

DARPA VTOL X-PLANE TAKES FLIGHT IN MINIATURE

News / Manufacturer

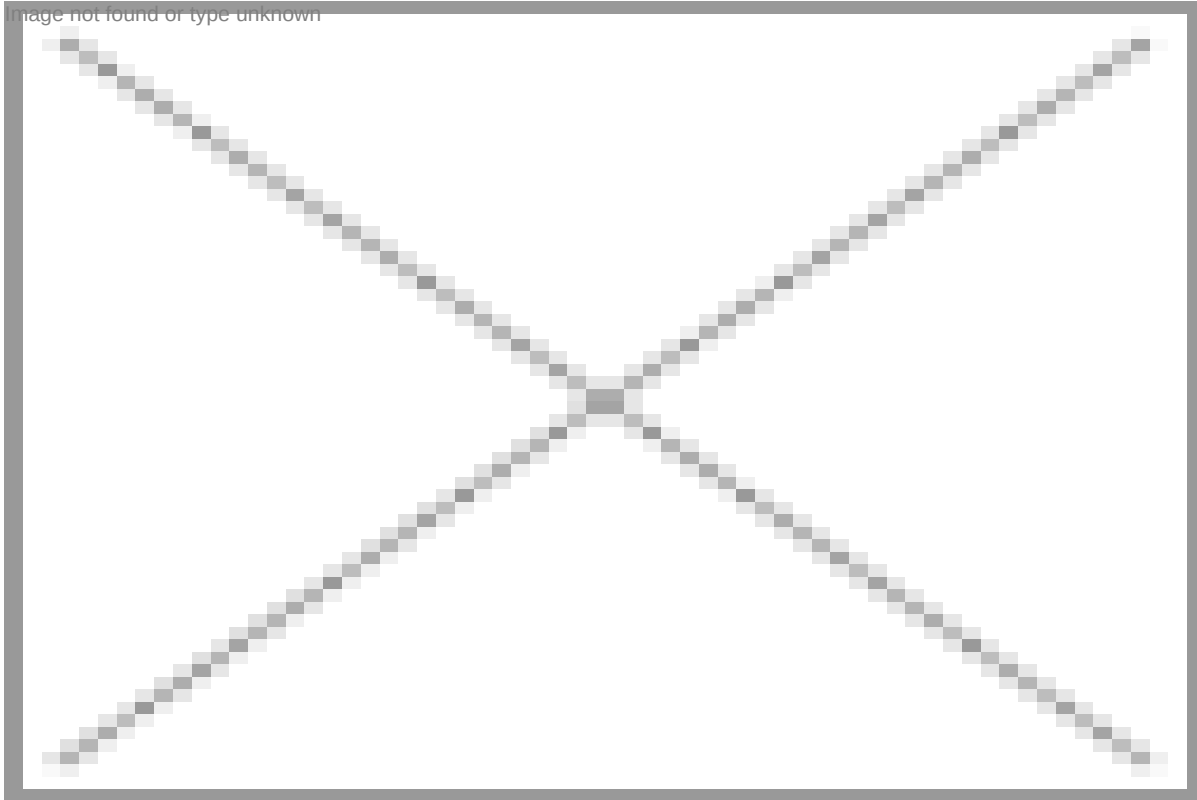


It may look like a backwards airplane with a collection of fans for wings, but a miniature test version of DARPA's Vertical Take-off and Landing Experimental Plane (VTOL X-Plane) took to the skies recently. According to the builder, Aurora Flight Sciences, the subscale vehicle demonstrator (SVD) prototype of the LightningStrike successfully completed a series of takeoff, hover, and landing maneuvers at an undisclosed US military base.

Artist's concept of LightningStrike in vertical flight mode

The recent flight was conducted by an Aurora team from a ground control station with oversight from US government officials and is part of the goal to build a full-size demonstrator aircraft to validate the LightningStrike's technology. Tipping the scales at 325 lb (147 kg), the one fifth scale SVD uses wings and canards made of carbon composites and 3D-printed plastics to produce the necessarily complex structures while keeping weight down.

When finished, the full-scale LightningStrike will be the first to use a distributed hybrid-electric propulsion system with synchronous electric-drive. The unmanned aircraft will reach a top sustained speed of 300 to 400 knots (345 to 460 mph, 555 to 740 km/h), hover with an efficiency of at least 75 percent instead of the current 60 percent, reduce the cruise lift-to-drag ratio from five or six to 10, and carry a payload equal to 40 percent of the X-Plane's 10,000 to 12,000 lb (4,536 to 5,443 kg) gross weight.



According to Aurora, the program is now in Phase II under which Aurora was awarded a contract on March 3 to build the unmanned VTOL X-Plane demonstrator based on the company's Phase I design competition entry. The full-size demonstrator is expected to be built in the next year, during which the Aurora engineers will work on more testing and validation of the flight controls as well as the full-scale aircraft's configuration.

"Our design's distributed electric propulsion system involves breaking new ground with a flight control system requiring a complex set of control effectors," says Tom Clancy, Aurora's chief technology officer. "This first flight is an important, initial confirmation that both the flight controls and aerodynamic design are aligning with our design predictions."

LightningStrike includes 3D-printed components

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19 APRIL 2016

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