

U.S. ARMY JOINT MUNITIONS & LETHALITY LIFE CYCLE MANAGEMENT COMMAND

FY2007 EXECUTIVE SUMMARY



The Ammunition Enterprise



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**JOINT MUNITIONS AND LETHALITY LIFE CYCLE MANGEMENT
COMMAND**

In August 2004, the Assistant Secretary of the Army for Acquisition, Logistics and Technology and the former Commander, U.S. Army Materiel Command (AMC), General Paul J. Kern agreed to formalize the Army's Life Cycle Management initiative in order to get products to the Warfighter faster, make products better and minimize life cycle cost. The key to this Life Cycle Management initiative was the integration of significant elements of acquisition, logistics and technology leadership to bring a closer relationship between AMC, the Major Subordinate Commands (MSC) and the Program Executive Officers (PEO). This collaboration was enabled by the establishment of Life Cycle Management Commands (LCMC), aligning AMC system oriented MSCs with the PEOs they already supported. The Aviation and Missile LCMC, Communications-Electronics LCMC and Tank Automotive Command LCMC were already operational in 2006, making the stand-up of the Joint Munitions & Lethality (JM&L) LCMC an important FY07 initiative. The JM&L LCMC integrates the people, organizations, infrastructure, and processes necessary for the effective life cycle management of conventional munitions for the Warfighter. The overarching objective of the JM&L LCMC is to have the best munitions in the right place, at the right time, at the right cost.

The new JM&L LCMC is co-located at Picatinny Arsenal, N.J., and Rock Island Arsenal, Ill. The establishment of the JM&L LCMC aligns three organizations that execute the Army's munitions and lethality mission: the Program Executive Office for Ammunition (PEO Ammo), the Armament Research, Development, and Engineering Center (ARDEC) and the Joint Munitions Command (JMC). This annual command history contains full reports from each of the Ammunition Enterprise partners.

The U.S. Army Materiel Command formally unveiled the Joint Munitions and Lethality Life Cycle Management Command on 30 November 2006 under the command of Major General Paul S. Izzo. The JM&L LCMC and the PEO Ammunition welcomed a new leader, Brigadier General William N. Phillips, during a ceremony held 1 June 2007. General Benjamin S. Griffin, Commanding General for the Army Materiel Command, officiated at the JM&L LCMC portion of the ceremony, while Claude M. Bolton Jr., Assistant Secretary of the Army for Acquisition, Logistics and Technology, presided over the PEO Ammunition management change.

The JM&L LCMC vision is to provide battlespace dominance for the Warfighter with superior munitions. This vision drives organizational structure, resourcing, partnerships, and customer base.

The JM&L LCMC mission is to develop, acquire, field, and sustain value-added ammunition for the joint Warfighter through the integration of effective and timely acquisition, logistics, and cutting-edge technology. The mission core competencies

include: research, development, and engineering; acquisition and program management; logistics management; industrial operations; contracting; serving as the Single Manager for Conventional Ammunition (SMCA) Executor and Field Operating Activity; performing demilitarization and disposal of unserviceable stocks; conducting industrial base management and executing transformation; providing real time munitions readiness reporting; maintaining worldwide asset visibility; centralized ammunition management and providing integrated lethality solutions.

JM&L LCMC Leadership



Major General Paul S. Izzo
Commanding General, Joint
Munitions and Lethality Life Cycle
Management Command



Brigadier General William N. Phillips
Commanding General, Joint
Munitions and Lethality Life Cycle
Management Command



Mr. James C. Sutton
Deputy, Program Executive
Office for Ammunition



Brigadier General James E. Rogers
Deputy Commanding General,
Joint Munitions and Lethality Life
Cycle Management Command



Dr. Joseph A. Lannon
Director, Armament Research
Development Engineering Center

PROGRAM EXECUTIVE OFFICE FOR AMMUNITION

The Program Executive Office for Ammunition (PEO Ammo) has program and fiscal responsibility for nearly 300 Army programs comprised of Research Development Acquisition (RDA), Procurement Ammunition Army (PAA), Other Procurement Army (OPA), Weapon Track Combat Vehicles (WTCV) and Research Development Test and Evaluation (RDT&E) funding lines with an average per annum funding stream of \$2.6 billion. In addition, PEO Ammo managed 230 FY07 orders for Other Service ammunition valued at \$1.25 billion. PEO Ammo directly supported the Warfighter by developing and fielding products that counter the threats encountered by Warfighters fighting in the Global War on Terrorism (GWOT).

The PEO Ammo organization supports four Battlefield Operating Systems (BOS) (Ammunition, Fire Support, Maneuver and Mobility) and two Program Executive Group (PEG) (Equipping and Sustaining) structures. PEO Ammo is comprised of four Program Manager Offices: Program Manager Close Combat Systems (PM CCS), Program Manager Combat Ammunition Systems (PM CAS), Program Manager Maneuver Ammunition Systems (PM MAS), and Program Manager Joint Services (PM JS). The PEO Ammunition mission expanded in July 2007 with the establishment of the Product Manager Improvised Explosive Device Defeat/Protect Force.

One of PEO Ammunition's key functions is to set and manage funding requirements for outlying years. The Procurement of Ammunition, Army (PAA) FY 2008 President's Budget (Pres Bud) balances ammunition procurement, Army priorities and funding constrains to meet current Defense Planning Guidance goals. The FY08 Pres Bud finances \$2.2 billion to support training, limited modernization, war reserve, production base improvement and demilitarization. The FY09 Pres Bud finances \$2.3 billion to support the same mission areas. The budget supports institutional and home station training ammunition at a low risk level. Ammunition support for current operations continues to be dependent on supplemental funding authority.

