Reince Tyler

Subject: FW: Public Comment #4, Please add
Attachments: Request for Airport Authority testing in SMB.pptx

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From: Gary Wonacott <wildcatwonacott@gmail.com>
Sent: Wednesday, February 15, 2023 3:27 PM
To: SDCRAA clerk <clerk@san.org>
Subject: Public Comment #4, Please add

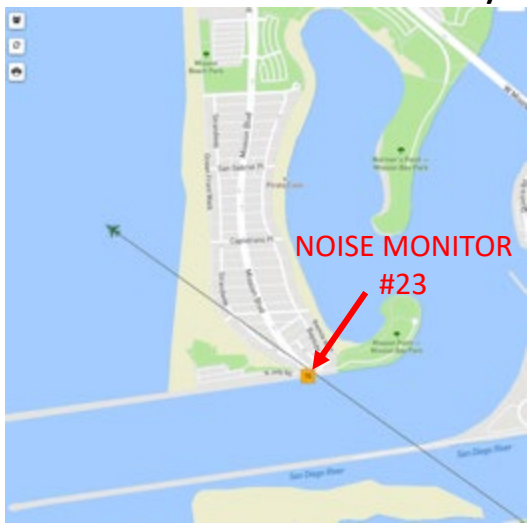
REQUEST FOR AIRPORT AUTHORITY PORTABLE NOISE SYSTEM TESTING IN SOUTH MISSION BEACH

G Wonacott

February 2023

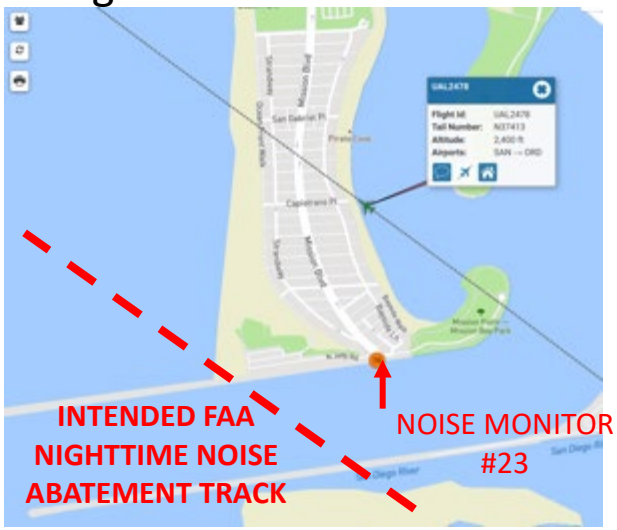
MORE FIXED NOISE MONITORS ARE NEEDED IN SOUTH MISSION BEACH TO MAP OUT THE CONTOURS

PADRZ Lower boundary.



PADRZ Upper boundary

FAA nighttime noise abatement



- THE CURRENT FIXED NOISE MONITOR #23 IS AT THE SOUTHERN EDGE OF THE PADRZ TRACK
- FAA NIGHTTIME NOISE ABATEMENT TRACKS VARY WIDELY BOTH SOUTH AND NORTH OF NM#23
- NEED ADDED FIXED NOISE MONITORS TO ESTABLISH THE CONTOUR IN THIS AREA


THREE TEST SITES USING LARSON DAVIS PORTABLE TEST MONITOR
• Deal Court is 2070 ft @355 deg
• Capistrano Pl is 1311 ft @365 deg
• Avalon Court is 1065 ft @ 313 deg
Deal Court Site
Avalon Court site
SDIA fixed NM #23
Approximate nominal departure route for FAA nighttime noise abatement
Mission Bay Channel
Mariners Basin
Quivira Basin
Entrance Channel
Smiley Lagoon
Ocean Beach Athletic Area Robb Field
Mission Point Park
Ventura Cove
South Cove
Perez Cove
Quivira Point
Point Medanos
Google Earth

REASON AND OBJECTIVE FOR STUDY

- The implementation of the FAA satellite navigation concentrated the aircraft over South Mission Beach resulting in greater noise with a nominal track farther north.
- The current NM#23, located at the jetty in SMB, is on the southern fringe of the PADRZ SID and is subject to loud motor cycles and cars.
- These studies are intended to show comparable or higher noise levels farther north into SMB COMPARED TO NM#23
  - Step one using the Larson Davis LxT portable noise monitor using 24 hour test times (COMPLETED)
  - Step two would be for the Airport Authority to setup their portable noise monitor for two to four weeks that confirms the higher noise levels (REQUESTED).
- The final step is to move forward with fixed noise monitors

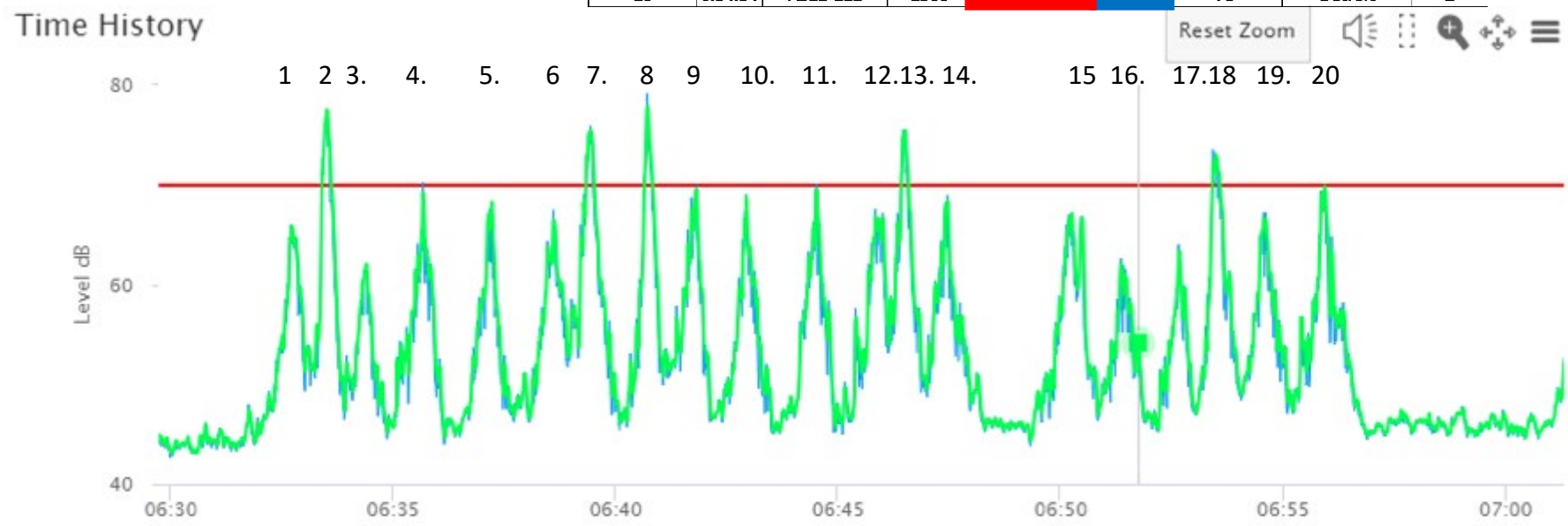
State of California (Caltrans) – Quarterly Noise Contours, Brendon Reed, Director of Airport Planning & Environmental Affairs

- For the Quarterly Noise Contours, Caltrans requires the extent of the contours to be validated with actual aircraft noise measurements. Section 5032 of California Title 21, Subchapter 6. Noise Standards, states:
- *"The noise impact boundary (65 CNEL) shall be validated by measurements made at locations approved for this purpose by the department (Caltrans)… The noise impact boundary may be ascertained directly from information gathered from monitors or from the combined use of an approved computer model (AEDT) and the data reported by the noise monitoring system. Monitoring shall be accomplished at locations in the approved monitoring system layout plan. The locations shall be selected to facilitate locating the maximum extent (closure points) of the noise impact boundary…"*
- To comply with the above-cited Caltrans (Title 21) requirement for the development of noise exposure contours for the quarterly noise reports, our acoustical consultant uses a complete year of flight track and aircraft identification data to generate the CNEL contours using AEDT and then adjusts the maximum extent of the 65 CNEL (noise impact boundary) using the measurements from the Airport's noise monitoring system, which collects the data in accordance with the Caltrans-approved monitoring system plan.

MORNING DEPARTURES 6:30 TO 7 AM

- The bad news is that there are 20 departures between 6:30 and 7 am. The good news is that all but 4 are on the ZZOOO SID, reducing the noise impact on Mission Beach
- Average single event numbers are 69.6 dB for Larson Davis LxT and 72.4 dB for LxT
- Larson Davis LxT CNEL is 60.4 dB

DEPARTURE	TIME	ACRFT TYPE	ALTITUDE	LARSON DAVIS	NM#23	NM#14	Destination	Departure
1	6:32:43	A321-211	2100	65.9	70	79	Phoenix	Z
2	6:33:31	737-924ER	2100	77.5	79	66	San Francisco	P
3	6:34:24	737-8	1800	62	65	79	Dallas	Z
4	6:35:40	767-300	2400	69.1	70	79	Memphis	Z
5	6:37:13	737-823	1900	68.3	70	82	Chicago	Z
6	6:38:36	A321-231	2400	66.4	70	79	Dallas	Z
7	6:39:26	737-7H4	2700	75.4	74	Unk	Las Vegas	P
8	6:40:43	ERJ 170-200ER	1800	77.9	76	UNK	SEATTLE	P
9	6:41:48	A321-211	2200	69.5	78	71	SALT LAKE CITY	Z
10	6:42:56	737-800	1700	69.5	72	84	CHICAGO	Z
11	6:44:27	737-800	2300	66.9	71	79	HOUSTON	Z
12	6:45:50	737-7QB	2200	75.5	71	80	DENVER	Z
13	6:46:30	ERJ 170-200ER	2200	75.5	76	unk	LAX	P
14	6:47:27	A321-211	2400	68.3	72	79	Minn St Paul	Z
15	6:50:14	A321-211	2500	67.1	70	79	Atlanta	Z
16	6:50:29	737-8	2700	66.7	unk	74	Phoenix	Z
17	6:51:21	A321-253NX	2300	62	unk	77	Philadelphia	Z
18	6:52:40	ERJ 170-200ER	2400	73	74	unk	San Francisco	P
19	6:53:29	A321-231	1800	66.6	unk	82	Charlott	Z
20	6:54:34	A321-211	2500	69.9	unk	78	Detroit	Z



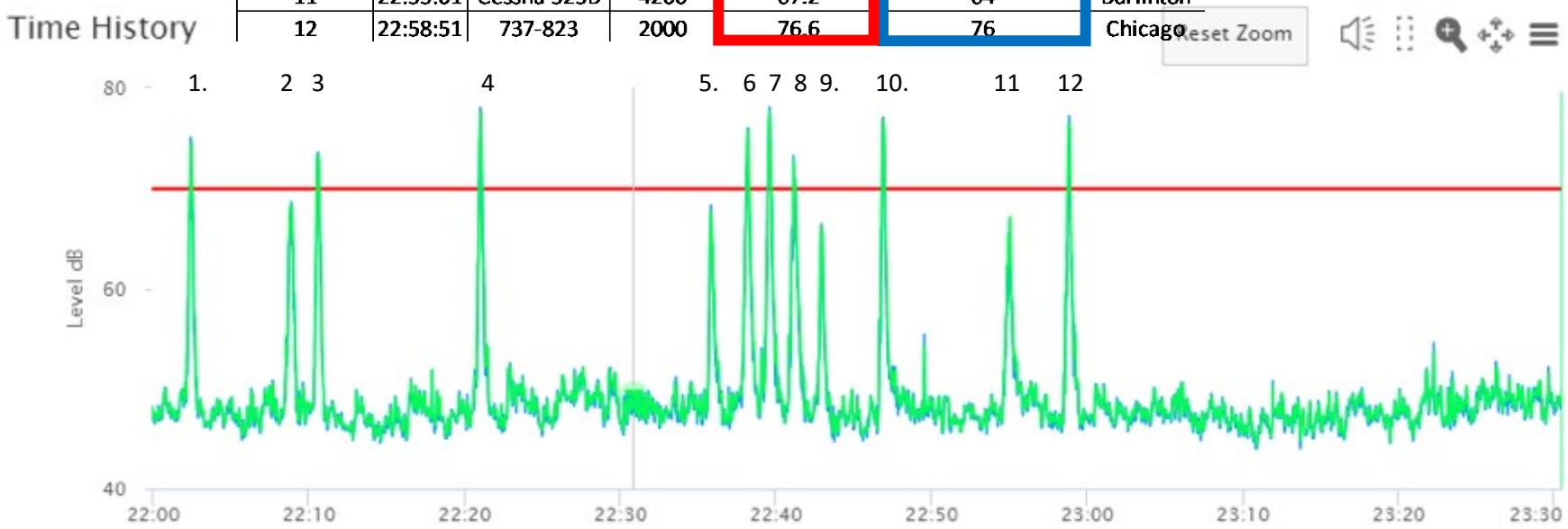
Avalon Court data and analysis – January 28/29 2023

NIGHTTIME DEPARTURES 10 TO 11:30 PM

LARSON DAVIS NOISE MEASUREMENTS ARE EQUAL TO OR HIGHER THAN NM#23 → STRONGLY SUPPORTS ADDITION OF NOISE MONITOR(S)

DEPARTURE	TIME	ACRFT TYPE	ALTITUDE	LARSON DAVIS	NM#23	Destination
1	22:02:25	A320-270N	2700	74.6	74	Las Vegas
2	22:08:52	Textron 680A	3600	68.6	69	Moffet
3	22:10:34	737-8	1800	73.5	75	Newark
4	22:21:01	A321-231	2200	77.8	76	Phl
5	22:35:39	Unk	2300	67.8	68	Las Vegas
6	22:38:11	A321-211	2500	75.9	74	Detroit
7	22:39:35	737-824	2000	77.7	77	Chicago
8	22:41:08	A321-253NX	3100	72.9	69	Miami
9	22:42:57	SAAB 2000	2400	66.3	67	Oakland
10	22:46:53	757-351	1900	76.9	77	Atlanta
11	22:55:01	Cessna 525B	4200	67.2	64	Burlinton
12	22:58:51	737-823	2000	76.6	76	Chicago

Community noise for 24 hour period is 60.4 dB CNEL



COMPARISON OF LARSON DAVIS LXT PORTABLE NOISE MONITOR AND NM#23 FIXED MONITOR JANUARY 28-29, 2023, NM LOCATED ON AVALON COURT OCEAN SIDE

RESULTS

- NOISE MONITOR #23 RESULTS – 60.4 dB (ANNUALIZED VALUE FROM TITLE 21 2022 Q3 REPORT)

- AVALON COURT JANUARY 28-29 2023
  - Community noise is 60.4 dB CNEL (GREATER THAN #23 SINCE FARTHER NORTH)
- CAPISTRANO PLACE
  - Community noise is 62.6 dB CNEL (FARTHER NORTH AND GREATER ABSOLUTE VALUE)
- DEAL COURT ON JANUARY 31 – FEBRUARY 1 2023
  - Community noise is 59.2 dB CNEL (SIGNIFICANT SINGLE EVENT NOISE LEVELS SUFFICIENTLY LOUD TO AWAKEN FROM SLEEP)

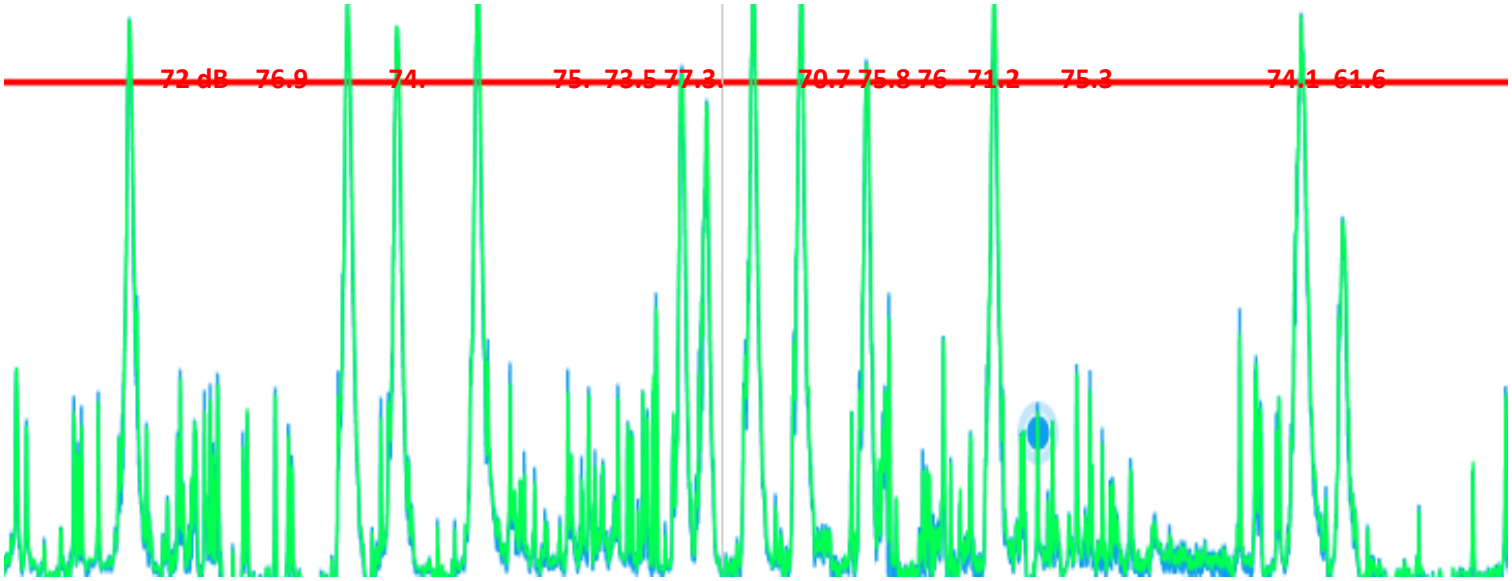
CONCLUSIONS

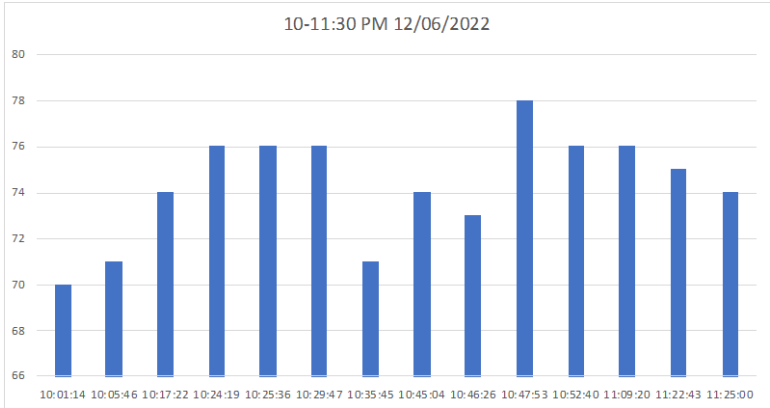
- DATA FROM THE LARSON DAVIS LXT PORTABLE NOISE MONITOR CONFIRMS THAT NOISE LEVELS CAN BE GREATER IN SOUTH MISSION BEACH COMPARED TO NOISE MONITOR #23
  - LXT ARE 24 HOUR TESTS
  - THERE IS SUBSTANTIAL VARIABILITY IN THE CNEL AT A SINGLE NOISE MONITOR
- NEED AIRPORT AUTHORITY PORTABLE NOISE MONITOR TO BE USED FOR MORE EXTENDED PERIOD (2-4 WEEKS) TO CONFIRM NEED FOR ADDED FIXED NOISE MONITORS IN SOUTH MISSION BEACH
- IF TESTS CONFIRM HIGHER NOISE LEVLS, THEN NEED TO REQUEST ADDED FIXED NOISE MONITORS IN SOUTH MISSION BEACH

