NASA Facts

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NASA Dryden Flight Research Center

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The Dryden Flight Research Center, NASA's premier installation for aeronautical flight research, is chartered is to research, develop, verify and transfer advanced aeronautics, space and related technologies for atmospheric flight operations.

The center is named in honor of Dr. Hugh L. Dryden, an internationally known aeronautical scientist who served as director of the National Advisory Committee for Aeronautics (NACA), NASA's predecessor organization, and later as deputy administrator of NASA.

NASA Dryden's history dates back to late 1946, when 13 engineers and technicians from the NACA's Langley Memorial Aeronautical Laboratory came to Muroc Army Air Base (now Edwards Air Force Base) in southern California's

high desert to prepare for the first supersonic research flights by the X-1 rocket plane in a joint NACA, Army Air Forces and Bell Aircraft research program. NASA Dryden is a tenant organization at Edwards AFB, which is located on adjacent to Rogers Dry Lake, at 44 square miles the largest dry lake bed in the world. The center flies a variety of specialized research aircraft within a 20,700-square mile restricted airspace test range.

Since the days of the X-1, the center has grown in size and significance and is associated with many important technological milestones in aviation and space access: supersonic and hypersonic flight, digital fly-by-wire control systems, supercritical and forward-swept wings, and the space shuttles. NASA Dryden was also the site of flight testing of the Apollo program's Lunar Landing Research Vehicle and the famed X-15 rocket plane in the 1960s and the wingless lifting bodies in the 1960s and 70s.

Dryden continues to pioneer projects that support NASA's Aerospace Technology Enterprise by contributing to revolutionary advances in aeronautics technologies, access to space at reduced cost and improved safety and security for global civil aviation. A sampling of current and recent projects includes:

- X-43/Hyper-X — exploring the realm of hypersonic flight and scramjet propulsion at Mach 7 and above.
- Active Aeroelastic Wing — investigating the benefits of flexible-wing control technology for transonic and supersonic aircraft of the future.
- Intelligent Flight Controls — applying self-learning neural network software to digital flight control systems to enable aircraft with damaged systems to be flown and landed safely.
- Environmental Research Aircraft and Sensor Technology — pioneered aeronautic, propulsion and control technologies for tomorrow’s high-altitude, long-endurance unmanned aircraft, the “atmospheric satellites” that will serve as environmental science or telecommunications relay platforms. The follow-on program, Access 5, is focusing on technical and procedural issues to allow high-altitude, long-endurance unmanned aircraft access to the national airspace system on a routine basis.
- X-37 – Dryden will conduct the approach and landing tests of this Boeing-developed technology demonstrator for NASA's planned Orbital Space Plane in the 2004-2005 period.

In addition to its flight research charter, NASA Dryden also is home to NASA’s Airborne Science Program, which supports Earth Science research by a variety of scientists from NASA, other government agencies, the academic community and private industry. Currently, two ER-2s —a civilian version of the U-2S aircraft —carry high-altitude experiments, while a modified DC-8 jetliner is flown as an airborne laboratory for sensor development, satellite sensor verification and basic research about the Earth’s surface and atmosphere.

Along with research and support aircraft, Dryden assets include a high-temperature and loads-calibration laboratory; aircraft flight instrumentation capability; a flow visualization facility to study airflow patterns; a data-analysis facility to process flight research data; and remotely piloted vehicle flight research expertise. Dryden's Research Aircraft Integration Facility (RAIF) simultaneously checks aircraft flight controls, avionics, electronics and other systems. The only facility of its type in NASA, the RAIF is designed to accelerate and enhance systems integration and preflight checks on research aircraft.

In addition to carrying out aeronautical research, NASA Dryden continues to support NASA’s human space flight program as an alternate landing site for the space shuttle orbiters. Dryden has been the site of 49 space shuttle landings since the first orbital flight in April 1981. After an Edwards' landing, orbiters are serviced at Dryden for ferry flights back to Kennedy Space Center in Florida atop one of NASA's two modified Boeing 747 Shuttle Carrier Aircraft. Dryden was also the site of the first approach-and-landing tests of the prototype space shuttle orbiter Enterprise in 1977.

From a handful of engineers who established the center in the late 1940s, Dryden now employs approximately 1,450 government and contractor personnel. Its FY 2004 budget is just under $180 million US.

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