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Dedicated to restoring the pre-NextGen dispersed arrival paths and more optimized profile descents at Seattle/Tacoma International Airport that had been in place since the introduction of commercial aviation to the Puget Sound region, many decades ago.

August 11, 2020

Dear Port of Seattle Commission,

We're requesting the Port of Seattle make a procedural change in how the data from your system of port owned Larson Davis 831 noise monitors is collected and retained. This is particularly timely given that the contract with the vendor who provides services associated with the monitors, L3Harris, is due for renewal as per Item 6e in today's commission meeting.

Currently the Port does not retain the raw second by second measured sound level data but instead contracts the data collection and analysis to the vendor L3Harris. The vendor periodically downloads this data and then purges it from the monitors. They use this data to build a list of SELs (Sound Exposure Level) for overflight events at that monitor location along with a set of noise statistics for the site. Nothing precludes the Port from also downloading a copy of their own raw second by second data from the Port owned noise monitors before L3Harris purges it. Alternatively, if the Port's Noise Office wants to retain a completely hands-off relationship with their own noise monitors, the vendor L3Harris could deliver the raw data with the other processed data currently being supplied. This raw data amounts to ~62 MB/month (~40 MB compressed) per monitor, which is tiny by today's standards.

At the UC Davis Aviation Noise & Emissions Symposium in March I spoke with L3Harris, who was a sponsoring vendor and had a booth there. Samuel Carter, their Training & Solutions Manager, indicated it would be a simple modification of the procedure to deliver the raw data with the processed results. The Port simply has to request it. I didn't ask, nor did he say, if there would be an extra cost for that. However, again, this is Port owned data on Port owned noise monitors so the Port can simply download this data themselves periodically before L3Harris purges it.

This raw data is absolutely essential for any rigorous analysis of the aviation noise levels at the site. As a real-world example, I was looking over the processed data from last December and came across an interesting anomaly. Here is a map of six noise monitor sites immediately North of the Airport including overflight event counts for December:

Registered Overflight Event Counts at 6 Noise Monitor Sites: December 2019
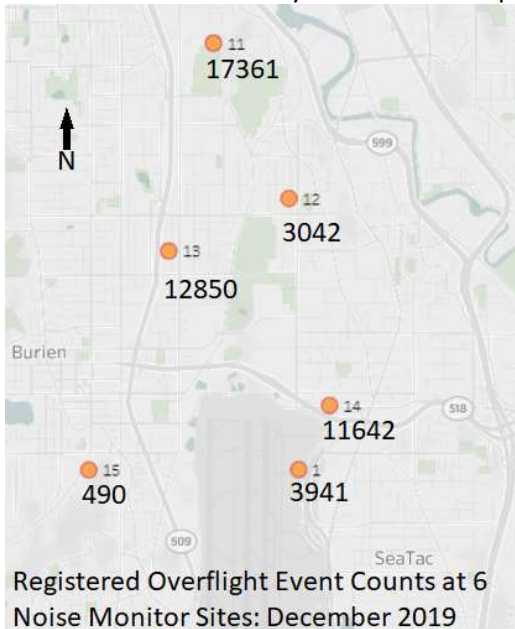
What's odd here is how small the event count at site #12 was. It was near the axis of the runways, as were sites 11 and 13, yet had a much smaller event count. Site #1, on the grounds of the airport proper also had a low count. In that case the overall background noise of the airport could drown out the signal from individual operations. Site #15 was laterally separated from the runways which could explain its low count. However site #12 doesn't have a good explanation for being so low.

By looking at the runway data and focusing on the triangle of sites North of the airport (#11, #12, and #13) we can see the key difference for site #12.

	Runway (Southflow)			Runway (Northflow)			
Site	16L	16C	16R	34L	34C	34R	Unknown
SEA01	3676	970	2218	74	10	702	232
SEA11	2344	306	31342	0	6	724	0
SEA12	4750	236	304	0	16	778	0
SEA13	228	48	24758	0	10	656	0
SEA14	6446	1186	14692	0	10	790	160
SEA15	308	160	498	2	0	12	0

Unsurprising for December, Southflow was much more common than Northflow. In Northflow, these departures are high throttle (i.e. loud) and the three sites give similar numbers, or at least the same order of magnitude. In Southflow however something emerges. The big discrepancy with site #12 is due to 16R Southflow arrivals.

