San Francisco International
Airport/Community Roundtable

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

MEETING PACKET

Meeting No. 303
Wednesday, November 2, 2016 - 7:00 p.m.

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

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

AGENDA

1. Call to Order / Roll Call / Declaration of a Quorum Present
ACTION
Cliff Lentz, Roundtable Chairperson / James A. Castaneda, AICP, Roundtable Coordinator

2. Public Comments on Items NOT on the Agenda
INFORMATION
Speakers are limited to two minutes. Roundtable members cannot discuss or take action on any matter raised under this item.

CONSENT AGENDA ITEMS

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

3. Review of Airport Director's Report
July 2016 pg. 11
August 2016 pg. 19
September 2016 pg. 27
ACTION

4. Review of Roundtable Regular Meeting Overview for August 3, 2015 pg. 35
ACTION

REGULAR AGENDA

5. Review of SFO FlyQuiet Report for Q3 2016 pg. 41
INFORMATION
Bert Ganoung, Manager - Aircraft Noise Abatement Office

6. Airport Director's Comments
INFORMATION
Ivar Satero, Director – San Francisco International Airport

7. Roundtable Response to FAA Initiative Results to Address Noise Concerns
ACTION
Cliff Lentz, Roundtable Chairperson
Cindy Gibbs, Roundtable Aviation Technical Consultant

***** Materials for this item are provided as a separate publication to accompany this meeting packet ****

8. Discussion, Tasks and Appointment of Legislative Subcommittee
INFORMATION
James A. Castaneda, AICP, Roundtable Coordinator

OTHER MATTERS

9. Airport Noise Briefing
INFORMATION
Cindy Gibbs, Roundtable Aviation Technical Consultant

10. Member Communications / Announcements
INFORMATION
Roundtable Members and Staff

11. Adjourn
ACTION
Cliff Lentz, Roundtable Chairperson

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.

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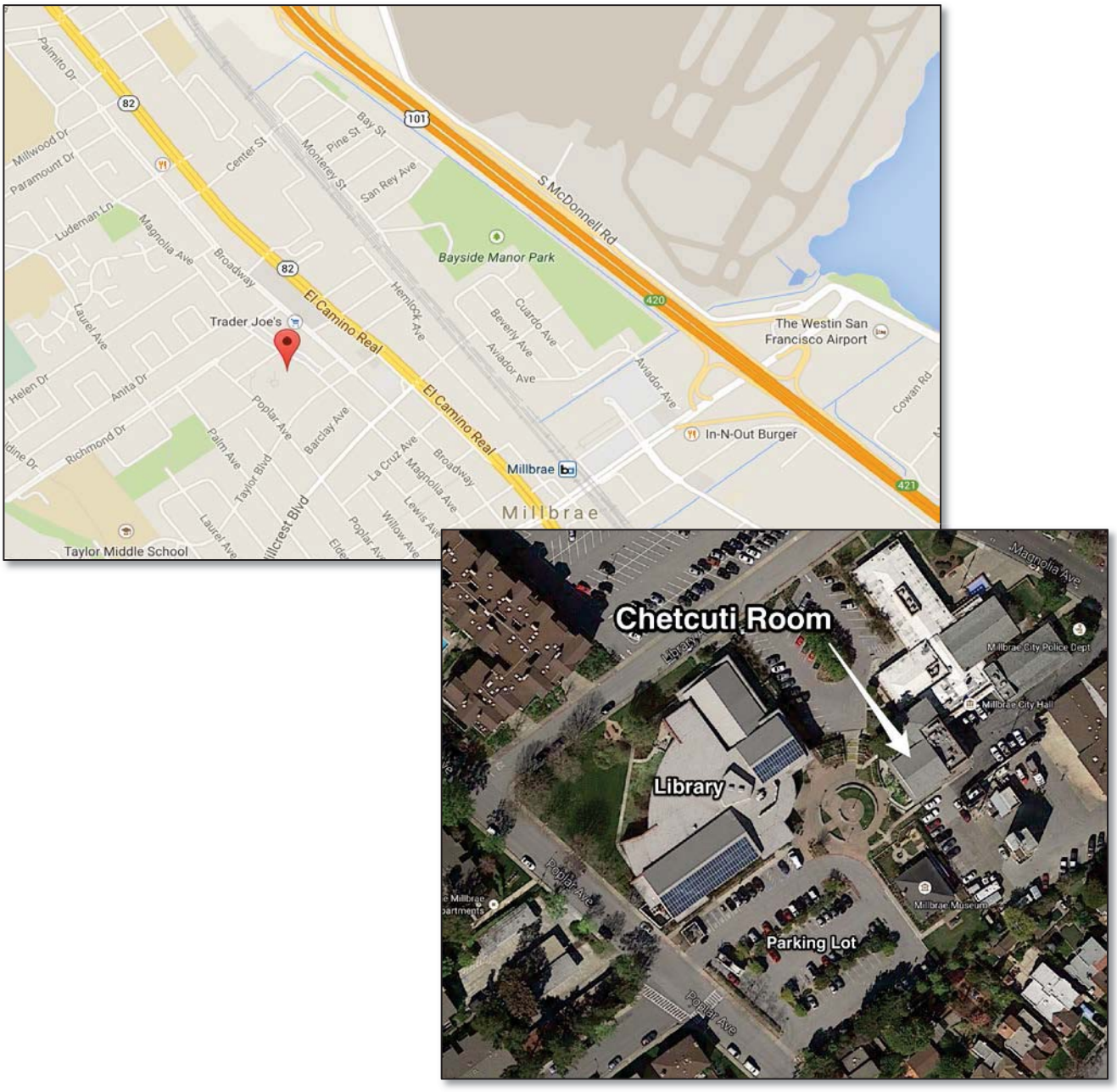
REGULAR MEETING LOCATION

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

Access through Millbrae Library parking lot on Poplar Avenue



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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. In 2016, the Roundtable is scheduled to meet on the first Wednesday of the following months: February, April, June, August, October and December. Regular Meetings are held on the first Wednesday of the designated month at 7:00 p.m. at the **David Chetcuti Community Room at Millbrae City Hall, 450 Poplar Avenue, Millbrae, California** unless noted. Special Meetings and workshops are held as needed. The members of the public are encouraged to attend the meetings and workshops to express their concerns and learn about airport/aircraft noise and operations. For more information about the Roundtable, please contact Roundtable staff at (650) 363-1853.

POLICY STATEMENT

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

> ***"The Airport/Community Roundtable members, as a group, when considering and taking actions to mitigate noise, will not knowingly or deliberately support, encourage, or adopt actions, rules, regulations or policies, that result in the "shifting" of aircraft noise from one community to another, when related to aircraft operations at San Francisco International Airport."*** *(Source: Roundtable Resolution No. 93-01)*

FEDERAL PREEMPTION, RE: AIRCRAFT FLIGHT PATTERNS

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

> "No state or political subdivision thereof and no interstate agency or other political agency of two or more states shall enact or enforce any law, rule, regulation, standard, or other provision having the force and effect of law, relating to rates, routes, or services of any air carrier having authority under subchapter IV of this chapter to provide air transportation." (49 U.S.C. A. Section 1302(a)(1)).

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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 audio file can be made available to the public upon request. Please contact the Roundtable Coordinator for any request.

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

AIRPORT/COMMUNITY ROUNDTABLE OFFICERS & STAFF

Chairperson:
CLIFF LENTZ
Representative, City of Brisbane
clifflentz@ci.brisbane.ca.us

Vice-Chairperson:
ELIZABETH LEWIS
Representative, Town of Atherton
elewis@ci.atherton.ca.us

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

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MEMBERSHIP ROSTER NOVEMBER 2016
REGULAR MEMBERS

CITY AND COUNTY OF SAN FRANCISCO BOARD OF SUPERVISORS
Representative: Vacant
Alternate: Vacant

CITY AND COUNTY OF SAN FRANCISCO MAYOR'S OFFICE
David Takashima, Representative
Alternate: Edwin Lee, Mayor

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

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

CITY/COUNTY ASSOCIATION OF GOVERNMENTS OF SAN MATEO COUNTY (C/CAG) AIRPORT LAND USE COMMITTEE (ALUC)
Adam Kelly, Representative
Alternate: Vacant

TOWN OF ATHERTON
Elizabeth Lewis, Council Member/**Roundtable Vice-Chairperson**
Alternate: Bill Widmer, Council Member

CITY OF BELMONT
Douglas Kim , Council Member
Alternate: Vacant

CITY OF BRISBANE
Cliff Lentz, Council Member/**Roundtable Chairperson**
Alternate: Lori Liu, Council Member

CITY OF BURLINGAME
Ricardo Ortiz, Council Member
Alternate: Vacant

MEMBERSHIP ROSTER NOVEMBER 2016

CITY OF DALY CITY
Raymond Buenaventura, Mayor
Alternate: Vacant

CITY OF FOSTER CITY
Sam Hindi, Council Member
Alternate: Vacant

CITY OF HALF MOON BAY
Deborah Ruddock, Council Member
Alternate: Marina Fraser, Council Member

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

CITY OF MENLO PARK
Peter Ohtaki, Council Member
Alternate: Vacant

CITY OF MILLBRAE
Ann Schneider, Council Member
Alternate: Vacant

CITY OF PACIFICA
Sue Digre, Council Member
Alternate: Vacant

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

CITY OF REDWOOD CITY
Janet Borgens, Council Member
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

CITY OF SAN MATEO
Rick Bonilla, Council Member
Alternate: Vacant

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

TOWN OF WOODSIDE
Deborah Gordon, Mayor
Alternate: Vacant

ROUNDTABLE ADVISORY MEMBERS

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

FEDERAL AVIATION ADMINISTRATION
Andy Richards, SFO Air Traffic Control Tower
Don Kirby, Northern California Terminal Radar Approach Control (NORCAL TRACON)
Tony DiBernardo, FAA District Manager – Sierra-Pacific District

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ROUNDTABLE STAFF/CONSULTANTS

James A. Castañeda, AICP, Roundtable Coordinator
Cynthia Gibbs, Roundtable Aviation Technical Consultant (BridgeNet International)

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
Nastasja Gjorek, Noise Abatement Specialist
William Brown, Noise Abatement Specialist
Joyce Satow, Noise Abatement Office Administration Secretary

CONSENT AGENDA

Regular Meeting # 303
November 2, 2016

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Airport Director's Report

Presented at the October 13, 2016
Airport Community Roundtable Meeting

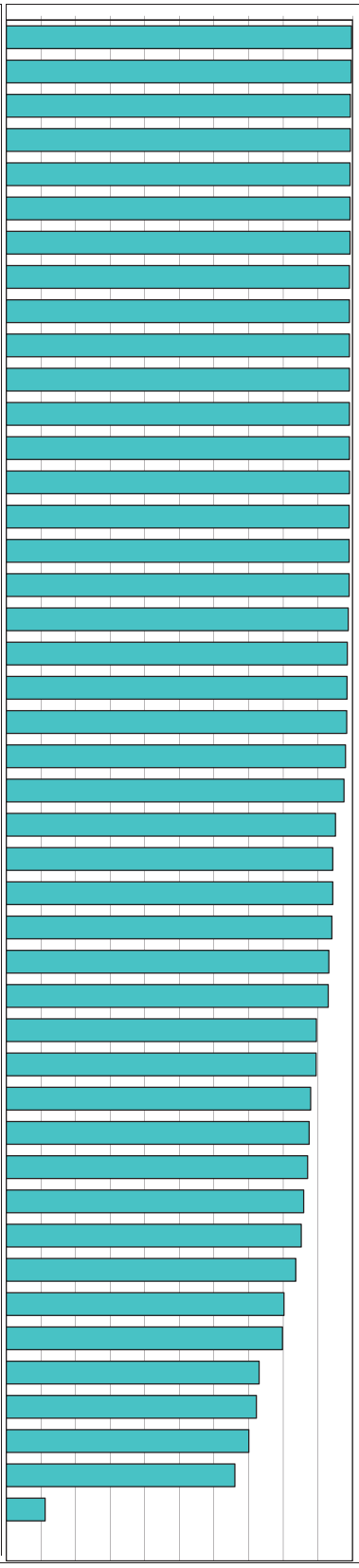
Aircraft Noise Abatement Office
July 2016

SFO San Francisco International Airport

Monthly Noise Exceedance Report
San Francisco International Airport -- Director's Report
Period: **July 2016**

Airline		Noise Exceedances: *Total Noise Exceedances*	*Total Operations per Month*	*Exceedances per 1,000 Operations*	*Score*
Lufthansa	DLH	1	124	8	*9.97*
SkyWest	SKW	54	6,216	9	*9.97*
ANA	ANA	1	62	16	*9.94*
Scandinavian Airlines	SAS	1	61	16	*9.94*
Turkish Airlines	THY	1	55	18	*9.93*
Virgin America	VRD	68	3,690	18	*9.93*
Delta	DAL	55	2,757	20	*9.92*
airberlin	BER	1	44	23	*9.91*
Alaska	ASA	25	1,091	23	*9.91*
Sun Country Airlines	SCX	4	173	23	*9.91*
WOW	WOW	1	43	23	*9.91*
Frontier	FFT	12	495	24	*9.91*
Compass	CPZ	20	823	24	*9.91*
Air Canada	ACA	19	769	25	*9.91*
JetBlue	JBU	25	957	26	*9.90*
Swiss	SWR	3	114	26	*9.90*
Virgin Atlantic	VIR	3	112	27	*9.90*
Etihad	ETD	2	62	32	*9.88*
XL Airways	XLF	1	25	40	*9.85*
United	UAL	513	11,956	43	*9.84*
Southwest	SWA	119	2,638	45	*9.83*
American Airlines	AAL	158	2,959	53	*9.80*
Air France	AFR	8	123	65	*9.75*
WestJet	WJA	16	123	130	*9.51*
Hawaiian	HAL	19	126	151	*9.43*
volaris	VOI	16	105	152	*9.43*
Avianca	TAI	15	94	160	*9.40*
FedEx	FDX	15	83	181	*9.32*
Aeromexico	AMX	38	204	186	*9.30*
Nippon Cargo Airlines	NCA	15	54	278	*8.95*
Copa Airlines	CMP	12	43	279	*8.95*
Air India	AIC	9	28	321	*8.79*
Atlas Air	GTI	28	84	333	*8.74*
China Airlines	CAL	34	99	343	*8.71*
Singapore Airlines	SIA	46	123	374	*8.59*
EVA Air	EVA	52	132	394	*8.52*
Japan Airlines	JAL	27	62	435	*8.36*
Fiji Airways	FJI	10	19	526	*8.02*
Cathay Pacific	CPA	80	149	537	*7.98*
Asiana Airlines	AAR	63	88	716	*7.30*
Korean Air	KAL	96	130	738	*7.22*
Philippines	PAL	70	88	795	*7.00*
Air New Zealand	ANZ	55	61	902	*6.60*
Kalitta	CKS	66	28	2,357	*1.12*
Qantas	QFA	146	55	2,655	*0.00*
TOTAL		**2,023**	**37,327**	**13,574**	

Noise Exceedance Quality Rating



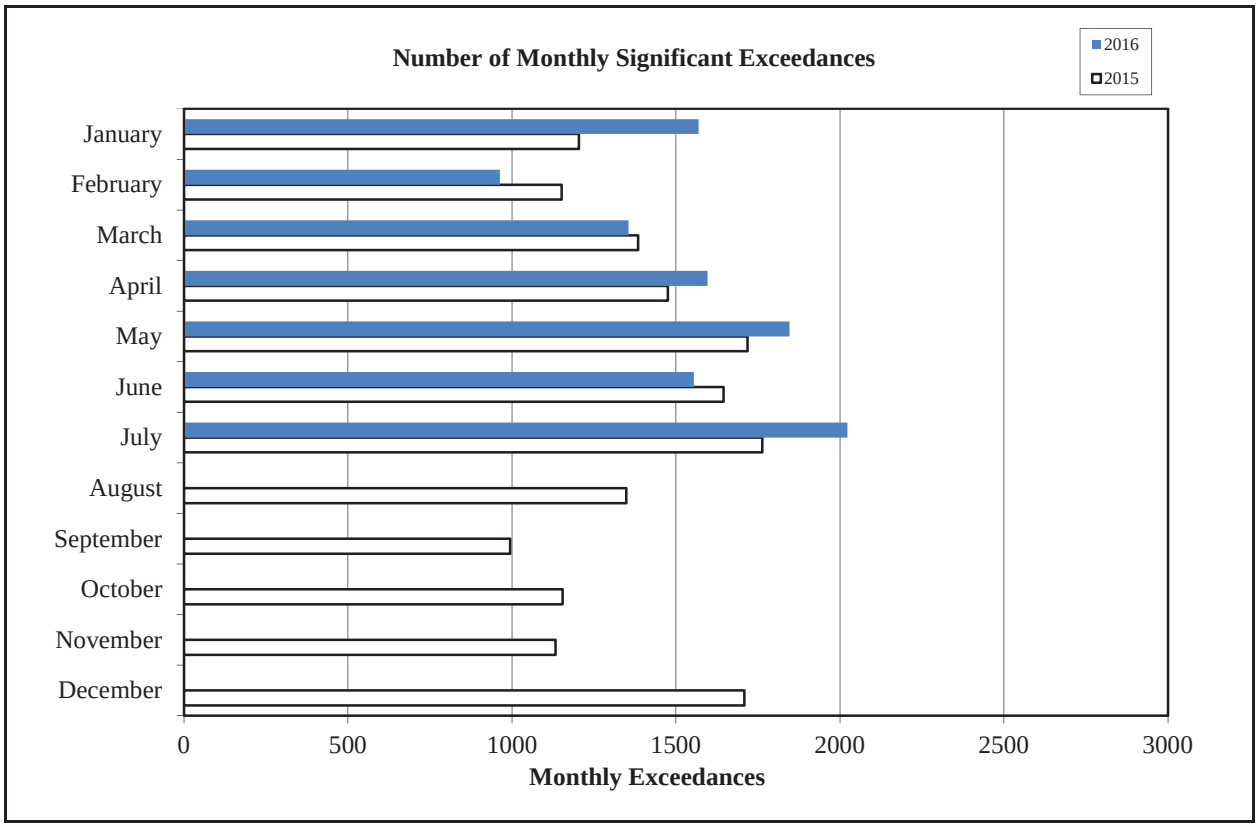
Source: SFO Noise Abatement Office

Historical Significant Exceedances Report
San Francisco International Airport -- Director's Report
Period: **July 2016**

San Francisco International Airport

Month	Number of Monthly Significant Exceedances 2012	2013	2014	2015	2016	Change from Last Year
January	1,378	1,428	1,184	1,204	1,569	**365**
February	1,581	1,176	1,141	1,151	963	**-188**
March	1,703	1,671	1,345	1,384	1,355	**-29**
April	1,870	1,910*	1,362	1,475	1,596	**121**
May	1,912	1,859*	1,515	1,718	1,846	**128**
June	2,355	1,915	1,740	1,645	1,554	**-91**
July	2,621	1,647	1,619	1,763***	2,023	**260**
August	1,823	1,638**	1,460	1,348		**0**
September	1,464	1,352	1,111	994		**0**
October	1,689	1,277	1,055	1,154		**0**
November	1,421	1,262	1,245	1,133		**0**
December	1,439	1,160	1,670	1,708		**0**
Annual Total	21,256	18,295	16,447	16,677	10,906	
Year to Date Trend	**21,256**	**18,295**	**16,447**	**16,677**	**10,906**	**566**

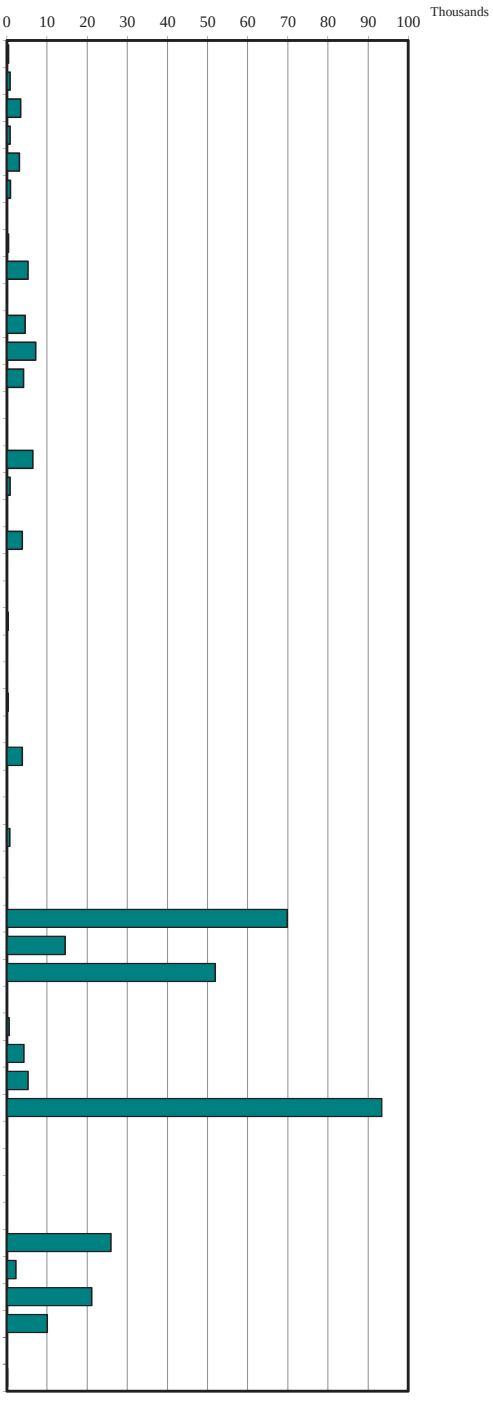
* Revised with correct amount of exceedance - 8/5/13
** No data available from Site 7, August 1-26
***No data available from Site 2 starting July 17



Monthly Calls by Community

Source: Airport Noise Monitoring System

Community	Total Complaints	Total Number of Complainants
Roundtable Communities		
Atherton	416	6
Belmont	808	9
Brisbane	3,413	52
Burlingame	762	30
Daly City	3,101	10
Foster City	894	23
Half Moon Bay	3	1
Hillsborough	426	17
Menlo Park	5,270	44
Millbrae	8	7
Pacifica	4,536	56
Portola Valley	7,153	71
Redwood City	4,109	24
San Bruno	4	4
San Carlos	31	5
San Francisco	6,429	59
San Mateo	791	18
South San Francisco	44	13
Woodside	3,865	42
Other Communities		
Alameda	73	3
Aptos	288	8
Ben Lomond	14	2
Berkeley	1	1
Boulder Creek	318	8
Campbell	1	1
Capitola	3,788	33
Carmel Valley	48	1
East Palo Alto	81	7
Felton	697	8
Fremont	8	1
La Selva Beach	111	2
Los Altos	69,884	391
Los Altos Hills	14,547	66
Los Gatos	51,916	211
Moraga	67	1
Morgan Hill	519	1
Mountain View	4,191	48
Oakland	5,295	23
Palo Alto	93,498	449
San Jose	20	2
San Leandro	14	2
San Pablo	1	1
Santa Clara	12	3
Santa Cruz	25,924	146
Saratoga	2,212	22
Scotts Valley	21,141	115
Soquel	10,043	105
Sunnyvale	64	13
Watsonville	176	2
	347,015	**2,167**



"Our software vendor's address validation relies on USPS-provided ZIP code look up table and USPS-specified 'default city' values."

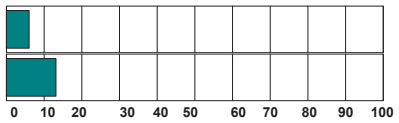
Monthly Noise Complainant Summary Map July 2016

"Our software vendor's address validation relies on USPS-provided ZIP code look-up table and the USPS-specified 'default city' values"

Caller Location

Monthly Nighttime Power Runups Report (85-06-AOB)
San Francisco International Airport -- Director's Report
Period : **July 2016**
Time of Day : From 10 pm through 7 am

Airline	Code	Number of Runups	Runups Per 1,000 Departures	Percentage of Runups
UNITED	UAL	7	1.2	33%
American Airlines	AAL	14	9.5	67%
Total		**21**		



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.

