

National Aeronautics and  
Space Administration



# NASA Glenn Research Center Historic Buildings of the NACA: A Self-Guided Tour



# NASA Glenn Research Center

## Lewis Field Historic District

### TOUR STOPS

1. Engine Research Building (ERB) – Building 5

2. Instrument Research Lab (IRL) – Building 77

3. PSL Operations Building – Building 60 (today, Business Services Center)

4. Fuels and Lubricants Building – Building 6 (today, Test Services Building)
5. Engine Propeller Research Building – Building 16 (today, Electric Propulsion Research Building)

6. 8-by 6-Foot Supersonic Wind Tunnel (8x6) – Building 54

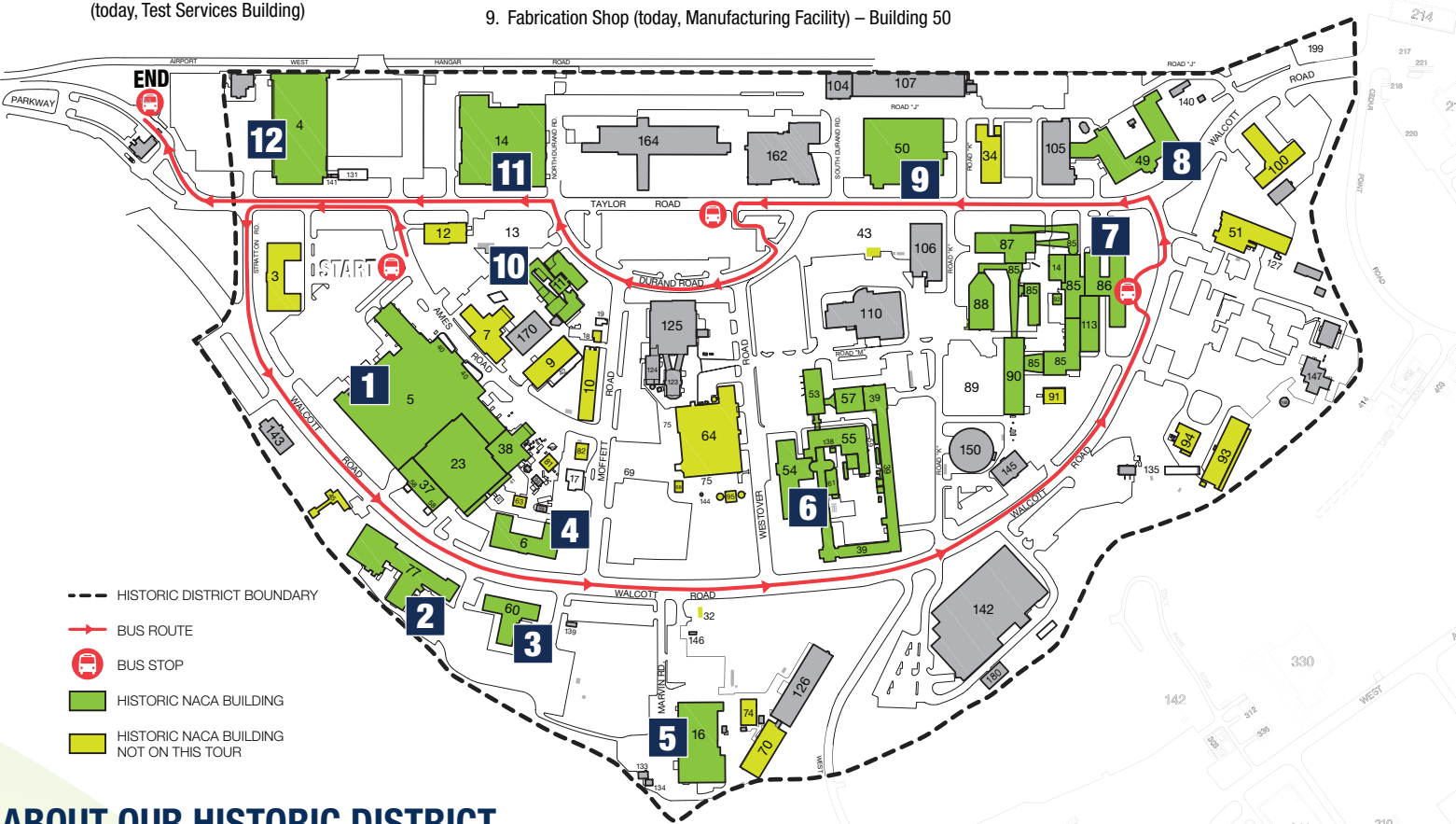
7. 10-by 10-Foot Supersonic Wind Tunnel (10x10) – Building 86

