



## Disposal of Excess, Obsolete and Unserviceable Ammunition: Help for the Warfighter

*To support the ongoing global war on terrorism, we don't have any trouble getting funding for the new technologies. [Ammunition demilitarization] is at the other end. Although it may not have the highest priority, if we don't put money into demil, both the stockpile and cost to maintain the stockpile will grow exponentially.*

Brigadier General William N. Phillips  
Commanding General, JM&L LCMC<sup>1</sup>

### Introduction

The U.S. Army continues to adapt institutions and the processes, policies and procedures, including business practices, to more effectively and efficiently support an expeditionary Army at war and, in a larger sense, the Department of Defense (DoD).

As the single manager for conventional ammunition (SMCA), the Army has the responsibility for demilitarization<sup>2</sup> of conventional ammunition for DoD. This includes storage, surveillance, demilitarization and disposal of all of DoD's excess, obsolete and unserviceable ammunition, including all conventional munition items, tactical missiles and large rocket motors. The Army is also charged with planning, programming and budgeting for the necessary resources to accomplish this mission. Past supplemental funding has enabled the replenishment of older munitions with newer, more lethal versions. This has added to the demilitarization stockpile and exacerbated the challenge to properly dispose of it. Reducing the demilitarization stockpile is a formidable and resource-intensive mission for the U.S. Army.



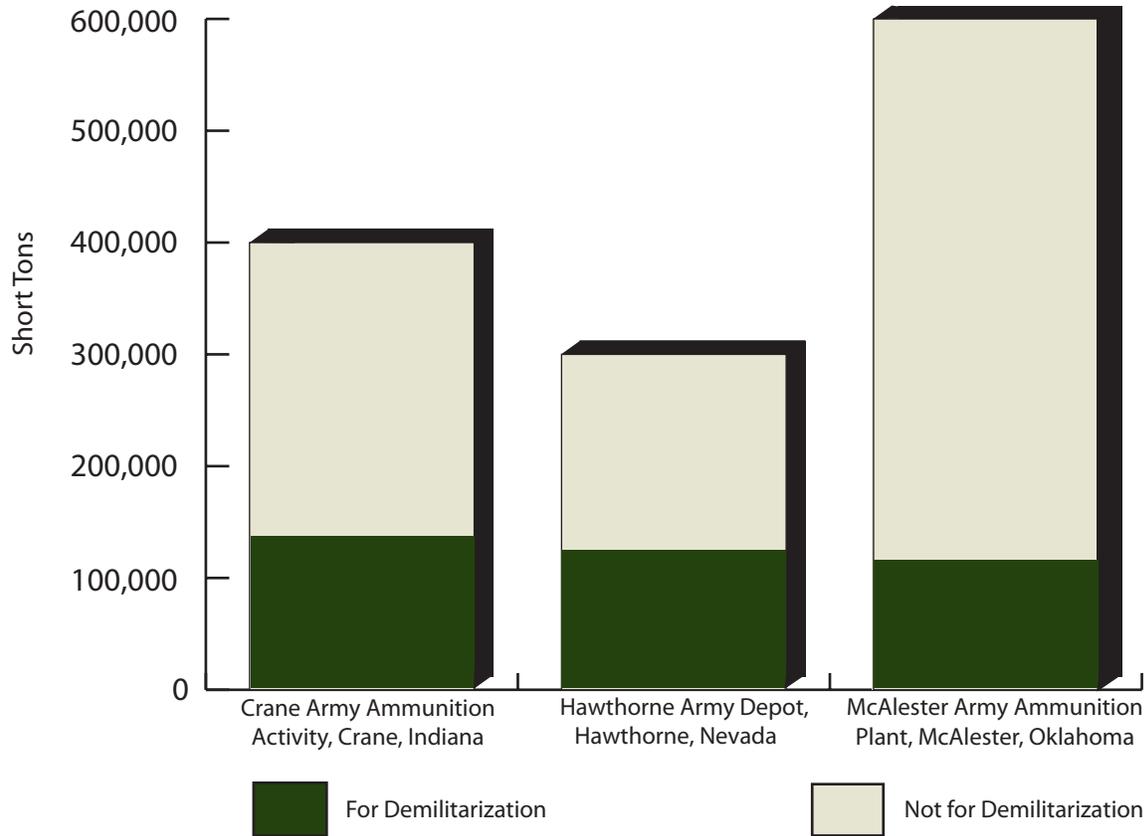
### Background

The demilitarization stockpile is currently estimated at almost 480,000 short tons of conventional ammunition and more than 400,000 missiles and missile components. At an approximate cost of \$2,200 per ton to demilitarize this stockpile, and taking into account future additions to the stockpile, the total demilitarization liability to DoD is almost \$2 billion through the current budget and program years. With the current level of additional newer

<sup>1</sup> From Meg Williams and Trish Bryan, "The Joint Munitions and Lethality Life Cycle Management Command (JM&L LCMC) Provides the Best Capability to U.S. Warfighters," Army AL&T magazine, January-February-March 2008, p. 11, [http://asc.army.mil/docs/pubs/alt/2008/1\\_JanFebMar/full/00\\_ALT\\_magazine\\_Full\\_Issue\\_200801.pdf](http://asc.army.mil/docs/pubs/alt/2008/1_JanFebMar/full/00_ALT_magazine_Full_Issue_200801.pdf).