The FY 2008 Pre Bud funding will support production base modernization improvements at Radford, Holston and Lake City Army Ammunition Plants (AAPs), where capabilities exist to support all the U.S. Services' requirements. Furthermore, this funding supported the remaining Government Owned, Contractor Operated (GOCO) AAPs and critical machine tooling for the private sector. Facility sizing issues are expected to become further complicated by the anticipated drop in ammunition requirements being projected over the POM. Appropriate sizing of the government owned munitions production base is critical to ensure affordable munitions availability for the war fighter.

Program Manager Close Combat Systems (PM CCS)

The Program Manager for Close Combat Systems (PM CCS) manages over 160 Army programs and acquisition of 50 items for the Other Services and continued to grow in FY2007. The establishment of Product Manager Improvised Explosive Devices

(IEDs) Defeat/Protect Force is a step towards combating the IED threat and complexity of defeat. In order to defeat this threat, the Army must develop a tool box of capabilities that can be integrated into a System of Systems approach, tailored to the threat given the systems. An IED Defeat POM strategy has been built and socialized with the appropriate entities and DA staff.

PM CCS managed the development of networked munition systems (NWM) that will comply with the President's policy to end the use of all persistent landmines by U.S. forces by 31 December 2010 and the stated goal for replacement capability to be fielded in FY08. A future increment will implement a common, battle command networked controller across NWM systems. In FY07 the Spider, a remotely controlled hand-emplaced munition system that functions as a replacement to M14/M16 anti-personnel mines, continued a low rate initial production phase. Development and system testing also continued on the Intelligent Munitions System (IMS), an alternative to antitank mines

PM CCS continued developmental and demonstrative phases of countermine products such as the Airborne Surveillance, Target Acquisition and Minefield Detection System (ASTAMDS). PM CCS continued to field the AN/PSS-14 mine detecting set, a ground penetrating radar and enhanced metal detector that combine to increase metal detection. Detectors are presently deployed with Army and Marine Corps Combat Engineer units in support of Operation Iraqi Freedom and Operation Enduring Freedom. The Area Mine Clearance System (AMCS) program began in 2006 as a DoD sponsored Foreign Comparative Test (FCT) Program. Two commercial flail systems were selected from multiple medium-flail vendors to participate in the FCT. The FCT phase was completed in 2007 and the Army is in the process of selecting one of the two flails tested as the medium flail for the Army's Engineer Clearance Companies.

PM CCS managed the Explosive Ordnance Disposal (EOD) product lines which consist of all equipment purchases for Army EOD units (excepting vehicles, radios, and personal weapons). This product line started in 2003 with a budget of \$3 million. By 2007, funding had increased to over \$51 million after supplemental funding. These procurements are primarily tools and pieces of equipment that support EOD Soldiers in the execution of unexploded ordnance (UXO) and IED detection, access, and render safe/neutralize missions.

The M211, M212, M206 and XM216 Air Countermeasure Flares are part of a family of advanced Infrared (IR) decoy flares designed for use by Army helicopters and fixed wing aircraft to meet advanced threats in current and future operational environments. Three of the flares (M206, M211 and M212) are used in conjunction with one another to form the Advanced Infrared Countermeasure (AIRCMM) solution. New war reserve and operational requirements for the M206, M211 and M212 required expanding the production capacity for the M211 and M212. Both contractors for the M211 and M212 have expanded production and are now producing sufficiently to meet operational requirements and start to build war reserve inventory.

In support of GWOT and operations in urban environments, PEO Ammo adjusted the acquisition strategies for grenades. The M67 systems contract reestablished a CONUS source for the C70 detonator. The M213 fuze will be manufactured by Combined Systems, Inc. (CSI) in Jamestown, Penn. This will ensure that a secondary M201 (M18 Smoke Grenade Fuze) manufacturer will remain viable with sufficient grenade fuze workload to support DOD surge requirements.

Program Manager Combat Ammunition Systems (PM CAS)

The office of the Project Manager for Combat Ammunition Systems (PM CAS) is supported by two Product Managers, Excalibur and Mortar Systems, with fiscal and program management responsibility for over 58 active programs supporting Army and other Service acquisitions.

PM CAS oversees the highly anticipated 155mm XM982 Excalibur precision guided munitions program which is considered the future of cannon fired artillery. In FY07 the XM982 program continued an incremental development approach to provide rounds to Soldiers quickly. Increment Ia-1 of the XM982 is in production and was fielded to the Multi-National Corps-Iraq and to US Forces in Afghanistan to fulfill an Urgent Need Statement. Excalibur was also fielded to the M777 Lightweight 155 howitzer for Army and US Marine Corps during FY07. The XM395 Precision Guided Mortar Munition 120mm mortar round, designed to defeat high pay-off targets at extended ranges, was terminated as a result of competing fiscal priorities during the development of the FY08 Presidential Budget.

PM CAS continued a program to create Insensitive Munitions explosives to replace TNT and Comp B in artillery and mortar ammunition. The new explosives should not react or will mildly react to unplanned stimuli such as bullet impacts, fragment impacts, fire or slow thermal heating and rocket propelled grenades. If one projectile were to be initiated, the adjoining stocks of that item containing the new explosive should not mass detonate.

Project Manager for Maneuver Ammunition Systems (PM MAS)

The Office of the Project Manager for Maneuver Ammunition Systems (PM MAS) is supported by three Product Managers, one for Large Caliber programs, one for Medium Cannon Caliber programs and one for Small and Medium (40mm Grenades) Caliber programs. The product lines within the Small and Medium Caliber Product Manager include several families of small caliber ammunition in the DOD inventory, three of which (5.56mm, 7.62mm and Caliber .50) represent over 95 percent of production and expenditures. The Small and Medium Caliber Product Manager is also responsible for 40mm grenades launched from the M203 and MK19 grenade launchers. Execution time for these cartridges was reduced from 42 months to 19 months in FY07.

