

'Smart Weapons' Capability Fielded On USAF F-16s; Software Developed By Lockheed Martin

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The U.S. Air Force recently released a software upgrade that significantly increases the combat capability of its F-16 Block 50 aircraft by including the latest U.S. "smart weapons."

Three new families of inertially aided munitions, often referred to as "smart weapons," are fully integrated in this software release. They are the GBU-31 Joint Direct Attack Munition (JDAM), the AGM-154 Joint Stand-Off Weapon (JSOW) and the CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD) series. All of these weapons employ an inertial guidance system for improved accuracy, with JDAM and JSOW also equipped with a Global Positioning System satellite guidance feature for even higher accuracy.

"These new weapons address a major airpower deficiency identified during the 1991 Gulf War -- the inability to strike targets accurately through clouds and smoke or from safe distances away from intense terminal enemy air defenses," said Col. Mark Shackelford, director of the F-16 Systems Program Office at Wright-Patterson Air Force Base, Ohio. "These all-weather precision weapons allow the delivery aircraft to 'launch and leave', or be free to maneuver, thus remaining at safer altitudes and distances from the target area. These weapons greatly increase the versatility, lethality and survivability of the F-16."

The F-16 is the first USAF aircraft to become operational with JSOW and WCMD and is the first USAF fighter to field the JDAM. The F-16 was instrumental in the development flight testing of all three new weapons.

"We integrated all three weapons as a package, with a high degree of commonality in the interfaces," said Donald W. Jones, vice president of F-16 programs. "This provided savings both in the initial integration and in future upgrades, plus simplifies the cockpit mechanization training for the pilot."

The software upgrade, known as 50T5, is the fifth such release for USAF's fleet of approximately 240 Block 50/52 F-16s. It also includes major enhancements to the aircraft's ability in one of its primary roles, suppression of enemy air defenses (SEAD). The modified aircraft will be compatible with the upgraded ASQ-213 HARM Targeting System (HTS) pod. The hardware/software upgrade to the HTS pod greatly improves system performance.

The software update also incorporates many improvements for the following systems: AGM-68 fire control radar, AGM-88 High-speed Anti-Radiation Missile (HARM), AGM-65 Maverick missile, AIM-120 Advanced Air-to-Air Medium Range Missile (AMRAAM), Improved Data Modem, Digital Terrain System and ALE-50 towed decoy.

The Improved Data Modem, a device that provides data-link capability using existing radios, previously had the capability to transmit and receive only SEAD target messages as configured on USAF Block 50 aircraft. The software has been expanded to include standard close air support target messages and an intra-flight data-link function for sharing data among flight members. The intra-flight data-link capability was first introduced in the F-16A/B Mid-Life Update for the European Participating Air Forces and was successfully employed in Operation Allied Force in 1999.

The main improvement to the Digital Terrain System is the inclusion of a predictive ground collision avoidance warning based on the digital elevation data base. This will significantly improve flight safety when operating over hills and known man-made obstructions, such as towers.

"Lockheed Martin has a very proactive approach to keeping its aircraft at the leading edge of capability and to ensure it is the right capability, even as requirements continue to change in modern warfare," Jones said. "We work closely with our customers to evaluate current and ongoing usage of the F-16 and develop programs that address changing mission requirements. We believe

the F-16 stands alone in its flexibility to adapt to today's changing requirements. In addition, having these new smart weapons reinforces the F-16's position as the most modern operational fighter in the world."

Development of the software update began in 1996. The added capabilities represent the largest update yet fielded for the Block 50 aircraft. Developmental flight testing was conducted at Edwards Air Force Base, Calif., from February 1998 to April 2000, and involved approximately 300 flights and 625 flight hours using four F-16 aircraft. In addition, many operational test and evaluation flights and tactics development flights were conducted at Eglin AFB, Fla., and Nellis AFB, Nev.

Block 50 F-16s at the 20th Fighter Wing, Shaw AFB, S.C., were the first to receive the software upgrade. Some of the aircraft were modified early to provide enhanced suppression/destruction of enemy air defense capability for participation in a scheduled Aerospace Expeditionary Force deployment this summer. Incorporation in the rest of the USAF Block 50 fleet is being paced by the hardware upgrade to the HTS pod and will occur over the next 14 months.

The F-16, the world's most sought-after fighter, is the choice of 20 countries. More than 4,000 aircraft have been delivered; hundreds more will be delivered to Bahrain, Egypt, the United States, Israel, Greece, the United Arab Emirates, Korea and Singapore; and production is expected to continue beyond 2010. Major upgrades for all F-16 versions are being incorporated to keep the fleet modern and fully supportable over the aircraft's long service life.

The F-16 is playing a major role as the durable and versatile "workhorse" in allied peacekeeping operations in the Balkans and Iraq.

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