

# Modifications Completed on NASA's New Research Aircraft

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NASA's S-3 Viking aircraft returned home to NASA's Glenn Research Center after extensive modifications to transform it from a carrier-based military aircraft to a state-of-the-art icing research aircraft.

The modifications, implemented over the last two years at the Boeing facility at Cecil Field, Fla., and the U.S. Navy's Fleet Readiness Center (FRC) Southeast, Jacksonville, Fla. will have a dramatic effect on the capability of the aircraft to fulfill its role in NASA's research missions.

The S-3 was originally designed as an anti-submarine aircraft for the U.S. Navy and is slowly being phased out of naval operations.

"Glenn researchers, working with FRC, were able to capitalize on the Navy's decommissioning of these assets to acquire this aircraft directly from the Navy," said Dr. Rickey Shyne, director of Facilities and Test at Glenn. "This saved taxpayers millions of dollars in acquisition costs as compared to the cost of a new aircraft."

Navy communication, navigation and surveillance equipment was replaced or enhanced to provide increased compatibility with current and future airspace requirements both domestically and internationally.

"With the addition of state-of-the-art global positioning systems, satellite communications and commercial weather radar, we are ready to deploy the S-3 worldwide in support of research missions," commented Jim Demers, research pilot at Glenn.

In addition, research equipment racks were installed internally in what was one of the S-3's bomb bays. "The recent modifications to the S-3 have made it a world class test facility, increasing Glenn's aircraft capability by a factor of two. The S-3 allows us to delve into flight regimes that had previously been inaccessible to us," said Ed Emery, Aircraft Experiments manager at Glenn.

The S-3 will be able to fly at higher altitudes and serve a wider range of NASA research needs, including NASA's Science Mission Directorate, which has added the Glenn's S-3 to its catalogue of aircraft to be used by NASA centers for in-flight research.

While capable of a wide variety of science and aeronautics missions, the revamped S-3 will begin its research career continuing Glenn's long-term work in the field of icing research. Aircraft icing research at Glenn is based on the use of two major facilities: the Icing Research Tunnel and an icing research aircraft. These facilities, along with computational tools, experimental methods and highly specialized instrumentation, have led to the successful advancement of safety-based research supported in NASA's Aviation Safety Program.

Initial flights in the S-3 are anticipated to originate in Aguadilla, Puerto Rico, where flights will seek to characterize the icing conditions that exist in the tropical convective layer of the atmosphere.

The NASA Aviation Safety Program is a partnership with the Federal Aviation Administration, aircraft manufacturers, airlines and the Department of Defense, all working to reduce the rate of aircraft fatalities and protect air travelers from security threats.

Researchers at four NASA centers have teamed with the Federal Aviation Administration and industry to develop advanced, affordable technologies to make flying safer and more secure: Glenn, Ames

Research Center, Moffett Field, Calif., Dryden Flight Research Center, Edwards, Calif. and Langley Research Center in Hampton, Va.

Source: NASA

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