UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20591

In the matter of the petition of

Boom Technology, Inc.

for a special flight authorization
to exceed Mach 1 pursuant to
Title 14 of the Code of Federal Regulations,
Section 91.818.

GRANT OF SPECIAL FLIGHT AUTHORIZATION TO EXCEED MACH 1

By emailed communication dated March 24, 2023, Ms. Rachel Devine, Boom Supersonic, Inc., Centennial, CO, petitioned the Federal Aviation Administration (FAA) on behalf of Boom Technology, Inc. ("Boom") to allow Boom to operate a civil aircraft that is expected to exceed Mach 1 speeds during flight testing. The requested special flight authorization, if granted, would allow Boom to conduct limited and conditional flight operations that exceed Mach 1. Title 14 of the Code of Federal Regulations (14 CFR) part 91, Subpart I- Operating Noise Limits, prohibits the creation of civil aircraft sonic boom by exceeding Mach 1 in 14 CFR § 91.817. That regulation specifies that Mach 1 may only be exceeded in the United States when done pursuant to a special flight authorization issued in accordance with 14 CFR § 91.818. This section specifies the information that is needed by the Administrator to assess the anticipated effect of the sonic boom noise on the quality of the human environment that is affected during the requested operation and that the Administrator take the required action regarding that assessment. Section 91.818 also specifies all the information the applicant must provide to the FAA. The petitioner requested to conduct developmental flight test operations of the Model XB-1 experimental aircraft and a chase airplane (Models NH-T38 or NH-F5) over Edwards Air Force Base at an existing airspace complex, known as the "R-2508 Complex," located in Los Angeles, Kern, and San Bernardino counties in California. The petitioner requested authorization for up to 20 supersonic test flights over one year. The petitioner's proposed operations would occur at or above 30,000 ft Mean Sea Level.

A notice regarding the Environmental Assessment (EA) supporting this petition was published in the Federal Register on January 12, 2024 (89 FR 2471). No comments were received.

The petitioner, Boom Supersonic, supports the request with the following information:

The petitioner seeks to flight test its Model XB-1 experimental aircraft supersonically to demonstrate that it is safe and complies with airworthiness requirements. In addition, XB-1 will also provide data that validates and strengthens the computational models that will be used to help develop select technologies and tools to enable the development of a mature, safe design for the company's full-size supersonic airliner aircraft - Overture. The petitioner states that flight testing also would provide data on the flight performance capabilities of previously untested and uncertified new technology.

The test flights will be conducted entirely in the "R-2508 Complex." The supersonic operations will occur in the Black Mountain Supersonic Corridor and in a portion of the High Altitude Supersonic Corridor within the R-2515 airspace, a special use airspace associated within Edwards Air Force Base in Los Angeles, Kern, and San Bernardino counties in California. This airspace is used extensively for research and military supersonic aeronautical operations, and has current, extensive environmental documentation. The petitioner believes the operation of XB-1 demonstrator will have a negligible added or cumulative noise effect on the environment. The FAA's EA and Finding of No Significant Impact (signed February 29, 2024) supports FAA's determination that the proposed finite number of flights would not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act.

In order to demonstrate that the aircraft is safe and complies with airworthiness requirements, Boom's XB-1 must operate over land within the prescribed test corridors to minimize the safety risks. In particular, operation over land avoids or minimizes safety risks to the aircraft and air crew and avoids enroute overflights of large populations on the ground. The proposed corridor for operations would provide the highest and only acceptable level of safety for XB-1 operations, given the following aspects:

1) XB-1 is designed for short sprints of supersonic flight for aircraft testing. It does not have the fuel capacity to fly from inland runways with adequate runway lengths to a sufficient distance from the coast over the ocean for supersonic testing, while still maintaining required fuel reserves. Further, the additional distance to the coast adds additional risk to the flight crew and flight test program if an immediate return to base, or bailout, is necessary during testing.
2) Due to its experimental designation, XB-1 is restricted from operating over densely populated areas or within congested airways (e.g., Class B airspace). The available coastal runways are all located in densely populated areas within congested Class B airspace where XB-1 is restricted from operation. This precludes the use of civilian runways near the coast.
3) The mission control room needs to monitor XB-1 for critical safety of flight parameters. Given range limitations of the telemetry antenna, overwater testing adds risk of losing critical monitoring that ensures safety of the operations.

These aircraft and test constraints outweigh any potential for safer over ocean testing that would otherwise avoid sonic booms reaching the land surface of the United States.

The FAA finds the request by the petitioner is well within the intent of 14 CFR § 91.818. As such, the FAA has decided to grant this Special Flight Authorization to Exceed Mach 1. Authority to exceed Mach 1 during the testing of the Boom XB-1 experimental aircraft is limited to the conditions and limitations stated in this special flight authorization.

Nothing in this special flight authorization may be construed as agreement with any airworthiness certification requirements, flight test plan, or analyses to be conducted at transonic or supersonic speeds. This authorization is limited to those provisions of the noise operating rules of 14 CFR § 91.817 that require prior authorization for a civil aircraft to exceed Mach 1 in the United States. No other certification requirements, express or implied, are affected by this authorization.

This special flight authorization to exceed Mach 1 for supersonic flight operations is subject to the following conditions and limitations:

1. This authorization applies to the Boom XB-1 experimental test and a chase aircraft[1] with registration numbers as follows:

Registration No.	Aircraft
N990XB	XB-1
N638TC	T-38A Chase
N938TC	T-38A Chase

2. This authorization is valid for a total of twenty (paired) flights of XB-1 and a chase aircraft, per the registration numbers specified in the table above over the course of one year. The purpose of such flights is to:

   - demonstrate XB-1 airworthiness requirements;
   - determine XB-1 experimental aircraft's characteristics to validate prediction methods/tools (such validation could be used to design full scale transport Overture aircraft); and
   - have the chase aircraft trail XB-1 to record video, and have the chase aircraft pilot observe, monitor, and record the XB-1's safety of flight.

3. The authorized test flights may be conducted between April 7, 2024 and April 7, 2025. The expected supersonic flight profiles are such that nominal allowable altitude will be at 30,000 (FL 300) and limited to a total number of 20 paired flights of the XB-1 and a chase airplane. The flights may only be conducted during daytime hours.

[1] Boom indicated via email on February 26, 2024 that Boom no longer plans to use NH-F5 aircraft as a chase vehicle.

4. This authorization requires the permitted flight test operations take place only in the "R-2508 Complex" that includes the Black Mountain Supersonic Corridor and the portion of the High-Altitude Supersonic Corridor that lies within the R-2515 restricted area. The test flights will be conducted entirely in the R-2508 Complex. The R-2508 Complex was developed in part for military operations involving the testing and training of supersonic aircraft and spacecraft.

5. This authorization provides relief only from the noise operational requirements for civil aircraft described in 14 CFR part 91, § 91.817, and § 91.818.

6. This authorization may be amended, terminated, or suspended at any time if the Administrator finds that such action is necessary to protect the environment.

7. This authorization is effective until it expires or is surrendered. If there is a need to extend the time limits of this authorization, the petitioner must request the extension by letter to the FAA, Office of Environment and Energy.

This authorization to exceed Mach 1 terminates the sooner of the date when the authorized test flights of the Boom XB-1 experimental aircraft are completed, or April 7, 2025, unless sooner superseded or revoked.

Issued in Washington, DC on April 7, 2024 .

JULIE ANN MARKS Digitally signed by JULIE ANN MARKS
Date: 2024.04.07 18:10:19 -04'00'

Julie Marks
Director for Environment and Energy