

# Massive Ordnance Penetrator Modification

The Air Force conducted testing of the Large Penetrator Smart Fuze (LPSF) integrated into the Massive Ordnance Penetrator (MOP) against low-fidelity subscale and full-scale targets. The Air Force must also execute the planned subscale tests and a final full-scale qualification event to determine MOP operational effectiveness. The Air Force delayed the fielding of the LPSF-enabled MOP from FY22 to at least FY25 due to delays in constructing the required target surrogates.



## System Description

The Guided Bomb Unit (GBU)-57 MOP is a large, GPS-guided, penetrating weapon designed to attack Hard and Deeply Buried Targets (HDBTs) such as bunkers and tunnels. The GBU-57 warhead is intended to be more lethal than its predecessors, the GBU-28 and GBU-37. The LPSF integrates and advances smart fuze capability into the MOP warhead, providing increased probability of kill against HDBTs by minimizing the effects of target intelligence uncertainty. The B-2 Spirit is the only aircraft in the Air Force inventory programmed to employ the MOP.

## Program

The MOP was developed from an Air Force-led Quick Reaction Capability (QRC) as a SECDEF special interest effort. The MOP transitioned to the Air Force as an Acquisition Category IC program in August 2017. The Air Force established the LPSF QRC program in August 2018 to respond to an Urgent Operational Need, validated in July 2018, to integrate and qualify a smart fuze capability into the MOP. This upgrade provides the capability to hold additional high-value HDBTs with limited threat intelligence at risk.

The Air Force was on track to field an LPSF-enabled MOP in FY22. Contracting award delays and significant Defense Threat Reduction Agency (DTRA) target construction overruns in the HDBT Defense System Program Element resulted in the Air Force Program Executive Officer for Weapons pulling funds from the full-scale LPSF MOP testing. Based on current funding options, the LPSF MOP fielding will be in FY25 or later.

## Major Contractor

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

## Test Adequacy

The Air Force conducted LPSF QRC testing in accordance with the DOT&E-approved Smart Fuzing Test Strategy, dated December 2020. The GBU-57 MOP intends to complete accuracy validation drops in a contested GPS environment during 1QFY22. In December 2020, the Air Force conducted one live weapon drop from a B-2 on a simple tunnel target to evaluate the initial LPSF design. In August 2021, the Air Force conducted one live weapon drop from a B-2 to validate MOP performance. In FY21, the Air Force completed 13 of 16 sled tests.

Prior to funding cuts, delays with contracting processes and internal test plan reviews for subscale and full-scale targets constructed by DTRA resulted in construction delays and cost overruns. Target construction was also delayed by pandemic-induced supply and labor shortages and the loss of priority status at the test range.

The next phase of the program, currently unfunded, intends to finalize smart fuze software, improve weaponeering tactics, and validate through demonstration lower-risk smart fuze capability against a full-scale, high-fidelity underground target.

## Performance

In accordance with the MOP Security Classification Guide, preliminary analysis of effectiveness and suitability is provided in the Controlled Unclassified

Information edition of this report. The survivability assessment of MOP in a contested environment is classified.

## Recommendations

The Air Force should:

1. Revalidate the Urgent Operational Need requirement for the LPSF QRC against legacy and pacing threats.
2. Complete the LPSF testing to validate the ability to meet Combatant Command requirements.
3. Develop and submit a MOP test plan for DOT&E approval to enhance communication and coordination between stakeholders and provide decision-makers with better visibility of the MOP program.

DTRA should:

1. Evaluate and expedite contracting and test plan review processes to minimize delays to target construction.