

What Makes Our 120mm Tank Ammo The Best on the Battlefield?

by Master Sergeant Wakeland K. Kuamoo

Since the mid-1980s, U.S. tankers have been firing 120mm ammunition from the M1A1 and more recently the M1A2 tanks. Many armor soldiers, Cavalry troopers, and Marines will tell you that their success on Tank Tables VIII (individual crew qualification), XII (platoon qualification), and numerous other live-fire exercises is directly linked to high quality main gun ammunition. Still others will tell you that their very lives and survivability during the Gulf War depended on how well the ammunition performed.

But what makes our 120mm tank ammunition the best?"

Last year, several master gunners from Ft. Knox had an opportunity to learn first-hand how our 120mm tank ammunition is produced. At each site, we learned about the company's overall mission and toured the facility. At the end of each tour, we briefed the management, production, and support personnel. We explained tank gunnery training in our units and the success achieved by our tankers in Operation Desert Storm. Our intent was to tell these folks how we use their products.

Our visits took us to several different locations because so many firms manufacture the components for the Army's tank rounds (See chart, next page).

As you can imagine, there is a lot of work required to produce a main gun round. During our visits we saw much of this work. We viewed component production at the facility and how the pieces were put together. We observed a metal forge that transformed a steel ingot into a case base assembly (the "aft cap"). We saw primers assembled, to include the nearly invisible bridge wire and benite explosives, and the making of our combustible cartridge cases and the actual explosive propellants that went into these cases. It was fascinating to watch

the M829A2 Depleted Uranium penetrators prepared for assembly. People, not machines on the production lines, put together the new composite sabot pedals that will be used during the assembly of the M829A2 projectile. A technician showed us the M744 fuze's electronic components which is part of the M830A1 MPAT round. Ever see an M865 Sabot or M831A1 Heat Target Practice Training round assembled? Let me tell you that it is a remarkable process.

At the Iowa Army Ammunition Plant we observed the load, assemble, and packout process (LAP). Here the sub-components are united to produce the complete round you see in the field. They assemble both training and service rounds at the Iowa plant. Once assembled, they are loaded into metal shipping containers. A sample of the rounds from each lot is shipped to a live-fire proving ground for testing, either at Aberdeen Proving Grounds, Maryland, or Yuma, Arizona. Our prime contractors also have range test facilities; Alliant Techsystems has a range in Socorro, New Mexico, and Primex has a range test facility in Camden, Arkansas. The professional personnel that work at these sites ensure the bullets we use are safe and meet all strict Army and Marine Corps requirements. These people are yet another key element in ensuring we have top quality ammunition.

It was a great experience to be able to view this work, which most other armor soldiers and Marines may never have the opportunity to see. Throughout all of our visits, no matter where we went, several factors were very evident.

First, the management people at each site showed a genuine concern for their workers and were actively involved in the entire production process.

Secondly, all along the assembly lines, we could see various testing stations.



Somewhere during its assembly on the production line, rigorous testing of the round by humans and specialized machines and instruments occurs. Devices similar to X-ray machines look for nearly invisible cracks in our aft caps. Each round of 120mm ammunition is physically put through a chamber gage test. This test simulates the loading of a round into a main gun breach.

If a component fails a critical test, an entire assembly line may be shut down until the fault is analyzed and fully corrected. Time was never the major factor in these delays. This vast improvement in ammunition production ensures that only top quality ammunition goes to the field. The emphasis was always on the quality of the product.

At the conclusion of every visit, we felt a greater sense of confidence in our ammunition. Certainly, much of this confidence came from being able to actually see the amount of effort and dedication put forth during the production cycles. This confidence not only gave us personal satisfaction but, for the master gunners who are instructors, doctrine

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writers, and developers, we can see this confidence in their jobs here at Ft. Knox. The new information which we gained on our visits will be transferred to students as well as the doctrine and equipment development programs here.

Another important contributor needs to be mentioned here because it is also a part of ensuring that we are getting and using top quality ammunition. The 120mm team from the Industrial Operations Command (IOC), Rock Island, Illinois, is responsible for ensuring that fielded ammunition works properly. This team, working with civilians in your local ammunition agencies, continuously monitors how well the ammunition is working. Report any problems that you may encounter with your ammunition in the field to your local quality assurance personnel who will forward the information to the 120mm team. Two other agencies that also make major contributions to ensure we get and use quality 120mm ammunition are the Office of the Program Manager for Tank Main Armament Systems (OPM-TMAS) and the Armament, Research, Development, and Evaluation Command (ARDEC). Through previous experience with these groups, I can assure you that their response towards investigating possible problems will be very swift. These agencies strongly support the needs of the soldier.

Back to the original question, "What Makes Our 120mm Tank Ammunition The Best?" The answer is quite simple. Sophisticated technology is certainly a big part of production excellence and our technology in the field of tank ammunition is second to none. But we also believe that the most important factors are the people who manage, produce, assemble, test, and monitor our tank ammunition.

The next time you break out a 120mm round, stop and take a close look at it. The next time you score a first round hit on Tank Table VIII, take a second to think about that round. Real people produced it, real people that care about us,

the soldiers and Marines whose lives may one day again depend upon their products.

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They Forge the Thunderbolts...

- Primex Technologies, St. Petersburg, Florida; Headquarters of the Systems Contractor
- Alliant Techsystems, Minneapolis, Minnesota; Headquarters of the Systems Contractor
- Ver-Sa-Til Associates Inc., Chanhassen, Minnesota; M830A1 Fin and Sabot Pedals
- Wiltec Industries, New Hope, Minnesota; Primer Body
- NB 502 Inc., New Brighton, Minnesota; M830A1 Shaped Charge Liner
- Motorola Inc., Scottsdale, Arizona; M830A1 Proximity Sensor
- Armtec Defense Products, Coachella, California; Combustible Cartridge Case
- Nuclear Metals Inc., Concord, Massachusetts; 829A2 Penetrator
- Conco Inc., Louisville, Kentucky; PA116 Metal Containers
- Ferrulmatic Operations, Totowa, New Jersey; Case Base, M830A1/M865 Components
- Aerojet Ordnance, Jonesboro, Tennessee; M829A2 Penetrator
- Bulova Technologies, Lancaster, Pennsylvania; M830A1 Fuze
- Flinchbaugh Technologies, Red Lion, Pennsylvania; Case Base, M829A2, M865, and M831A1 components
- Radford Army Ammunition Plant, Radford, Virginia; Explosive Propellant
- Day and Zimmerman Operations, Camden, Arkansas; Primers
- National Ordnance and Ballistic Test Center, Camden, Arkansas; Live Fire Range Testing
- Kilgore Operations, Toone, Tennessee; Primers
- Eagle Pitcher Industries, Joplin, Missouri; Thermal Battery for the M830A1
- Thyssen Precision Forge Inc., Garner, North Carolina; Case Base Forgings
- Iowa Army Ammunition Plant, Middletown, Iowa; Load, Assemble, and Packout of Tank Ammunition