wyle's Geographical Information System (GIS) tools make it possible to target measures more effectively and to



ensure safe aircraft operation and efficient airspace management along with routing for reduced noise. By applying this state-of-the-art tool to existing noise abatement procedures, Wyle has optimized noise abatement and shown how to reduce the number of people impacted at certain airports by more than 30 percent below the best procedures developed using conventional methods.

Noise Mitigation Engineering

Wyle is an industry leader in the evaluation and design of alternative airport noise mitigation strategies, such as maintenance run-up procedures, noise barriers, and hush houses. In addition, Wyle has pioneered the use of active noise cancellation techniques to reduce noise in the vicinity of engine run-up facilities and areas exposed to the low-frequency rumble of departing aircraft. By applying active noise reduction, Wyle successfully reduced noise energy to less than one-eighth of the untreated level over a large area, and as low as 1/20th the energy at some frequencies. Placing an anti-noise system near an affected community, or at the airport property line, will achieve significant improvement for noise sensitive areas. We have submitted our ideas to SFO and LAWA as part of a project to reduce low-frequency noise levels in the community.



On-Airport Noise Control

Wyle's acoustical engineers and architects are expert at developing noise control strategies for on-airport facilities such as terminals and administrative offices. Wyle has assisted airport clients by designing sound barriers, hush houses and airport layouts that minimize noise.



Land Use Planning

Wyle has worked with numerous airports to develop realistic land use plans, including buffer zones, zoning overlays, and model building codes for new construction. Land use planning options are always evaluated for feasibility, safety, cost and effectiveness. Aircraft noise management and mitigation strategies are developed with the input and cooperation of all interested and responsible parties.

Community Involvement Programs

Public information and building community support are the most important, and often the most challenging, aspects of any effective noise mitigation plan. Wyle has the in-depth knowledge to be able to identify key concepts and clearly explain them to all audiences. Using carefully prepared materials; Wyle communicates effectively with neighborhood groups, building contractors, aviation experts, and other noise scientists. By establishing trust and understanding, Wyle works with the airport



to build consensus regarding the airport's programs and their value to the community.

Airport-specific Experience

Wyle has been serving large airports since the late 1960s preparing nearly 50 individual major reports. As evidence of its familiarity with aviation noise, airspace and environmental issues, Wyle has provided the following types of support to large airports over the last 40 years:

- The Pilot Sound Insulation program at LAX in 1968 the first in the nation;
- Sound insulation and acoustic studies of homes, schools, churches and libraries;
- Noise monitoring system design, installation and/or testing (i.e., 1st, 2nd and 3rd generation systems);
- Noise measurements (e.g., Concorde, helicopters), maintenance run-ups;
- Quarterly Report support and preparation;
- Deriving model-compatible flight tracks from radar data;
- Study of the effects of buildings on CNEL contours;
- The Dicerno application to evaluate "what if" operational scenarios



Wyle's SFO Projects:

Highlights of Wyle's SFO-specific experience include:

- A recent study to optimize noise, emissions and fuel burn from aircraft departures at SFO;
- An analysis of the status of low-frequency aircraft noise research and mitigation;
- The conceptual design of a noise cancellation system to reduce the effect of backblast noise from aircraft departing from Runways 1L/1R; and
- Pilot and subsequent large-scale implementation of sound insulation programs at San Mateo, San Bruno, Millbrae, Pacifica and Daly City.

SFO Departure Optimization Study.

In order to augment SFO's noise abatement program and analyses, Wyle is currently conducting an optimization analysis to assess the tradeoffs between noise, fuel burn, and emissions. The analysis focused on departure procedures off Runway 28L and the top three aircraft types (by noise strength) for each procedure. Noise was quantified using population exposures for different noise levels while fuel burn and emissions were quantified as mass values for the range of flight tracks modeled. The optimization analysis was conducted using methods and data derived from previous work Wyle conducted at other airports to investigate the tradeoffs associated with using lower-noise engine technology on direct flight tracks. The work involved identifying viable sets of alternative tracks that can be tested and compared against the existing tracks.

