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PROGRESS POINT
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N.A.C.A. 4655



National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001

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Photo Number: NACA 4655

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CONSTRUCTION OF THE 30- by 60-FOOT TUNNEL

This photograph from 1930 shows the 30- by 60-Foot Tunnel during construction. Smith J. DeFrance, a NACA engineer, was in charge of the design team for the new tunnel. Planning involved the construction of a 1/5 scale model of the tunnel. In 1929, the NACA received congressional approval and two year appropriation of \$900,000 for construction. The tunnel was built by the J.A. Jones Construction Company. The framework is solid steel. Like many early wind tunnels, the 30- by 60-Foot Tunnel featured "inside-out" construction, with structural supports on the outside. The circular frames indicate where the two 35 foot propellers are located today.

Built to test full-scale models or actual aircraft, the 30- by 60-Foot Tunnel was an innovative concept in wind tunnel design. It proved especially valuable during World War II as a majority of the nation's bombers and fighters (as well as several foreign aircraft) were tested in this tunnel. Since the 1970s, one of the unique test techniques used in the "30- by 60" was free-flight of dynamically scaled models in the test section. This technique allowed researchers to measure and assess flight characteristics as well as control options. The "30- by 60" is an example of a major facility adapted to serve a multitude of uses not originally visualized.

The "30 by 60" remained as one of NASA's largest wind tunnels until its closing in September 1995. In 1985 the 30-by 60-Foot Tunnel was designated a National Historic Landmark.

FOR MORE INFORMATION CONTACT: NASA Langley Office of Public Affairs (804) 864-6123

PHOTO CREDIT: NASA or National Aeronautics and Space Administration Historic Photo





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MERCURY CAPSULE IN THE 30- by 60-FOOT TUNNEL

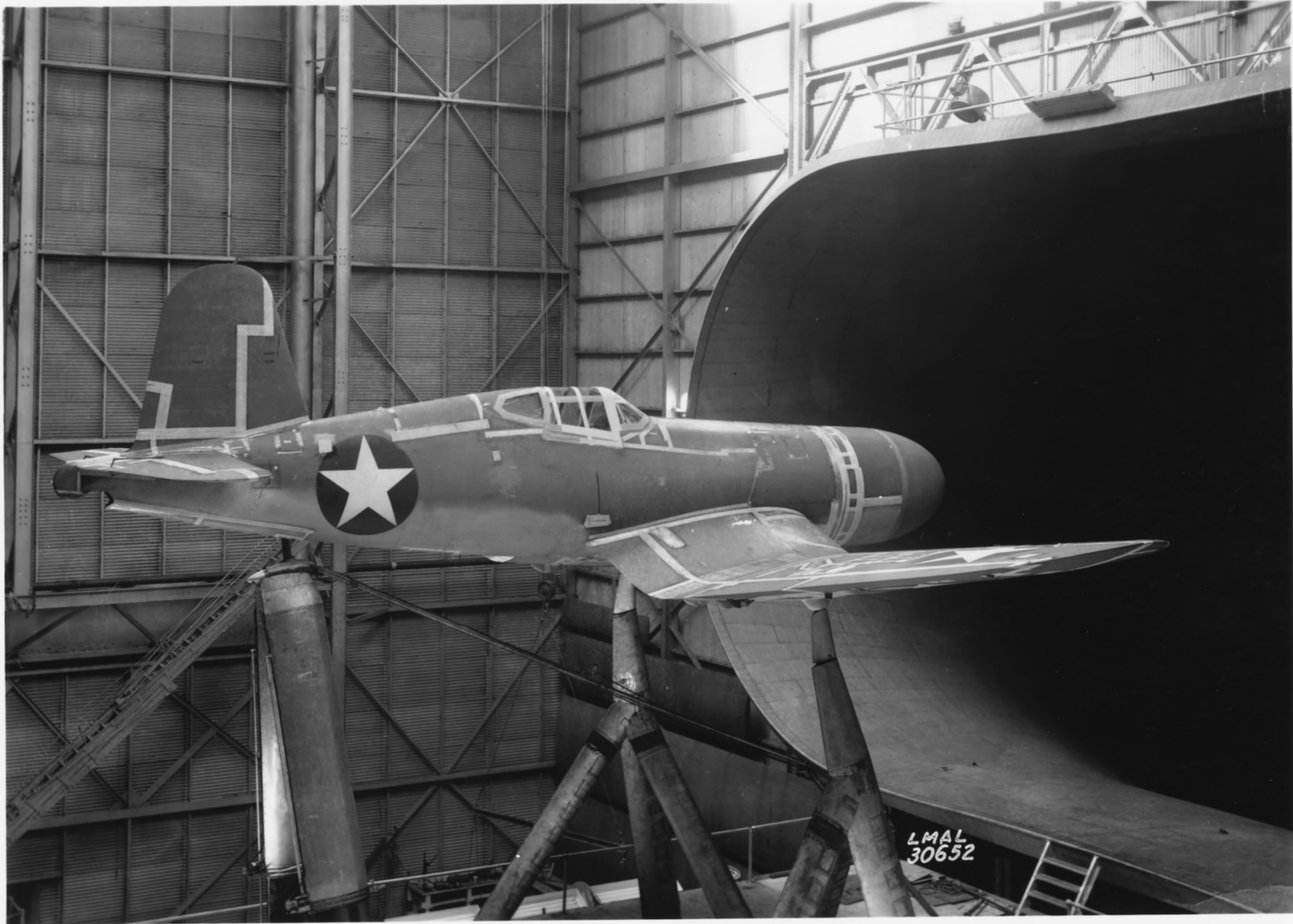
NASA technician checks the Mercury capsule prior to testing in the 30- by 60-Foot Tunnel in 1959 at Langley Research Center in Hampton, Va. Much of the research and development of the Mercury program was conducted at Langley. Langley was the home of NASA's Space Task Group until it moved to the newly established Johnson Space Center in 1962. The Mercury astronauts would return to Langley on a regular basis throughout the program to train on Langley's unique facilities.

