



# ✖ Noise News

September 2020

Prepared for the LAX/Community Noise Roundtable

## Response to FAA Notice of Proposed Rulemaking for Supersonic Aircraft Standards for Certification

In a press release dated March 30, 2020, the FAA stated that a major step was taken toward reintroducing supersonic commercial jet travel by way of a proposed rulemaking for noise certification standards for new supersonic aircraft. The Notice of Proposed Rulemaking (NPRM) serves the purpose of adding landing and takeoff noise standards for a certain class of new supersonic airplanes. It was available for public comment for 90 days after publication in the Federal Register (April 13, 2020). The public comment period closed on July 13, 2020.

The lack of noise standards for certification of supersonic aircraft up to this point has been a key obstacle to bringing these aircraft to market for manufacturers. Regulations require that aircraft meet standards for certification, so the absence of such standards prevents supersonic aircraft from receiving approval. The Supersonic Level 1 proposed standard would serve as a baseline for developing and adopting standards for future classes of supersonic aircraft, like those with maximum takeoff weights over 150,000 pounds. The NPRM would set a threshold that would be less stringent than Stage 4 certification levels, which most subsonic aircraft currently meet.

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The FAA received nearly 270 responses to the proposal, with mixed responses. Manufacturer representatives and trade organizations, including the Aerospace Industries Association (AIA), the General Aviation Manufacturers Association (GAMA), NBAA, and Air Line Pilots Association (ALPA) commended FAA’s efforts, noting the data-driven approach. The proposed standard works within the existing framework of certification testing requirements for subsonic jets, so these organizations are confident in FAA’s ability to apply the “same level of rigor” to testing supersonic jets while allowing for innovation.

On the other hand, more than 60 environmental organizations called for the withdrawal of the proposal, noting that it would allow these supersonic aircraft to be noisier at takeoff and landing than new conventional jets. The European Union also expressed concern, noting that the development of international standards within ICAO should take priority over initiatives by any one country. The EU also noted that allowing supersonic standards to exceed subsonic standards may potentially distort the market by providing circumstances for unfair competition with subsonic aircraft.

Bombardier, the Canadian jet manufacturer, agreed with the EU’s take, while other manufacturers with expressed intent to develop supersonic aircraft and engines, like GE, Boom, and Aerion expressed support for the FAA’s NPRM.

Sources: FAA, AINonline

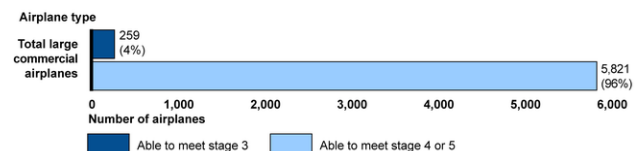
## Government Accountability Office Report on Potential Mandated Stage 3 Phase-Out

On August 20, 2020, the U.S. Government Accountability Office (GAO) published a report titled *AIRCRAFT NOISE: Information on a Potential Mandated Transition to Quieter Airplanes*. The study was conducted based on a provision of the FAA Reauthorization Act of 2018 for GAO to review a potential mandatory phase-out of Stage 3 aircraft.

In the process of this study, GAO reviewed FAA’s analysis of December 2017 fleet data, reviewed January 2020 fleet data from select airlines and airframe/engine manufacturers, and conducted interviews with FAA officials and 35 other stakeholders.

GAO found that most commercial jet aircraft are certified as Stage 3, but most (96 percent) of those can meet more stringent (Stage 4 or Stage 5) noise standards according to FAA’s 2017 analysis based on manufacturer’s data (See Figure 1).

This is primarily because innovation of aircraft technology has outpaced the implementation of noise standards. In addition to this, the decrease in travel in during the COVID-19 pandemic has led airlines to accelerate the retirement of some older, Stage 3 jets, like the McDonnell Douglas MD-80-family. About 86 percent of smaller regional jets and 73 percent of general aviation jets are able to comply with Stage 4 or 5 standards.



Source: GAO assessment of December 2017 Federal Aviation Administration (FAA) noise-based fleet composition analysis and January 2020 aviation stakeholder data. | GAO-20-661

Figure 1. GAO Estimate of The Number of Large Airplanes in the U.S. Commercial Fleet That Are Able to Meet Stage 3 or Stage 4 and 5 Noise Standards, January 2020

Most of these jets are certified as Stage 3 despite being able to meet Stage 4 and 5 standards because the process of recertification is costly and would provide little to no noise reduction benefit. Additionally, a mandatory phase-out of Stage 3 aircraft would mean some operators would incur costs for replacement aircraft sooner than originally planned. Based on interviews with stakeholders, the report found that a mandatory phase-out of Stage 3 certified jets would provide limited noise reduction and other benefits. Additionally, stakeholders indicated that it could be costly and might present other challenges.

