



Fly Quiet Report

Presented at the November 2, 2016
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
Third Quarter 2016



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

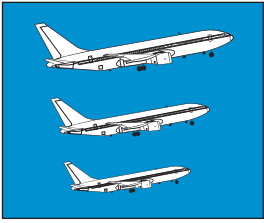
Fly Quiet reports communicate results in a clear, understandable format on a scale of 0-10, zero being poor and ten being good. This allows for an easy comparison between airlines over time. Individual airline scores are computed and reports are generated each quarter. These quantitative scores allow 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.

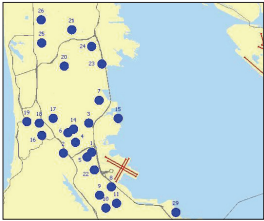


SFO's Fly Quiet Ratings



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

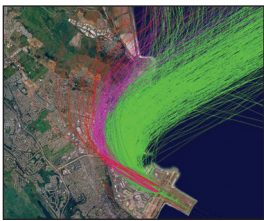
Eliminating high-level noise events is a long-standing goal of the Airport and the Airport Community Roundtable. As a result the Airport has established single event maximum noise level limits at each noise-monitoring site. These thresholds were set to identify aircraft producing noise levels higher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

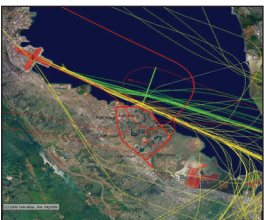
In order to evaluate each airline's performance when flying a Shoreline Departure, a corridor was established using Interstate 101 (green colored flight tracks) as a reference point. The corridor runs north along 101, beginning approximately one-mile north-northwest of the end of Runways 28L and 28R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



Gap Departure Quality



































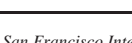
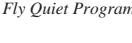

Aircraft departing SFO using Runways 28L and 28R frequently depart straight out using a procedure known as the Gap Departure. This procedure directs air traffic to fly a route that takes them over the area northwest of the airport over the cities of South San Francisco, San Bruno, Daly City, and Pacifica. 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.













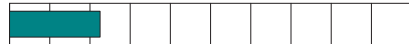
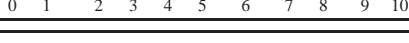


Foster City Arrival Quality






















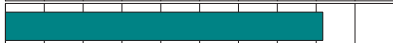







































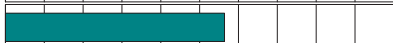








The Arrival Quality Rating is the latest addition to the Fly Quiet Program. In an effort to further reduce nighttime noise in neighboring communities, this rating is designed to maximize over-bay approaches to Runways 28 between 11:00 p.m. and 6:00 a.m. Airlines arriving to Runways 28 during these hours 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.