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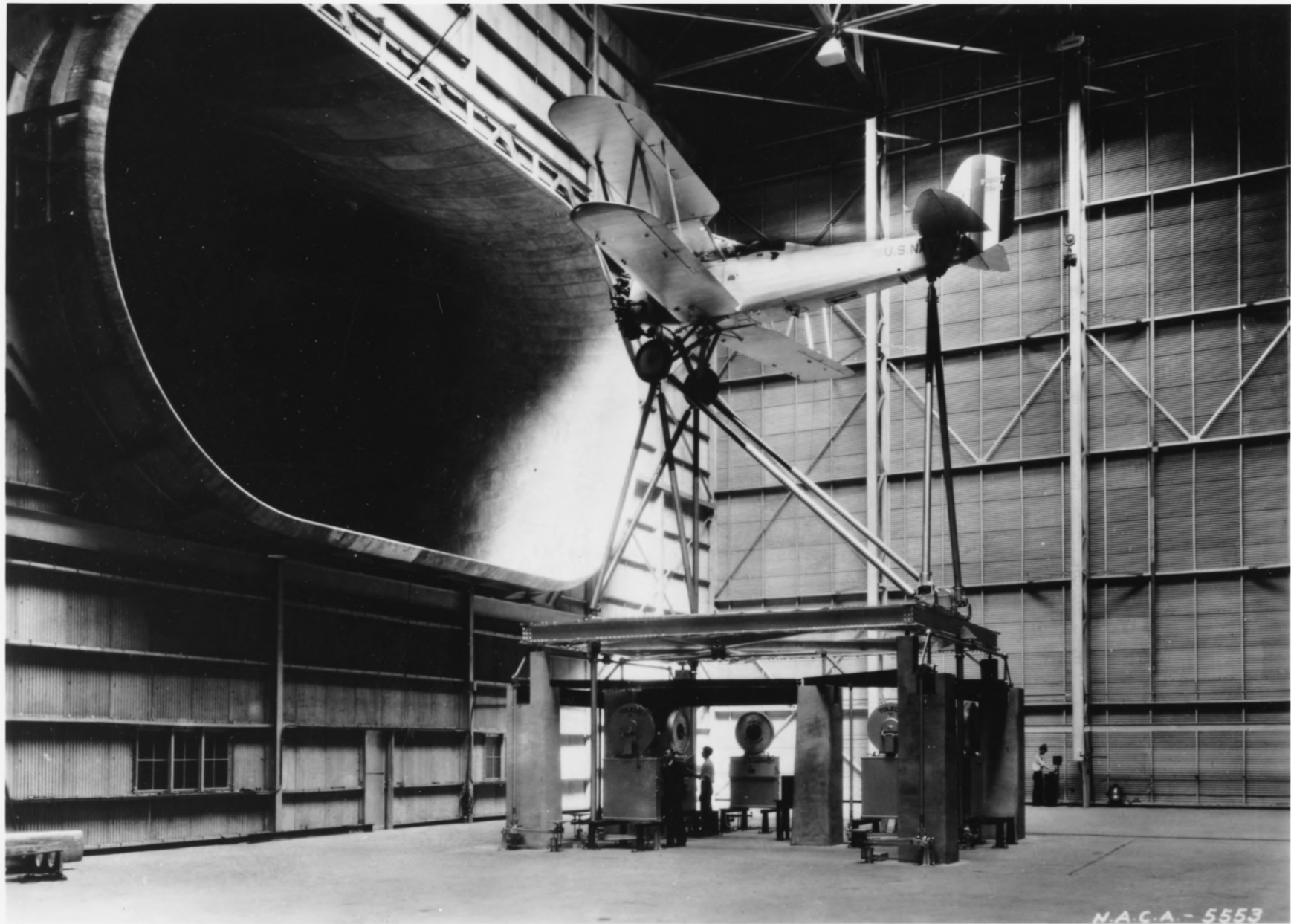
F4U-1 AIRPLANE TESTED IN THE 30- by 60-FOOT TUNNEL

