Is GBAS Creating More Noise or Not?

To: SFO-RT Members
From: Darlene Yaplee and Marie-Jo Fremont

Subject: SFO RT 4/5/23 Meeting - Agenda Item: Public Comment on Items NOT on the Agenda

SFO has committed to decommission any GBAS approaches that create more noise than non-GBAS approaches. This provides the SFO RT and the affected communities assurance that GBAS will not result in higher noise and requires noise monitoring and reporting.

The chart below identifies the minimum data reporting required to determine whether GBAS creates more noise or not, and is based on the SFO RT motion passed on April 6, 2022 when recommending Group 1 Innovative Approaches for SFO to submit to the FAA, namely: "To support the procedures as presented, with the understanding that robust monitoring will continue in Palo Alto and develop criteria for the decommissioning of procedures where noise impacts prove to be higher and **adding criteria that would include both average and single events with reports rendered on regular basis** [emphasis added]."

SFO has stated that they will report averages and provide a list of single noise events for GLS approaches. SFO is not however planning to compare single noise events for GLS and non-GLS approaches. Therefore, SFO is currently not complying with the April 6, 2022 RT motion.

Reporting averages is not sufficient to understand if there is a problem or not. You can have an average rainfall below historical norms but still experience flooding issues. Averages can mask problems.

Adequate GBAS Reporting is Needed
The chart below describes the minimum data reporting needed to determine if GBAS has or has not increased noise by arrival procedure.

Action: will the RT require SFO to honor the April 6, 2022 motion by providing minimum data reporting on GBAS approaches, including single event reporting?

MINIMUM GBAS DATA REPORTING		
ITEM	**IS SFO PROVIDING?**	**COMMENT**
Data reporting done for each major arrival procedure and for each recording site	**Unclear**	Impacts are procedure-specific and site-specific. Different analyses should be done for DYAMD, BDEGA, and SERFR and for each recording site. Notes:

		- Understanding whether fewer planes will fly BDEGA-west because of DBAYY will be an important indicator to report. - GLS overlay events must be separated from GLS IA events.
Averages for GLS and non-GLS approaches for Lmax and SEL	**Yes**	Averages alone are not sufficient to understand a problem.
Min, Max, and Median for GLS and non-GLS approaches for Lmax and SEL	**Unclear**	These data help understand the data distribution.
List of every non-GLS event with details	**No**	• The list of every non-GLS event will not be provided. • Therefore, details such as date, time stamp, origin airport, flight #, aircraft type, altitude, speed, Lmax, SEL, closest distance from the recording site will not be available either.
List of every GLS event with details	**Unclear**	• List of every GLS event will be provided. • Unclear about the level of details such as date, time stamp, origin airport, flight #, aircraft type, altitude, speed, Lmax, SEL, closest distance from the recording site.
Graphs showing the daily distribution of all noise events (GLS and non-GLS) for both Lmax and SEL	**Unclear**	- Blue dots are GLS events, Red dots are non-GLS events - 2 graphs per arrival route: 1 SEL graph and Lmax graph - Vertical scale should range from the lowest value to the highest value of the whole data set (for Lmax or for SEL) to delineate differences between GLS and non-GLS.
Analyses for specific monitoring periods to capture differences in ground tracks, noise levels (Lmax & SEL), altitudes, and speeds between GLS and non-GLS events.	**No**	For example, comparing a GLS and non-GLS approach for the same flight# and aircraft type for an extended period of time at a recording sight might provide insights. Given the low usage of GBAS, this type of analysis will require temporary monitoring for more than the typical 2 weeks because there will not be enough GLS data captured in a 2-week period to be statistically significant. After the test flights were reviewed, the RT commented that SFO needed to collect more data. Comparing GLS events to non-GLS events is exactly

		the data needed to determine whether GLS flights are quieter.
Data access to GLS events and non-GLS events	**Unclear**	Pdf files do not allow viewers to do further analyses.
Ground tracks comparison of GLS and non-GLS approaches	**Unclear**	Need to validate that Innovative Approaches do not result in ground track changes.

Questions for the GBAS Team - SFO.GBAS@flysfo.com

In reference to the chart titled "Minimum GBAS Data Reporting":

1. For the items marked "Unclear", please clarify if SFO will be providing the specified data.
2. For the items marked "No", please explain why SFO cannot provide the data.