<sup>2</sup> Demilitarization: The act of destroying the military offensive or defensive advantages inherent in certain types of equipment or material. The term includes mutilation, dumping at sea, scrapping, melting, burning, or alteration designed to prevent the further use of this equipment and material for its originally intended military or lethal purpose and applies equally to material in unserviceable or serviceable condition that has been screened through an inventory control point and declared excess or foreign excess. (DoD 4160.21-M, "Defense Materiel Demilitarization Manual," 18 August, 1997, pp. xviii, <http://www.dtic.mil/whs/directives/corres/pdf/416021mfront.pdf>.)

## Storage Posture at Three Largest Depots



Source: Joint Munitions and Lethality Life Cycle Management Command

ammunition and its corresponding funding, instead of getting smaller, the demilitarization stockpile will only continue to grow.

Most of the demilitarization stockpile is stored and maintained by the U.S. Army Joint Munitions Command (JMC) at its major depots and ammunition plants, where they also receive, store and outload ammunition in direct support of current combat operations. The presence of demilitarization stocks in the same place as the critical mission and training stocks results in storage inefficiencies, increased costs and decreased opportunities to apply transformational business process improvement practices, such as Lean Six Sigma, to improve operational efficiency.

In addition, under recent Base Realignment and Closure law, the JMC lost a significant amount of covered storage space without a corresponding decrease in stored stockpile. Demilitarization is more critical than ever to ensure that excess, obsolete and unserviceable munitions items do not consume valuable covered storage space. In this regard, the

JMC is the Demilitarization Program's major customer. **In fact, for every ton of conventional ammunition demilitarized, approximately seven to nine square feet of additional covered storage space is made available to store ammunition for use in current combat operations.**

Currently demilitarization stocks in the continental United States account for 25 percent of depot storage. Approximately 80 percent of the demilitarization stockpile is at three installations: Crane Army Ammunition Activity in Indiana; Hawthorne Army Depot in Nevada; and McAlester Army Ammunition Plant in Oklahoma. At these locations, the demilitarization stock is nearly 30 percent of the total stored munitions.

### Resource Implications

At the program's current level of funding, the demilitarization stockpile is expected to grow. Moreover, as the stockpile is demilitarized, the munitions toward the end of the queue are more

complex than those currently being demilitarized. This increased complexity results in increased cost; therefore, tomorrow's demilitarization dollar will potentially buy less in terms of the number of items demilitarized. In addition, the trend over the last few decades has been away from the more traditional (and less complex) techniques of open burn/open detonation (OB/OD) demilitarization to more complex (and more costly) techniques of Closed Disposal Technology (CDT) and Resource Recovery and Recycling (R3).