The product lines within the Medium Cannon Caliber Product Manager include 20mm, 25mm and 30mm for air, sea, and ground platforms. Forty seven percent of the

funding executed in medium cannon caliber is for Other Services. During FY07, PM MAS executed an overarching strategy that grouped the 25mm M793 TP-T, 25mm M910 TPDS-T, 30mm M788 TP, and 25mm M794 cartridges into one system acquisition with split procurements to two producers. This strategy is expected to result in reduced unit prices/Government administration, industrial base stability, award flexibility, and decreased lead time.

The product lines within the Large Caliber Product Manager include 105mm and 120mm. In order to mitigate impacts from the Base Realignment and Closure (BRAC) relocation of the current production source for 105mm steel cartridge case production from Riverbank Army Ammunition Plant (AAP) to Rock Island Arsenal, PM MAS will execute a multiple year contract for the M467A1 Target Practice with Tracer cartridge in FY08. This strategy will allow the offerer to procure M150B1 cartridge cases in advance of the relocation, thereby ensuring uninterrupted deliveries of the M467A1 cartridge during the relocation effort. PM MAS gained approval of a new four year multi-year strategy for 120mm tank training ammunition that will enable two contractors to maintain critical workforce and equipment.

Program Manager for Joint Services

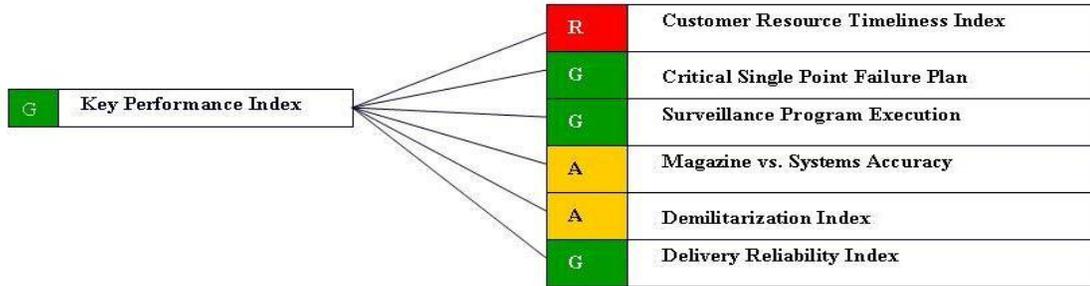
The Program Manager for Joint Services is responsible for three key areas of ammunition management: demilitarization of conventional ammunition, management of the industrial base, and the oversight of the Single Manager for Conventional Ammunition (SMCA) mission. The Product Manager of Demilitarization mission is responsible for all aspects of managing the recycling, demilitarization, and disposition of energetic materials and munitions for Army, Navy, Air Force, Marines, DoD and other U.S. Government activities. Currently DA G4 goals are to reduce unserviceable assets through demilitarization by 6% per year. However, funding does not account for the desired 6% decreases, creating an unfunded requirement. In FY07 the Army's liability related to the demilitarization stockpile is estimated at over \$1.7 billion. If the program is not resourced with funds to meet strategic goals focused on a reasonable, progressive stockpile reduction, the Army will suffer a greater liability.

Through the efforts of the DA G8 office, there has been a movement to provide additional funding to the Industrial Facilities program to resource critical industrial modernization projects through a "steady state funding" stream. The steady state funding stream scenario provides the Army with an attainable goal of leveling the program funding at an affordable level across the POM period, while providing the resources necessary to initiate the highest priority Industrial facility projects.

PM Joint Services continued to measure indices and metrics to demonstrate the SMCA Key Performance Index (KPI). The indices and metrics of KPI represent the interests of the PEO Ammo as the SMCA Executor, the Joint Munitions Command as the SMCA Field Operating Activity, and the Military Services as the Customer. Based on Service input for FY07, the KPI was modified and the overall Surveillance Program Execution Index replaced the Condition Code K (CC-K) metric and the Demilitarization

Index was added. The intent is to emphasize select metrics for cost, delivery and quality. The KPI consists of the indices and metrics are shown below. This KPI is rated green for FY07.

FY 2007 SMCA Metrics – Key Performance Indicators



Additional SMCA metrics for planning, contracting, quality, and supply, are also analyzed in detail within the full PEO Ammo history.

Acquisition Reform

In an effort to increase competition, the quality of ammunition and to enable contractors to better prepare for potential future solicitations, PEO Ammunition established a process for releasing ammunition Technical Data Packages (TDPs) to industry. A policy was issued in June and a Federal Business Opportunities Notice was published on 11 June 07 notifying industry of the opportunity to obtain advance copies of TDPs.

Summary

PEO Ammunition continued careful and critical management of several programs and products that are essential to the success of current operations. The command continues to address funding shortfalls for products, industrial base, modernization, demilitarization and manpower. Many of the Product Managers highlight the issue of need for more manpower to efficiently manage additional workload caused by management of additional programs.

U.S. ARMY JOINT MUNITIONS COMMAND

On 1 October 2006 the Joint Munitions Command (JMC) stood up as an independent AMC major subordinate command (MSC). From July 2003 to June 2006, JMC operated as a subordinate to the Army Field Support Command (AFSC) which was redesignated the Army Sustainment Command (ASC). The provisional separation of AFSC and JMC was implemented 1 June 2006 to prepare for their permanent transition to AMC MSCs. Under the new Joint Munitions & Lethality Life Cycle Management

Command, JMC remained the key command in ensuring quality ammunition is wherever and whenever needed. In support of GWOT, JMC continued to supply ordinary and urgent wartime ammunition requirements for all Services. The primary mission of the JMC is to manage the production, storage, issue, and demilitarization of conventional ammunition for all U.S. military services. The JMC is the field operating activity for the Single Manager for Conventional Ammunition (SMCA) and manages all aspects of the life cycle from procurement through demilitarization. JMC performs its mission through a production and logistics industrial base made up of 19 installations and depots and 158 commercial facilities.

