On March 3, 1915, the U.S. Congress established the National Advisory Committee for Aeronautics (the N-A-C-A) in order "to separate the real from the imagined and make known the overlooked and unexpected" in the quest for flight.

Why does this matter to us? Because the NACA was the institutional basis for creating NASA in 1958.

The NACA is the "DNA" of NASA.

We inherited the NACA's organizational and institutional structure. Its model of public-private partnerships in aerospace research. Its contributions to aerospace theory, ground research, and flight operations. Its culture.

From humble beginnings in 1915 with a $5,000 budget, no paid staff, and no facilities, the NACA eventually won the Collier Trophy five times. Its researchers made critical contributions to victory in World War II and to security during the Cold War. Not to mention the NACA leaders whose names grace three NASA facilities—Ames, Dryden (now Armstrong), and Glenn. (Aviation pioneer Samuel Langley, namesake for Langley, was not affiliated with the NACA.)

Where do we see the NACA's influence today in aviation and spaceflight?

- Engine cowlings and inlets
- Area rule
- NACA airfoils
- Retractable landing gear
- Trim tabs
- Variable pitch propellers
- Superchargers
- Wind tunnels
- Stability and control guidelines
- Aerothermodynamics
- Landing/recovery operations
- Seaplane/floatplane design
- Jet engine compressors and turbines

We can only imagine how pleased that small band of brilliant, determined pioneers would be to know how well their passion paid off and how relevant their vision remains 100 years later.

"…to supervise and direct the scientific study of the problems of flight with a view to their practical solution…."

NACA Charter

NACA

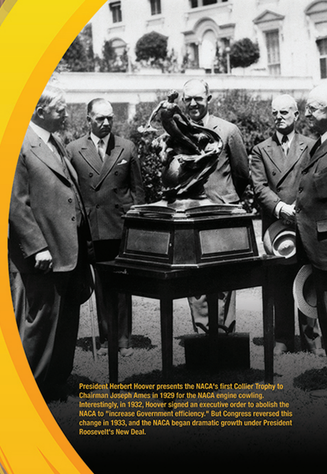
The first meeting of the National Advisory Committee for Aeronautics (NACA) took place in the Office of the Secretary of War on April 23, 1915. Brig. Gen. George P. Scriven was elected as the chairman of the NACA, and Dr. Charles D. Walcott (not pictured), Secretary of the Smithsonian, was elected chairman of the NACA Executive Committee.

In June 1915, the NACA hired its first full-time employee, John Victory, as a clerk.

The plan for this meeting in 1921 was to discuss how to place America at the forefront of innovation in aviation. Dr. S. W. Stratton, Secretary of the committee and director of the Bureau of Standards, is shown seated at the extreme left. Around the table, left to right, are professor Charles F. Marvin (Chief, Weather Bureau); Dr. John F. Hayford (Northwestern University); Orville Wright; Major Thurman H. Bane (Chief of the Engineering Division, U.S. Army Air Service); Paul Henderson (Second Assistant Postmaster General); Rear Admiral W. A. Moffett (Chief, Bureau of Aeronautics, U.S. Navy); Dr. Michael I. Pupin (Columbia University); Rear Admiral D. W. Taylor (Chief, Bureau of Construction and Repair, U.S. Navy); Dr. Charles D. Walcott, NACA Chairman (Secretary, Smithsonian Institution); Major General Mason M. Patrick (Chief of Air Service, U.S. Army); and Dr. Joseph S. Ames, Chairman NACA Executive Committee (Johns Hopkins University).

The NACA's first wind tunnel, located at Langley Field in Hampton, VA, was an open-circuit wind tunnel completed in 1920.

Circa 1927, Elton W. Miller, one of the designers for the Propeller Research Tunnel at Langley, stands in the entrance cone to inspect a Sperry M-1, the first airplane tested in the new facility.



