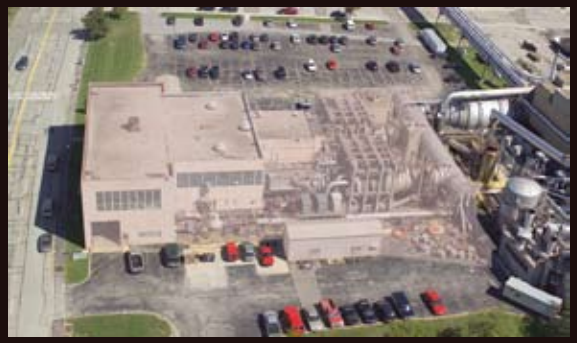
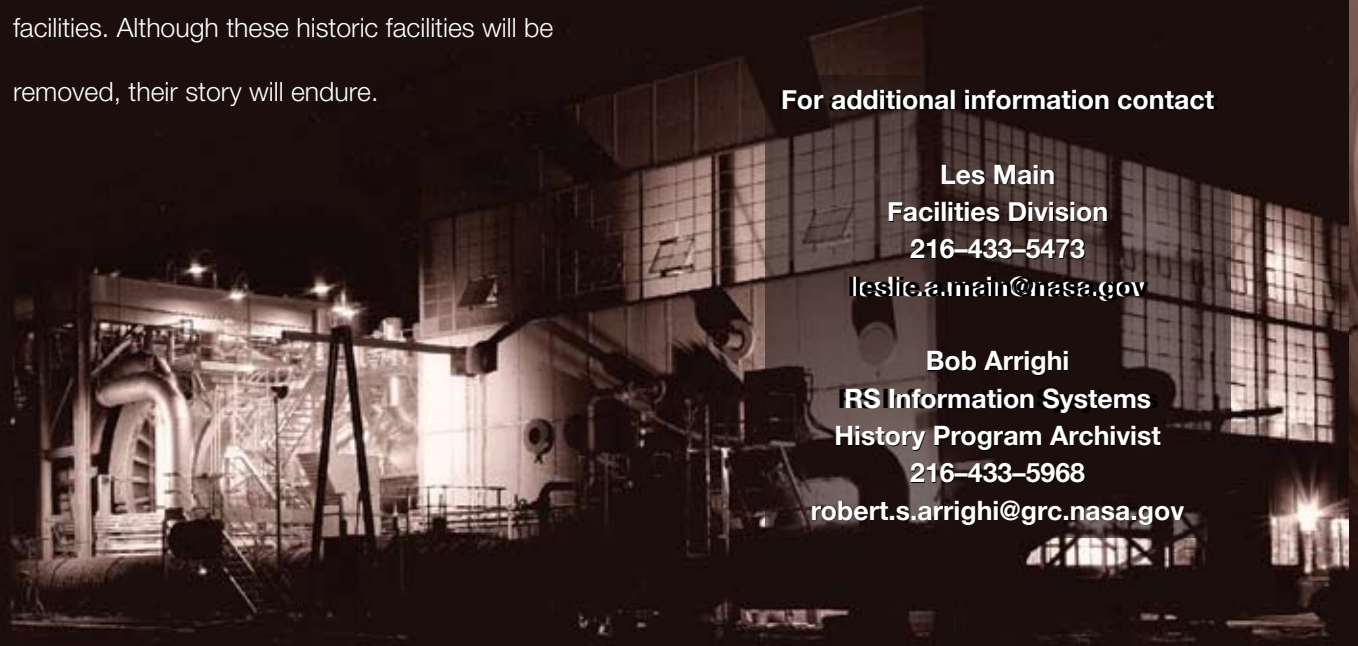
Demolition Intro

NASA Glenn Research Center is planning to demolish its Altitude Wind Tunnel, including the Space Power Chamber, and Propulsion Systems Laboratory 1 and 2 due to safety and environmental concerns. These facilities have been idle for over 25 years and are in poor condition. Both facilities have made significant contributions to aerospace history, and NASA desires to document and share their exciting story. NASA Glenn is currently undertaking a significant effort to capture the history of these facilities. Although these historic facilities will be removed, their story will endure.