JMC managed ammunition worldwide, with a conventional ammunition value of \$24.3 billion and a missiles value of \$14.5 billion. In FY2007 JMC obligated over \$488 million in support of the ammunition mission. In addition to normal OMA program funding of \$130 million, JMC received \$240 million GWOT supplemental program funds, and \$78 million RESET funds. Receipt of supplemental GWOT and RESET funding enabled the following high priority missions to be accomplished: GWOT outload ammunition supported troop training, SWA operations and the Integrated Logistic Strategy (ILS) ammunition redistributions; GWOT depot receipt of new production ammunition; the entire core surveillance program; critical GWOT ammunition maintenance projects, high priority depot storage improvement projects; urgent Reset maintenance projects making critical contingency ammunition items available; Reset ammunition packaging requirements; and Stryker Brigade depot ammunition stock management.

JMC's Munitions Logistics Readiness Center (MLRC) received orders at a value delivered valued at \$2 billion. The MLRC supported seven call forward vessels with over ammunition containers. The command accomplished demilitarization and maintained ammunition stocks.

Since the beginning of OIF/OEF, the JMC Quality Directorate has consistently deployed its workforce to support the warfighter. These personnel served various capacities during their deployments: Senior QASAS, Multi-National Corps-Iraq; performed assessments of ammunition at forward operating bases in Iraq, surveillance/logistics functions for the Army Field Support Brigade-Iraq and Afghanistan at the Ammunition Supply Points in Iraq and Afghanistan; and Army Surveillance representatives at the Coalition Munitions Clearance sites throughout Iraq, assuring explosive safety procedures are maintained. In FY07 JMC supported ammunition logistics assistance representative (LARs) unit deployments and increased the authorized allocation of ammunition LARs in theater by five personnel.

JMC led the stand up and operation of the SWA Ammunition Assessment Team to address RESET planning. The team assessed the ammunition maintained at the using unit level, identified packing requirement to support RESET/retrograde of unit's basic load, provided guidance to units for proper ammunition storage, answered units concerns on all Class V matters, and identified CAT I serial numbers for accountability. The Assessment Team identified packaging required to get unit ammunition back to a

serviceable condition before stocks went through Relief in Place/Transfer of Authority (RIP/TOA) or return to supply points, minimizing the unnecessary loss of otherwise serviceable ammunition.

JMC also supported theater operations through the Foreign Military Sales (FMS) program. During FY07, 61 Special Assignment Airlift/Air Missions (SAAM) were completed to deliver ammunition and other urgently required materiel to Afghanistan. FMS supports both the Iraq Ministry of Defense (MoD), comprised of the Iraqi Special Operations Forces (ISOF), and the Ministry of the Interior (MoI), comprised of the Iraqi Police, and is funded by DoD appropriated and country funds. JMC delivered Excalibur 155mm projectiles supporting Canadian deployment to Afghanistan. The FMS program also supported the Georgia Sustainment and Stability Operations Program (SSOP). In FY07 the mission focus was to train Georgian troops for deployment to Iraq as guardian forces for UN personnel.

JMC's New Designated Unit Insignia

As JMC formed for official standup as a MSC, a distinctive new designated unit insignia was requested. Because JMC traces a direct lineage to its predecessor command, the U.S. Army Armaments, Munitions and Chemical Command (AMCCOM), AMCCOM's DUI was modified for the JMC to include a motto on the benzene ring. JMC's affiliation with the U.S. Army Material Command is highlighted by the colors red, white, and blue from the AMC shoulder sleeve insignia. Scarlet (crimson) and yellow are the Ordnance branch colors.



The crossed field guns and flaming bomb symbolize the ordnance mission and the benzene ring represents the chemical mission. The laurel wreath symbolizes excellence and achievement. The designated unit insignia was effective 1 October 2006.

Key Leadership & Personnel Changes

Brigadier General James E. Rogers commanded JMC throughout the fiscal year. Deputy to the Commanding General, Robert C. Crawford retired on 7 January 2007. JMC Chief of Staff Colonel Jyuji Hewitt retired from military duty on 7 January 2007 and was appointed as JMC's Senior Executive Service (SES) staff member and the Deputy to the Commanding General the same day. Colonel Alan Braithwaite was mobilized from the National Guard to become the JMC Chief of Staff 21 January 2007 through 10 September 2007. Throughout the remainder of FY07 Colonel Todd R. Smith was assigned as the JMC Chief of Staff.

Mr. Louis Dellamonica came to work for Hawthorne Army Depot on 13 December 1941 and completed 65 years of Federal Service on 14 December 2006, retiring at the young age of 94. His historic length of career is recognized as the longest civilian service in the U.S. Army.

Tragically, Defense Ammunition Center (DAC) Director, Mr. James Q. Wheeler passed away on 5 February 2007. In memoriam DAC dedicated a training facility in his honor and JMC named a conference center in his honor.

HQ Building 350 Remodel

FY07 was marked with the constant shifting of employees as the JMC Headquarters Building 350 was remodeled. The building offices and workspaces had not been remodeled since 1990 and needed a face lift. In a democratic style, employees voted on color schemes furniture, and desk configurations. A command group suite was constructed at the west end of the 6th floor.



1990



2007

In order to improve office efficiency and streamline records holdings a new records storage area was created in Building 131 and electronic record archiving was emphasized and organized by the command Records Manager.