President Herbert Hoover presents the NACA's first Collier Trophy to Chairman Joseph Ames in 1929 for the NACA engine cowling. Interestingly, in 1932, Hoover signed an executive order to abolish the NACA to "increase Government efficiency." But Congress reversed this change in 1933, and the NACA began dramatic growth under President Roosevelt's New Deal.

In 1947, the Collier Trophy was awarded to John Stack of Langley Memorial Aeronautical Laboratory for research to determine the physical laws affecting supersonic flight. Lawrence D. Bell and Chuck Yeager also shared in this trophy. This image is of the 8- by 6-Foot Supersonic Wind Tunnel.

In 1951, the Collier Trophy was awarded again to John Stack and associates at the Langley Memorial Aeronautical Laboratory for the development and use of the slotted-throat wind tunnel.

In 1946, the Collier Trophy was awarded to Lewis A. Rodert of Ames Aeronautical Laboratory for the development of an efficient wing deicing system. This Consolidated B-24 Liberator was modified by the NACA for studies on the effects of in-flight icing.

In 1954, the fifth and final of the NACA's Colliers was awarded to Richard Travis Whitcomb of Langley Memorial Aeronautical Laboratory for the development of the Whitcomb area rule.

President Franklin D. Roosevelt (seated in car in white shirt) visited Langley Field on July 29, 1940.

In this April 1940 photo, staff recently transitioning from Langley Field to the newly opened Ames Aeronautical Laboratory pose in the California sun.

In 1943, the NACA hired its first African-American female "computers" (left to right): Dorothy Vaughan, Leslie Hunter, and Vivian Adair.

Test pilots (from left) Mel Gough, Herb Hoover, Jack Reeder, Steve Cavallo, and Bill Gray stand in front of a P-47 Thunderbolt Fighter in this 1945 photo taken at the Langley Memorial Aeronautical Laboratory.

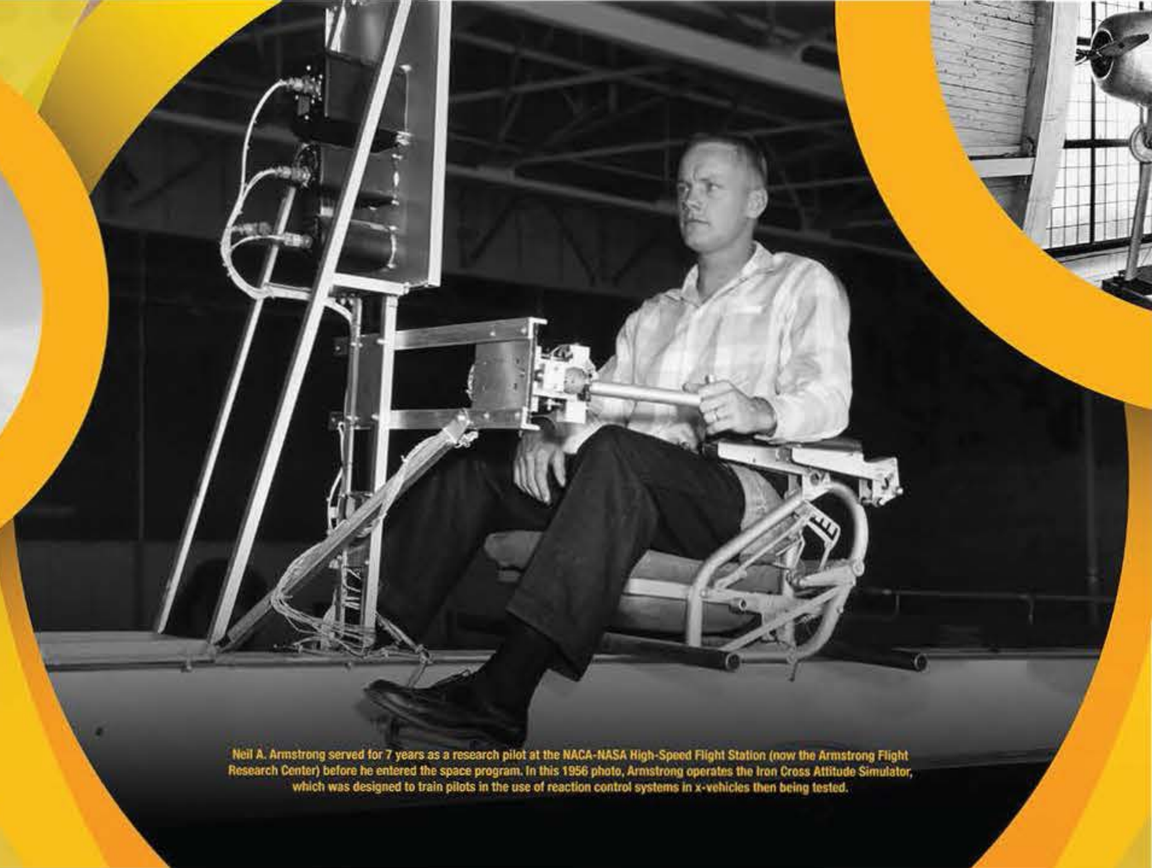
In this 1951 photo, George Cooper, World War II veteran and NACA test pilot, talks with Smith DeFrance, the first and longest-serving director of the Ames Aeronautical Laboratory.

