

Mobile Protected Firepower (MPF)



The Army completed the Middle Tier of Acquisition (MTA) phase for the Mobile Protected Firepower (MPF) and transitioned to a Major Capability Acquisition program at Milestone C in June 2022. The MTA phase included two vendors: BAE Systems and General Dynamics Land Systems (GDLS). The Army selected the GDLS design in June 2022 to support low-rate initial production. The MPF demonstrated satisfactory progress toward achieving operational effectiveness, reliability, and availability to support infantry brigade operations. The Army is working to correct vulnerabilities to threats discovered during the MTA phase. Due to the immaturity of the prototype, cyber survivability testing was conducted during developmental testing, but not operational testing. It will be evaluated during operational testing in support of the Full-Rate Production decision in 2QFY25.

SYSTEM DESCRIPTION

The MPF is an armored track vehicle with a large caliber main gun that provides the Brigade Combat Team (BCT) with a mobile, protected, direct fire capability against light armored vehicles, hardened enemy fortifications, and dismounted personnel. The MPF will be able to fire a broad spectrum of currently fielded munitions that can achieve lethal effects against a variety of targets in support of BCT missions. The MPF design includes armor, smoke grenade launchers, blow-off panels, and automatic fire suppression intended to enhance survivability against direct/indirect fire, rocket-propelled grenades, and underbody threats.

MISSION

BCTs will employ the MPF across a range of military operations, including forced and early entry operations in high Anti-Access/Area Denial environments, in direct support of infantry squads, platoons, and companies. The purpose of MPF is to engage and neutralize enemy personnel, bunkers, machine gun positions, fortifications, and strongpoints, as well as defeat light armored threats.

PROGRAM

MPF is now an Acquisition Category IB program of record following Milestone C. The Army

completed the MTA phase for the MPF and entered Milestone C in June 2022. The MTA phase included two vendors: BAE Systems and GDLS. The Army selected the GDLS design in June 2022 to support low-rate initial production. DOT&E approved the MPF Milestone C Test and Evaluation Master Plan in May 2022.

» MAJOR CONTRACTOR

- General Dynamics Land Systems – Sterling Heights, Michigan

TEST ADEQUACY

During the MTA phase the Army Test and Evaluation Command conducted the Limited User Test from September 15 to November 3, 2021. Operational testing was conducted in accordance with DOT&E-approved test plans and was adequate to inform the Milestone C in June 2022. DOT&E observed the test and published an Operational Assessment Report in April 2022.

The Army Test and Evaluation Command conducted Live Fire testing from March 2019 to December 2021 in accordance with DOT&E-approved test plans, and observed by DOT&E. The MTA live fire events were sufficient to inform the survivability and force protection considerations for vendor down-select. Each contractor provided armor coupons and two ballistic hull and turret structures for live fire survivability

testing. The Army's LFT&E program included: (1) armor coupon testing to assess performance of armor recipes against penetration from operationally relevant threats; (2) exploitation testing to evaluate integrated armor solutions and determine if welds, seams, bolts, hatches, and doors are vulnerable to penetration from direct and indirect fire threats; and (3) ballistic, hull, and turret testing to evaluate structural response to required threats. A classified LFT&E annex was included in the DOT&E Operational Assessment Report published in April 2022.

PERFORMANCE

» EFFECTIVENESS

The MPF's progress toward achieving operational effectiveness is satisfactory. Risk to achieving operational effectiveness include: minimizing the MPF's audible signature, improving compatibility of MPF and infantry target designators to allow sharing of target information, and improving the usability of the intercom system. The companies equipped with the MPF accomplished their missions more consistently than a unit without MPF support and took fewer casualties during force-on-force operations. During gunnery, the MPF crews qualified on gunnery tables developed for the MPF. The MPF platoon was able to communicate with the supported infantry unit, and their high-powered radios provided additional communications capability to the dismounted infantry soldiers.

» **SUITABILITY**

Vehicle reliability and availability support infantry brigade operations. The MPF shares many fire control components with the Abrams tank. The similarity in turrets will allow MPF crews to train on existing Abrams simulators, and reduces the vehicle-specific training that maintainers will need to support the MPF. Developmental testing found that the MPF had high levels of toxic fumes when firing the main gun, requiring modifications to crew procedures during gunnery to mitigate the build-up of fumes in the turret.

» **SURVIVABILITY**

Live Fire testing using operationally realistic threats

revealed vulnerabilities. Details, including threat descriptions and survivability performance, can be found in the classified LFT&E annex to the DOT&E Operational Assessment Report published in April 2022. The classified annex assesses test adequacy and platform survivability of the MPF when exposed to relevant threats. The Army is implementing the survivability recommendations identified in the classified annex for GDLS. The Army will begin lethality and live fire testing of GDLS-produced low-rate initial production-representative vehicles in FY23.

RECOMMENDATIONS

The Army should:

1. Continue implementing system design fixes to reduce the high levels of toxic fumes when firing the main gun.
2. Continue improving the vehicle's cooling system to reduce preventive maintenance checks and services time required.
3. Continue addressing the survivability recommendations highlighted in the classified annex found in the DOT&E Operational Assessment Report published in April 2022.
4. Improve Real-Time Casualty Assessment capabilities to replicate target effects against non-vehicle targets such as bunkers and walls to improve combat realism and training value.