Major Command Initiatives

One of Brigadier General Rogers's key priorities for JMC was implementation of Lean Six Sigma (LSS) and continuous improvement across the enterprise. In FY07, JMC continued working with LSS consultant firm, George Group, LCC. JMC executed \$5.7 million against the initial contract ceiling of \$20 million. By close of FY07, all GS-14s and 15s within the command were trained to Green Belt (GB) level. JMC also provided its first class of in house training by Master Black Belts (BB). JMC completed 115 projects (21 BB projects and 94 GB projects) with savings and cost avoidance totaling in excess of \$7.3 million. These projects improved business operations in the areas of ammunition maintenance, renovation, demilitarization, safety, washout, breakdown, production, quality, training, procurement, transportation, and force protection processes. Project details and success stories can be reviewed in the LSS annual history. The command looked towards FY08 with goals of training all GS-13s and providing self-sustaining training programs with in house master black belts.

In March 2007 the command embarked on the Strategic Analysis and Executive (SA&E) initiative. Unlike previous event-driven strategic planning efforts, the command intended to focus on embedding an ongoing process. The George Group was utilized to help JMC understand the X-matrix tool used to develop and deploy our strategic efforts. By the end of the FY07, FY08 initiatives and metrics were drafted and work was underway to synchronize and track the initiatives with the installations and DAC. The SA&E focuses on immediate one year goals and future five and fifteen year projected goals.

JMC also initiated a new strategy for employee development named the Employee Development System (EDS). EDS improves career development utilizing competency based training plans that support the mission of our organization. Training plans are created through job analysis for each position in the command to determine the required competencies for job proficiency. Every training plan is comprised of four variables: organization, career program, series, and acquisition field. EDS automatically generates an IDP for each employee utilizing their corresponding training plan and other training they have taken or requested. The IDP is a roadmap to guide the employee throughout their career. In 2007 the JMC G1 integrated MLRC and Resource Management (RM) employees into the new system.

Through the MLRC, JMC continued improving new initiatives to improve readiness, logistics management, supply and support to theater operations. The Integrated Logistics Strategy (ILS) is a command level strategic effort aimed toward creating effective and efficient munitions positioning for training and operational contingencies support for the present and future Army. In FY07 the command actively participated in the Network Strategy (Storage Capacity) through the following phases: Phase I) JMC established a new storage baseline, Phase II) JMC identified the ammunition stockpile as Level I, II, III, and B5A munitions, Phase III) JMC determined the minimum number of sites to store the Level I, II, III, or B5A munitions. Implementation continues through the application of the initial Level I, II, III, and B5A munitions stratification to several installations and providing storage data for the positioning and transitioning strategies.

In FY07 the MLRC Quality Directorate achieved International Standards Organization (ISO) certification. Standard procedures were developed in accordance with the ISO process for most functions within the Surveillance Division. As a part of the ISO process, there is a continuing effort to improve and maintain the procedures to assure a superior level of ammunition and services are provided to the Warfighter.

The Munitions Readiness Report (MRR) system implemented in 2001 provides major elements of the Army with a common methodology for assessing munitions readiness. The MRR is managed for continual improvement and the configuration has increased in relevancy and improved in accuracy since its inception. In FY07 JMC reengineered the methodology of the R (munitions quality/reliability) rating. The result was a change from four rating thresholds (Green, Amber, Red, and Black) to just three thresholds (Green, Amber and Red). This change, now operational, is in alignment with

the new methodology for the S (munitions availability) rating methodology which had been incorporated in 2006. In consideration of serviceable assets, this year JMC made a change to include 'in transit' stocks as serviceable. This small but significant segment of stocks had not been captured as part of serviceable quantities in the MRR prior to 2007.

JMC also reviewed the B rating, a measure of industrial base readiness. While acknowledging the industrial base as relatively stable, experiencing long term changes in readiness, a modeling potential existed in this area. The idea was to tie measurements in base readiness to the POM budget years in order to create a longer view relevant for the future. Modeling would provide projected ratings based on various munitions procurement plans. An option was developed to provide the MRR user with a link to the modeling capability currently available in the Industrial Base Assessment Tool (IBAT) system and specifically to present the user with an initial POM view of base readiness ratings. This view is an IBAT generated file based on a set of default assumptions, can be requested by munitions family or for the total stockpile, and would eliminate the legacy B rating methodology and screens in the MRR. The MRR also created new reporting functions for users needing different report views.

In addition to assessing the readiness of the stockpile, the JMC continued work with Ammunition Enterprise partners and contractor, Decision Sciences Inc. to develop the Industrial Base Assessment Tool (IBAT). The SMCA IBAT is an initiative to automate the Ammunition Production Base Plan to facilitate industrial base preparedness planning in acquisitions. The SMCA IBAT is a web-based data system that documents the production capabilities, capacities, production schedules, deficiencies, and industrial base metrics of the ammunition supply chain to assist in optimizing acquisition decision making that affects the preparedness of the National Technical Industrial Base (NTIB). The data system also provides "what-if" scenario generation and ammunition maps to identify potential supply chain choke points. The IBAT evolved from a once every two year assessment to providing real time data to the entire ammunition community. Development of the IBAT has been a time-phased spiral effort. Two improvement efforts were begun in FY07: 1) disaster mapping will provide the ability to sort and display all IBAT producer/item data by state and 2) redesign of the "Help" system embedded in IBAT. Efforts were also started to establish a new three year contract with the program developer, Decision Sciences, Inc. IBAT is becoming the premier supply chain management tool and is being used by all the Services.

