Joint Air-to-Ground Missile (JAGM)

The Joint Air-to-Ground Missile (JAGM) is operationally effective, suitable, and lethal against a wide array of operationally representative targets when launched from the AH-64E Apache attack helicopter. To support the full-rate production decision in 3QFY22, the Navy needs to complete the second phase of operational testing intended to demonstrate JAGM operational effectiveness, suitability, and lethality as fired from the Marine's AH-1Z Viper attack helicopter.

System Description

JAGM is an air-to-ground, precision-guided missile with two new seekers that replicate and combine the capabilities of the existing laser-guided HELLFIRE Romeo and radar-guided Longbow HELLFIRE missiles. Army and Marine Corps commanders intend to employ the JAGM from helicopters and unmanned aircraft to engage enemy combatants in stationary and moving armored and unarmored vehicles, within complex building and bunker structures, in small boats, and in the open.

Program

The JAGM is an Acquisition Category IC joint program led by the Army's Program Executive Office Missile and Space, Redstone Arsenal, Alabama. DOT&E approved the updated Test and Evaluation Master Plan on September 9, 2020. The Army completed IOT&E I in 3QFY20 but did not make a production decision due to a delay in IOT&E II required for the evaluation of the JAGM when launched from the Navy's threshold platform. The Navy is scheduled to complete IOT&E II in 1QFY22 to support a full-rate production decision in 3QFY22.

Major Contractor

Lockheed Martin Corporation, Missiles and Fire Control Division – Orlando, Florida.

Test Adequacy

The JAGM IOT&E I was adequate to assess operational effectiveness, suitability, and survivability of JAGM when launched from the AH-64E Apache attack helicopter, the Army's threshold platform. The Army Test and Evaluation Command conducted testing in accordance with a DOT&E-approved test plan. The IOT&E I included new equipment training, force-on-force missions, and live fire engagements.

LFT&E, conducted in accordance with DOT&E-approved test plans, was adequate to evaluate JAGM lethality against all required ground and maritime targets.

The JAGM IOT&E II, intended to assess JAGM performance when launched from the Marine's AH-1Z Viper attack helicopter, has been delayed due to platform software performance challenges. The Navy is continuing to address interoperability concerns and is scheduled to conduct IOT&E II in 1QFY22.

Performance

Effectiveness

The AH-64E Apache attack helicopter units firing the JAGM are operationally effective, exceeding required hit performance requirements against a wide array of operationally representative targets. The Army developed an effective and intuitive pilot-vehicle interface for aircrews. The flexibility of the JAGM's dual seeker provides aircrews a greater ability to adapt to the changing battlefield environment. The dual guidance capability mitigates the effects of battlefield obscurants such as smoke, dust, and foliage that limit the performance of legacy semi-active laser HELLFIRE missiles.

The Navy has not yet completed operational testing of the JAGM launched from the Marine's AH-1Z Viper attack helicopter, the Navy's threshold platform. There have been numerous software issues with the integration of the JAGM onto the AH-1Z's platform systems. The JAGM software has remained stable. The Navy believes integration faults are limited to the AH-1Z platform.

The JAGM demonstrated adequate lethality against heavy and light armor, structures, personnel in the open, maritime targets, and classified counterinsurgency targets. The height of burst is higher than expected when engaging personnel in the open and appears unrelated to surrounding objects or vehicles.

Suitability

The JAGM fired from the AH-64E Apache attack helicopter is operationally suitable, exceeding prelaunch and inflight reliability requirements. The Army continues to conduct reliability test engagements as part of their lot acceptance process. The Army has conducted environmental testing in a controlled chamber environment but has not completed live fire testing in an extreme cold weather environment, such as Alaska. Live fire testing in an Arctic environment may reveal reliability concerns that are masked in a static chamber test environment.

The program has completed some developmental and integrated testing on the AH-1Z. The Navy has not completed operational testing needed to verify the JAGM's operational suitability.

Survivability

The survivability assessment of JAGM against insider and nearsider cyber threats is available in the classified JAGM IOT&E report, published in August 2020. The Army has not assessed the JAGM's survivability against an outsider threat or the survivability of the JAGM's supply chain.

The Navy is scheduled to conduct additional cybersecurity testing in 2QFY22 to assess the survivability of the JAGM as integrated on the AH-1Z Viper. Cybersecurity test plans are in development and have not yet been submitted to DOT&E for review and approval.

Recommendations

The Army should:

1. Conduct cybersecurity testing to assess the survivability of the JAGM supply chain and potential vulnerabilities to an outsider threat.
2. Correct deficiencies with the height of the burst sensor and adjust tactics, techniques, and procedures to ensure lethality against personnel in the open.
3. Demonstrate JAGM effectiveness and lethality against emerging threats, including those with countermeasure systems.
4. Continue to improve reliability through lot acceptance and reliability testing.
5. Conduct missile flight testing in the Arctic to assess performance of sustained extreme cold temperatures.