NORTHROP GRUMMAN

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Unmanned Combat Air System Carrier Demonstration (UCAS-D)

The U.S. Navy's UCAS-D program is designed to demonstrate the ability of a tailless, fighter-sized unmanned aircraft to land on and be launched from the flight deck of a Navy aircraft carrier underway at sea, one of the harshest aviation environments known to man.

Northrop Grumman Corporation (NYSE: NOC), a leader in unmanned systems, serves as the Navy's prime contractor for the UCAS-D program.

Under contract awarded in Aug. 2007 by the U.S. Naval Air Systems Command (NAVAIR), Patuxent River, Md., Northrop Grumman designed, produced and is currently flight testing two autonomous, low-observable-relevant aircraft designated the X-47B. The company will use these aircraft to demonstrate two "firsts" for unmanned jet-powered aviation:

- autonomous carrier operations including launch, recovery and operations in the carrier control area (out to 50 nautical miles); and
- autonomous aerial refueling, including the Air Force's preferred "boom/receptacle" approach and the Navy's "probe and drogue" method.

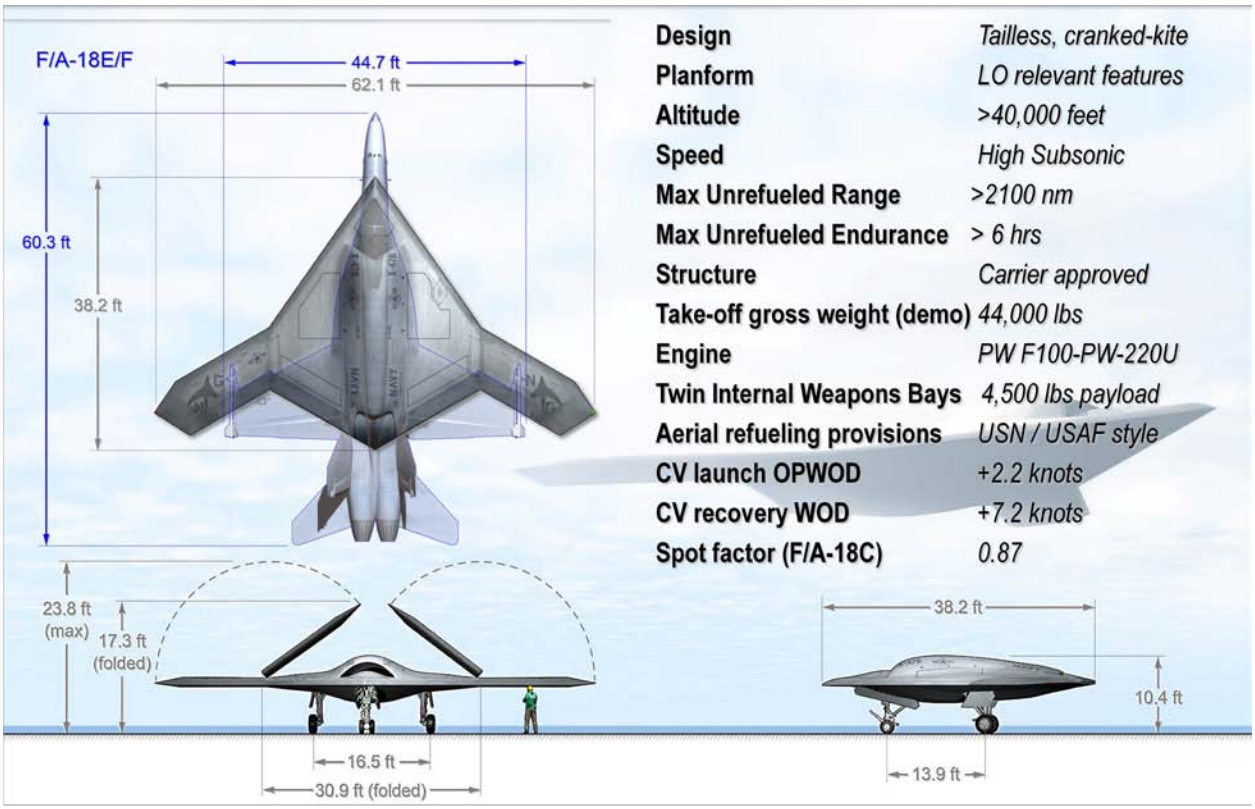
The two X-47B aircraft are identical except that one is designed to accommodate the hardware required to perform aerial refueling. Both aircraft are designed with space, weight and power provisions for weapons and intelligence, surveillance and reconnaissance sensors, but no weapons or sensor demonstrations are included in the UCAS-D program.

Test activities are currently underway that will lead to completion of the Navy's carrier launch and recovery objectives by 2013. The autonomous aerial refueling demonstrations are planned for 2014.

The Navy's UCAS-D program is intended to reduce risks associated with developing potential future unmanned, carrier-compatible systems.

Smart, Autonomous Air System
X-47B is a computer-controlled unmanned aircraft system that takes off, flies a preprogrammed mission, then returns to base in response to mouse clicks from its mission operator. The mission operator monitors the X-47B air vehicle's operation, but does not actively "fly" it via remote control as is the case for other unmanned systems currently in operation.

Northrop Grumman's UCAS-D joint industry team includes GKN Aerospace, Lockheed Martin, Pratt & Whitney, Eaton, General Electric, Hamilton Sundstrand, Dell, Honeywell, Goodrich, Moog, Wind River, Parker Aerospace and Rockwell Collins.



Program History/Milestones Achieved

Date	Event	Location
Aug. 2007	Northrop Grumman selected by NAVAIR as the UCAS-D prime contractor	San Diego, Calif.
July 2009	Structural Proof Testing – First X-47B (Air Vehicle 1)	Palmdale, Calif.
Oct. 2009	Completion of Air Vehicle 1 (AV-1) - Palmdale, Calif.	Palmdale, Calif.
Jan. 2010	Low Speed Taxi – AV-1	Palmdale, Calif.
May 2010	Medium Speed Taxi – AV-1	Palmdale, Calif.
July 2010	Move AV-1 to Edwards Air Force Base (EAFB), Calif.	Palmdale/EAFB
Jan 2011	Structural Proof Testing Complete – Second X-47B (AV-2)	Palmdale, Calif.
Feb. 2011	High Speed Taxi – AV-1	EAFB, Calif.
Feb. 2011	First Flight, AV-1	EAFB, Calif.
March 2011	Beginning of Envelope Expansion – AV-1	EAFB, Calif.
March 2011	Move AV-2 to Edwards AFB	Palmdale/EAFB
July 2011	First autonomous carrier arrested landing by manned surrogate emulating X-47B	*USS Dwight D Eisenhower* (CVN-69) at sea
July 2011	Completion of AV-1 preplanned software, hardware upgrades	EAFB, Calif.

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