

JOINT DIRECT ATTACK MUNITION (JDAM)



The Joint Direct Attack Munition (JDAM) is a low cost, autonomously controlled, adverse weather accurate guidance kit for the Air Force/Navy 2,000-pound MK-84 and BLU-109 general-purpose bombs and the 1,000-pound MK-83 and BLU-110 bombs. The JDAM tail kit will also be adapted to the MK-82 500-pound bomb. There are no planned design changes to the bombs (casing metallurgy, explosive fill, fusing mechanism, etc.), but the existing inventory weapons will be configured with JDAM guidance kits and accessories. The guidance is accomplished via an Inertial Navigation System (INS) aided by Global Position System (GPS). Actual weapon launch will occur when the aircrew has flown the aircraft into the weapon Launch Acceptability Region (LAR). The LAR is the three-dimensional volume in space in which the weapon may be released to fly either directly to a selected target or on a pre-determined bearing.

The JDAM kit yields delivery accuracy of less than 13 meters when GPS is available and less than 30 meters when GPS is absent or jammed after release. JDAM is employed by a variety of fighter/attack and bomber aircraft, allowing precision engagement from all altitudes under adverse environmental conditions. The primary aircraft for integration and operational testing of the 2,000-pound JDAM were the B-52H and the F/A-18C/D. The F-16, B-1, and B-2 are also operational users of JDAM. The 1,000-pound JDAM will be tested and integrated initially on the F/A-18C/D, AV-8B, and F-22. The 500-pound JDAM will be tested and integrated initially on the F/A-18C/D and B-2.

BACKGROUND INFORMATION

The April 1997 JDAM LRIP decision approved the procurement of approximately 1 percent of the total planned buy. In January 1998, USD(A&T) approved the delay of Milestone III to 3QFY99, and added a second LRIP for JDAM. In May 1998, the LRIP II decision approved the procurement of additional 2,000-pound MK-84 kits. In December 1998, USD(A&T) approved delay of Milestone III until 1QFY00. This was due to investigation of a bending fatigue problem discovered in the high-speed, low to medium altitude environment, resulting in cracks in the fin shafts in MK-84 tail assemblies carried on the inboard stations of the F/A-18C/D, and added a third LRIP for JDAM. Further delays in completing the development and flight testing of the new pin-lock tail actuator sub-system design necessitated an additional delay for Milestone III. In June 2000, USD(AT&L) approved further delay of Milestone III until April 2001 and approved the pin-lock configuration for a fourth LRIP for JDAM. This decision also added the F/A-18C/D as a threshold aircraft for the MK-83 due to software development delays for the AV-8B. The LRIP weapons comprise approximately 18 percent of the

planned total quantity. A waiver for exceeding 10 percent of the planned total procurement during LRIP was approved prior to the LRIP IV decision. Milestone III was approved in March 2001.

Live Fire Test and Evaluation of JDAM was not required because the lethality and survivability of both the MK-84 and BLU-109 bomb bodies were well documented.

TEST & EVALUATION ACTIVITY

Integration testing of the 2,000-pound JDAM on additional platforms, including the F-14 and F/A-18E/F, continues.

DT of 1,000-pound MK-83 is complete. An operational assessment of the DT results was accomplished. F/A-18C/D dedicated OT of the MK-83 is planned to begin December 2001. The scale of testing is expected to be less than testing for the 2,000-pound variants due to the high commonality of already tested components. Integration testing on the F-22 is planned to begin in FY02.

Developmental flight test is projected to begin for the MK-82 500-pound bomb on the F-16 and F-18C/D in 3QFY02 followed by operational flight testing in FY03.

TEST & EVALUATION ASSESSMENT

JDAM completed operational testing of the MK-84 and BLU-109 2,000-pound variants in August 2000. The operational testing was adequate to evaluate the operational effectiveness and suitability of the JDAM 2,000-pound class kit. Results were reported in the Operational Test and Evaluation Report in March 2001.

JDAM is operationally effective only in combination with existing fuzes, the FMU-139 and FMU-143, used by MK-84 and BLU-109 weapons. Testing was not completed with the FMU-152 Joint Programmable Fuze due to numerous arming failures and subsequent decertification of FMU-152/JDAM combinations for both Air Force and Navy use. The accuracy of the weapon, in GPS-aided and INS-only modes, and against both horizontal and vertical targets, exceeded requirements with high confidence. However, because of container durability, system reliability, and failure to meet mission planning timelines, JDAM capability as integrated with delivery platforms and other system components was assessed as not operationally suitable. Although improvements were demonstrated during the test period, deficiencies remain that will affect operational employment. However, the high degree of effectiveness and substantial increase in targeting and weapon delivery flexibility were sufficient to justify fielding of the JDAM weapon system.

To address the unresolved and unsatisfactory issues from IOT&E: a dedicated FMU-152 Joint Programmable Fuze/JDAM follow-on operational test and evaluation (FOT&E) is planned, and the redesigned container and system reliability will continue to be tracked and evaluated through FOT&E and lot acceptance testing. Mission planning time should not adversely affect JDAM effectiveness, but will be evaluated during FOT&E and MK-83 OT.

Six DT&E MK-83 weapons were dropped with effectiveness results sufficient for the program office to declare the DT phase complete and ready for FOT&E. A joint OT Readiness Review concurred in December 2001.