Source: GAO

## COVID-19 Impacts

### Public Responses to Decline in Air Traffic

As of July 2020, passenger volume at U.S. airlines nationwide are at 23 percent of 2019 levels, according to the U.S. Transportation Security Administration. Minneapolis-Saint Paul International Airport (MSP) saw 25 percent of 2019 air traffic levels during the spring of 2020. Trends in noise complaints have matched this; complaints declined to 20 percent of 2019 levels in May of 2020 and when flights increased 18 percent between May and June, complaints increased by 23 percent

Complaints at Chicago O’Hare International Airport (ORD) have also been down due to the COVID-19 outbreak. In April 2020, complaints fell by 54 percent compared to April 2019, coinciding with a reduction of 68 percent to flights at night over that same time period.

Joseph Schwieterman, an aviation expert at DePaul University in Chicago, anticipates that as the aviation industry recovers, noise complaints will increase again and that the reaction will likely be strong as the public has grown use to the quiet.

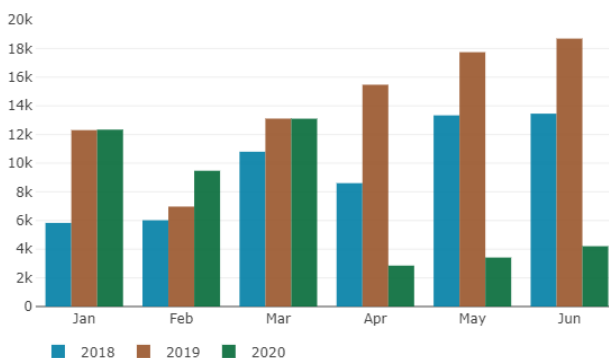


Figure 2: Noise complaints are down significantly in 2020 compared to 2018-2019 surrounding MSP

Source: Metropolitan Airports Commission, 2020.

For some areas in the UK, this decline in traffic has led community members to call for permanent change to noise levels and a new approach to noise

mitigation. This has coincided with the UK’s Independent Commission on Civil Aviation Noise (ICCAN) publication of a report that reviews how airports collect and analyze data on noise pollution. The report urges airports to clarify their monitoring and reporting practices while ICCAN works on best practice guidance for noise management. As the world looks toward recovery in the airline industry after COVID-19, ICCAN is pushing noise management as a key priority.

Sources: Chicago Daily Herald, Star Tribune, Metropolitan Airports Commission, Clyde Bank Post, Airport Technology, and International Airport Review.

### Changes in Operations, Noise Levels, and Complaints

Following the decline in air traffic that has occurred nation-wide due to the COVID-19 Pandemic, HMMH has worked with airport partners and EnviroSuite to examine operations, noise, and complaint data in a kind of “before” and “after” trial. Since March, HMMH has looked not only at the community noise levels without aircraft noise but at how traffic levels, noise levels, and complaints are coming back – quickly in some cases and slowly in others – to their pre-pandemic levels. HMMH analyzed two central research questions:

- How do changes in operations compare with changes in noise levels since the start of pandemic?
- How do changes in operations and noise levels compare with changes in noise complaints since the start of pandemic?

For purposes of data collection and analysis, HMMH defined the “Pre-COVID” period as November 1-March 15; and the “COVID” period as March 16-June 30. HMMH obtained three sets of raw data for each airport from their NOMS database:

1. Hourly complaint data
2. Daily cumulative noise levels (CNEL/DNL)
3. Hourly aircraft operational levels

The results of this analysis for a large commercial airport (Airport ‘A’) are shown in Figure 4 and Figure 4. Polynomial curves were fit to these data sets to

assist in understanding trends for each variable and relationships between them during the COVID-19 Pandemic. Figure 3 displays the relationship between operations and complaints and Figure 4 shows the relationship between airport and community noise levels.

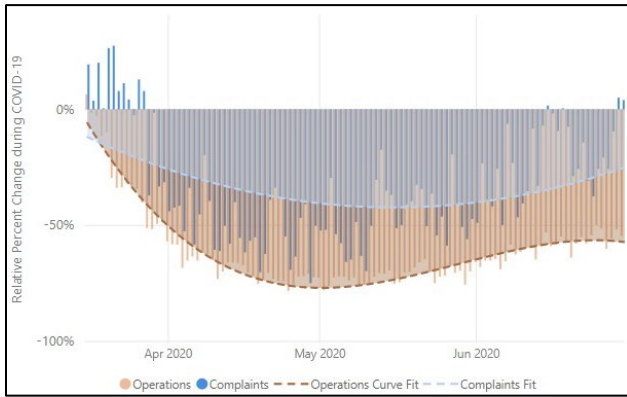


Figure 3. Comparison of Operations and Complaints for Airport A: Large Commercial Service Airport