Propulsion Systems Laboratory 1 and 2

Altitude Wind Tunnel/Space Power Chamber



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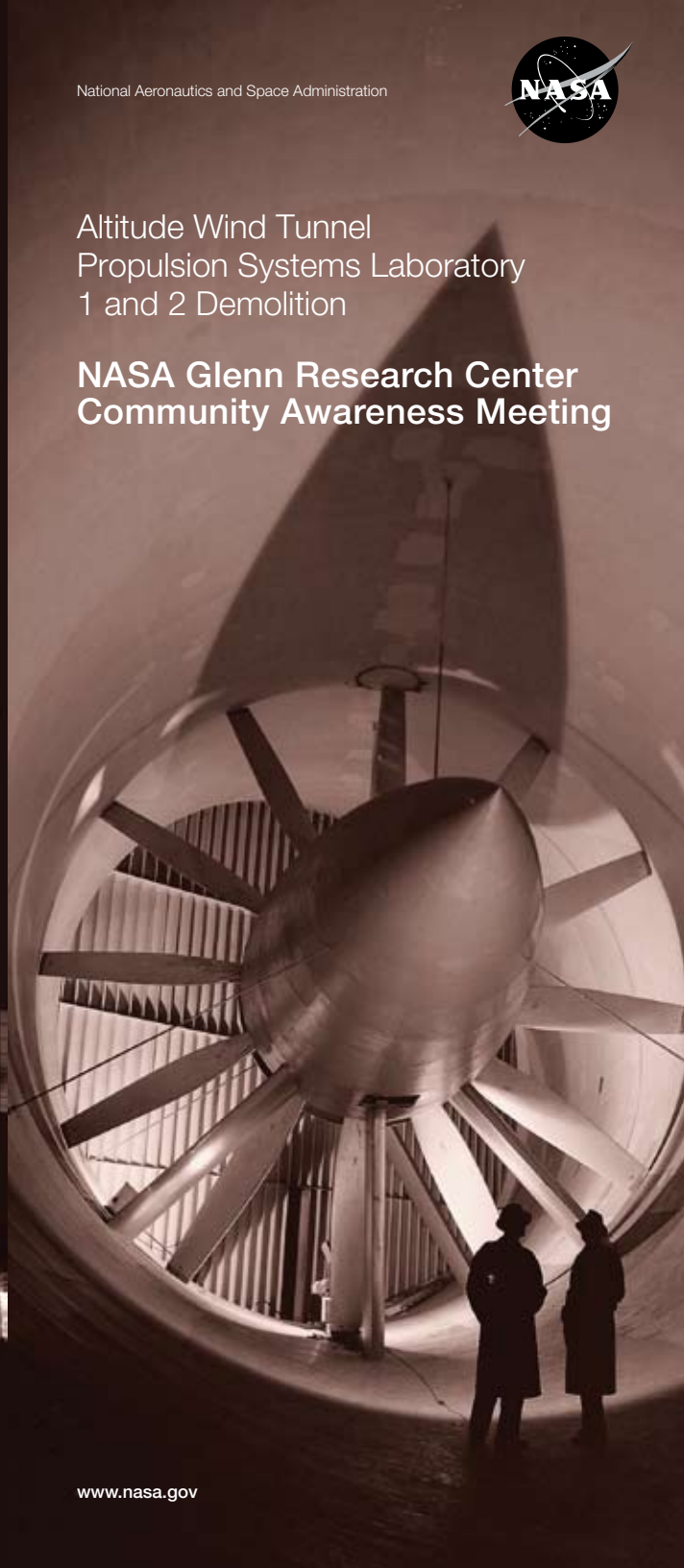
Altitude Wind Tunnel Propulsion Systems Laboratory 1 and 2 Demolition

