NASA Glenn Research Center

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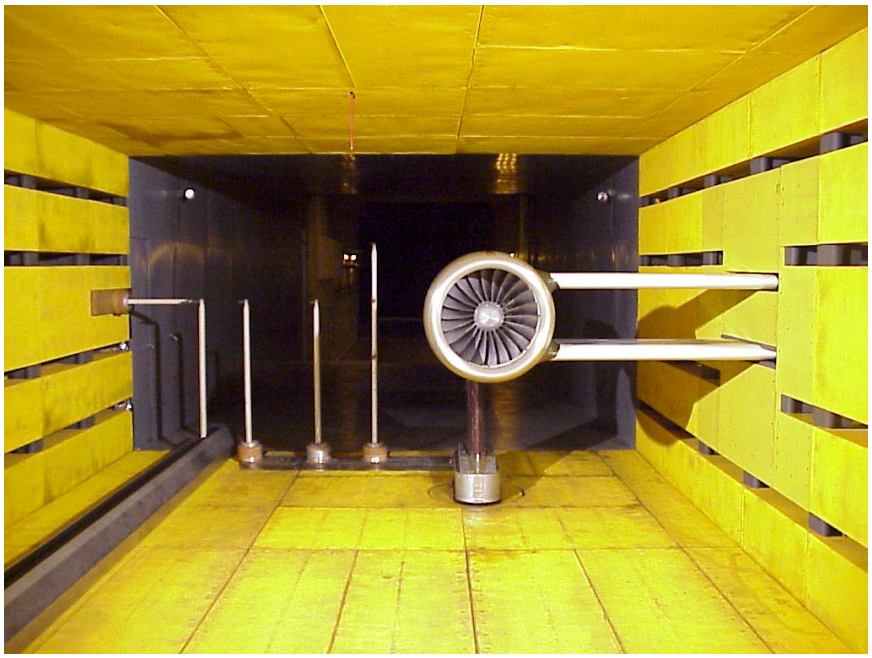
The NASA Glenn Research Center continued engine noise research through the Aerospace Propulsion and Power Base Program (which includes the previous Advanced Subsonic Technology Noise Reduction Program). The Third Computational Aeroacoustics Workshop for Benchmark Problems was hosted at the Ohio Aerospace Institute where over 65 people from around the world participated in providing numerical solutions to various model problems relevant to engine noise. Fan research included a rotor-alone noise assessment using a self-centering nacelle suspension system that successfully maintained stringent fan tip clearances. New data including aerodynamic performance, unsteady surface pressures on various stators, two-point hot-wire flow measurements near the fan, duct mode measurements and sideline acoustic data were obtained to provide diagnostic information on fan noise sources. A new small hot jet rig was installed in the Aeroacoustic Propulsion Laboratory that will be used for future fundamental studies in jet noise. The larger, Nozzle Acoustic Test Rig (NATR) was used to obtain Particle Image Velocimetry (PIV) data for several nozzle configurations representative of subsonic turbofan engines. Subsonic engine noise reduction concepts are being are being evaluated for the new Quiet Aircraft Technology (QAT) Program that will start in 2001.



Rotor-Alone Fan Test Installed in NASA Glenn's 9'x15' Wind Tunnel