Evaluation of Airport Alternatives using Dicerno

Wyle has developed and provided to several airports the only environmental decision support tool that allows airports to assess the noise impacts of airport operational alternatives in a fraction of the time that it takes using currently available tools and methods. This translates into valuable cost savings for the airport and a substantial increase in its ability to assess a large number of alternatives.

Dicerno allows the airport to vary several operational variables such as fleet mix and airport usage data and obtain in mere seconds a GIS-rich assessment of noise exposure complete with population impact analysis. The tool also allows the user to derive valuable graphs and statistics for analysis or presentation purposes. Dicerno allows for the assessment of alternatives based on changes in:

- Fleet mix;
- Runway utilization;
- Flight track utilization;
- Numbers of operations;
- Day/evening/night distribution;
- Track dispersion; and
- Ground operations.

This tool also allows the user to derives impact information based on supplemental metrics such as Number-of-Events Above (NA) that otherwise would require expert tools. In Dicerno



all of these features and products are accessible through a user-friendly interface and GISdriven functionality.

Public Forums, Educational Reports and Presentations

During the course of many of Wyle's projects, we have engaged and educated people about noise and have made presentations to airport sponsors and public forums. Wyle has been associated with the Navy's semi-annual or annual Air Installation Compatible Use Zone (AICUZ) Seminar educating Navy and Marine Corps personnel about the AICUZ process and noise issues in particular.

Wyle periodically publishes via electronic mail its "Wyle Noise Bulletin" that presents relevant topics in aviation noise news. Wyle hosts several aviation noise related email forums with over 2,500 airport and aviation industry addressees worldwide. These unique forums are used to share important and useful information and to enable on-line discussions of various topics and issues of interest to subscribers (e.g., land-use related projects). Many subscribers have praised the Bulletin and look forward to receiving and reading it.

Staff members such as Mr. Czech, Mr. Albee, and Mr. Rachami have all been part of faculty on airport noise topics at various forums such as the annual UC Davis Noise Symposium and for various organizations such as the International Air Transport Association (IATA), Airports Consultants Council (ACC), and the US Department of the Navy. Topics taught by Wyle staff range from basic Airport Noise 101 courses to complex technical workshops on noise propagation, noise simulation and the FAA's Air Traffic Noise Screen (ATNS) process and software.

Each Wyle noise study typically includes a Wyle-compiled appendix, a treatise of sorts, of the basics of sound/noise and its effects on humans, animals and structures. This appendix is fully referenced and has been included in many environmental documents. It is written in layman's terms and serves to educate the reader on its subject matter.

Wyle staff has participated in numerous public meetings, in leading and supporting roles, educating the attendees about noise and the particular project, clearly explaining the analysis and results and describing its effects. Recent examples include the public meetings for:

- Tweed-New Haven Part 150 Study
- Boston Logan Airport Noise Study and EIS
- MV-22 Introduction to Japan
- F-35B West Coast Basing EIS
- Philadelphia International Airport Part 150 study
- LAX Roundtable presentations
- McClellan-Palomar Airport Part 150 Study;
- Washington-Dulles International Airport New Runways EIS;
- Ronald Reagan Washington National Airport Part 150 Study; and
- New York/New Jersey/Philadelphia Metropolitan Area Airspace Redesign EIS scoping meetings.

As part of our outreach process, Wyle staff has presented technical information to the LAX Roundtable – specifically on the application of supplemental noise metrics.



INM Flight Track Preparation

In preparation for their new aircraft noise and operations management system, LAWA contracted with Wyle to analyze radar data to verify and/or generate modeled flight tracks for LAX, ONT and Van Nuys Airport (VNY). The modeled flight tracks would serve as standards for the new system, which would curve fit future radar data to the standard tracks, populating them with the operational information necessary for computing CNEL contours with the INM. As these airports are deemed "noise problem" airports by the State of California, LAWA is mandated to produce CNEL contours quarterly.