NASA Glenn Research Center Community Awareness Meeting



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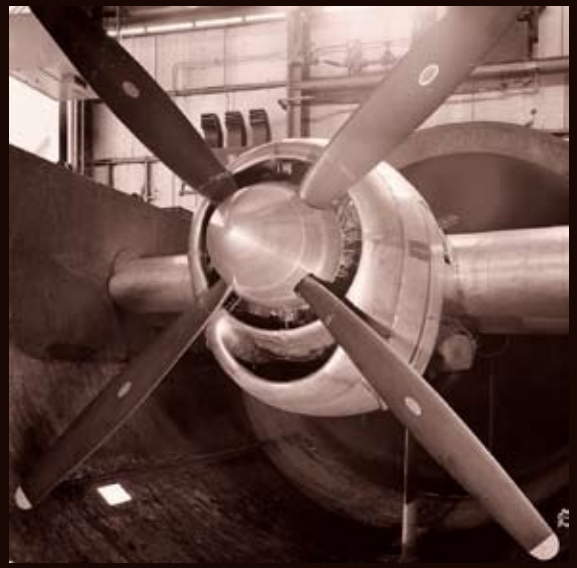
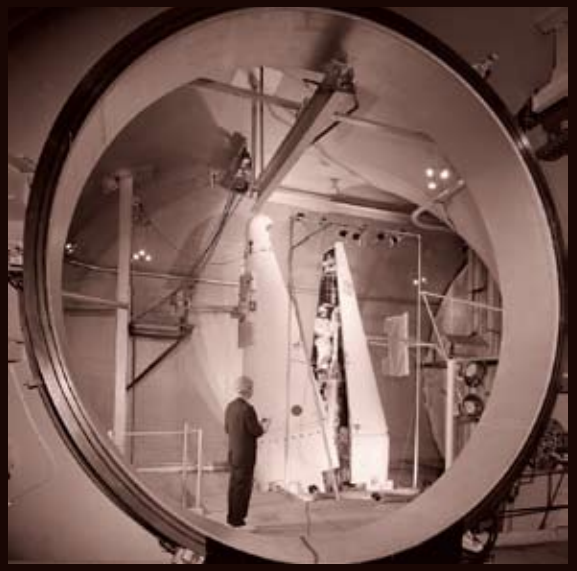
Altitude Wind Tunnel

The Altitude Wind Tunnel (AWT), which began operation in 1944, was the nation's first wind tunnel capable of testing full-scale engines under simulated altitude conditions. In its original configuration, entire fuselages could be inserted into the test section. The AWT conducted significant propulsion research during the final years of World War II and into the mid-1950s.

The AWT's initial test on February 4, 1944, secretly studied the first jet aircraft in the United States, the Bell YP–59A Airacomet. The tunnel played a key role improving the reliability of the B–29's Wright R–3350 engine during the final year of the war. The AWT was also used to enhance the performance of the first U.S.-built jet aircraft, the Lockheed YP–80 Shooting Star, early ramjets, and other turbojet engines such as the Westinghouse 19XB and 24C–4B, General Electric's TG–180, Armstrong-Syddeley's Python,and the Rolls-Royce Avon engines.

Jet engine performance accelerated rapidly after the war, and the Center constructed supersonic wind tunnels. The AWT remained a vital research tool by upgrading its capabilities several times. However, by the mid-1950s the AWT's subsonic speed limitations resulted in a reduced test schedule.





The burgeoning space program kick-started by the October 4, 1957, Sputnik I launch, breathed new life into the facility, but no longer as a wind tunnel. The Mercury Program utilized the tunnel's vast interior for escape capsule separation tests and astronaut disori entation tests in its Multi-Axis Spin-Test Inertia Facility Trainer or MASTIF.

Later, with the transfer of the Centaur Program to NASA Lewis in 1961, the Space Power Chamber (SPC) was created within the AWT. Bulkheads were installed inside the tunnel to create two vacuum chambers. A removable dome and new pump house were installed in the smaller chamber to permit the insertion of the Centaur rocket. The new SPC vacuum chamber was capable of simulating altitudes of up to 100,000 feet. It was utilized throughout the 1960s and early 1970s for Centaur system and separation tests. The SPC testing contributed to the Surveyor, Orbiting Astronomical Observatory, MECA, and many other Centaur missions.

Propulsion Systems Laboratory 1 and 2

The Propulsion Systems Laboratory (PSL), which began testing in 1952, originally consisted of two enclosed altitude chambers, PSL 1 and 2, capable of firing full-scale engines at altitudes up to 70,000 feet. The two 24-foot-diameter and 14-foot-long chambers required an expansive pumping and exhaust sys tem. The engines, without cowlings or mounts, were installed in PSL to study thrust, fuel consumption, air flow, stall limits, starting characteristics, and other performance aspects.

PSL 1 was initially used to test turbojets, but later in the 1950s it primarily conducted missile studies. PSL 2 was used for ramjet and rocket studies and was later employed to study more complex rocket systems. PSL tested ramjets for the Navaho missile, and the J85, J90, TF–30, and other engines. Some of PSL's most important work was on the Centaur rocket's RL–10 engine during the mid-1960s.

Two improved test cells, PSL 3 and 4, became operational in 1972. Use of the original PSL 1 and 2 test chambers diminished until they were closed down in late 1979. PSL 3 and 4, which remainsactive today, is NASA's only ground-based test facility that can pro vide true flight simulation for experimental research on air-breathing propulsion systems.