NACA High-Speed Flight Station test pilot Joseph Walker transforms to "Cowboy Joe" atop his steed—in this case, the Bell Aircraft X-1A—in this 1955 photo.

Kitty Joyner, an electrical engineer for the NACA, at work in 1952.

In this 1945 photo, Abe Silverstein, chief of the NACA Wind Tunnel and Flight Research Division at the Aircraft Engine Research Laboratory in Cleveland, OH, demonstrates the operation of a model ramjet aircraft engine.

Ames Aeronautical Laboratory Director Smith J. DeFrance poses by an F-84 aircraft on the flight line in this 1954 photo.



Neil A. Armstrong served for 7 years as a research pilot at the NACA-NASA High-Speed Flight Station (now the Armstrong Flight Research Center) before he entered the space program. In this 1956 photo, Armstrong operates the Iron Cross Attitude Simulator, which was designed to train pilots in the use of reaction control systems in x-vehicles then being tested.

The NACA's first big technological breakthrough involved engine drag. Early tests in Langley's Propeller Research Tunnel proved that a cowling placed over the engine reduced drag and counterintuitively improved cooling. Dramatic results from this 1928 test of Cowling #10 led to quick adoption by industry and international recognition for the NACA.

This 1941 photo shows the Vought-Sikorsky V-173 airplane in the Full-Scale Wind Tunnel at Langley Field. This test article was a prototype for the larger XF5U-1 known as the "Zimmer Skimmer" or "Flying Flapjack." Radical designs like this may not have gone into production, but they demonstrated the creativity and risk-taking that was typical of NACA work.

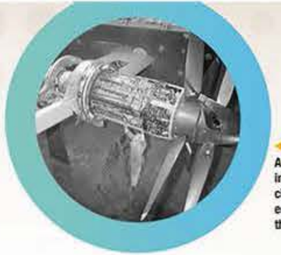
In 1944, a technician inside a modified B-29 bomber collects data during high-altitude flight to determine what conditions cause ice to form on wings and aircraft surfaces. NACA icing research was critical to establishing aviation as a reliable mode of transportation.

The NACA's Airplane Engine Research Laboratory Icing Research Tunnel—and some pretty cool cars—are captured on film in 1944 at the Lewis Flight Propulsion Research Laboratory in Cleveland, OH.

This 1943 photo shows a North American Aviation P-51B Mustang mounted in Ames's 16-Foot High-Speed Tunnel. The NACA was responsible for its most distinctive feature—the belly air intake scoop for cooling that stuck out into the airflow.

In 1946, a model of a Boeing B-29 long-range bomber is tested for ditching characteristics in the Langley No. 2 tow tank. Equipment and procedures developed in these tests are critical to saving lives in ditching aircraft to this current day.

