



AIR COMBAT COMMAND

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JOINT DIRECT ATTACK MUNITIONS GBU 31/32

Current as of February 23, 2023



MISSION

The Joint Direct Attack Munition (JDAM) is a guidance tail kit that converts existing unguided free-fall bombs into accurate, adverse weather "smart" munitions.

With the addition of a new tail section that contains an inertial navigational system and a global positioning system guidance control unit, JDAM improves the accuracy of unguided, general purpose bombs in any weather condition. JDAM is a joint U.S. Air Force and Department of Navy program.

FEATURES

JDAM is a guided air-to-surface weapon that uses either the 2,000-pound BLU-109/MK 84 or the 1,000-pound BLU-110/MK 83 warheads as the payload. JDAM enables employment of accurate air-to-surface weapons against high priority fixed and relocatable targets from fighter and bomber aircraft. Guidance is facilitated through a tail control system and a GPS-aided inertial navigation system. The navigation system is initialized by transfer alignment from the aircraft that provides position and velocity vectors from the aircraft systems.

Once released from the aircraft, the JDAM autonomously navigates to the designated target coordinates. Target coordinates can be loaded into the aircraft before takeoff, manually altered by the aircrew before weapon release, and automatically entered through target designation with on-board aircraft sensors. In its most accurate mode, the JDAM system will provide a weapon circular error probable of 13 meters or less during free flight when GPS data is available. If GPS data is denied, the JDAM will achieve a 30-meter CEP or less for free flight times up to 100 seconds with a GPS quality handoff from the aircraft.

JDAM can be launched from very low to very high altitudes in a dive, toss, and loft, or in straight and level flight with an on-axis or off-axis delivery. JDAM enables multiple weapons to be directed against single or multiple targets on a single pass.

JDAM is currently compatible with F-35, A-10, F-22, F-117, AV-88, B-18, B-2A, B-52H, F-15E, F/A-18E/F, F-16C/D and F/A-18C/D aircraft.

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BACKGROUND

Desert Storm highlighted a shortfall in air-to-surface weapon capability. Adverse weather conditions limited employment of precision guided munitions. Unguided weapon accuracy was also degraded when delivered from medium and high altitudes. Research and development of an "adverse weather precision guided munition" began in 1992.

The first JDAMs were delivered in 1997 with operational testing conducted in 1998 and 1999. More than 450 JDAMs were dropped during testing, recording an unprecedented 95 percent system reliability while achieving a 9.6-meter accuracy rate. JDAM performance has been demonstrated in operationally representative tests including drops through clouds, rain and snow. These tests included a B-2 releasing 16 JDAMs on a single pass against multiple targets in two separate target areas.

JDAM and the B-2 made their combat debuts during Operation Allied Force. The B-2s, flying 30-hour, nonstop, round-trip flights from Whiteman Air Force Base, Mo., delivered more than 600 JDAMs during Allied Force. This combination of stealth and accuracy has revolutionized air warfare. Growth of the JDAM family of weapons expanded to the MK-82 500-pound version, which began development in late 1999, and a laser guided 500-pound version utilized for attacking moving targets.



Characteristics

Primary Function: Guided air-to-surface weapon

Contractor: Boeing Corp.

Length: (JDAM and warhead) GBU-31 (v) 1/B: 152.7 inches (387.9 centimeters); GBU-31 (v) 3/B: 148.6 inches (377.4 centimeters); GBU-32 (v) 1/B: 119.5 inches (303.5 centimeters)

Launch Weight: (JDAM and warhead) GBU-31 (v) 1/B: 2,036 pounds (925.4 kilograms); GBU-31 (v) 3/B: 2,115 pounds (961.4 kilograms); GBU-32 (v) 1/B: 1,013 pounds (460.5 kilograms)

Wingspan: GBU-31: 25 inches (63.5 centimeters); GBU-32: 19.6 ins. (49.8 centimeters)

Range: Up to 15 miles

Ceiling: 45,000-plus feet (13,677 meters)

Guidance System: GPS/INS

Unit cost: Approximately \$21,000 per tailkit (FY 01 dollars)

Date Deployed: 1999

Inventory: The tailkit is in full-rate production. Projected inventory is 158,000; and 82,000 for the U.S. Navy

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