F-35B Tackles Night Takeoff, Landing Trials

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ABOARD THE USS WASP — Two F-35Bs have conducted 19 night sorties, including short takeoffs (STO) and vertical landings (VL), on the USS Wasp amphibious assault ship.

These are among the 94 STOs and 95 VLs conducted as of the morning of Aug. 29 in Developmental Testing 2, a follow on to a set of day-only DT trials conducted in 2011.

The tests, taking place Aug. 12-30, are designed to open the F-35B's envelope to include night flying around the ship, different approaches and headings for landings and conducting these operations in various wind conditions. So far, testing included headwinds of 35 kt. and crosswinds of 15 kt., more than was included in DT-1, said Navy Capt. Kurt Kastner, executive officer for the Wasp, which operated about 35 mi. offshore.

The F-35Bs, made by Lockheed Martin, also have flown with internal weapons stores using a variety of inert AIM-120s, GBU 12s and GBU 32s. These were used to alter the aircraft's center of gravity for approaches, VLs and STOs. Pilots on deck report no anomalies.

Peter Wilson, a BAE Systems test pilot, was able to test F-35 landing at four headings, each 90 deg. apart. He says the testing validates the aircraft can conduct VLs at any heading on the ship.

The VLs were conducted on spots in the aft portion of the ship that have been treated with Thermion, a new heatresistant coating that includes ceramic and steel; it is a vast improvement over the current anti-skid coating used on the deck and might be applied to other ships hosting F-35 operations in the future, says Joe Spitz, lead tester on deck for Naval Sea Systems Command.

During one of the tests, Wilson landed an F-35B with its nose off toward the port side of the deck and its engine and hot nozzle exhaust on the port side. During this test, the engine nozzle was just at the demarcation on the deck between the Thermion and baseline anti-skid coatings on the deck. The effects are obvious. The anti-skid coating is brown as a result of the intense heat, while the Thermion appears unaffected.

Spitz says that while the anti-skid coating typically used on carrier decks can handle F-35 operations, its service life could be compromised over time. So the Navy is assessing whether it will outline decks — or at least portions to be used by the F-35B — with the Thermion material in the future. The performance trade-off is cost; Thermion is more expensive, he says.

However, heat output also is an issue with the MV-22 Ospreys landing on the decks of carriers and small-deck ships, so it is possible the Navy will take into account the operational use of these tiltrotor aircraft as it plots a way forward for the use of Thermion.

Though both F-35 BF-1 and BF-5 were unable to fly due to maintenance issues during the 3 hr. reporters were on the Wasp Aug. 28, Navy Capt. Erik Etz says the single-engine, stealthy aircraft had achieved a 90% availability rate since flying started early this month.

BF-1, which was scheduled to conduct a demonstration for the media event, was down due to a faulty cooling fan in the engine nacelle; this was repaired and test flights were conducted with the aircraft later that day. BF-5, a production-representative version, was having trouble with its thermal management subsystem.

During these tests, pilots are using the existing "Gen-2" helmet, made by Vision Systems International, a joint venture between Rockwell Collins and Elbit. This helmet includes the ISIE-10 night camera, which has problems with acuity in some night operations. Marine Corps Lt. Col. C.R. Clift, who is participating in the DT-2 test flights, says he has seen some of the results of flight testing with the upgraded ISIE-11 camera that will be put into the Gen 3 helmet, which is needed to allow pilots the full spectrum of operations expected for nighttime. He says he is "optimistic" and that "progress

has been made" with the new camera, which was flown in a Cessna in July. The Gen 3 helmet is slated to fly in the F-35 in early 2015.

The Marines plan to declare initial operational capability with their first F-35Bs by December 2015.