BACK UP CHARTS

LARSON DAVIS LxT MEASUREMENTS ON CAPISTRANO PLACE ON 10/31/2022

WEBTRAX DATA NOT AVAILABLE ON 10/31; FIRST DATE DATA AVAILABLE IS 12/6/2022 AT NM#23; NM#23 VALUES ARE SLIGHTLY HIGHER, BUT AGAIN NOT DIRECTLY COMPARABLE

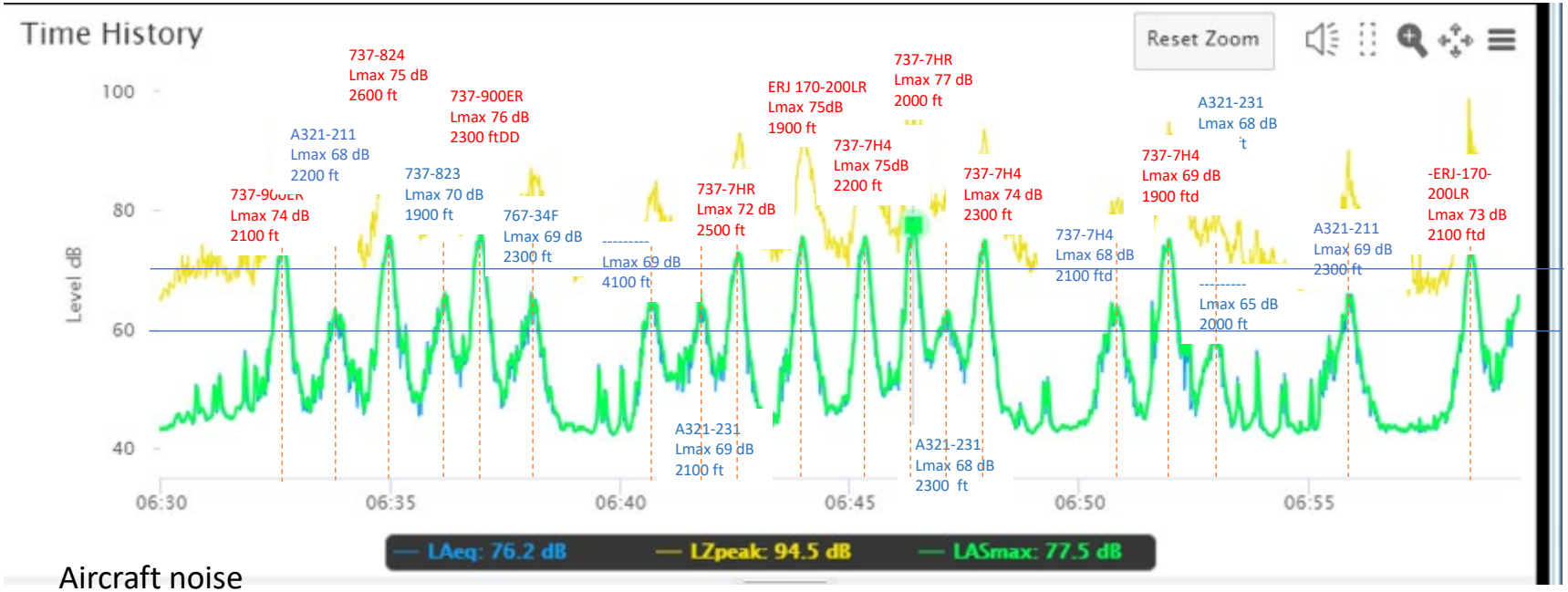




LARSON DAVIS LxT MEASUREMENTS ON CAPISTRANO PLACE ON 11/1/2022

WEBTRAX DATA NOT AVAILABLE for 11/1

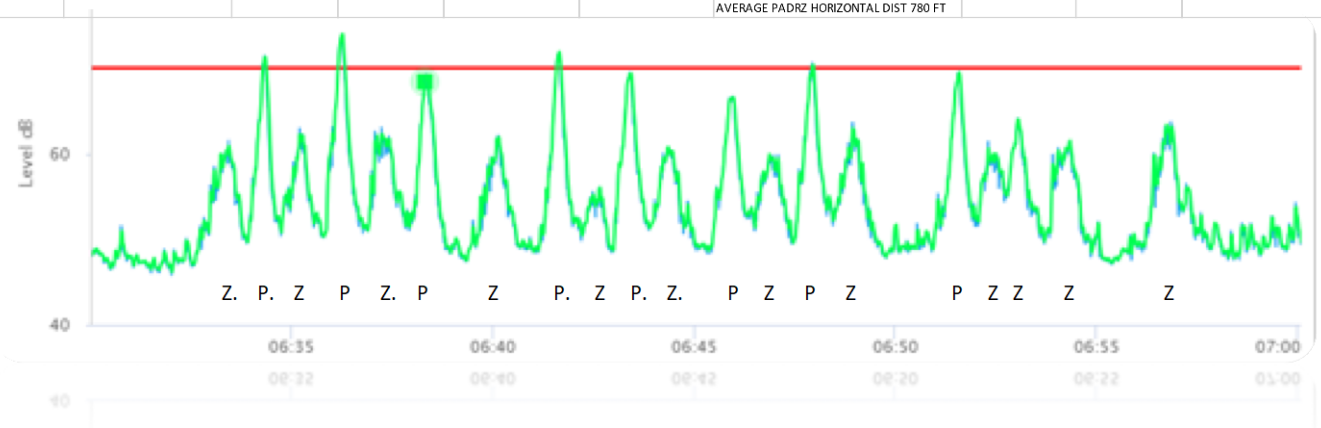
- Substantial values comparable to NM#23
  - Capistrano measurement is



Aircraft noise events 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

COMPARISON OF NM#23 AND LARSON DAVIS AT PROPERTY ON DEAL COURT OCEANSIDE 0630 TO 0700

NUMBER	DEPARTURE TRACK	TIME	DELTA TIME	AIRCRAFT TYPE	DESTINATION	HORIZONTAL DIST TO NM FT	ALTITUDE FT	LMAX NM#23	LMAX LARSON DAVIS
1	ZZOOO	6:33:06	N/A	A321-214	SALT LAKE CITY	5808	2400	66	60.8
2	PADRZ	6:34:10	0:01:04	737-800	PORTLAND	901	2200	73	71.2
3	ZZOOO	6:35:13	0:01:03	A321-211	MINN-ST PAUL	5808	1900	67	62.1
4	PADRZ	6:36:03	0:00:50	737-924	SAN FRANCISCO	1276	2300	77	73.9
5	ZZOOO	6:37:14	0:01:11	737-8H4	CHICAGO	5808	2000	70	62.2
6	PADRZ	6:38:12	0:00:58	ERJ 170-200LR	SAN FRANCISCO	909	2600	71	69.1
7	ZZOOO	6:39:51	0:01:39	A321-211	DETROIT	5808	2200	67	61.8
8	PADRZ	6:41:30	0:01:39	737-7H4	LAS VEGAS	944	2400	73	71.8
9	ZZOOO	6:42:20	0:00:50	A320-251N	DENVER	5808	2700	61	55.2
10	PADRZ	6:43:16	0:00:56	737-7H4	SAN JOSE	710	2500	71	69.3
11	ZZOOO	6:44:12	0:00:56	A321-231	PHOENIX	5808	2000	66	60.7
12	PADRZ	6:45:48	0:01:36	737-7H4	SACRAMENTO	449	3600	68	66.5
13	ZZOOO	6:46:43	0:00:55	A321-231	CHARLOTTE	5808	2200	67	59.5
14	PADRZ	6:47:47	0:01:04	737-7H4	OAKLAND	758	2600	72	70.3
15	ZZOOO	6:48:43	0:00:56	A321-211	ATLANTA	5808	2100	67	62.9
16	PADRZ	6:51:23	0:02:40	ERJ 170-200LR	LAX	915	2500	71	69.4
17	ZZOOO	6:52:11	0:00:48	737-7H4	DENVER	5808	1900	66	60.5
18	PADRZ	6:52:49	0:00:38	BLANK	VAN NUYS	389	53--	65	64
19	ZZOOO	6:53:58	0:01:09	767-34AF	LOUISVILLE	5808	2100	67	60.3
20	ZZOOO	6:56:34	0:02:36	737-924ER	CHICAGO	5808	1800	70	63.3
21	ZZOOO	7:01:08	0:04:34	ERJ 170-200LR	SAN JOSE	553	2700	70	68
						AVERAGE PADRZ HORIZONTAL DIST 780 FT			



COMPARISON OF NM#23 AND LARSON DAVIS DATA

COLLECTED ON JANUARY 31, 2023 ON DECK AT DEAL COURT ON OCEANSIDE OF MISSION BLVD, 10 pm to 11:30 pm analysis

Only one departure on PADRZ SID

- 737 Max 8
- Newark
- Hor – 2450 ft
- Alt – 1800 ft
- Lmax-23= 73 dB
- Lmax-LD= 68.1dB

- Shorts 360
- Philadelphia
- Hor – 2131 ft
- Alt – 2200 ft
- Lmax-23= 71 dB
- Lmax-LD= 65.8 dB

- 737-824
- Chicago
- Hor – 2004 ft
- Alt – 2300 ft
- Lmax-23= 75 dB
- Lmax-LD= 70.5 dB

- A321-211
- Atlanta
- Hor – 2524 ft
- Alt – 2000 ft
- Lmax-23= 75 dB
- Lmax-LD= 71.5 dB

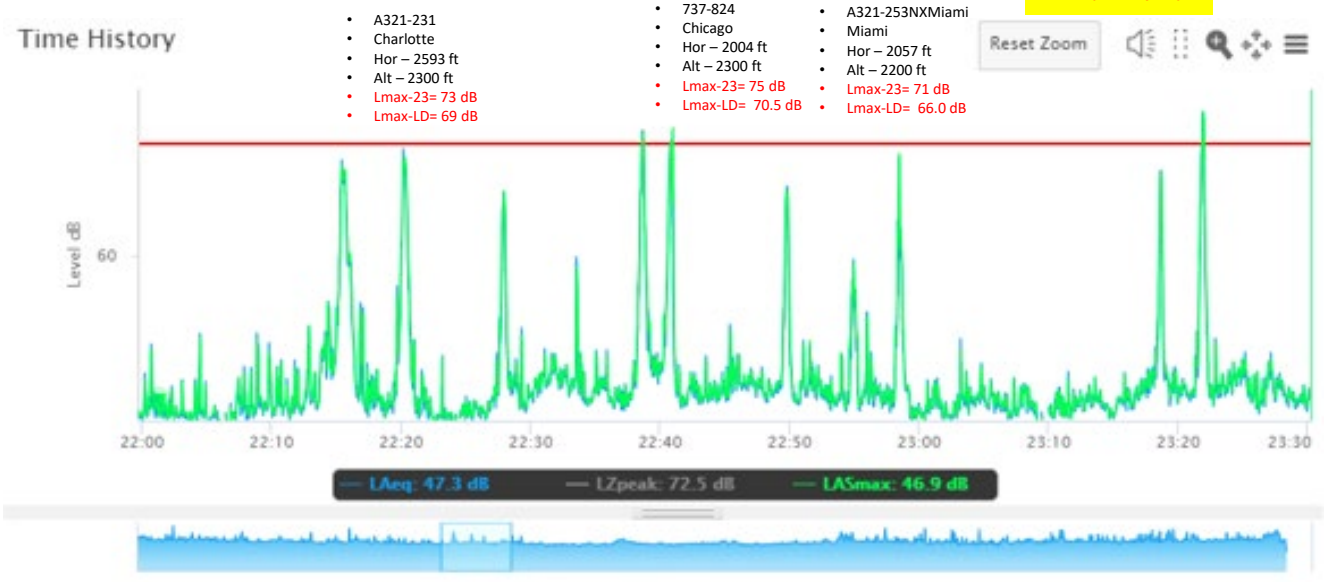
- A330-941
- chicago
- Hor – 1548 ft
- Alt – 1900 ft
- Lmax-23= 76 dB
- Lmax-LD= 73.0 dB

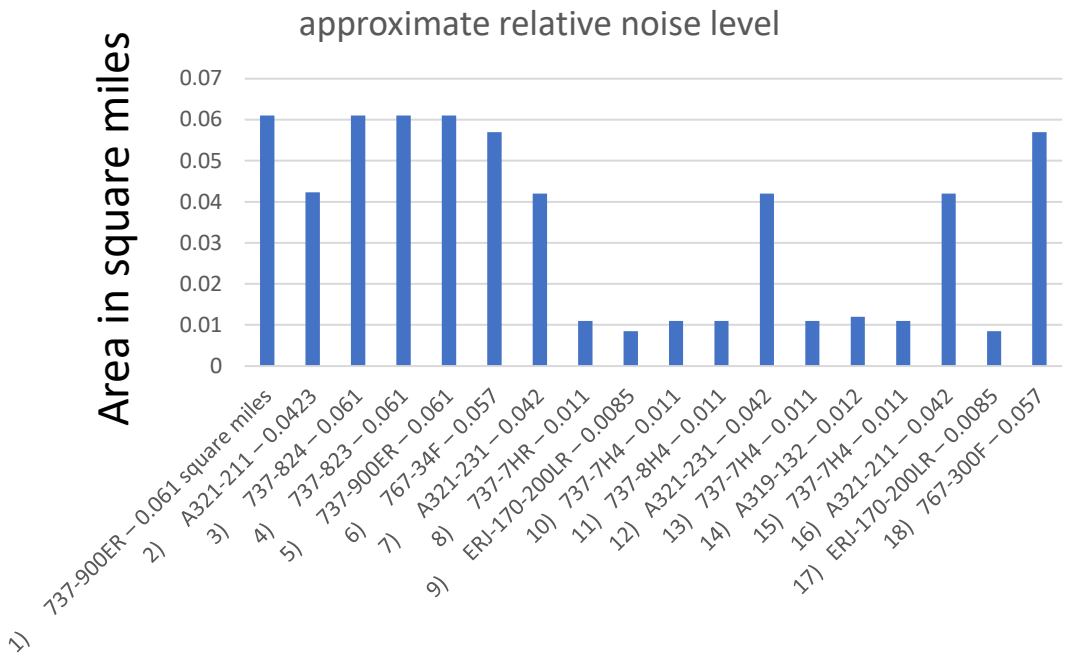
- 737-900Max
- Portland
- Hor – 738 ft
- Alt – 2400 ft
- Lmax-23= 69 dB
- Lmax-LD= 67.4 dB

- A321-231
- Charlotte
- Hor – 2593 ft
- Alt – 2300 ft
- Lmax-23= 73 dB
- Lmax-LD= 69 dB

- 737-824
- Chicago
- Hor – 2004 ft
- Alt – 2300 ft
- Lmax-23= 75 dB
- Lmax-LD= 70.5 dB

- A321-253NXMiami
- Miami
- Hor – 2057 ft
- Alt – 2200 ft
- Lmax-23= 71 dB
- Lmax-LD= 66.0 dB





The morning departures are primarily the loudest aircraft in the fleets

Reince Tyler

Subject: FW: ANAC Input
Attachments: Input to ANAC on Stages for nighttimeFeb 2023.docx

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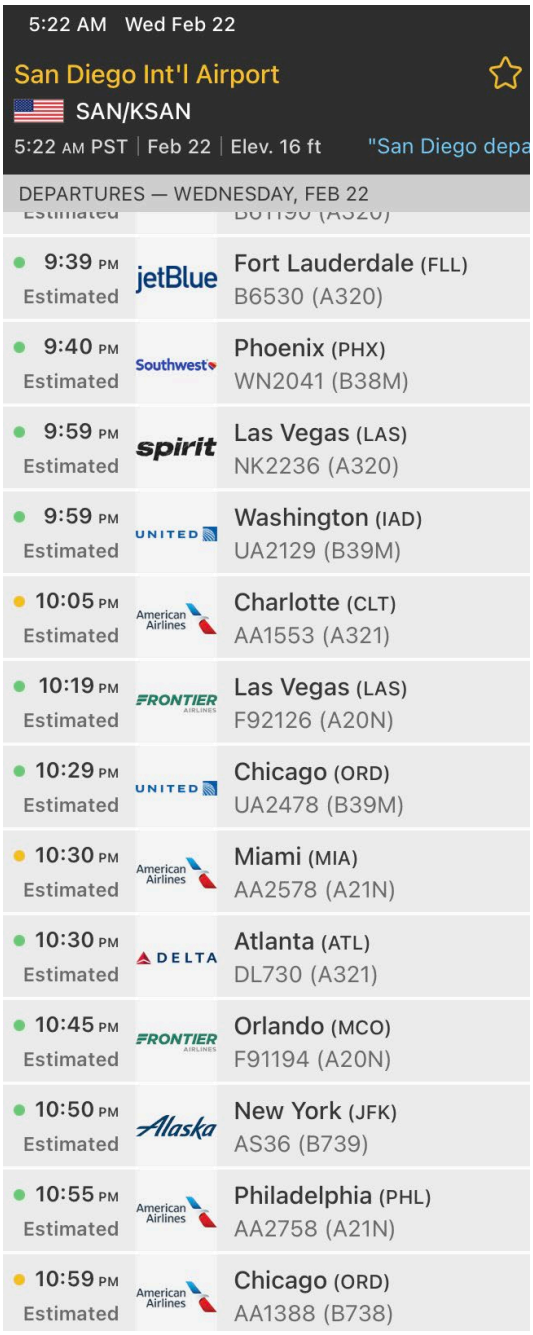
From: Gary Wonacott <gwonacott@hotmail.com>
Sent: Sunday, February 26, 2023 11:25 PM
To: Klaus Mendenhall <kluasm@aol.com>; cathy ives <cathy.ives@gmail.com>; president@missionbeachtc.com; bob semonsen <gerdsem@twc.com>; Larry Clark <lclark7@san.rr.com>; John Williams <jtw@american-design.net>; Jean Froning <ofroning@san.rr.com>; Jeannie Mershon <bunnylady@me.com>; Gary Katz <garykatz@gmail.com>; SDCRAA clerk <clerk@san.org>
Subject: ANAC Input

Please distribute to ANAC members.

Gary Wonacott
San Diego, CA 92109

Get Outlook for iOS

At the last meeting, a question came up about pushing for Far Part 35 Stage 4 or 5 aircraft by airlines during the nighttime hours from 10 pm to 11:30 pm. In response, Ms. Knack commented about the FAA and the Part 161. Part 161 has been used effectively to dismiss many good noise abatement ideas that had minimal interference with interstate commerce. SDIA continues to be a "spoke" type airport in spite of efforts to make it a "hub". There is a natural curfew at about 11 pm for spoke airports on the west coast. With the exception of red eye flights, most flights to the east coast leave earlier in the day, by 2 or 3 pm.



These are the nighttime departures *scheduled* for Wednesday, February 22, 2023. However, there were actually 19 departures between 10 pm and 11:30 pm. This means, that the scheduled departures would almost always be our minimum number. There is, in fact, no limit on the maximum number of nighttime departures.

There were ten delayed departures during the day. Why are all of these put on the FAA nighttime noise abatement procedure over Mission Beach? Of the 10 delayed departures, 8 were ZZOOO and 2 were on PADRZ. I think the delayed departures should stay on their scheduled flight plans. It is bad enough that we have an FAA nighttime noise abatement procedure, but then to add all of the delayed flights on this route is unfair and inequitable. Not only do these

departures disrupt residents, they also contribute to a larger 65 dB CNEL, including the penalty. These aircraft are far more disruptive than "an early left or right turn", which is included in the Fly Quiet Score. While these departures are perfectly legal, as are early turns, there needs to be a penalty.

