ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

August 22, 2019
Mr. Daniel Elwell, Administrator
Federal Aviation Administration,
U.S. Department of Transportation
1200 New Jersey Avenue SE
Room W12-140, West Building Ground Floor
Washington, DC 20590-0001

Re: Special Flight Authorizations for Supersonic Aircraft, Docket ID: FAA-2019-0451

Dear Acting Administrator Elwell,

The Information Technology and Innovation Foundation (ITIF) is pleased to submit these comments in response to the Federal Aviation Administration's (FAA) request for public comment concerning special flight authorizations for supersonic aircraft.[1] ITIF is a nonprofit, non-partisan public policy think tank based in Washington D.C., committed to articulating and advancing a pro-productivity, pro-innovation, and pro-technology public policy agenda that spurs growth, prosperity, and progress.

Since the 1970s, commercial supersonic innovation has languished, with the last commercial service ending completely in the early 2000s. Now U.S.-based companies are in the process of resurrecting and improving upon these classic implementations of supersonic air transportation. Modern airframes based on lighter and more efficient composite materials with computer-optimized aircraft designs can significantly improve the efficiency of these aircraft and reduce the magnitude of an aircraft's sonic boom. Several innovative aerospace companies are now developing supersonic planes—including U.S. startups such as Aerion Supersonic, Boom Technologies, and Spike Aerospace, as well as established aerospace firms such as Boeing and Lockheed Martin.

Current regulations, created by the FAA in 1973 after the passage of the Noise Control Act of 1972, restrict operation of civil aircraft at speeds greater than Mach 1 (the sound barrier), unless otherwise authorized by

[1] Federal Aviation Administration, "Special Flight Authorizations for Supersonic Aircraft," Federal Register, docket no. FAA-2019-0451, July 2019, https://www.federalregister.gov/documents/2019/06/28/2019-13079/special-flight-authorizations-for-supersonic-aircraft.

the FAA.[2] While this rulemaking would not end this overland speed limit, the updated rule would streamline the application procedure for special flight authorizations for supersonic transport aircraft—an authorization that enables the testing of supersonic civil aircraft in the United States—by clarifying and rearranging the information that needs to be submitted and specifying the contact office within the FAA.[3] These changes promote better testing of supersonic aircraft and can help the agency in future permissive regulatory processes. Indeed, the agency is also proposing the addition of a new reason for flight testing supersonic transport aircraft to allow for future noise certification actions.

ITIF applauds the FAA for moving forward in its plans to better enable the testing of supersonic civil flights over land in the United States. The agency should use this opportunity to advance supersonic flight in the United States, supporting U.S. competitiveness in the airline industry. It should also ensure testing data, especially data involving environmental impact, is thorough and public to help improve policymakers understanding of the relative risks of new supersonic aircraft.

THE FAA SHOULD ADOPT A FRAMEWORK THAT ENABLES COMMERCIAL SUPERSONIC INNOVATION AND BOLSTERS U.S. COMPETITIVENESS

While there were many failings with early supersonic transport—environmental and cost problems from its fuel requirements, noise pollution, limited markets due to ticket price, and research boondoggles—the FAA significantly contributed to the demise of supersonic flights through its rulemaking that created a ban of supersonic flight overland.[4] Because the aircraft industry has steep industry learning-curves to improving aircraft, maximizing the available market for supersonic transport could have helped it improve over time to tackle many of these challenges. For example, small supersonic business jets that do more frequent trips would have been better suited at meeting consumer demand without being nearly as vulnerable to financial losses.[5] Using knowledge about what routes are popular, airlines could then work up to full size passenger jets to ensure they are commercially viable. As a result, while supersonic planes have been around for over 50 years, we have not seen 50 years in supersonic innovation. Although, advances in technology make this technology much more viable today than in the past.