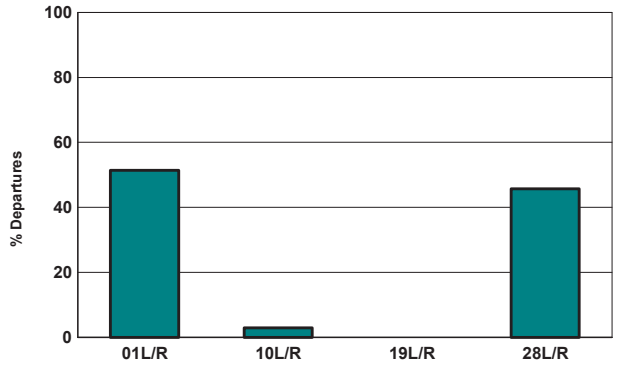
Late Night Preferential Runway Use Report
San Francisco International Airport -- Director's Report
Period: July 2016
Time of Day: Late Night (1 am to 6 am)

Runway Utilization (1 am to 6 am)

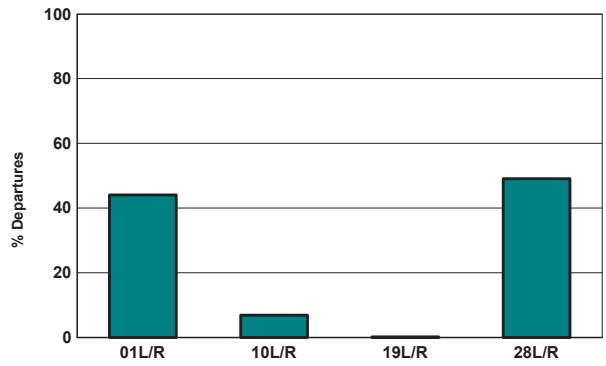
Monthly Jet Departures

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*YTD*
01L/R	155	149	168	166	167	216	335	-	-	-	-	-	1,356
10L/R	72	14	85	8	3	9	19	-	-	-	-	-	210
19L/R	5	-	-	-	-	-	-	-	-	-	-	-	5
28L/R	85	93	216	250	287	282	298	-	-	-	-	-	1,511
Total	**317**	**256**	**469**	**424**	**457**	**507**	**652**	**-**	**-**	**-**	**-**	**-**	**3,082**
01L/R	49%	58%	36%	39%	37%	43%	51%	0%	0%	0%	0%	0%	44%
10L/R	23%	5%	18%	2%	1%	2%	3%	0%	0%	0%	0%	0%	7%
19L/R	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28L/R	27%	36%	46%	59%	63%	56%	46%	0%	0%	0%	0%	0%	49%

Current Month (1 am to 6 am)



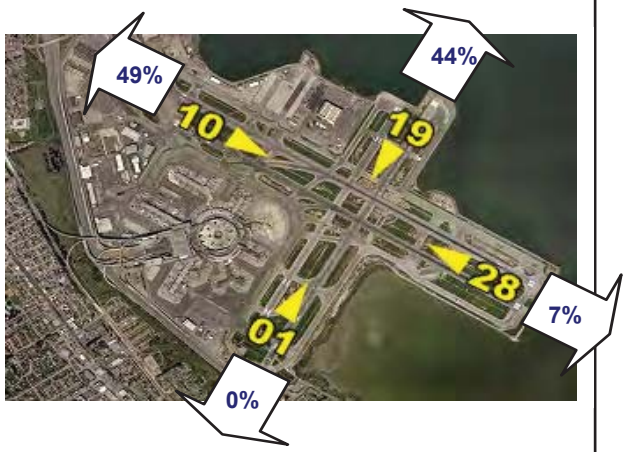
Year-to-Date (1am to 6 am)



Current Month (1 am to 6 am)

Numbers rounded to nearest whole percentages

Year-to-Date (1am to 6am)



Numbers rounded to nearest whole percentages

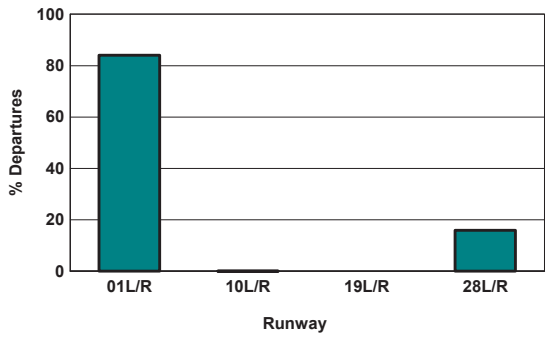
Air Carrier Runway Use Summary Report
San Francisco International Airport -- Director's Report
Period: July 2016
Time of Day : All Hours

Runway Utilization (All Hours)

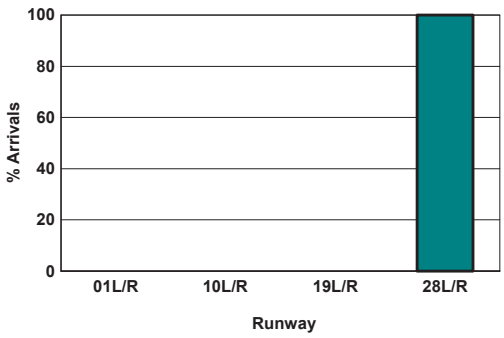
Source: Airport Noise Monitoring System

	Runway Utilization				Total
	01L/R	*10L/R*	*19L/R*	*28L/R*	
Total Monthly Operations					
Departures	15,872	20	0	3,003	18,895
Arrivals	0	0	0	18,768	18,768
Percentage Utilization					
Departures	84.0%	0.1%	0.0%	15.9%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%

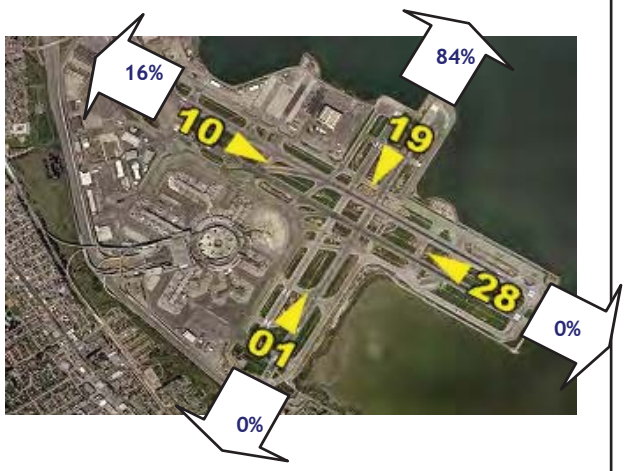
Departures (All Hours)



Arrivals (All Hours)



Percentage Departure Utilization



Numbers rounded to nearest whole percentages

Percentage Arrival Utilization

Numbers rounded to nearest whole percentages

Airport Director's Report

Presented at the October 13, 2016
Airport Community Roundtable Meeting

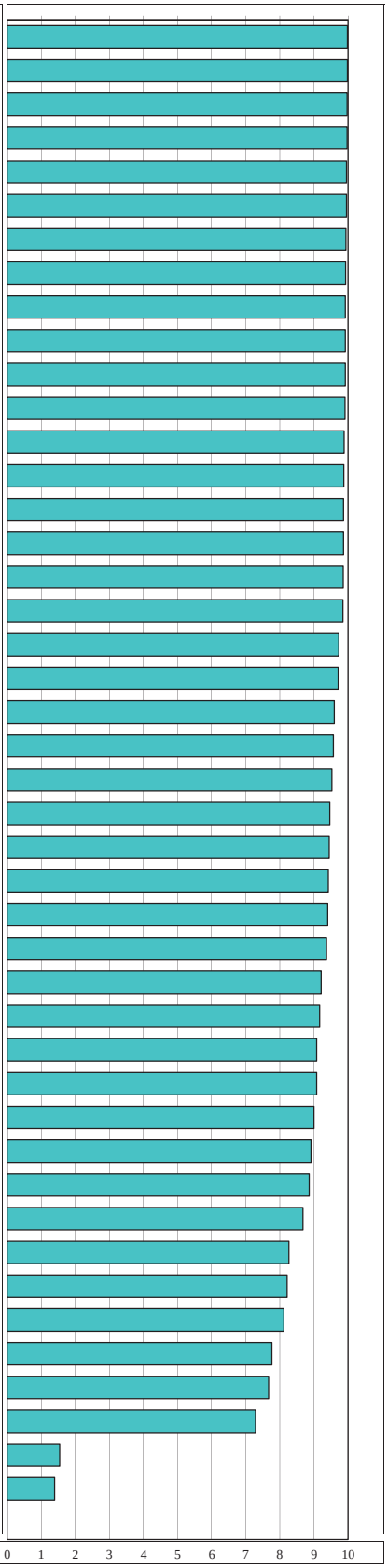
Aircraft Noise Abatement Office
August 2016

SFO San Francisco International Airport

Monthly Noise Exceedance Report
San Francisco International Airport -- Director's Report
Period: **August 2016**

Airline		Noise Exceedances: *Total Noise Exceedances*	*Total Operations per Month*	*Exceedances per 1,000 Operations*	*Score*
NETJETS	EJA	2	448	4	*9.98*
SkyWest	SKW	41	6,356	6	*9.98*
AIRFRANCE	AFR	1	124	8	*9.97*
BRITISH AIRWAYS	BAW	1	123	8	*9.97*
KLM Royal Dutch Airlines	KLM	1	79	13	*9.95*
Virgin america	VRD	48	3,763	13	*9.95*
suncountry airlines	SCX	3	162	19	*9.93*
AIR CANADA	ACA	16	768	21	*9.93*
DELTA	DAL	59	2,736	22	*9.92*
Compass Airlines	CPZ	20	913	22	*9.92*
WOW	WOW	1	44	23	*9.92*
Southwest	SWA	72	2,813	26	*9.91*
中国南方航空	CSN	2	62	32	*9.88*
American Airlines	AAL	101	2,907	35	*9.88*
FRONTIER AIRLINES	FFT	19	508	37	*9.87*
Alaska	ASA	41	1,093	38	*9.87*
UNITED	UAL	482	12,535	38	*9.86*
jetBlue	JBU	41	1,004	41	*9.85*
XL Airways	XLF	2	26	77	*9.73*
ETIHAD	ETD	5	62	81	*9.71*
HAWAIIAN AIRLINES	HAL	14	123	114	*9.59*
WESTJET	WJA	15	124	121	*9.57*
volaris	VOI	14	106	132	*9.53*
NCA Nippon Cargo Airlines	NCA	8	53	151	*9.46*
Avianca	TAI	15	97	155	*9.45*
AEROMEXICO.	AMX	31	192	161	*9.42*
EASTERN	EAL	1	6	167	*9.40*
AIR CHINA	CCA	17	96	177	*9.37*
FedEx	FDX	20	90	222	*9.21*
SINGAPORE AIRLINES	SIA	29	124	234	*9.16*
CHINA AIRLINES	CAL	27	105	257	*9.08*
CopaAirlines	CMP	16	62	258	*9.08*
ATLAS AIR	GTI	26	93	280	*9.00*
ASIANA AIRLINES	AAR	22	72	306	*8.91*
AIR INDIA	AIC	8	25	320	*8.86*
JAPAN AIRLINES	JAL	23	62	371	*8.68*
EVA AIR	EVA	68	140	486	*8.27*
CATHAY PACIFIC	CPA	72	144	500	*8.21*
AIR NEW ZEALAND	ANZ	28	53	528	*8.11*
FIJI AIRWAYS	FJI	5	8	625	*7.77*
KOREAN AIR	KAL	81	124	653	*7.67*
Philippines	PAL	67	88	761	*7.28*
POLAR AIR CARGO	PAC	45	19	2,368	*1.54*
QANTAS	QFA	123	51	2,412	*1.39*
KALITTA AIR	CKS	70	25	2,800	*0.00*
TOTAL		**1,803**	**38,608**	**15,121**	

Noise Exceedance Quality Rating



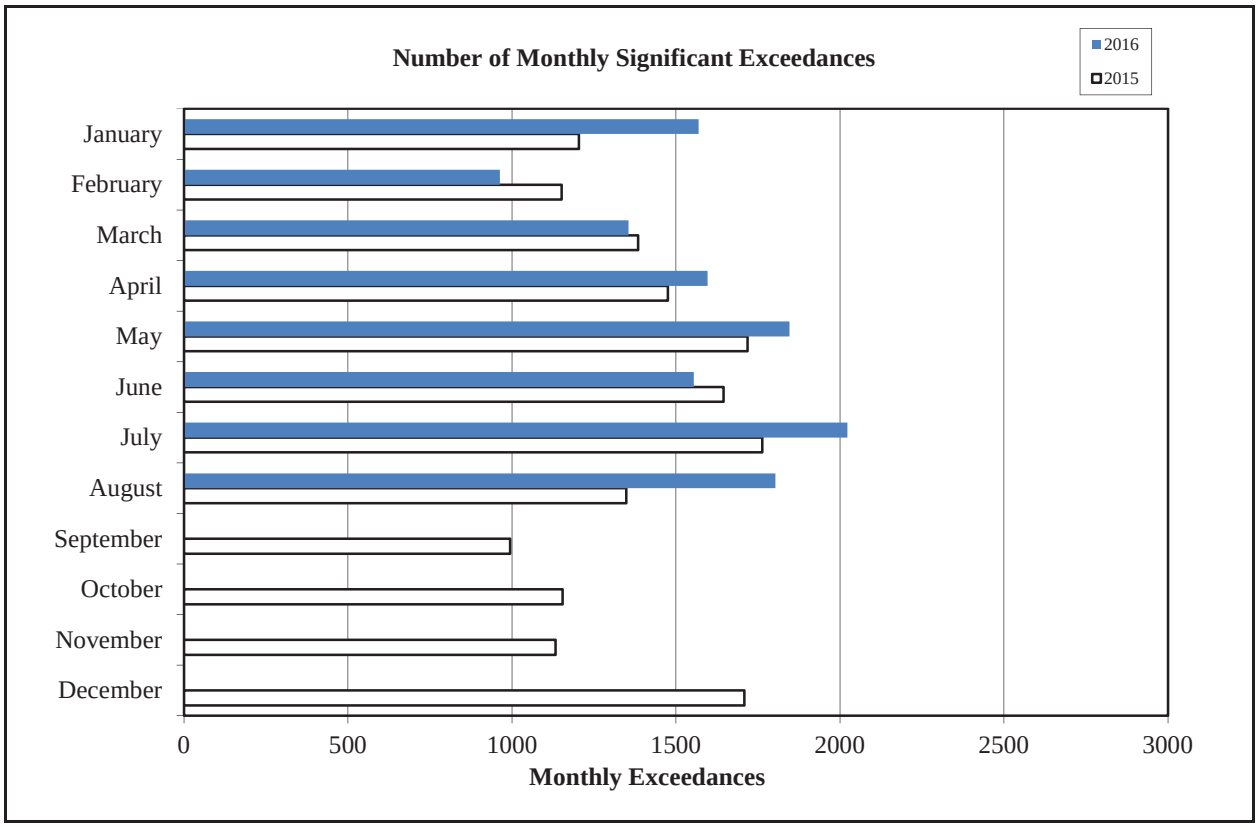
Source: SFO Noise Abatement Office

Historical Significant Exceedances Report
San Francisco International Airport -- Director's Report
Period: **August 2016**

San Francisco International Airport

Month	Number of Monthly Significant Exceedances 2012	2013	2014	2015	2016	Change from Last Year
January	1,378	1,428	1,184	1,204	1,569	**365**
February	1,581	1,176	1,141	1,151	963	**-188**
March	1,703	1,671	1,345	1,384	1,355	**-29**
April	1,870	1,910*	1,362	1,475	1,596	**121**
May	1,912	1,859*	1,515	1,718	1,846	**128**
June	2,355	1,915	1,740	1,645	1,554	**-91**
July	2,621	1,647	1,619	1,763***	2,023	**260**
August	1,823	1,638**	1,460	1,348	1,803	**455**
September	1,464	1,352	1,111	994		**0**
October	1,689	1,277	1,055	1,154		**0**
November	1,421	1,262	1,245	1,133		**0**
December	1,439	1,160	1,670	1,708		**0**
Annual Total	21,256	18,295	16,447	16,677	12,709	
Year to Date Trend	**21,256**	**18,295**	**16,447**	**16,677**	**12,709**	**1021**

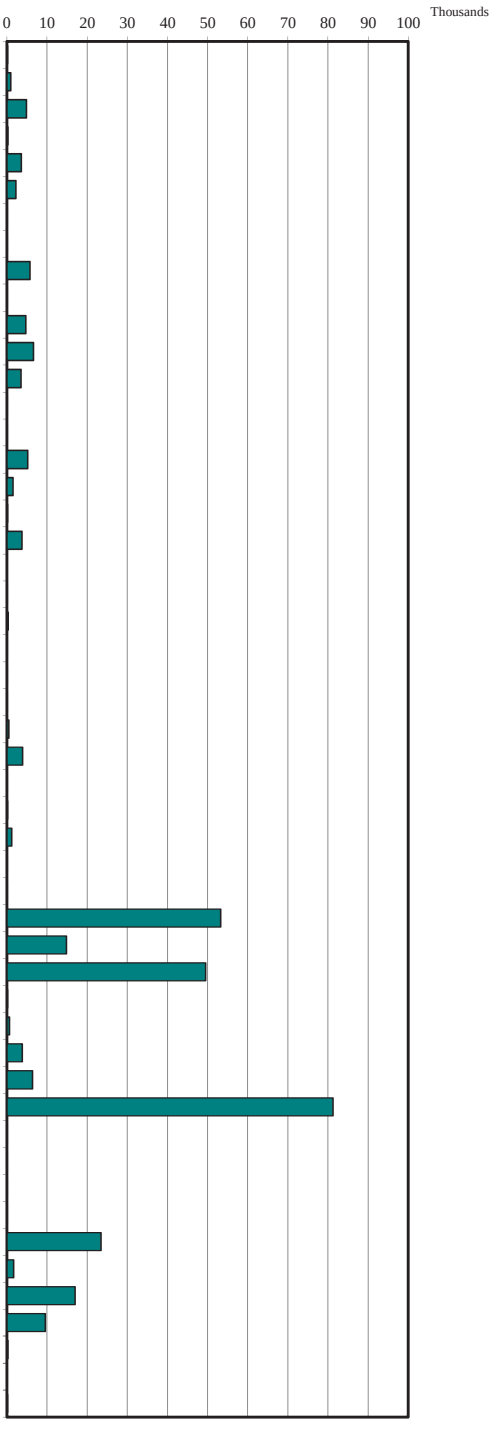
* Revised with correct amount of exceedance - 8/5/13
** No data available from Site 7, August 1-26
***No data available from Site 2 starting July 17



Monthly Calls by Community

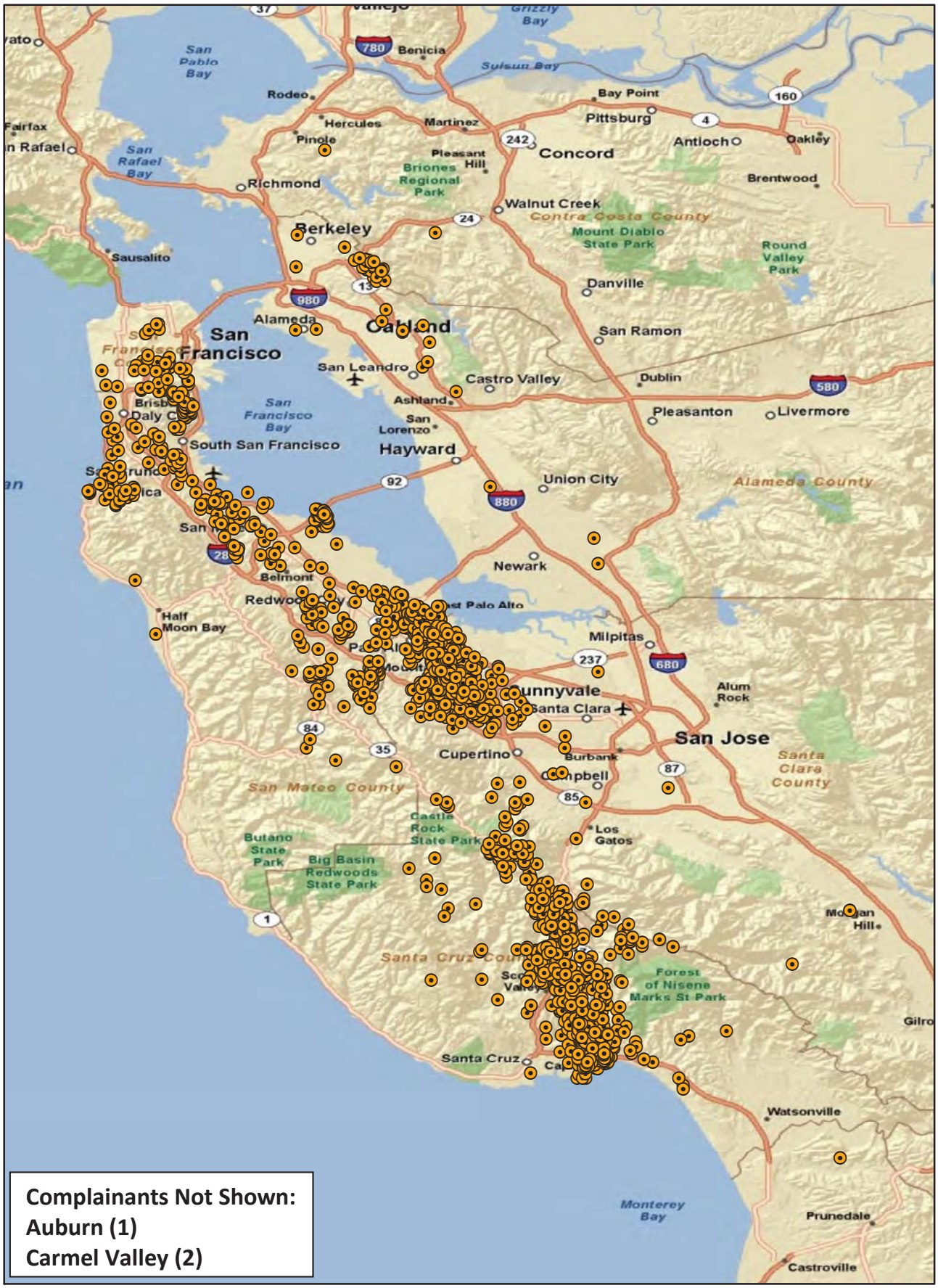
Source: Airport Noise Monitoring System

Community	Total Complaints	Total Number of Complainants
Roundtable Communities		
Atherton	123	6
Belmont	975	7
Brisbane	4,839	46
Burlingame	227	16
Daly City	3,604	13
Foster City	2,211	30
Half Moon Bay	2	2
Hillsborough	88	10
Menlo Park	5,718	43
Millbrae	8	4
Pacifica	4,742	47
Portola Valley	6,630	64
Redwood City	3,534	30
San Bruno	27	13
San Carlos	16	4
San Francisco	5,169	44
San Mateo	1,525	24
South San Francisco	124	14
Woodside	3,714	39
Other Communities		
Alameda	11	2
Aptos	285	11
Auburn	1	1
Ben Lomond	11	2
Berkeley	19	2
Boulder Creek	505	8
Capitola	3,868	39
Carmel Valley	28	2
East Palo Alto	157	6
Felton	1,184	12
Fremont	64	2
La Selva Beach	70	2
Los Altos	53,295	342
Los Altos Hills	14,855	59
Los Gatos	49,518	227
Moraga	148	1
Morgan Hill	654	3
Mountain View	3,789	50
Oakland	6,386	29
Palo Alto	81,265	385
Richmond	115	1
San Jose	4	3
San Leandro	9	3
Santa Clara	40	2
Santa Cruz	23,440	157
Saratoga	1,702	21
Scotts Valley	16,946	120
Soquel	9,544	116
Sunnyvale	203	11
Union City	1	1
Watsonville	197	2
	311,590	**2,078**



"Our software vendor's address validation relies on USPS-provided ZIP code look up table and USPS-specified 'default city' values."

Monthly Noise Complainant Summary Map August 2016

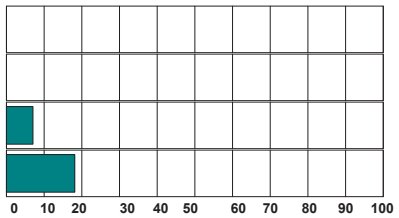


"Our software vendor's address validation relies on USPS-provided ZIP code look-up table and the USPS-specified 'default city' values"

Complainant Location

Monthly Nighttime Power Runups Report (85-06-AOB)
San Francisco International Airport -- Director's Report
Period : **August 2016**
Time of Day : From 10 pm through 7 am

Airline	Code	Number of Runups	Runups Per 1,000 Departures	Percentage of Runups
Compass Airlines	CPZ	1	2.2	3%
DELTA	DAL	1	0.7	3%
UNITED	UAL	8	1.3	28%
American Airlines	AAL	19	13.1	66%
Total		**29**		



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.

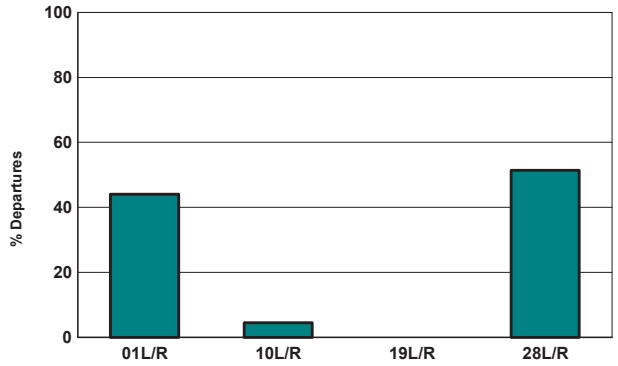
Late Night Preferential Runway Use Report
San Francisco International Airport -- Director's Report
Period: August 2016
Time of Day: Late Night (1 am to 6 am)

Runway Utilization (1 am to 6 am)

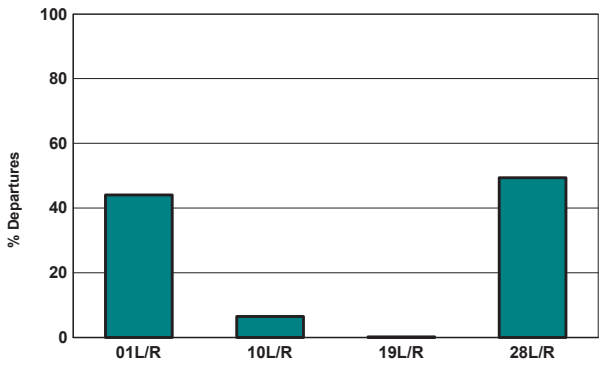
Monthly Jet Departures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	155	149	168	166	167	216	335	265	-	-	-	-	1,621
10L/R	72	14	85	8	3	9	19	27	-	-	-	-	237
19L/R	5	-	-	-	-	-	-	-	-	-	-	-	5
28L/R	85	93	216	250	287	282	298	309	-	-	-	-	1,820
Total	**317**	**256**	**469**	**424**	**457**	**507**	**652**	**601**	**-**	**-**	**-**	**-**	**3,683**
01L/R	49%	58%	36%	39%	37%	43%	51%	44%	0%	0%	0%	0%	44%
10L/R	23%	5%	18%	2%	1%	2%	3%	4%	0%	0%	0%	0%	6%
19L/R	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28L/R	27%	36%	46%	59%	63%	56%	46%	51%	0%	0%	0%	0%	49%

Current Month (1 am to 6 am)



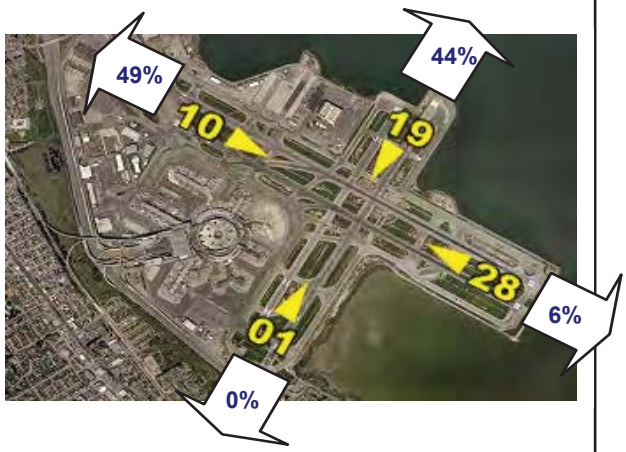
Year-to-Date (1am to 6 am)



Current Month (1 am to 6 am)

Numbers rounded to nearest whole percentages

Year-to-Date (1am to 6am)



Numbers rounded to nearest whole percentages

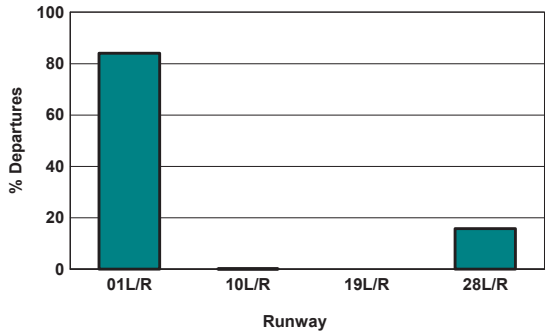
Air Carrier Runway Use Summary Report
San Francisco International Airport -- Director's Report
Period: August 2016
Time of Day : All Hours

Runway Utilization (All Hours)