These ten departures in the table below are some of the loudest, most disruptive and most unhealthy of the day. Most people are asleep by 10:30 pm, but there were still 10 departures after 10:30 pm

Number	Time	Aircraft	Type		Lmax dB		Destination
		Flightradar24	Webtrax	NM#7	NM#24	NM#23	
1	10:02:38		767-300	78	72	70	Memphis
2	10:04:42		A320-231	83	76	75	t Lauderdal
3	10:06:04		A321–271NX	86	78	75	Boston
4	10:12:19		A320-232	79	75	74	Las Vegas
5	10:14:51		737-8H4	78	71	70	Phoenix
6	10:16:34		Van's acrft	78	73	70	Las Vegas
7	10:17:18		Aronca Inc.	78	73	70	Las Vegas
8	10:24:10	A321	A320-231	90	78	77	Charlotte
9	10:26:10		A320-232	86	77	74	JFK
10	10:32:12		737-900	78	76	74	Wash DC
11	10:44:33	737 900Max	737-900	82	77	74	Chicago
12	10:47:54	A321	A321-211	91	77	79	Atlanta
13	10:52:33	A321Neo	A321-253X	79	73	73	Miami
14	10:58:32	A321Neo	A321-253X	80	73	71	Philadelphia
15	11:01:45	A20N	A320-251	78	70	70	Las Vegas
16	11:03:51		737-900	82	76	74	Spokane
17	11:08:13	737 800	737-823	87	79	76	Chicago
18	11:16:59	737 900	737-900ER	89	79	76	JFK
19	11:28:51	A320Neo	A320-251N	79	71	71	Orlando
				82.15789	74.94737	73.31579	

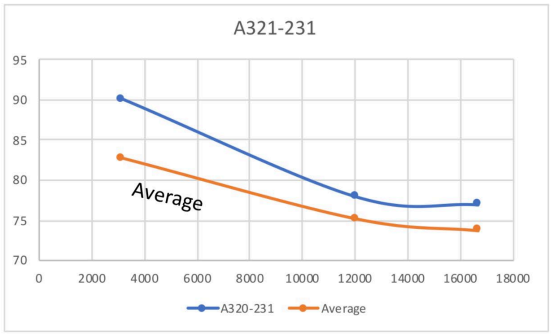
Among other considerations, the Fly Quiet Program is aimed at encouraging airlines to use quieter aircraft. So, why not do a study that quantifies the noise reduction benefits of replacing the current Stage 3 departures post 10 pm aircraft with stage 4 and 5? Of the nine scheduled departures between 10 pm and 11:30 pm, only one of these is on the PADRZ SID and the rest are on the FAA nighttime noise abatement procedure. As Ms. Knack pointed out at the last meeting, the pandemic resulted in retirement of many older aircraft. In the group above, it appears that there are five Stage 4/5 and four Stage 3 departures. The FAA AEM tool was used to calculate the area contribution to the 65 dB CNEL by each group. The total contour area contribution from the five State 3 aircraft is 0.2015 square miles while the four Stage 4/5 aircraft is 0.0492 square miles. This is a fairly substantial difference and should be further investigated by ANAC.

The information that follows provides additional insight into the increased noise impact of some of the aircraft. In the table above, I have shown Lmax readings for each of the departures for three fixed noise monitors: 7, 24, and 23. I then plotted the noise as a function of the direct line-of-sight distance from the end of the runway to the fixed noise monitors.

The plots revealed a couple of key issues, one that is of particular interest to Mission Beach. First, the Fly Quiet Program uses Part 36 formula to quantify the quietness of one acrft relative to another. While I have not done a direct comparison, I think it likely that the data shown in the PP charts that follow bear little resemblance to Part 36. My second point is that, in general, the Airbus aircraft are quieter than the Boeing acrft, again setting Part 36 aside.

This is important. If you are flying, and you have a choice of airlines, one flying Boeing aircraft and the other Airbus equipment, you can compare the data in this report, but more than likely, it is in our best interests to fly the Airbus equipment. This is the same as it was forty years ago; PSA, which included many very quiet Bae146 aircraft in its inventory, was the airline of choice.

The last point I want to bring up is the shape of the curves that tend to tail up at the end. It appears to me that pilots are backing off on thrust to reduce noise over Pt. Loma, but then resuming high thrust levels before reaching Mission Beach. This, I believe, could be a win-win, but it requires the pilots to keep the thrust setting low until over the ocean. It does not sound like a big request, but we will see if it gains support.


A321-231
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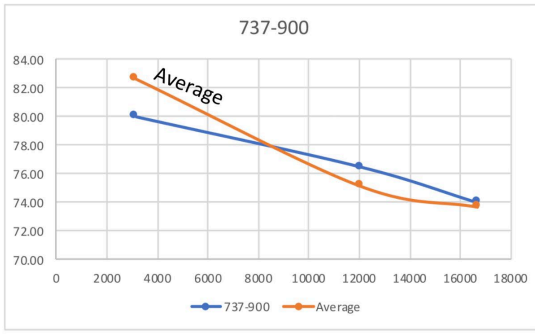
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18000
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737-900
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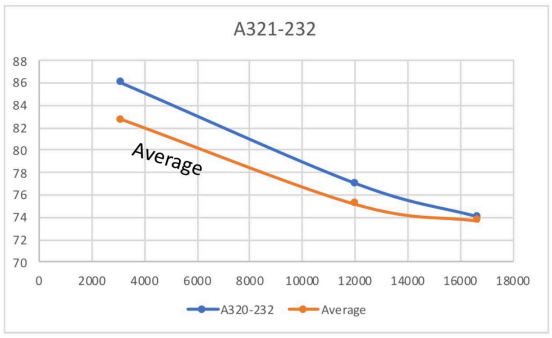
A321-232
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A320-232
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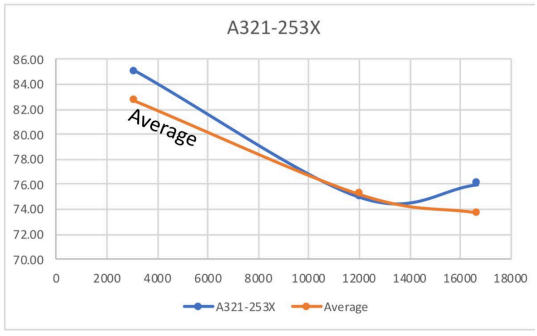
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86.00
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A321-253X
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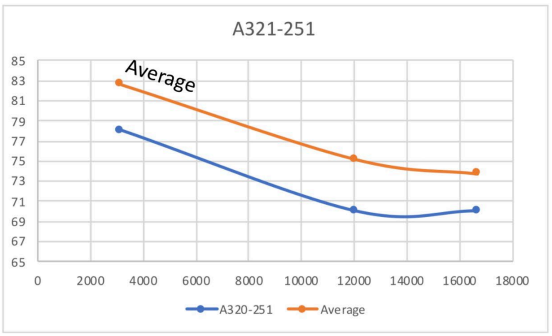
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A320-251
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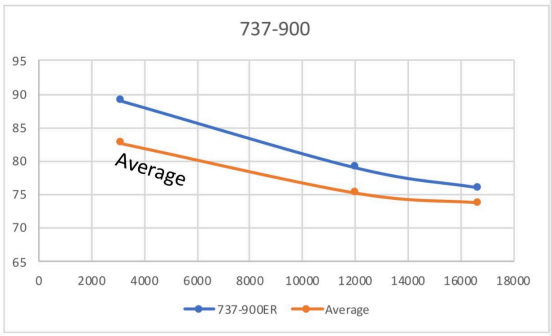
737-900
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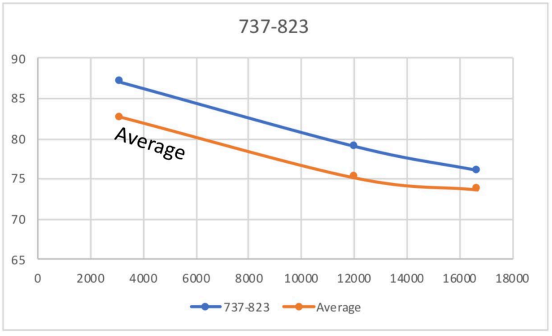
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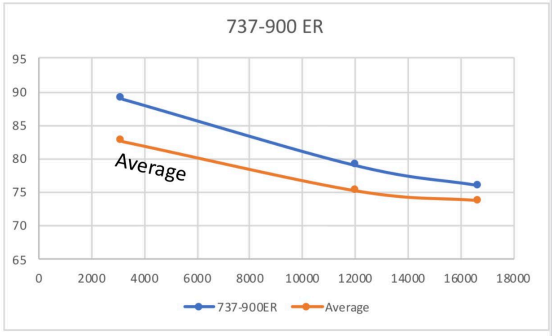
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Average
737-900ER
Average

Reince Tyler

Subject: FW: Please distribute to ANAC members

From: Gary Wonacott <gwonacott@hotmail.com>
Sent: Wednesday, March 1, 2023 11:16 PM
To: SDCRAA clerk <clerk@san.org>
Subject: Please distribute to ANAC members

Non-agenda Public Comment

The SDIA curfew is sacrosanct, or is it? The Airport is adding destinations at a rapid rate. We are already seeing some hours approaching 50 operations. The FAA has invested heavily in the Quieter Home Program the past few years, reducing the potential for a legal response from residents. Three billion dollars is being spent on T1, resulting in a total of 70 gates. The recent Part 150 did not exactly bring the different airport noise impacted neighborhoods together. Mission Beach was able to thwart moving all nighttime departures onto the PADRZ SID, but there is something coming. The FAA, Airport Authority only has to deal with neighborhoods on the west side of the airport. Look for the attack on the curfew to come from the FAA or airlines, but this does not mean the airport is on our side.

If I am wrong, then you can tar and feather me, but it is time to begin asking the questio, what happens when the airport reaches capacity?

Sent from my iPad

Reince Tyler

Subject: FW:
Attachments: Input to ANAC on Stages for nighttimeFeb 2023.docx

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From: Gary Wonacott <gwonacott@hotmail.com>
Sent: Saturday, March 11, 2023 2:13 PM
To: SDCRAA clerk <clerk@san.org>
Subject:

Please distribute to ANAC members before the May ANAC meeting. By the way, my letter to the editor is being corrected from 2028 to 2023.

Get Outlook for iOS

INSIGHTS INTO AIRCRAFT NOISE AT SDIA

BY G. WONACOTT
MISSION BEACH

MARCH 2023

INTRODUCTION

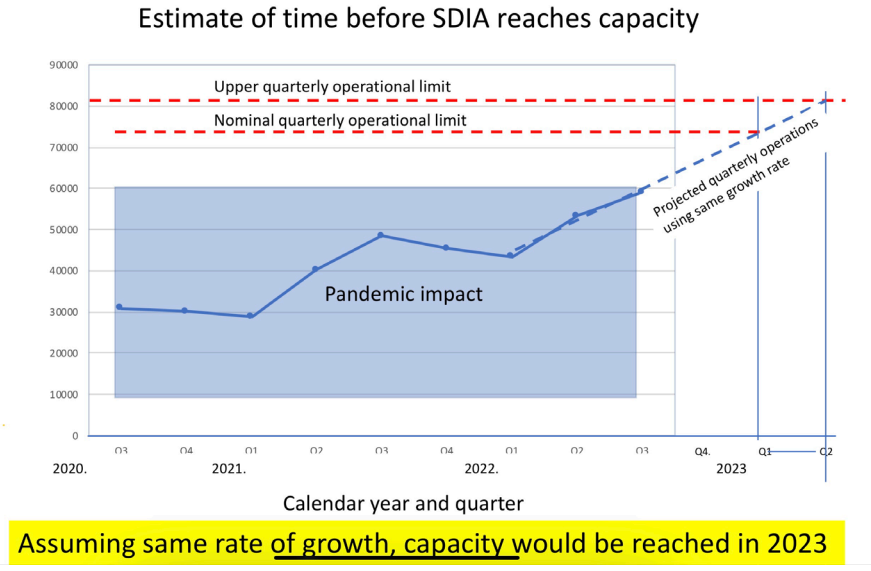
All of the information in this paper, with some effort, should be understandable by the members of ANAC. Much of it is common sense. Airport noise is a problem, and the first step to finding solutions is to break down the problem and understand its causes. There are tools available to help to understand the problem, including, the noise monitors, sketch and Calc (for calculating areas within contours), the FAA AEDT code, WEBTRAX and the FAA AEM program. I do believe there are solutions, but the solutions are only attainable if there is collaboration and cooperation.

Also, the airport noise problem needs to be defined, and it is not clear the Airport Authority has been forthcoming as far as the real issue. For decades, the Airport Authority tried to convince themselves that Lindbergh is a hub, but with one runway, it was not going to happen. Are we then a spoke, or are we an overnight parking lot. With the arrivals curfew no longer enforced[1] and with 70 potential gates, 11 more when T1 is completed, it seems like we are moving in the latter direction.

What are the implications of being a parking lot with 70 gates. With no arrivals curfew, in retrospect, that must have happened without any representation on the east side of the airport, it will be no problem filling up all of the parking spaces. The issue will be how to get these 70 aircraft out of here as quickly as possible. The most likely way to achieve this objective would be to change the departure curfew from 6:30 to 6 or even 5:30 am. These are questions that can only be answered by the Airport Authority. One point I can make is that none of these departures to the east coast or Midwest are using PADRZ without a fight.

Let's look at this issue a little more closely. The maximum capacity at the one runway is 48 operations per hour, combined departures and arrivals. There is a benefit from added gates from T1 development. If the concept of an overnight parking lot was to be fully embraced, this would allow 70 planes to be parked. This means that during the non-curfew 17 hours, there would be an uneven number of departures and arrivals, with as many as 70 more departures. This would result in as many as 478 departures and 338 arrivals with the other 70 arrivals between 11:30 pm and 6:30 am. This results in 886 total daily operations, up from 816.

Now converting the two numbers to quarterly operations yields 82000 and 74,000 for the best case and more nominal



number of operational limits. conditions. The bottom line is that if growth in operations continues at the same rate, then SDIA is virtually at capacity.

BACKGROUND

The latitude and longitude for each of the fixed noise monitors is shown in the table below. This information has been used to calculate the distance from the end of the runway on the east and west sides of the runway to the noise monitors.

Table 3 Annual CNEL Measured at the RMTs
Source: Airport Authority, ANOMS™ January 1, 2008 through December 31, 2008

Site	Location			Annual CNEL (dB)
	Address	Latitude	Longitude	
1	Park & Rec Bldg - Balboa Park	32.725170	-117.157071	70.8
2	1328 1/2 Dale St	32.719510	-117.131235	66.4
3	1698 1/2 Eighth St	32.722851	-117.157577	66.5
4	200 1/2 E. Juniper St.	32.729363	-117.162840	66.1
6	Marine Corps Recruit Depot	32.740452	-117.200950	69.4
7	Liberty Station, Historic Decatur Rd	32.738923	-117.211829	74.7
9	1134 1/2 Redwood St.	32.736781	-117.172882	67.0
10	3225 1/2 Michaelmas Terrace	32.748280	-117.209302	63.6
11	3413 1/2 Browning St.	32.740748	-117.221897	71.8
12	3232 1/2 Duke St.	32.753464	-117.218971	61.8
13	4669 1/2 Larkspur St.	32.750030	-117.239540	65.8
14	4799 1/2 Cape May Ave.	32.747069	-117.244984	66.3
15	809 1/2 Dover Ct.	32.766465	-117.250600	59.8
16	3385 1/2 B St.	32.717931	-117.121128	64.2
17	3651 1/2 A St.	32.718475	-117.137127	64.7
18	418 W. Nutmeg St.	32.733414	-117.167147	60.7
19	1290 1/2 West Thorn St.	32.739609	-117.174537	62.4
20	1944 1/2 Plum St.	32.734008	-117.227287	60.5
21	1615 1/2 Froude St.	32.737964	-117.248051	59.4
22	5029 1/2 Lotus St.	32.752754	-117.246852	64.1
23	2600 Mission Boulevard	32.759700	-117.249016	62.4
24	Barnes Tennis Center Parking Lot	32.752721	-117.235338	64.7
25	1873 Santa Barbara Ave.	32.739900	-117.241050	63.3
26	750 Gateway Center Way	32.714521	-117.112670	63.2

The main sources of aircraft noise are from the engines, mainly associated with thrust levels, and the airframe. Airframe noise is very sensitive to the aircraft speed. The other main factor that determines the noise on the ground is distance from the source, comprised of altitude and lateral distance. Webtrax provides much of this information, including the altitude and lateral distance to your house. It is generally thought that the worst noise levels on the ground are from departures, but this is not always the case. In addition, the change in altitude during departures can be indicative of the thrust level. The higher the angles, the higher the thrust.[1]

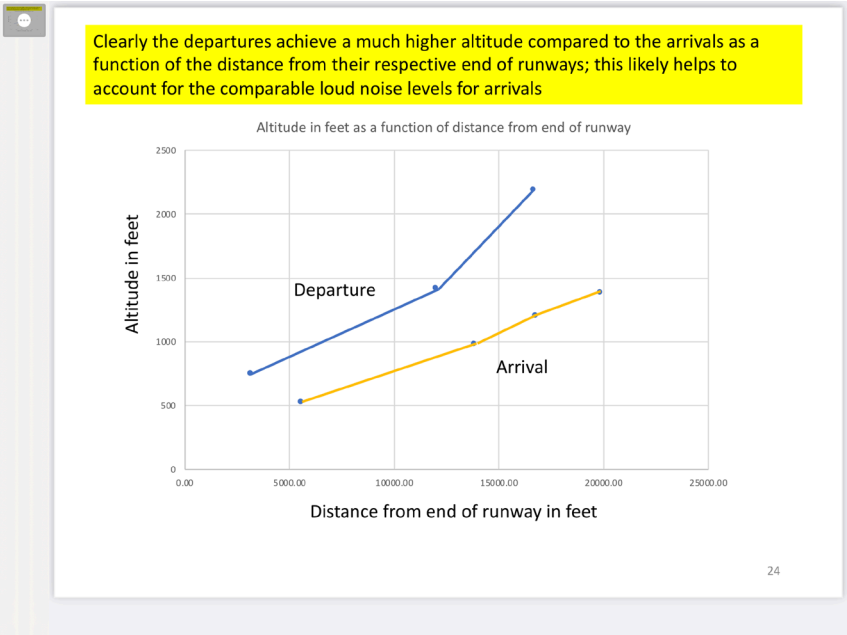
Altitude Assessment

A brief assessment was made of aircraft departure and arrival angles by calculating the tangents of - differences in elevations and distances from the end of the runway. The first one done was for seven arrivals using Webtrax data that shows the aircraft elevation changes at noise monitors 26, 16, 2, and 1. While the Webtrax data is an approximation, it is very repeatable for arrivals. The average of several arrivals was calculated to be -3.46 degrees, which is fairly close to the -3.5 degree glide slope approved by the FAA for use in the AEDT code for the Part 150 program.

[1] The port commissioners, who operate the downtown bayfront airport, voted unanimously for the Jan. 5 curfew, which forbids all flight departures but allows certain large jetliners considered to be “quiet” to land after midnight. The jetliners classified as quiet are the wide-body I-1011 and DC-10, the Boeing 747 and those Boeing 727's whose engines have been acoustically reconditioned to reduce their noise. **By Everett R. Holles Special to The New York Times, December 7, 1975.**

On the departure side, there are the three departures, ZZOOO, PADRZ, and the FAA nighttime departure procedure. There is much more variability from departure to departure.