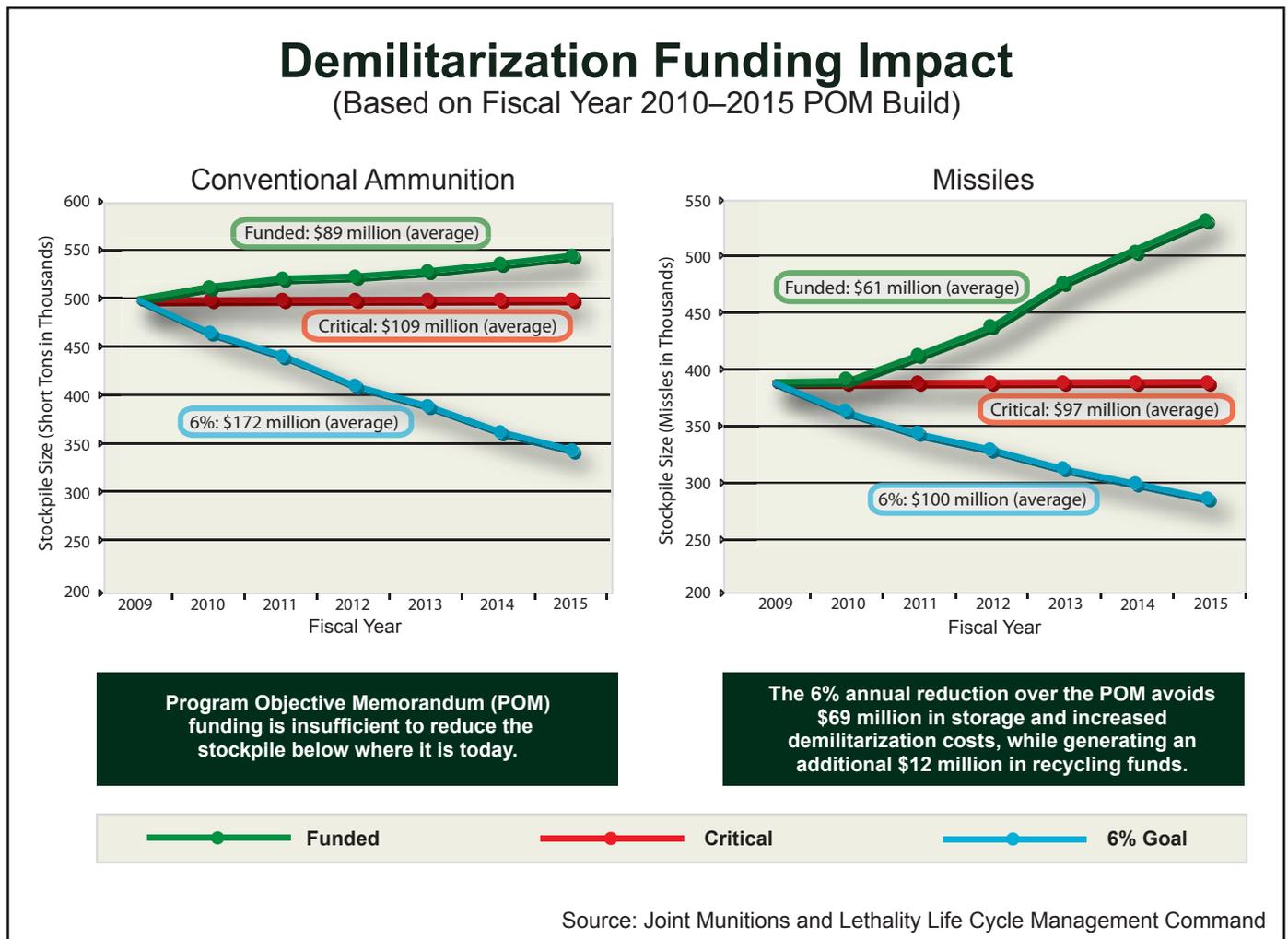
Environmental considerations have resulted in the current Demilitarization Program operating at CDT or R3 levels of 85 percent or higher and OB/OD at 15 percent or less. Additionally, CDT and R3 capabilities generally require a capital investment to develop and purchase equipment and tooling, as well as the normal level of operational funding to actually execute the work of demilitarization. Operating at a high level of CDT and R3, although more environmentally responsible, results in diminishing marginal returns.

Current Program Objective Memorandum (POM) Fiscal Years 2010–2015 funding of approximately \$150 million per year results in a growth to 550,000 tons of ammunition and more than 500,000 missiles; \$206 million per year is required just to keep pace with generations of additional items into the Demilitarization Account. In 2003, the Army received the requirement to reduce the stockpile by 6 percent per year. The annual funding to meet that requirement is \$272 million. The convergence of these three trends creates a significant increase to the stockpile.

Demilitarization and storage costs increase over time; therefore, early sufficient funding leads to substantial cost avoidance in the future.

### Potential of Recycling

With insufficient demilitarization program funding levels, and with demilitarization costs on the rise, the Army looked for ways to reduce costs. One potential answer came in the form of finding markets





# Ammunition Demilitarization

for the recyclable components and end products of demilitarization operations, much the way the commercial recycling industry does. This involved several initiatives, not the least of which required statutory relief for the Demilitarization Program to directly reinvest the proceeds of R3 operations back into the program. While demilitarization operations were already producing millions of pounds of marketable metals and energetics every



year, there was no way to effectively see and direct monetary benefit back into the program. This required a change to the law. With the passage of the John Warner National Defense Authorization Act for Fiscal Year 2007 (NDAA), the Army now has the legal authority to establish and operate a recycling program that will directly benefit the Demilitarization Program by helping to offset the cost of demilitarization R3 operations. Upon publication of an implementing message in May 2007, the Demilitarization R3 Program was established and the first revenue checks were deposited in the centrally-managed account shortly thereafter.

The new law also complements two existing demilitarization initiatives, the Demilitarization

Research and Development Program (DRD) and the Design for Demilitarization (DFD). The DRD program's major thrust areas focus on disassembly and reuse of existing munitions; the DFD effort seeks to influence future munitions design for ease of disassembly. Both initiatives can help maximize the recycling value of the residual products of demilitarization by helping reduce the cost of achieving a more valuable end product. In addition, through the implementation of Lean Six Sigma principles, existing processes can be tuned to return higher yields on existing R3 projects.

## Challenges

While the current legislation does offer potential in terms of cost reduction for demilitarization R3 programs, much more is needed. While selling the recyclable derivatives of demilitarization can help offset costs, it certainly does not pay the whole cost, nor does it apply to the entire stockpile. In addition, many items are too small or too complex to be effectively recycled; other derivatives—for example, commercial glass, which is cheaper to produce new—offer little or no value. It is imperative that the Army receives the necessary resources to adequately fund the demilitarization program in a timely and predictable manner, thereby increasing the effectiveness of ongoing demilitarization programs and enhancing the economic viability of demilitarization R3 processes.



**Timely, adequate and predictable funding now for conventional ammunition demilitarization leads to substantial future cost avoidance.**