Massive Ordnance Penetrator (MOP)

Executive Summary

- In December 2016, the Air Force successfully completed one GBU-57 Massive Ordnance Penetrator (MOP) drop from a B-2 aircraft, followed by another weapon drop in January 2017, also from a B-2 aircraft; both on representative targets.
- In May 2017, the Air Force successfully completed a three-weapon drop from B-2 aircraft on a representative target.
- Collectively, the three GBU-57 MOP tests, conducted at the White Sands Missile Range (WSMR), New Mexico, demonstrated effectiveness of the Enhanced Threat Response (ETR)-IV weapon modifications.
- DOT&E published a classified Early Fielding Report summarizing the ETR-IV test results in November 2017.

System

- MOP is a large, GPS-guided, penetrating weapon with the ability to attack deeply-buried and hardened bunkers and tunnels. The warhead case is made from a special high-performance steel alloy and its design allows for a large explosive payload while maintaining the integrity of the penetrator case during impact.
- The B-2 Spirit is the only aircraft in the Air Force programmed to employ MOP.
- The GBU-57 warhead is more powerful than its predecessors, the BLU-109 and GBU-28.
- MOP was developed from an Air Force-led, Quick Reaction Capability and is a SECDEF special interest effort under DOT&E oversight. MOP transitioned to an Air Force program of record in August 2017.

Mission

Combatant Commanders use the B-2 equipped with MOP to conduct pre-planned, day or night attacks against defended point targets vulnerable to blast and fragmentation effects and requiring significant penetration, such as hardened and deeply buried facilities.

Major Contractor

The Boeing Company, Defense, Space & Security – St. Louis, Missouri

Activity

- In December 2016, the Air Force conducted one live weapon drop on a representative target at WSMR to evaluate weapon functionality with the ETR-IV modifications. An Air Force B-2 aircraft flew the mission.
- In January 2017, the Air Force conducted an additional single-weapon test, also on a representative target at WSMR, to evaluate weapon effectiveness. An Air Force B-2 aircraft flew the mission.
- In May 2017, the Air Force conducted a three-weapon test on a representative target at WSMR to evaluate ETR-IV modifications and to test weapon effectiveness. Three Air Force B-2 aircraft each flew one sortie to complete the mission.
- These events completed the ETR-IV test.
- DOT&E submitted a classified Early Fielding Report in November 2017 detailing the results of ETR-IV.
- The Air Force conducted all testing in accordance with the DOT&E-approved Quick Reaction Capability test plan.

Assessment

- The ETR-IV testing successfully demonstrated weapon effectiveness of the current weapon configuration when paired with proper tactics, techniques, and procedures (TTPs). A partial failure on the second ETR-IV test event identified a failure mode that appears to occur under specific circumstances with improper TTPs.
- No further ETR testing is currently planned.

Recommendations

- Status of Previous Recommendations. There were no previous recommendations for this program.
- FY17 Recommendations.
  1. The Air Force should identify the root cause of the partial failure of the second ETR-IV test event in January 2017.
  2. The Defense Threat Reduction Agency should continue to improve the fidelity of the modeling and simulation tools intended to be used for MOP weaponeering.