Wyle analyzed 12 to 14 days of radar data for each airport, examining 2 to 4 flow conditions for each airport. Wyle decoded and translated LAWA's third-party (Dimensions International) radar data format (REL). Wyle then utilized its proprietary Noise Data Acquisition and Display System (NDADS) and Geographic Information Systems (GIS) based Flight Density mapping software, flight density maps were developed to identify flight corridors and areas of frequent overflight, aiding the nominal track creation process. For LAX and jets departures at VNY, LAWA's existing INM flight tracks were compared to the flight density maps. For ONT, and propeller aircraft and jet arrivals at VNY, nominal tracks were borne out of analysis with NDADS and the flight density maps.

Wyle recommended 221 vector-style nominal flight tracks among the three airports and prepared their specification to the geographic extent of the airport's radar coverage in INM-compatible format.

ICAO Experience

Wyle has recently worked with the ICAO on the FAA's AEDT, and has made presentations to ICAO's Committee on Aviation Environmental Protection (CAEP). Wyle has been involved with formal CAEP meetings "CAEP/5" and "CAEP/6" (1996 through present) producing reports with specific recommendations for the consideration of the ICAO Council. Prior to AEDT, Wyle designed and implemented the Model for the Assessment of Global Exposure to Noise from Transport Aircraft (MAGENTA) for use by the FAA and ICAO to evaluate different options in the balanced approach towards airport noise abatement and mitigation, including reduced aircraft noise levels, air traffic control procedures, operational restrictions, and landuse planning. MAGENTA has been used recently by Wyle to document the degree of population encroachment that has occurred at 96 US airports.

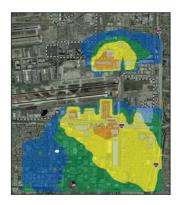
Development of the CNEL Noise Metric

As part of the development of California's noise standards, Wyle conceived (and the State implemented) the CNEL noise metric in the late 1960s. The noise standards served the state's Department of Transportation (CalTrans), more specifically, their Department of Aeronautics. CNEL predated the Day-Night Average Sound Level (DNL) metric and was derived from the Composite Noise Rating (CNR) metric. Wyle recognized the need for an A-weighted metric in lieu of CNR for ease of measurement and computation, and added the evening and nighttime weightings to account for the intrusiveness of sound and reduced ambient noise environment during these periods.



Effects of Buildings on CNEL Contours

Departures and arrivals of commercial jet aircraft create noise impacting communities near large airports such as SFO. However, noise levels due to departures and arrivals can be significantly reduced in neighboring communities by the shielding effect of buildings close to the airport runways. The objectives of this study were to (1) quantify the shielding effect of buildings nearby Runways 25L and 25R at LAX on CNEL contours and (2) devise a quick method to implement with future State-mandated Quarterly Report contours so as to explain differences between measured and modeled CNEL.



Wyle achieved the objectives of the project and developed an assessment method through a combination of Wyle's NOISEMAP Simulation (NMSim) computer program and the FAA's INM. In the areas of El Segundo, Del Aire, Westchester and Inglewood, west of the I-405 freeway, it was determined buildings and highways provide 5-20 dB of attenuation for westerly arrivals and departures on Runways 25L and 25R.



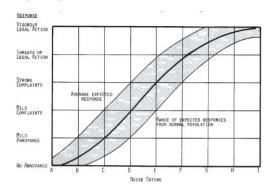
Demonstration of Written Communication Capabilities and Technical Expertise

The following is Wyle's response to the RFQ's topic "How did the community standard of 65 CNEL become the national standard and what level of effort will be required to reduce this standard to a lower threshold?"

