

Fast-Track Armaments for Iraq and Afghanistan

Picatinny's ARDEC Provides America's Warfighters with Full Spectrum Fighting Power

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At the U.S. Army's Armament Research, Development and Engineering Center (ARDEC) at Picatinny, N.J., engineers and scientists are providing America's warfighters with solutions to today's battlefield challenges faster than ever before. In an environment that once measured progress by decades, the laboratories here are creating new metrics that are based on speed, flexibility, value, and customization.

Often called the home of Army lethality, Picatinny's ARDEC and its Program Executive and Project Manager Office partners have together provided more than 90 percent of the Army's weapons and munitions systems for well over a century. Current support to Iraq and Afghanistan represents a new chapter in this long tradition of supporting the soldier.

ARDEC's rich heritage and strong knowledge base acts as a springboard for innovative armaments engineering practices and technologies. U. S. forces are benefiting from the full spectrum of Picatinny's armaments expertise in four important ways.

1. Urgent Fieldings

ARDEC understands the immediacy of the soldier's needs. Over a recent 12-month period, the center and its partners have responded to urgent Army and Joint Service

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requests by fielding some 17 specialized weapons and ammunition systems in record time, among them the:

Gunfire Detection System. This device quickly detects and locates the origin of small arms fire, allowing troops to rapidly return fire and enhancing their survivability. Twenty detection systems—10 fixed and 10 vehicle mounted—were fielded within 90 days of the receipt of a requirement.

M211/212 Advanced Aircraft Infrared Countermeasure Flares. The M211/212 flares counter all known surface-to-air missile (SAM) threats by serving as decoys that confuse the SAM's infrared guidance systems. Army aviator Chief Warrant Officer Al Mack of the 160th Special Operations Aviation Regiment summed up the M211/212's effectiveness when he said, "Our MH47E fleet had 16 confirmed SAM firings during the first six months of the Afghanistan



tance and troubleshooting. This always-open line of communications helps engineers assess the effectiveness of existing and newly fielded weapons systems as well as identify warfighter needs. Some recent examples of this support follow.

—ARCENT [U.S. Army Forces, U.S. Central Command] Kuwait and the 82nd Airborne Division at Fort Bragg, N.C., reported unacceptable readiness and performance of various small arm weapons. Picatinny engineers were deployed and on the ground within 72 hours performing weapon inspections, training the troops on scheduled maintenance procedures, and developing workable field inspection and repair criteria. These reports prompted a Picatinny-led mission in July 2003 of representatives from Fort Benning, Ga., ARDEC, and PM Soldier Weapons to evaluate reliability and performance of individual

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conflict. I had two SAMs fired during a daylight flight with Gen. Tommy Franks on board. ... Flares dispensed automatically. ... I think I am sitting here writing because our ASE [Aircraft Survivability Equipment] worked.”

XM1060 40mm Thermobaric Grenade. This 40mm device, developed and fielded by Picatinny within a four-month span, is the very first small arms thermobaric device released to the war theatre. It is applauded as a critical tool for military operations in urban terrain and close-quarters cave applications.

Advanced M26 TASER Stun Pistol. Adapted for Army use from a commercial design, the M26 non-lethal weapon is utilized for crowd control and detainee management. It provides the soldier with a less-than-lethal option appropriate to control personnel situations.

2. On-The-Ground Support

ARDEC engineers are found wherever U.S. troops are living and fighting. They serve as the Army's “911” lifeline for lethality assis-

sion and ammunition systems under combat conditions. The team visited Tikrit, Mosul, Irbil, and Baghdad, and sites in Afghanistan. It interviewed 1,000 soldiers and obtained valuable feedback on weapon performance and field problems.

—The 101st Airborne Division reported that its air Volcano systems were inoperative for an upcoming deployment. ARDEC engineers immediately deployed to Fort Campbell, Ky., to troubleshoot and repair the systems and conduct a new equipment training refresher course. The ARDEC team returned two of the three systems to operation and was presented a certificate of appreciation by the 101st Division commander.

—The Picatinny Explosive Ordnance Disposal (EOD) unit collected vital information about enemy ordnance and explosive devices while in Iraq and Afghanistan. The unit developed protocols that enable U.S. Joint Forces personnel to download information on how to render safe foreign ground combat enemy weapons, and procedures guides

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for disarming and disposing of captured and abandoned tanks, missiles, and attack helicopters.

—In recent months, Picatinny engineering teams provided on-site support to the new Stryker Brigade Combat Team (BCT). The teams assisted the BCT Project Manager's Office and its industrial contractors by integrating and testing various Picatinny-developed weapon systems for Stryker armored vehicles headed to Iraq. A Picatinny team also trained soldiers from Fort Lewis, Wash., on a newly developed logistics software program for efficient and safer configuration of munitions for loading onto shipping platforms.