8. Materials & Stresses Building (M&S) – Building 49

9. Fabrication Shop (today, Manufacturing Facility) – Building 50
10. Icing Research Tunnel (IRT) – Building 11

11. Technical Services Building – Building 14 (today, Center Operations Building)

12. Flight Research Building (Hangar) – Building 4



### ABOUT OUR HISTORIC DISTRICT...

The GRC Lewis Field Historic District is eligible for listing on the National Register of Historic Places. It is significant for its association with the development of aeronautic and aerospace technologies undertaken by the NACA and the NASA. It embodies the distinctive characteristics of a federally funded and constructed research facility. This guided tour highlights select buildings that were initially associated with the NACA and excludes those constructed under NASA.



Engine Research Building (ERB)

The Engine Research Building, which began operation in 1942, initially provided facilities for testing piston engines and components, but was quickly adapted to handle turbojets. Additional wings were added in the mid-1940s, making it the center's largest building. It contains over 60 test cells, shop areas, air handling equipment and an office wing.



Instrument Research Laboratory (IRL)

The Instrument Research Lab, began operation in 1951, contained facilities to service and repair specialized instrumentation and models for the center's research organizations. It also housed an early differential analyzer computer system. An addition was added to the building in the early 1960s.



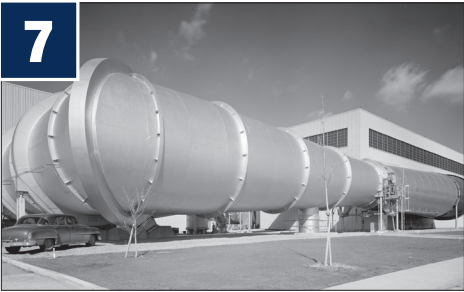
PSL Operations Building (today, Business Services Center)

The PSL Operations Building was constructed in 1950 to provide office space for the engineers conducting tests in the new Propulsion Systems Laboratory (PSL). It was nearly identical in layout to the Instrument Research Laboratory. The center's library was located here from the mid-1960s to 2010. Today, the building is known as the Business Services Center.



Fuels and Lubricants Building (today, Test Services Building)

The Fuels and Lubricants Building was one of the center's key facilities when it opened in 1942. The building included both offices and laboratories used to study fuel mixtures and lubrication issues that were critical to the piston engines that powered World War II era aircraft. The building was renamed the Chemistry Lab in the late 1950s and today primarily serves as office space.



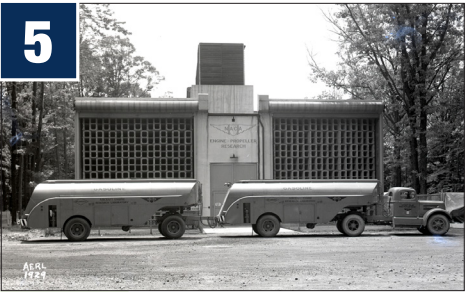
10-by 10-Foot Supersonic Wind Tunnel (10x10)

The 10 foot by 10 foot Supersonic Wind Tunnel was built as part of the National Unitary Wind Tunnels Plan of 1949. The tunnel, which began operation in 1956, can be used as a closed-circuit tunnel for aerodynamic testing and as an open circuit for propulsion testing. Its first test program led to the resolution of critical inlet issue for the world's first supersonic bomber.



Icing Research Tunnel (IRT)

The Icing Research Tunnel, which became operational in 1944, was designed to produce atmospheric conditions causing ice buildup on planes. Its unique refrigeration system could produce temperatures as low as -14F while spray bars release water droplets into the air stream. The tunnel has been utilized to develop deicing systems, ice prediction models, and provide a better understand icing physics.



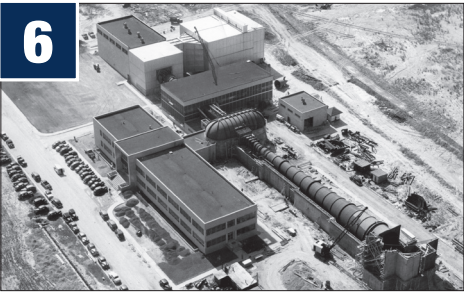
Engine Propeller Research Building (today, Electric Propulsion Research Building)

In May 1942, the Engine Propeller Research Building conducted the laboratory's first test. The facility originally contained two large stands for testing piston engines. It was expanded and upgraded in the late 1940s to handle turbojets. In 1959, the stands were replaced by vacuum tanks to test ion thrusters and was renamed the Electric Propulsion Research Building.