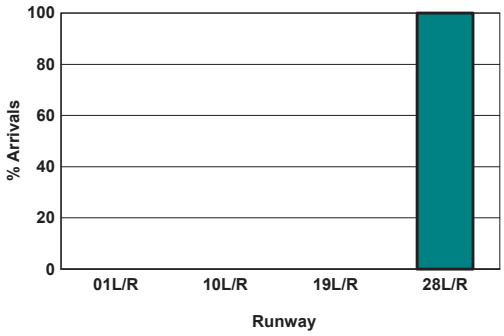
Source: Airport Noise Monitoring System

	Runway Utilization				Total
	01L/R	*10L/R*	*19L/R*	*28L/R*	
Total Monthly Operations					
Departures	15,811	31	0	2,968	18,810
Arrivals	0	0	0	18,124	18,124
Percentage Utilization					
Departures	84.1%	0.2%	0.0%	15.8%	100%
Arrivals	0.0%	0.0%	0.0%	100.0%	100%

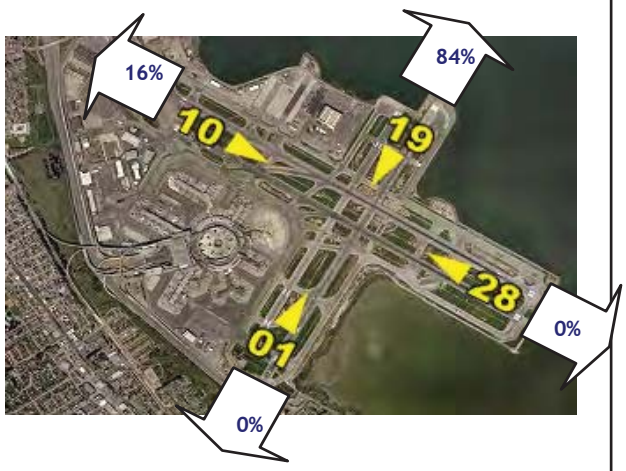
Departures (All Hours)



Arrivals (All Hours)



Percentage Departure Utilization



Numbers rounded to nearest whole percentages

Percentage Arrival Utilization

Numbers rounded to nearest whole percentages

Airport Director's Report

Presented at the November 2, 2016
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
September 2016

SFO San Francisco International Airport

Monthly Noise Exceedance Report
San Francisco International Airport -- Director's Report
Period: **September 2016**

Airline		Noise Exceedances: *Total Noise Exceedances*	*Total Operations per Month*	*Exceedances per 1,000 Operations*	***Score***
SkyWest	SKW	29	6,303	5	***9.98***
Air Canada	ACA	5	669	7	***9.97***
Lufthansa	DLH	1	119	8	***9.96***
British Airways	BAW	1	118	8	***9.96***
KLM Royal Dutch Airlines	KLM	1	74	14	***9.94***
Compass Airlines	CPZ	13	948	14	***9.94***
Delta	DAL	28	1,973	14	***9.94***
Virgin America	VRD	51	3,434	15	***9.94***
China Eastern	CES	1	62	16	***9.93***
Southwest	SWA	60	2,735	22	***9.91***
Frontier Airlines	FFT	11	483	23	***9.90***
Volaris	VOI	3	110	27	***9.88***
American Airlines	AAL	81	2,661	30	***9.87***
ANA	ANA	2	59	34	***9.85***
United	UAL	385	10,915	35	***9.85***
Alaska	ASA	37	1,033	36	***9.85***
jetBlue	JBU	39	964	40	***9.83***
WestJet	WJA	6	120	50	***9.79***
Etihad	ETD	4	61	66	***9.72***
Avianca	TAI	7	83	84	***9.64***
AeroMexico	AMX	16	171	94	***9.60***
Hawaiian Airlines	HAL	13	117	111	***9.52***
FedEx	FDX	11	84	131	***9.44***
Air China	CCA	13	94	138	***9.41***
CopaAirlines	CMP	10	61	164	***9.30***
Atlas Air	GTI	19	88	216	***9.07***
Singapore Airlines	SIA	28	118	237	***8.98***
Nippon Cargo Airlines	NCA	13	52	250	***8.93***
China Airlines	CAL	32	100	320	***8.63***
Japan Airlines	JAL	20	60	333	***8.57***
Cathay Pacific	CPA	47	135	348	***8.51***
Air New Zealand	ANZ	23	60	383	***8.36***
Air India	AIC	10	25	400	***8.29***
EVA Air	EVA	54	124	435	***8.13***
Philippines	PAL	38	60	633	***7.29***
Korean Air	KAL	84	119	706	***6.97***
Asiana Airlines	AAR	92	108	852	***6.35***
Polar Air Cargo	PAC	2	2	1,000	***5.71***
Kalitta Air	CKS	8	6	1,333	***4.29***
Qantas	QFA	119	51	2,333	***0.00***
TOTAL		**1,417**	**34,559**	**10,968**	

Noise Exceedance Quality Rating

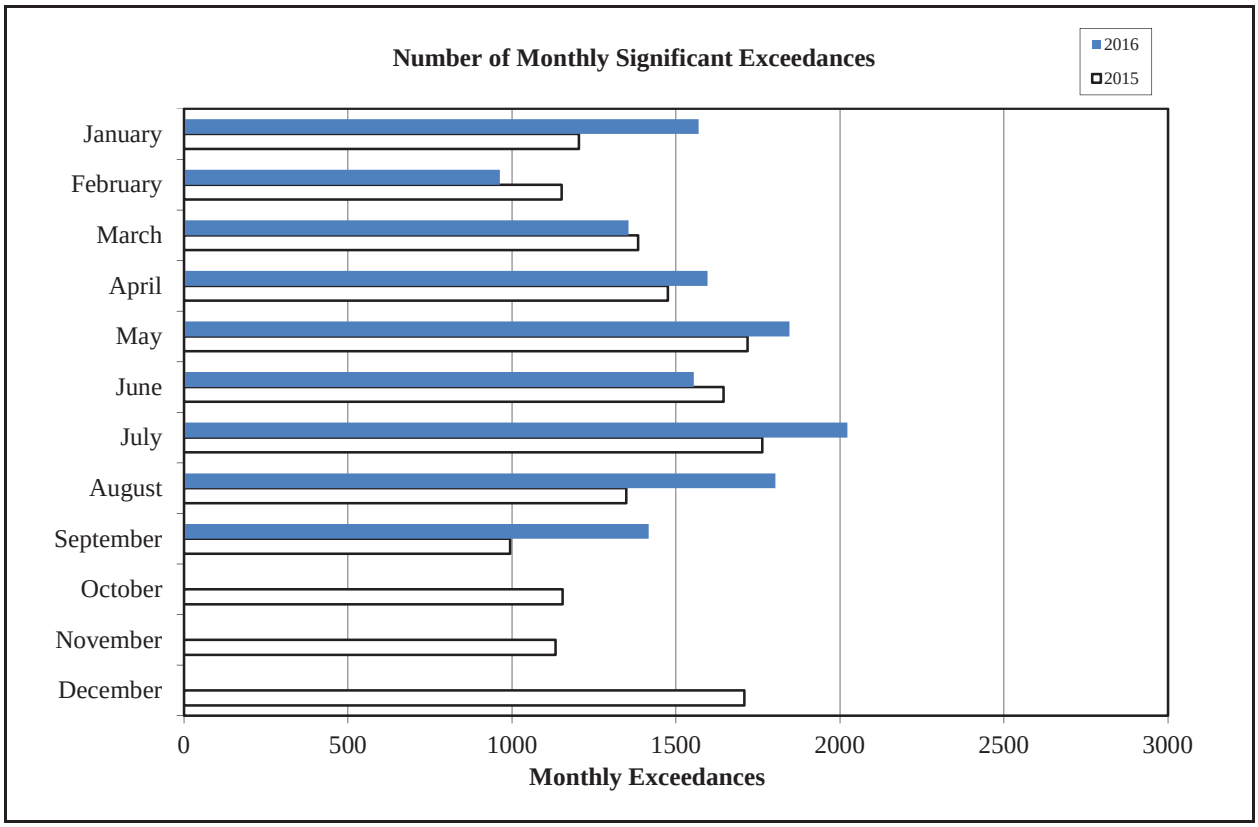
Source: SFO Noise Abatement Office

Historical Significant Exceedances Report
San Francisco International Airport -- Director's Report
Period: **September 2016**

San Francisco International Airport

Month	Number of Monthly Significant Exceedances 2012	2013	2014	2015	2016	Change from Last Year
January	1,378	1,428	1,184	1,204	1,569	**365**
February	1,581	1,176	1,141	1,151	963	**-188**
March	1,703	1,671	1,345	1,384	1,355	**-29**
April	1,870	1,910*	1,362	1,475	1,596	**121**
May	1,912	1,859*	1,515	1,718	1,846	**128**
June	2,355	1,915	1,740	1,645	1,554	**-91**
July	2,621	1,647	1,619	1,763***	2,023	**260**
August	1,823	1,638**	1,460	1,348	1,803	**455**
September	1,464	1,352	1,111	994	1,417	**423**
October	1,689	1,277	1,055	1,154		**0**
November	1,421	1,262	1,245	1,133		**0**
December	1,439	1,160	1,670	1,708		**0**
Annual Total	21,256	18,295	16,447	16,677	14,126	
Year to Date Trend	**21,256**	**18,295**	**16,447**	**16,677**	**14,126**	**1444**

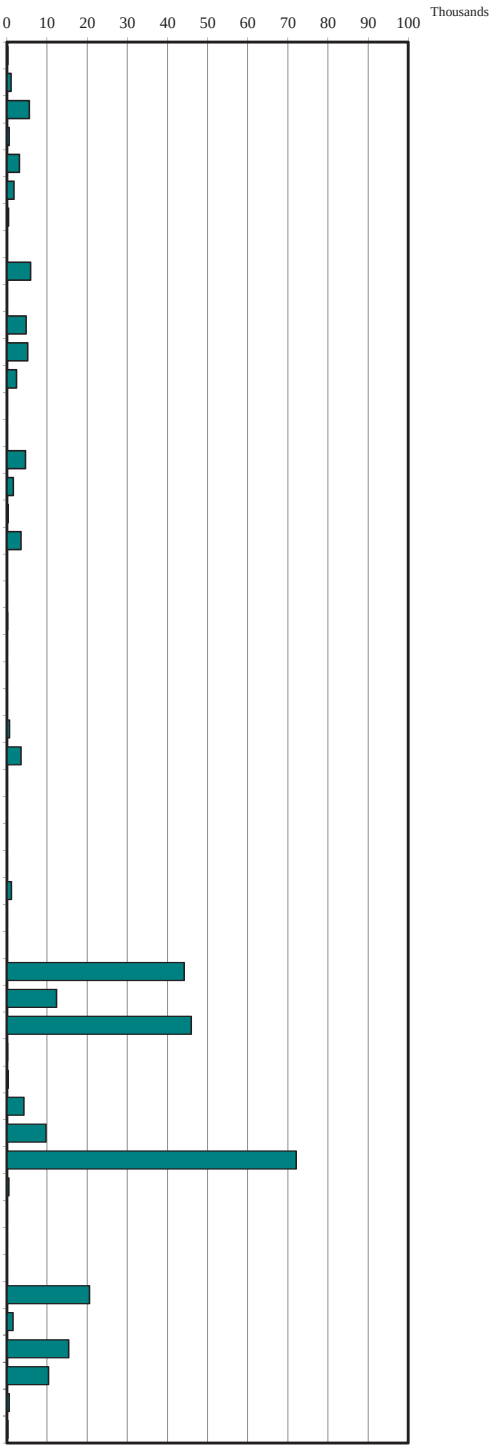
* Revised with correct amount of exceedance - 8/5/13
** No data available from Site 7, August 1-26
***No data available from Site 2 starting July 17



Monthly Calls by Community

Source: Airport Noise Monitoring System

Community	Total Complaints	Total Number of Complainants
Roundtable Communities		
Atherton	241	7
Belmont	999	11
Brisbane	5,619	55
Burlingame	537	16
Daly City	3,098	9
Foster City	1,738	27
Half Moon Bay	374	6
Hillsborough	113	11
Menlo Park	5,932	47
Millbrae	10	5
Pacifica	4,778	53
Portola Valley	5,174	63
Redwood City	2,354	35
San Bruno	5	4
San Carlos	17	5
San Francisco	4,650	47
San Mateo	1,566	23
South San Francisco	319	17
Woodside	3,483	30
Other Communities		
Alameda	16	2
Aptos	172	8
Belvedere-Tiburon	1	1
Ben Lomond	14	2
Berkeley	2	1
Boulder Creek	611	8
Capitola	3,471	37
Carmel Valley	35	1
Cupertino	1	1
East Palo Alto	28	4
El Sobrante	6	1
Felton	1,106	10
Fremont	47	2
La Selva Beach	28	2
Los Altos	44,204	337
Los Altos Hills	12,385	56
Los Gatos	45,917	222
Moraga	177	1
Morgan Hill	332	3
Mountain View	4,249	42
Oakland	9,757	41
Palo Alto	72,110	391
Richmond	485	1
San Jose	46	2
San Leandro	4	2
Santa Clara	2	1
Santa Cruz	20,612	158
Saratoga	1,517	18
Scotts Valley	15,382	113
Soquel	10,356	115
Sunnyvale	565	39
Watsonville	202	2
	284,847	**2,095**



"Our software vendor's address validation relies on USPS-provided ZIP code look up table and USPS-specified 'default city' values."

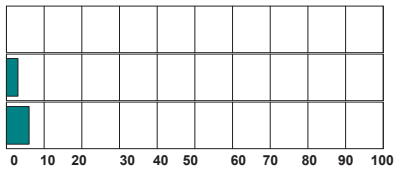
Monthly Noise Complainant Summary Map September 2016

"Our software vendor's address validation relies on USPS-provided ZIP code look-up table and the USPS-specified 'default city' values"

Caller Location

Monthly Nighttime Power Runups Report (85-06-AOB)
San Francisco International Airport -- Director's Report
Period : **September 2016**
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	8%
UNITED	UAL	4	0.7	33%
American Airlines	AAL	7	5.2	58%
Total		**12**		



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.

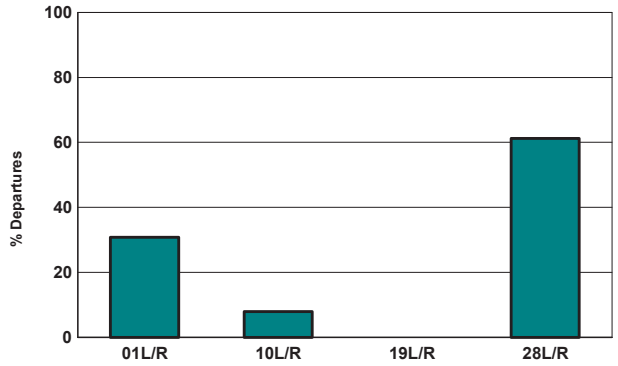
Late Night Preferential Runway Use Report
San Francisco International Airport -- Director's Report
Period: September 2016
Time of Day: Late Night (1 am to 6 am)

Runway Utilization (1 am to 6 am)

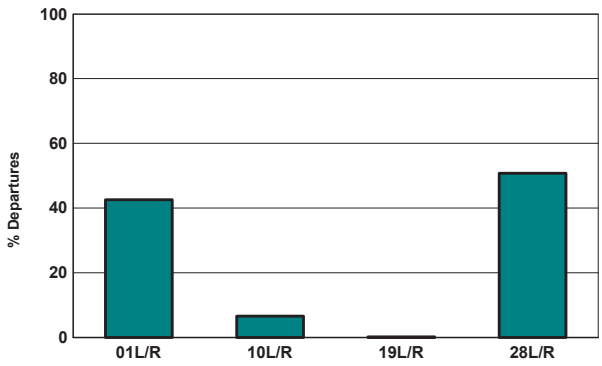
Monthly Jet Departures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
01L/R	155	149	168	166	167	216	335	265	140	-	-	-	1,761
10L/R	72	14	85	8	3	9	19	27	36	-	-	-	273
19L/R	5	-	-	-	-	-	-	-	-	-	-	-	5
28L/R	85	93	216	250	287	282	298	309	278	-	-	-	2,098
Total	**317**	**256**	**469**	**424**	**457**	**507**	**652**	**601**	**454**	**-**	**-**	**-**	**4,137**
01L/R	49%	58%	36%	39%	37%	43%	51%	44%	31%	0%	0%	0%	43%
10L/R	23%	5%	18%	2%	1%	2%	3%	4%	8%	0%	0%	0%	7%
19L/R	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28L/R	27%	36%	46%	59%	63%	56%	46%	51%	61%	0%	0%	0%	51%

Current Month (1 am to 6 am)



Year-to-Date (1am to 6 am)



Current Month (1 am to 6 am)

Numbers rounded to nearest whole percentages

Year-to-Date (1am to 6am)

Numbers rounded to nearest whole percentages

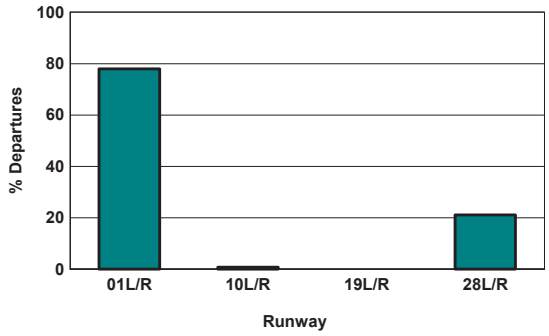
Air Carrier Runway Use Summary Report
San Francisco International Airport -- Director's Report
Period: September 2016
Time of Day : All Hours

Runway Utilization (All Hours)

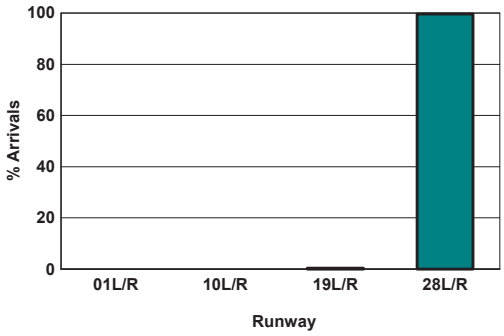
Source: Airport Noise Monitoring System

	Runway Utilization				Total
	01L/R	*10L/R*	*19L/R*	*28L/R*	
Total Monthly Operations					
Departures	13,117	136	0	3,562	16,815
Arrivals	0	0	55	16,780	16,835
Percentage Utilization					
Departures	78.0%	0.8%	0.0%	21.2%	100%
Arrivals	0.0%	0.0%	0.3%	99.7%	100%

Departures (All Hours)



Arrivals (All Hours)



Percentage Departure Utilization

Numbers rounded to nearest whole percentages

Percentage Arrival Utilization

Numbers rounded to nearest whole percentages

SFO Airport/Community Roundtable
Meeting No. 302 Overview
Wednesday, August 3, 2016

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

Roundtable Chairperson, Cliff Lentz, called the Regular Meeting of the SFO Airport / Community Roundtable to order, at approximately 7:08 p.m., in the David Chetcuti Community Room at the Millbrae City Hall. James A. Castañeda, AICP, Roundtable Coordinator, called the roll. A quorum (at least 12 Regular Members) was present as follows:

REGULAR MEMBERS PRESENT
Ivar Satero – City and County of San Francisco Airport Commission
David Takashima – City and County of San Francisco Mayor's Office
Dave Pine – County of San Mateo Board of Supervisors
Elizabeth Lewis – Town of Atherton
Douglas Kim – City of Belmont
Cliff Lentz – City of Brisbane
Ricardo Ortiz – City of Burlingame
Sam Hindi – City of Foster City
Alvin Royse – Town of Hillsborough
Peter Ohtaki – City of Menlo Park
Ann Schneider – City of Millbrae
Sue Digre – City of Pacifica
Ann Wengert – Town of Portola Valley
Ken Ibarra – City of San Bruno
David Lim – City of San Mateo
Mark Addiego – City of South San Francisco

REGULAR MEMBERS ABSENT
City and County of San Francisco Board of Supervisors (Vacant)
C/CAG Airport Land Use Committee (ALUC)
City of Daly City
City of Half Moon Bay
City of Redwood City
City of San Carlos
Town of Woodside

ROUNDTABLE STAFF
James A. Castañeda, AICP – Roundtable Coordinator
Cindy Gibbs – Roundtable Technical Support (Consultant)

SAN FRANCISCO INTERNATIONAL AIRPORT STAFF
Bert Ganoung, Noise Abatement Manager
John Hampel, Noise Abatement Specialist
Nastasja Gjorek, Noise Abatement Specialist
Anthony Carpeneti, Noise Abatement Public Service Aide (assistant to professional)
Tyler Hernandez, Noise Abatement Intern

2. Public Comments on Items Not on the Agenda

A total of 4 members of the public spoke to express concern over aircraft noise over their communities. The communities represented were Pacifica, San Francisco, South San Francisco and San Mateo. San Francisco resident Charlie Wambeck expressed concerns for overflights in San Francisco, and the objectives of the community group S.C.R.E.A.M. to reduce aircraft noise. Pacifica resident Ahna Dominski raised the issue of noise impacts below 60dB not being included in the reports from the Noise Abatement Office, and expressed consider with the ongoing noise over Pacifica and lack of refuge from overflights in her community. William Faber advocated for additional assistance to those victimized by noise of aircraft noise flight. Finally, Glenn Morse of United Airlines announced that United will begin installing wake vortex generators on all their A319 and A320 aircraft. Mr. Morse and Noise Abatement Manager Bert Ganoung outline the benefits of such and the reduced impacts to those communities that receive arriving aircraft overflights.

CONSENT AGENDA

3. Review of Airport Director's Reports for November 2015, December 2015, January 2016, February 2016, March 2016, April 2016, May 2016, and June 2016
4. Review of Roundtable Regular Meeting Overview for April 6, 2016

ACTION: Elizabeth Lewis **MOVED** approval of the Consent Agenda. The motion was seconded by Ann Schneider and **CARRIED**, unanimously.

REGULAR AGENDA

5. Review of SFO FlyQuiet Report for Q2 2016

Bert Ganoung, Noise Abatement Manager, provided an overview of the second quarter Fly Quiet report for 2016.

DISCUSSION: City of Foster City representative Sam Hindi expressed concern over the recent increase in noise over Foster City, and indicated it being the worst experienced in over 10 years, and did not find "nothing has changed" as an acceptable answer. Mr. Ganoung responded that in the Noise Abatement Office's investigation, the aircraft were where they were supposed to be, but will continue to investigate other factors (such as weather) that have contributed to the additional noise experienced in Foster City. Millbrae representative Ann Schneider asked that back blast be considered a Fly Quiet category to be measured. Mr. Ganoung provided a brief background on the numerous studies done in the past in the industry regarding back blast measurements, and some of the challenges in those studies in proposing mitigations. Mr. Ganoung indicated that it'll be looked into, but perhaps the Fly Quiet quarterly reports may not be the place to include back blast noise measurements, and will investigate where it would be best placed.

6. Airport Director's Comments

Chairperson Lentz introduced Ivar Satero as the new Airport Director for San Francisco International Airport. Mr. Satero provided a brief overview of his experience working at SFO, and expressed that he is fully committee in continuing the airport's work with the Roundtable. Vice-chair and Atherton representative Elizabeth Lewis commended SFO ongoing support of the Roundtable.

7. FAA Subject Matter Presentation

Mindy Wright and Steve Karnes, staff with the FAA Western Service Area, provided an overview of the status of the initiative and discussion of the various challenges in with the bay area air space. A brief view was presented to illustrate what air traffic controls view on their scopes on when preforming their duties. Ms. Wright and Mr. Karnes indicated they look forward to reviewing the Roundtable's responses to the initiative.

DISCUSSION: Members of the audience asked if the presentation provided could be made available online. Roundtable Coordinator James Castañeda indicated it could be posted soon.

8. Update, Roundtable Response to FAA Initiative Results to Address Noise

Roundtable Technical Consultant Cindy Gibbs provided an overview of the current draft of the Roundtable's response to the FAA's Initiative that the Technical Working Group has been working on. Ms. Gibbs provided details of the attachments to the response document, which are designed to provide an in-depth analysis of various procedures and help illustrate the potential solutions that would help reduce noise.

DISCUSSION: Vice-chair Lewis inquired how raising the altitude of the SSITK waypoint would help communities. Ms. Gibbs responded that the raised altitude would help by having aircraft higher as they fly over the peninsula. Millbrae representative Ann Schneider asked that if the suggestions being made would add capacity and increase the number of airplanes taking off at night on the 01s (that impact Millbrae and Burlingame with back-blast noise). Ms. Gibbs indicated that it wasn't the case, and the suggestion were to ask for changes after planes take off from the RYW 01s but not increase the utilization of RWY 01s. Ms. Schneider expressed concern regarding suggestions contained in the Roundtable's response that could potentially add additional impact as a result of additional back-blast noise.

Brisbane resident Leila Aziz commented that the Airport Capacity Act of 1990 disenfranchise residences, and should be discussed as a long term solution to aircraft noise impacts. Pacifica resident Ray Ramos expressed support for aircraft to be routed more over the ocean as a solution that should be strongly considered. He also indicated that if a workshop is to be conducted between the Roundtable and the FAA that it should be open to the public. Brisbane resident Patrick Tainter remarked that the response is an excellent step forward, but asked to have some areas of the response reviewed further. Leslie Ransbottom, representing Save Our Skies East Bay, expressed that Oakland should have representation on the Roundtable in order to coordinate better the responses being proposed, and considerate of communities in the East Bay that would be impacted as part of recommendation made by the Roundtable.

Pacifica representative Sue Digre asked the Roundtable to consider placing on the agenda discussion of the Airport Capacity Act of 1990 in order to lobby for change that would address noise impacts.

Chairperson Lentz directed the Roundtable's attention to the draft letter to the FAA contained in the packet asking for a workshop to work with Roundtable staff to discuss in depth some of the ideas proposed thus far.

ACTION: Sue Digre **MOVED** approval of the draft letter to the FAA requesting a workshop. The motion was seconded by Ann Schneider and **CARRIED**, unanimously.

OTHER MATTERS

9. Airport Noise Briefing

No briefing was provided.

10. Member Communications / Announcements

DISCUSSION: Roundtable Coordinator James Castañeda announced the next Roundtable regular meeting scheduled for October 5, 2016 will need to be rescheduled due to the California League of Cities Conference. A new date will be investigated and an update provided soon.

12. Adjourn

The meeting was adjourned at 9:35 p.m.

Roundtable meeting overviews are considered draft until approved by the Roundtable at a regular meeting. Due to technical difficulties during the meeting, an audio recording of this meeting is not available.

REGULAR AGENDA

Regular Meeting # 303
November 2, 2016

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Fly Quiet Report

Presented at the November 2, 2016
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
Third Quarter 2016

SFO San Francisco International Airport

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.

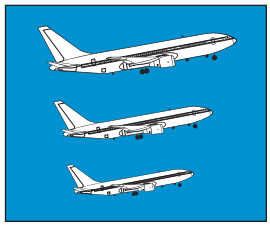
Program Reports

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.

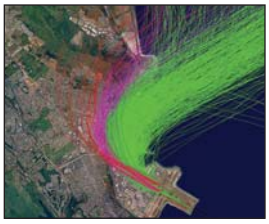
Noise Exceedance

Eliminating high-level noise events is a long-standing goal of the Airport and the Airport Community Roundtable. 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 nighttime noise—especially sleep disturbance— is a key goal of SFO's aircraft noise abatement program.