3. Ensuring Strength of America's Armaments Inventory

The majority of weapons systems and ammo used by the Army are drawn from standing inventories. These items were designed by Picatinny engineers and many industry partners. Several of these systems deserve highlighting because of their superb performance in theatre operations in both Iraq and Afghanistan.

—The Bunker Defeat Munition has destroyed hardened emplacements, masonry walls, and light armored vehicles. "This thing is a real kick in the pants," says Staff Sgt. Lonnie Schultz, Infantry Squad Leader, 31st Infantry Regiment, 10th Mountain Division, when describing this lightweight 83mm shoulder-launched weapon.

—The SADARM (Search and Destroy Armor) precision smart-guided 155mm artillery munition "exceeded expectations and became the preferred precision munition for the field artillery battalions and their supported maneuver commanders," according to a 3rd Infantry Division After Action Report. "Very effective against tanks/light armored vehicles, with three rounds killing at least one tank ... (it) never missed," said Lt. Col. Doug Harding, former 3rd Brigade Combat Team fire support coordinator, 1/10 Field Artillery commander. Of 121 SADARMs fired in Operation Iraqi Freedom, 48 pieces of enemy equipment were completely destroyed. SADARM defeated all known armor and artillery targets on the battlefield.

—The M109A6 Paladin 155 self-propelled artillery howitzer is the most technologically advanced cannon in the current Army inventory with highly mobile "shoot and scoot" capability. Fielded after Operation Desert Storm, it fires a first round 30 seconds after stopping and delivers devastating firepower at ranges up to 30 kilometers. This capability, realized by its highly automated navigation and fire control system, got rave reviews from howitzer crews and commanders alike during the "dash to Baghdad."



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Armaments for the Army's Future Combat System (FCS). Leading industry combat vehicle developers like General Dynamics and United Defense have entered into cooperative research and development agreements with Picatinny's ARDEC in support of the FCS-mounted combat system, non line-of-sight cannon (NLOS-C), and NLOS mortar variant and other cannon, fire control, and munition technologies.

—Electromagnetic Gun Technology. ARDEC, working with the Army Research Laboratory and U.S. Navy partners, is expanding research and development efforts on a novel pulsed-power gun concept that eliminates the need for energetic propellants. Development activities are maturing the technology and generating notional system designs ranging from small arms to large caliber direct and indirect firing systems that provide either very high velocity defeat of advanced targets or very long range for projectiles depending on the application.

Armed TALON. The Armed TALON is a small, highly maneuverable, remote controlled tracked vehicle fitted with lethal and non-lethal armaments. TALON's introduction to the battlefield will provide a new dimension to warfighting capability and greater soldier survivability.

—Current and small arms superiority stems from weapons like the M4 carbine, M249 squad automatic weapon, and M240 machine gun, which continued to receive high praise from soldiers. "Our stuff worked great ... weapons worked well enough that it saved lives," said the commander of 2-187th Infantry. Soldiers have hailed the M240 machine gun as one of the best weapons on the battlefield. "Three different soldiers firing the same gun outperformed a group of 30 gunners using other equipment," said Master Sgt. Michael Valdez, 82nd Airborne Division. The new, urgently fielded XM107 Barrett .50-caliber Sniper rifle was recognized as a key element in urban fighting.

4. Developing Advanced Weapon Systems

U.S. military capability must keep pace with the changing world to assure supremacy in the spectrum of conflict. Looking ahead, ARDEC engineers are working on a range of advanced warfighting and counter-terrorism systems in support of Army transformation:

Armed TALON. The Armed TALON is a small, highly maneuverable, remote controlled tracked vehicle fitted with lethal and non-lethal armaments. The system is currently undergoing tests at Picatinny. TALON's introduction to the battlefield will provide a new dimension to warfighting

—Leap-Ahead Disruptive Technologies. ARDEC's development portfolio supports exploration into leap-ahead technologies—like nano technology and direct energy-based, scaleable effects weapon systems—enhancing weapon performance and future warfighter capabilities in the spectrum of conflict.

Warfighting will continue to depend on the combatant's ability to address the full spectrum of conflict by delivering desired effects on target in order to reduce threat capabilities. Picatinny's mission is to research, develop, and integrate advanced armament technologies into weapon systems that meet warfighter needs. No other organization in the world provides the overall world-class portfolio of armament systems and advanced technologies that support a broad range of Joint Service warfighters today and for tomorrow.

Editor's note: For questions or comments on this article, contact the ARDEC External Affairs Office at <eva.j.bush@us.army.mil> .