Long-term annoyance is the primary effect of aircraft noise on exposed communities. Noise annoyance has been defined by the Environmental Protection Agency (EPA) in 1974 as any negative subjective reaction on the part of an individual or group. The scientific community adopted the use of long-term annoyance as a primary indicator of community response because it attempts to account for all negative aspects of effects from noise, e.g., interference with everyday conversation and increased annoyance due to being awakened the previous night by aircraft.

The study of how noise annoys people is part and parcel with the evolution of noise metrics. Early work in the 1930s by researchers Fletcher and Munson determined frequency dependent curves that defined equal loudness levels as a function of frequency. These curves were used to define the three weightings, A, B and C. Of these three, A-weighting was found to best correlate with human perceptions of the loudness of an aircraft noise event. A more complicated metric, Perceived Noise Level (PNL) correlated even better.

In the 1950s, a cumulative metric, the Composite Noise Rating (CNR), was developed that could relate both annoyance and community reaction (complaints, legal action, etc.) to aircraft noise. The CNR included both the number of aircraft events and noise level (using PNL), and was correlated with annoyance and community response. CNR began in a form where aircraft noise spectra were compared to reference spectra at various levels, in a manner similar to Noise Criteria (NC) curves used for assessment of interior



ventilation system noise, and noise was quantified by a letter rank as shown in the accompanying figure by Kryter. The process included adjustments for time of day (effectively a 5 dB penalty for nighttime noise), ambient conditions, season, and various physical characteristics of the noise. CNR was supported by surveying community response to measured noise, and it was noted even then that factors other than noise had a role in response.

When adopted by the DOD in 1964, the CNR rating had moved from letter scale to numbers and zones as follows:

Zone	CNR	Acceptability
1	< 100	Normally Acceptable
2	100 - 115	Normally Unacceptable
3	≥115	Clearly Unacceptable



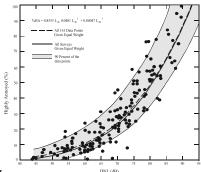
The basic concepts in CNR evolved into forms with more detail and an understanding of underlying effects. By the 1960s this evolution led to use of Noise Exposure Forecast (NEF), which represented the frequency content of noise by perceived noise level PNL. NEF was computed from the Effective Perceived Noise Level (EPNL) which, in turn, used PNL with adjustments for event duration and pure tone content. Multiple events were combined via an energy summation basis. NEF included a 10 dB adjustment for nighttime events, an early change from CNR's initial 5 dB. The Department of Housing and Urban Development (HUD) linked acceptability for residential development to NEF values. It is not a coincidence that the HUD NEF guidelines also equate to CNR values as the HUD work built upon earlier guidelines issued by the DOD in 1964.

In the late 1960s and early 1970s, with the tones produced by most jet aircraft significantly reduced, tone corrections were less important, and A-weighted levels became widely used, in part because, unlike NEF or EPNL, they could be easily determined through direct measurement with available sound monitoring equipment. The Community Noise Equivalent Level (CNEL), based on A-weighted levels, was developed by Wyle and used by the State of California in 1970 to establish noise standards in residential communities. Like CNR, the California implementation of CNEL included correction factors to "normalize" community reactions.

In response to the Noise Control Act of 1972, the EPA, in its now well-known 1974 'Levels Document', identified "noise levels requisite to protect public health and welfare with an adequate margin of safety," and established a variant of CNEL known as the Day-Night Average Sound Level, DNL, with no evening weighting. Like CNR, the EPA Levels Document related DNL to community reactions.

In the 1970s, EPA led the effort to replace the use of NEF for airport noise contours with DNL as part of its mandate. This was a consolidation of metrics between government agencies, seeking one which applied to all community noise sources, and accepting compromise in details for particular sources. The agencies formed the Federal Interagency Committee on Urban Noise (FICUN) to develop Federal policy and guidance on noise. After prodding by Congress in the form of the Quiet Committees Act of 1978 and the Aviation Safety and Noise Abatement Act of 1979 (ASNA), FICUN selected DNL as the best metric for measuring noise for land use planning, thus endorsing the EPA's earlier work and making it applicable to all Federal agencies. The FICUN issued its report in June 1980 that established the Federal government's 65 dB DNL standard for land use compatibility and related guidelines.