Shoreline Departure Quality

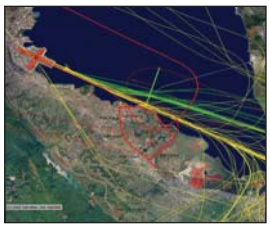
Aircraft departing SFO using Runways 28L and 28R are also considered by the Fly Quiet grading system whenever they use the Shoreline Departure Procedure. This predominately VFR (visual flight rules) departure steers aircraft to the northeast shortly after takeoff in an attempt to keep aircraft and aircraft 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 nighttime 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.

Revised date: 5/15/09

Airline Fly Quiet Summary Report - 3rd Quarter 2016

July 1 to September 30, 2016

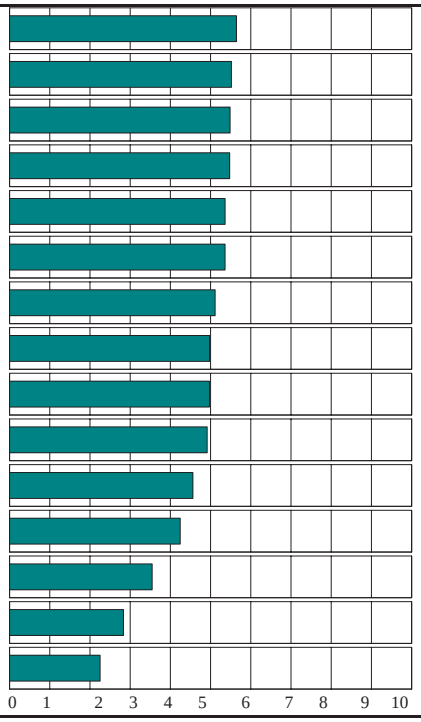
Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline	Departures Gap	Arrivals Foster City	Final Score	Airline Fly Quiet Rating
virgin atlantic	VIR	8.99	9.96	-	-	6.51	-	8.49	
Compass Airlines	CPZ	10.00	9.92	-	10.00	5.51	5.00	8.09	
Lufthansa	DLH	9.09	9.98	-	7.50	5.63	-	8.05	
sun country airlines	SCX	5.82	9.94	3.33	10.00	-	10.00	7.82	
ANA	ANA	7.15	9.93	-	-	5.99	-	7.69	
AIR INDIA	AIC	7.15	8.60	-	-	7.19	-	7.64	
AIRFRANCE	AFR	8.36	9.89	-	-	4.64	-	7.63	
Emirates	UAE	10.00	10.00	-	-	2.83	-	7.61	
WESTJET	WJA	5.82	9.59	-	10.00	-	5.00	7.60	
Scandinavian Airlines	SAS	8.17	9.98	-	-	4.47	-	7.54	
Alaska	ASA	5.35	9.87	10.00	9.51	5.00	4.69	7.40	
ETIHAD	ETD	7.15	9.76	-	-	5.26	-	7.39	
SWISS	SWR	8.17	9.96	-	-	3.82	-	7.32	
BRITISH AIRWAYS	BAW	7.93	9.98	-	-	3.96	-	7.29	
SkyWest	SKW	10.00	9.97	3.33	9.82	4.73	4.85	7.12	
AIR CANADA	ACA	5.38	9.93	5.56	9.06	4.23	8.52	7.11	
FRONTIER AIRLINES	FFT	5.64	9.89	4.52	9.42	4.69	7.93	7.01	
Southwest	SWA	5.73	9.88	3.33	9.84	5.82	7.06	6.94	
DELTA	DAL	6.33	9.92	3.38	7.87	6.28	7.61	6.90	
WOW air	WOW	4.05	9.94	-	-	6.46	-	6.81	
Virgin America	VRD	4.96	9.94	-	9.37	3.44	6.28	6.80	
中國東方航空 CHINA EASTERN	CES	6.68	9.98	-	-	3.67	-	6.78	
XL Airways	XLF	4.05	9.82	-	5.00	7.89	-	6.69	
AIR NEW ZEALAND	ANZ	6.55	7.53	-	-	5.82	-	6.63	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	9.50	9.96	0.00	-	6.54	-	6.50	
FedEx	FDX	3.61	9.28	-	9.09	4.31	5.95	6.45	
TURKISH AIRLINES	THY	7.15	9.98	-	-	2.12	-	6.42	
jetBlue	JBU	4.79	9.85	3.33	7.66	4.77	7.83	6.37	
volaris	VOI	4.86	9.52	3.19	-	9.13	5.07	6.35	
AIR CHINA	CCA	9.23	9.52	0.29	-	6.26	-	6.33	
								6.29	SFO AVERAGE
ATLAS AIR	GTI	4.87	8.89	4.00	7.00	7.07	5.83	6.28	
UNITED	UAL	5.80	9.84	3.48	7.27	4.38	6.55	6.22	
AEROMEXICO	AMX	5.82	9.39	2.65	-	6.76	5.91	6.11	
CopaAirlines	CMP	5.82	9.16	-	-	3.25	-	6.08	
American Airlines	AAL	5.17	9.84	4.15	7.41	2.12	7.21	5.98	
KLM Royal Dutch Airlines	KLM	4.98	9.97	-	4.00	4.92	-	5.97	
NCA Nippon Cargo Airlines	NCA	10.00	9.08	0.00	-	5.59	5.00	5.93	
JAPAN AIRLINES	JAL	7.15	8.46	0.56	-	6.99	-	5.79	

Airline Fly Quiet Summary Report - 3rd Quarter 2016

July 1 to September 30, 2016

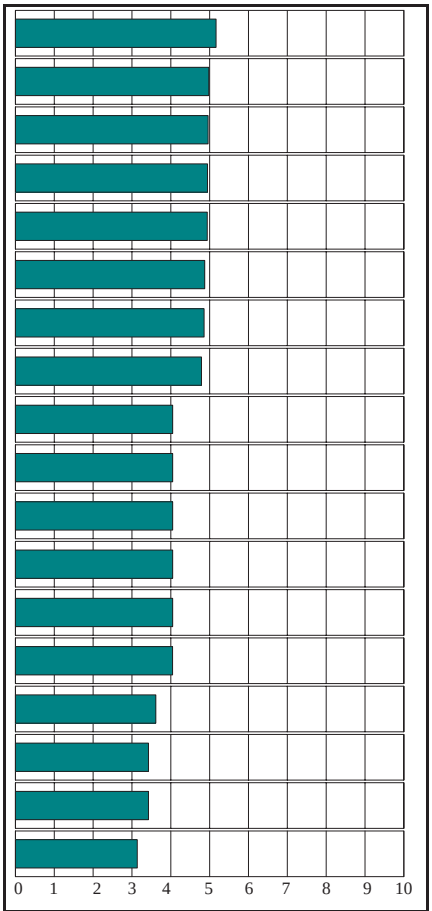
Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline	Departures Gap	Arrivals Foster City	Final Score
HAWAIIAN AIRLINES	HAL	4.05	9.49	-	-	4.04	5.00	5.64
KOREAN AIR	KAL	9.89	7.15	0.79	-	4.71	5.06	5.52
Avianca	TAI	4.94	9.44	3.08	-	4.80	5.16	5.49
ASIANA AIRLINES	AAR	4.95	7.33	1.82	-	8.14	5.14	5.47
Aer Lingus	EIN	4.05	10.00	-	-	2.03	-	5.36
CATHAY PACIFIC	CPA	7.15	8.12	0.09	-	6.45	5.00	5.36
airberlin	BER	4.05	9.97	-	5.00	1.44	-	5.11
EVA AIR	EVA	6.85	8.22	0.78	-	4.03	5.00	4.98
CHINA AIRLINES	CAL	5.64	8.76	0.57	-	4.89	5.00	4.97
SINGAPORE AIRLINES	SIA	7.15	8.86	0.34	-	3.23	5.00	4.92
Philippines	PAL	7.41	7.00	0.38	-	3.00	5.00	4.56
FIJI AIRWAYS	FJI	4.05	7.75	0.00	-	5.18	-	4.24
KALITTA AIR	CKS	3.14	0.12	0.72	10.00	1.92	5.37	3.55
POLAR AIR CARGO	PAC	3.43	0.32	2.50	-	2.92	5.00	2.83
QANTAS	QFA	3.43	0.00	0.00	-	5.58	-	2.25
SFO Average		**6.37**	**8.86**	**2.28**	**8.24**	**4.91**	**5.93**	**6.29**

Airline Fly Quiet Rating

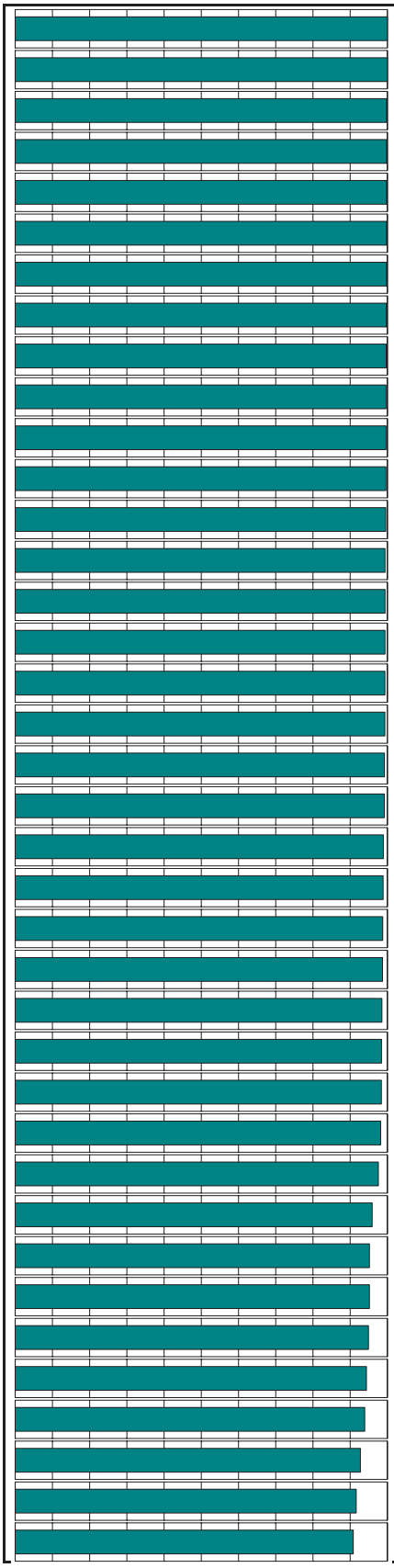


Airline		Nationwide Fleet Noise Quality Rating	San Francisco Average Daily Jet Operations	San Francisco Score	Fleet Noise Quality Rating
NCA	NCA	3.90	1	10.00	
Emirates	UAE	7.89	1	10.00	
Compass Airlines	CPZ	10.00	9	10.00	
SkyWest	SKW	10.00	82	10.00	
KOREAN AIR	KAL	4.05	2	9.89	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	5.64	1	9.50	
AIR CHINA	CCA	3.46	1	9.23	
Lufthansa	DLH	6.09	2	9.09	
virgin atlantic	VIR	5.84	2	8.99	
AIRFRANCE	AFR	5.49	2	8.36	
Scandinavian Airlines	SAS	4.96	1	8.17	
SWISS	SWR	5.17	2	8.17	
BRITISH AIRWAYS	BAW	4.34	2	7.93	
Philippines	PAL	5.09	1	7.41	
ANA	ANA	5.43	1	7.15	
CATHAY PACIFIC	CPA	4.18	2	7.15	
ETIHAD	ETD	0.00	1	7.15	
JAPAN AIRLINES	JAL	4.20	1	7.15	
SINGAPORE AIRLINES	SIA	5.93	2	7.15	
TURKISH AIRLINES	THY	6.80	1	7.15	
AIR INDIA	AIC	4.77	0	7.15	
EVA AIR	EVA	5.05	2	6.85	
中國東方航空 CHINA EASTERN	CES	4.63	1	6.68	
AIR NEW ZEALAND	ANZ	4.00	1	6.55	
				6.37	SFO AVERAGE
DELTA	DAL	4.92	41	6.33	
AEROMEXICO	AMX	5.54	3	5.82	
CopaAirlines	CMP	6.46	1	5.82	
suncountry airlines	SCX	5.82	2	5.82	
WESTJET	WJA	5.82	2	5.82	
UNITED	UAL	5.83	192	5.80	
Southwest	SWA	5.70	44	5.73	
FRONTIER AIRLINES	FFT	6.41	8	5.64	
CHINA AIRLINES	CAL	3.62	2	5.64	
AIR CANADA	ACA	6.75	13	5.38	
Alaska	ASA	5.10	17	5.35	

Airline		Nationwide Fleet Noise Quality Rating	San Francisco Average Daily Jet Operations	San Francisco Score	Fleet Noise Quality Rating
American Airlines	AAL	3.94	46	*5.17*	
KLM Royal Dutch Airlines	KLM	4.67	1	*4.98*	
Virgin America	VRD	5.31	59	*4.96*	
Asiana Airlines	AAR	3.93	1	*4.95*	
Avianca	TAI	5.18	1	*4.94*	
Atlas Air	GTI	0.93	1	*4.87*	
volaris	VOI	0.00	2	*4.86*	
jetBlue	JBU	6.13	16	*4.79*	
Aer Lingus	EIN	4.05	1	*4.05*	
WOW air	WOW	0.00	1	*4.05*	
XL Airways	XLF	4.05	0	*4.05*	
airberlin	BER	5.92	1	*4.05*	
Fiji Airways	FJI	0.00	0	*4.05*	
Hawaiian Airlines	HAL	6.21	2	*4.05*	
FedEx	FDX	2.80	1	*3.61*	
Polar Air Cargo	PAC	3.43	0	*3.43*	
Qantas	QFA	3.47	1	*3.43*	
Kalitta Air	CKS	0.60	0	*3.14*	
AVERAGE		**4.71**	**11**	**6.37**	

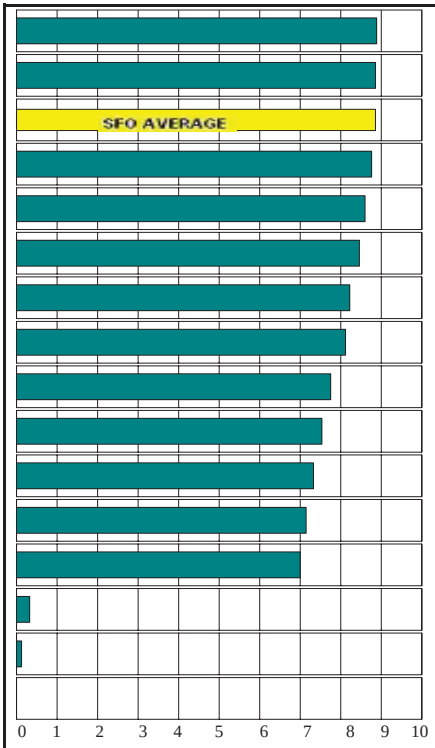


Airline		Noise Exceedances				Noise Exceedance Quality Rating
		Total Noise Exceedances	*Total Quarterly Operations*	*Exceedances per 1000 Operations*	***Score***	
Aer Lingus	EIN	0	183	0	***10.00***	
Emirates	UAE	0	184	0	***10.00***	
中國東方航空 CHINA EASTERN	CES	1	186	5	***9.98***	
Lufthansa	DLH	2	367	5	***9.98***	
BRITISH AIRWAYS	BAW	2	365	5	***9.98***	
Scandinavian Airlines	SAS	1	182	5	***9.98***	
TURKISH AIRLINES	THY	1	176	6	***9.98***	
SkyWest	SKW	124	18,872	7	***9.97***	
airberlin	BER	1	132	8	***9.97***	
KLM Royal Dutch Airlines	KLM	2	233	9	***9.97***	
virgin atlantic	VIR	3	338	9	***9.96***	
SWISS	SWR	3	331	9	***9.96***	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	2	183	11	***9.96***	
sun country airlines	SCX	7	457	15	***9.94***	
virgin america	VRD	167	10,887	15	***9.94***	
WOW air	WOW	2	127	16	***9.94***	
ANA	ANA	3	183	16	***9.93***	
AIR CANADA	ACA	40	2,389	17	***9.93***	
DELTA	DAL	142	7,462	19	***9.92***	
Compass Airlines	CPZ	53	2,684	20	***9.92***	
AIRFRANCE	AFR	9	343	26	***9.89***	
FRONTIER AIRLINES	FFT	42	1,486	28	***9.89***	
Southwest	SWA	251	8,173	31	***9.88***	
Alaska	ASA	103	3,217	32	***9.87***	
jetBlue	JBU	105	2,925	36	***9.85***	
UNITED	UAL	1,380	35,405	39	***9.84***	
American Airlines	AAL	340	8,530	40	***9.84***	
XL Airways	XLF	3	67	45	***9.82***	
ETIHAD	ETD	11	185	59	***9.76***	
WESTJET	WJA	37	367	101	***9.59***	
AIR CHINA	CCA	30	252	119	***9.52***	
volaris	VOI	33	277	119	***9.52***	
HAWAIIAN AIRLINES	HAL	46	366	126	***9.49***	
Avianca	TAI	38	274	139	***9.44***	
AEROMEXICO	AMX	85	567	150	***9.39***	
FedEx	FDX	46	257	179	***9.28***	
Copa Airlines	CMP	38	184	207	***9.16***	
NCA Nippon Cargo Airlines	NCA	36	159	226	***9.08***	



Airline		Noise Exceedances: *Total Noise Exceedances*	*Total Quarterly Operations*	*Exceedances per 1000 Operations*	***Score***
Atlas Air	GTI	73	265	275	***8.89***
Singapore Airlines	SIA	103	365	282	***8.86***
					8.86
China Airlines	CAL	93	304	306	***8.76***
Air India	AIC	27	78	346	***8.60***
Japan Airlines	JAL	70	184	380	***8.46***
EVA Air	EVA	174	396	439	***8.22***
Cathay Pacific	CPA	199	428	465	***8.12***
Fiji Airways	FJI	15	27	556	***7.75***
Air New Zealand	ANZ	106	174	609	***7.53***
Asiana Airlines	AAR	177	268	660	***7.33***
Korean Air	KAL	261	370	705	***7.15***
Philippines	PAL	175	236	742	***7.00***
Polar Air Cargo	PAC	55	23	2391	***0.32***
Kalitta Air	CKS	144	59	2441	***0.12***
Qantas	QFA	388	157	2471	***0.00***

Noise Exceedance Quality Rating



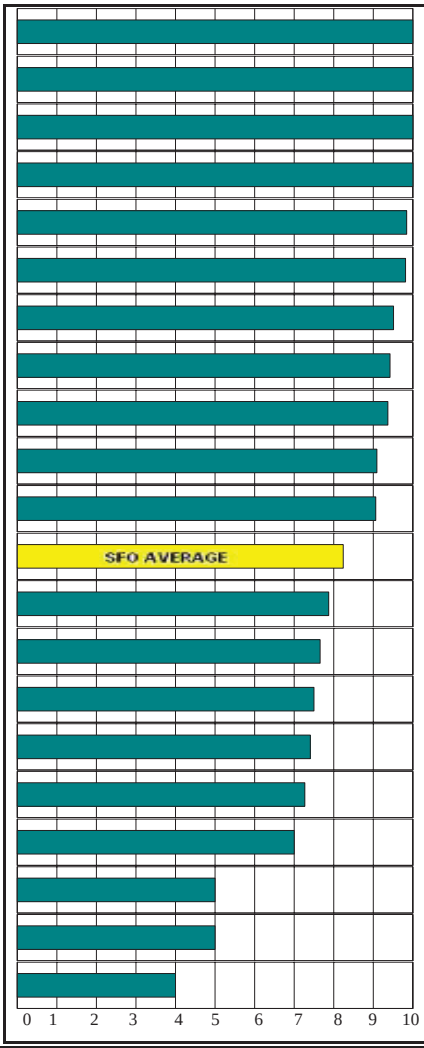
TOTAL	**5,249**	**112,289**		
SFO AVERAGE			**282**	**8.86**

Airline		*Nighttime Departures (1:00 am to 6:00 am)*						**Nighttime Runway Use Rating**
		Total	*10L/R*	*28L/R Shoreline*	*01L/R*	*28L/R Straight*	***Score***	
Alaska	ASA	**1**	100%	0%	0%	0%	***10.00***	
AIR CANADA	ACA	**3**	0%	67%	33%	0%	***5.56***	
FRONTIER AIRLINES	FFT	**31**	10%	16%	74%	0%	***4.52***	
American Airlines	AAL	**188**	4%	18%	77%	2%	***4.15***	
ATLAS AIR	GTI	**5**	0%	60%	0%	40%	***4.00***	
UNITED	UAL	**233**	3%	8%	81%	9%	***3.48***	
DELTA	DAL	**74**	0%	1%	99%	0%	***3.38***	
jetBlue	JBU	**11**	0%	9%	82%	9%	***3.33***	
suncountry airlines	SCX	**2**	0%	0%	100%	0%	***3.33***	
Southwest	SWA	**90**	0%	0%	100%	0%	***3.33***	
SkyWest AIRLINES	SKW	**15**	0%	13%	73%	13%	***3.33***	
volaris	VOI	**138**	7%	0%	74%	19%	***3.19***	
Avianca	TAI	**92**	7%	0%	73%	21%	***3.08***	
AEROMEXICO	AMX	**34**	9%	0%	53%	38%	***2.65***	
POLAR AIR CARGO	PAC	**12**	25%	0%	0%	75%	***2.50***	
							2.28	SFO AVERAGE
ASIANA AIRLINES	AAR	**33**	18%	0%	0%	82%	***1.82***	
KOREAN AIR	KAL	**89**	8%	0%	0%	92%	***0.79***	
EVA AIR	EVA	**128**	8%	0%	0%	92%	***0.78***	
KALITTA AIR	CKS	**23**	4%	4%	0%	91%	***0.72***	
CHINA AIRLINES	CAL	**88**	6%	0%	0%	94%	***0.57***	
JAPAN AIRLINES	JAL	**90**	4%	0%	3%	92%	***0.56***	
Philippines	PAL	**26**	4%	0%	0%	96%	***0.38***	
SINGAPORE AIRLINES	SIA	**89**	3%	0%	0%	97%	***0.34***	
AIR CHINA	CCA	**34**	3%	0%	0%	97%	***0.29***	
CATHAY PACIFIC	CPA	**116**	1%	0%	0%	99%	***0.09***	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	**5**	0%	0%	0%	100%	***0.00***	
FIJI AIRWAYS	FJI	**1**	0%	0%	0%	100%	***0.00***	
NCA Nippon Cargo Airlines	NCA	**1**	0%	0%	0%	100%	***0.00***	
QANTAS	QFA	**1**	0%	0%	0%	100%	***0.00***	
								0 1 2 3 4 5 6 7 8 9 10
TOTAL		**1,653**						
SFO AVERAGE			**8%**	**7%**	**32%**	**54%**	**2.28**	

Shoreline Departure Rating - 3rd Quarter 2016

July 1 to September 30,2016

Airline		Shoreline Departures					Shoreline Departure Rating
		Total	Successful	Marginal	Poor	Score	
KALITTA AIR	CKS	1	100%	0%	0%	10.00	
Compass Airlines	CPZ	18	100%	0%	0%	10.00	
suncountry airlines	SCX	15	100%	0%	0%	10.00	
WESTJET	WJA	5	100%	0%	0%	10.00	
Southwest	SWA	32	97%	3%	0%	9.84	
SkyWest Airlines	SKW	136	96%	4%	0%	9.82	
Alaska	ASA	41	90%	10%	0%	9.51	
FRONTIER AIRLINES	FFT	26	88%	12%	0%	9.42	
Virgin america	VRD	103	88%	11%	1%	9.37	
FedEx	FDX	11	82%	18%	0%	9.09	
AIR CANADA	ACA	32	81%	19%	0%	9.06	
						8.24	SFO AVERAGE
DELTA	DAL	87	63%	31%	6%	7.87	
jetBlue	JBU	32	53%	47%	0%	7.66	
Lufthansa	DLH	2	50%	50%	0%	7.50	
American Airlines	AAL	137	53%	43%	4%	7.41	
UNITED	UAL	390	58%	29%	13%	7.27	
ATLAS AIR	GTI	10	40%	60%	0%	7.00	
airberlin	BER	2	0%	100%	0%	5.00	
XL Airways	XLF	1	0%	100%	0%	5.00	
KLM Royal Dutch Airlines	KLM	5	20%	40%	40%	4.00	
TOTAL		**1,086**					
SFO AVERAGE			**68%**	**29%**	**3%**	**8.24**	



Gap Departure Climb Rating - 3rd Quarter 2016

July 1 to September 30, 2016

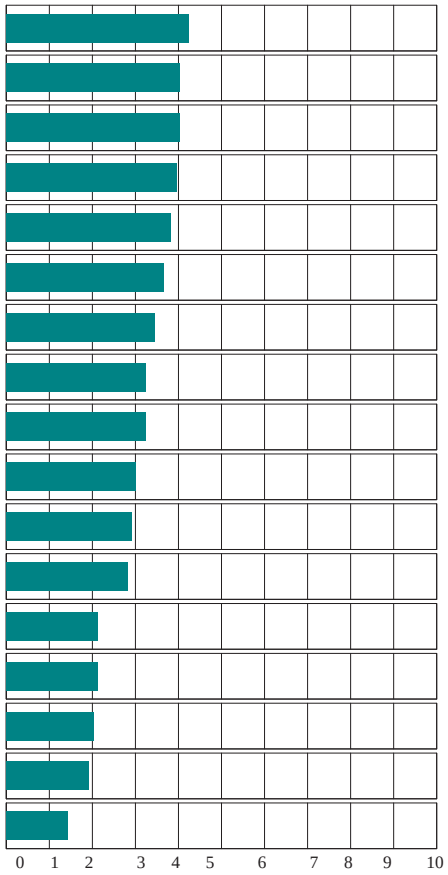
Airline		Gap Departures Total	Gap Departures Score
volaris	VOI	26	9.13
ASIANA AIRLINES	AAR	127	8.14
XL Airways	XLF	16	7.89
AIR INDIA	AIC	40	7.19
ATLAS AIR	GTI	32	7.07
JAPAN AIRLINES	JAL	83	6.99
AEROMEXICO	AMX	22	6.76
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	90	6.54
virgin atlantic	VIR	109	6.51
WOW air	WOW	36	6.46
CATHAY PACIFIC	CPA	211	6.45
DELTA	DAL	123	6.28
AIR CHINA	CCA	124	6.26
ANA	ANA	91	5.99
AIR NEW ZEALAND	ANZ	87	5.82
Southwest	SWA	142	5.82
Lufthansa	DLH	178	5.63
NCA Nippon Cargo Airlines	NCA	79	5.59
QANTAS	QFA	77	5.58
Compass Airlines	CPZ	47	5.51
ETIHAD	ETD	91	5.26
FIJI AIRWAYS	FJI	14	5.18
Alaska	ASA	43	5.00
KLM Royal Dutch Airlines	KLM	16	4.92
			4.91 SFO AVERAGE
CHINA AIRLINES	CAL	145	4.89
Avianca	TAI	19	4.80
jetBlue	JBU	33	4.77
SkyWest	SKW	233	4.73
KOREAN AIR	KAL	175	4.71
FRONTIER AIRLINES	FFT	20	4.69
AIRFRANCE	AFR	158	4.64
Scandinavian Airlines	SAS	90	4.47
UNITED	UAL	3309	4.38
FedEx	FDX	9	4.31

