**RECORD VERSION**

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**BEFORE THE**

**SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES**
**COMMITTEE ON ARMED SERVICES**
**UNITED STATES HOUSE OF REPRESENTATIVES**

**ON**

# MODERNIZATION OF THE CONVENTIONAL AMMUNITION PRODUCTION INDUSTRIAL BASE

**SECOND SESSION, 116TH CONGRESS**

**SEPTEMBER 22, 2020**

**NOT FOR PUBLICATION UNTIL RELEASED BY THE**
**COMMITTEE ON ARMED SERVICES**

## Introduction

Chairman Norcross, Ranking Member Hartzler, and distinguished Members of the Subcommittee on Tactical Air and Land Forces, thank you for this opportunity to discuss the Army's plans to modernize production of conventional ammunition across the industrial base. On behalf of the Secretary of the Army, the Honorable Ryan McCarthy, and the Chief of Staff of the Army, General James McConville, we thank you for the invitation to join you today and look forward to a productive discussion.

The Secretary of the Army and the Army's Chief of Staff priorities are People, Readiness, Modernization and Reform. The foundation of the Army is its People. People are the Army's centerpiece and they define who we are.

## People

Protecting the health and safety of our extremely skilled and dedicated workforce and the environment in which they operate is paramount. Munitions and the associated materials, including energetics, explosives and acids are inherently dangerous. Over 80 percent of Army Class A mishaps involving a fatality or property damage greater than $2.5 million are the result of human error. Human handling of these materials must be replaced with process automation or other technology solutions, freeing the workforce to focus on technical oversight. Our envisioned end-state is state-of-the-art manufacturing processes and machinery that have safety standards built in, this not only improves safety for the workforce, but makes production more efficient and effective while reducing risk to production, should an accident occur.

## Readiness

As readiness is one of the Army's priorities, the health and vitality of the ammunition industrial base, as based on our Title 10 roles and responsibilities, is critical

to enable our support to Combatant Command (COCOM) requirements and ensure the success of our Joint Warfighters in support of our National Defense Strategy. The ammunition industrial base must be postured to support current readiness, surge capabilities, and future modernization efforts.

The Army's ammunition industrial base is currently composed of a network of Government Owned, Contractor Operated (GOCO); Government Owned, Government Operated (GOGO); and Contractor Owned, Contractor Operated ammunition industrial sites that have evolved over time. In the 1940's, the Army had 84 ammunition plants to accomplish this mission. Today, the Army has 16 ammunition installations and is on a path to reduce to 14 through divestiture decisions.

Since 1977, the Army has been the Single Manager for Conventional Ammunition (SMCA) for the Department of Defense (DoD), providing central management of conventional ammunition for all the Services to ensure superior products and reliable sources of supply, as well as economies of scale and other managerial efficiencies. The Army continues to make progress across the spectrum of functions required to deliver world class ammunition and sustainment support to the Joint Warfighter. To date, there has been no significant shortfall in conventional ammunition production by the ammunition industrial base, thus enabling Joint Warfighters to execute their worldwide contingency missions. The 2019 SMCA annual report demonstrates that the Army is successfully executing its Title 10 responsibilities per the agreed-upon performance measures in accordance with Joint Conventional Ammunition Policies and Procedures, Implementing Regulations and Assessment.

The following are examples of metric data that drove Fiscal Year 2019 (FY19) ratings; FY20 annual report is yet to be published:

1. **Production and Industrial Base Management:** Of the 3,196 ammunition lots tested, 3,177 passed the initial acceptance test, receiving a 99.4 percent pass frequency.
2. **Stockpile Management:** Over 184,470 physical inventory accuracy counts were completed with an overall accuracy frequency of 99.6 percent.
3. **Distribution Management:** Of the 23,437 Continental United States storage depot shipments requested by the Military Service customer, 98.6 percent of the orders filled were considered “Perfect Orders.”
4. **Acquisition Management:** Of the 778 orders delivered, 657 met the Customer Required Delivery Dates, resulting in an on-time rate of 84 percent.

**Army Organic Ammunition Industrial Base**

While currently meeting the needs of our Joint Warfighters and Coalition Partners, the Army is simultaneously modernizing our plants to address aging conditions and meet future capabilities.

The Army’s buildings and infrastructure that support the ammunition industrial base average 58 years old, exceeding their expected useful service life of 50 years. More than half of these (54 percent) were built prior to 1945 and must be modernized to meet the evolving capabilities required.

As facilities that support the ammunition production mission become less capable, there is an increased risk to Army readiness and the safety of its personnel. Facilities with the appropriate size and configuration, utilities and technology for the capability, availability of adequate equipment necessary to perform the work required,

environmental conditions suitable for personnel to safely perform the work, and the availability of skilled labor with the unique industrial competencies are all required.

Since 2009, more than $3.2 billion of taxpayer dollars has been invested in modernizing ammunition production capability, making these facilities more mission capable, sustainable and safer. Environmental upgrades for water treatment and contaminated waste water purification are also underway.