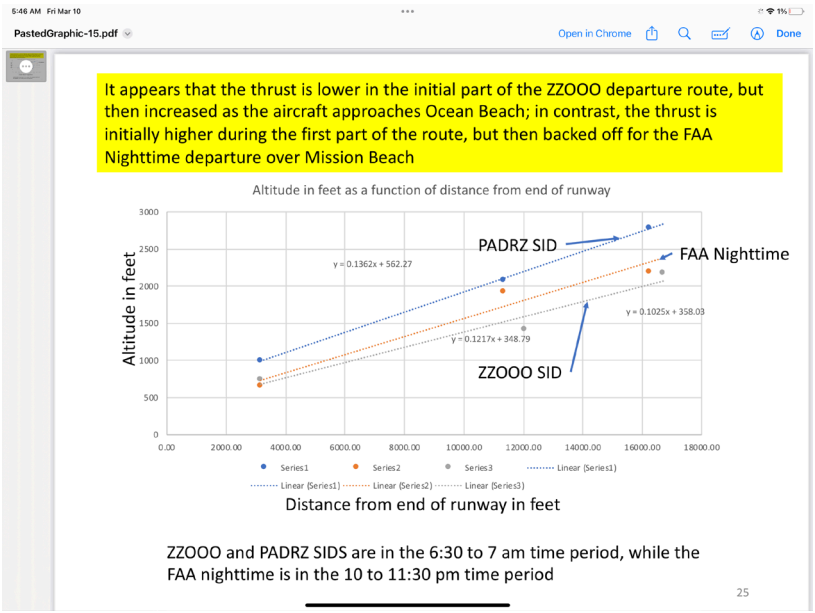
The first chart below compares the altitude versus distance from end of runway for departures and arrivals. It is clear from this chart that the altitudes near the airport are substantially lower for the arrivals than for the departures. While there is no way to quantify the effect, the departure slope is greater for the departures suggesting elevated thrusts. So, perhaps higher noise from the higher thrust for departures, but higher noise levels for the arrivals due to the lower altitudes.



There is a change in the slope of the departure curves as the aircraft move away from the end of the runway, but since there are only the three data collection points, it is difficult to say when the changes occur, and therefore when and if the slopes are correct. The only thing that can be said of the calculation is that it is the average slope between the noise monitors. Given that, there are slope changes. For example, between NM 7 and 11, the average slope is only 4.3 degrees, which seems low. From noise monitors 11 and 14, the average slope is 9.5 degrees, which is typical for a departure.

From the calculations, one might infer that the thrust is lower between noise monitors 7 and 11 than between 11 and 14. However, this might not be the ideal scenario for the majority of the population. One study at John Wayne suggests that maintaining a maximum thrust to 1500 feet followed by a decrease in thrust until out over the ocean would provide greater noise abatement.

The second chart below compares the altitude as a function of distance from end of runway for PADRZ and ZZOOO at 6:30 am, and the FAA nighttime departure at 10 pm. A linear curve fit was done for each set of data, which is confusing since the lines do not match the points for the FAA nighttime nor the ZZOOO departures. As indicated on the chart, one



might infer some points, but more importantly, these data raise questions that can only be answered with more detailed analysis by the AA staff.

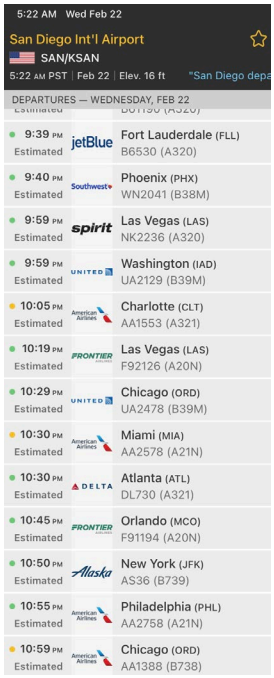
The most obvious conclusions are:

1. The aircraft on the PADRZ SID achieve higher altitudes with distance from the end of the runway, most likely because the aircraft are less heavy and have closer destinations.
2. There is a substantial difference in the altitude about halfway from the end of the runway to the ocean that disappears before reaching the ocean.
3. The thrust versus time for the ZZOOO and the FAA nighttime departures is noticeably different that requires further investigation before any conclusions can be reached.

FOCUS ON NOISE DURING DEPARTURES

At the last meeting, a question came up about pushing for FAR Part 36 Stage 4 or 5 aircraft by airlines during the nighttime hours from 10 pm to 11:30 pm. In response, Ms. Knack commented about the FAA and the Part 161. Part 161 has been used effectively to dismiss many good noise abatement ideas that had minimal interference with interstate commerce. SDIA continues to be a “spoke” type airport in spite of efforts to make it a “hub”. Currently, there is a natural curfew at about 11 pm for spoke airports on the west coast. With the exception of red eye flights, most flights to the east coast leave earlier in the day, by 2 or 3 pm. But, the rapid addition of destinations and flights at SDIA is raising questions that only the Airport Authority can answer.

These are the nine nighttime departures *scheduled* for Wednesday, February 22, 2023. However, there were actually 19 departures in this time period, with ten delayed from earlier in the day. This means, that the scheduled departures would almost always be our minimum number. There is, in fact, no limit on the maximum number, except for runway capacity, of nighttime departures.



There were ten delayed departures during the day. *Why are all of these put on the FAA nighttime noise abatement procedure over Mission Beach? Of the 10 delayed departures, 8 were ZZOOO and 2 were on PADRZ. I think the delayed departures should stay on their scheduled flight plans. It is bad enough that we have an FAA nighttime noise abatement procedure, but then to add all of the delayed flights on this route is unfair and inequitable.* Not only do these departures disrupt residents, they also contribute to a larger 65 dB CNEL, including the penalty. These aircraft are far more disruptive than "an early left or right turn", which is included in the Fly Quiet Score. While these departures are perfectly legal, as are early turns, there needs to be a penalty.

These ten departures in the table below are some of the loudest, most disruptive and most unhealthy of the day. Most people are asleep by 10:30 pm, but there were still 10 departures after 10:30 pm.

Number	Time	Aircraft	Type		Lmax dB		Destination
		Flightradar24	Webtrax	NM#7	NM#24	NM#23	
1	10:02:38		767-300	78	72	70	Memphis
2	10:04:42		A320-231	83	76	75	t Lauderdal
3	10:06:04		A321–271NX	86	78	75	Boston
4	10:12:19		A320-232	79	75	74	Las Vegas
5	10:14:51		737-8H4	78	71	70	Phoenix
6	10:16:34		Van's acrft	78	73	70	Las Vegas
7	10:17:18		Aronca Inc.	78	73	70	Las Vegas
8	10:24:10	A321	A320-231	90	78	77	Charlotte
9	10:26:10		A320-232	86	77	74	JFK
10	10:32:12		737-900	78	76	74	Wash DC
11	10:44:33	737 900Max	737-900	82	77	74	Chicago
12	10:47:54	A321	A321-211	91	77	79	Atlanta
13	10:52:33	A321Neo	A321-253X	79	73	73	Miami
14	10:58:32	A321Neo	A321-253X	80	73	71	Philadelphia
15	11:01:45	A20N	A320-251	78	70	70	Las Vegas
16	11:03:51		737-900	82	76	74	Spokane
17	11:08:13	737 800	737-823	87	79	76	Chicago
18	11:16:59	737 900	737-900ER	89	79	76	JFK
19	11:28:51	A320Neo	A320-251N	79	71	71	Orlando
				82.15789	74.94737	73.31579	

Among other considerations, the Fly Quiet Program is aimed at encouraging airlines to use quieter aircraft. Of the nine scheduled departures between 10 pm and 11:30 pm, only one of these is on the PADRZ SID and the rest are on the FAA nighttime noise abatement procedure. As Ms. Knack pointed out at the last meeting, the pandemic resulted in retirement of many older aircraft. In the group above, it appears that there are five Stage 4/5 and four Stage 3 departures. The FAA AEM tool was used to calculate the area contribution to the 65 dB CNEL by each group. The total contour area contribution from the five State 3 aircraft is 0.2015 square miles while the four Stage 4/5 aircraft is 0.0492 square miles. This is a fairly substantial difference and should be further investigated by ANAC.

The information that follows provides additional insight into the increased noise impact of aircraft. In the table above, I have shown Lmax readings for each of the departures for three fixed noise monitors: 7, 24, and 23. I then plotted the noise as a function of the direct line-of-sight distance from the end of the runway to the fixed noise monitors. Note that this is based on a very limited amount of data. And in fact, two plots are shown for the 737-900 that resulted in very different results. There are other factors that also affect noise level not included, including the destination of the aircraft.

There is a chart taken from the literature that shows the effect of aircraft size that does not include the discounting of noise for aircraft with a gross take off weight greater than 100K pounds (Part 36). The chart shown below indicates that the optimum aircraft size from a noise perspective has roughly 125 seats. This is most likely a two engine, narrow body design.

The plots revealed a couple of key issues, one that is of particular interest to Mission Beach. First, the Fly Quiet Program uses the Part 36 formula to quantify the quietness of one acrft relative to another. While I have not done a direct comparison, I think it likely that the data shown in the PP charts that follow bear little resemblance to Part 36. My second point is that, in general, the Airbus aircraft are quieter than the Boeing acrft, again setting Part 36 aside.

The aircraft that are most noticeably noisy are the A321-231, A321-232, 737-900, 737-823, 737-900ER. The winners are the A320-251, A320-251N, A321-253X, and A320-232. The chart below is actual noise monitor data at three locations, NM#7, NM#11, and NM#14.

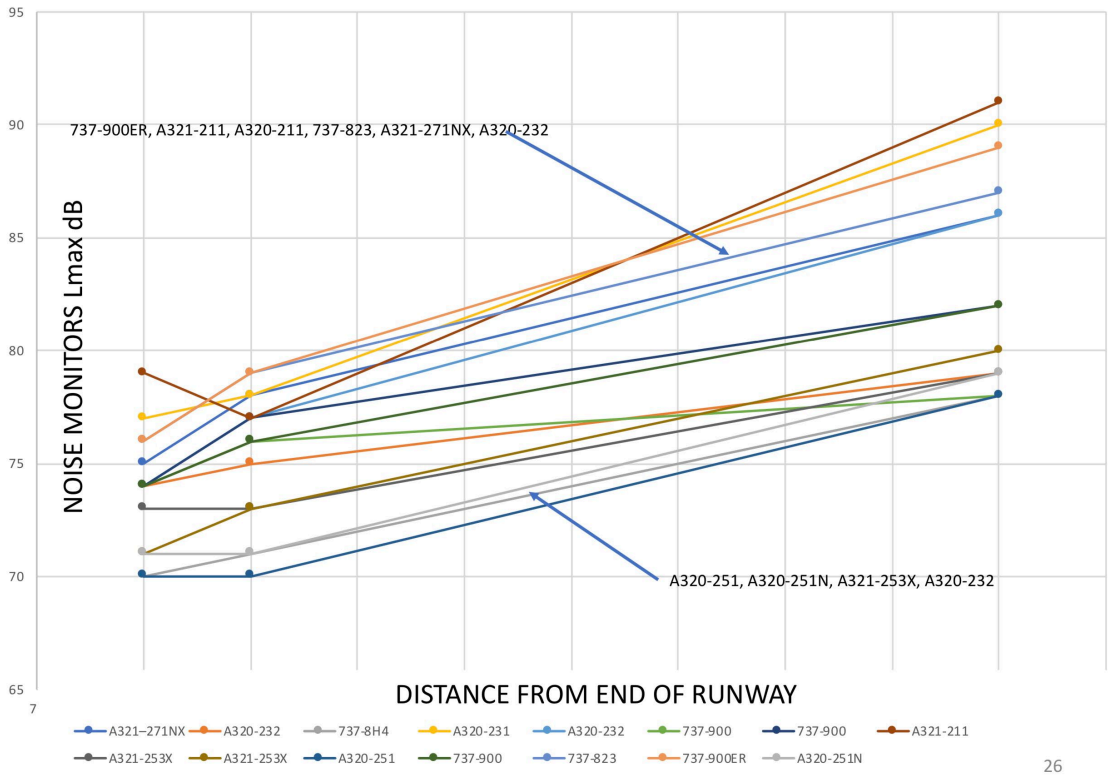


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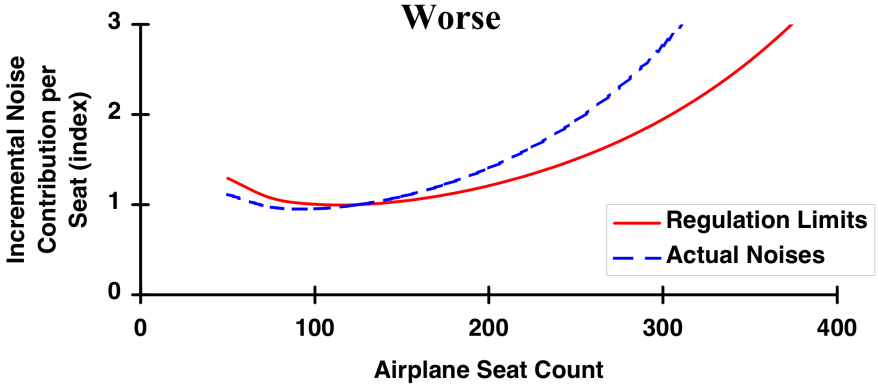
Figure 4: Actual Noise for Big Planes is Worse

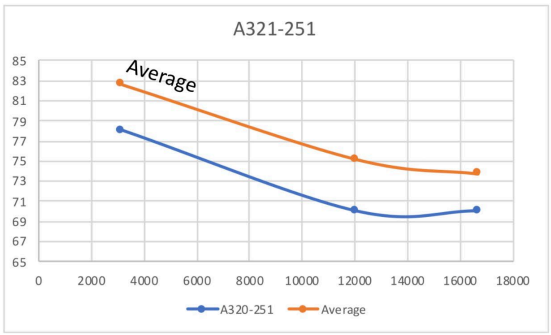


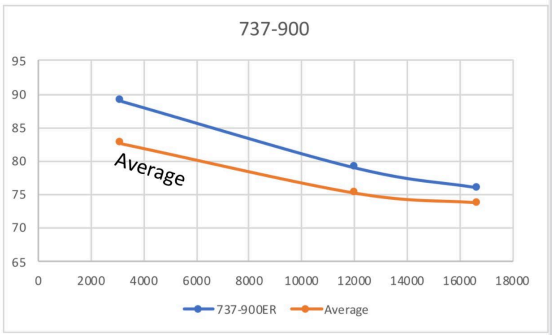
This is important. If you are flying, and you have a choice of airlines, one flying Boeing aircraft and the other Airbus equipment, you can compare the data in this report, but even better do the assessment yourself and make your decision which flight/airline is in your best interest to support. This is the same as it was forty years ago; PSA, which included many very quiet Bae146 aircraft in its inventory, was the airline of choice by residents who wanted to support the quiet airline.

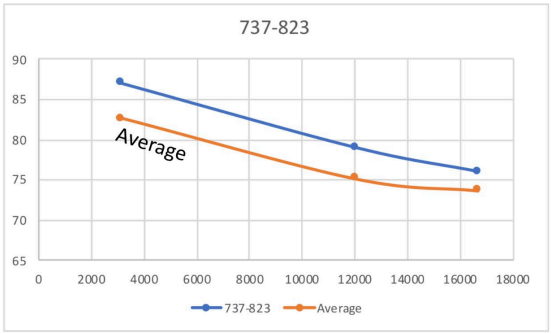
The last point I want to bring up is the shape of the curves that tend to tail up at the end. It appears to me that pilots are backing off on thrust to reduce noise over Pt. Loma, but then resuming high thrust levels before reaching Mission Beach. Keeping the thrust setting low until over the ocean would benefit all of us. It does not sound like a big request, but we will see if it is supported by the Mission Beach representative to ANAC.

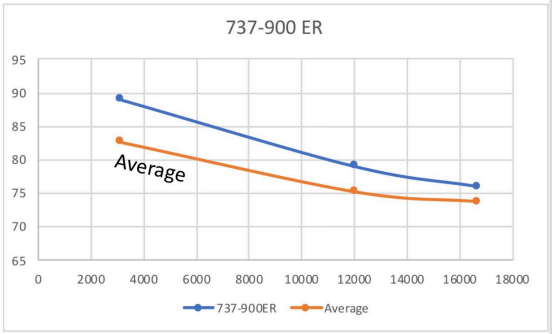
Compares Lmax values for different aircraft types as a function of distance from end of runway for departures

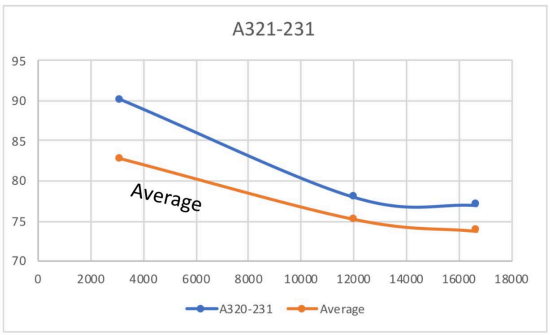
(Part 36 determines an aircraft stage, but these are actual Lmax readings)

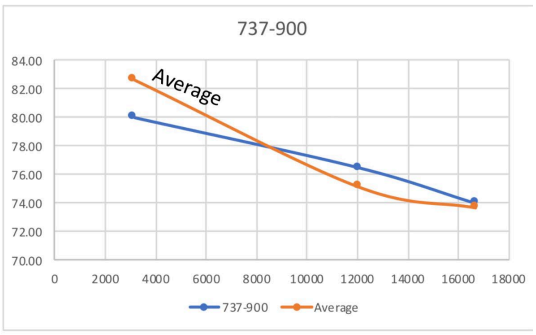


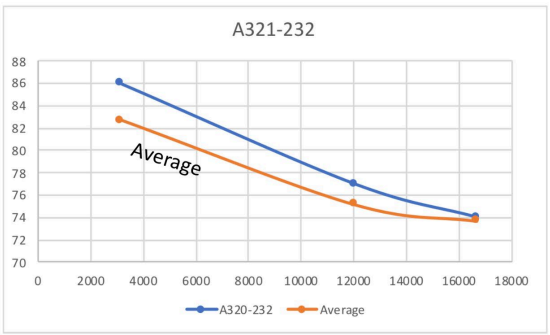


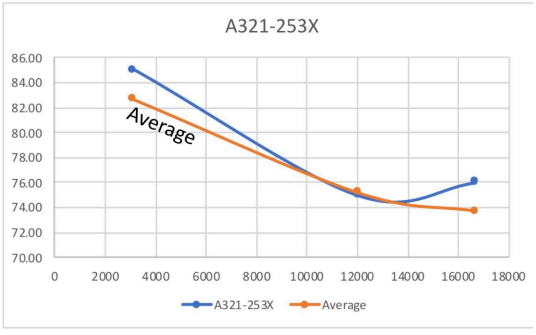










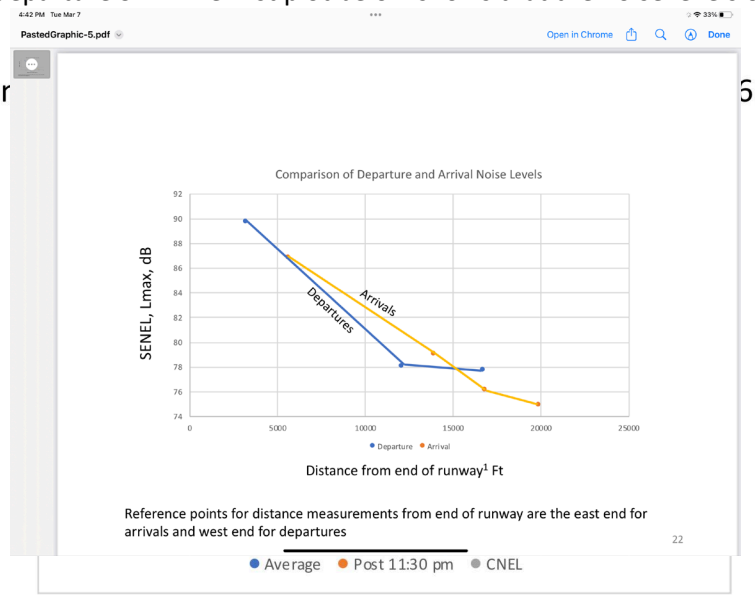


FOCUS ON ARRIVALS OR MAKING THE CASE FOR THOSE EAST OF THE AIRPORT

Most of the oxygen in the room (at ANAC and the Part 150) is sucked up by those living west of the airport, and generally for good reason. There is no doubt that those living in Liberty Station, Loma Portal, and Pt. Loma Heights are subjected to very loud and unhealthy aircraft noise departing from SDIA. But, to a large extent, the noise problem on the east side of the airport, in communities like South Park and Bakers Hill, has been understated. The majority of my attention has been on Mission Beach, a community that has been largely underrepresented over the last 50 years. But, the data below shows that those living on the east side of the airport are subject to some very loud and, again, unhealthy aircraft environments. Just as there have been more revelations in the past decades about the vascular, pulmonary and cardiac impact of aircraft noise, there has also been an increase of attention to environmental justice. For example, is there a representative on ANAC from South Park?

