

120-mm Advanced Multi-Purpose (AMP), XM1147

Executive Summary

- DOT&E approved the operational test plan for the XM1147 Advanced Multi-Purpose (AMP) Cartridge, 120-mm, High Explosive Multi-Purpose with Tracer Round, Limited User Test (LUT) in March 2020.
- The Army planned to conduct the LUT at Yuma Proving Ground, Arizona, April 21 – 23, 2020, but canceled the test due to coronavirus (COVID-19) pandemic restrictions. The Army plans to conduct an IOT&E of the AMP round in October 2021.
- The Army plans to conduct an operational assessment (OA) in 3QFY21 after the Milestone C decision. During the OA, soldiers will engage Anti-Tank Guided Missile (ATGM) teams and double reinforced concrete walls (DRCW) in order to assess the two new capabilities prior to the IOT&E.
- The Army began AMP live fire, lethality testing in August 2020, which included: (1) ammunition sensitivity testing to determine any crew vulnerability to an onboard AMP energetic reaction, (2) hard target (bunkers and walls) testing to gather data to evaluate performance against these targets, and (3) armor characterization testing to collect data to support future modeling and simulation (M&S) of AMP performance against anti-armor targets.

System

- The XM1147 120-mm AMP round is a line-of-sight tank round fired from the Abrams tank.
- The Army intends the AMP round to replace the M830 High Explosive Anti-Tank Multi-Purpose with Tracer (HEAT-MP-T), the M830A1 HEAT-MP-T, the M1028 Canister (CAN) round, and the M908 Obstacle Reducing with Tracer (OR-T) round. The AMP round consolidates the capabilities of these four rounds into a single munition.

Activity

- The Army planned to conduct the LUT at Yuma Proving Ground, Arizona, April 21 – 23, 2020. The Army canceled the test due to COVID-19 restrictions.
- The Army does not plan to reschedule the LUT. The Army plans to conduct an OA in 3QFY21 after the Milestone C decision. The OA will focus on soldiers engaging ATGM teams and DRCWs to assess the two new capabilities prior to the IOT&E. The Army intends to evaluate a tank crew's ability to perform mission-essential tasks; inform tactics, techniques, and procedures/soldier training packet development; and reduce IOT&E risk.
- The Army plans to conduct an IOT&E in September 2021.



- The Army desires to add new capabilities for engaging dismounted ATGM teams at extended ranges and breaching DRCW in support of dismounted infantry.
- The AMP round has three defeat modes including Point Detonate (PD), Point Detonate Delay (PDD), and airburst used to defeat a combination of targets including ATGM teams, dismounted infantry, DRCW, light armor, bunkers, obstacles, and armor.
- The Army intends the AMP round to provide the ability to conduct the breach of a DRCW with greater standoff and fewer rounds
- The AMP round will use the same Ammunition Data Link hardware interface integrated on the Abrams platform for the 120-mm M829E4 Kinetic Energy munition.
- The Army developed a training round for the AMP round.

Mission

Commanders employ units equipped with the XM1147 120-mm AMP round to close with and destroy the enemy by direct fire across the full range of military operations.

Major Contractor

Northrop Grumman Defense Systems – Minneapolis, Minnesota

- Live fire and integrated testing was conducted in accordance with a DOT&E-approved Test and Evaluation Master Plan (TEMP) and live fire test plans.
- DOT&E approved the operational test plan for the XM1147 AMP Cartridge, 120-mm, High Explosive Multi-Purpose with Tracer Round LUT in March 2020.
- The Army began AMP live fire, lethality testing in June 2020, which included:
 - Ammunition sensitivity testing to determine any crew vulnerability to an onboard AMP energetic reaction
 - Hard target (bunkers and walls) testing to gather data to evaluate performance against these targets

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- Armor characterization testing to collect data to support future M&S of AMP performance against anti-armor targets
- The Army intends to conduct additional live fire testing against armored vehicle targets to support the 3QFY22 Full-Rate Production decision.

Assessment

- The Army developed a training round for the AMP round. The training round does not replicate the new airburst capability to engage dismounted ATGM teams at extended ranges. Because it is an inert warhead, the training round does not train a gunner's ability to develop subsequent aim points when breaching a DRCW. Under the current training strategy, the only opportunity to train those engagements will be through simulation.
- The Army designed the AMP LUT to focus on the new capabilities for engaging dismounted ATGM teams at extended

ranges, and breaching DRCW in support of dismounted infantry by having soldiers fire against those targets as part of the test. The planned OA is expected to focus on these new capabilities.

- AMP lethality testing demonstrated the difficulty for the gunner to determine the aimpoint for subsequent shot placement when breaching a DRCW at the higher requirement angles of obliquity.
- Analysis of live fire test data is ongoing. DOT&E will detail the AMP lethality in the DOT&E report supporting the Full-Rate Production decision.

Recommendations

The Army should:

1. Update the tank crew simulator to support crew training on the new capabilities of the AMP round.
2. Review the obliquity requirement for breaching a DRCW.