The Vought F4U-1 Corsair airplane was among many that were tested at the "30- by 60," located at NASA Langley Research Center in Hampton, Va. During World War II, extensive aerodynamic tests were conducted. In 1938, tunnel engineers pioneered a new research technique called "drag cleanup." They would make an airplane, such as the Corsair shown here with the enlarged cabin removed, as aerodynamically clean as possible. Tape and putty were used to cover all the cracks and to smooth irregularities. When these tasks were complete, engineers returned the aircraft to its original condition, one part at a time. They noted how much drag was caused by each change. The final report to the military and the airplane manufacturer suggested a whole series of changes which often resulted in impressive gains in total performance.

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VOUGHT CORSAIR AIRPLANE TEST IN THE 30- by 60-FOOT TUNNEL

On May 27, 1931, the National Advisory Committee for Aeronautics (NACA) dedicated its new "Full Scale" wind tunnel. The Navy Vought O3U-1 was the first complete aircraft to be tested in the 30- by 60-Foot Tunnel. It was used to demonstrate the new tunnel during the dedication ceremony which was held during the National Advisory Committee for Aeronautics 6th Annual Aircraft Engineering Research Conference.

The aircraft is mounted on the "balance." This is a floating platform connected to the instruments which measure the aerodynamic characteristics of an airplane. Below the platform, the Toledo scales used until the tunnel closed, recorded the lift, drag, pitch, roll and yaw of the airplane being tested.

