

## XM17/XM18 Modular Handgun System (MHS)

### Executive Summary

- The vendor conducted contractor testing of the XM17 and the XM18 Modular Handgun Systems (MHS) to implement reliability improvements from October 2017 through March 2018.
- The upgraded configuration of the MHS demonstrated improved reliability firing for both XM1152 ball ammunition and XM1153 jacketed hollow point ammunition during the Army's second Production Verification Test (PVT2).
- The MHS meets or exceeds requirements for accuracy, lethality, ergonomics, and safety.

### System

- The MHS program is comprised of the XM17 full-size variant and XM18 compact variant 9 mm pistols. The majority of Army MHS users will use the XM17 variant. Individuals and units requiring a concealed weapon, will use the XM18 variant.
- Both variants include modular features to allow for the future addition of different targeting enablers (e.g., infrared and visible laser pointers), pistol grips, and alternate magazine options.
  - Targeting enablers can be mounted on the weapon using standard Picatinny rails.
  - Small, medium, and large polymer grip modules accommodate different hand sizes.
- The XM17 and XM18 pistols are mechanically locked, short-recoil operated weapons. Common features include: a reversible magazine catch to accommodate left- or right-handed shooters, ambidextrous manual safety, and external slide catch lever. Loading is automatic with each shot fired, until the magazine is empty. The slide is locked to the rear after the last shot is fired.
- The MHS incorporates a non-reflective, neutral color for detection avoidance. The Army intends for the MHS to be operable with a future sound suppressor.
- The Army requires the weapon to use ball ammunition and jacketed hollow point ammunition. The XM1152 ball cartridge uses an 115 grain truncated nose full metal jacket projectile, and the XM1153 jacketed hollow point cartridge uses a 147 grain jacketed hollow point projectile.
- The contractor provides two 21-round magazines and one 17-round magazine with each pistol as part of the system.
- The MHS is an Army program with joint interest. The Army, including Army Special Operations Command, intends to purchase approximately 233,429 pistols, of which approximately 4.5 percent will be XM18s. The Navy, Marine Corps, and Air Force may collectively purchase 224,000 pistols under the same contract.



1 - XM17, Full Size, with 21-round magazine  
 2 - XM18, Compact, with 17-round magazine  
 3 - XM1152 Ball round  
 4 - XM1153 Jacketed Hollow Point (JHP) round  
 5 - XM1156 Dummy round  
 6 - XM1157 Blank round

### Mission

- Military personnel conducting core mission combat operations use the MHS for personal self-defense and as their secondary weapon system. Core missions include anti-terrorism, direct action, force protection, anti-hijacking, evasion, special investigations, special operations, reconnaissance, protective service, law enforcement, resource protection, base security, terminal air control, and combat search and rescue. Civil affairs and peacekeeping operations are also core missions in some Services.
- Military personnel conducting collateral activities use the MHS as their primary weapon system. Collateral activities include foreign and U.S. humanitarian assistance,

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counter-terrorism, and counter-narcotics, all of which may involve military operations in urban terrain/operations, close quarters battle, and other operations on the battlefield.

## Major Contractors

- Pistol: SIG SAUER Inc. – Newington, New Hampshire
- Ammunition: Olin-Winchester – East Alton, Illinois

## Activity

- The MHS experienced a large number of stoppages in early developmental testing with ball ammunition. To address these problems, a tiger team was created consisting of government and contractor personnel to determine root cause.
- The Army completed IOT&E for the XM17 and the XM18 with jacketed hollow point ammunition in September 2017. The final IOT&E and LFT&E report were held until the completion of all developmental test events.
- To improve the reliability with ball ammunition without degrading any of the other attributes of the weapon, the vendor made adjustments to the magazine spring, magazine follower, slide geometry, and the internal components.
- The vendor conducted contractor testing on the XM17 and the XM18 with both ball and jacketed hollow point ammunition from October 2017 through March 2018 to address the deficiencies identified during early testing.
- The Army conducted PVT-2, in coordination with DOT&E and with the same procedures as the DOT&E-approved PVT-1 testing, to validate the fixes implemented during contractor testing. The Army released the preliminary results in September 2018.
- During PVT-2, the Army shot 16,500 rounds on five weapons for a total of 82,500 rounds per weapon/ammunition combination from the test stand. DOT&E published the IOT&E and LFT&E Report for the XM17 and XM18 in December 2018 upon completion of the Army's assessment of PVT-2.
- The Army intends to have a Full-Rate Production decision in November 2018.

## Assessment

- DOT&E assessed that the XM17 and the XM18 are operationally effective and operationally suitable with jacketed hollow point ammunition. Both are lethal with the ball and jacketed hollow point ammunition. Details are found in the DOT&E IOT&E and LFT&E report.
- Analysis from PVT-2 and findings from IOT&E testing confirms that the upgraded MHS configuration met or

exceeded their requirements for lethality, accuracy, ergonomics, and safety.

- Data from the Army Evaluation Center (AEC) analysis of PVT-2 reliability testing indicate that the changes made to the weapon and magazine have led to improvements to the MHS reliability with ball ammunition when compared to the PVT-1 conducted in 2017, as measured by Mean Rounds Between Failures (MRBF) and Mean Rounds Between Stoppages (MRBS).
- Both the XM17 and XM18 exceed the MRBF requirement of 5,000 MRBF (96 percent probability of completing two 99-round missions without a single failure).
- The XM18 with both ball and jacketed hollow point ammunition exceeds the MRBS requirement of 2,000 MRBS (95 percent probability of completing one 99-round mission without a single stoppage). The XM17 with ball and jacketed hollow point ammunition demonstrated 93 percent and 94 percent probability, respectively, of completing one 99-round mission without a single stoppage.

		XM17 with Ball	XM17 with JHP	XM18 with Ball	XM18 with JHP
PVT-1 (AEC Results)	MRBS	*431	2,709	*358	*1,779
	MRBF	7,009	15,501	4,352	8,895
PVT-2 (AEC Final Results)	MRBS	1,566	1,880	3,185	7,833
	MRBF	6,349	10,321	7,009	15,501
PVT – Production Verification Test; AEC – Army Evaluation Center; JHP – Jacketed Hollow Point Ammunition; MRBS – Mean Rounds Between Stoppages; MRBF – Mean Rounds Between Failures  * Due to high variance between results of the five weapons tested, and the inability to statistically combine all five weapons in the grouping, these are median values. All other figures in this table are 80 percent lower confidence bound of the combined data for the five weapons in those groupings.					

## Recommendation

1. The Army should confirm reliability fixes to both the XM17 and XM18 during initial fielding to confirm that fixes do not adversely affect operational effectiveness and suitability.