As mentioned earlier, the Army's organic ammunition industrial base consists of 16 installations. Two of those installations perform chemical weapons destruction; four primarily perform demilitarization, storage and distribution functions; and ten installations are primarily dedicated to ammunition production.

**Chemical Weapons Destruction**

Both Blue Grass Chemical Agent Pilot Plant and Pueblo Chemical Agent Pilot Plant are on pace to complete chemical weapons destruction in advance of the December 31, 2023 treaty deadline with projected completion of Pueblo in April 2023 and Blue Grass in August 2023. After destruction operations are completed, it will take 18 to 24 months to destroy the main plant and support structures and remediate all toxic waste associated with chemical agent processing and neutralization.

**Demilitarization, Storage and Distribution Installations**

The complete list of demilitarization, storage and distribution installations includes:

- Anniston Munitions Center, Anniston, Alabama (GOGO)
- Blue Grass Army Depot, Richmond, Kentucky (GOGO)
- Hawthorne Army Depot, Hawthorne, Nevada (GOCO)
- Letterkenny Munitions Center, Chambersburg, Pennsylvania (GOGO)
- Tooele Army Depot, Tooele, Utah (GOGO)

**Ammunition Production Installations**

The Army's organic ammunition production industrial base consists of ten facilities: seven GOCO facilities and three GOGO facilities. They are:

1. ***Crane Army Ammunition Activity*** (GOGO) in Indiana performs explosive loading (cast cure, press, and extrusion) and Load, Assemble, and Pack (LAP) of Navy gun ammunition, candles and pyrotechnics. The installation is currently executing five modernization projects valued at roughly $15 million, which includes a state-of-the-art plating facility based on current industry standards, the Crane Flexible Manufacturing Complex to improve the melt core process, and upgrading the shipping and receiving facility to enhance ammunition outload capabilities. Future plans are to improve the rail holding area, construct a new machine shop, construct a pyro complex and potentially construct a tetranitrocarbazole, or TNC, facility.
2. ***Holston Army Ammunition Plant*** (AAP) (GOCO) in Tennessee produces almost all of the explosives used in nearly every lethal system within DoD from bombs and missiles to hand grenades, mortars, tank and artillery ammunition. Enhancements for Warfighter safety at Holston AAP includes the introduction of Insensitive Munition Explosives, or IMX, to reduce the chance of inadvertent detonation while in storage or during transport. At present, the plant is executing 19 modernization projects valued at more than $530 million. In support of the U.S. Air Force, the primary effort is expansion of Research Department Explosive, or RDX, explosive capacity from 8 million pounds to 15 million pounds annually.

3. ***Iowa Army Ammunition Plant*** (GOCO) provides nearly all of our artillery LAP production capability for 40mm, tank, mine clearing and demolition munitions, as well as loads warheads for missiles. The installation is currently executing 18 modernization projects valued at nearly $100 million, including design efforts in support of artillery melt-pour explosive loading. The plant has initiated a working group to devise a more fully autonomous, new melt-pour artillery production line that would incorporate extensive automation to minimize human interaction with explosives and minimize explosive yield concentrations.
4. ***Lake City Army Ammunition Plant*** (GOCO) in Missouri produces 85 percent of DoD's small caliber ammunition (less 9mm ammunition), as well as metal parts for 20mm ammunition. The plant is executing quality of work-life improvements such as the addition of major heating, ventilation, and air conditioning systems, which also increases the reliability of electronic machinery. It is also currently modernizing small caliber production equipment. Twelve modernization projects valued at roughly $165 million are currently ongoing and plans are underway to construct a new production capability for the Next Generation Squad Weapon 6.8mm ammunition. This would be the first, new small caliber production capability since the 1940s, incorporating the latest advancements in technology, automation and ergonomic designs to enable increased worker safety and productivity.
5. ***McAlester Army Ammunition Plant*** (GOGO) in Oklahoma performs mixing operations for both cast cure and melt-pour explosive formulations, as well as LAP operations of all penetrator, general purpose and inert (practice) bombs

(500 pounds – 30,000 pounds) for the U.S. Air Force and U.S. Navy. The installation is currently executing a $1 million new x-ray capability project, as well as a design project for a $35 million multipurpose demilitarization facility. Future plans include an ammunition multipurpose demolition shop project to improve demilitarization capabilities. This project relocates operations and personnel out of World War II era bomb production facilities that were not designed with proper ventilation to accommodate munition demilitarization processes and rectifies employee exposure hazards (documented anemia cases) by providing a properly designed facility that limits worker exposure to explosive and chemical health hazards. This project will also improve material handling and ergonomics.