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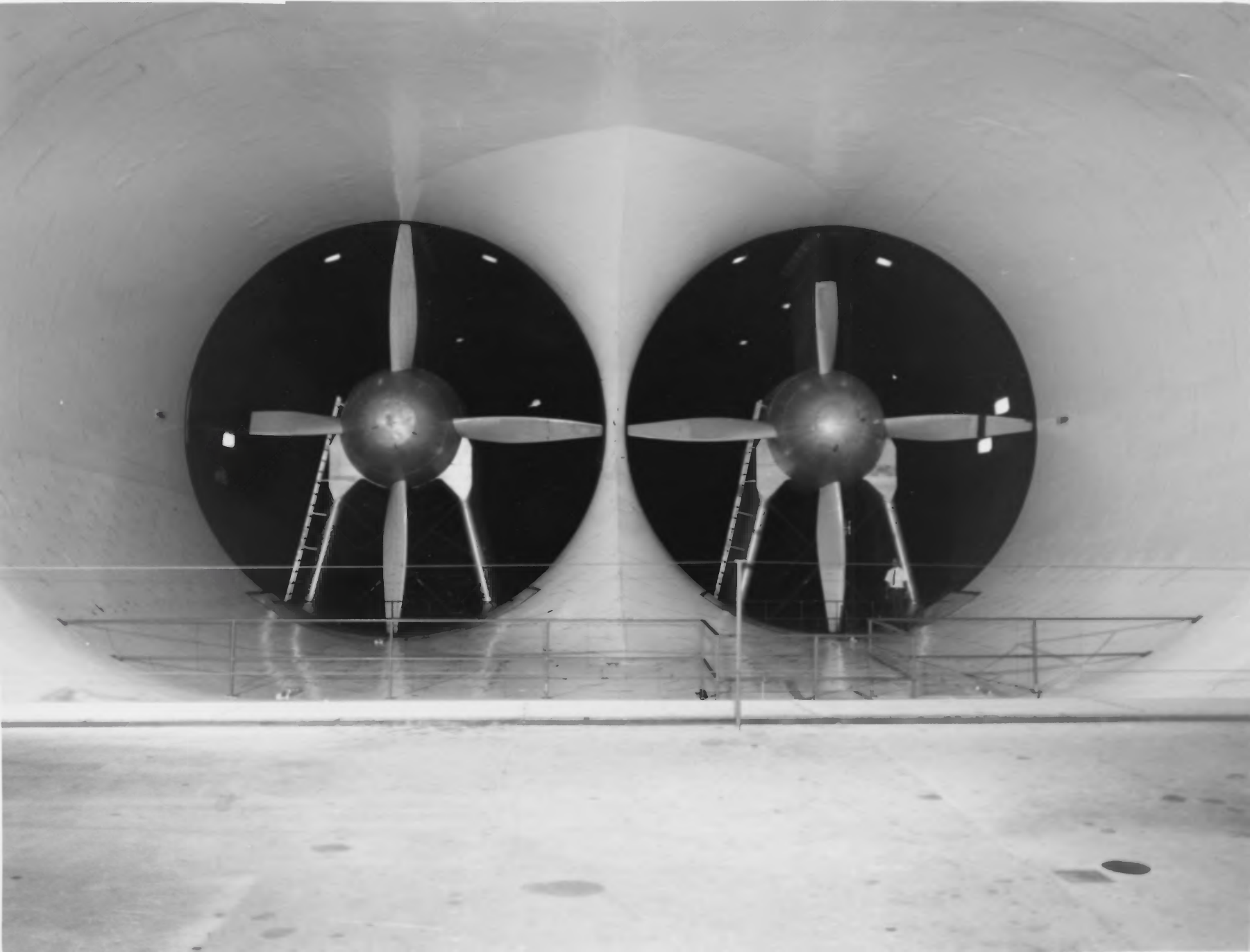
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PHOTO CREDIT: NASA or National Aeronautics and Space Administration Historic Photo



1. Full Scale Tunnel
2. Hampton, Virginia
3. NACA
4. 1931
5. NASA, Langley Research Center Archives
6. Interior view of test section with Vought 03U-1
Airplane
7. 2



1. Full Scale Tunnel
2. Hampton, Virginia
3. NASA
4. 1983
5. NASA, Langley Research Center Facilities Office
6. Modern view of the two four-blade fans that power the Full Scale Tunnel
7. 3-B



1. Full Scale Tunnel
2. Hampton, Virginia
3. NASA
4. 1978
5. NASA, Langley Research Center Facilities Office
6. Modern interior view of test section
7. 3-A



1. Full Scale Tunnel
2. Hampton, Virginia
3. NACA
4. 1950
5. NASA, Langley Research Center Archives
6. Interior view of test section with submarine
Albacore
7. 3



1. Full Scale Tunnel
2. Hampton, Virginia
3. NASA
4. 1981
5. NASA, Langley Research Center Facilities Office
6. Exterior view
7. 4