---

[2] The Noise Control Act of 1972, Pu. L. 92-574.
[3] Federal Aviation Administration, "Special Flight Authorizations for Supersonic Aircraft."
[4] Samuel Hammond, "The Business Case for Supersonic Overland" *Niskanen Center*, February 28, 2017, https://niskanencenter.org/blog/supersonic-overland/.
[5] Samuel Hammond and Eli Dourado, "Make America Boom Again" (Mercatus Center, October 2016), accessed on SSRN, https://ssrn.com/abstract=3191498.

This rule can put the FAA on the right track to enabling U.S. supersonic innovation. The FAA's updated rules would streamline the application process, incentivizing commercial companies to work with the agency to conduct more tests. This will, in turn, help the FAA gather important data on the relative noise and performance of new models and engines used in supersonic aircraft. This data will help with regulatory evaluation for expanded flights and rulemakings in the future, especially as the FAA implements supersonic provisions required in the FAA Reauthorization Act of 2018.[6] For example, data will be instrumental in setting noise certification regulations for supersonic aircraft, as current noise certification regulations of part 36 do not apply to supersonic transport.[7] For this reason, we believe the rule change to allow future noise certification actions as a reason to enable flight testing is important and timely.

The ultimate goal of the FAA should be to lift the ban based on speed and replace it with a set of noise standards that companies can innovate around to develop supersonic planes.[8] This speed limit did not make sense in 1973 and it certainly does not make sense in 2019. For example, the shock wave created by a plane flying supersonic up to a speed of Mach 1.1 and at 41,000 feet decays before it reaches the ground and therefore cannot be heard (this is called a Mach cutoff).[9] Creating a noise standard rather than a speed standard can help companies understand the rules of the road for how supersonic planes should operate, and can innovate around those restrictions. This standard should be set lower than the noise level generated by the older models, such as the Concorde, and should be based on other noises to which citizens are more accustomed.

Going forward, a permissive system like the one detailed above will bolster U.S. competitiveness in aviation. Already, several other countries are developing supersonic aircraft. For example, both China and Russia have unveiled plans to develop supersonic and hypersonic planes.[10] Facilitating new technology and innovation in aviation will enable U.S. aviation and aerospace industries to remain competitive in the global marketplace.

---

[6] FAA Reauthorization Act of 2018, Pub.L. 115–254 (2018).
[7] Noise Standards: Aircraft Type and Airworthiness Certification, 14 Code of Federal Regulations, Part 36.
[8] Hammond and Dourado, "Make America Boom Again."
[9] "2018 Annual Report – Acoustical Model of Mach Cut-off" (Ascent, 2018), https://ascent.aero/documents/2019/07/ascent-project-042-2018-annual-report.pdf/.
[10] Hugh Morris, "China unveils plans for hypersonic jet that can fly anywhere in the world in three hours" *Telegraph*, February 23, 2018, accessed August 8, 2019, https://www.telegraph.co.uk/travel/news/hypersonic-jet-flies-anywhere-in-the-world-three-hours/; "Russia to bring back the supersonic passenger airliner," *Russia Today*, January 31, 2019, accessed August 8, 2019, https://www.rt.com/business/450231-russia-supersonic-passenger-jet/.

THE FAA SHOULD COLLECT AND PUBLISH ENVIRONMENTAL DATA FROM SUPERSONIC TESTS

There is a long history of individuals using false or misleading environmental claims to justify policy that impedes supersonic air travel.[11] For example, in the 1960s and 1970s, the "Anti-Concorde Project" warned sonic booms would shatter windows and disturb wildlife, while high-altitude emissions would cause catastrophic ozone loss, despite evidence to the contrary.[12] Unfortunately, the FAA used many of these criticisms—some of which were based on misleading information—as a basis for its original ruling for an overland supersonic ban.[13] Certainly, without significant innovation in alternative fuel types, efficient engines and aerodynamic designs, new models of supersonic planes will likely have a large carbon footprint because they require energy-dense fuels to operate.[14] Therefore, it is important to ensure policymakers and the public have an accurate accounting of environmental risks with new supersonic models. However, it is important to focus on specific risks (e.g., ozone loss) as opposed to general risks (e.g., more greenhouse gas emissions) that apply to many different technologies and industries.

