# X-47B UCAS Deck-handling Testing Success

*An important non-event*

Written by: Eric Tegler on January 22, 2013

Categories: Aviation, Naval

Tags: Aircraft Carriers, Military News, Research and Developm...

Comments: No Comments



An X-47B Unmanned Combat Air System (UCAS) demonstrator aircraft is transported on an aircraft elevator aboard the aircraft carrier Harry S Truman (CVN 75). U.S. Navy photo courtesy of Northrop Grumman by Alan Radecki

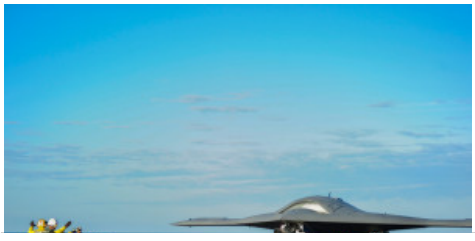


December's first at-sea test of the Navy's Unmanned Combat Air System (UCAS-D) was historic, but in a way, it was also a non-event. The Northrop-Grumman X-47B hoisted aboard the *USS Harry S Truman* (CVN 75) was measured against an admittedly narrow range of test points confined to basic deck handling, electromagnetic compatibility, and concept of operations. But the limited program cannot overshadow the fact that the aircraft "fit" into the environment as naturally as any manned aircraft.

The fundamental premise of the UCAS demonstration is that it have "no impact on current carrier procedures," says UCAS-D program manager Capt. Jaime Engdahl.

> *"It's a brand new aircraft, a very different shape, but the second we set it down on the flight deck, the crew pulled up a tractor, connected it to the nose gear, towed it away and the sailors integrated it into the ship seamlessly throughout. It may seem boring, but the fact that we just set the air vehicle down and the Navy could do whatever they needed to do with it was very meaningful."*

There was no special equipment to bring along, no extensive special training, no alteration to the ship. The test team, a mix of Northrop-Grumman employees and a cadre of Navy project officers, included deck controllers and mission controllers.



The former wirelessly controls the X-47B via an arm-mounted control display unit (CDU) when it moves under its own power on deck. The deck controller works in tandem with a traditional flight deck director, following the standard hand signals and instructions the latter issues. The flight deck director looks

View all Publications »


Air Power at Sea: A Century of U.S. Naval Aviation

Videos | Photos

Your System Status

WE'RE SORRY!

You need to update your Flash Player.

Get ADOBE FLASH PLAYER

IMPORTANT: After installing the required upgrade please reload this browser window to view the video player.

X-47B UCAS Inaugural Land-based Catapult Lau

View all Videos »

**The X-47B Unmanned Combat Air System (UCAS) demonstrator taxies on the flight deck of the aircraft carrier USS Harry S Truman (CVN 75). Harry S. Truman is the first aircraft carrier to host test operations for an unmanned aircraft. Truman was under way supporting carrier qualifications. U.S. Navy photo courtesy of Northrop Grumman Corp. by Alan Radecki**

directly at the X-47 as he would a manned aircraft, while the deck controller, standing a few feet behind, executes his commands.

The process, which can be seen in YouTube videos, and the "familiarity" of the X-47B instilled such confidence that the aircraft had the run of the deck almost immediately Engdahl says.

"In the first pier-side taxi event the team got all of the taxi test points they needed in an hour. The flight deck directors and handler were almost immediately comfortable enough with the aircraft to have it go all the way forward, all the way aft, and collect all the data points in one shot."

The X-47 taxied while the ship was under way as well. Carrier qualifications were ongoing during its fortnight aboard, but the UAV moved under its own power only when manned aircraft were not operating.

**The X-47B demonstrator taxies on the Truman's flight deck. A crewmember with a remote control unit controls the aircraft under a flight deck director's orders. U.S. Navy photo by Mass Communication Specialist 2nd Class David R. Finley Jr.**

"We didn't do that dance on the flight deck with other moving aircraft," Engdahl acknowledges.

However, the test did confirm the X-47's suitability in one of the most dense electromagnetic environments found anywhere. Preparatory electromagnetic/environmental effects testing done ashore in an anechoic chamber, on the ramp, and at pier-side proved Northrop Grumman to have adequately insulated the air vehicle's multiple command/control links, including the wireless link to the CDU.

"At sea was probably the most controlled place [in electromagnetic terms]," Engdahl says.

The X-47B flies autonomously under basic direction of its mission controller, but from the time it rolls to a stop after snagging the arrester gear to the time it next catapults off the deck it is under a human's active control. Proving it can take autonomous action in the event of a glitch was accomplished as well.

> *"There are situations in which the pilot and flight deck director don't quite communicate effectively, maybe they're not looking at each other," Engdahl explains. "One of the things we proved is that the UCAS-D acts exactly the same as a manned aircraft. If it doesn't get a command, if it loses its RF link, it just stops and awaits further commands. That's exactly what a manned aircraft would do."*

That response builds trust. More will be required when the X-47B returns to a carrier to execute catapult takeoffs and arrested landings. In February, the aircraft will perform precision relative navigation landings at Pax River, working toward field arrested landings in March. Depending upon carrier scheduling, the X-47B should make historic launches and recoveries late this summer.

If the UCAS-D team's risk reduction/build-up work has been done right over the past two years, it will be a *very* important non-event.

## Related Stories




## Leave a Comment

*Name* *

*Email* *

*Website*

*Notify me of followup comments via email*

Submit Comment »

## Our Newest Tweet

DefenseMediaNetwork
**DefenseMediaNet**

DefenseMediaNet X-47B UCAS Deck-handling Testing Success goo.gl/h8ZhU #Aviation
7 hours ago · reply · retweet · favorite

Join the conversation

## Categories

- Defense-Wide
- Aerospace
- Land Forces
- Naval
- SpecOps
- Homeland Security
- VA / MILMED
- Multimedia
- Press Releases

## Tag Cloud

Military News, Military History, US Navy, Issues, US Military, US Army, US Marine Corps, World War II: 70 Years, US Air Force, Research and Development, Programs, US Coast Guard, Fighter Aircraft, Foreign Military, Attack Aircraft, Surface Ships, Rotary-wing Aircraft, Commentary, C4ISR, Armored Fighting Vehicles, Centennial of Naval Aviation, Small Arms, Special Operations Forces, Logistics, Tactical Vehicles