The Centralized Ammunition Management (CAM) mission expanded in FY2007. At the direction of DA G4, JMC began an aggressive transship effort in May 2007. The amount of excess ammunition at the Ammunition Supply Points (ASPs) was large and in order to ease the burden on the depots and the low depot stockpiles, JMC looked at the ASPs as another source of supply. JMC also began using the newly developed automated sourcing tool (CONPRO) to process CAM documents. The CONPRO sourcing process began with the CAM Southeast region resupply package in January 2007. The goal is to improve the load consolidation process at our shipping facilities, thereby reducing transportation costs and public exposure to Arms Ammunition and Explosives (AA&E) shipments. During FY07, JMC coordinated and tracked the

movement of 12,105 CAM transportation control numbers (TCNs) and achieved a 99% on time shipment rate.

The JMC BRAC transition team conducted planning and execution strategies for the impending moves of operations at closing installations: cartridge case production from Riverbank AAP to Rock Island Arsenal; Sensor Fuzed Weapon (SFW) production from Kansas AAP to McAlester AAP; and detonator production from Lone Star AAP to Iowa AAP. In addition Mississippi AAP and Red River Munitions Centers will be closed. JMC is postured to reach milestones for realignment and closures beginning in 2008 through 2011. Overall, JMC obligated 98% of \$101 million of BRAC funding received in FY07

JMC was awarded numerous significant awards for its success in FY07. The JMC/ASC (Army Sustainment Command) flare team, in conjunction with PM CCS counterparts, won the prestigious David Packard Award for Acquisition Excellence for supplying critical aircraft countermeasure flares to SWA. The team was able to build a sufficient supply of aircraft countermeasure flares in SWA so that airlifting flares to theater was no longer necessary. Flares are being supplied from depot, via surface vessel, due to sufficient quantities on hand. An engineering change proposal in the production of pyrotechnic simulators was incorporated that substitutes commercial grade black powder for potassium perchlorate.

The JMC and all subordinates were awarded the Army Superior Unit Award in August 2007 for achievements during the period of 28 December 2004 to 27 December 2006. JMC displayed outstanding meritorious service in support Operations Iraqi and Enduring Freedom.

Ammunition Industrial Base

JMC managed operations at 13 ammunition plants, 3 munitions center, 3 ammunition storage depots, and the Defense Ammunition Center in FY07. The ammunition installations focused on supporting regular mission and wartime requirements. Each plant has provided detailed reports in individual annual historical summaries in this report. The following section highlights their accomplishments and challenges.

During FY07, the Defense Ammunition Center (DAC) assisted the war effort by deploying nine personnel in the Quality Assurance Specialist, Ammunition Surveillance (QASAS), Ammunition Management, Explosives Safety and other fields. DAC provided support to Kuwait, Iraq, Afghanistan, Qatar, and Bahrain with instructors being deployed to support training requests, and improvements to the Automated Tactical Ammunition Classification System (ATACS). DAC experts answered over 700 questions through the AmmoHelp database in FY07.

Milan Army Ammunition Plant (MLAAP) hosted various industries who were interested in bidding to become the Facility Use Contractor for Milan AAP starting in

January 2009. The 40mm Systems Contract continued production in 2007. Upon the completion of the 2004 and prior contracts for M433s, the Systems Contractors began full production in support of the Warfighter. Production increased significantly during the year on the majority of products.

Iowa Army Ammunition Plant (IAAAP) continued to be the U.S. producer of 120mm tank training cartridges and maintained the production capability to Load Assemble, and Pack (LAP) all 120mm cartridges. Iowa remained the U.S. producer of the 155mm M107 high explosive projectiles and one of two producers of the 155mm M795 high explosive projectiles. A renovation program was continued to return unserviceable 120mm M830 high explosive cartridges to a serviceable status. Production of add-on armor kits with reactive armor tiles to support the Stryker vehicle was completed in early FY07. Limited production of Javelin K-Charge, Sidewinder, and XM982 Excalibur missile warheads continued. The 120mm M829A1 and M829A2 depleted uranium (DU) demilitarization operations continued as scheduled.

Holston Army Ammunition Plant (HSAAP) is the the production scale manufacturer of RDX and HMX based explosives in the United States. In FY07 Holston continued development of new insensitive munitions such as PAX-21, Air Force products (CXM-AF), and OSI products (OSX). BAE SYSTEMS Ordnance Systems, Incorporated (OSI), the operating contractor, successfully produced High Bulk Density Nitroquanadine on a large scale.

Kansas Army Ammunition Plant (KSAAP) continued production on the Sensor Fuzed Weapons (SFW) Containerized Bomb Unit 105s, the M720A1 and M768 60mm Mortars, and the M795 155mm High Explosive Projectile. SFW rework and Wind Corrected Munitions Dispenser (WCMD) retrofits as well as Product Performance Agreement Testing of the Combined Effects Munitions (CEM) were also work loaded during the year. The operating contractor continued miscellaneous warhead development work for ARDEC and small quantity production orders for various customers.

Lake City Army Ammunition Plant (LCAAP) continued production of critical combat needs. The plant's ammunition operations well exceed expectations, and although some of the plant is relatively modern, much of the military small caliber ammunition continues to be produced on World War II equipment. JMC in coordination with PM MAS continues to proceed with plant modernization planning and execution.

At Lone Star Army Ammunition Plant (LSAAP) the staff responded to requests for cost estimates and for information required for BRAC implementation plans. Day & Zimmermann received funding for movement of industrial stocks and those movements began after considerable coordination with headquarters and the gaining installations. Lone Star produced primers, detonators and mines for the Volcano and Gator; refuzing of the M77 sub-munitions for Multiple Launcher Rocket System (MLRS); Modular Crowd Control Munitions (MCCMs) and other items.

McAlester Army Ammunition Plant's (MCAAP's) total revenue for production operations in FY07 was \$38 million. The plant produced inert and live-loaded bombs, renovated 8 rounds of various munitions and recovered energetics. Depot functions remained at a hectic pace. The new Air Force explosive, AFX-757, emerged as a explosive fill for many new weapons loaded at MCAAP.

