Project Manager Soldier Weapons and the XM8: Applying Future Technology to Benefit Today's Soldier

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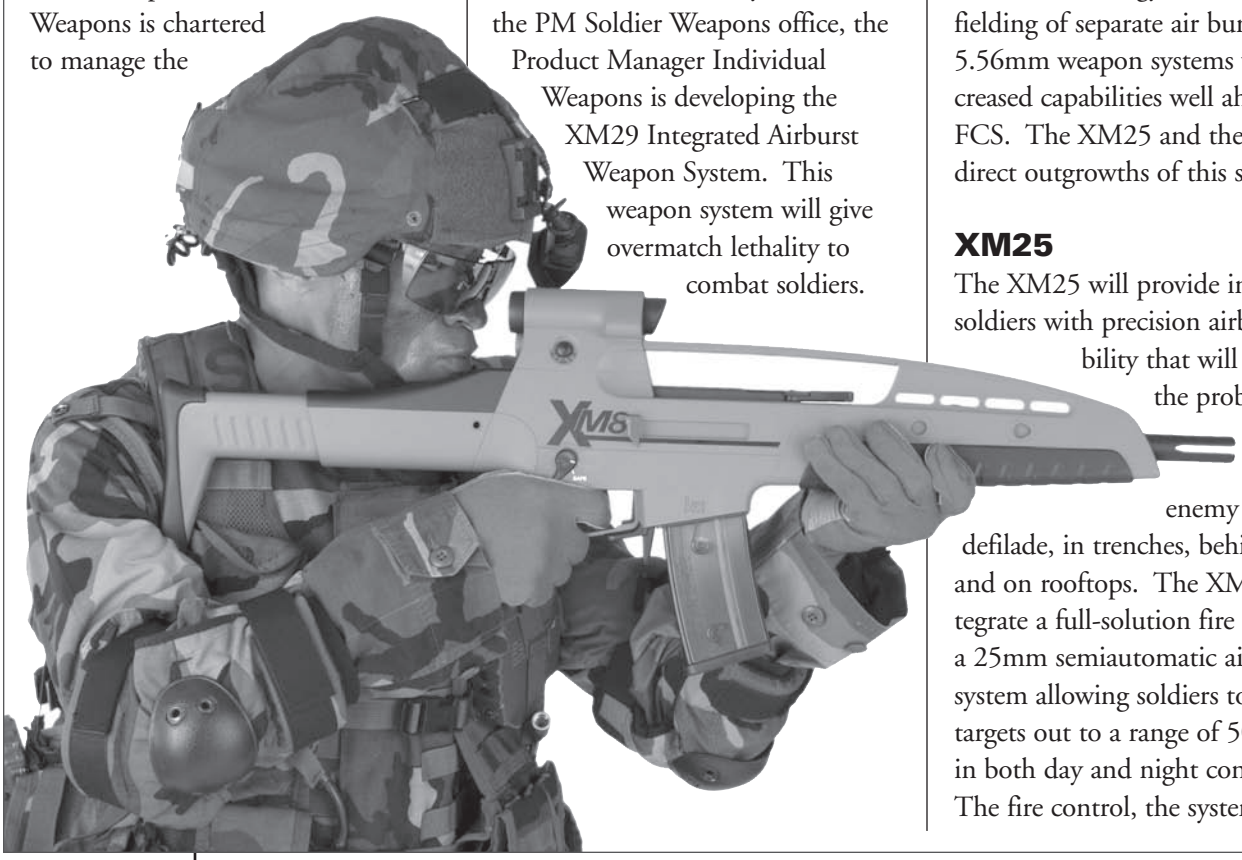
For the first time in Army history, there is a single office that centralizes all soldier support equipment. Activated June 7, 2002, Program Executive Office (PEO) Soldier has the mission to "Arm and equip soldiers to dominate the full spectrum of peace and war now and in the future." Within the PEO's portfolio are more than 300 programs. Executing these programs are three project manager (PM) offices: PM Soldier Warrior; PM Soldier Weapons; and PM Soldier Sensors and Equipment.

