

# ENHANCING LETHALITY ACROSS THE FORCE

## *The Integration of Combat Optics Technologies and the Designated Marksman Concept*

MAJOR CHARLES PAVLICK,  
U.S. ARMY, RETIRED

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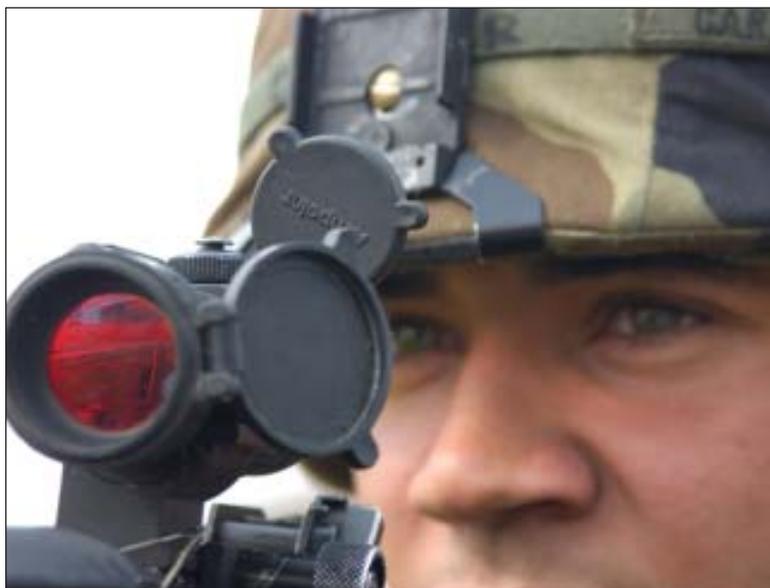
Recent after action reviews (AARs) and the results of post-combat surveys conducted by the Directorate of Combat Developments, U.S. Army Infantry Center, attest to the applied effectiveness and lethality of small arms combat optics in general, and the effectiveness of designated marksmen (DM) during Operations Enduring Freedom and Iraqi Freedom (OEF/OIF).

### **The Close Fight**

The M68 Close Combat Optic (CCO) is the most prolific individual weapon optic that has been fielded in-depth across Infantry formations and now to combat support (CS) and combat service support (CSS) organizations on the brigade and below battlefield. The fundamental advantage of the CCO is rapid, simplified sighting. The CCO's simple red-dot-on-target replaces the iron sight's more complex front-sight-on-target and rear-sight alignment procedure, as well as the iron sight's requirement for consistent, cheek-to-stock placement. Like iron sights, the CCO has no magnification, but the CCO's parallax-free, unlimited eye relief allows for greater flexibility with cheek-to-stock placement and enables aimed or reflexive fire with a both-eyes-open field of view, thus contributing to improved situational awareness/target acquisition and effective multi-shot/multi-target engagements. The CCO's lack of magnification, however, limits its utility across all battlefield applications.

### **The Mid-to-Long Range Fight**

The limitations regarding the CCO are primarily associated with rapidly changing operational scenarios with associated multiple target profiles and, at times, engagement distances beyond 300 meters. Target engagements beyond 300 meters with the CCO require the shooter to estimate range and apply an estimated hold-off/hold-over point of aim to effect target hit. Optics with



Airman First Class Anthony Nelson, Jr., USAF

*Private First Class Keith Carter from the 501st Parachute Infantry Regiment scans for enemy activity during an exercise in Alaska.*

magnification (which may include range estimating reticles) significantly enhance the shooter's capability to detect, recognize, and engage targets at longer ranges. Additionally, small profile targets such as bunker apertures, sniper loopholes, prone targets and targets that are partially covered or concealed at mid-range distances may also be engaged with a greater probability of hit with the aid of magnified optics. The most common (optic dependant) downsides to using magnified optics include restricted field of view, limited eye relief, and associated one eye vs. two eyes open aiming issues.

### **Current Small Arms Optics and Designated Marksman Initiatives**

Historically (Civil War to present), American combat units as well as individual Soldiers have long recognized the lethal capabilities that magnified optics bring to the fight, and OEF/OIF is no exception. Primarily associated with the designated marksman concept, the Army (Brigade Combat Teams and other tactical Army organizations) has fielded and/or is in the process of procuring an array of optic applications and multi-combination "solutions" that include, but are not limited to the following: variable power scopes bought from local gun shops mounted on M4s and M16s; M14s with variable powered scopes and/or with Advanced Combat Optical Gunsights (ACOGs); match-grade M16A4 conversions; and match-grade M14 conversions; as well as several different optics and accessories issued via the Army's Rapid Fielding Initiative (RFI). Additionally, the use of both 5.56 M855 (green tip) and/or 5.56 Mk 262 match-grade ammunition is in use. Designated marksman training has been conducted via mobile training teams (MTTs), new equipment training teams (NETTs), division schools, Sniper School and the U.S. Army



**Figure 1 — Technical capabilities:** Left target - USAMU-modified M16A4 w/ Mk 262 ammo. Right target - M16A4 w/M855 ammo at 600 yards (9-ring = 20 inches diameter).

