

FactSheet

National Aeronautics and
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Synthetic Vision: A visibility solution to a visibility problem



NASA has used this Cessna 206, based at NASA's Langley Research Center in Hampton, Va., to test Synthetic Vision Systems for general aviation aircraft.

Inexperienced private pilots who inadvertently fly from good weather into bad can become easily disoriented and even crash. This can also happen to pilots with years of experience.

This type of accident is called low visibility loss of control and it's the leading cause of deadly general aviation crashes. Another all too common kind of fatal accident is controlled flight into terrain, where a perfectly functioning aircraft flies into the ground, obstacles or water.

Researchers with the Synthetic Vision Systems -

General Aviation project at NASA's Langley Research Center in Hampton, Va., are developing revolutionary cockpit display technology that could virtually eliminate low visibility mishaps.

NASA has teamed with the Federal Aviation Administration, industry, and universities to create an affordable Synthetic Vision System (SVS) for general aviation airplanes.

SVS technology paints a 3-dimensional computer picture of the outside world on

a display so that pilots can see terrain and obstacles, even in bad weather or darkness. The SVS terrain image can be combined with guidance information to give pilots an easy to understand view of where they are and to predict where they're headed.

Pilots help research

NASA has used simulators and aircraft to develop systems and assess how experienced and inexperienced pilots relate to Synthetic Vision.

To conduct simulations, researchers outfitted a general aviation workstation with flight controls, software and a display screen. Volunteer pilots from across the country, many of them with few

hours of flight time, "flew" the Synthetic Vision System. Among the things they were evaluating were aspects of SVS, such as terrain portrayal and guidance information.

Then the research moved onto a NASA Cessna 206, where engineers gathered nearly 120 hours of test flight data at two airports in Virginia. Pilots wore restrictive-vision hoods to simulate limited visibility conditions. The pilots relied on the SVS cockpit displays for a clear electronic view of what was outside their window.



NASA equipped its Cessna 206 with experimental Synthetic Vision displays during test flights.



Pilot Steve Masica from Cleveland was one of the test subjects who "flew" NASA Langley's general aviation workstation during Synthetic Vision general aviation research.

After hours of focusing on the Synthetic Vision display during the flight test, one pilot said, "I really, really think it's going to save a lot of lives. It's awesome."

NASA's primary interest in Synthetic Vision is to enhance safety, but the display has operational benefits too. Researchers at NASA Langley, working with the FAA, industry and pilots, are currently working on a simulation/flight test experiment to determine what kind of safety and operational benefit SVS displays provide compared to current general aviation instruments and procedures.

NASA advances safety

The Synthetic Vision Systems - General Aviation project is part of NASA's Aviation Safety and Security Program. The program is a partnership with the Federal Aviation Administration, aircraft manufacturers, airlines and the Department of Homeland Security to reduce the fatal aircraft accident rate and protect air travelers and the public from security threats.

For more information, please check the Internet at <http://avsp.larc.nasa.gov> or call the Langley Public Affairs Office at (757) 864-6124