Gap Departure Climb Rating - 3rd Quarter 2016

July 1 to September 30, 2016

Airline		Gap Departures Total	Gap Departures Score
AIR CANADA	ACA	13	4.23
HAWAIIAN AIRLINES	HAL	13	4.04
EVA AIR	EVA	185	4.03
BRITISH AIRWAYS	BAW	143	3.96
SWISS	SWR	164	3.82
中國東方航空 CHINA EASTERN	CES	92	3.67
Virgin america	VRD	358	3.44
CopaAirlines	CMP	92	3.25
SINGAPORE AIRLINES	SIA	179	3.23
Philippines	PAL	117	3.00
POLAR AIR CARGO	PAC	9	2.92
Emirates	UAE	92	2.83
TURKISH AIRLINES	THY	86	2.12
American Airlines	AAL	349	2.12
Aer Lingus	EIN	91	2.03
KALITTA AIR	CKS	26	1.92
airberlin	BER	47	1.44

Gap Departure Quality Rating

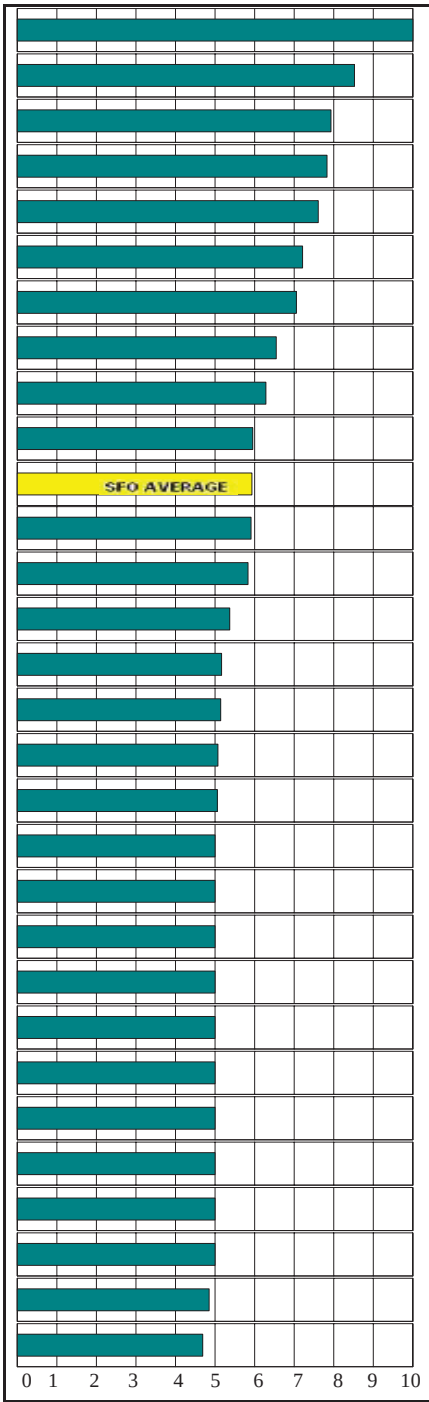


TOTAL	**8151**	
SFO Average		**4.91**

Foster City Arrival Rating - 3rd Quarter 2016

July 1 to September 30,2016

Airline		Foster City Arrivals					Foster City Arrival Rating
		Total	*Successful*	*Marginal*	*Poor*	*Score*	
SunCountry Airlines	SCX	**1**	100%	0%	0%	***10.00***	
Air Canada	ACA	**122**	70%	30%	0%	***8.52***	
Frontier Airlines	FFT	**145**	59%	41%	0%	***7.93***	
JetBlue	JBU	**235**	58%	41%	1%	***7.83***	
Delta	DAL	**364**	53%	47%	1%	***7.61***	
American Airlines	AAL	**669**	45%	54%	1%	***7.21***	
Southwest	SWA	**282**	45%	50%	4%	***7.06***	
United	UAL	**1,470**	33%	65%	2%	***6.55***	
Virgin America	VRD	**179**	26%	74%	0%	***6.28***	
FedEx	FDX	**63**	19%	81%	0%	***5.95***	
						5.93	SFO AVERAGE
AeroMexico	AMX	**33**	18%	82%	0%	***5.91***	
Atlas Air	GTI	**30**	17%	83%	0%	***5.83***	
Kalitta Air	CKS	**27**	7%	93%	0%	***5.37***	
Avianca	TAI	**91**	5%	92%	2%	***5.16***	
Asiana Airlines	AAR	**35**	3%	97%	0%	***5.14***	
Volaris	VOI	**137**	1%	99%	0%	***5.07***	
Korean Air	KAL	**87**	2%	97%	1%	***5.06***	
China Airlines	CAL	**2**	0%	100%	0%	***5.00***	
Cathay Pacific	CPA	**5**	0%	100%	0%	***5.00***	
Compass Airlines	CPZ	**22**	0%	100%	0%	***5.00***	
Eva Air	EVA	**8**	0%	100%	0%	***5.00***	
Hawaiian Airlines	HAL	**3**	0%	100%	0%	***5.00***	
Nippon Cargo Airlines	NCA	**1**	0%	100%	0%	***5.00***	
Polar Air Cargo	PAC	**11**	0%	100%	0%	***5.00***	
Philippines	PAL	**3**	0%	100%	0%	***5.00***	
Singapore Airlines	SIA	**1**	0%	100%	0%	***5.00***	
WestJet	WJA	**4**	0%	100%	0%	***5.00***	
SkyWest Airlines	SKW	**134**	7%	84%	10%	***4.85***	
Alaska	ASA	**32**	3%	88%	9%	***4.69***	



TOTAL	**4,196**				
SFO AVERAGE		**20%**	**79%**	**1%**	**5.93**

CORRESPONDENCES

Regular Meeting # 303
November 2, 2016

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Dave Ong (AIR)

From:	Dave Ong (AIR)
Sent:	Thursday, September 29, 2016 2:54 PM
To:	'Michael'; 'cchoa'; re.cc@astound.net
Cc:	'rbuenaventura@dalycity.org'; 'James A Castañeda'; Bert Ganoung (AIR); John Bergener (AIR); 'Kathleen.Wentworth@mail.house.gov'
Subject:	Short Term Aircraft Noise Monitoring Report for Daly City and the Serramonte Neighborhood
Attachments:	Short Term Aircraft Noise Monitoring - Daly City.pdf; Supplement Aircraft Noise Terminology Metric.pdf; Raw Aircraft Noise Event Data for Location 984.pdf

September 29, 2016

Mr. Michael Leonhardt
397 Imperial Way #303
Daly City, CA 94015

Dear Mr. Michael Leonhardt:

Thank you for allowing San Francisco International Airport (SFO) Noise Abatement Office the opportunity to collect aircraft noise measurements at your residence. Please find attached Short Term Aircraft Noise Monitoring report #092016-P50-984. This document contains the results of the monitoring performed from Thursday, August 25 through Friday, September 9, 2016. Also attached is an Aircraft Noise Terminology & Metric Supplement to help explain some of the terms used in the report and a list of raw aircraft noise event data collected.

I have also copied Honorable Raymond Buenaventura, the Daly City Airport Community Roundtable Representative to share the results with.

SFO will strive to improve aircraft noise abatement procedures to further reduce aircraft noise in your community and are continually developing initiatives to mitigate the impacts of aircraft noise by working with the Airport Community Roundtable, the Federal Aviation Administration, and the airlines operating here at SFO.

As always, please feel free to call me at (650) 821-5100 if you have any questions or would like to discuss this information.

Sincerely,

David Ong SFO
Noise Systems Manager | Aircraft Noise Abatement Office
San Francisco International Airport | P.O. Box 8097 | San Francisco 94128
Tel 650-821-5100 | www.flysfo.com | www.flyquietsfo.com

Short Term Aircraft Noise Monitoring

Prepared for the Serramonte Neighborhood, Daly City

Technical Report #092016-P50-984
August and September 2016

Executive Summary

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office conducted short term noise monitoring in Daly City at the request of Daly City Councilmember Ray Buenaventura and the SFO Community Roundtable. Noise monitoring was performed to determine the noise level within the Serramonte neighborhood from aircraft operations at SFO. This monitoring location was selected as it is near a departure corridor and at the request and assistance of the Daly City resident and their Airport Community Roundtable Representative. The overall average daily noise level from all aircraft was 61.7 decibels Community Noise Equivalent Level (CNEL). The Community daily noise level was 65.4 decibels CNEL. Noise from all aircraft over this location increased the total average daily noise level by 1.5 decibels.

Introduction

The noise monitoring equipment used to measure the sound level was an Environmental Monitor Unit 2200 noise monitor and Type 41DM-2 microphone manufactured by Bruel & Kjaer. The measurements consisted of monitoring the A-weighted decibels (dBA) 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 microphone was calibrated prior to the start of the measurement. The monitor was housed in a weatherproof case and powered by a standard interior electrical wall outlet. The microphone was mounted on a tripod at a height of 7 feet (see Figure 1) and placed on the roof of the condominium complex. The sound levels at the site were continuously monitored, data was stored on the onboard memory and transferred to a removable memory stick for decoding. The decoded noise data was then processed in the Airport Noise and Operations Management System for identification, noise to flight track matching and CNEL noise metric calculations.

Community and SFO Operations

During the monitoring period there were flight delays at SFO. This occurred in the morning hours, mainly during the first half of the measurement period. This was due to low cloud ceilings which normally clears up at about mid-day. On the nights of August 30, 31 and September 4 there were strong westerly winds from 10 mph to 20 mph, with wind gusts up to 24 mph. These conditions did not alter the flight paths airplanes used to depart the airport. SFO operated on a West Flow Plan (Appendix 1) for the entire monitoring period.

The Serramonte neighborhood mainly experiences larger, heavier aircraft that depart on the longer west facing runways, 28L (Left) and 28R (Right). Flights destined for the Pacific Rim and Europe require additional runway length for a safe take-off. As a result, Daly City will experience aircraft fly overs. In an attempt to mitigate noise in these communities, the Gap Departure Quality Rating is included as a category in SFO's Fly Quiet Program. Since "higher departures are quieter," we encourage all airlines to climb as quickly and safely as possible when departing straight-out off these runways. All departures are evaluated at one-mile increments along this departure corridor and given a grade on how well they perform, the higher aircraft receiving higher scores.

The majority of flights departing SFO use over water departure procedures to the north that reduce noise in residential communities when wind speed and wind direction allow for a safe take-off. Aircraft taking off on runways 01L and sometimes 01R, bound for destination airports in the south or southwest; will turn left over the peninsula using the SSTIK Departure Procedure or as directed by Federal Aviation Administration (FAA) Air Traffic Controllers. As a result, these flights may overfly parts of Brisbane, South San Francisco, San Bruno, Daly City, and Pacifica while climbing through their left turn. Their altitudes vary from 2,500 feet closer to the airport to 6,000 feet or more above mean sea level as they complete their turn. The timing of the left turn is dependent on individual aircraft performance. FAA Air Traffic Controllers work to maintain 6-mile horizontal distance and 1,000 feet vertical separation between departing aircraft from SFO and Oakland International Airport (OAK) out of the Bay Area airspace.

When the westerly winds exceed 25 knots (29 miles per hour), runways facing the San Francisco Bay (01L, 01R) are not available for take-offs due to safety. All aircraft regardless of aircraft size or weight will use runways 28L and 28R to depart into the wind. Some will continue straight out, while those headed east may turn right. During these conditions, communities will experience more aircraft operations. To reduce noise in residential communities, FAA Air Traffic Controllers will direct aircraft to make a right turn for the bay shortly after takeoff. By keeping aircraft east of Highway 101, majority of overflights will be over industrial and business parks instead of residential areas. This right turn is limited to aircraft performance having a standard of 560 feet per nautical mile angle of climb.

Due to the proximity of the measurement location to Hickey Boulevard and Interstate 280, the community sound levels also consisted of noise from vehicular traffic from fire trucks, ambulances, law enforcement vehicles, cars and motorcycles. The ambient level was approximately 60 decibels in the day and about 55 decibels at night.

Aircraft Noise Analysis

Noise measurements were taken at Imperial Way and Hickey Boulevard starting August 25, 2016 to September 9, 2016. The noise monitor measures noise at the pre-defined sound level threshold of 65dBA from 7:00 a.m. to midnight and 63dBA from midnight to 7:00 a.m. This means that not every aircraft passing over the Serramonte neighborhood may register a noise event. During the monitoring period a total of 1,908 aircraft noise events were recorded. This report evaluates periods where full 24 hour days of data are available, from August 26 through September 8. For this 14-day period, there were no incomplete days. There were 1,815 identified correlated aircraft noise events associated with SFO operations (SFO Events) and 93 identified correlated aircraft noise events associated with other Bay Area airports (Non-SFO Events) over the evaluation period. For the 1,815 aircraft noise events, the average aircraft generated Maximum Noise Level (Lmax) was 76dBA, the average Sound Exposure Level (SEL) was 86dBA, and the average aircraft noise event duration was 30 seconds. Table 1 below lists the aircraft totals along with community noise event totals, that were detected by the noise monitor arranged by date with the events' daily energy averages.

Table 1 - Noise Events by Date

Date	SFO Events[1]	SEL (dBA)[2]	Lmax (dBA)[3]	Non-SFO Events	SEL (dBA)	Lmax (dBA)	Community Events	SEL (dBA)	Lmax (dBA)
8-26	203	86	76	13	78	67	291	79	70
8-27	117	87	77	8	76	69	183	77	68
8-28	96	87	77	4	83	77	65	77	70
8-29	110	86	76	3	73	67	165	76	68
8-30	161	85	75	5	75	66	243	77	67
8-31	201	85	74	9	77	66	436	79	68
9-1	118	84	75	2	74	67	203	77	67
9-2	164	86	76	18	78	66	380	78	67
9-3	148	85	74	11	77	67	407	79	68
9-4	103	87	77	2	77	67	83	76	69
9-5	113	86	76	7	77	67	151	77	68
9-6	79	86	76	1	75	65	61	75	67
9-7	97	86	76	4	74	67	35	80	72
9-8	105	86	76	6	75	66	116	76	68
Total	**1,815**			**93**			**2,819**		

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

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

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

Table 2 shows a graphic comparison between the SEL of SFO Events and SEL of Community Events. For example, on August 26 (the day with the highest number of SFO Events), these 203 events were on average 7dBA louder than the 291 Community Events. While the single event noise levels of SFO Event and Community Event varied, single event noise levels of SFO Events were on average 8.5dBA higher than Community Events for this measurement period.

Table 2 – SEL Comparison

Date	SFO Events	Community Events	SEL (dBA) Delta
8-26	203	291	7
8-27	117	183	10
8-28	96	65	10
8-29	110	165	10
8-30	161	243	8
8-31	201	436	6
9-1	118	203	7
9-2	164	380	8
9-3	148	407	6
9-4	103	83	11
9-5	113	151	9
9-6	79	61	11
9-7	97	35	6
9-8	105	116	10

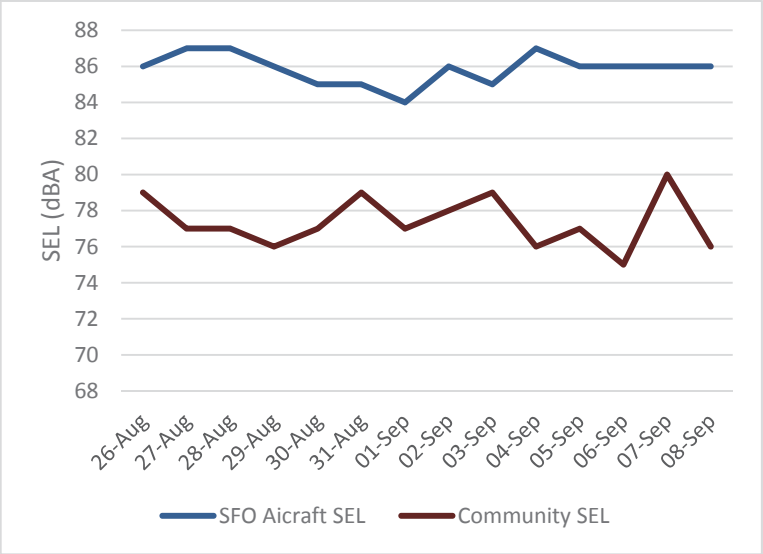
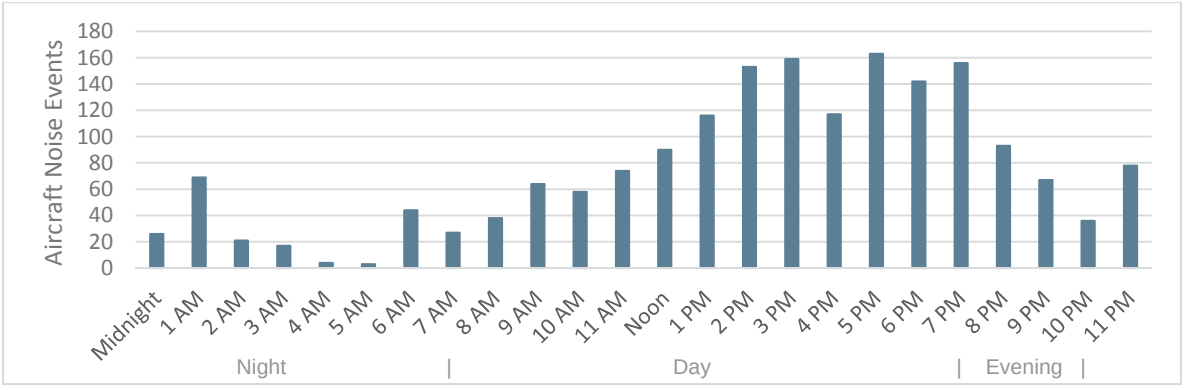


Table 3 - SFO Events by Daytime, Evening and Nighttime hours

SFO Aircraft Noise Data (Single Noise Events)			Lowest (dBA)	Highest (dBA)	Average (dBA)
Day (7:00 am-7:00 p.m.)	1,201	Lmax	65	87	76
		SEL	71	96	86
		Duration	5 sec	120 sec	30 sec
Evening 7:00 pm-10:00 p.m.)	316	Lmax	65	85	75
		SEL	72	94	85
		Duration	5 sec	96 sec	29 sec
Night (10:00 pm-7:00 a.m.)	298	Lmax	63	84	75
		SEL	69	93	85
		Duration	5 sec	98 sec	28 sec

Table 4 - Aircraft Noise Events by Hour (SFO Aircraft and Non-SFO Aircraft)



Overflights

All aircraft overflights, which flew within a cylindrical airspace of 2 miles in radius and 15,000 feet in height, known as Point of Closest Approach (PCA); centered on the measurement location were evaluated for this measurement period. A daily average of 471 flights penetrated this airspace. An average of 29% of overflights exceeded the thresholds used to detect aircraft noise and registered events on the noise monitor. The majority of these operations were departing aircraft. Only 32 noise events were generated by arriving aircraft and 16 by airplanes not associated with Bay Area airports. Table 5 and 6 below detail the amount of daily overflights versus aircraft noise events. Appendix 2 lists these aircraft by type.

Table 5 - Aircraft Overflights versus Noise Events

Date	Amount of PCA Overflights[3]	Amount of Aircraft Noise Events[4]	Aircraft CNEL (dBA)[5]	Range (dBA)		Flow Pattern[8]
				Lmax[6]	SEL[7]	
8-26[1]	576	216	63	65-86	72-96	West Flow
8-27	457	125	62	65-85	72-95	West Flow
8-28	478	100	61	64-85	72-95	West Flow
8-29	479	113	61	63-86	71-95	West Flow
8-30	469	166	62	63-86	71-94	West Flow
8-31	505	210	62	64-84	72-94	West Flow
9-1	480	120	61	64-85	72-93	West Flow
9-2	497	182	64	64-87	71-96	West Flow
9-3	406	159	61	65-84	72-94	West Flow
9-4	405	105	62	65-85	72-95	West Flow
9-5	477	120	61	65-87	72-95	West Flow
9-6	461	80	60	64-84	71-94	West Flow
9-7	462	101	62	63-85	71-94	West Flow
9-8[2]	441	111	61	63-85	69-94	West Flow
Total	**6,593**	**1,908**				
Daily Average	**471**	**136**	**62**			

[1] 8/26/16 first Aircraft Noise Event was measured at 1:18 a.m. for this survey.

[2] 9/08/16 last Aircraft Noise Event was measured at 11:59 p.m. for this survey.

[3] The Amount of PCA Overflights through a defined cylindrical airspace for a 24-hour period starting at midnight to 11:59:59 p.m. The cylindrical airspace is two miles in radius and 15,000 feet in elevation, centered on the monitor's location.

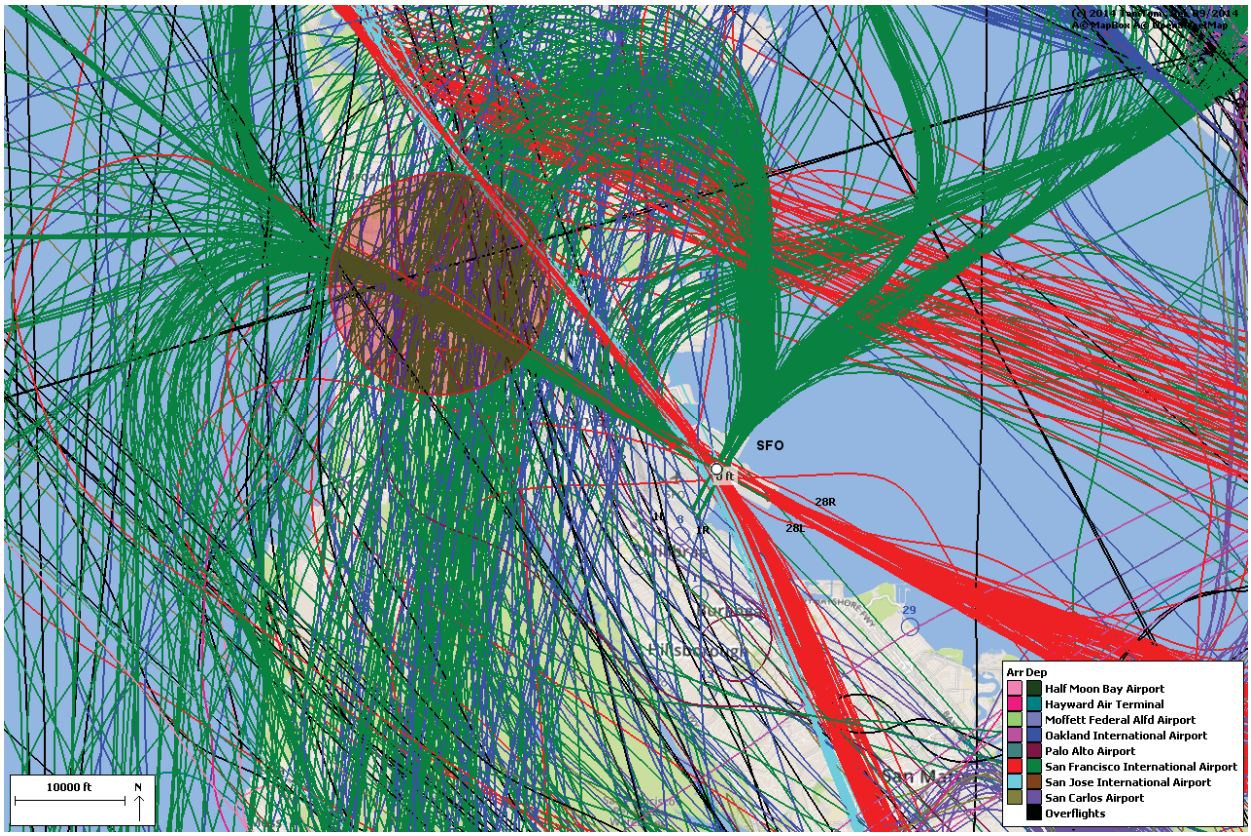
[4] Aircraft Noise Events include all SFO Aircraft, Multiple SFO Aircraft, Non-SFO Aircraft, and Simultaneous SFO & Non-SFO Aircraft.

[5] This value is an energy average.

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

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

[8] Flow Pattern is the general flight pattern used by arriving and departing aircraft based on wind speed and direction. See Appendix 1 for San Francisco Bay Area Major Jet Arrival and Departure patterns: West Flow Plan and Southeast Flow Plan.



Above 6,371 Flights on 8-26 for the region. Below 216 Flights that Registered a Noise Event on 8-26.