Marksmanship Unit (USAMU). Based on AARs and post-combat surveys, as well as Department of the Army involvement to address and fund optics and weapon-related Urgent Requirements (UR), Operational Need Statements (ONS), and RFI initiatives, a need was identified to develop a comprehensive (DOTLMPF — doctrine, organization, training, leadership & education, material, personnel and facilities) U.S. Army Infantry Center strategy/path-ahead regarding designated marksman capability requirements.

**The DOTLMPF Review**

An integrated concept team (ICT) consisting of Infantry School/Center staff representatives was established to formalize a comprehensive DOTLMPF strategy/path-ahead regarding DM application to infantry formations as well as the potential integration of DM capabilities across all Army units.

**Soldier Performance and Weapon's Technical Capabilities**

The U.S. Army Soldier Battle Lab (SBL) conducted a DM experiment to provide supporting data and analysis for DOTLMPF refinement. Experiment Soldiers/shooters were provided by 1st Battalion, 30th Infantry Regiment, 3rd Brigade, 3rd Infantry Division, and technical, instrumented shooting/shooting

data was provided by USAMU. During the experiment (after DM training), Soldiers provided with an M4 or M16A4 with ACOG, and bipod and standard M855 “Green Tip” ammunition, were able to achieve a cumulative .50 probability of hit or higher out to 600 meters. Current standard weapons and ammunition provide the technical capability for 600 meters engagements. However, training/trigger

time remains the linchpin factor when it comes to exploiting the technology and improving the Soldier’s accuracy/lethality.

Soldiers also fired USAMU modified (accurized) M16A4s equipped with ACOGs and with match-grade Mk 262 ammunition. The experiment results indicate that the modified weapons were technically more accurate with match-grade ammunition, and that shooter performance was improved, particularly at the longest range targets. It should be noted that the experiment results also indicated that both the standard M16A4 and M4 were more accurate than the USAMU-modified M16A4 when all weapons fired standard M855 ammunition. Finally, the DM experiment included standard 7.62mm M14 rifles enhanced with an ACOG and bipod. The M14 was the least effective weapon in all categories that included overall Soldier preference, technical accuracy (USAMU fired) and hit probability (1-30 IN fired) from close quarter battle (CQB) distances to 600 meters.

The pictured targets (Figure 1) provide a visual context regarding the technical capabilities of both accurized (left target) and current standard (right target) 5.56mm weapons and ammunition and further reflect the direction of Small Arms Division, Combat Development initiatives for the improvement of Army individual weapons

**Figure 2**

**DESIGNATED MARKSMAN + RFI**

**Both Riflemen (NOT Squad Snipers) trained & equipped to engage Targets 0 – 600m**

- **Weapon: Squad-common M4/M16**
- **Ammo: M855 Green-Tip, M993 AP and/or Mk262 (77gr Match)**

**Rapid Fielding Initiative (RFI) Supports DM:**



**ACOG**



**Improved Buttstock**



**Bipod**

and ammunition capabilities.

### DOTLMPF Recommendations

The complete DOTLMPF review and recommendations is on file at Small Arms Division/DCD. The summary below provides an outline of the materiel aspects of the DOTLMPF review recommendations and Small Arms Division initiatives.

#### Immediate

- Riflemen/DMs employ squad-common M4 carbine or M16A4 rifle and investigate a polished “drop-in” trigger modification to M4/M16.
- Current M855 ammunition exceeds MilSpec minimum. Issue Mk262 match-grade ammunition if available.
- Continue ACOG and accessories fielding via RFI.

#### Near-Term

•Pursue an ACOG-like capability via the “Spiral Integration” initiative and Magnified Combat Optic (MCO) Soldier Enhancement Program (SEP) and investigate potential application of DM-type capabilities to other-than-Infantry combat, CS, and CSS force structure. The MCO requirement document (in staffing) reflects a basis of issue that includes C, CS and CSS formations.

#### Objective

The Objective Individual Combat Weapon (OICW) family of weapons systems includes an accurized DM (by design) variant with optics/fire control and accessories.

#### Summary

Small Arms Division’s individual weapons, optics, and ammunition initiatives reflect long range objectives analysis, as well as an institutional recognition and response to post-combat surveys, to AARs, and to initiatives already developed by combat forces during CONUS training and proven effective against threat forces during OIF/OEF. The USAIC path-ahead strategy provides for a basis of issue to current and future combat, combat support, and combat service support formations to enhance lethality across the force.

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**Major Charles Pavlick, U.S. Army, Retired**, was commissioned through OCS. His active duty tours include serving with 5th Special Forces; 1-52nd Infantry, 2nd Infantry Division; 501st Military Intelligence, the Infantry (Test) Board and Infantry Combat Developments. He currently is contracted as a project officer for the Small Arms Division, Directorate of Combat Developments, USAIC.

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Figure 3