Site #11 is the most centered of the three and its numbers tell the story of runway use for Southflow arrivals. By a large margin 16R, the "Third Runway", is the most commonly used. As an aside, during the legal battles over building the third runway, the community was assured it would only be used in rare circumstances, but that's another story. So, site #12, being East of the airport is the furthest from 16R, but we're talking about a two orders of magnitude reduction in events from Site #11 to Site #12 even though Site #12 is only ~3300 feet East of Site #11.

That small separation shouldn't account for such a huge discrepancy. I made Public Records Request 20-19 to get the raw data from site #12 for December to investigate what was causing this. The data came with this ominous warning:

"The vendor, L3Harris was able to extract the data. Please note that this is not data that the Port keeps in-house on its Noise Monitoring system. L3Harris has indicated that all future records we obtain from them are subject to an additional fee that we would have to pass on to you."

With this data it became clear why site #12 was reporting so many fewer events.

For the purpose of this illustration, I'll cover a short period on the morning of 12/1/19:

Date/Time	Noise Monitor	Flight ID	Operation	Equipment	Runway	SEL
12/1/2019 8:30:09	SEA12	DAL166	Arrival	A339	16L	85.47776989
12/1/2019 8:30:58	SEA11	ASA85	Arrival	B739	16R	86.59586146
12/1/2019 8:33:11	SEA11	ASA368	Arrival	B738	16R	86.13313923
12/1/2019 8:35:07	SEA11	QXE2535	Arrival	E75L	16R	83.59008407
12/1/2019 8:35:10	SEA12	ASA625	Arrival	B739	16L	83.32092607
12/1/2019 8:36:32	SEA11	ASA169	Arrival	B738	16R	85.4135081
12/1/2019 8:37:20	SEA11	KAL019	Arrival	B77W	16L	77.66649632
12/1/2019 8:37:41	SEA12	KAL019	Arrival	B77W	16L	87.66999824
12/1/2019 8:38:08	SEA11	ASA1017	Arrival	A320	16R	85.72240682
12/1/2019 8:39:33	SEA11	CPZ5782	Arrival	E75S	16R	83.028042
12/1/2019 8:41:02	SEA11	ASA894	Arrival	B738	16R	86.45152272
12/1/2019 8:42:12	SEA12	QXE2433	Arrival	E75L	16L	81.04083749

Note that only KAL019 was recorded by both SEA11 and SEA12 and were separated by about 21 seconds. These events are attached to the sound level graph below, with the flights detected by SEA12 written in black above the peaks and the flights only detected by SEA11 written in gray under the smaller peaks. So small in fact, that the algorithm did not consider them to be events:
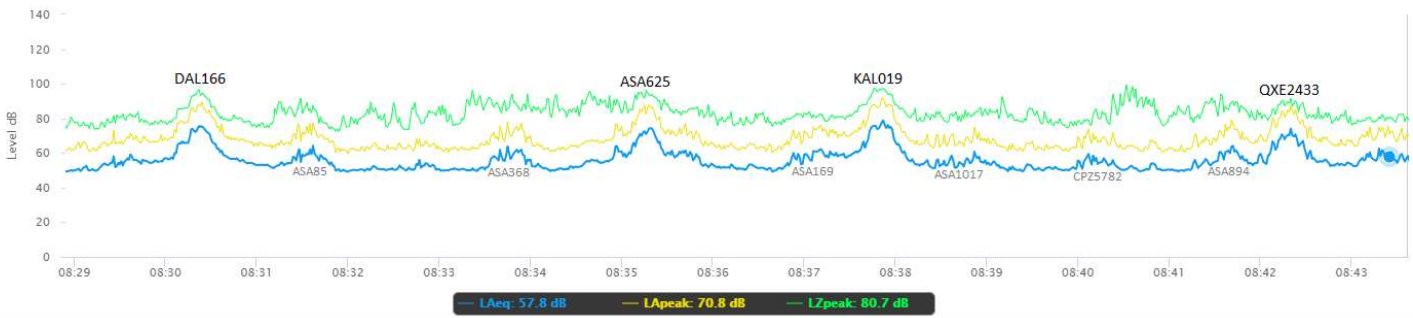
The issue here is the very high background noise level at this site, which causes the signal to not be sufficiently above the ambient noise level to convince the software that it's an overflight.

Retaining the raw data from the Port owned noise monitors is critical, and instead allowing the data to be purged violates the spirit, and perhaps the letter, of the Public Records Act (RCW 42.56).

We filed Public Records Request 20-314 asking for a copy of the proposed contract in item 6e, and we request that this item be removed from today's Unanimous Consent Calendar until we've had a chance to review the changes to the contract.

Thank you,

David Goebel

President, Vashon Island Fair Skies