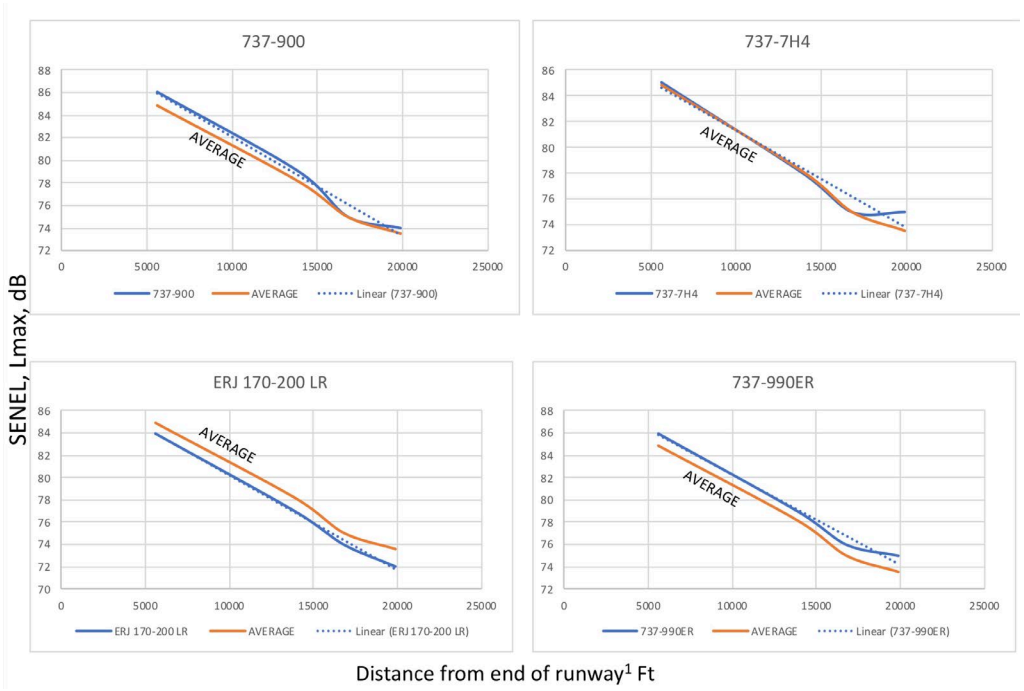
Webtrax Lmax data was collected for February 22-24 for noise monitors 26, 16, 2, and 1 on the arrival side and 7, 11, and 14 on the departure side. The latitude and longitude values above were used with Google Earth Pro to calculate the distance from the ends of the runway on the departure and arrival sides to obtain the distance from the end of runway to the noise monitor.

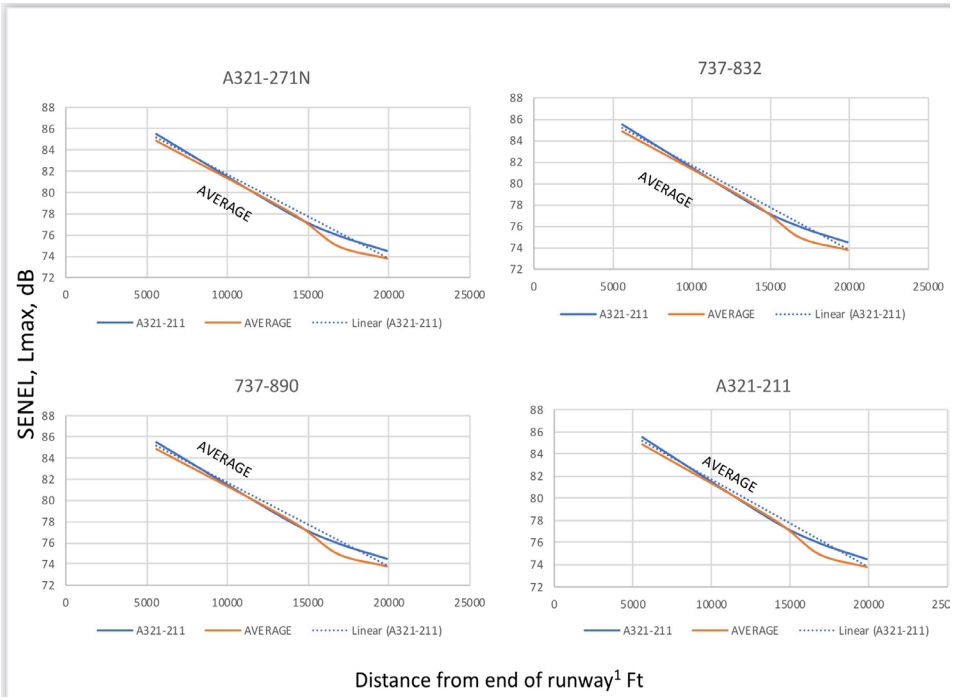
The first plot below confirms that the Lmax noise levels under the arrivals flight path are comparable to the Lmax noise levels under the ZZOOO departure SID. The first plot below shows that the noise levels on the east side of the runway,



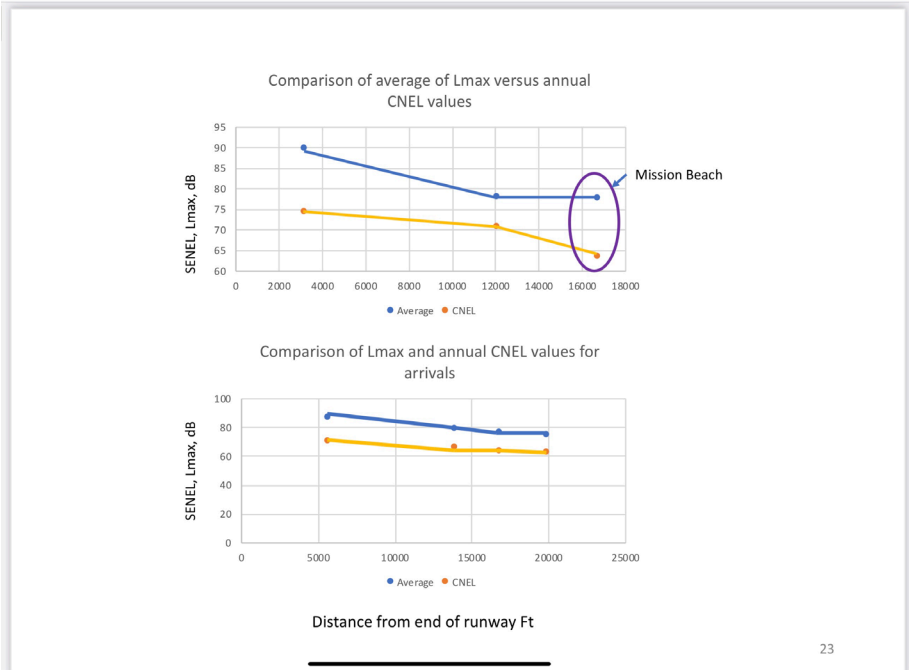
arrivals, are comparable to those on the west side that are departures. The departure numbers at the different represent an average of X There is also evidence that there is a pretty good correlation between Lmax or SENEL versus CNEL values

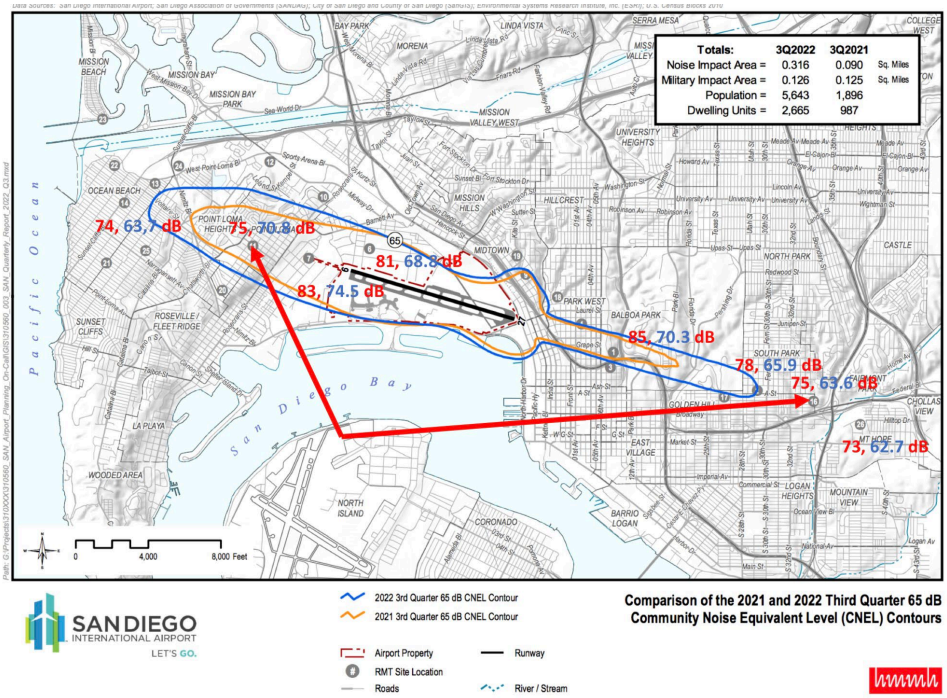
Compares Lmax values for different aircraft types as a function of distance from end of runway for arrivals
(Part 36 determines an aircraft stage, but these are actual Lmax readings)





Comparison of Lmax and CNEL noise measures





Noise monitor	6	7	1	11	2	14	16	26
Distance (ft)	1442	3159.00	5597	12041	13876	16698	16772	19865
Average	81.23	82.65	84.86	75.17647	78.14	73.70588	75.00	73.79
CNEL	68.8	74.5	70.3	70.8	65.9	63.7	63.6	62.7

CONCLUSIONS

The only conclusion from this and other papers is that it is time to find a different airport location, Mira Mar NAS or Pendleton Marine Corps Depot. Given the current one-runway, the maximum theoretical number of daily operations is 886, including 478 departures and 338 arrivals during the day and 70 arrivals at night. This results in a theoretical

maximum number of daily operations at 886 and annual operations at 323,390. This is about an 8.6 percent greater number than if nighttime arrivals and parking are not considered. The more likely maximum is about 85 percent of this number, or 274,823. If SDIA continues to grow at its current rate, it will be at capacity in the next year.

I could list all of the key findings, but then I doubt you would read anything but that paragraph. Do don't have to read anything, but if you want to understand, then you need to read all of it and draw your own conclusions.

Reince Tyler

To: Covell Joshua
Subject: RE: Replacement for previous submittal, INSIGHTS INTO AIRCRAFT NOISE AT SDIA

From: Gary Wonacott <wildcatwonacott@gmail.com>
Sent: Thursday, March 23, 2023 10:31 AM
To: SDCRAA clerk <clerk@san.org>
Subject: Replacement for previous submittal, INSIGHTS INTO AIRCRAFT NOISE AT SDIA

Please replace and distribute to ANAC members.

INSIGHTS INTO AIRCRAFT NOISE AT SDIA

BY G. WONACOTT
MISSION BEACH

MARCH 2023

SUMMARY

I am hoping that members of ANAC will not just read the summary, but will see it as reason to go deeper into the reasons for the conclusions I include below. Prior to the pandemic, it was projected that the one runway would reach capacity in 2023 or 2024. I differentiate between runway capacity and airport capacity, as the FAA and the Airport Authority can promote ways to further increase enplanements per day beyond the runway being at capacity.

There could be Saturday promotions to increase traffic on this day, or push for more arrivals after 11:30 pm, much to the distress of those living in the arrival flight path. And there could be some increase in the load factor, the number of passengers per aircraft. Lastly, there could be an attempt to modify the current curfew, adding an hour the start and end times. But, capacity is coming, which will have the single greatest negative financial impact on County revenues short of another pandemic.

The Fleet Quiet Score, brought down from San Francisco, is bogus. In spite of adding a Lmax component, the Fleet Quiet Score currently rewards loud airlines and penalizes quieter ones. It does this by using an incorrect mathematic logarithmic calculation when averaging the airline fleet, specific to SDIA, score by not converting to real numbers before the averaging calculation. As a minimum, this correction must be made to stop penalizing the quieter airlines fleets.

The distance to a destination, east coast versus Las Vegas, makes a huge difference in the noise levels, for a number of reasons. But, this distance effect can be largely mitigated with the use of a quieter aircraft. There needs to be some reward for those airlines that fly the quieter aircraft on these long range, potentially very loud departures.

The folks in Loma Portal are subjected to very loud and unhealthy departures daily, but at least not at night as the curfew kicks in. But this is not the case for those living on the arrival side to the east. The main reason is that the aircraft are at much lower altitude for a much greater distance during arrivals. And because there is no curfew for arrivals (that was a mistake), these residents on the arrival side experience far worse airport noise than those to the west. But, this does not seem to be acknowledged, nor does there seem to be the same effort to address these loud and unhealthy arrivals. These residents should get more attention.

ANAC members of the public and the government representatives have no special training in aircraft noise. So, hopefully this paper will help provide some insight into the issues and better prepare members to ask questions. But one thing for sure. It pays to have a politician of some stature living in your district. The one noise mitigation alternative adopted from all of the Part 150 work that was done had far less to do with noise mitigation than political power. Departing aircraft will be forced to fly out an additional mile to help prevent the aircraft from flying back over La Jolla and Pt. Loma at only 6,000 feet. But, these same folks would not supported moving PADRZ a quarter of a mile south to a 290 instead of a 295 heading, which would then have allowed the nighttime departures to be integrated into the SID. I will never forget the individual who lives in Sunset Cliffs who virtually yelled out he was going to the Beach and Bay Press if PADRZ was moved one foot farther south. Also, he had to point out that he lives in a privileged single family zone and was still allowed to continue on the committee.

INTRODUCTION

All of the information in this paper, with some effort, should be understandable by the members of ANAC. Much of it is common sense. Airport noise is a problem, and the first step to finding solutions is to break down the problem and understand its causes. There are tools available to help to understand the problem, including, the noise monitors, sketch and Calc (for calculating areas within contours), the FAA AEDT code, WEBTRAK and the FAA AEM program. In addition, the Title 25 current and archive data is extremely helpful to review. I do believe there are solutions, but the solutions are only attainable if there is collaboration and cooperation.

Also, the airport noise problem needs to be defined, and it is not clear the Airport Authority has been forthcoming as far as the real issue. For decades, the Airport Authority personnel tried to convince themselves that Lindbergh is a hub, but with one runway, it was not going to happen. Are we then a spoke, or are we more, perhaps an overnight parking lot.

With the arrivals curfew no longer enforced[1] and with 70 potential gates, including 11 more when T1 is completed, it seems like we are moving in the latter direction.

What are the implications of being a parking lot with 70 gates. With no arrivals curfew, in retrospect, that must have happened without any representation on the east side of the airport, it will be no problem filling up all of the parking spaces overnight. The issue will be how to get these 70 aircraft out of here as quickly as possible in the morning. One step would be to delay arrivals in the morning hours, thus allowing a continuous stream of departures. Then there is the possibility to change the departure curfew from 6:30 to 6 or even 5:30 am. These are questions that can only be answered by the Airport Authority. One point I can make is that none of these departures to the east coast or Midwest are using PADRZ without a fight.

Let's look at this issue a little more closely. The maximum capacity at the one runway is 48 operations[1] per hour, combined departures and arrivals. If the 17 hour curfew included both departures and arrivals, then there would have to be an equal umber of arrivals ad departures during that period. But, the no-curfew from 11:30 pm to 6:30 am provides for two operational benefits.

For example, there is a benefit from added gates from T1 development. If the concept of an overnight parking lot was to be fully embraced, this would allow 70 planes to be parked. This means that during the non-curfew 17 hours, there could be an uneven number of departures and arrivals, with as many as 70 more departures. This would result in as many as 478 departures and 338 arrivals during the 17 hour day, with the other 70 arrivals between 11:30 pm and 6:30 am. This results in 886 total daily operations, up from 816, or 323,390 annual operations.

Probable the single most important question of the day is, when will SDIA reach its capacity. The number of quarterly operations for. Commercial and all operations was obtained from the Title 25 reports. This data was then plotted, assuming a start time for when the airlines begin their most recent recovery. The dates were them obtained for when the number of operations exceeded the capacity.The bottom line is that if growth in operations continues at the same linear rate, then SDIA is virtually at capacity. ***This is based on Title 21 data as of Q3 2022. When the Q4 2022 data is published, this estimate will be revised. Note that the date when capacity is reached is very sensitive to this rate of growth. It could stretch out a decade if the rate of increases decreases.*** A return back to a much smaller growth rate would push out the capacity being reached in 2035.

The most important point here is that the capacity of SDIA is within sight; growth rates should be monitored closely given the sensitivity of the date when capacity is reached is to this variable. In any case, we can expect our tourism and government officials to keep their heads buried deep into the sand.

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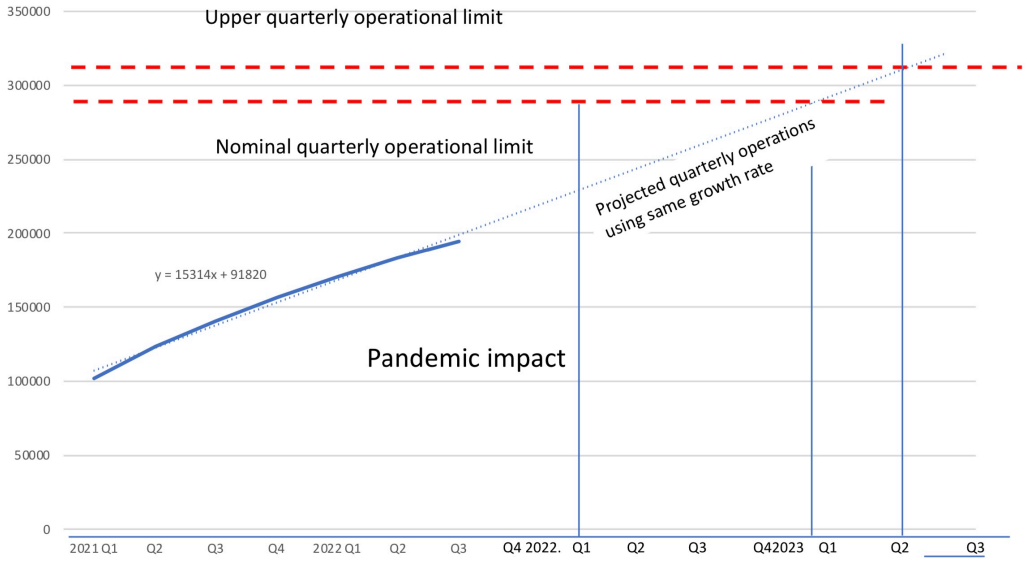
1 Theoretically, it could be 50 operations per hour if only landings or only takeoffs.