Mississippi Army Ammunition Plant (MSAAP) operates as an industrial complex compliant with the Armament, Retooling and Manufacturing Support (ARMS) Program. Contract revenues from ARMS tenants exceed the annual cost (\$10M) to maintain and operate the plant. MSAAP's military mission ceased in 2007 with the transfer of cargo grenade metal parts manufacturing equipment to Rock Island Arsenal, thus meeting the requirements of BRAC.

As a large manufacturer of large caliber ammunition metal parts in the United States, Scranton Army Ammunition Plant (SCAAP) plays a key role as the provider of conventional ammunition for the military services. Scranton AAP's operating contractor General Dynamics Ordnance and Tactical Systems (GDOTS) started the rebuild of the Erie 1 press line in January 2007. The press line worked well with improved productivity and quality. One million dollars of congressional funding was received for Phase 1 of the Flexible Manufacturing Cell project. The funds were used to procure and install Okuma lathes. Funding was also received for Phase 1 of the Bliss 3 press line rebuild project.

Radford Army Ammunition Plant (RFAAP) continued to produce propellants, energetics and munitions for our Nation while the Army focused on how to modernize the plant. RFAAP planned key modernization projects throughout 2007. The design of a gas-fired steam plant was completed, providing a potential replacement for the aging coal-fired, co-generation plant. The initial design phase for the replacement of a 28 year old Nitric Acid Concentrator/ Sulfuric Acid Concentrator (NAC/SAC) was completed. Significant improvements were made to the reliability and efficiency of the powerhouse to keep it operational for the next decade. Finally, studies began to increase the quality and efficiency of the nitrocellulose production and for improvements to the solvent recovery system.

Hawthorne Army Depot (HWAD) continued to be a multifunctional depot providing storage, shipping, demilitarization, and military training ready to support the joint warfighter, capable of providing ammunition when and where needed. FY2007 saw increased workload for the Depot. The depot issued and received ammunition. Hawthorne Army Depot seeks to expand its demilitarization program and is looking for ways to further enhance the capabilities of the Western Area Demilitarization Facility (WADF).

At Blue Grass Army Depot several improvements were made to facilities including changes to energy sources for heat, lighting and energy control systems to several buildings, and repairs to the Lake Vega Dam using OMA funds. BGAD had four munitions sheds constructed in the restricted area. The construction of the multi-billion dollar chemical weapons demilitarization facility had funding starts and stops as the cost

overruns dictated a DoD review of cost overruns. Award of a design build contract was announced for the Joint Reserve Training Center and Field Maintenance Shop in September 2007. The \$18.5 million dollar facility was directed by BRAC and is being managed by the Commonwealth of Kentucky Adjutant General's Office. The depot shipped and received ammunition. BGAD renovated and demilitarized a variety of rounds. BGAD demilitarized 3K short tons of ammunition and explosives during FY07.

Crane Army Ammunition Activity (CAAA) was selected to be the prototype installation for Active Radio Frequency Identification (ARFID) testing and implementation. CAAA made a concerted effort to complete orders for mortar candles. Due to Lean efforts, production rates increased on mortar and artillery candles in FY 07. CAAA shipped containers in support of OIF/OEF.

Anniston Defense Munitions Center (ADMC) had an aggressive ammunition demilitarization schedule which included demil of TOW Missiles and M15 mines. ADMC performed minor maintenance on Hellfire missiles, Hellfire containers, and Javelin missiles. The ADMC Munitions Recycling Center processed TOW missiles. In 2007 ADMC was tasked to destroy Spartan First Stage Rocket Motors. The Spartan Rocket Motors were originally part of the Safeguard anti-ballistic missile system which was decommissioned in 1973 and have been in storage for over 30 years.

Letterkenny Munitions Center (LEMC) personnel demilitarized the first ever Army Tactical Advanced Cruise Missile System (ATACMS) warheads in August 2007. This involved the first ever removal of the M74 Sub-munitions. LEMC personnel designed and modified a warhead holding fixture to hold the ATACMS warheads and developed the LOI to perform this demil operation. LEMC demilitarized over 2K short tons of warheads, fuzes, mines, inert items, B5A munitions and non-SMCA items. LEMC also provided interservice missile COSIS operations for HARM missiles and components, Sidewinder, M206 aircraft countermeasure flare maintenance.

Red River Munitions Center (RRMC) stored ammunition for all Services. FY07 marked the beginning of the execution phase of the 2005 Base Realignment and Closure (BRAC) process for Red River Munitions Center. In the fourth quarter of FY07, RRMC received BRAC funding and began shipment of stocks from RRMC to McAlester Army Ammunition Plant (MCAAP) and completed shipments by the end of the FY.

Tooele Army Depot (TEAD) shipped and received tons of various types of conventional munitions to various locations in Southwest Asia (SWA). Despite a very lean year for depot workload, TEAD ended FY07 \$4.6M in excess of plan in new orders, \$4.3M in excess of plan in revenue, \$3.7M less than planned in depot expenses, and was better than planned for Depot Net Operating Results (NOR) by \$8.0M.

Pine Bluff Arsenal was transferred to the Joint Munitions Command from the Chemical Materials Agency (CMA) effective in 2007.

