

# Terrain Shaping Obstacles (TSO)



The XM204 Interim Top Attack system will complete government testing in FY23 with an urgent materiel release (UMR) decision planned for late FY23. The Army intends XM204 to support the U.S. Army Europe (USAREUR) Operational Needs Statement (ONS) for an interim Top Attack (TA) anti-vehicle capability. The schedule-driven, compressed timeline of the XM204 system development resulted in an inadequate test strategy that does not support DOT&E's assessment of operational effectiveness and suitability across the operational environment.

## SYSTEM DESCRIPTION

The XM204 is a U.S. landmine policy compliant, hand emplaced system that provides an interim TA anti-vehicle capability. The XM204 is designed to autonomously detect, track, and engage heavy and light tracked vehicles within its zone of authority when armed. It may be used as a standalone obstacle or be integrated with the XM343 Standoff Activated Volcano Obstacle (SAVO) to create a complex obstacle containing both top and bottom attack mines.

## MISSION

The XM204 will provide Brigade Combat Teams and Engineer Brigades in a deliberate defense, the ability to create disrupt/fix or turn/block directed obstacles against enemy armored formations maneuvering across lightly vegetated, open, and rolling terrain. Directed obstacles are used by Brigade Combat Teams to slow the rate or alter the direction of advancing enemy armored formations.

## PROGRAM

The Army intends the XM204 program to fulfill the interim TA capability required by USAREUR ONS 18-22702, which directed the acceleration of mature technology, development, and limited fielding of an interim Close Terrain Shaping Obstacle (CTSO) TA solution by 2023. The program

plans to produce 500 units for USAREUR. The XM204 program does not have a defined acquisition pathway but is most aligned with the Urgent Capability Acquisition pathway. DOT&E will produce an Early Fielding Report to inform the Army UMR decision planned for late FY23, but will not be able to make an effectiveness and suitability determination due to the inadequate test strategy. There is a follow-on program of record known as CTSO Increment 1, which will become the Army's enduring TA capability.

DOT&E approved the XM204 Cooperative Vulnerability and Penetration Assessment (CVPA) Test Plan in July 2021, a Live Fire Test Design Plan in March 2022, an Adversarial Assessment (AA) Test Plan in April 2022, and an Operational Assessment (OA) Operational Test Plan in July 2022.

### » MAJOR CONTRACTOR

- Textron Systems Corporation – Wilmington, Massachusetts

## TEST ADEQUACY

The XM204 T&E strategy was constrained due to the Army's intent to reach initial operational capability by 4QFY23. The planned DT was not robust enough to support the modeling and simulation effort. The overall test strategy was not adequate to determine operational effectiveness and suitability across the expected operational environment to include

various terrain types, weather conditions, and complex battlefield environments.

The majority of government-led DT and OT occurred in FY22 and all remaining testing is expected to be completed in FY23. This testing includes:

- A cyber CVPA in October 2021 and an AA in May 2022 conducted in accordance with DOT&E-approved test plans. Both were observed by DOT&E personnel.
- A third Soldier Touch Point conducted in January 2022.
- An OA in July and August 2022 conducted in accordance with a DOT&E-approved test plan and was observed by DOT&E personnel.
- Ongoing government-led System Verification Testing with planned completion in early FY23. System Verification Testing includes live warhead testing against light and heavy tracked vehicles and is being conducted in accordance with the DOT&E-approved Live Fire Test Design Plan.
- A DT series that will be completed in early FY23 to include Safety and Sequential Transportability, Adverse Environment, Electromagnetic Environment Effects, Explosive Ordnance Disposal, Final Hazard Classification, 1660 Pallet Unitization, XM343 SAVO initiation, and Self Destruct testing.

DOT&E will publish an XM204 early fielding report with classified annex to include an evaluation of



completed operational and lethality testing in 2QFY23.

## PERFORMANCE

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### » EFFECTIVENESS

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Due to an abbreviated DT test program and limited number of full tactical system shots against realistic moving targets, the true hit performance and warhead lethality is difficult to estimate at this time. A final series of live shots against moving targets occurring in early FY23 will help support a more robust estimate.

Soldier feedback indicates that the training provided by the Army did not properly explain terrain conditions that may impact the performance of the XM204 sensors, resulting in soldiers emplacing the system in locations where it was not able to track enemy vehicles. Soldiers suggested that extending the firing range and having the ability to conceal the XM204 would improve its overall operational effectiveness.

### » SUITABILITY

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Contractor-led testing in FY21 identified several design and manufacturing issues and implemented fixes. Test articles that included these fixes were delivered to the Army in July of FY22 for government-led DT and the OA.

Government-led safety and sequential transportability testing resulted in several new failures that, as of this writing, are still under investigation. The XM204 does not appear to be on track to meet its reliability requirement.

Early results of the OA suggest that soldiers are able to transport and emplace the XM204 in open, lightly vegetated terrain under clear, hot weather conditions. They are able to quickly create point, gauntlet, and disrupt/fix directed obstacles per their Commander's intent. Soldiers are able to arm the system and egress to a safe distance within the safe separation time limits of the system.

### » SURVIVABILITY

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The Army Test and Evaluation Command conducted a CVPA and AA on the XM204. Results will be published in the classified annex to the early fielding report.

## RECOMMENDATIONS

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The Army should:

1. Address deficiencies found in the training materials to ensure that soldiers emplacing the XM204 understand the sensor limitations and avoid terrain features that would impact system performance.
2. Conduct DOT&E-approved follow-on testing in operationally realistic environments to support an effectiveness and suitability determination.