PEO Soldier is supporting development of the Objective Force Warrior (OFW) program to further ensure battlefield dominance by soldiers today and in the future. Responsible for the life cycle of all individual and crew-served weapons, PM Soldier Weapons is chartered to manage the development, acquisition and support of small-arms weapons and munitions for both mounted and dismounted soldiers.

PM Soldier Weapons is developing a family of weapons that will provide increased OFW lethality. Within the PM Soldier Weapons office, the Product Manager Individual Weapons is developing the XM29 Integrated Airburst Weapon System. This weapon system will give overmatch lethality to combat soldiers.



The XM29 integrated dual munitions weapon system incorporates a 5.56mm kinetic energy weapon and a semiautomatic, 25mm, air-bursting munitions launcher with full-solution control. The XM29 will provide precisely delivered air-burst ammunition in military operations on urban terrain and complex terrain at ranges exceeding the M203 Grenade Launcher with five times the lethality. Although the system is scheduled to support the Future Combat Systems (FCS), the PM Individual Weapons has transformed the planned strategy into a spiral development approach that allows fielding of capabilities as they mature. This strategy will allow for fielding of separate air bursting and 5.56mm weapon systems with increased capabilities well ahead of FCS. The XM25 and the XM8 are direct outgrowths of this strategy.

XM25

The XM25 will provide individual soldiers with precision airburst capability that will increase the probability of incapacitation of enemy forces in defilade, in trenches, behind trees and on rooftops. The XM25 will integrate a full-solution fire control to a 25mm semiautomatic air-bursting system allowing soldiers to engage targets out to a range of 500 meters in both day and night conditions. The fire control, the systems' brains,

integrates a thermal sensor, direct view optic, laser range finder and environmental sensor with a ballistic computer, just to name a few features. This capability will revolutionize the battlefield by enabling individual soldiers to fire a 25mm high-explosive bursting round through a window at 300 meters with devastating first-shot effects. The XM25 may be available for use by FY07.

XM8

The XM8 Lightweight Assault Rifle is a new 5.56mm carbine that forms the basis for a family of weapons to fill multiple roles from a single architecture. The XM8 weapon system incorporates many features requested by soldiers in the field including a high degree of modularity, an integrated sight, improved reliability and a reduced weight over current weapons. A systems engineering approach was taken in designing the XM8, ensuring that all capabilities the soldier requires for combat will be integrated into or fully compatible with the weapon. The XM8's goal is to be 20-30 percent lighter than a similarly configured M4 Modular Weapon System as it is fielded today but with increased lethality when integrated with the Soldier-as-a-System. This effort is also being supplemented by an ammunition science and technology effort to examine the lightweight case materials that could provide even further weight savings for the actual weapon. The modularity of the current weapon design simplifies barrel changes and requires a lower maintenance level compared to current weapons, thus allowing for simple barrel changes without the use of special tools. The XM8's modularity enhances combat capability and allows for mission-specific weapons tailoring. In only 5 minutes, unit commanders can direct their soldiers to reconfigure the weapon system into carbine, compact, sharpshooter or autorifle variants. For the first time, commanders can transform the capabilities of their soldiers to meet specific mission requirements using a single common weapon platform. This means commanders can provide their soldiers with longer ranges or higher volumes of fire capabilities from organic weapons. Each variant will fire all standard U.S./NATO 5.56mm rounds and provide semiautomatic and fully automatic operation modes. Initiated in August 2002, the XM8 program is on track to field initial weapon systems in FY05. To view a table outlining XM8's general weapon characteristics and performance, go to **http://asc.army.mil/pubs/default.cfm** (November-December issue).

The XM8 carbine will be the standard individual weapon for riflemen and most unit leaders. The compact variant will be significantly shorter than the XM8 carbine, improving portability and soldier mobility. It could be used for close quarter battles, personal defense and for selected vehicle crewmembers. The sharpshooter variant would support the squad-designated marksman mission. The autorifle variant will use a high-capacity magazine and a heavy barrel, and will provide a significant weight savings over the current M249 Squad Automatic Weapon, supporting the automatic rifleman mission.