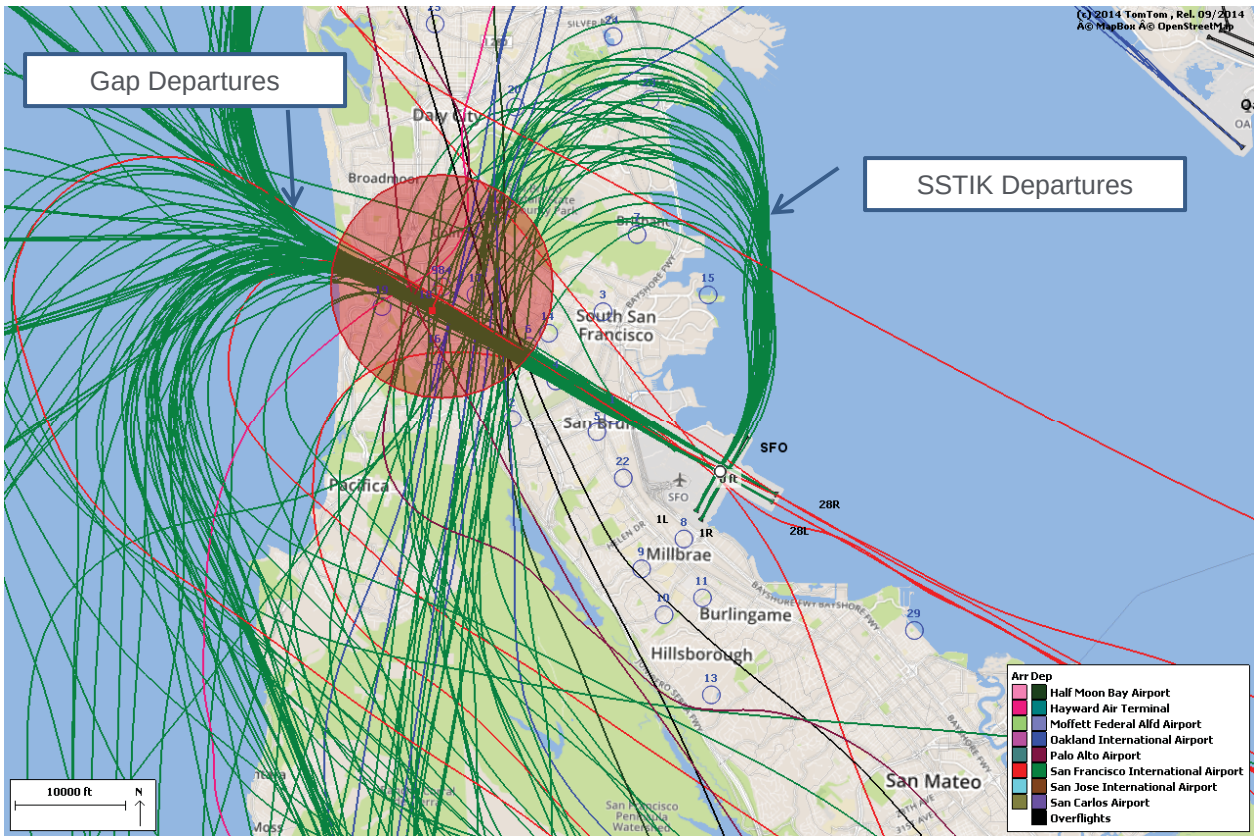


Table 6 - PCA Overflights versus Noise Events

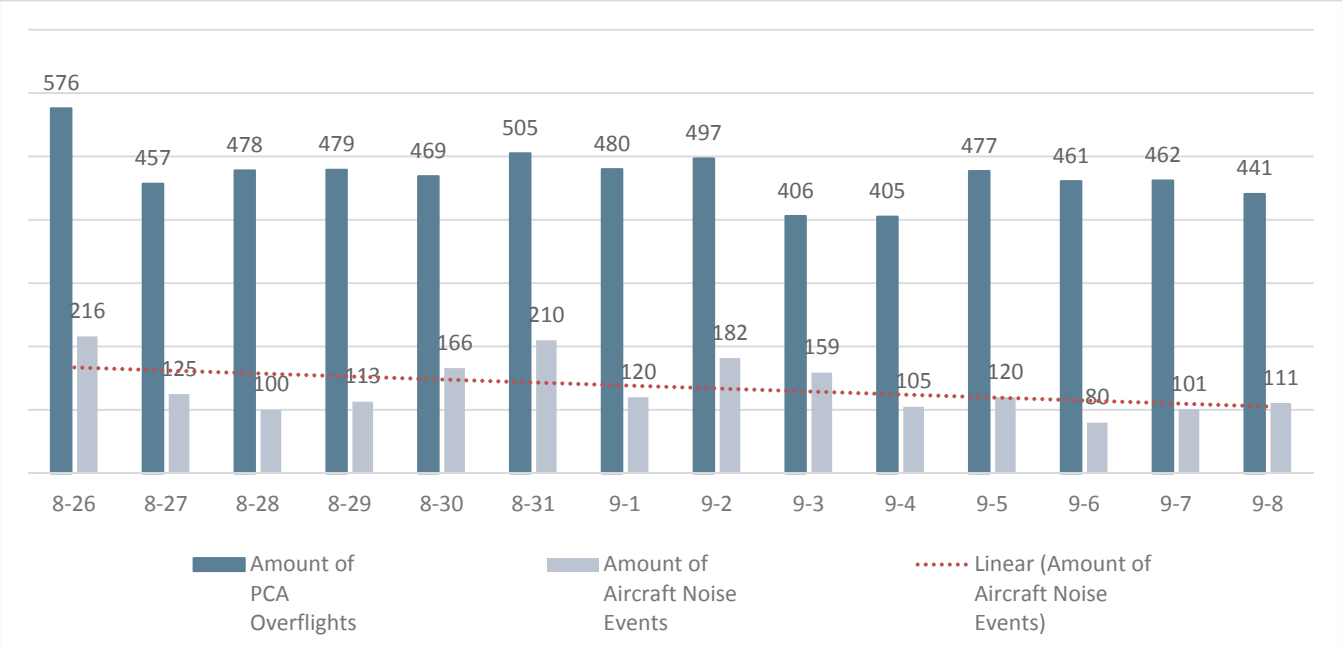
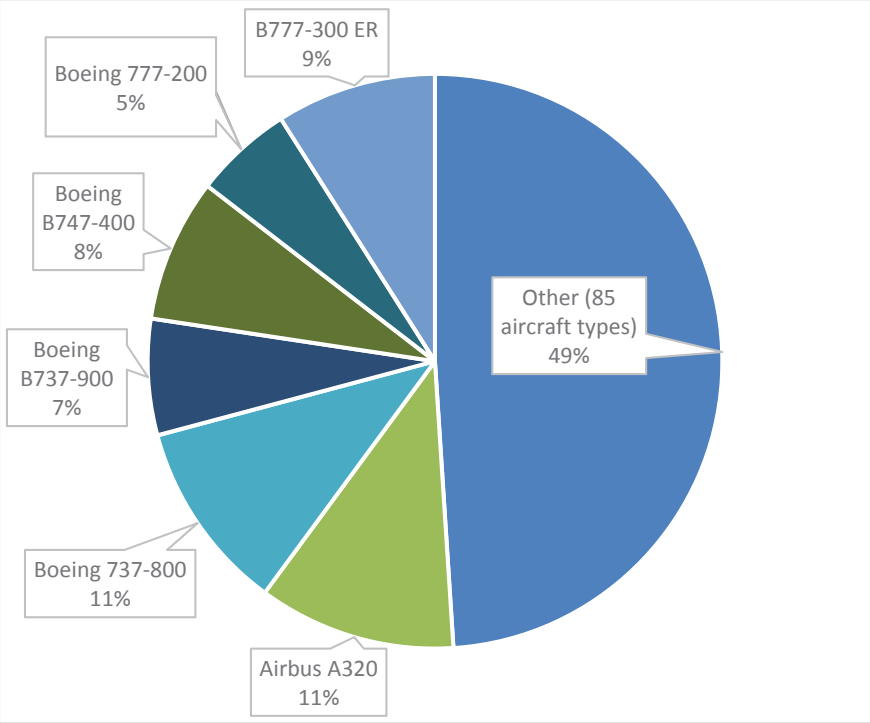


Table 7 - Noise Events by Aircraft Type



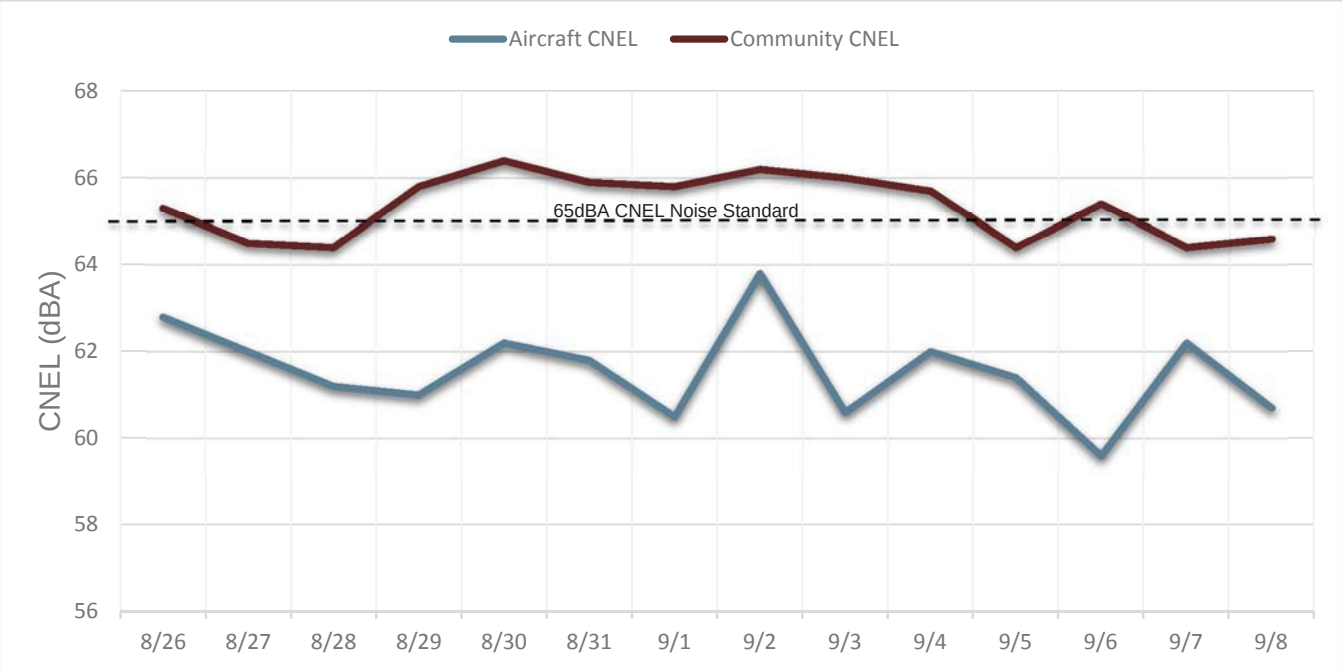
Conclusion

Aircraft noise levels were measured in the Serramonte neighborhood of Daly City. This community is approximately 4 miles away from SFO and 13 miles away from OAK. It is located below SFO departure corridors serving four main commercial use runways (28L, 28R, 01L, 01R) at SFO and one main commercial use runway (30) at OAK. Flights above Daly City typically consist of Straight out the Gap and SSTIK Departures from SFO (see page 6, bottom photo).

The computed levels for the average **Aircraft CNEL** was 62dBA, the average **Community CNEL** was 65dBA, and the **Total CNEL** was 67dBA (see Table 8). The highest Aircraft CNEL of 64dBA was measured on September 2. An increase of flight operations was observed in the nighttime hours, no significant weather or delays, only more departing flights that night. On September 2 there were a total of 35 nighttime noise events of which 20 were large heavy aircraft that result in higher aircraft noise climate. When calculating CNEL there is a 10dBA penalty added for flights during the hours from 10 p.m. to 7:00 a.m., therefore the Aircraft CNEL for September 2 is 2dBA higher than average.

Overall aircraft noise measurements contribute 1.5dBA additional noise to the total cumulative average noise level of 67dBA CNEL. For comparison purposes, the computed average Aircraft CNEL at permanent noise monitor #18 (75 Margate Street, Daly City) located approximately half a mile south was 65dBA for the same period.

Table 8 – CNEL



The California Code of Federal Regulations, Title 21, Division 2.5, Chapter 6, paragraph 5012 states, "The standard for the acceptable level of aircraft noise for persons living in the vicinity of airports is hereby established to be a community noise equivalent level of 65 decibels." Since the average Aircraft CNEL was measured at 62dBA for the Serramonte neighborhood, this residential area has an acceptable level of aircraft noise as defined by state law. The extent of the 65dBA CNEL noise impact contour at SFO is shown on page 9. This noise contour was generated using Federal Aviation Administration's Integrated Noise Model (version 7.0d). The Federal Aviation Administration accepted this map as part of the Noise Exposure Map update under Federal Aviation Regulations Part 150 on January 29, 2016 (Figure 3). The results of the field monitoring validate the extent of the 65dBA CNEL noise impact boundary confirming Aircraft CNEL is less than 65dBA CNEL for this location.

Figure 1 – Microphone and tripod (main) and Monitor (bottom right) at the Crown Colony Complex.

Figure 2 - Monitoring Location #984 (red circle – 2-mile radius) and Permanent Noise Monitor Sites (blue circles)

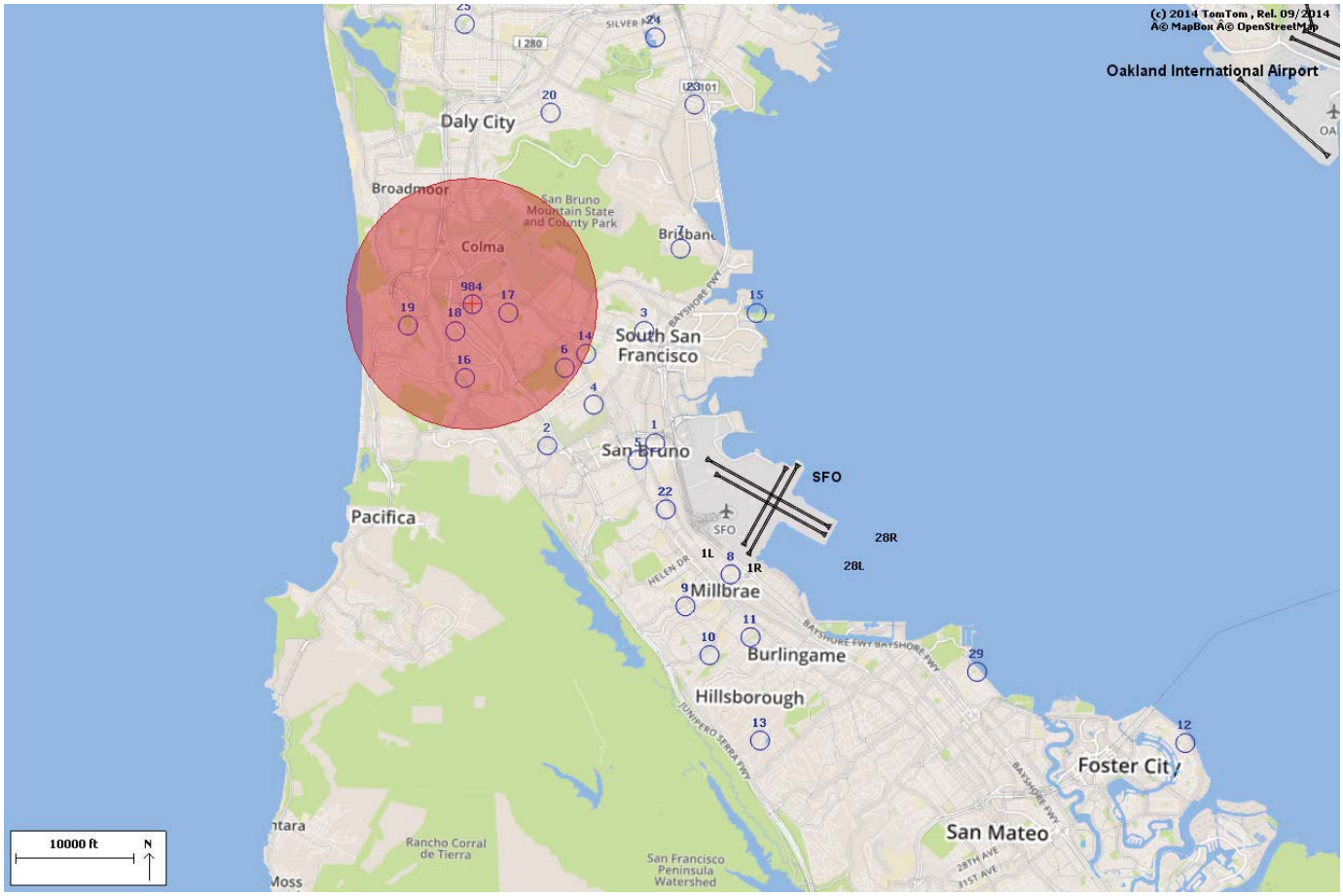
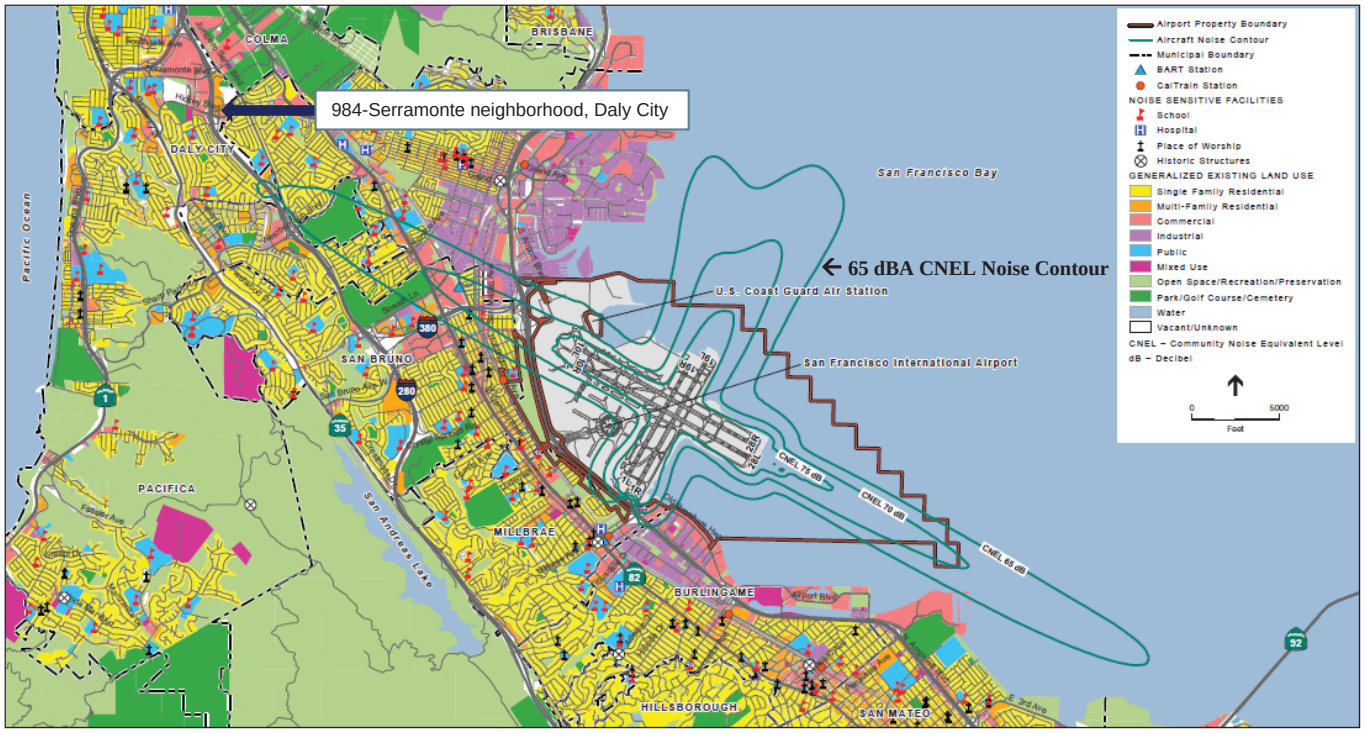


Figure 3 – 2014 Noise Exposure Map



SOURCE: ESRI, 2014; San Mateo County Planning and Building Department, 2014; ESA Airports, 2014

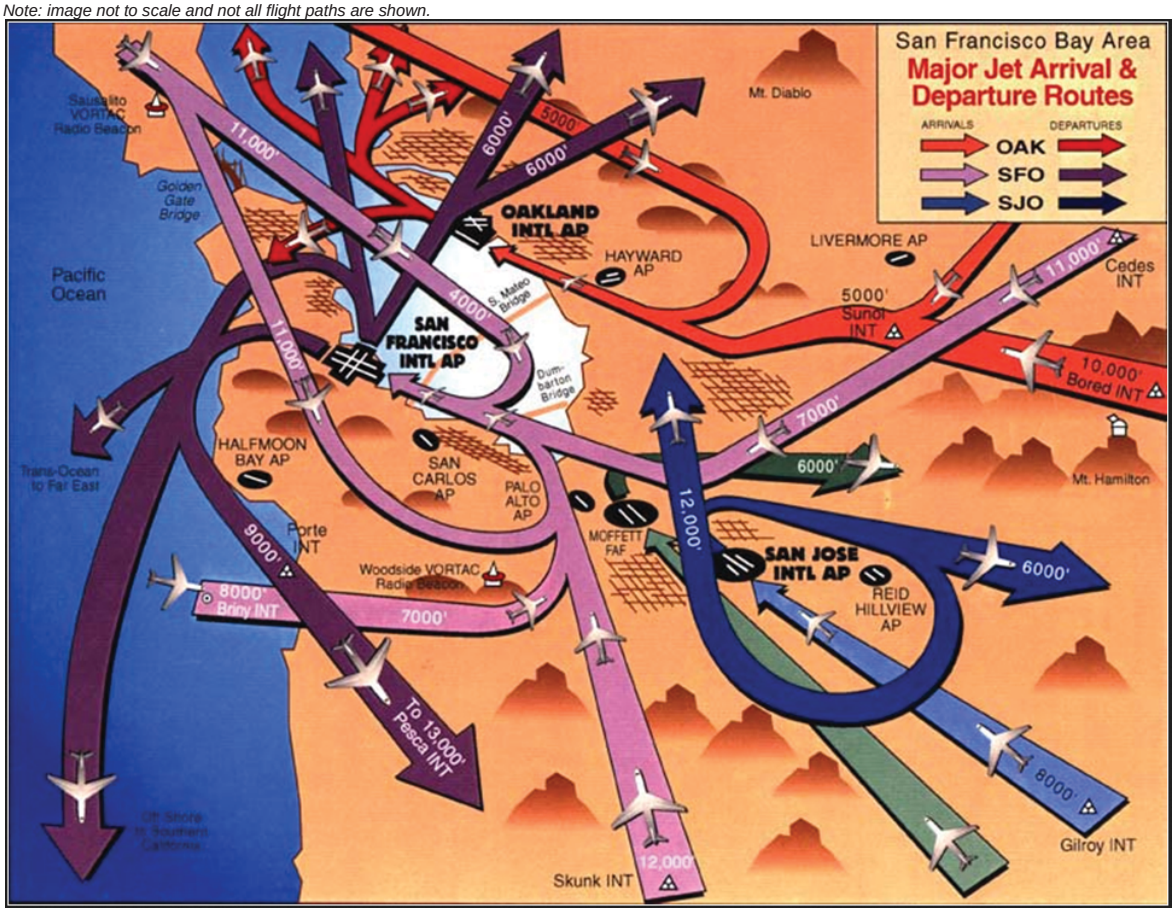
SFO FAR Part 150 Noise Exposure Map Report . 120832

Exhibit 5-1
2014 Noise Exposure Map – San Francisco International Airport

Appendix 1 – San Francisco Bay Area Major Jet Arrival and Departure Routes

West Flow Plan

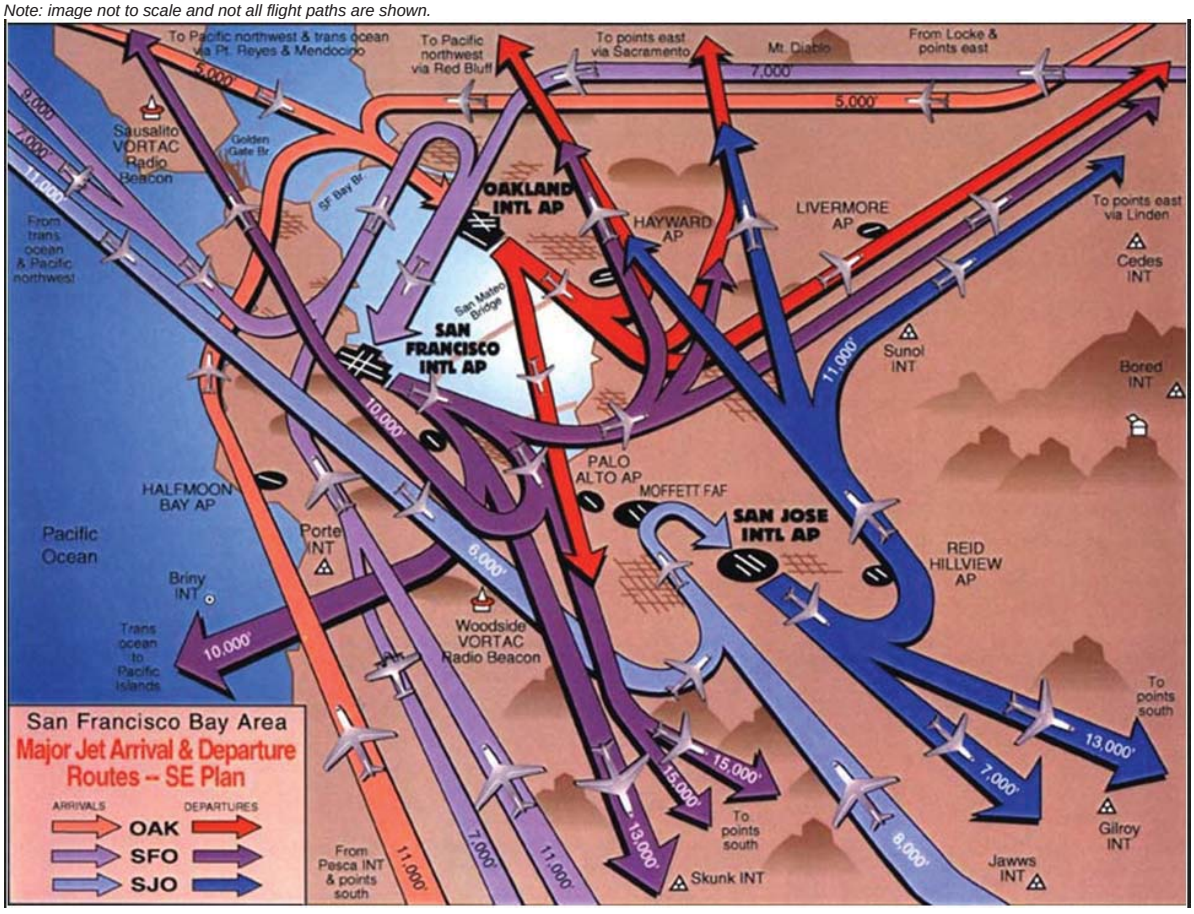
Note: image not to scale and not all flight paths are shown.



Appendix 1 – San Francisco Bay Area Major Jet Arrival and Departure Routes

Southeast Flow Plan

Note: image not to scale and not all flight paths are shown.



