



NASA's X-59 Quiet Supersonic Technology (QueSST)

NASA OFFICE OF PROCUREMENT | VIGNETTE



NASA's X-59
QueSST Aircraft

Who/Where

NASA's Quiet Supersonic Technology (QueSST) mission is enabled by two programs within the Aeronautics Research Mission Directorate (ARMD) -- the Advanced Air Vehicles Program (AAVP) and the Integrated Aviation Systems Program (IASP); and managed by a systems project office whose members span both programs and all four of NASA's aeronautical research field centers: Langley Research Center in Virginia; Glenn Research Center in Ohio; and Ames Research Center and Armstrong Flight Research Center (AFRC) in California. NASA Office of Procurement personnel located at AFRC awarded the QueSST contract and are responsible for contract administration.

What

The objectives of the QueSST mission are to design and build NASA's X-59 research aircraft with technology that reduces the loudness of a sonic boom to a gentle thump to people on the ground and fly the X-59 over select U.S. communities to gather data on human responses to the sound generated during supersonic flight and deliver that data set to U.S. and international regulators.

Under AAVP, the Commercial Supersonic Technology Project has conducted concept feasibility studies and project planning for a quiet supersonic aircraft that would provide final validation of design tools and technologies applicable to low sonic boom aircraft and create a database of community response acceptability data supporting the development of a noise-based standard for supersonic overland flight.

Under IASP, the QueSST mission will be executed over three distinct phases. In Phase 1, the QueSST project team (both NASA and Contractor) will conduct aircraft development activities from detailed design through fabrication, concluding with functional checkouts and supersonic envelope expansion. In Phase 2, a NASA-led team will perform low-boom acoustic validation flights of the aircraft. In Phase 3, a NASA-led team will conduct low-boom community response overflight studies with multiple test campaigns using the aircraft over various locations.

When

The QueSST mission began its planning phase in December 2016. The contract was awarded in April 2018. The program is in production with a projected "First Flight" scheduled by the end of 2022.

How

For ARMD, the QueSST program sought to use mission-focused incentives to achieve program success. The Cost-Plus-Incentive-Fee structure included multiple schedule targets to incentivize timely shipment to Fort Worth, TX, for testing and first flight in Palmdale, California. The program introduced a multi-center Source Evaluation Board to include “the best resources” from all Centers, and various disciplines on the Procurement Development Team, including Office of Counsel and other procurement support representatives.

NASA's X-59 QueSST Aircraft under construction



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Why

The “first A” in NASA’s acronym is what drives the Agency in being a leader in aeronautics research. The airline industry depends heavily on NASA research in areas such as sonic boom reduction when designing the next classes of commercial airliners. NASA initiated the QueSST program to demonstrate that noise from sonic booms can be reduced to a level acceptable to the population residing under future supersonic flight paths and create a community response database that supports an International effort to develop a noise-based rule for supersonic overflight. This research could make supersonic flight over land possible, dramatically reducing travel time in the United States or anywhere in the world.

You can read more X-59 QueSST Aircraft at <https://www.nasa.gov/specials/QueSST/>