Social surveys of community response to noise have allowed the development of general dose-response relationships that can be used to estimate the proportion of people who will be "highly annoyed" by a given noise level, gauging the intrusion and disturbance to speech, sleep, audio/video entertainment, and outdoor living. In 1978, Schultz published his synthesis with the dose-response relationship shown in the accompanying figure. The concept of "percent highly annoyed" has provided the most consistent response of a community to a particular noise environment. The "highly annoyed" terminology



was derived from a combination of two of Schultz's descriptors "very annoyed" and "extremely annoyed" in his social surveys.



After Schultz published his synthesis, "percent highly annoyed," (%HA), became the way to view airport noise impact¹. Thus, aircraft noise became judged more by its effects on the public than on public reactions to aircraft noise. It should be noted that, contrary to occasionally expressed opinions, 65 dB DNL as a land use compatibility guideline pre-dated the Schultz %HA relationship. While Schultz's work was published in the Journal of the Acoustical Society of America (JASA) during the federal agencies deliberations on noise metrics, the FICUN report makes no mention of it. It seems clear from the FICUN report that the choice of 65 dB DNL as the significant impact threshold is based on the land use planning precedents set by DOD and HUD, decisions made years before Schultz's work. In other words, 100 CNR begat 30 NEF, which begat 65 dB DNL.

The scatter of data supporting the Schultz curve is large partly because the original curve and the subsequent updates assumed that the relationship between percent highly annoyed and DNL was independent of the noise source, whether road, rail or aircraft. In the years after the Schultz analysis, additional social surveys have been conducted, most notably by Miedema and Vos, to better understand the annoyance effects of various transportation sources. This later data shows aircraft noise exhibiting a higher percentage of the community highly annoyed than the other modes for the same DNL. For example, the data shows that 28% are highly annoyed with aircraft noise at an exposure of 65 dB DNL – more than twice that predicted by the FICON relationship. With such a high percentage of HA, it is questionable as to whether 65 dB DNL represents an appropriate 'threshold of significance' for aircraft noise assessment.

There is no strong technical basis for the selection of 65 dB CNEL/DNL (or 100 CNR, or 30 NEF) as the standard; it represents a compromise involving technical feasibility and economical reasonableness. After all, EPA identified a DNL of 55 dB as the level to "protect public health and welfare with an adequate margin of safety" and a large number of the complaints about aircraft noise come from people exposed to CNEL/DNL less than 65 dB CNEL/DNL. An additional factor to be considered is the increasing perception that the CNEL/DNL metric with its equal energy equivalence between level and number of events, may not best represent annoyance, and that number of events may be more important than level.

Clearly, modifying the threshold requires a better understanding of community response to aircraft noise. More research is needed and FAA has recently funded such research. The results (probably available in about two years) can be used to evaluate both the metric and an appropriate level to better protect the community from aircraft noise. More than likely, unless very strong evidence appears, there will be a reluctance to change the metric/threshold.

Furthermore, lowering the threshold from 65 dB CNEL/DNL will have financial and legal implications to AIP-funded abatement and mitigation programs, Part 150/AICUZ studies, and NEPA studies, and will need to be thoroughly examined by stakeholders such as airports, FAA, CEQ and DOD for feasibility, especially from a technical acoustic perspective. The task of coordinating such an effort would most likely be given to FICAN.

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¹ The relationship of %HA to DNL has been reworked several times since Schultz, the latest endorsed by the Federal Interagency Committee on Noise (FICON) in 1992. The FICON curve was the result of an USAF analysis of data using logistic curve fit.