Estimate of time before SDIA reaches capacity



Calendar year and quarter

Assuming same rate of growth, capacity would be reached in 2023

BACKGROUND

The latitude and longitude for each of the fixed noise monitors is shown in the table below. This information has been used to calculate the distance from the end of the runway on the east and west sides of the runway to the noise monitors.

Table 3 Annual CNEL Measured at the RMTs
Source: Airport Authority, ANOMS™ January 1, 2008 through December 31, 2008

Site	Location			Annual CNEL (dB)
	Address	Latitude	Longitude	
1	Park & Rec Bldg - Balboa Park	32.725170	-117.157071	70.8
2	1328 1/2 Dale St	32.719510	-117.131235	66.4
3	1698 1/2 Eighth St	32.722851	-117.157577	66.5
4	200 1/2 E. Juniper St.	32.729363	-117.162840	66.1
6	Marine Corps Recruit Depot	32.740452	-117.200950	69.4
7	Liberty Station, Historic Decatur Rd	32.738923	-117.211829	74.7
9	1134 1/2 Redwood St.	32.736781	-117.172882	67.0
10	3225 1/2 Michaelmas Terrace	32.748280	-117.209302	63.6
11	3413 1/2 Browning St.	32.740748	-117.221897	71.8
12	3232 1/2 Duke St.	32.753464	-117.218971	61.8
13	4669 1/2 Larkspur St.	32.750030	-117.239540	65.8
14	4799 1/2 Cape May Ave.	32.747069	-117.244984	66.3
15	809 1/2 Dover Ct.	32.766465	-117.250600	59.8
16	3385 1/2 B St.	32.717931	-117.121128	64.2
17	3651 1/2 A St.	32.718475	-117.137127	64.7
18	418 W. Nutmeg St.	32.733414	-117.167147	60.7
19	1290 1/2 West Thorn St.	32.739609	-117.174537	62.4
20	1944 1/2 Plum St.	32.734008	-117.227287	60.5
21	1615 1/2 Froude St.	32.737964	-117.248051	59.4
22	5029 1/2 Lotus St.	32.752754	-117.246852	64.1
23	2600 Mission Boulevard	32.759700	-117.249016	62.4
24	Barnes Tennis Center Parking Lot	32.752721	-117.235338	64.7
25	1873 Santa Barbara Ave.	32.739900	-117.241050	63.3
26	750 Gateway Center Way	32.714521	-117.112670	63.2

The main sources of aircraft noise are from the engines, mainly associated with thrust levels, and the airframe. Airframe noise is very sensitive to the aircraft speed. The other main factor that determines the noise on the ground is distance from the source, comprised of altitude and lateral distance. WEBTRAK provides much of this information, including the

altitude and lateral distance to your house. It is generally thought that the worst noise levels on the ground are from departures, but this is not always the case. In addition, the change in altitude during departures can be indicative of the thrust level. The higher the angles, the higher the thrust.[1]

Logarithmic Calculations and Implications

This is one of the more important, hidden (not intentionally) considerations when it comes to aircraft noise, particularly when averaging logarithmic numbers. It is much like when comparing two seismic events, one at 4 and one at 7 on the Richter Scale. You cannot simply get the average by adding the two numbers together and dividing by 2. The correct approach would be to convert from a logarithmic value to an arithmetic number by raising the value 10 with the exponent equal to the logarithm and then averaging the arithmetic values, and finally converting back to the logarithm.

For example,

1) 10^4= 10000
2) 10^7= 10000000
3) 10000+10000000=10010000
4) 10010000/2=50050000
5) Log(50050000)=6.695

If one simply averages the two logarithms, the answer would be 5.5. This is a fairly significant error if not done correctly. In the case of seismic events, we know that an event that is 6.7 would cause far more damage than one that is 5.5.

The same holds true for aircraft single events, SENEL or Lmax. When averaging a number of single events, it is important to follow the approach above to obtain the correct average value. For example, if two aircraft fly over, one registers a maximum noise level of 82 dB and the other one is at 79 dB, the correct average for these two would be 81.7 dB compared to 80.5 dB. Another example is even more illustrative. If ten aircraft fly overhead, one measured at 80 dB and the other nine at 75 dB, the average using the correct approach would be 79dB, the point being that 80 dB is a much larger noise level compared to 75 dB. It is likely that a single event at 2 am of 80 dB is going to be far more disruptive compared to 9 events at 75 dB. This is why in my opinion, single events are very important and need to be incorporated into the incompatible noise area calculation, but not at the expense of doing the logarithmic calculations incorrectly.[2]

Because Southwest has the majority of the SDIA operations and because Southwest's fleet is only Boeing aircraft we might expect higher noise levels . Again, the Fleet Quiet Scores used by the Airport Noise Abatement Office is in my opinion of little value. To do this correctly so that it is meaningful to those of us on the ground, it should be an absolute score that can be tracked from quarter to quarter. It should not include the Gross Take Off Weight compensation, and it should be divided into one score for take offs and one for landings.

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[1] The port commissioners, who operate the downtown bayfront airport, voted unanimously for the Jan. 5 curfew, which forbids all flight departures but allows certain large jetliners considered to be "quiet" to land after midnight. The jetliners classified as quiet are the wide-body I-1011 and DC-10, the Boeing 747 and those Boeing 727's whose engines have been acoustically reconditioned to reduce their noise. **By Everett R. Holles Special to The New York Times, December 7, 1975.**

[2] Several years ago, I determined that the fleet score was being calculated incorrectly. You might ask if that analysis has now been corrected.

My next step is to show the differences between doing the logarithms correctly or not. I obtained a copy of the methodology used to calculate the score for each airline using data, referred to by the Airport Authority as ***2020 Fleet Quality – COVID.***

I included below the highlights for a score analysis using American Airlines for the example. Using the current approach, the AAL score is 13.5; however, using the corrected approach, the score is 24.0. At the time this was done, AAL had five aircraft types in their SDIA inventory with a total number of operations of 4073. Of the five, one has a score of 25.8 dB, much larger than the other four, which therefore dominated even with a small number of operations. The Airport Authority apparently decided that penalizing AAL for one loud aircraft was not fair; but instead, the Airport Authority should have been concerned that they were penalizing airlines that has no loud aircraft that should have received a more positive score.

Using the correct approach would result in five airlines gaining substantially, one, Airborne Express going from 14th to 5th. The Airport Authority should be rewarding Sun Country, Delta Airlines, Jet Blue, and Alaska AL. The addition of the Lmax in the criteria, while a good idea, does not compensate for the negative implications from doing the analysis wrong.

Compares averaging of the engine types using logarithm values and corrected arithmetic numbers for AAL fleet

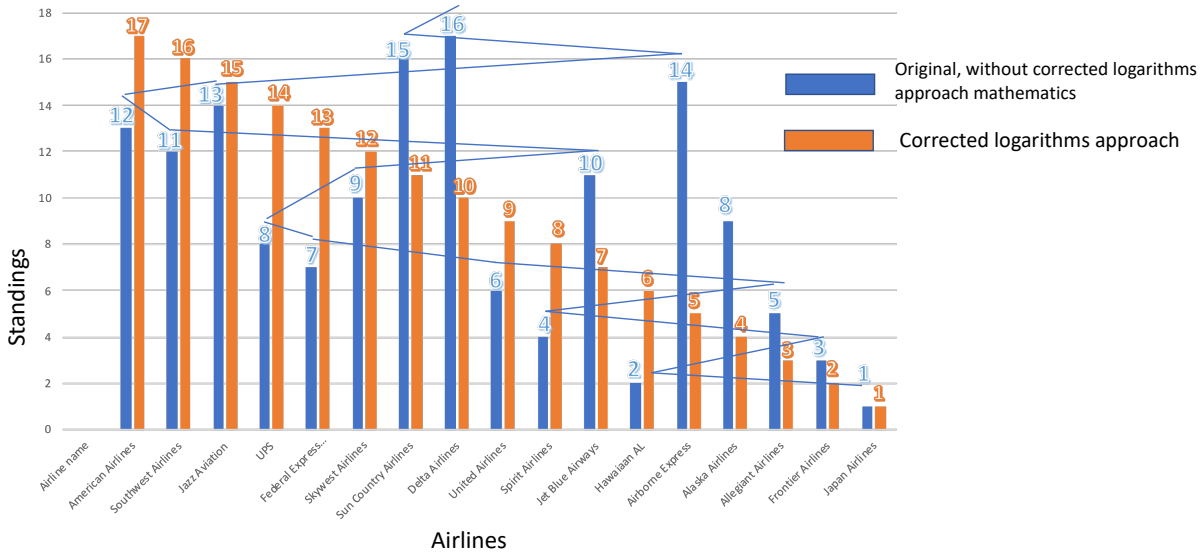
- Fleet score is a correct statement for the entire AA fleet, but may not relate at all to the American Airlines fleet that operates out of SDIA.
- The fleet score calculation is not arithmetically correct.
  - Each engine type for the airframe being evaluated has a Part 36 score; the Noise Abatement Office personnel calculated a weighted average for all of the engine types by incorrectly averaging the logarithm numbers
  - The logarithms must first be converted to real numbers
    - (exp→ (real number) = 10 ^ (Log number)
  - The weighted average is then calculated for the real numbers
  - The weighted average real number is then converted back to a Log
  - From the next chart, one can see that the differences for the corrected values are not great, but then there is a final calculation that takes into account the number of operations for each aircraft type for that quarter.

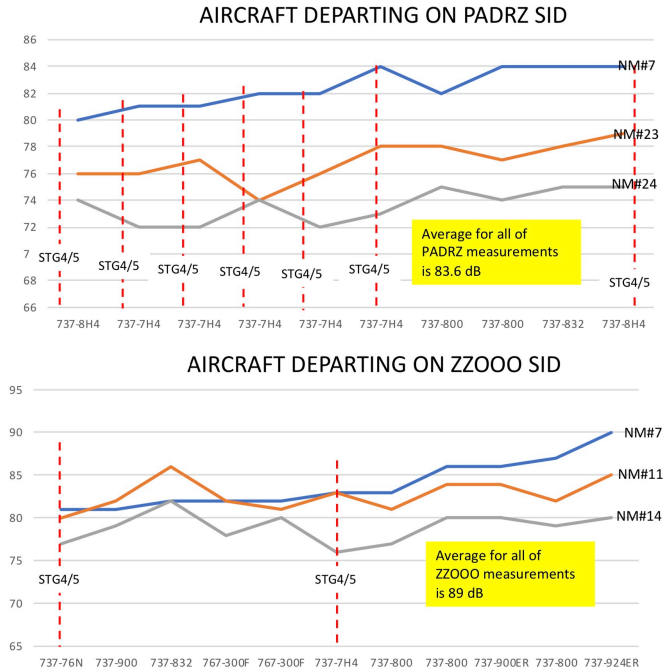
Aircraft	Uncorrected Values	Corrected Value	No Operations	Weighted average using logarithms	Weighted average using real numbers
Airbus A319	18.6	18.9	34	632.12	2.64396E+20
Airbus A320	17.8	18.0	124	2,203.07	1.19566E+20
Airbus A321	13.0	13.8	2,051	26,694.05	1.40118E+17
A321 253N (CFM)(neo)	25.8	25.8	64	1,651.20	4.03813E+27
737 NG 800 Winglets	13.2	13.6	1,800	23,694.28	7.73436E+16
		Sum	4,073	54,874.71	9.91E+23
		Weighted average values		13.5	24.00

- The problem is that the A321 has a noise level of 25.8 dB, which totally dominates, even though there are only 64 operations (1.6 percent)
- On the other hand, this sends a very strong message to American Airlines; that is that they can dramatically improve their score by changing out that aircraft, or
- Does this perhaps raise the question about the viability of this approach compared to using noise monitor values

Southwest went from 11th to 16th, which is interesting given their inventory is mainly, or perhaps all Boeing aircraft. In an effort to provide insight into the Southwest fleet, I have plotted noise monitor measurements from Webtrak for both PADRZ and ZZOOO individual departures for different Boeing aircraft. The measurements were taken for ZZOOO at Noise Monitors 7, 11, and 14 and from NM 7, 24, and 23.

While I have publicly stated that I believe that putting all of the nighttime departures over Mission Beach, to be consistent, I must also state that the average aircraft noise for those departures during the daytime and evening on PADRZ is less than for those departing on ZZOOO, and by a significant. In the example shown below, the average for all of the Lmax on ZZOOO was 89 dB, while on PADRZ was 83.6 dB. The main complaint for those of us in Mission Beach, other than the nighttime issue, is that the FAA satellite navigation concentrated the departures over a relatively small area. While noise decreased for some, it increased a lot for others, which should have made those of us directly under PADRZ and the nighttime departures eligible for the Quieter Home Program funding.



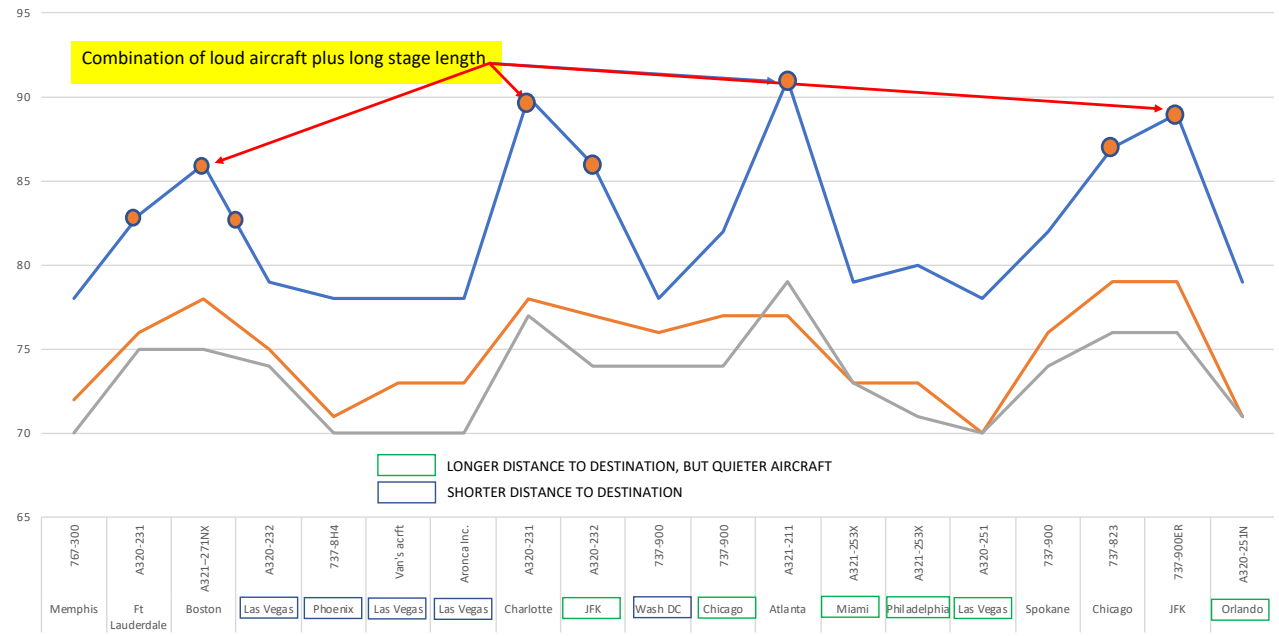


This next chart more than most gets to the heart of the conflict between the airport and the residents. In my opinion, the City, and therefore the airport, continues to rely on tourism (30 percent of economy) far too much, instead of moving more towards technology, with a much higher salary base. For tourism to be successful, the airport must bring people from both near and far places, but far places result in much greater noise if the aircraft is not one of the latest NEOs or MAXs. This is shown in the picture below. A combination of ZZOO and PADRZ departures is shown, with PADRZ typically having the routes with the shorter destinations, which are shown across the bottom. The type of aircraft is also shown for each departure. The three lines depict the three noise measurements made for each departure at NM 7, 11, 14, for ZZOOO and 7, 24, and 23 for PADRZ.

The worst combination by far is a departure with a louder aircraft and a long destination. And the best combination is a short destination with a quieter aircraft.

The airport is headed towards capacity. Whether we reach it in 2028 or 2029 makes a difference, but what if the capacity issue was used to incentivize airlines to fly quieter aircraft, with for example, lower landing fees. While an airline might claim interference with interstate commerce or violation of equal protection, it does not hurt to try, and if there is money to be made on the route, an airline is very unlikely to go somewhere else. It is easy enough to identify the culprits and put some pressure on them.

AIRPORT NOISE SENSITIVITY TO DESTINATION OR STAGE LENGTH

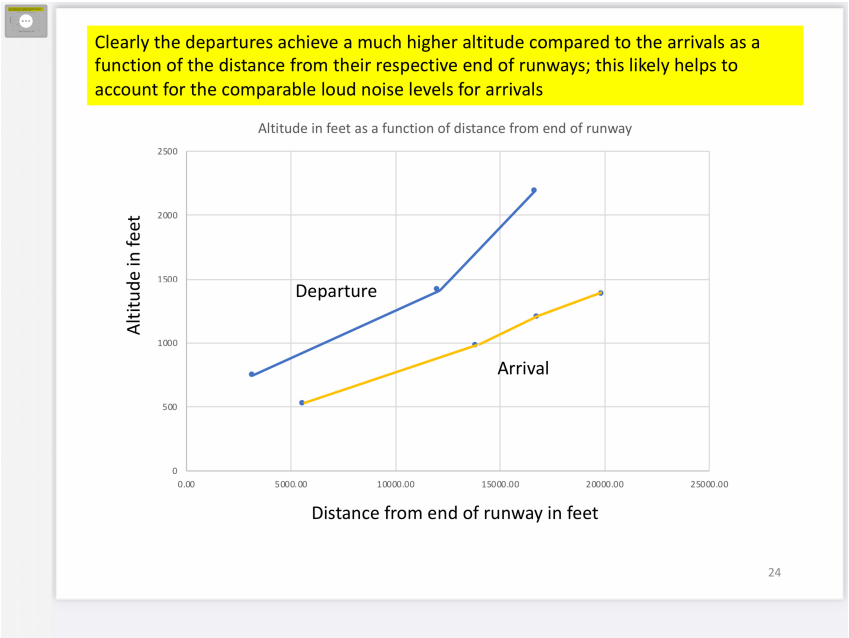


Altitude Assessment

An assessment was made, using a limited amount of data, of aircraft departure and arrival angles by calculating the tangents of differences in elevations and distances from the end of the runway. The first one done was for seven arrivals using WEBTRAK data that shows the aircraft elevation changes at noise monitors 26, 16, 2, and 1. While the WEBTRAK data is an approximation, it is very repeatable for arrivals. The average of several arrivals was calculated to be -3.46 degrees, which is fairly close to the -3.5 degree glide slope approved by the FAA for use in the AEDT code for the

Part 150 program. On the departure side, there are the three departures, ZZOOO, PADRZ, and the FAA nighttime departure procedure. There is much more variability from departure to departure.