Source: HMMH 2020

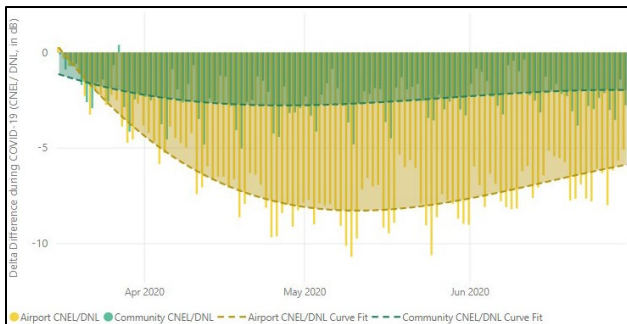


Figure 4. Comparison of Airport and Community Noise Levels (CNEL/DNL) for Airport A: Large Commercial Service Airport

Source: HMMH 2020

The data shows the following:

- Complaints, operations, and noise levels all decreased beginning mid-March
- Daily operations dropped as much as 80 percent by mid-April; they recovered to 40 percent of pre-COVID-19 by end-June
- Noise complaints followed similar trends but did not drop as much percentage-wise

- Average airport cumulative noise levels have dropped by more than 5 dB during COVID
- Community noise levels dropped an average of 2+ dB
- Since late March, community noise has been higher than aircraft noise

Since the start of the pandemic, airlines have retired a lot of older aircraft. HMMH explored how that affects noise levels. The top of Figure 5 presents the average noise per flight – a simple index computed by dividing (logarithmically) the average noise level at all sites by the average number of operations – essentially a Sound Exposure Level (SEL) for a single event.

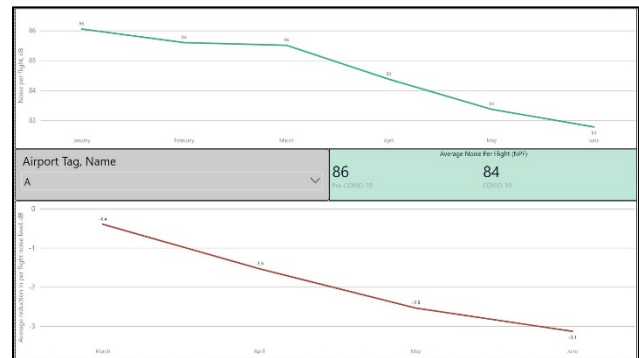


Figure 5. Reduction in Noise per Flight

Source: HMMH 2020

The average has dropped from just over 86 dB in January to just under 83 dB in June. The bottom part of the graphic simply shows the difference compared to average pre-COVID noise per flight. If these changes in fleet mix are permanent, a major noise reduction will have been achieved as the pandemic will have effectively accomplished the Phase out of the remaining Stage 3 aircraft.

Source: HMMH

## Boeing ecoDemonstrator Flight Testing

Boeing began its 2020 ecoDemonstrator flight testing in Glasgow, Montana in partnership with NASA, Etihad Airlines, and Safran Landing Systems this

August. Boeing is testing the use of new technologies on a 787-10 Dreamliner that will increase cabin sanitation and en-route airspace efficiency, lessen airframe noise, and use quieter a landing gear, all while flying on a mix of sustainable aviation jet fuel.

Boeing launched the ecoDemonstrator program in 2010 to test new technologies on passenger and cargo jets in flight. Many of this year's tests will be focused on aircraft noise and noise mitigation, including a partnership with NASA. The airframe noise tests use about 1,200 microphones that are attached to the outside of the aircraft or positioned on the ground beneath the flight path. The team plans to examine the 787's noise during flight to determine the efficacy of Safran Landing Systems' low-noise landing gear fairings in mitigating noise.



*Figure 6. Boeing's 787-10 Dreamliner ecoDemonstrator*

Sources: PRNews, Boeing, AINonline

Safran Landing Systems noted that the objective is to reduce noise from landing gear by more than 20 percent. Because modern aircraft engines have been so effective in reducing their noise signature, the landing gear has become one of the largest contributing factors to aircraft noise on approach and landing; it can account for 30 to 40 percent of the external noise upon arrival on modern long-haul aircraft, so a reduction of 20 percent has the potential to make a significant impact in noise reduction.

Tests will occur in August and September of 2020, and in addition to testing for environmental benefits, the ecoDemonstrator test flights will be used to help validate aircraft noise prediction processes and the sound reduction potential of aircraft designs.

Sources: Boeing, Safran Landing Systems, Aviation International News

## Other Noise News

- The newly formed Coastal Orange County Aircraft Mitigation Noise Task Force led by U.S. Rep. Harley Rouda (D - CA-48) held its first meeting on July 17, 2020. The Task Force includes local elected officials and representatives from the Federal Aviation Administration (FAA), SNA Airport, and major airlines. The intent of the task force is to decrease noise and improve collaboration with the community surrounding John Wayne Airport (SNA) in Orange County, CA.
- Rep. Don Beyer (D-Va.) and Del. Eleanor Holmes Norton (D-D.C.) introduced an amendment to the House version of the National Defense Authorization Act that would create a centralized complaint tracking system for helicopter noise at Washington Dulles International (IAD) and Reagan International (DCA) airports. The measure would also create a community working group to use that information to inform recommendations for dealing with noise in the area.

Sources: Orange County Breeze, Washington Post