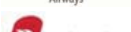





Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline Gap	Arrivals Foster City	Final Score	Airline Fly Quiet Rating				
 VIR	8.99	9.96	-	-	6.51	-	8.49	[Bar chart]				
 CPZ	10.00	9.92	-	10.00	5.51	5.00	8.09	[Bar chart]				
 DLH	9.09	9.98	-	7.50	5.63	-	8.05	[Bar chart]				
 SCX	5.82	9.94	3.33	10.00	-	10.00	7.82	[Bar chart]				
 ANA	7.15	9.93	-	-	5.99	-	7.69	[Bar chart]				
 AIC	7.15	8.60	-	-	7.19	-	7.64	[Bar chart]				
 AFR	8.36	9.89	-	-	4.64	-	7.63	[Bar chart]				
 UAE	10.00	10.00	-	-	2.83	-	7.61	[Bar chart]				
 WJA	5.82	9.59	-	10.00	-	5.00	7.60	[Bar chart]				
 SAS	8.17	9.98	-	-	4.47	-	7.54	[Bar chart]				
 ASA	5.35	9.87	10.00	9.51	5.00	4.69	7.40	[Bar chart]				
 ETD	7.15	9.76	-	-	5.26	-	7.39	[Bar chart]				
 SWR	8.17	9.96	-	-	3.82	-	7.32	[Bar chart]				
 BAW	7.93	9.98	-	-	3.96	-	7.29	[Bar chart]				
 SKW	10.00	9.97	3.33	9.82	4.73	4.85	7.12	[Bar chart]				
 ACA	5.38	9.93	5.56	9.06	4.23	8.52	7.11	[Bar chart]				
 FFT	5.64	9.89	4.52	9.42	4.69	7.93	7.01	[Bar chart]				
 SWA	5.73	9.88	3.33	9.84	5.82	7.06	6.94	[Bar chart]				
 DAL	6.33	9.92	3.38	7.87	6.28	7.61	6.90	[Bar chart]				
 WOW	4.05	9.94	-	-	6.46	-	6.81	[Bar chart]				
 VRD	4.96	9.94	-	9.37	3.44	6.28	6.80	[Bar chart]				
 CES	6.68	9.98	-	-	3.67	-	6.78	[Bar chart]				
 XLF	4.05	9.82	-	5.00	7.89	-	6.69	[Bar chart]				
 ANZ	6.55	7.53	-	-	5.82	-	6.63	[Bar chart]				
 CSN	9.50	9.96	0.00	-	6.54	-	6.50	[Bar chart]				
 FDX	3.61	9.28	-	9.09	4.31	5.95	6.45	[Bar chart]				
 THY	7.15	9.98	-	-	2.12	-	6.42	[Bar chart]				
 JBU	4.79	9.85	3.33	7.66	4.77	7.83	6.37	[Bar chart]				
 VOI	4.86	9.52	3.19	-	9.13	5.07	6.35	[Bar chart]				
 CCA	9.23	9.52	0.29	-	6.26	-	6.33	[Bar chart]				
								6.29	SFO AVERAGE			
 GTI	4.87	8.89	4.00	7.00	7.07	5.83	6.28	[Bar chart]				
 UAL	5.80	9.84	3.48	7.27	4.38	6.55	6.22	[Bar chart]				
 AMX	5.82	9.39	2.65	-	6.76	5.91	6.11	[Bar chart]				
 CMP	5.82	9.16	-	-	3.25	-	6.08	[Bar chart]				
 AAL	5.17	9.84	4.15	7.41	2.12	7.21	5.98	[Bar chart]				
 KLM	4.98	9.97	-	4.00	4.92	-	5.97	[Bar chart]				
 NCA	10.00	9.08	0.00	-	5.59	5.00	5.93	[Bar chart]				
JAL	7.15	8.46	0.56	-	6.99	-	5.79	[Bar chart]				

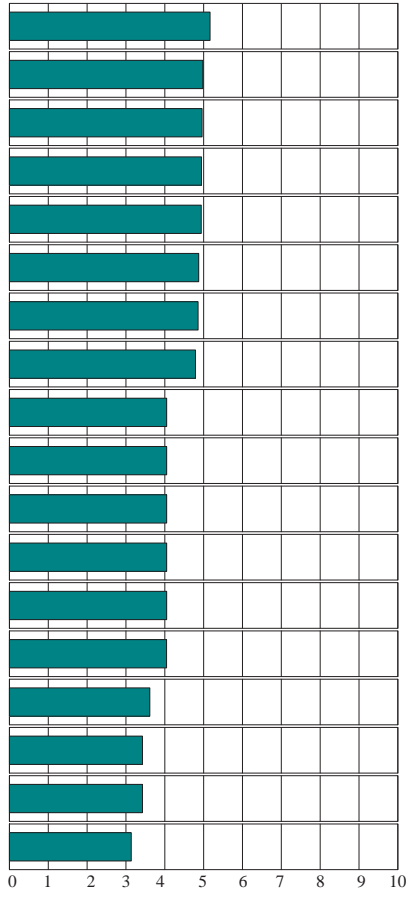
Airline Fly Quiet Summary Report - 3rd Quarter 2016


