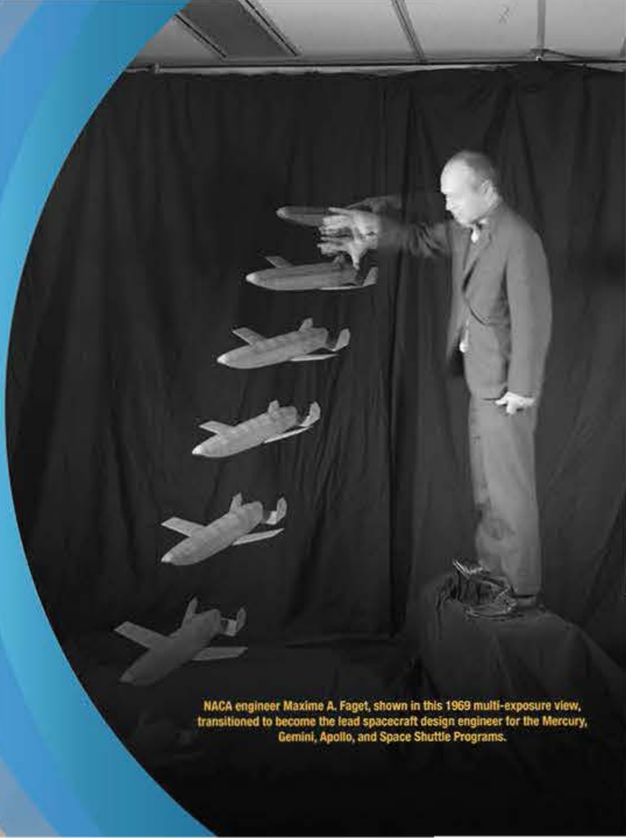
In this 1946 photo taken at the Flight Propulsion Research Laboratory, engineers take motion pictures of exhaust gases being discharged from a special burner used for studying thrust augmentation in jet engines.



In this 1947 photo, the 50-foot-long experimental model is dwarfed in the throat of what was then the world's largest wind tunnel—the 40- by 80-Foot Wind Tunnel at the Ames Aeronautical Laboratory.

The shock wave pattern is very visible in this X1-1 exhaust plume. Test pilot Chuck Yeager flew this vehicle beyond the sound barrier on October 14, 1947.

The space race was led by many NACA staff after the transition to NASA. In this photo, former NACA engineers Robert F. Thompson (center) and Christopher C. Kraft, Jr. (right), brief a Rear Admiral on Gemini recovery operations.



NACA engineer Maxime A. Faget, shown in this 1969 multi-exposure view, transitioned to become the lead spacecraft design engineer for the Mercury, Gemini, Apollo, and Space Shuttle Programs.

An engine mechanic in 1949 checks instrumentation before a test of operating characteristics of a large turboprop engine with counter-rotating propellers in the Altitude Wind Tunnel.

In this 1957 photo, engineers check a supersonic aircraft model before a test run in the 10- by 10-Foot Supersonic Wind Tunnel test section at the Lewis Flight Propulsion Laboratory.