Appendix 2 – Aircraft Type Reference Sheet

	Wide Body Jet (wide enough for two passenger aisles)		Narrow Body Jet (wide enough for one passenger aisles)		Business Aircraft (transportation for small groups of people)		Business Aircraft (transportation for small groups of people)		General Aviation Aircraft (Generally small, propeller-driven aircraft)
A332	Airbus A330-200	**A319**	Airbus A319	**B350**	Beechcraft 350 Super King Air	**E55P**	Embraer EMB-500 Phenom 300	**BE36**	Beechcraft 36 Bonanza
A333	Airbus A330-300	**A320**	Airbus A320	**BE20**	Beechcraft 200 King Air	**F2TH**	Dassault Falcon 2000	**BE55**	Beechcraft 55 Baron
A343	Airbus A340-300	**A321**	Airbus A321	**BE40**	Beechcraft 400 Beechjet	**F900**	Dassault Falcon 900 (tri-jet)	**BE58**	Beechcraft Baron
A346	Airbus A340-600	**B712**	Boeing 717-200	**BE9T**	Beechcraft 90 King Air	**FA7X**	Dassault Falcon 7X	**BE76**	Beechcraft 76 Duchess
A388	Airbus A380-800	**B733**	Boeing 737-300	**C208**	Cessna 208 Caravan	**G150**	Gulfstream 150	**C172**	Cessna 172 Skyhawk
B742	Boeing 747-200	**B737**	Boeing 737-700	**C25A**	Cessna Citation CJ2	**GALX**	Dassault Falcon 900EX	**C177**	Cessna 177 Cardinal
B744	Boeing 747-400	**B738**	Boeing 737-800	**C25B**	Cessna Citation CJ3	**GLEX**	Bombardier Global Express (twin-jet)	**C182**	Cessna 182 Skylane
B747	Boeing 747	**B739**	Boeing 737-900	**C25C**	Cessna Citation CJ4	**GLF4**	Gulfstream 4	**C206**	Cessna 206 Super Skylane
B748	Boeing 747-8	**B752**	Boeing 757-200	**C510**	Cessna 510 Citation Mustang	**GLF5**	Gulfstream 5	**C340**	Cessna 340
B762	Boeing 767-200	**B753**	Boeing 757-300	**C525**	Cessna 525 Citation CJ1	**GLF6**	Gulfstream 6	**F260**	SIAI-Marchetti SF.260
B763	Boeing 767-300	**CRJ2**	Bombardier CRJ200	**C560**	Cessna 560 Citation V	**H25C**	Hawker-Beechcraft Hawker 800/850	**GC1**	Globe/Temco Swift
B764	Boeing 767-400	**CRJ7**	Bombardier CRJ700	**C56X**	Cessna 560XL Citation Excel	**LJ35**	Learjet 35	**P28A**	Piper 28A Cherokee
B772	Boeing 777-200	**DC91**	Douglas DC-9-10	**C650**	Cessna Citation III	**LJ40**	Learjet 40	**PA46**	Piper Malibu/Mirage
B773	Boeing 777-300	**E170**	Embraer EMB 170	**C680**	Cessna 680 Citation Sovereign	**LJ45**	Learjet 45	**RV7**	Van's Aircraft RV-7
B77L	Boeing 777-200LR	**E75L**	Embraer ERJ-175	**C750**	Cessna 750 Citation X	**LJ55**	Learjet 55	**S2**	Grumman S-2 Tracker
B77W	Boeing 777-300ER	**E75S**	Embraer ERJ-175	**CL30**	Bombardier Challenger 300	**PAY2**	Piper Cheyenne ii	**SR22**	Cirrus SR-22
B788	Boeing 787-8	**MD82**	McDonnell Douglas MD-82	**CL35**	Bombardier Challenger 350	**PC12**	Pilatus PC-12 Eagle		
B789	Boeing 787-9			**CL60**	Bombardier Challenger 600	**PRM1**	Beechcraft Premier I		
				E55P	Embraer EMB-500 Phenom 300				

Helicopters (Aircraft operated by rotor blades)				Military (U.S Military Aircraft)			
B407	Bell Helicopter 407	**HELO**	Helicopter	**C27J**	Alenia C-27J Spartan	**C30J**	Lockheed Martin C-130
				F18	Boeing F18 Hornet		

Subject: Re: Fwd: Comments on Documents for Discussion at 13 Oct. 2016 SFORT Select Committee Technical Working Group Meeting

Date: Friday, October 14, 2016 at 9:27:22 PM Pacific Daylight Time

From: Cliff Lentz

To: BT Broadband, clifflentz@sbcglobal.net

CC: kathleen.wentworth@mail.house.gov, suedigre@gmail.com, James A Castañeda

Hi Ray,

Nice seeing you last night. Thank you for your comments. I will pass them along to James, who will put this in the public record – we will have this in the Roundtable Member's packet.

Have a great weekend.

Best regards,

Cliff

From: BT Broadband
Sent: Friday, October 14, 2016 7:00 PM
To: clifflentz@sbcglobal.net
Cc: kathleen.wentworth@mail.house.gov ; suedigre@gmail.com
Subject: Fwd: Comments on Documents for Discussion at 13 Oct. 2016 SFORT Select Committee Technical Working Group Meeting

Cliff,

AsI mentioned at last nights SFORT Technical Working Group meeting here are my comments for inclusion in the meeting record and distribution to SFORT members not already in receipt via Cc. As you can see some SFORT members have already received via Cc.

I understand that Kathleen Wentworth previously provided you with my 26 September 2016 email comments on the previous draft SFORT response to FAA that was scheduled for SFORT meeting on 5 October. If you need me to send another copy of the 26 September 2016 email for inclusion in the meeting record and distribution to SFORT members, please let me know.

Regards,

Ray Ramos, P.E.

-----Original Message-----
From: BT Broadband <rerpac@aol.com>
To: suedigre <suedigre@gmail.com>
Cc: kathleen.wentworth <kathleen.wentworth@mail.house.gov>; clifflentz <clifflentz@sbcglobal.net>; dpine <dpine@smcgov.org>; pgrace <pgrace@petergrace.com>; ptainter <ptainter@yahoo.com>; dhorsley <dhorsley@smcgov.org>; jocharas <jocharas@gmail.com>; helppacifica <helppacifica@gmail.com>; homebythesea <homebythesea@yahoo.com>; willeb3 <willeb3@att.net>; jwkeener296 <jwkeener296@gmail.com>; dlwjkw <dlwjkw@comcast.net>; andynarraway <andynarraway@gmail.com>; kenmilesaqa <kenmilesaqa@earthlink.net>; MARC.HERSHMAN <MARC.HERSHMAN@SEN.CA.GOV>
Sent: Wed, Oct 12, 2016 7:58 pm
Subject: Comments on Documents for Discussion at 13 Oct. 2016 SFORT Select Committee Technical Working Group Meeting

Sue and others by Cc:

Although this is a quick read of the subject meeting document that I had available to me this morning I offer the following review comments:

General:

I understand that the previously scheduled 5 October 2016 was rescheduled to the subject meeting and may also be a joint meeting involving the South Bay Select Committee's work that focuses on arrivals into SFO, while the SFORT Select Committee focuses on deparfures from SFO. These focuses may be nearsighted since there are aircraft noise events impacting our community members, as well as other communities, that are from aircraft noise not just from aircraft coming into or from the SFO Airport.

It appears that Pacifica's proposals submitted back in June of this year need to brought up again during the subject meeting, particularly in regard to the WHALE waypoint that Pacifica proposed and which emphasizes greatly increases routings of aircraft traffic over Pacific Ocean waters and over Baywaters, which bottom line means significantly reduced aircraft traffic noise by having **aircraft traffic fly over the fewish number of people on the ground**. It seems logical that if we can, as I have experienced in the past, put aircraft traffic over the Pacific Ocean and Baywaters to much greater degrees than what the FAA's NextGen currently does, that this would provide the people on the ground significant relief from aircraft traffic noise and help provide better safeguards from aircraft noise pollution. This will help the FAA to put aircraft noise pollution back into their mission statement along with greatly increased consideration for the health and welfare of people on the ground that are impacted by aircraft noise.

Please take a relook at the Pacifica's Proposals that are attached hereto as well as my September 26, 2016 10:15 am email comments that were submitted for the previous draft SFO Roundtable Response to the FAA Initiative that was previously scheduled for consideration at the October 5, 2016 SFORT meeting.

Sue please advocate for: (1) the proposals put forth in the attachment; (2) the need for adequate public health and welfare protections from single event aircraft noise events that would be based on a health based noise standard rather than the current FAA CNEL 24 Hour averaged noise standard that is not what I would consider a health based noise standard. If the FAA would desire a design criteria for a health based standard I can provide them with advise, although others can also assist them; and (3) restating your previous recognition that there seems to be a need for changing laws inorder to provide adequate protections and ability by local and state government to ensure adequate protections for public health and welfare from aircraft and airport generated noise pollution.

I plan on attending the subject meeting and encourage others to also attend.

Here are my specific comments on the two attachments to the public notice for the subject meeting:

Re: Attachment 1 the EXECUTIVE WORKING OUTLINE (DRAFT) SFO AIRPORT/COMMUNITY ROUNDTABLE DRAFT RESPONSE TO FAA INITIATIVE.

(1) This is the initial introduction of this document to the SFORT Technical Work Group, to my awareness - is this also your understanding Sue?. Based on feedback from the SFO Noise Abatement Office in response to my email noise complaints, there are arrivals that impact Pacifica, but certainly not to degree that communities on more southern areas of the Peninsula are experiencing and which the South Bay Select Committee (SBSC) has been focused on. This attachment involves both arrivals and departures - Has the SBSC approved the arrivals input to this document?

(2) **This document indicates ST = Short Term Task and LT = long Term, but does not indicate time period for these terms**. Does ST mean 6 - 9 months or 18 -24 months? Does LT mean 2 years to 5 years? The SFORT and SBSC should coordinate with the FAA to get some idea of the timeframes envisioned. I understand that the SBSC is planning for a mid-November conclusion of efforts. The SBSC has indicated they expect to have a meeting on the 13th of October and 27th of October on its draft. While the 13th of October SBSC be a joint meeting with the SFORT? , but I see a need for continuing contact and involvement beyond mid-Noverber, particularly to maintain awareness of how recommendations from SFORT and SBSC are evolving and progressing. There should be feedback from FAA to all involved and a continuing value to have exchanges between the Select Committees, Congressional offices, SFORT, and the public. Keeping the public informed of progress and when they can expect relief from the impacts of aircraft and airport noise pollution needs to be emphasized in any response to the FAA.

(3) # 25 CNDEL This item needs further discussion because there needs to be increased aircraft traffic up the bay

out over the Golden Gate and this should necessary make recommendations related to SSTIK and prevention of early turn that currently result from SSTIK flown as published, which is the one (1) nautical mile issue. Why not fly over and up to the Golden Gate to maximum extend feasilbe. It was done in past when I departure from SFO and flew out over SF to Pacific Ocenan and if on the left side of the aircraft could on a clear day see the coast and my home in the Park Pacifica area. If such flight paths were possible in the past that maximize aircraft traffic over water and minimize aircraft traffic over people - I would recommend that this is preferable to the current situation.

(4) # 26 CNDEL currently states "**Determine if a revised southbound transition (with additional waypoints?) for the CNDEL procedure could "contain" the flight paths further west (perhaps over the ocean) to allow expanded clear space for possible modifications of the SSTIK departure."** This needs to be discussed at the subject meeting for the wording as written is not what I could consider a recommendation. **The interrelationship between CNDEL, SSTIK and more over Golden Gate out to Pacifica Ocean should be wothy of some wording in the comments section to the far right.**

(5) #29 SSTIK currently indicates **"...should fly the procedure as chartered including flying over the SSTIF flyover waypoint and flying to the PORTE fly-by waypoint as specified in the departure procedure."** I would like to see this traffic pattern put on a graphic and discussed. SSTIK procedure that resulted in touching the one (1) nautical mile FAA compliance allowance criteria has caused Brisbane and Pacifica harm from aircraft noise pollution. I recommend that Peter Grace be asked for his input about this item, as well as for items 30 and 31.

(6) #30 SSTIK I would concur with move SSTIK N + E word based on this quick read, but I would recommend in the comment column to the far right that reference be made to Pacifica's recommended WHALE waypoint be included. WHALE need to be evaluated inorder to get more aircraft traffic out over the ocean, and may require some adjustment in regard to PORTE. Please refer to the attachment if necessary. **Remember the OFFSHORE route that Congresswoman Speier told the FAA should not disestablish!**

(7) #31 RT indicates ST and LT indicates **"The SFO Airport and the SFO RT will support the FAA in their efforts. The RT will provide data regarding land use and terrain height for areas throughout the RT region to assist NCT in using less sensitive noise areas for vectoring. SFO and RT will work with airline representative to encourage use of "noise-triendlier" options for flight planning and operatios. The RT will provide community input to the FAA and will make recommendations to the FAA based on community consensus for changes.** Is it realistic to expect community consensus or is it more reasonable to expect some differences of opinion? The SFORT is under the SELECT COMMITTEE mandate in the business to find way to possible move aircraft traffic to reduce aircraft noise pollution from the current NextGen imposed conditions. This may require new design criteria for the FAA, new laws at the federal, state, county, and local levels that are protective of ground level people's health and welfare in safe, efficient, and effective ways.

Re: Attachment 2 DRAFT SFORT Response to the FAA Imitiative Finding, Phase 1 prepared for subject Technical Working Group meeting on 13 October 2016:

(8) Page 3 Nautical Niles (NM) - as I previously indicated in by 26 Sep.'2016 email you should indicate what the length of a NM is, which is 6080 feet instead of statute mile which is 5280 feet. This has importance in regard to SSTIK in that the FAA considers aircraft in compliance with their waypoint procedure if an aircraft gets within on nautical mile (6080 feet) of the GPS SSTIF waypoint location, which is of concern for Pacifica and even more for Brisbane even if aircraft atitudes were higher. Indeed increased altitudes should be evaluated for what the anticipated dBA reductions might be and whether such reduction would be meaningful in respect to public health or welfare issues.

(9) Page 5 Short Term - What time period is considered Short Term (6-9 month to execution/implementation or other timeframe like 18 - 24 month?) This will be important because I would recommend an ongoing dialog between SFORT, SBSC, FAA, Congressional Representative, and the public.

(10) Page 5 Current item 2. What does "...when an aircraft is actually over SSTIK." mean? Plain English would lead one to believe this mean the aircraft has to have flown north of SSTIK and not just within one (1) nautical mile of the GPS point. The aircraft should not be vectored until they have flown north of the GPS position for SSTIK.

(11) Page 5 Short Term there needs to be included wording about the OFFSHORE routing of aircraft that Congresswoman Jackie Speier has told the FAA should not be dropped and the SFORT should include in Short Term recommendation to utilize that routing until an even better noise lessening routing to a new waypoint, such as what Pacifica has proposed for what is called the WHALE waypoint.

(12) Page 5 Current item 4, if the OFFSHORE routing referred to in (11) above can not be reactivated in some reasonable timeframe period (Short Term Hopefully) then current item 4 should be rewording to indicate the strong belief by the SFORT that there should be maximum use of Bay and ocean for overflight as much as possible. Hopefully, the FAA can indicate what levels of noise reduction could be expected.

(13) Page 5 Current item 5 is "in the existing procedure, utilize existing areas of compatible land use for overflight. What does the SFORT mean by 'compatible land use'? Dependent on the definition there could be several significant concerns that should be discussed. Does the SFORT mean any land use not within the FAA 65 CNEL or greater contour map? If yes, then please refer to my 26 Sep. '2016 email comment 3.

(14) Page 5 Longer Term - this should be discussed and clarified as to what timeframe this estimated to be or expected to be.

(15) Page 5 COLLABORATION Current 2. wording is " Request the FAA provide modeling or other tools to determine the effects of different waypoint options." In that the SFORT Select Committee mandate is to recommend actions that will reduce aircraft noise I recommend the following wording: **Request the FAA provide modeling (inclusive of noise modeling) or other tools to determine the effects of different waypoints options and their comparative aircraft noise reduction expectations**

(16) Page 6 "...flying over noise-sensitive land uses..." The SFORT should clarify what it means by noise-sensitive land uses...".

(17) Page 7 CNDEL Procedure Why not take many more OAK and SFO departures out the Golden Gate and over the Pacifica Ocean? Again this would have aircraft traffic over fewer people on the ground. Please remember the OFFSHORE procedure the Congresswoman Jackie Speier has indicated should not be dropped by FAA and might be available for utilization for aircraft traffic routing over the Pacifica Ocean.

(18) Page 8 Short Term and Longer Term need to have expect timeframes defined.

(19) Page 10 Woodside VORTAC Procedure this is an arrival that the SBSC has been evaluating. Has the SBSC approved this wording?

(20) Page 13 Opposite Direction Operations Under DESCRITION item 1**."This is the most impactful departure with noise events to residents reaching 100 dBA.**" Can the SFO NAO provide what the duration of the exposure would be over a time period of time? What types of aircraft are causing this level of exposure? What specific areas can expect this level of dBA noise events? Is this true for all PRIMARILY IMPACTED CITIES: Daly City, Pacifica, San Francisco, South San Francisco?

(21) Page 14 Short Term (ST) this needs to be provided meaning by indicating a timeframe (i.e. 6-9 months, 18 - 24 months etc.)

(22) Page 15 Long Term (LT) this needs to be provided meaning by indicating a timeframe (i.e. 2 year to 5 years etc.)

(23) Page 17 NIITE Procedure Sue this departure routing is usually used during nighttime but should be considered for daytime usage also Why not out the Golden Gate to the Pacific Ocean and then either south, west or north traffic routing. This shows that the aircraft traffic does fly out the Golden Gate. This routing would track over the fewest people on the ground and if adjusted could lessen impacted on Brisbane as well as Pacifica and many other Peninsula communities. This routing during most of the day were the norm it would a big deal.

(24) Page 19 Long Term CONCEPT ONLY - Yes this is also getting more over Baywaters and out Golden Gate to Pacifica Ocean. This type of routing of aircraft traffic should be maximized if protecting the public health and welfare of people on the ground is a significant concern for community representatives and the FAA.

(25) Page 23 PROCEDURE: Visual Arrivals, Foster City Arrivals - This is SBSC focus item.

(26) Pages 26 - 29 PROCEDURE: NIGTTIME OFFLOADS/ROUTES This is a step in the right direction, but the SFORT should expedite its Legislation Subcommittee into action to help with appropriate new legislation that will provide adequate safeguards, protections, and enforceable regulations for controlling aircraft noise emissions for

the protection of public health and welfare people on the ground.

This concludes my quick read review comments.

Regards,

Ray Ramos, P.E.
Resident of Pacifica, CA

-----Original Message-----
From: Sue Digre <suedigre@gmail.com>
To: Cliff Lentz <cliffordlentz@gmail.com>; Cliff Lentz <clifflentz@sbcglobal.net>; Elizabeth Lewis <lizlew08@gmail.com>; Bert Ganoung <Bert.Ganoung@flysfo.com>; cindy.gibbs <cindy.gibbs@gmail.com>; cindy.Gibbs <cindy.Gibbs@flysfo.com>; Wentworth, Kathleen <Kathleen.Wentworth@mail.house.gov>
Cc: rerpac <rerpac@aol.com>; Pacifica City <helppacifica@gmail.com>; janice weeks airport <homebythesea@yahoo.com>; Ken Miles <kenmilesaqa@earthlink.net>; Meyya Meyyappan (ARC-T) <m.meyyappan@nasa.gov>; dlwjkw <dlwjkw@comcast.net>
Sent: Wed, Jun 22, 2016 12:26 am
Subject: Fwd: Document for Round Table Members

It has been a journey of much research, data collecting, meetings, sharings and brainstorming to reach the response attached. Arriving at this response was due to the hard work performed by a dedicated group of Pacifica residents acting as an advisory group for me to ensure that all affected neighborhoods in Pacifica are heard. They also spent their time listening attentively to and collaborating with the residents of Brisbane and other cities.

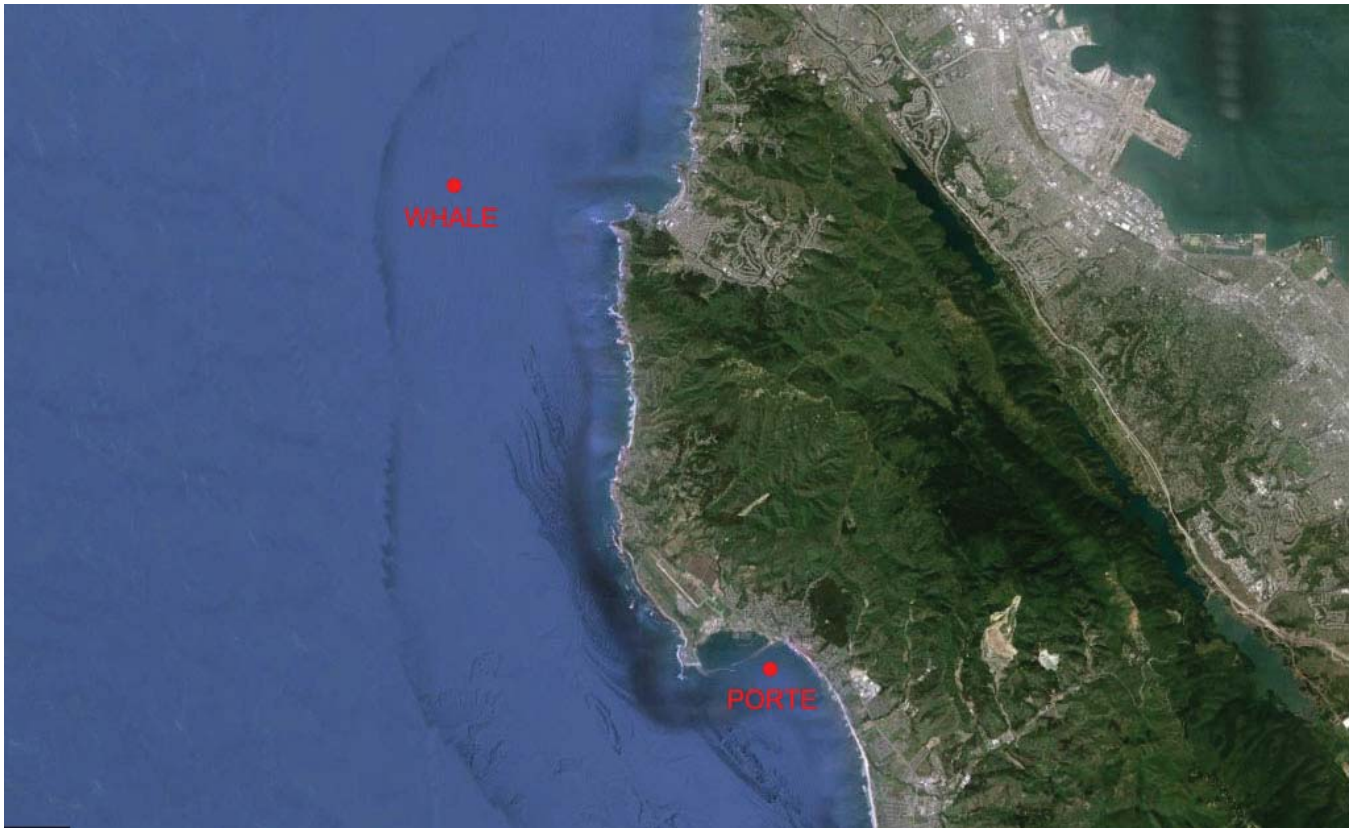
We are grateful to our Congresswoman, Jackie Speier, the FAA and the SFO Roundtable and Staff for their support towards creating a positive resolution to counteract the severe negative impacts on the health of our residents due to aircraft noise over our neighborhoods.

We are grateful to the residents of Brisbane for mutual collaboration.

Sue Digre, Pacifica liaison to SFO Roundtable.

Pacifica's Proposals & Response To FAA Initiatives

Mayor Sue Digre June 22, 2016



SSTIK THREE DEPARTURE (RNAV)

SAN FRANCISCO INTL (SFO)
SAN FRANCISCO, CALIFORNIA

ATIS
113.7 118.85
CLNC DEL
118.2
GND CON
121.8
SAN FRANCISCO TOWER
120.5 269.1
NORCAL DEP CON
135.1 307.2

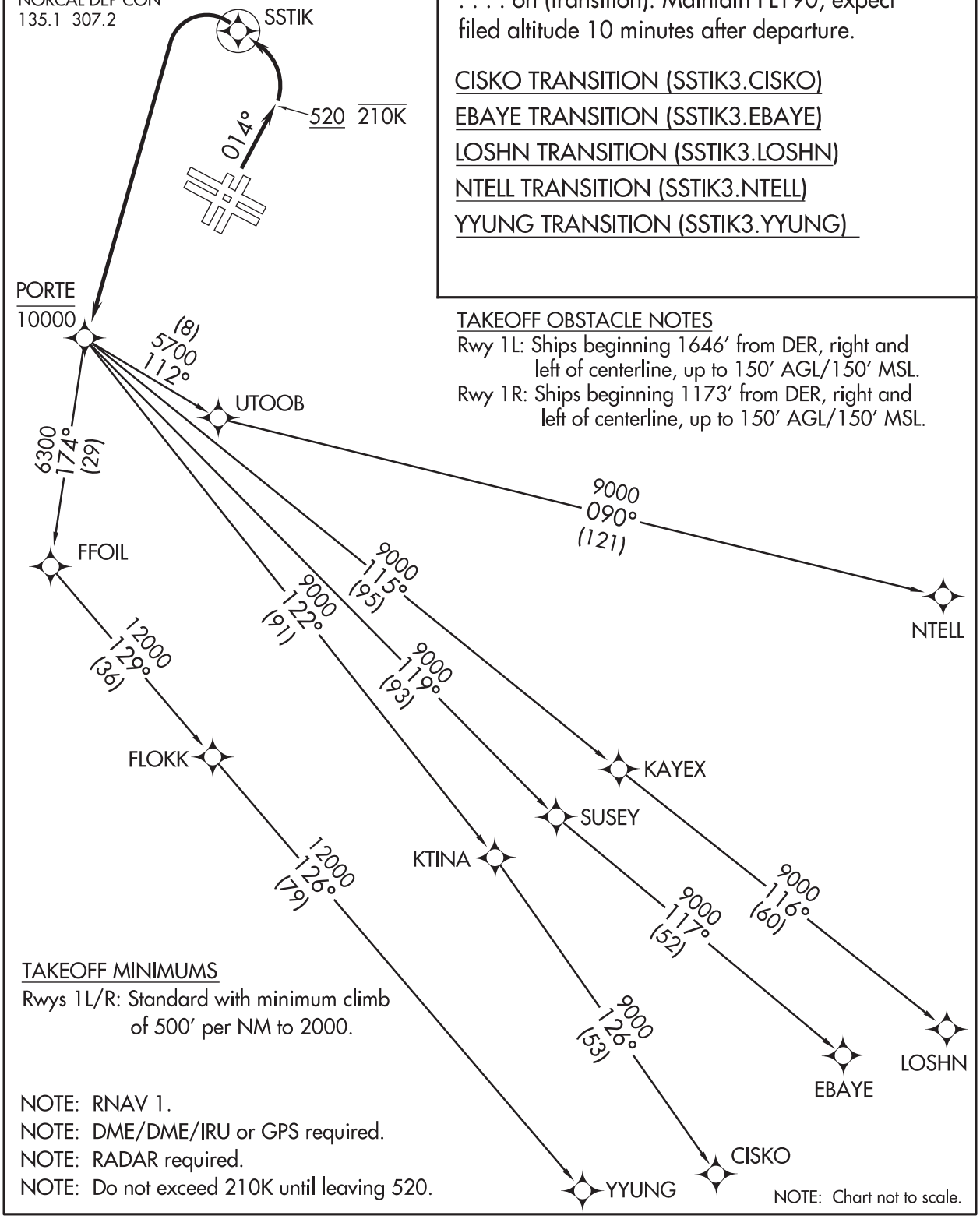
TOP ALTITUDE: FL190

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 1L/R: Climb heading 014° to 520 then left turn direct to SSTIK, then left turn direct to cross PORTE at/below 10000. Thence. . . .