Materials & Stresses Building (M&S)

The Materials and Stresses Laboratory was built in 1949 to provide resources to study a wide variety of materials, including superalloys, powdered metals, ceramics, polymers, and composites, under extreme environmental conditions. In 1955 a cyclotron was added to the building to study radiation physics. It was removed in 2018.



8-by 6-Foot Supersonic Wind Tunnel (8x6)

The 8-by 6-Foot Supersonic Wind Tunnel, completed in 1949, was the NACA's first large supersonic propulsion tunnel, capable of operating turbojet and ramjet engines at supersonic speeds. The 8x6 was originally built as a non-return tunnel, but its excessive noise spurred the installation of a large muffler and ultimate conversion into a closed-circuit facility. The test section was perforated with holes in 1957 to permit transonic testing.



Fabrication Shop (today, Manufacturing Facility)

The Fabrication Shop was constructed in 1948 to repair and make sheetmetal models and hardware. It contains forming equipment, lathes, stamping and casting machines, and welders to support the center's research programs.



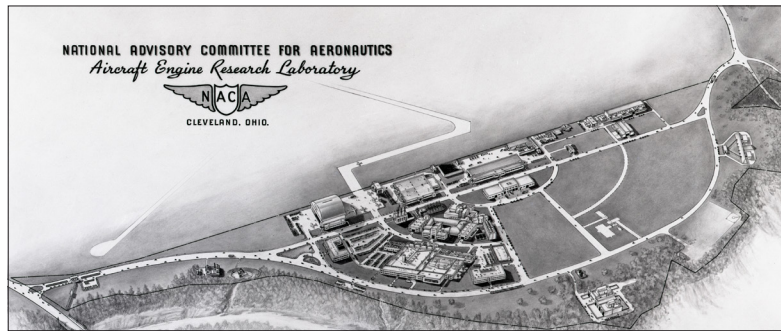
Technical Services Building (today, Center Operations Building)

The Technical Services Building, which opened in 1942, housed the machine shop, which included metal fabrication, woodworking, and heat-treating equipment to support the laboratory's test programs. During the NACA period, the laboratory created nearly all of its own test hardware. The building later housed the center's security personnel, and was recently converted into office areas.



Flight Research Building (Hangar)

Completed in the fall of 1941, the hangar was the center's very first building. Flight research, which verified data from the wind tunnels and other facilities, was an essential aspect of the laboratory's overall research effort throughout the NACA period. The hangar housed large numbers of planes surplus military aircraft in the 1940s and 1950s. The hangar has represented the center to the public for decades.



Glenn Research Center was established in 1941 as one of three National Advisory Committee for Aeronautics (NACA) research laboratories. The NACA was originally formed by Congress in 1915 as committee to coordinate U.S. aeronautical research, soon established its own test facility, the Langley Memorial Aeronautical Laboratory.

In the late 1930s, the NACA decided to expand its capabilities by adding two new laboratories--the Ames Aeronautical Laboratory and the Aircraft Engine Research Laboratory (today, NASA Glenn). The latter, located in Cleveland, Ohio, was unique in its focus on aircraft propulsion. On January 23, 1941, ground was broken for the engine laboratory on a 200-acre semicircular lot adjacent to the Cleveland Municipal Airport.

The original campus contained six primary structures--the Flight Operations Building, Engine Research Building, Fuels and Lubrication Building, Administration Building, Engine Propeller Research Building, Altitude Wind Tunnel, and the Icing Research Tunnel. During World War II, the center improved the performance of the large piston engines that powered military aircraft and early jet engines.

After the war, the center focused on jet propulsion and high-speed flight. New, more powerful facilities, such as the Propulsion Systems Laboratory, 8-by 6-Foot Supersonic Wind Tunnel, and the 10-by 10-Foot Supersonic Wind Tunnel were added in the 1950s. In 1958, the NACA disbanded, and its three research laboratories were incorporated into the new NASA space agency.

#### FOR MORE INFORMATION, CONTACT

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For more information  
about the history of  
Glenn Research Center