6. ***Milan Army Ammunition Plant*** (GOCO) in Tennessee is no longer required for mission needs and is being prepared for divestiture. The Army is currently executing projects to demolish environmentally hazardous buildings at this plant.
7. ***Pine Bluff Arsenal*** (GOGO) in Arkansas produces and performs LAP operations of various smoke, incendiary and riot-control ammunition (artillery projectiles, mortar cartridges, grenades and 40mm cartridges) filled with white phosphorus, illuminating candles, smoke, compound 2-chlorobenzalmalononitrile, the defining component of tear gas, red phosphorus and incendiary formulations. The installation is currently executing five modernization projects valued at roughly $15 million, which includes upgrading natural gas lines and pyrotechnic production facilities.

8. ***Quad Cities Cartridge Case Facility (QCCCF)*** (GOCO) at Rock Island Arsenal in Illinois manufactures deep-drawn steel cartridge cases for use in 5-inch/54 caliber Navy guns and 105mm brass tank ammunition. They are preparing for $2 million in safety and environmental upgrades in support of the U.S. Navy, which includes the relocation of a commercially-owned “deep draw” large-caliber case.
9. ***Radford Army Ammunition Plant*** (GOCO) in Virginia produces propellants and propellant ingredients used in rockets, tank ammunition and nearly all of our small caliber ammunition from 5.56mm to .50 caliber. The plant has a number of product quality improvements underway, including a new nitrocellulose facility, which uses the most modern and efficient manufacturing technologies to improve energy efficiency and provide better quality product. At present, the plant is executing 17 modernization projects valued at more than $640 million, including a new $114 million initiative to eliminate open burning and open detonation. Future plans are to construct new solventless and nitroglycerin production facilities that incorporate the latest technology to minimize human interaction with dangerous chemicals and energetics while increasing throughput and operating efficiencies.
10. ***Scranton Army Ammunition Plant*** (GOCO) in Pennsylvania provides metal forge capabilities critical to the production of mortar and artillery shell bodies used to supply the production process in Iowa. The plant is currently executing a project to repair exterior walls, columns and arches, and requires investment in a modern, flexible small-scale machining line in order to support the Army’s Long Range Precision Fires modernization efforts.

**Future Modernization Strategy**

The Army's future modernization strategy is built upon an overarching holistic approach. This long-term (15 years) ammunition industrial base investment plan will consider emerging requirements for facilities and land, energy and water resiliency, equipment modernization, information technology and security, and human capital requirements. In order to support current readiness, future modernization and ensure surge capability, we are identifying and prioritizing our installation-specific requirements. To fully modernize, improve mission capability, facility sustainability and plant safety, the Army's ammunition industrial base will require between $14 billion and $16 billion from FY21 thru FY35. The investment plan will identify how we modernize our facilities: we will primarily focus on renovation versus new construction.

**Challenges**

Timely, adequate, predictable, and sustainable funding is necessary. In today's international security environment, it is essential that the ammunition industrial base be brought to 21st Century technological standards. In general, our existing facilities do not match the needs of the equipment or the people working in them. Although it is difficult to modernize the ammunition industrial base while maintaining production continuity to meet current Warfighter needs, there is greater risk in not doing so. Within available funding, we have and continue to prioritize projects across the enterprise that deliver readiness, build surge capacity, and modernize for the future force. We must also address the fiscal resources required to reduce our single points of failure, protect our industrial control systems from cyber threats, ensure energy resilience and eliminate reliance on international suppliers that are currently a part of our ammunition supply chain.

Funding new facilities that are designed to embrace current technology, rather than trying to retrofit 20th Century facilities, will enable predictive analysis, environmental compliance (water, energy efficiency, conservation and resiliency), improve workforce safety, and enable more efficient and effective production capacity resulting in a greater return on investment.

Finally, energy resilience is also a priority. The Army will need legislative support to allow DoD to receive the benefits of shale gas production on DoD lands in supporting the energy resilience and energy security of DoD installations. As an example, there are significant natural gas reserves in the shale deposits beneath McAlester Army Ammunition Plant. Allowing access to this natural gas would serve two key purposes: the natural gas could power the plant, enabling energy security and resilience, and the savings generated through utility cost reduction could be used to fund modernization initiatives across the organic industrial base.

**Conclusion**

Mr. Chairman, the Army's organic ammunition industrial base, its workforce and its products that support our Joint Warfighters and Coalition Partners are strategic, national assets that must be protected now for future generations. Although the Army is successfully supporting COCOM requirements and ensuring the success of our Joint Warfighters, we must modernize these plants with the latest technological advances, manufacturing processes and safety protocols to bring them to 21st Century standards. At the same time, we must implement a strategy to reduce single point failures, reduce dependence on international sole source suppliers, some of whom are not our allies, and develop international partnerships and strategic, reliable international second sourcing where necessary.

This modernized ammunition industrial base will be realized through a deep understanding of the production supply chain and potential worldwide alternative sources, continual criticality and fragility assessments, prioritization and management of vulnerabilities and risk, while capitalizing on opportunities for improvement and anticipating future needs.

Mr. Chairman and distinguished Members of this Subcommittee, we thank you for your steadfast and strong support of the outstanding men and women in uniform, our Army Civilians and their Families, and look forward to your questions.