The first chart below compares the altitude versus distance from end of runway for departures and arrivals. It is clear from this chart that the altitudes near the airport are substantially lower for the arrivals than for the departures. While



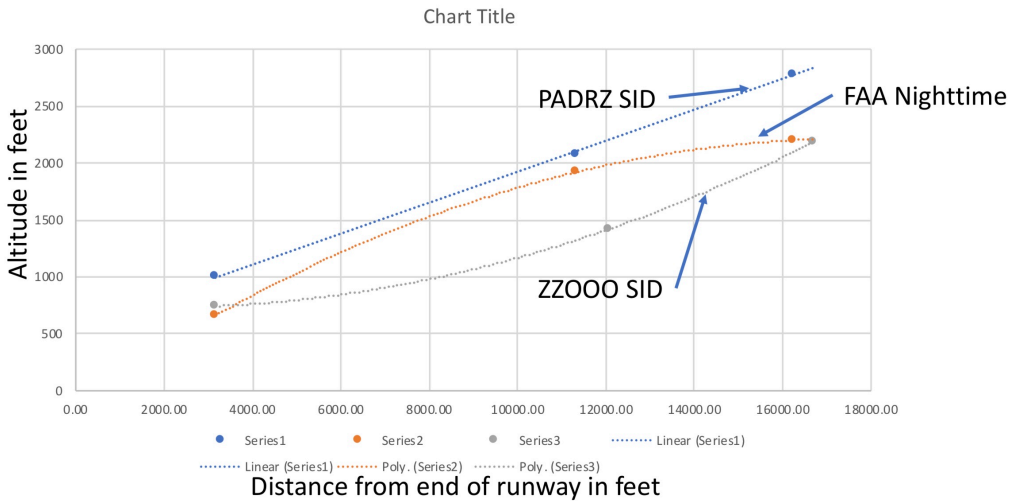
there is no way to quantify the effect, the departure slope increases at distances farther from the end of the runway for the departures, higher average thrust values. So, perhaps higher noise from the higher thrust for departures, but higher noise levels for the arrivals due to the lower altitudes.

There is a change in the slope of the departure curves as the aircraft move away from the end of the runway, but since there are only the three data collection points, it is difficult to say when the changes occur, and therefore when and if the slopes are correct. The only thing that can be said of the calculation is that it is the average slope between the noise monitors. Given that, there are slope changes. For example, between NM 7 and 11, the average slope is only 4.3 degrees, which seems low. From noise monitors 11 and 14, the average slope is 9.5 degrees, which is typical for a departure.

From the calculations, one might infer that the average thrust is lower between noise monitors 7 and 11 than between 11 and 14. However, this might not be the ideal scenario for the majority of the population. One study at John Wayne suggests that maintaining a maximum thrust to 1500 feet followed by a decrease in thrust until out over the ocean would provide greater noise abatement.

The chart below compares the altitude as a function of distance from end of runway for PADRZ and ZZOOO at 6:30 am, and the FAA nighttime departure at 10 pm. A number of departures were averaged at each of the noise monitors. A polynomial curve fit was done for each set of data, which indicates that the rate of change of altitude for PADRZ is the same (linear curve fit), FAA Nighttime decreases and ZZOOO increases.

It appears that the thrust is lower in the initial part of the ZZOOO departure route, but then increased as the aircraft approaches Ocean Beach; in contrast, the thrust is initially higher during the first part of the route, but then backed off for the FAA Nighttime departure over Mission Beach



ZZOOO and PADRZ SIDS are in the 6:30 to 7 am time period, while the FAA nighttime is in the 10 to 11:30 pm time period

25

1. The aircraft on the PADRZ SID achieve higher altitudes with distance from the end of the runway, most likely because the aircraft on PADRZ have on average shorter distances to their destinations and as a result, are not as heavy.
2. There is a substantial difference in the altitude about halfway from the end of the runway to the ocean for ZZOOO and the FAA Nightime that decreases such that they are about the same before reaching the ocean.
3. The changes in thrust versus time for the ZZOOO and the FAA nighttime departures is noticeably different that requires further investigation before any conclusions can be reached.

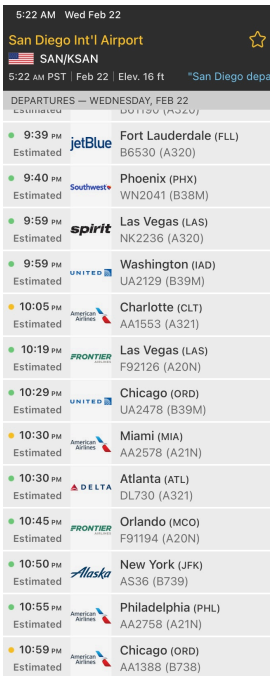
FOCUS ON NOISE DURING DEPARTURES

At the last meeting, a question came up about pushing for FAR Part 36 Stage 4 or 5 aircraft by airlines during the nighttime hours from 10 pm to 11:30 pm. In response, Ms. Knack commented that the FAA, based on Part 161 would deny this type of change. Part 161 has been used effectively by the Airport Authority and the FAA to dismiss many good noise abatement ideas that had minimal interference with interstate commerce.

SDIA continues to be a “spoke” type airport in spite of efforts to make it a “hub”. While the current curfew is at 11:30 pm, there are very few departures after 11 pm at SDIA. With the exception of red eye flights, most flights to the east coast leave earlier in the day, by 2 or 3 pm. So, why are residents in Mission Beach complaining so loudly during this time period, from 10 to 11:30 pm?

These are the nine nighttime departures *scheduled* for Wednesday, February 22, 2023. However, there were actually 19 departures in this time period, with ten delayed from earlier in the day. This means, that the scheduled departures would almost always be our minimum number. There is, in fact, no limit on the maximum number, except for runway capacity, of nighttime departures.

There were ten delayed departures during the day. *Why are all of these put on the FAA nighttime noise abatement procedure over Mission Beach? Of the 10 delayed departures, 8 were ZZOOO and 2 were on PADRZ. I think the delayed departures should stay on their scheduled flight plans. It is bad enough that we have an FAA nighttime noise abatement procedure, but then to add all of the delayed flights on this route is unfair and inequitable.* Not only do these departures disrupt residents, they also contribute to a larger 65 dB CNEL, including the penalty. These aircraft are far more



disruptive than "an early left or right turn", which is included in the Fly Quiet Score. While these departures are perfectly legal, as are early turns, there needs to be a penalty. These ten departures in the table below are some of the loudest, most disruptive and most unhealthy of the day. Most people are asleep by 10:30 pm, but there were still 10 departures after 10:30 pm.

Among other considerations, the Fly Quiet Program is aimed at encouraging airlines to use quieter aircraft. Of the nine scheduled departures between 10 pm and 11:30 pm, only two of these is on the PADRZ SID and the rest are on the FAA nighttime noise abatement procedure. As Ms. Knack pointed out at the last meeting, the pandemic resulted in retirement of many older aircraft. In the group above, it appears that there are five Stage 4/5 and four Stage 3 departures. The FAA AEM tool was used to calculate the area contribution to the 65 dB CNEL by each group. The total

Number	Time	Aircraft	Type		Lmax dB		Destination
		Flightradar24	Webtrax	NM#7	NM#24	NM#23	
1	10:02:38		767-300	78	72	70	Memphis
2	10:04:42		A320-231	83	76	75	t Lauderdal
3	10:06:04		A321–271NX	86	78	75	Boston
4	10:12:19		A320-232	79	75	74	Las Vegas
5	10:14:51		737-8H4	78	71	70	Phoenix
6	10:16:34		Van's acrft	78	73	70	Las Vegas
7	10:17:18		Aronca Inc.	78	73	70	Las Vegas
8	10:24:10	A321	A320-231	90	78	77	Charlotte
9	10:26:10		A320-232	86	77	74	JFK
10	10:32:12		737-900	78	76	74	Wash DC
11	10:44:33	737 900Max	737-900	82	77	74	Chicago
12	10:47:54	A321	A321-211	91	77	79	Atlanta
13	10:52:33	A321Neo	A321-253X	79	73	73	Miami
14	10:58:32	A321Neo	A321-253X	80	73	71	Philadelphia
15	11:01:45	A20N	A320-251	78	70	70	Las Vegas
16	11:03:51		737-900	82	76	74	Spokane
17	11:08:13	737 800	737-823	87	79	76	Chicago
18	11:16:59	737 900	737-900ER	89	79	76	JFK
19	11:28:51	A320Neo	A320-251N	79	71	71	Orlando
				82.15789	74.94737	73.31579	

contour area contribution from the three Stage 3 aircraft is 0.2015 square miles while the four Stage 4/5 aircraft is 0.0492 square miles. This is a fairly substantial difference and should be further investigated by ANAC.
The information that follows provides additional insight into the increased noise impact of aircraft. In the table above, I have shown Lmax readings for each of the departures for three fixed noise monitors: 7, 24, and 23. I then plotted the noise as a function of the direct line-of-sight distance from the end of the runway to the fixed noise monitors. Note that this is based on a very limited amount of data. And in fact, two plots are shown for the 737-900 that resulted in very different results. There are other factors that also affect noise level not included, such as the distance to the destination.

The plots revealed a couple of key issues, one that is of particular interest to Mission Beach. First, the Fly Quiet Program uses the Part 36 formula to quantify the quietness of one acrft relative to another. While I have not done a direct comparison, I think it likely that the data shown in the PP charts that follow bear little resemblance to Part 36. My second point is that, in general, the Airbus aircraft are quieter than the Boeing acrft, again setting Part 36 aside.

The aircraft that are most noticeably noisy are the A321-231, A321-232, 737-900, 737-823, 737-900ER. The winners are the A320-251, A320-251N, A321-253X, and A320-232. The chart below is actual noise monitor data at three locations, NM#7, NM#11, and NM#14.

I have also included a chart taken from the literature that shows the effect of aircraft size that does not include the discounting of noise for aircraft with a gross take off weight greater than 100K pounds (Part 36). The chart shows that the optimum aircraft size from a noise perspective has roughly 125 seats. This is most likely a two engine, narrow body design.

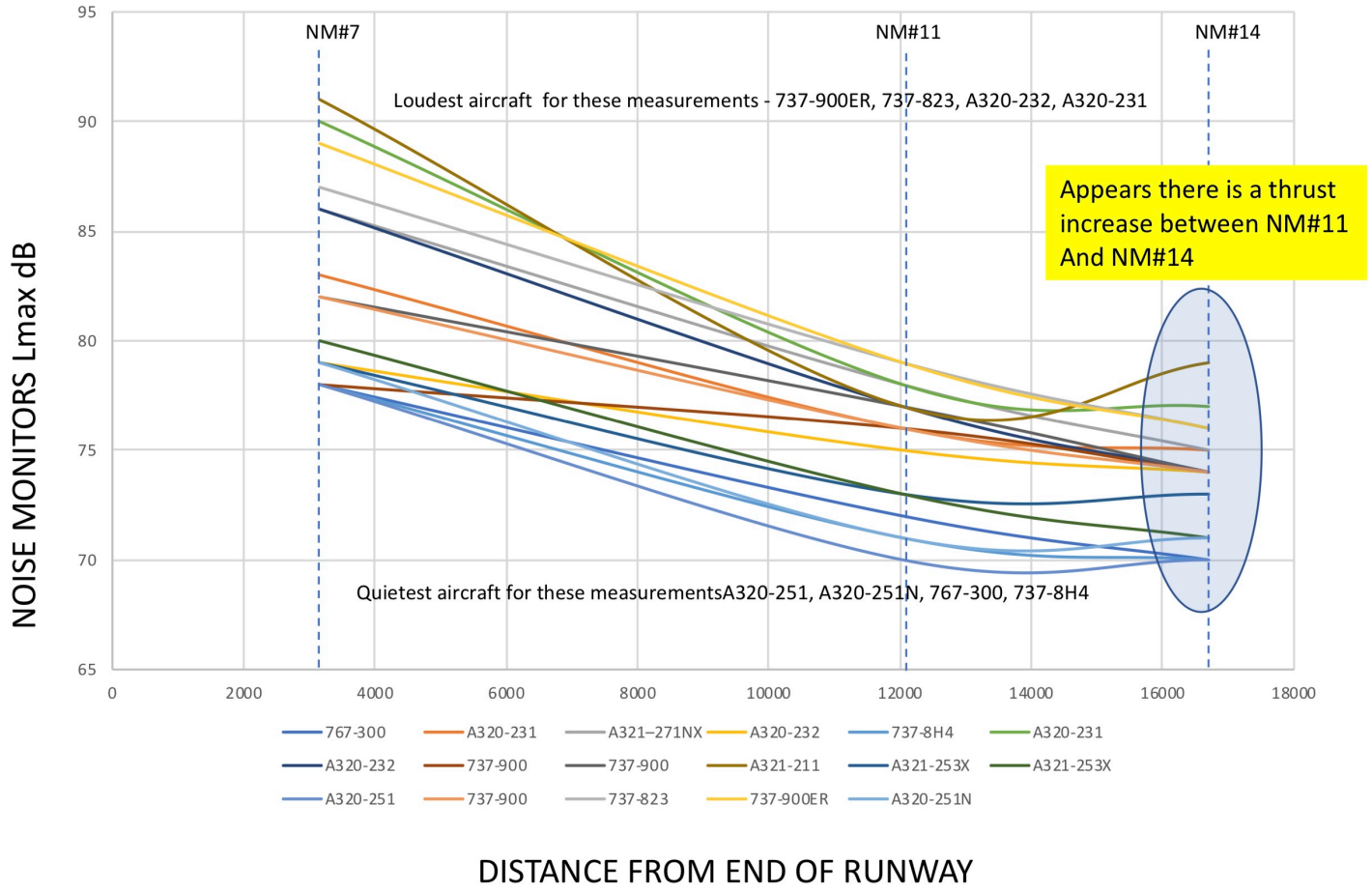
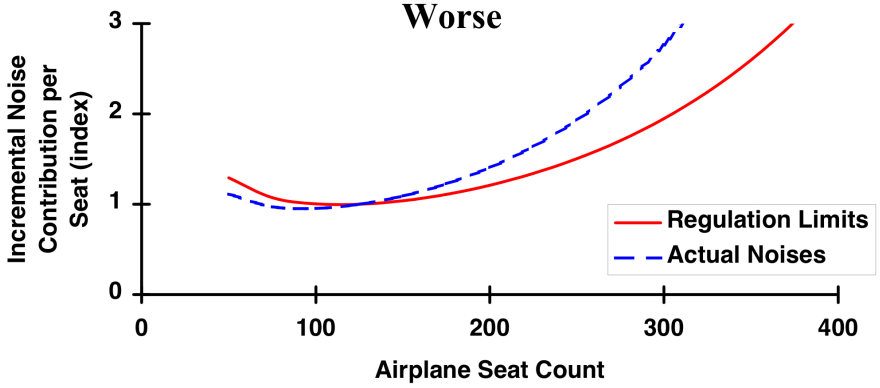


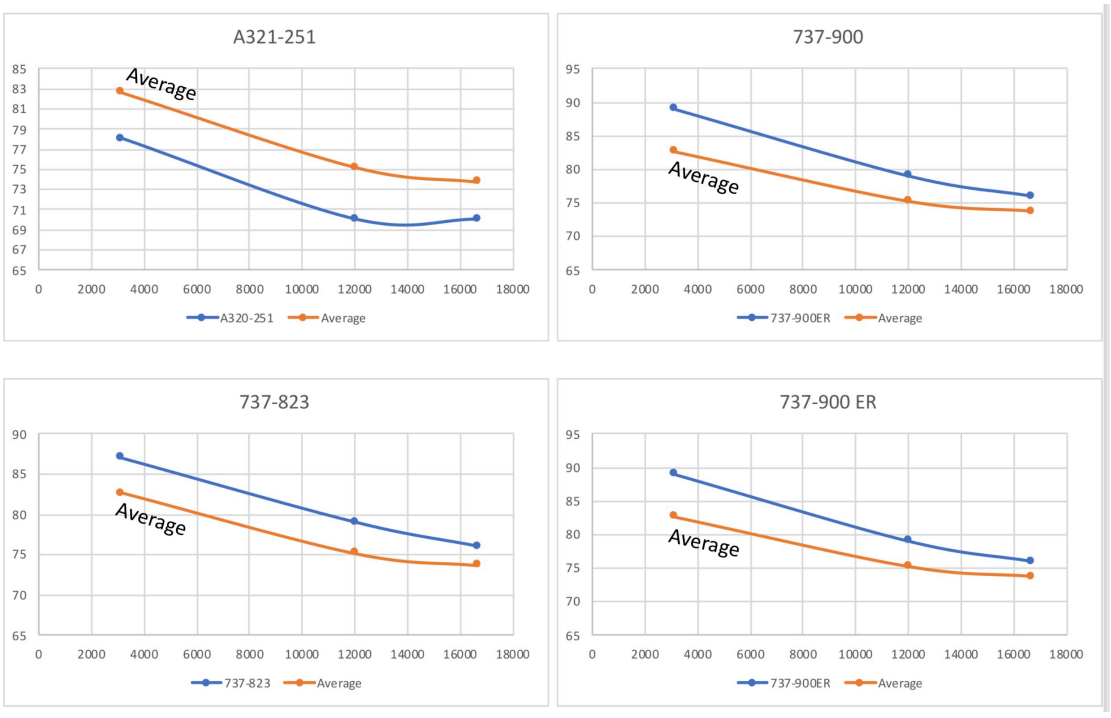
Figure 4: Actual Noise for Big Planes is Worse

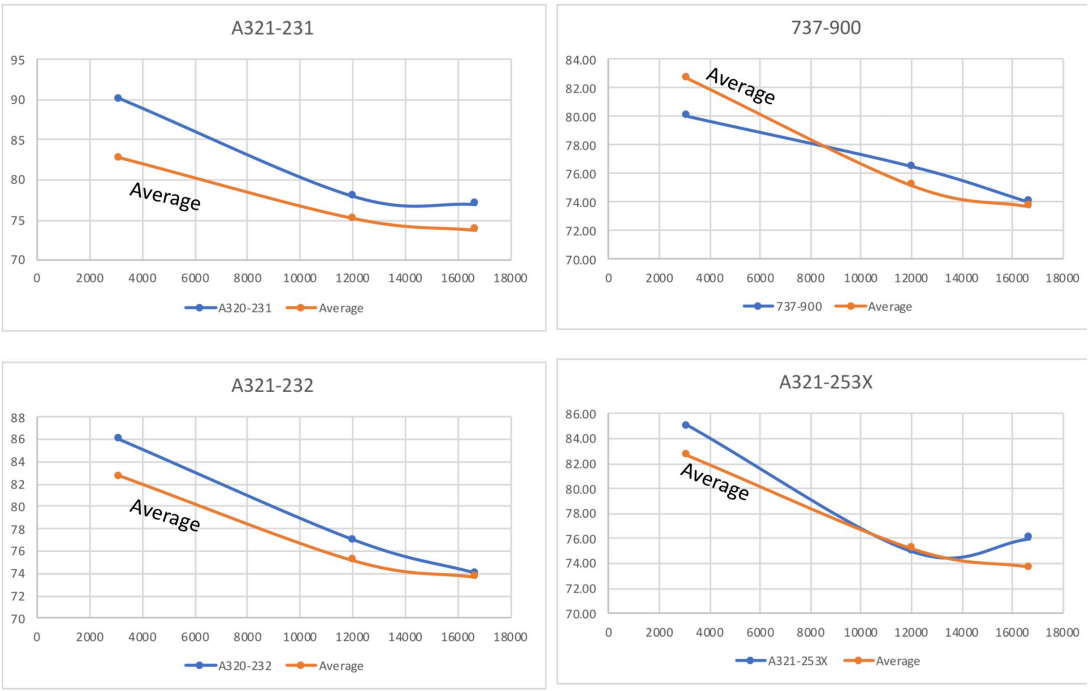


I believe that this information is important. Southwest is by far the largest provider at SDIA. Southwest has been adding 737 Max aircraft as fast as possible. This is the same as it was forty years ago; PSA, which included many very quiet Bae146 aircraft in its inventory, was the airline of choice by residents who wanted to support the quiet airline.

The last point I want to bring up is the shape of the curves that tend to tail up at the end. It appears to me that pilots are backing off on thrust to reduce noise over Pt. Loma, but then resuming high thrust levels before reaching Mission Beach. Keeping the thrust setting low until over the ocean would benefit all of us. It does not sound like a big request, but we will see if it is supported by the Mission Beach representative to ANAC.