ARMAMENT RESEARCH DEVELOPMENT AND ENGINEERING CENTER

The United States Army Armament Research, Development, and Engineering Center (ARDEC) conducted or managed research, development, and life cycle engineering in support of items in production and integrated logistics support (ILS) for assigned armament and munitions systems and materiel. ARDEC also procured and managed initial production quantities and provided technical support to Soldiers and equipment in the field. ARDEC maintained a technology base to facilitate the design, development, procurement, production, and life cycle support of assigned materiel or transitioned technologies. ARDEC director, Dr. Joseph Lannon maintained responsibility for all the center's activities as an element under the U.S. Army Research, Development, and Engineering Command (RDECOM).¹

Total ARDEC funding for FY07 was approximately \$831 million. Research, development, test, and evaluation (RDTE) direct funding was over \$280 million, of which ARDEC had obligated 91%. ARDEC obligated 36% of the \$449 million received in reimbursable research and development funds. ARDEC obligated \$51 million in OMA funding. The Army Working Capital Fund (AWCF) provided another \$7 million. Other reimbursable funding from DOD totaled \$63 million. ARDEC pushed items to full materiel release during FY07 and obtained conditional materiel release approval for one more. ARDEC also arranged urgent materiel releases.

ARDEC also is a recognized leader in Lean Six Sigma (LSS). Since FY 2000, employees have completed Green Belt training with 771 certifications. Employees have received Black Belt training with 80 certifications. In order to implement LSS earlier in the lifecycle, ARDEC is expanding into Design for Lean Six Sigma.

ARDEC was named a 2007 recipient of the Malcolm Baldrige National Quality Award, the nation's premier honor for business excellence. One of five organizations so honored, ARDEC is the first DoD organization in the program's 20-year history to receive the award and is one of the first two recipients in the non-profit category.

Initiatives and Accomplishments

ARDEC's list of projects and accomplishments are extensive. This summary will touch briefly on some of the programs that relate specifically to ammunition, although it is noted that the armament mission performed at ARDEC is as critical to the performance of newly developed technologies and munitions. For a more extensive view of ARDEC missions, see their complete historical report in Part II.

In efforts to reduce the various uses and sizes of containers and shipping platforms for all Army materials, ARDEC continued development of a 2005 project to create a Joint Modular Intermodal Distribution System (JMIDS) Joint Capabilities Technology Demonstration (JCTD) that involves a standardized platform, container and identification technology. In September 2007, ARDEC and BAE Systems Land and Armaments L.P. signed a CRADA for joint development of JIMIDS.

¹ ARDEC annual history input can also be found in the RDECOM annual history.

ARDEC improved interplant shipping of 60mm and 81mm mortar ammunition. A new engineering change proposal (ECP) changed pallet caps from fiberboard to plywood for better protection of the shipping boxes from forklift damage and better support for the pallet load.

The Lightweight Small Arms Technologies (LSAT) program shares technical achievements in both the weapon and ammunition areas during FY07. The cased telescoped ammunition provided a weight reduction compared to standard brass cased ammunition, and the lightweight machine gun achieved a weight reduction against the M249 squad automatic weapon (SAW). Another LSAT technology success in FY07 was caseless ammunition. This effort reached a significant milestone in June 2007 when the caseless ammunition fabrication facility came online at Alliant TechSystems (ATK) Launch Systems in Corinne, Utah.

The Urban Assault Munition (UAM) effort aimed to provide a single, lightweight warhead for shoulder launched munitions able to defeat lightly armored vehicles, bunkers, and personnel inside masonry structures. UAM utilized a tandem warhead design consisting of a precursor warhead up front and a bash-through warhead in the rear. In FY07 ARDEC began precursor designs and fabrication for testing.

The 120mm M1028 Canister Cartridge was developed in conjunction with General Dynamics Ordnance and Tactical Systems (GDOTS) and is a new item capable of defeating an enemy squad with one shot and a platoon with two shots. The canister gives tank guns a close-range antipersonnel capability. The cartridge received approval for full materiel release in November 2006.

155mm XM982 Excalibur Projectile production began in September 2006. In November 2006, B Battery, 2nd Battalion, 5th Field Artillery became the first unit to fire the projectile. ARDEC issued an urgent materiel release which allowed use of Excalibur by the U.S. Army and Marine Corps and the Canadian Army. Intended future users include the Australian and Swedish Armies. In September 2007, the National Defense Industrial Association (NDIA) named Excalibur one of the top five DoD programs for 2006.

At Hawthorne Army Depot, ARDEC supported the start-up of the Plasma Ordnance Demilitarization System. ARDEC developed the system under the demilitarization technology research and development program as an environmentally sound means of disposing of smoke and pyrotechnic items. Testing in late FY07 revealed gas pipe plugging but also proved out the solution of a slag tapping issue.

On 11 December 2006, ARDEC broke ground for its new state-of-the-art pyrotechnics facility. MES, Incorporated, was the contractor for the \$11 million project which covered construction of a 13,000 square foot laboratory and an 8,000 square foot pilot manufacturing plant. ARDEC plans completion by April 2008.

Preparations to move ARDEC fuze workers from Adelphi, Maryland, to Picatinny and to receive several Navy guns and ammunition responsibilities as ordered by the 2005 Base Realignment and Closure (BRAC) effort continued throughout FY07.

SUMMARY

As the nation continues operations in the Middle East the JM&L LCMC enterprise strives to improve the life cycle process to provide more lethal, cost effective and reliable munitions to all Services and Warfighters now and for the future. Ammunition leaders embraced the LCMC implementation and starting planning for the future of munitions using tools like Lean Six Sigma and the Strategic Analysis and Execution matrix. The PEO Ammo addressed funding shortfalls for conventional ammunition products, industrial base, modernization, demilitarization and manpower as it planned future budget POMs. The Joint Munitions Command mission remained fluid as it stood up as an AMC MSC. JMC ammunition installations and depots provided constant support to production, maintenance, shipping, and receiving operations in support of current operations. Many employees from the organizations deployed to support and solve ammunition issues in the field. ARDEC continued its path of excellence as it improved and invented munitions relevant for current and future operations. Each JM&L LCMC organization component describes challenges and accomplishments individually within the body of this report.

