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EXPERIMENTAL TURBOFAN ENGINE FOR SMALL AIRCRAFT DELIVERED

The second of two experimental turbofan engines designed to demonstrate a technology of quieter operation and cleaner exhaust for future general aviation aircraft has been delivered to NASA for performance and acoustic testing.

The engine was developed and initially tested by AVCO Lycoming Division of AVCO Corp., Stratford, Conn., under direction of aeronautical engineers at NASA's Lewis Research Center, Cleveland.

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The first engine in the program, known as QCGAT, for quiet, clean, general aviation turbofan, was delivered to Lewis last winter by its designer/builder Garrett AiResearch Manufacturing Co., Phoenix, Ariz.

Preliminary results from the newly arrived AVCO engine indicate flyover noise level reduction of at least 14 decibels as compared to the quietest business jet now in service, said G. Keith Sievers, project manager at Lewis. "This lower level of noise," he said, "would produce a noise 'footprint' on the ground of less than one-tenth that produced by the quietest business jet now flying."

Noise reductions were achieved in the AVCO engine through improved acoustical design of internal engine parts -- including use of sound-absorbing materials to muffle fan, compressor and turbine noise -- and reduced engine exhaust velocity.

Test results from the AiResearch engine showed flyover noise reduction of approximately 10 decibels and exhaust emission reductions compared to current engines of 54 percent and 76 percent for carbon monoxide and unburned hydrocarbons, respectively. Emissions from the AVCO engine are even lower.

Overall objective of the NASA project is to demonstrate adaptability of large turbofan engine technology to smaller general aviation turbofan engines. Specific goals are to achieve major decreases in noise and exhaust emissions while maintaining or reducing fuel consumption as compared with present day general aviation turbofans.

"Test results to date for both engines have clearly demonstrated that noise need not be a major constraint on the future growth of turbofan-powered aircraft in general aviation," Sievers said.

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