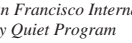




July 1 to September 30, 2016




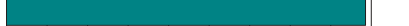













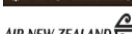





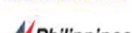







Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline Gap	Arrivals Foster City	Final Score	Airline Fly Quiet Rating										
 HAL	4.05	9.49	-	-	4.04	5.00	5.64											
 KAL	9.89	7.15	0.79	-	4.71	5.06	5.52											
 TAI	4.94	9.44	3.08	-	4.80	5.16	5.49											
 AAR	4.95	7.33	1.82	-	8.14	5.14	5.47											
 EIN	4.05	10.00	-	-	2.03	-	5.36											
 CPA	7.15	8.12	0.09	-	6.45	5.00	5.36											
 BER	4.05	9.97	-	5.00	1.44	-	5.11											
 EVA	6.85	8.22	0.78	-	4.03	5.00	4.98											
 CAL	5.64	8.76	0.57	-	4.89	5.00	4.97											
 SIA	7.15	8.86	0.34	-	3.23	5.00	4.92											
 PAL	7.41	7.00	0.38	-	3.00	5.00	4.56											
 FJI	4.05	7.75	0.00	-	5.18	-	4.24											
 CKS	3.14	0.12	0.72	10.00	1.92	5.37	3.55											
 PAC	3.43	0.32	2.50	-	2.92	5.00	2.83											
 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	Nationwide Fleet Noise Quality Rating	San Francisco		Fleet Noise Quality Rating	
		Average Daily Jet Operations	Score		
 NCA	3.90	1	10.00		
 UAE	7.89	1	10.00		
 CPZ	10.00	9	10.00		
 SKW	10.00	82	10.00		
 KAL	4.05	2	9.89		
 CSN	5.64	1	9.50		
 CCA	3.46	1	9.23		
 DLH	6.09	2	9.09		
 VIR	5.84	2	8.99		
 AFR	5.49	2	8.36		
 SAS	4.96	1	8.17		
 SWR	5.17	2	8.17		
 BAW	4.34	2	7.93		
 PAL	5.09	1	7.41		
 ANA	5.43	1	7.15		
 CPA	4.18	2	7.15		
 ETD	0.00	1	7.15		
 JAL	4.20	1	7.15		
 SIA	5.93	2	7.15		
 THY	6.80	1	7.15		
 AIC	4.77	0	7.15		
 EVA	5.05	2	6.85		
 CES	4.63	1	6.68		
 ANZ	4.00	1	6.55		
				6.37	SFO AVERAGE
 DAL	4.92	41	6.33		
 AMX	5.54	3	5.82		
 CMP	6.46	1	5.82		
 SCX	5.82	2	5.82		
 WJA	5.82	2	5.82		
 UAL	5.83	192	5.80		
 SWA	5.70	44	5.73		
 FFT	6.41	8	5.64		
 CAL	3.62	2	5.64		
 ACA	6.75	13	5.38		
 ASA	5.10	17	5.35		

Airline	San Francisco		Fleet Noise Quality Rating
	Nationwide Fleet Noise Quality Rating	Average Daily Jet Operations Score	
 AAL	3.94	46	5.17
 KLM	4.67	1	4.98
 VRD	5.31	59	4.96
 AAR	3.93	1	4.95
 TAI	5.18	1	4.94
 GTI	0.93	1	4.87
 VOI	0.00	2	4.86
 JBU	6.13	16	4.79
 EIN	4.05	1	4.05
 WOW	0.00	1	4.05
 XLF	4.05	0	4.05
 BER	5.92	1	4.05
 FJI	0.00	0	4.05
 HAL	6.21	2	4.05
 FDX	2.80	1	3.61
 PAC	3.43	0	3.43
 QFA	3.47	1	3.43
 CKS	0.60	0	3.14
AVERAGE	4.71	11	6.37

































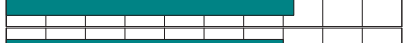







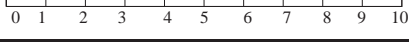


Airline	Noise Exceedances				Noise Exceedance Quality Rating
	Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	
 EIN	0	183	0	10.00	
 UAE	0	184	0	10.00	
 CES	1	186	5	9.98	
 DLH	2	367	5	9.98	
 BAW	2	365	5	9.98	
 SAS	1	182	5	9.98	
 THY	1	176	6	9.98	
 SKW	124	18,872	7	9.97	
 BER	1	132	8	9.97	
 KLM	2	233	9	9.97	
 VIR	3	338	9	9.96	
 SWR	3	331	9	9.96	
 CSN	2	183	11	9.96	
 SCX	7	457	15	9.94	
 VRD	167	10,887	15	9.94	
 WOW	2	127	16	9.94	
 ANA	3	183	16	9.93	
 ACA	40	2,389	17	9.93	
 DAL	142	7,462	19	9.92	
 CPZ	53	2,684	20	9.92	
 AFR	9	343	26	9.89	
 FFT	42	1,486	28	9.89	
 SWA	251	8,173	31	9.88	
 ASA	103	3,217	32	9.87	
 JBU	105	2,925	36	9.85	
 UAL	1,380	35,405	39	9.84	
 AAL	340	8,530	40	9.84	
 XLF	3	67	45	9.82	
 ETD	11	185	59	9.76	
 WJA	37	367	101	9.59	
 CCA	30	252	119	9.52	
 VOI	33	277	119	9.52	
 HAL	46	366	126	9.49	
 TAI	38	274	139	9.44	
 AMX	85	567	150	9.39	
 FDX	46	257	179	9.28	
 CMP	38	184	207	9.16	
 NCA	36	159	226	9.08	





































































