The Army relies on the private sector for 70 percent of DOD’s conventional ammunition requirements; the remaining 30 percent are provided by government-owned ammunition plants and depots. Some plants, such as Radford Army Ammunition Plant (AAP), VA, and Holston AAP, Kingsport, TN, are well-known. This article focuses on some of the lesser known unique capabilities within the government-owned industrial base and how those capabilities provide flexibility to support our Soldiers, often in ways that were never imagined when the capabilities were developed.

CAA produces the USN’s MJU-32/B decoy flares to protect aircraft from attack. CAAA has been producing illumination pyrotechnics for DOD since the 1940s. (U.S. Army photo courtesy of JMC.)
Unique Needs Spur Ongoing Operations

Some capabilities within the government-owned industrial base are truly unique. Private industry could not afford to sustain them given the ups and downs of defense munitions requirements. Riverbank AAP in Riverbank, CA, for example, produces steel-drawn cartridge cases used in the 105mm Stryker mobile gun system and the U.S. Navy’s (USN’s) 5-inch gun ammunition. Although the plant is scheduled for closure, the capability is so critical that JMC has laid out a comprehensive plan to stockpile sufficient cartridge cases to meet Soldiers’ and Sailors’ requirements while the production line is being moved to Rock Island Arsenal, Rock Island, IL, where JMC is headquartered.

Other capabilities are not unique, but serve a unique purpose. Crane Army Ammunition Activity (CAAA) in Crane, IN, has been producing pyrotechnics for illumination since the 1940s. In October 2001, when the USN needed MJU-32/B decoy flares to protect aircraft from attack, it was logical to turn to CAAA. In a little over 10 months, they were able to produce an acceptable first article product. While there are several commercial producers available, the fact that CAAA has this capability allows the government to conduct low-rate initial production prior to technical data package (TDP) release and to ensure that TDPs are fully acceptable for competitive procurement. This also reduces the cost of follow-on buys.
Diverse Missions Lead the Way to New Technology

Pine Bluff Arsenal (PBA) in Pine Bluff, AR, has diverse missions ranging from depot storage to chemical and biological defense (CBD) equipment production. PBA's production engineering lab, smoke test facilities, and chemical and physical laboratories are integral to new munition item development. PBA is a key producer of white and red phosphorus rounds, pyrotechnics and training items; and manufacturer of the M45 protective mask, large filters and decontamination kits used by Soldiers around the world. PBA's support of DOD's CBD has led to broader involvement with homeland security first-responder training, pre-positioned equipment surveillance and national weapons of mass destruction training center maintenance for the American Red Cross.

The need to reduce environmental impacts has spurred new technology at Anniston Defense Munitions Center (ADMC) in Anniston, AL, where a missile recycling center (MRC) is being implemented in three phases. Phase I established a disassembly process for Tube-launched, Optically tracked, Wire-guided (TOW) missiles. ADMC estimates that 98 percent of missile hardware, warhead explosives and propellant ingredients can be reclaimed. Currently, TOW missile cases are being recycled and sold to the original equipment manufacturer for reuse in new production. Other components are undergoing testing to determine reuse potential. Phase II, a slurry explosives module, will incorporate low-value energetic materials and produce a mining explosive for commercial use. Phase III, an energetics processing module (EPM), is planned for startup in 2008. The EPM will reclaim high-value HMX (cyclotetramethylene-tetranitramine), RDX (hexahydro-trinitrozine) and AP oxidizer ingredients in crude form with greater than 99 percent purity. The MRC technologies should be directly applicable to the vast majority of missiles in the DOD and NATO inventories.

Demilitarization (Demil), Recovery and Renovation

Demil capability exists across the ammunition industrial base. At McAlester...
AAP (MCAAP) in McAlester, OK, capabilities include disassembly, autoclave meltout and recovery with technologies like robotic and cryofracture disassembly under development. MCAAP partners with several commercial firms doing a wide variety of demil work. Together, they have developed cost-effective methods for recovery of explosives like tritonal and TNT that has resulted in recovering 11 million pounds of tritonal per year and more than 20 million pounds of TNT for reuse in new bomb production. The Defense Ammunition Center (DAC), collocated at MCAAP, is currently developing three capabilities for implementation into the U.S. Republic of Korea Demil Facility — a unit to treat contaminated solid waste for projectile meltout operations; a unit to treat contaminated liquid waste; and a unit that converts military propellants into usable liquid fertilizer.

Hawthorne Army Depot in Hawthorne, NV, is home to the Western Area Demil Facility (WADF), a $120 million complex with a full range of demil capabilities including meltout, steamout, high-pressure washout, decontamination furnaces and disassembly capabilities for improved conventional munitions. WADF has a capacity to demil 49,000 tons of ammunition per year.