Each XM8 variant will have an integrated sight that is factory boresighted featuring a reflex sight, an infrared (IR) illuminator, an IR pointer and an integrated backup sight capability. This combines three accessories into a single package. This design effort's goal is focused on increasing overall accuracy while decreasing target acquisition time. Accessory rails will be eliminated and replaced by a new integrated mounting system requiring only an initial boresight adjustment. PM Soldier Sensors is also working to develop an ultra-lightweight thermal weapon sight that will attach to the XM8 to complement the integrated sight.

Specific design attention also focused on improved reliability and durability. Using proven materials and processes, the XM8 will have a projected barrel life 63-117 percent longer than current weapons and will have improved reliability in all environmental conditions compared to current weapons. Contractor weapons testing with the XM8-type operating system conducted at Yuma Proving Ground, AZ, demonstrated impressive reliability. Weapons endured rigorous tests and incredibly harsh conditions including the firing of 24,000 rounds from a single weapon without stoppage and without cleaning. After completing this extreme test, the barrel was still within acceptable accuracy and dispersion limits. During additional testing, 10 weapons fired 10,000 rounds each with no cleaning or maintenance, and had only one stoppage between them during the 100,000-round test.

The XM8 multiple variant concept could replace the Army's M16 series 5.56mm weapons in use for the past 40 years and constitute a true family of weapons when combined with the XM25 and XM29. A high level of commonality will exist within the family, reducing the number of unique spare parts in inventory and decreasing the logistics burden and accompanying life-cycle costs.

The focus of PEO Soldier is to continuously provide improved capability to U.S. forces. The cutting-edge technologies developed for the future XM29 are being used today to develop and field the XM8 and the XM25. The XM29's spiral development strategy could provide the U.S. Army infantryman with a new carbine by FY05 and precision airburst capability by FY07 — systems that will provide enhanced maneuver and fire-support capabilities that will dramatically improve soldier lethality on the battlefield.

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DAVID AHMAD is the Acting Chief of the Future Weapons Division at PM Individual Weapons. He has a B.S. in mechanical engineering and an M.B.A. in management of innovation and technology from Rutgers University. He is currently the system lead on the carbine: 5.56mm, XM8 lightweight weapon system.

FBCB2 Blue Force Tracking — Fielding During Combat

MAJ Rodney A. Mentzer

"FBCB2 is a winner! When all other means of communications failed, FBCB2 carried the day. This system provides improved situational awareness for all soldiers, leaders and staffs. The ability to send and receive text messages, develop and distribute graphics and monitor real-time tactical movements has made the Brigade TOC much more effective."

LTC Richard Trietley, Brigade XO,
1st Brigade, 82nd Airborne Division,
during *Operation Enduring Freedom*,
Khandahar, Afghanistan

On Jan. 7, 2003, a Force XXI Battle Command Brigade and Below (FBCB2) training and installation team arrived in Afghanistan faced with the monumental task of training and equipping the 1st Brigade (Bde.), 82nd Airborne Division's (Abn. Div.) soldiers with a Blue Force Tracking System that would greatly enhance battlefield awareness. These soldiers were in the midst of combat operations and, in many cases, had no prior knowledge of FBCB2 or its tremendous capabilities. The successful fielding can be directly attributed to the 1st Bde.'s outstanding leaders and well-trained soldiers.

Fielding and training a digital situational awareness (SA) command and control (C2) system during combat provided many lessons learned that may apply to other systems fielded during similar conditions. As the Assistant Program Manager (PM) for FBCB2, I provided Blue Force Tracking to the 1st Bde. in Afghanistan.

After receiving the mission to install, train and support this digital system during combat operations from COL Nickolas G. Justice, PM FBCB2, the first thing I did was contact the unit and begin to assemble a mission-capable team. As expected, initial contact with the unit met with some reluctance because the 1st Bde. was scheduled to deploy to a combat zone in less than 2 months. Already training at a high