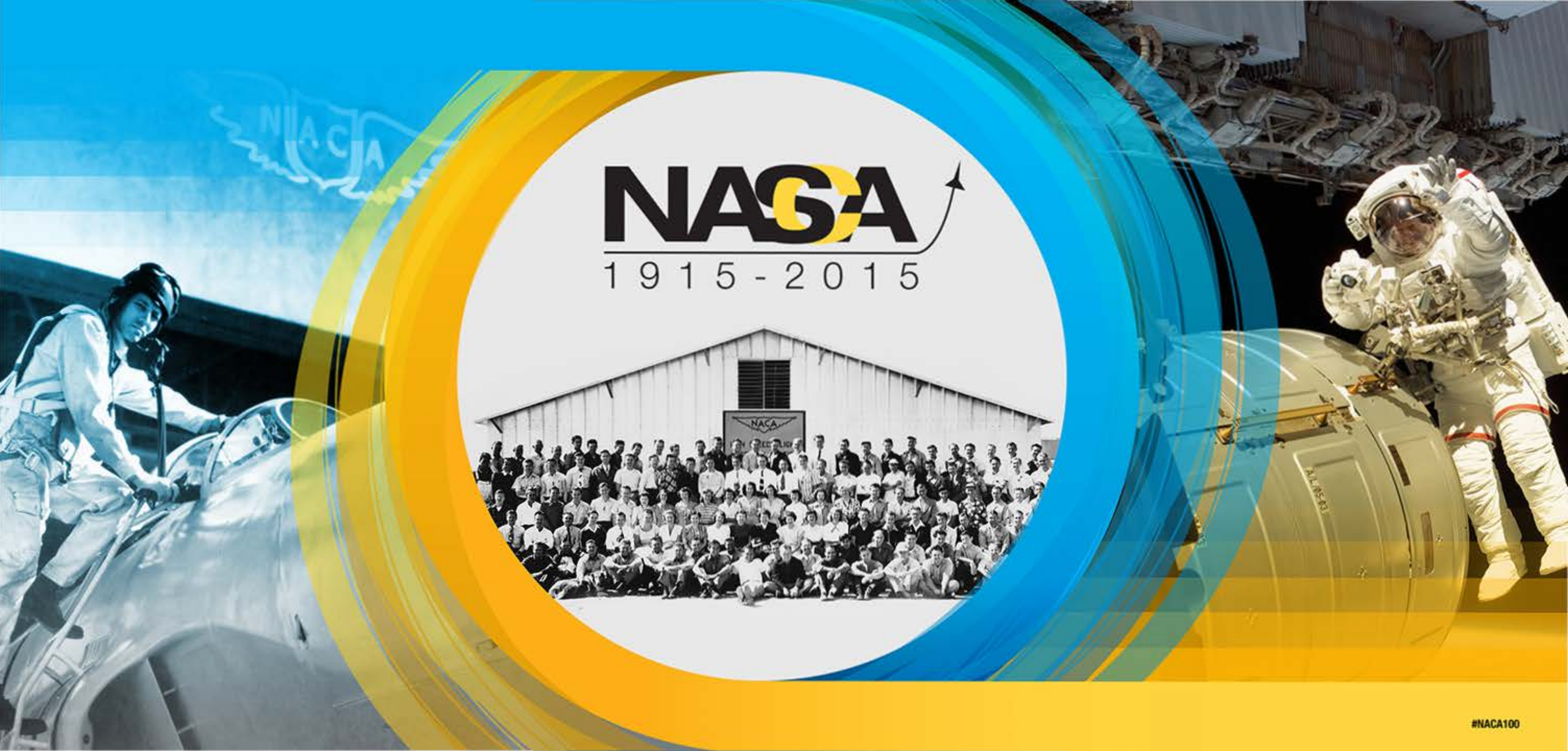
Former NACA cooperative education student Glynn S. Lunney (seated) was part of the team that worked non-stop for days to bring Apollo 13 safely home.

In this 1948 photo, a technician mounts a model of a P-80 aircraft on the wing of a NACA North American P-51B at Langley Aeronautical Laboratory. During high speed dives, the model returned aerodynamic data on transonic flight.

This 1955 photo shows the Bell Aircraft Corporation X-1E rocket-powered research aircraft—one of four versions—being loaded under its mothership Boeing B-29 before flying out of the NACA High-Speed Flight Research Station in Edwards, CA.

This 1949 photo shows an analog computing machine—a very early version of the modern computer—in the Fuel Systems Building at the Lewis Flight Propulsion Laboratory in Cleveland, OH.

A NACA technician in 1957 focuses a television camera on a ramjet engine model through the schlieren optical windows of the 10- by 10-Foot Supersonic Wind Tunnel. Closed-circuit TV enabled scientists to view the ramjet (used to propel missiles) while the wind tunnel operated at speeds from 1,500 to 2,500 mph.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