Airline	Noise Exceedances				Noise Exceedance Quality Rating
	Total Noise Exceedances	Total Quarterly Operations	Exceedances per 1000 Operations	Score	
 GTI	73	265	275	8.89	
 SIA	103	365	282	8.86	
				8.86	
 CAL	93	304	306	8.76	
 AIC	27	78	346	8.60	
 JAL	70	184	380	8.46	
 EVA	174	396	439	8.22	
 CPA	199	428	465	8.12	
 FJI	15	27	556	7.75	
 ANZ	106	174	609	7.53	
 AAR	177	268	660	7.33	
 KAL	261	370	705	7.15	
 PAL	175	236	742	7.00	
 PAC	55	23	2391	0.32	
 CKS	144	59	2441	0.12	
 QFA	388	157	2471	0.00	
TOTAL	5,249	112,289			
SFO AVERAGE			282	8.86	

Nighttime Preferential Runway Use - 3rd Quarter 2016

July 1 to September 30, 2016






















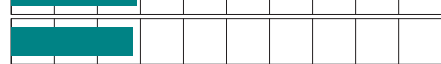

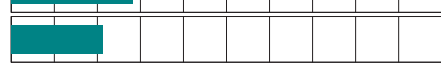

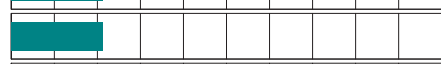

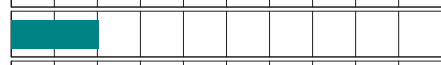

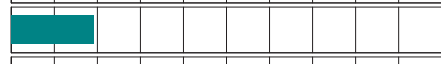

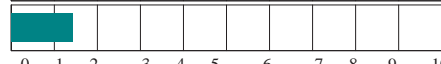

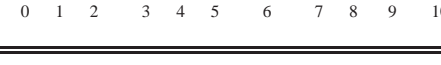
Airline	Nighttime Departures (1:00 am to 6:00 am)						Nighttime Runway Use Rating
	Total	10L/R	28L/R Shoreline	01L/R	28L/R Straight	Score	
ASA	1	100%	0%	0%	0%	10.00	
ACA	3	0%	67%	33%	0%	5.56	
FFT	31	10%	16%	74%	0%	4.52	
AAL	188	4%	18%	77%	2%	4.15	
GTI	5	0%	60%	0%	40%	4.00	
UAL	233	3%	8%	81%	9%	3.48	
DAL	74	0%	1%	99%	0%	3.38	
JBU	11	0%	9%	82%	9%	3.33	
SCX	2	0%	0%	100%	0%	3.33	
SWA	90	0%	0%	100%	0%	3.33	
SKW	15	0%	13%	73%	13%	3.33	
VOI	138	7%	0%	74%	19%	3.19	
TAI	92	7%	0%	73%	21%	3.08	
AMX	34	9%	0%	53%	38%	2.65	
PAC	12	25%	0%	0%	75%	2.50	
						2.28	SFO AVERAGE
AAR	33	18%	0%	0%	82%	1.82	
KAL	89	8%	0%	0%	92%	0.79	
EVA	128	8%	0%	0%	92%	0.78	
CKS	23	4%	4%	0%	91%	0.72	
CAL	88	6%	0%	0%	94%	0.57	
JAL	90	4%	0%	3%	92%	0.56	
PAL	26	4%	0%	0%	96%	0.38	
SIA	89	3%	0%	0%	97%	0.34	
CCA	34	3%	0%	0%	97%	0.29	
CPA	116	1%	0%	0%	99%	0.09	
CSN	5	0%	0%	0%	100%	0.00	
FJI	1	0%	0%	0%	100%	0.00	
NCA	1	0%	0%	0%	100%	0.00	
QFA	1	0%	0%	0%	100%	0.00	
TOTAL	1,653						
SFO AVERAGE		8%	7%	32%	54%	2.28	
























