

A CLOSER LOOK

Greatest Inventions give Soldiers added edge

GREEN EYES – ESCALATION OF FORCE KIT INTEGRATION WITH THE CROWS SYSTEM

A team of ARDEC engineers, in support of Product Manager Soldier Weapons, developed a new method for easily integrating an escalation-of-force kit called “Green Eyes” onto the widely used CROWS weapon system. The Common Remotely Operated Weapon Station allows the operator to acquire and engage targets while inside a vehicle, protected by its armor.

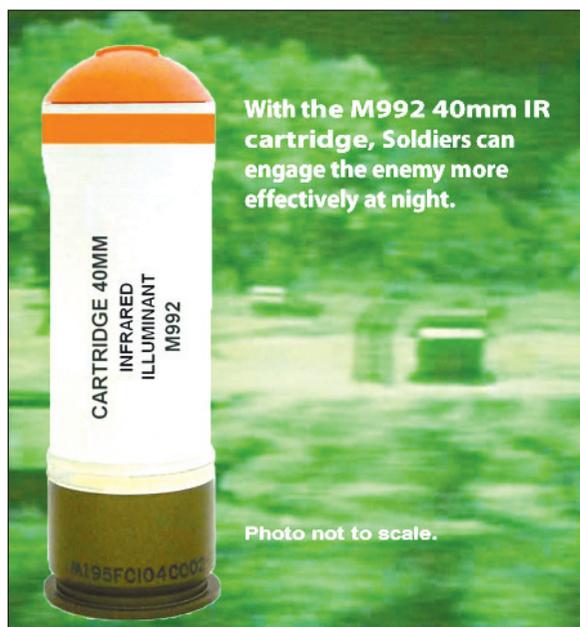
The Green Eyes kit can switch on and off multiple auxiliary devices, such as an infrared pointing laser or green ocular disrupting laser, on a rotating turret and allows operators to control these items without physical contact on the rotating assembly.

On the battlefield, there is a demand to attach several auxiliary devices to the turret of the CROWS system, giving operators multiple escalations-of-force capabilities. An auxiliary control system is therefore needed, one whose physical construction does not inhibit the CROWS ability to rotate 360 degrees, and is not susceptible to jamming.

The Green Eyes Kit is an add-on that universally mounts onto all existing and future CROWS systems with minimal labor. With the kit, units can customize the CROWS with items such as ocular disrupters, infrared pointers, speakers, white search lights or any other item that could improve the effectiveness of the CROWS system.

40MM INFRARED ILLUMINANT CARTRIDGE, M992

The M992 Infrared illuminant cartridge is fired from a 40mm Grenade Launcher system and is designed to provide illumination in the near infrared passband. Its objective is to enhance night operation capabilities of troops equipped with currently fielded night-vision equipment while producing minimum visual signature outside of the infrared passband.



With the M992 40mm IR cartridge, Soldiers can engage the enemy more effectively at night.

Photo not to scale.



Green Eyes

The M992 cartridge is similar in design and performance to conventional 40mm signal and illuminant cartridges except for the IR capability. The projectile has a 4-5 second delay ignition element crimped into the center opening of a metal delay carrier and carries an illuminant payload secured to a parachute assembly.

In addition to being the first infrared illuminant system to support individual use by the warfighter, it is also compatible with currently fielded night-vision equipment.

5.56MM M855A1 ENHANCED PERFORMANCE ROUND

The U.S. Army begun shipping its new, improved M855A1 Ball, otherwise known as the 5.56 mm Enhanced Performance Round, to U.S. troops in Afghanistan last summer.

The M855A1 replaces the current M855 cartridge used by U.S. troops since the early 1980s.

There are three main areas in which the M855A1 round excels: soft-target consistency, hard-target penetration, and the extended range at which it maintains these performance improvements.

Before initial production, the new M855A1 round underwent vigorous testing. Official qualification of the round consisted of a series of side-by-side tests with the current M855. Overall, the Army fired more than one million rounds to ensure the new cartridge met all expectations, making it the most thoroughly tested small caliber round ever fielded in U.S. history.

The new M855A1 is also more environmentally friendly because it uses copper slug, instead of a lead slug. The M855A1 also includes a hardened-steel penetrator. While the M855 also has a steel penetrator hidden in the tip of the jacket, the M855A1's penetrator is almost twice



M855A1 Enhanced Round

as heavy, sharper, and exposed, a combination that produces better performance.

The M855A1 is tailored for use in the M-4 weapon system [Colt M4 Carbine and Colt M4A1 Carbine/SBR (Short Barreled Rifle) platforms] but also improves the performance of the M-16 [M16 assault rifle] and M-249 [FN M249 SAW/LMG] families of weapons.

JACKAL EXPLOSIVE HAZARD PRE-DETONATION SYSTEM

The Jackal Explosive Hazard Pre-Detonation System was developed and fielded to help in the fight against roadside bombs. Improvised Explosive Devices (IEDs) are a continuously evolving threat that has been difficult to defeat with a singular approach and methodology.

Jackal supports virtually all ground-based tactical platforms and missions, such as route clearance, logistics, VIP convoys, etc. Moreover, it is adaptable to new and emerging threats and has day/night, multi-terrain, multi-environment operational capability. Jackal's use is transparent to the Soldier, requiring minimal interaction.

MORTAR FIRE CONTROL SYSTEM – DISMOUNTED

In support of Product Manager Mortar Systems, ARDEC engineers developed a digital Mortar Fire Control System – Dismounted (MFCS-D) for the 120mm ground

mounted mortar system.

The MFCS-D program effort included both hardware and software development. The 120mm dismounted mortar system provides indirect fire support in a rapidly deployable capacity towed behind a High Mobility Multipurpose Wheeled Vehicle (HMMWV). The system includes mortar firing operation command and control enhancements and increased accuracy, survivability, and faster use of dismounted mortars.

The system provides responsive and accurate weapon platforms to keep ahead of enemy forces in today's fast-paced battlefield. It also improves interoperability by eliminating time-consuming and error prone voice-over-radio communication for receiving fire mission data (target coordinates, ammo type, fuze, etc.). Moreover, the system eliminates any accuracy deficiencies with automated hardware and software digital fire control.

M240L LIGHTWEIGHT MACHINE GUN

The M240L is a lightweight variant of the M240B 7.62mm Medium Machine Gun, providing system performance equal to the M240B at a significantly reduced weight. The M240L machine gun weighs 22.3 pounds, which is nearly five pounds lighter than the M240B machine gun.

This was accomplished by using titanium in the receiver, a re-profiled barrel, and a lightweight grip assembly. The system has two quick-change barrels, a fixed buttstock, and an integral bipod.

A new collapsible buttstock and short barrel have also been developed, though not yet fielded for the M240L.

For Soldiers, the lighter machine gun means increased portability, increased mobility and the ability to carry more ammunition due to reduced weight of the weapon.

The M240L is fully compatible with the M192 lightweight tripod as well as all standard accessories (optics, aiming lights, slings, barrel bags, ammo packs) and cleaning tools.

In addition, it is the first gun in the U.S. Army to extensively use titanium alloys.



Mortar Fire Control System