. . . . on (transition). Maintain FL190, expect filed altitude 10 minutes after departure.

CISKO TRANSITION (SSTIK3.CISKO)
EBAYE TRANSITION (SSTIK3.EBAYE)
LOSHN TRANSITION (SSTIK3.LOSHN)
NTELL TRANSITION (SSTIK3.NTELL)
YYUNG TRANSITION (SSTIK3.YYUNG)



TAKEOFF OBSTACLE NOTES

Rwy 1L: Ships beginning 1646′ from DER, right and left of centerline, up to 150′ AGL/150′ MSL.
Rwy 1R: Ships beginning 1173′ from DER, right and left of centerline, up to 150′ AGL/150′ MSL.

TAKEOFF MINIMUMS

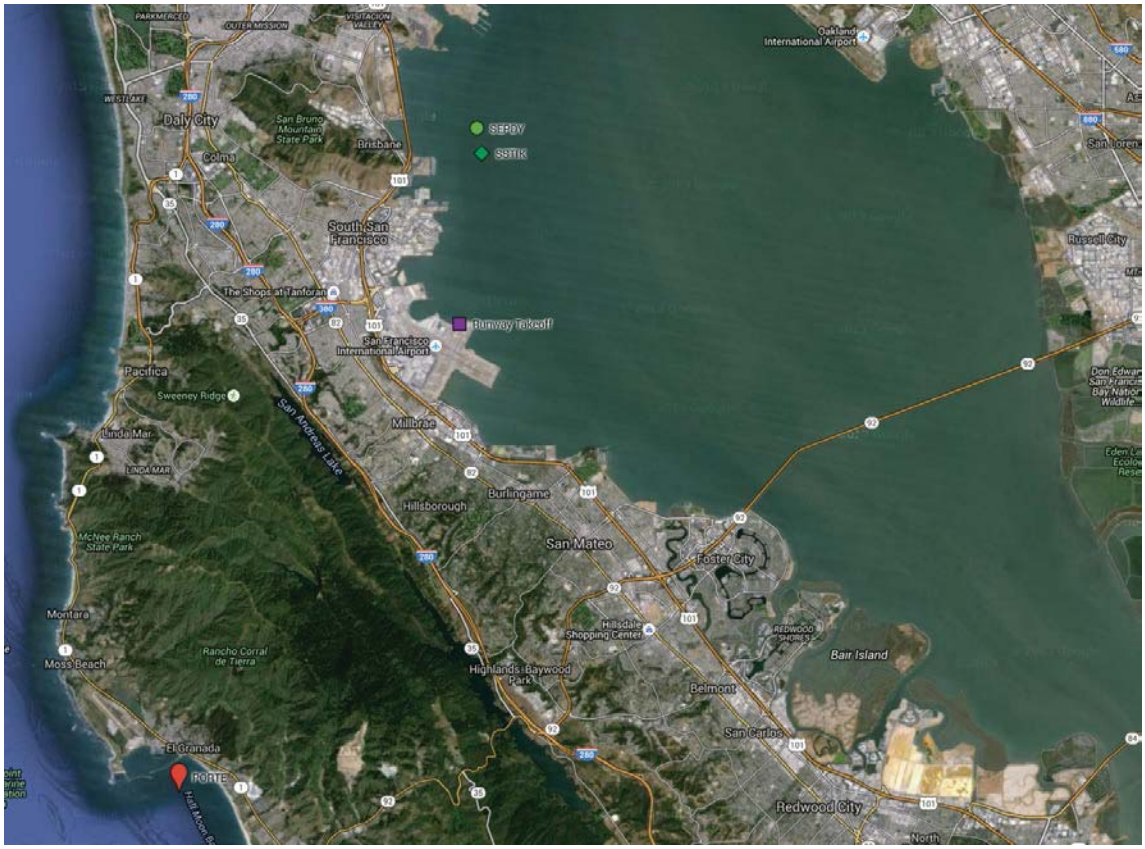
Rwys 1L/R: Standard with minimum climb of 500′ per NM to 2000.

NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: RADAR required.
NOTE: Do not exceed 210K until leaving 520.

NOTE: Chart not to scale.

SW-2, 28 APR 2016 to 26 MAY 2016

PROCEDURE: SSTIK	**ADJUSTMENTS:** 1.a.ii, 1.b.i, 1.b.ii, 1.b.iii, 2.a.ii(b)



DESCRIPTION: The SSTIK RNAV departure is typically used by aircraft departing SFO runways 1L and 1R. After takeoff, the aircraft flies north a short distance over the Bay, then flies *over* SSTIK waypoint. (located east of the City of Brisbane marina). For southbound destinations, after SSTIK, the aircraft then typically makes a left turn to head south to the PORTE intersection (located just south of the Half Moon Bay airport.)

This procedure replaced the conventional navigation PORTE departure. The new SSTIK waypoint is located approximately 1 nautical mile south of the SEPDY waypoint that is associated with the PORTE procedure; SEPDY is located east of the Baylands Soil Processing facilities. The SSTIK waypoint is closer to downtown Brisbane than SEPDY.

IMPACTED CITIES: Brisbane, Daly City, Pacifica, San Francisco, South San Francisco

NOISE ISSUES: The San Francisco Bay area is an area rich in diverse topography. The topography of San Bruno Mountain State Park amplifies noise impacts for Brisbane, due to its elevation relative to the City of Brisbane, from low flying planes that are vectored. Similarly, topography of the coastal range, including Milagra and Sweeny ridges, amplifies noise impacts for Pacifica residents from aircraft flying toward the PORTE waypoint. Planes flying at low altitudes negatively affect all impacted cities.

SFO ROUNDTABLE REQUESTS

Short Term

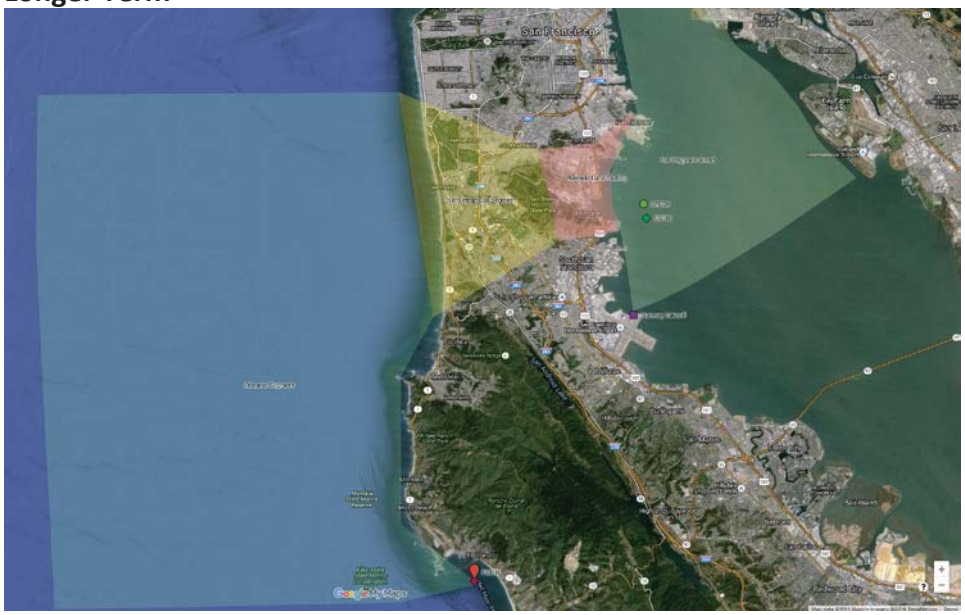
Modifications to the SSTIK departure:

1. Move SSTIK waypoint north and east as much as feasible to allow maximum altitude gain before turning west to fly over land.
2. Determine the necessity for an additional waypoint on land after SSTIK to provide lateral path guidance to airplanes to reduce noise impact.

Improved utilization of existing flight path and procedures:

3. In the existing procedure, use the Bay and ocean for overflight as much as possible.
4. In the existing procedure, utilize existing areas of non-residential land for overflight.
5. Avoid issuing southerly vectors to aircraft until an aircraft is actually *over* SSTIK (avoid anticipatory turns approaching SSTIK).
6. Avoid assigning a southbound heading toward PORTE for as long as feasible (allows additional altitude gain to reduce noise impact.)
7. Avoid vectoring aircraft down the Peninsula direct to points beyond PORTE.

Longer Term



1. Design a new transition from SSTIK waypoint to PORTE waypoint or to a waypoint further south along the coast. We would suggest that the lateral path for this transition be researched and studied by dividing the lateral path into four or more suggested segments as follows:
    a. Green segment: Takeoff to SSTIK (or a revised location of SSTIK)
    b. Pink segment: SSTIK to San Bruno Mountain
    c. Yellow segment: San Bruno Mountain to the Pacific Ocean coastline – utilizing the shortest, least impactful routing, maximizing overflight of non-residential areas by using industrial, commercial, cemeteries, highways, parks, golf courses and similar. If feasible, consider incorporating flight path dispersal.
    d. Blue segment: Pacific Ocean coastline to PORTE intersection – remaining significantly offshore over the Pacific Ocean for the entirety of this segment.

COLLABORATION:

1. Work with the FAA to find an appropriate location for moving the SSTIK waypoint east and north of its current location so planes can fly over the Bay for a longer period of time, and thus increase altitude before heading west and flying over residential areas.
2. Explore feasibility of creating a waypoint at the Bayshore Train Station or other point on land, to help guide planes over non-residential areas when they reach land.
3. Work with our local FAA officials to reduce vectoring and allow planes to fly the charted procedures when safety is not an issue.
4. Work with local FAA officials and airlines to encourage higher altitudes when flying over residential areas and the use of non-residential areas where feasible.
5. To monitor success, provide a monthly report indicating % of flights that achieve these stated goals.
6. Extensive long term collaboration will be required to initiate and develop the process of creating a new southbound destination transition from the SSTIK waypoint.

REQUESTED INITIAL FAA RESEARCH:

1. **FAA is requested to work with SFO Roundtable members and staff to assess options for a SSTIK revised location and transition over land as well as additional waypoints over land to provide lateral aircraft path guidance.**
2. **FAA is requested to research and determine any conflicting airspace issues within the Green segment (see map above) which would NOT be available for the location of a new SSTIK waypoint.**
3. **Preliminary to the creation of a new SSTIK transition for southbound destinations, it is requested that the FAA research and determine any conflicting airspace issues within each of the segments (see map above) which would NOT be available for airplane flight at altitudes compatible with a new SSTIK departure transition for southbound destinations.**

PROCEDURE: MENLO INTERSECTION/ WAYPOINT	**ADJUSTMENTS:** 1.a.i.(a) (Altitude) Not Feasible

DESCRIPTION: Evaluate raising altitude at MENLO waypoint to 5,000' or establish a new waypoint to allow for crossing the MENLO area closer to 5,000 feet.

IMPACTED CITIES: Atherton, East Palo Alto, Menlo Park, Redwood City…**LIST OTHERS**

NOISE ISSUES: This Adjustment contains two items: increasing the altitude at MENLO and establishing a new waypoint.

ALTITUDE: Based on the safety criteria of instrument procedure design, the Roundtable understands the altitude at MENLO must remain at the current 5000' altitude in order for aircraft to safely intercept and descend on the vertical and lateral paths to the SFO Runway 28L ILS during weather conditions of restricted visibility or cloud cover.

LOCATION OF MENLO: Establishing a new waypoint or additional waypoints for entry to the Instrument Landing System (ILS) should be addressed separately by the FAA to determine feasibility.

SFO ROUNDTABLE REQUESTS

Short Term: FAA to determine the feasibility of moving MENLO to a new location-- preferably utilizing sites in the Bay-- or adding additional dispersed waypoints to serve as alternative entry points to the 28L ILS.

Longer Term:
To be determined after feasibility determination.

COLLABORATION:
The SFO RT will work with the FAA to clarify this request and provide other data, as needed to support their research.

REQUESTED INITIAL FAA RESEARCH:
FAA is requested to determine the feasibility of moving MENLO to a new location-- preferably utilizing sites in the Bay-- or adding additional dispersed waypoints to serve as alternative entry points to the 28L ILS.

AIRPORT NOISE NEWS

Regular Meeting # 303
November 2, 2016

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Airport Noise Report

A weekly update on litigation, regulations, and technological developments

Volume 28, Number 35 October 21, 2016

Community Involvement

FAA ACCEPTS NAC RECS, NAMES JULIE MARKS TO BE COMMUNITY INVOLVEMENT MANAGER

The FAA has accepted the NextGen Advisory Committee's recommendations on ways to improve community outreach when implementing NextGen Performance-based navigation (PBN) procedures and airspace changes.

The agency also has named Julie Marks to the new position of Community Involvement Manager for Airspace Projects in FAA's Air Traffic Organization (ATO). She formerly served as manager of Environmental Policy and Operations.

FAA told the NAC at its Oct. 5 meeting in Orlando that it has begun a new process, based on the NAC's recommendations, to better educate and communicate with the public about airspace changes.

FAA plans to expand its current process of community outreach by adding "multiple layers of engagement" with stakeholders in order to make the collaborative process of airspace redesign more transparent to airports; local, state, and federal governments; community organizations; and the general public.

Public outreach will be integrated into the PBN study, design, and implementa-

(Continued on p. 140)

Research

'FRUSTRATED MINORITY' OF CITIZENS FILING MOST NOISE COMPLAINTS, THINK TANK FINDS

A study just issued by a major conservative think tank evaluated aircraft noise complaint data at nine U.S. airports and found that the majority of complaints at most of these airports were filed by just a handful of people whose influence, the study authors contend, runs the risk of impeding much-needed improvements to the aviation system that would benefit their communities.

"There are worrisome signs that this small, frustrated minority of citizens is affecting aviation policy," Eli Dourado and Raymond Russell, researchers at the Mercatus Center at George Mason University, concluded in their paper "Airport Noise NIMBYism: An Empirical Investigation."

"Airport noise can be a nuisance but it is also necessary for economic activity in the modern world," they wrote. "Airport noise policy must strike a reasonable balance between noise abatement and the economic benefits associated with noisy airplane takeoffs and landings. However, because the majority of noise complaints come from a small number of loud objectors, there is a danger that this balance has been tilted too far in the direction of noise abatement," they asserted.

"We hope that increasing awareness of the lopsided distribution of noise com-

(Continued on p. 140)

In This Issue…

FAA, from p. 139

tion processes and airspace designs will be refined based on public outreach and airport input.

FAA will continue to use a workshop format to allow the public to provide feedback on airspace changes and will use visual props to illustrate changes in flight paths and explain why they are being made.

FAA also has added a new section on Community Engagement to its NextGen website (www.faa.gov/nextgen). The new section has links to individual Metroplex airspace projects with updates on their status.

NAC Recommendations

Last June, the NAC's PBN Blueprint Task Group sent recommendations to FAA on ways to improve the agency's community's community outreach efforts (28 ANR 86).

The Task Group urged FAA to do the following:

• Form a specialized outreach team of professionals trained to engage in local community outreach;

• Develop specific Local Community Outreach Toolkits tailored for, and able to be understood by a wide range of audiences for the Community Outreach Strategy for specific PBN procedure efforts based upon an assessment of the local community needs;

• Develop ongoing and scalable Community Outreach Programs in collaboration with local airports in order to establish a basis of communication and collaboration with local communities that can help support PBN procedure implementation;

• Disseminate both this document as well as the original Blueprint for Success to Implementing PBN to airport operators, airlines and other stakeholders to encourage and foster successful community engagement efforts; and

• To the extent practicable, incorporate the best practices outlined throughout this document for (1) preparation; (2) education; (3) engagement; (4) advocacy; and (5) post-implementation steps in PBN-related community engagement.

Complaints, from p. 139

plaints can help promote noise standards that strike an appropriate balance and facilitate the advancement of faster and cheaper commercial flight."

The Mercatus Center, one of the best-funded think tanks in the U.S., was founded by the Koch Family Foundations and is described by a Democratic strategist as "ground zero for deregulation policy in Washington."

That market-oriented zeal is evident in Dourado and Russell's paper on aircraft noise complaints, which is being picked up by news outlets around the country.

"It would be a mistake to allow the preference of a vocal but minuscule minority of citizens, however sympathetic their circumstances, to impede much-needed improvements in aviation," such as the implementation of NextGen flight paths and development of new supersonic aircraft, Dourado and Russell argued, contending that new SSTs should not be subject to subsonic aircraft noise standards.

"Holding supersonic aircraft to subsonic noise standards would hamper the viability of the new market," they asserted.

"Aircraft noise standards are already quite strict and they create real economic and environmental costs associated with lower aircraft fuel efficiency," the researchers said.

They noted that, in recent decades, the FAA has imposed progressively more stringent noise standards on aircraft operating in U.S. airspace.

"While noise abatement is desirable, it can have significant costs – particularly on the fuel efficiency of aircraft – resulting not only in higher carbon emissions but also in higher ticket prices," they argued.

Implications of Paper Concern N.O.I.S.E.

The N.O.I.S.E. organization – which represents elected officials of jurisdictions with aircraft noise problems – told ANR it has "great concerns" with the implications of the Mercatus Center report.

"To suggest that noise impacts are captured and dialogue and policies are implemented only based off of citizen complaints is misleading," Brad Pierce, N.O.I.S.E. president and Aurora, CO, City Council Member, told ANR.

"We too have concerns with the noise complaint system at many U.S. airports, but as we know from the FAA, noise policy is not determined based on complaints – it is based on modeling using long standing and still implemented metrics.

"We too agree that centering the discussion solely on noise complaints would be ineffective. However, what this report suggests is that there is no further dialogue, discussion and collaboration between impacted communities and the FAA and airports beyond call logs of complaints.

"The N.O.I.S.E. organization participates and is engaged in these discussions at U.S. airports every day and we encourage the FAA and federal policy makers to continue the effort to take community impacts into strong consideration when implementing new technologies and changing airspace."

Criticism of Study

Because the Mercatus Center paper has the potential to significantly influence congressional discussions on matters regarding NextGen flight path decisions, privatization of FAA's air traffic control system, and noise policy issues, ANR asked two experts with in-depth knowledge of FAA noise policy development and the legal structure underpinning it to comment on the study.

ANR also asked one of the authors of the paper, Eli Dourado, to address several questions posed by ANR.

Dourado is a research fellow at the Mercatus Center, which is located in Fairfax, VA, and director of its Technology Policy Program.

Thesis Both Simplistic and Wrong

Following are comments by Dr. Sanford Fidell, a Los Angeles-based psychoacoustician and expert on how communities respond to aircraft noise. He is one of the architects of recently revised ICAO Standard 1996-1 on measurement and assessment of environmental noise:

"Airport Noise NIMBYism: An Empirical Investigation" by Eli Dourado and Raymond Russell, posted to the website of George Mason University's Mercatus Center, is an analysis produced by a graduate student and an undergraduate of the influence of aircraft noise complaints on U.S. aircraft noise regulatory policy.

Its thesis is both simplistic and demonstrably wrong. The work proceeds from several incorrect assumptions:

1) That noise complaints play a substantive role in awards of federal subsidies to airport infrastructure projects (they don't);

2) That the historic imposition of source level restrictions on aircraft types have been motivated primarily by concerns about aircraft noise impacts (they were in fact developed and encouraged by aviation interests to secure much lower operating costs of replacement aircraft); and

3) That airports always represent the best and highest economic uses of land.

The authors further seem unaware:

1) That all regulation seeks to balance conflicting societal interests, not to overwhelmingly favor one set of interests over others;

2) That their insights about aircraft noise complaints are hardly novel; and

3) That the professional, peer-reviewed technical literature on aircraft noise effects offers far more rigorous analysis of ratios of complainants to complaints.

Even more disturbingly, however, Dourado and Russell complain about the ability of their fellow citizens (whom they denigrate as "NIMBYs") to exercise their Constitutionally-guaranteed rights of free speech and to petition elected officials.

This complaint suggests a preference for a more business-oriented political system, if not a general impatience with the untidiness of democracy. After all, Mussolini's Fascists are popularly (if incorrectly) credited with making Italy's trains run on time, and China quickly builds dams, bullet trains, airports and even complete cities by the simple expedient of ignoring opposition to infrastructure projects.

Dourado and Russell seem to regret that in America, industry must still attempt to socialize costs while privatizing profits the old-fashioned way: by lobbying Congress (think ANCA) and regulatory agencies for operating and construction subsidies. As Churchill observed in 1947, democracy remains " … the worst form of Government except all those other forms that have been tried from time to time."

Diminishes Impact of Aviation Noise

Following are comments by Steven Taber of the Taber Law Group in Irvine, CA, who formerly served as an FAA attorney and now represents communities impacted by aircraft noise from NextGen flight path changes:

The report diminishes the impact of aviation noise on communities by showing that in several cases a few individuals or households accounted for a high percentage of noise complaints. The implicit conclusion is that if people really were affected by aviation noise there would be more unique complainers. This is an unreasonable conclusion.

First, this conclusion assumes that noise complaints are a statistically good example of the communities' opinion of aviation noise. There is no research to support this conclusion.

The article by Fidell, Mestre and Sneddon in the Jan-Feb 2012 edition of *Noise Control Engineering Journal* (title: "A potential role for noise complaints as a predictor of the prevalence of annoyance with aircraft noise") reaches valid conclusions about noise complaints.

Second, it has been my experience that many residents do not believe that noise complaints are an effective tool for expressing their discontent about aviation noise. Because of their belief they do not file noise complaints even though they are severely affected by aviation noise. The issue with filing noise complaints with the airport and/or FAA is that residents in communities do not see any results from filing noise complaints.

Another concern is the report's emphasis on economic considerations. The report authors continue "[t]here are worrisome signs that this small, frustrated minority of citizens is affecting aviation policy." They claim that noise abatement has an effect on fuel efficiency, which increases carbon emissions and raises ticket prices. Therefore, the economic considerations should outweigh the concerns of a few "annoying," but vocal, citizens.

This ignores the very real health effects that aviation noise has on people. Summarily dismissing the residents' concerns as being the result of a "small, frustrated minority" ignores the breadth of the community's opposition to an increase in aviation noise.

The report ignores the FAA's duty to protect these communities. See "[T]he Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." 42 USC § 4901(b); see also 49 U.S.C. § 40103(b)(2) "Administrator shall prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes) for . . . protecting individuals and property on the ground." The statutes do not state that the FAA should take airline ticket prices into account when deciding whether noise abatement is appropriate.

While the report does not propose any firm policy options, it is worrisome that the effect of aviation noise on communities should be downplayed because only a few vocal

individuals are filing noise complaints. There is enough evidence that the health, as well as the economic, effects of aviation noise have a wide ranging effect on communities.

Finally, the report ignores the FAA's obligations under the law. When the FAA was reauthorized in 2003 and the FAA began its roll-out of NextGen, the Congress directed the FAA to "take into consideration, to the greatest extent practicable, design of airport approach and departure flight paths to reduce exposure of noise and emissions pollution on affected residents." 49 U.S.C. § 40101 note, Vision 100 - Century of Aviation Reauthorization Act of 2003, Pub.L. No. 108-176, § 709(c)(7). The report is asking the FAA to ignore its statutory duties.

Not the Final Word on Right Policy Balance

Following are comments by paper author Eli Dourado:

Airport noise policy is made in an incredibly complex way, entailing both legislative action and input from several agencies at the federal level, as well as local and international components.

The purpose of our study is not to claim that there is a direct pathway from citizen complaints to FAA policymaking on noise. Rather, it is simply to document that, by one available metric, policy input from the public is highly concentrated in a tiny minority of people.

Moreover, although many policymakers are aware of the skewed distribution of complaints, others, such as members of Congress, may not be.

Although there may be better conceptual measures of public input or of its impact on policy, the distribution of complaints is available data. We do not believe our paper to be the final word on whether airport noise policy strikes the right balance, but taking account of this available data is a necessary part of the discussion.

As is the case with all papers published by the Mercatus Center, our paper was subject to double-blind peer review. Our paper received both constructive and critical feedback from reviewers who are experts in relevant fields and, based on their comments, extremely familiar with the issue of airport noise. Now that our paper is published, we welcome further research, including opposing views, on whether airport noise policy strikes the right balance and why.

My interest in airport noise policy stems from my broader interest in aviation innovation. I would love to live in a world with radically cheaper, faster, and more convenient flight. Some of the barriers to this are technological and others are regulatory. While we cannot fully deregulate aviation in pursuit of innovation, we can at least ensure that regulation strikes the right tradeoff between competing interests.

His paper can be downloaded at
https://www.mercatus.org/publications/airport-noise-nimbyism

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San Francisco International Airport

Aircraft Noise Abatement Office

Glossary of common Acoustic and Air Traffic Control terms

A

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

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

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

ALP - Airport Layout Plan – The official, FAA approved map of an airport's facilities.

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

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

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

APU - Auxiliary Power Unit – A self-contained generator in an aircraft that produces power for ground operations of the electrical and ventilation systems and for starting the engines.

Arrival – The act of landing at an airport.

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

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

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

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

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

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

Altitude MSL –Aircraft altitude measured in feet above mean sea level.

B

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

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

C

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 4.77 and 10 decibel penalty

penalty for operations occurring in the evening and nighttime periods, respectively.

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

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

D

Decibel (dB) - In sound, decibels measure a scale from the threshold of human hearing, 0 dB, upward towards the threshold of pain, about 120-140 dB. Because decibels are such a small measure, they are computed logarithmically and cannot be added arithmetically. An increase of ten dB is perceived by human ears as a doubling of noise.

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

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

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

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

Departure Procedure – A published IFR departure procedure describing specific criteria for climb, routing, and communications for a specific runway at an airport.

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

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

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

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

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

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

E

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

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

F

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

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 ground the terrain.

H

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

I

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

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

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

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

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

J

K

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

L

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

Lmax – The peak noise level reached by a single aircraft event.

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

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

M

Middle Marker - A beacon that defines a point along the glide slope of an ILS, normally located at or near the point of decision height.

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

N

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

Nautical Mile – A measure of distance used in air and sea navigation. One nautical mile is equal to the length of one minute of latitude along the earth's equator. The nautical mile was officially set as 6076.115 feet. (100 nautical miles = 115 statute miles)

Navaid – Navigational Aid.

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

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

NEM – Noise Exposure Map – A FAR Part 150 requirement prepared by airports to depict noise contours. NEMs also take into account potential land use changes around airports.

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

NMS – See RMS

Noise Contour – See CNEL and DNL Contour.

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

O

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.

P

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

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

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

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

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

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

Q

R

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

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

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

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

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

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

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

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

S

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

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

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.

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

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

T

Taxiway – A paved strip that connects runways and terminals providing the ability to move aircraft so they will not interfere with takeoffs or landings.

Terminal Airspace - The air space that is controlled by a TRACON.

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

Threshold – Specified boundary.

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

U

V

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

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

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

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

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

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

W

X

Y

how to reach us

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