With this rulemaking, the FAA can help ensure policymakers have access to accurate information. Recent environmental studies on this subject, such as a report from the International Council on Clean Transportation (ICCT), have relied heavily on dated studies and projections from theoretical models, rather than actual data from supersonic tests.[15] While these were good faith efforts to ascertain environmental impact, these estimates differ from those of internal company modeling.[16] While it is reasonable under the updated rule to exempt test flights from certain National Environmental Policy Act (NEPA) requirements, such as environmental assessments or environmental impact statements, there is simply no substitute for the

---

[11] Samuel Hammond and Alan McQuinn, "Don't Let Bogus Environmental Claims Bring Down Supersonic Flight" *Daily Caller*, August 16, 2018, accessed August 8, 2019, https://dailycaller.com/2018/08/16/bogus-claims-bring-down-supersonic/.

[12] Hammond and Dourado, "Make America Boom Again."

[13] Andrea O'Sullivan, "How the FAA Killed Supersonic Flight—and How It Can Revive It" Mercatus Center, July 16, 2016, accessed August 8, 2019, https://www.mercatus.org/expert_commentary/how-faa-killed-supersonic-flight-and-how-it-can-revive-it.

[14] Alan McQuinn, "Don't Let Potential Environmental Concerns Stop Supersonics from Achieving Lift-off," Information Technology and Innovation Foundation, July 24, 2018, accessed August 8, 2019, https://itif.org/publications/2018/07/24/dont-let-potential-environmental-concerns-stop-supersonics-achieving-lift.

[15] Anastasia Kharina, Tim McDonald, and Dan Rutherford, "Environmental Performance of Emerging Supersonic Transport Aircraft" *International Council on Clean Transportation (ICCT), July 2018), accessed August 8, 2019, https://theicct.org/sites/default/files/publications/Environmental_Supersonic_Aircraft_20180717.pdf.

[16] Dan Thisdell, "NBAA: Supersonic flight may be feasible – but can Earth stand it?" *FlightGlobal*, October 15, 2018, accessed August 13, 2019, https://www.flightglobal.com/news/articles/nbaa-supersonic-flight-may-be-feasible-but-can-ea-452510/.

environmental data that the FAA can produce as a result of testing supersonic aircraft.[17] Therefore, when the FAA grants a special flight authorization, it should collect environmental impact data during the test, aggregate it, and release it as part of a public report on the efficiency and impact of supersonic tests. The FAA should provide options for what entity collects this environmental data. A flexible collection policy would allow the FAA to either collect environmental data itself or allow companies, especially those that would like to keep some information confidential, to collect environmental data and provide it to the agency.

Public reporting of environmental impact data will improve the public discussion and policy discussion around the integration of supersonic into the National Airspace System. It will also ensure the FAA has environmental impact data for future rulemakings that impact supersonic aviation. Moreover, a robust and public accounting of environmental impact during these tests may push supersonic companies to innovation to reduce their environmental impact. For example, one company, Boom Technologies, has partnered with a fuel company to create a carbon neutral fuel for its supersonic test demonstrator aircraft.[18]

CONCLUSION

The FAA has the ability to usher in a new wave of innovation with its rulemaking for commercial supersonic transport vehicles in the United States. This renewed special authorization for supersonic tests should be a first step forward in that direction, helping to give the FAA and other policymakers the noise and environmental information they need to support commercial supersonic flight and bolster U.S. competitiveness in aviation.

Sincerely,

Daniel Castro
Vice President, Information Technology and Innovation Foundation

Alan McQuinn
Senior Policy Analyst, Information Technology and Innovation Foundation

---

[17] FAA Order 1050. 1F.

[18] Boom Technologies, "Boom Supersonic Partners with Prometheus Fuels to Supply Carbon Neutral Fuel for XB-1, its Mach-2.2 Demonstrator Aircraft," press release, June 2019, accessed August 8, 2019, https://boom-press-assets.s3-us-west-2.amazonaws.com/2019_Promoetheus_PressRelease.pdf.