Compares Lmax values for different aircraft types as a function of distance from end of runway for departures
(Part 36 determines an aircraft stage, but these are actual Lmax readings)





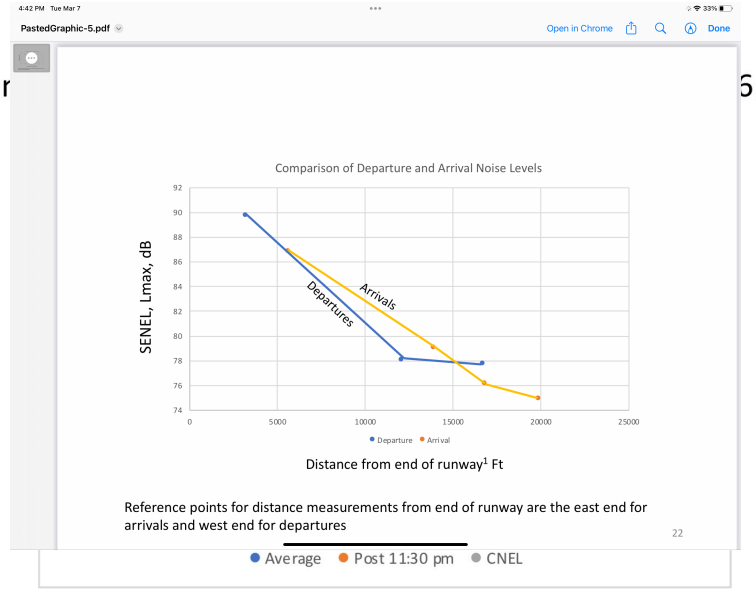
FOCUS ON ARRIVALS OR MAKING THE CASE FOR THOSE EAST OF THE AIRPORT

Most of the oxygen in the room (at ANAC and the Part 150) is sucked up by those living west of the airport, and generally for good reason. There is no doubt that those living in Liberty Station, Loma Portal, and Pt. Loma Heights are subjected to very loud and unhealthy aircraft noise departing from SDIA. But, to a large extent, the noise problem on the east side of the airport, in communities like South Park and Bakers Hill, has been understated. The majority of my attention has been on Mission Beach, a community that has been largely underrepresented over the last 50 years. But, the data below shows that those living on the east side of the airport are subject to some very loud and, again, unhealthy aircraft environments. Just as there have been more revelations in the past decades about the vascular, pulmonary and cardiac impact of aircraft noise, there has also been an increase of attention to environmental justice. For example, is there a representative on ANAC from South Park?

WEBTRAK Lmax data was collected for February 22-24 for noise monitors 26, 16, 2, and 1 on the arrival side and 7, 11, and 14 on the departure side. The latitude and longitude values above were used with Google Earth Pro to calculate the distance from the ends of the runway on the departure and arrival sides to obtain the distance from the end of runway to the noise monitor.

The first plot below confirms that the Lmax noise levels under the arrivals flight path are comparable to the Lmax noise

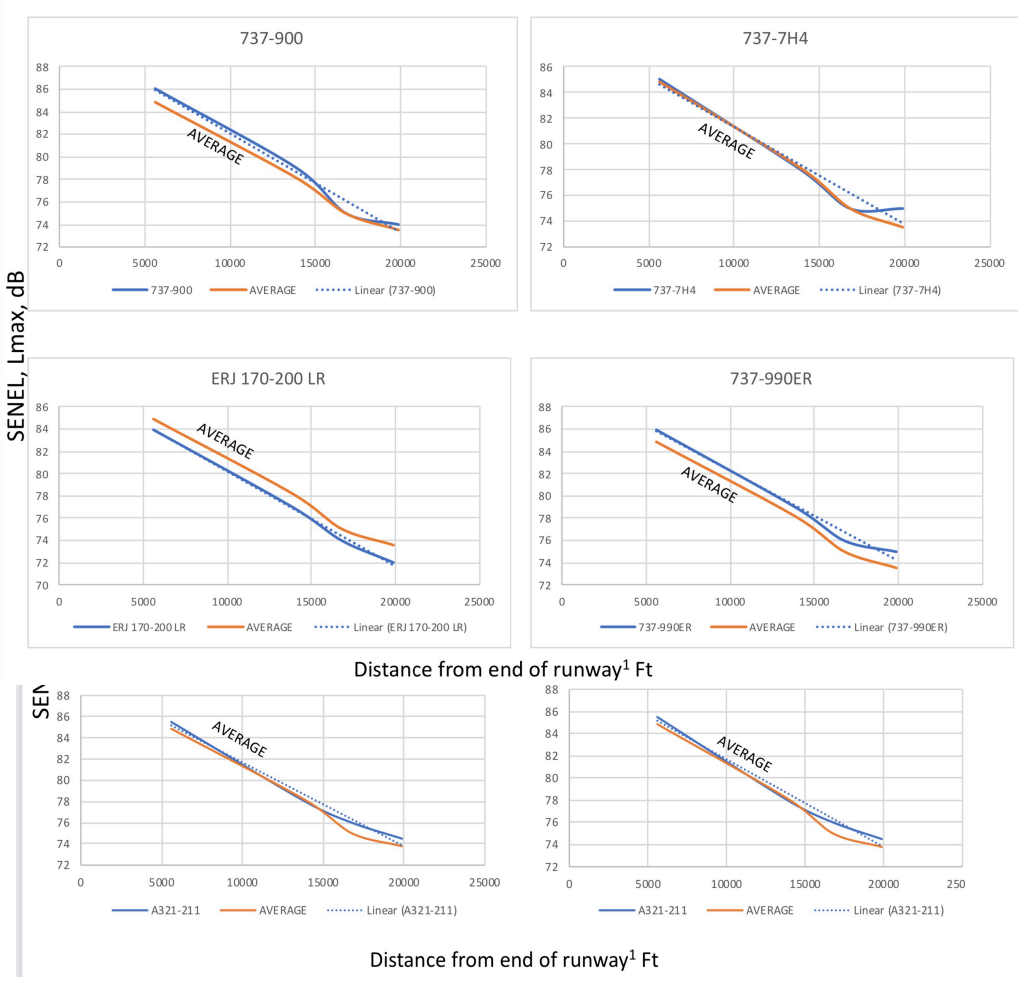
levels under the ZZOOO departure SID. The first plot below shows that the noise levels on the east side of the runway,



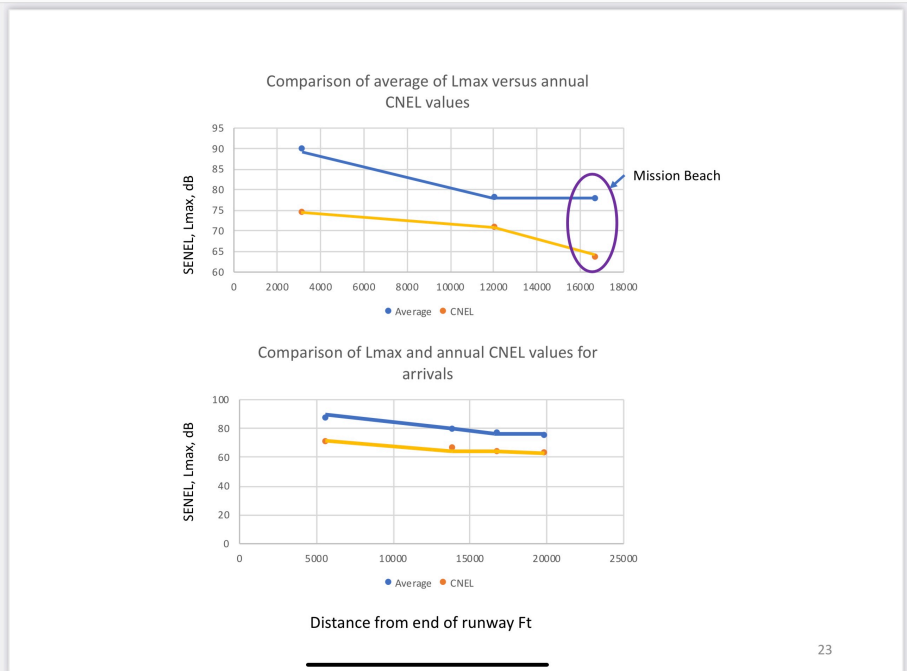
Cor 6:30

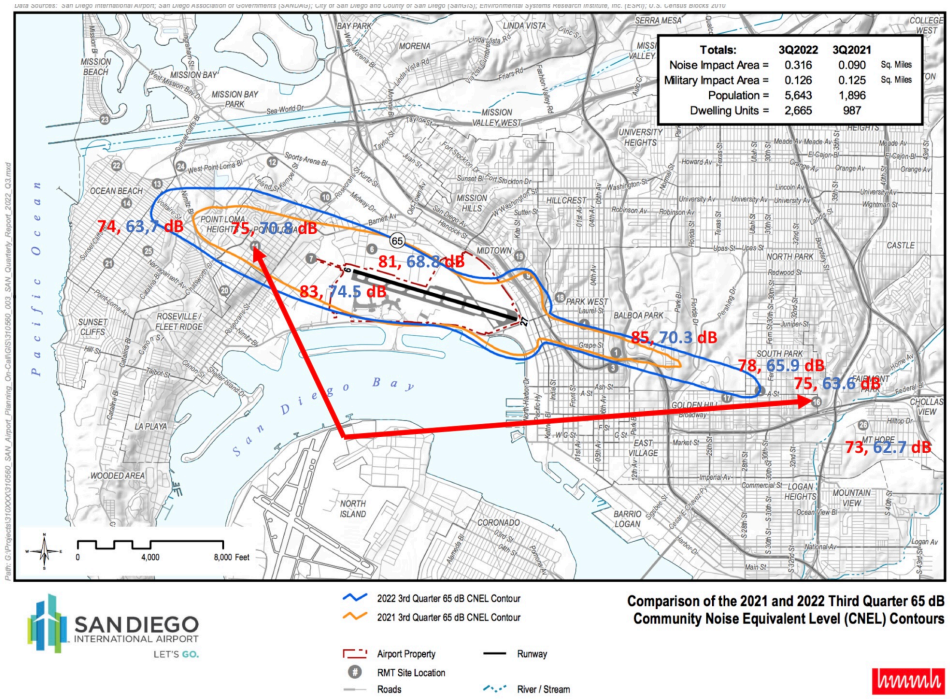
arrivals, are comparable to those on the west side that are departures. The departure numbers at the different represent an average of X There is also evidence that there is a pretty good correlation between Lmax or SENEL versus CNEL values

Compares Lmax values for different aircraft types as a function of distance from end of runway for arrivals
(Part 36 determines an aircraft stage, but these are actual Lmax readings



Comparison of Lmax and CNEL noise measures



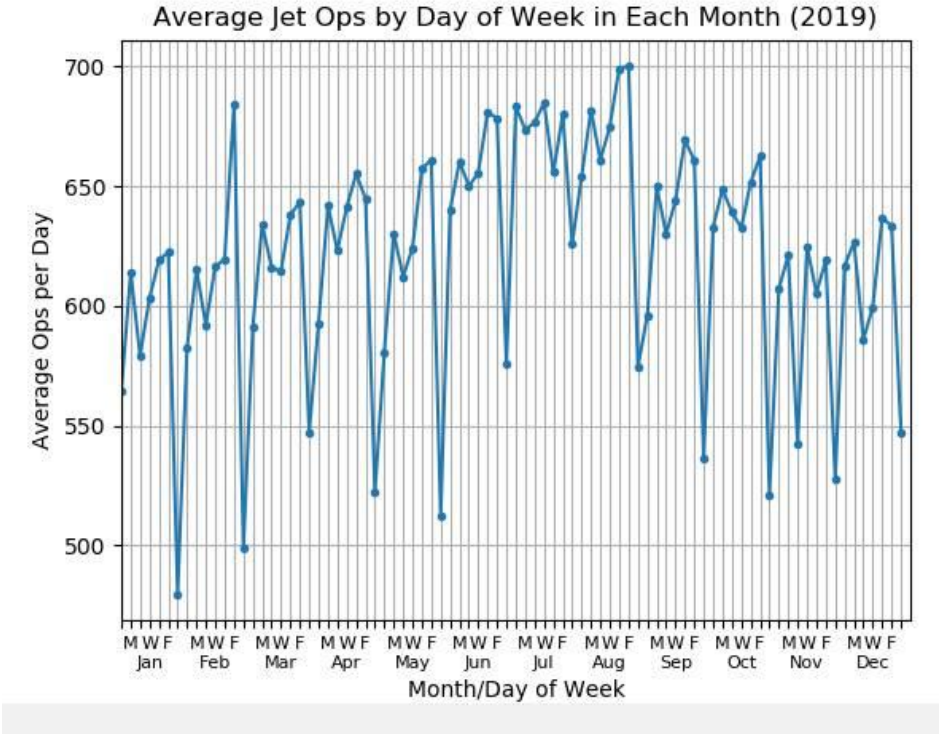


Noise monitor	6	7	1	11	2	14	16	26
Distance (ft)	1442	3159.00	5597	12041	13876	16698	16772	19865
Average	81.23	82.65	84.86	75.17647	78.14	73.70588	75.00	73.79
CNEL	68.8	74.5	70.3	70.8	65.9	63.7	63.6	62.7

CONCLUSIONS

The only conclusion from this and other papers is that it is time to find a different airport location, Mira Mar NAS or Pendleton Marine Corps Depot. Given the current one-runway, the maximum theoretical number of daily operations is

886, including 478 departures and 338 arrivals during the day and 70 arrivals at night. This results in a theoretical maximum number of daily operations at 886 and annual operations at 323,390. This is about an 8.6 percent greater number than if nighttime arrivals and parking are not considered. The more likely maximum is about 85 percent of this number, or 274,823. In the chart below, it shows the average daily ops by day of week for each month for 2019. In virtually every case, Saturday ops is well below the other days, except for a couple of weeks in the summer months. As capacity is reached, presumably the FAA could force the airlines to fly more Saturday ops.



I could list all of the key findings, but then I doubt you would read anything but that paragraph. But here are a couple. The noise levels on the east side of the airport are nearly as high as on the west side, because the altitudes are much lower. The airport is near capacity

You don't have to read anything, but if you want to understand what is happening, then you need to read all of it and draw your own conclusions.

Reince Tyler

Subject: FW: Use of time history data with hearing loss damage models

From: Gary Wonacott <wildcatwonacott@gmail.com>
Sent: Wednesday, May 10, 2023 9:57 AM
To: SDCRAA clerk <clerk@san.org>
Subject: Use of time history data with hearing loss damage models

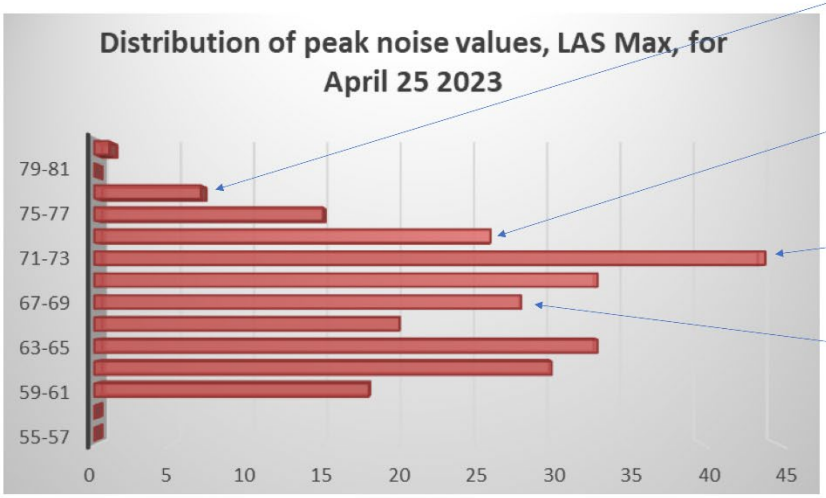
Members of the committee:

Most of us have heard of metal fatigue. It is what you hope does not happen on the plane you are flying on. And it doesn't because there are large factors of safety in the design to account for much variability in the metals and snd the methodologies used to calculate the fatigue life. In addition, a single very large load or stress can cause the metal properties to change making it less resistant to fatigue. Well, it turns out that the same can happen with the ear and hearing. It is referred to as Hyperacusis. However, there is no way that I am aware of to correlate CNEL or DNL with hearing loss.

On the other hand, it is far easier to correlate hearing damage or loss with either a Kurtosis functions or a cumulative damage analogy. The two histograms below were obtained from time history measurements using the Larson-Davis LxT noise monitor system. The measured and calculated 65 dB CNEL values for the two charts are 61.5 dB (top) and 60.5 dB (bottom). These charts are based on 24 hours of data, which collects the data and does no averaging, while the CNEL value collects departure data over a 17 hour period and then averages it over 24 hours. This is nonsensical. Perhaps the assumption by the FAA is that your hearing is recovering during the 7 hours of quiet on the departure side.

Our home is about 3.3 miles from the end of the runway. It would be more than interesting to compare my values with yours. You simply need to request that data be collected using the portable noise monitor owned by the Airport Authority. Then request time history data be provided that at least covers a 24 hour period or multiples of 24 hours. You can then calculate the histogram in Excel or send it to me, and I will provide you results. Then lets press the FAA for a methodology that uses hearing loss as a criterion for the QHP.

PRELIMINARY MEASUREMENTS, USED FOR THE DISTRIBUTION, WERE OBTAINED ON MY DECK IN SOUTH MISSION BEACH USING LARSON DAVIS LXT NOISE MONITOR SYSTEM



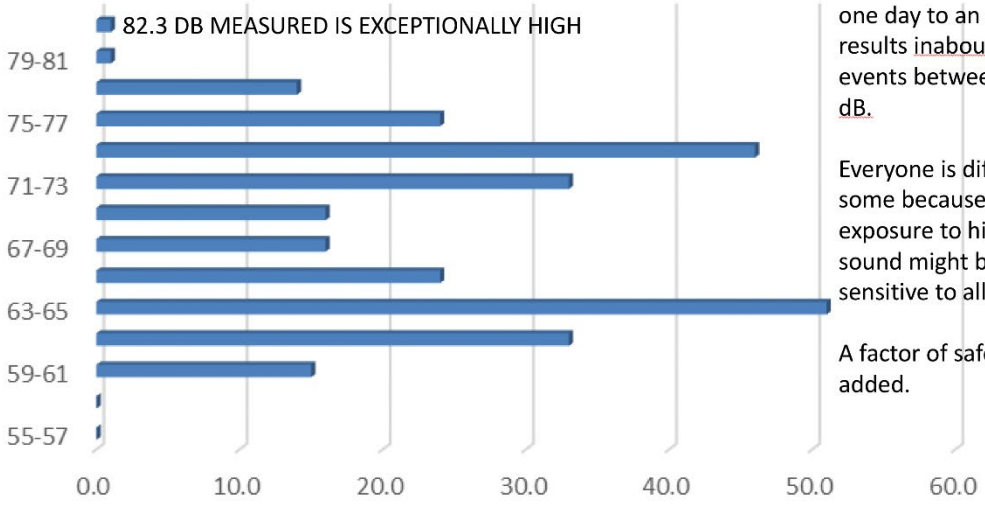
737-924ER, to Baltimore at at 1800 ft

A321- 231 to Charlotte at 2100ft

737-800 at 1900ft to Baltimore

737-7H4 at 2700ft to Las Vegas

PRELIMINARY MEASUREMENTS, USED FOR THE DISTRIBUTION, WERE OBTAINED ON A DECK IN SOUTH MISSION BEACH ON DEAL COURT USING A LARSON DAVIS LXT NOISE MONITOR SYSTEM FOR A 24 HOUR PERIOD ON APRIL 17/18.



Translating the data from one day to an entire year results inabout 16,800 noise events between 73 and 75 dB.

Everyone is different and some because of previous exposure to high levels of sound might be more sensitive to all sounds levels.

A factor of safety should be added.