Similarly, ammunition renovation is a capability that exists throughout the ammo industrial base. Renovation allows the Army to recover and extend the life of ammunition that otherwise would have become candidates for demil. For example, MCAAP and Blue Grass Army Depot (BGAD) in Richmond, KY, have pioneered bomb maintenance and renovation with complete thermal coating and thermal arc spray capabilities that meet stringent U.S. Air Force (USAF) thermal arc coating standards. The “new” bombs have 41 percent lower life-cycle maintenance costs and a 20-year useful life extension. BGAD has also developed a high-output renovation process for 105mm howitzer ammunition, a much needed capability since the 105mm howitzer is the primary artillery piece currently being used by our light forces.

**Specialized Capabilities Support Design, Manufacturing, Logistics**

Some capabilities emerge from the need to maintain the depot itself. For example, MCAAP, the largest ammunition storage depot in DOD, also has the largest rail system in the Army. Over the years, MCAAP has developed...
in institutional expertise and capabilities for efficient and effective rail maintenance that it now provides as a service to other facilities to generate revenue.

Another specialized capability at MCAAP is the design and manufacture of both wood and steel pallets. The metal pallet facility can prototype, machine, weld, fabricate and galvanize as many as 2,000 pallets a month. The wood pallet shop is equally versatile. MCAAP houses two of only four heating chambers within DOD capable of destroying insects and pests in wood products meeting U.S. Department of Agriculture, European Community and United Nations requirements, making MCAAP the supplier of choice for numerous DOD customers and vendors throughout the world.

JMC established the Mobile Ammunition Renovation Inspection Demil (MARID) team to provide direct ammunition logistics support to Soldiers in the field. Calling on ammo expertise from throughout the JMC depot system, MCAAP deploys teams to perform all aspects of ammo life-cycle management, including maintenance, shipping, receiving, inspection, renovation and demil. DAC also provides mobile training teams to provide critical hazardous materials (HAZMAT) training to DOD-deployed forces in Southwest Asia (SWA). A 2-instructor team spends 3 months in theater, teaching students the rules and regulations governing HAZMAT transport by land, sea or air.

DAC also serves as the Army’s Hazard Classifier, coordinating actions with the USN, USAF, SDDC, DOD Explosives Safety Board and DOT. DAC also serves as the Army’s Hazard Classifier, coordinating actions with the USN, USAF, Surface Deployment and Distribution Command (SDDC), DOD Explosives Safety Board and Department of Transportation (DOT). DAC also operates and maintains the Joint Hazard Classification System on DOD’s behalf and serves as the Army approver for Explosives and Chemical Agent Safety Site plans for operations and storage.

Some of the equipment used by the MARID team comes from another JMC...
In direct support to the warfighter, DAC developed an Automated Tactical Ammunition Classification System (ATACS) that is capable of sorting and classifying 50,000 rounds of mixed small arms ammunition from 5.56mm through .50 caliber per 8-hour shift, and has processed 5 million rounds since spiral integration in 2004 at Camp Arifjan, Kuwait. A second ATACS at the National Training Center, Fort Irwin, CA, has processed 2 million rounds since 2006. A third ATACS is being integrated into the Desert Optimized Equipment Workshop, and will provide a transportable, self-contained workshop for fielding to SWA.

Along with providing critical equipment to the warfighter, DAC provides Joint service ammunition-related training to more than 35,000 military and civilian students annually. DAC also manages the Army's oldest career program, the Quality Assurance Specialist Ammunition Surveillance, and the Ammunition Managers career program. Combined, these career programs provide more than 1,000 qualified civilians in the field supporting warfighters. DAC produces the Yellow Book, formally known as the Hazard Classification of United States Military Explosives and Munitions, to help Soldiers in the field who don't have ready access to official information sources.

CAAA has developed a niche in repair of 20-foot shipping containers that are essential to the Army's logistics support. Applying Lean Six Sigma to develop production processes allows CAAA to deliver high-quality products at competitive prices. CAAA is also renovating items such as dummy nose plugs, metal pallets and other types of shipping containers. CAAA's machining center supports all of these operations with a full compliment of modern computer numerically controlled machinery as well as paint, plating and powder coating capabilities.

**Unique Expertise Supports the Warfighter**

The existence of these unique capabilities makes it possible for the Army to respond quickly to urgent Soldier requests. For example, the rapid manufacture of armor-protective kits for High-Mobility Multi-purpose Wheeled Vehicles (HMMWVs) early on in OEF/OIF was done at CAAA. As the improvised explosive device threat grew, CAAA and TEAD were both called upon to produce armored cabs for M939 series trucks. In FY02, DAC developed AMMOHELP, an informational database that answers questions on any aspect of ammunition and explosives management, operations and use. Questions can be submitted by e-mail, phone or through the DAC Web page at www3.dac.army.mil. All responses are provided by subject matter experts, and more than 3,800 questions have been received and answered since the program began.

These are just a few examples of the diverse and unique capabilities that exist within the ammunition industrial base to support and protect our warfighters. The ammo industrial base touches Soldiers around the world every day with capabilities that extend far beyond the basics of ammunition production, storage and maintenance.