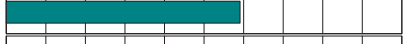


























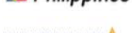






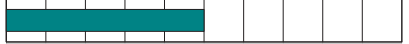
Airline	Shoreline Departures					Shoreline Departure Rating	
	Total	Successful	Marginal	Poor	Score		
 CKS	1	100%	0%	0%	10.00		
 CPZ	18	100%	0%	0%	10.00		
 SCX	15	100%	0%	0%	10.00		
 WJA	5	100%	0%	0%	10.00		
 SWA	32	97%	3%	0%	9.84		
 SKW	136	96%	4%	0%	9.82		
 ASA	41	90%	10%	0%	9.51		
 FFT	26	88%	12%	0%	9.42		
 VRD	103	88%	11%	1%	9.37		
 FDX	11	82%	18%	0%	9.09		
 ACA	32	81%	19%	0%	9.06		
					8.24		
 DAL	87	63%	31%	6%	7.87		
 JBU	32	53%	47%	0%	7.66		
 DLH	2	50%	50%	0%	7.50		
 AAL	137	53%	43%	4%	7.41		
 UAL	390	58%	29%	13%	7.27		
 GTI	10	40%	60%	0%	7.00		
 BER	2	0%	100%	0%	5.00		
 XLF	1	0%	100%	0%	5.00		
 KLM	5	20%	40%	40%	4.00		
TOTAL		1,086					
SFO AVERAGE		68%	29%	3%	8.24		

Airline	Gap Departures		Gap Departure Quality Rating
	Total	Score	
 VOI	26	9.13	
 AAR	127	8.14	
 XLF	16	7.89	
 AIC	40	7.19	
 GTI	32	7.07	
 JAL	83	6.99	
 AMX	22	6.76	
 CSN	90	6.54	
 VIR	109	6.51	
 WOW	36	6.46	
 CPA	211	6.45	
 DAL	123	6.28	
 CCA	124	6.26	
 ANA	91	5.99	
 ANZ	87	5.82	
 SWA	142	5.82	
 DLH	178	5.63	
 NCA	79	5.59	
 QFA	77	5.58	
 CPZ	47	5.51	
 ETD	91	5.26	
 FJI	14	5.18	
 ASA	43	5.00	
 KLM	16	4.92	
		4.91	SFO AVERAGE
 CAL	145	4.89	
 TAI	19	4.80	
 JBU	33	4.77	
 SKW	233	4.73	
 KAL	175	4.71	
 FFT	20	4.69	
 AFR	158	4.64	
 SAS	90	4.47	
 UAL	3309	4.38	
 FDX	9	4.31	

Gap Departure Climb Rating - 3rd Quarter 2016

July 1 to September 30, 2016

Airline	Gap Departures		Gap Departure Quality Rating
	Total	Score	
 AIR CANADA ACA	13	4.23	
 HAWAIIAN 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	
 america VRD	358	3.44	
 Copa Airlines 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	
TOTAL	8151		
SFO Average		4.91	

Airline	Foster City Arrivals					Foster City Arrival Rating
	Total	Successful	Marginal	Poor	Score	
 SCX	1	100%	0%	0%	10.00	
 ACA	122	70%	30%	0%	8.52	
 FFT	145	59%	41%	0%	7.93	
 JBU	235	58%	41%	1%	7.83	
 DAL	364	53%	47%	1%	7.61	
 AAL	669	45%	54%	1%	7.21	
 SWA	282	45%	50%	4%	7.06	
 UAL	1,470	33%	65%	2%	6.55	
 VRD	179	26%	74%	0%	6.28	
 FDX	63	19%	81%	0%	5.95	
					5.93	SFO AVERAGE
 AMX	33	18%	82%	0%	5.91	
 GTI	30	17%	83%	0%	5.83	
 CKS	27	7%	93%	0%	5.37	
 TAI	91	5%	92%	2%	5.16	
 AAR	35	3%	97%	0%	5.14	
 VOI	137	1%	99%	0%	5.07	
 KAL	87	2%	97%	1%	5.06	
 CAL	2	0%	100%	0%	5.00	
 CPA	5	0%	100%	0%	5.00	
 CPZ	22	0%	100%	0%	5.00	
 EVA	8	0%	100%	0%	5.00	
 HAL	3	0%	100%	0%	5.00	
 NCA	1	0%	100%	0%	5.00	
 PAC	11	0%	100%	0%	5.00	
 PAL	3	0%	100%	0%	5.00	
 SIA	1	0%	100%	0%	5.00	
 WJA	4	0%	100%	0%	5.00	
 SKW	134	7%	84%	10%	4.85	
 ASA	32	3%	88%	9%	4.69	
TOTAL	4,196					
SFO AVERAGE		20%	79%	1%	5.93	