

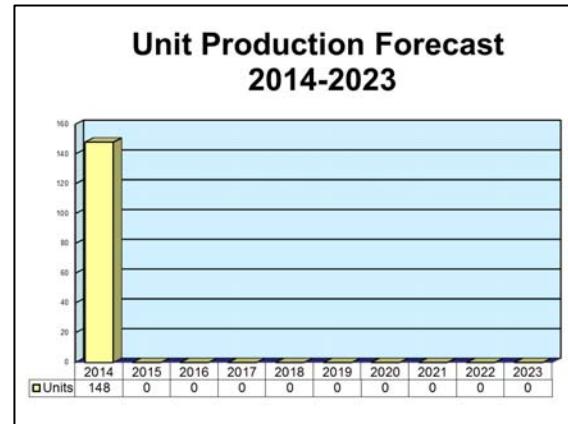
ARCHIVED REPORT

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M141 Bunker Defeat Munition

Outlook

- FY12 was the last year of funding for U.S. Army M141 procurement
- M141 Bunker Defeat Munition has reportedly yet to score any export sales
- Production forecast reflects remaining production to complete existing U.S. Army procurement order only



Orientation

Description. A man-portable multipurpose weapon.

Sponsor. The U.S. Department of Defense, through the U.S. Army, sponsors the development and U.S. Army procurement of the Bunker Defeat Munition.

Status. Development through serial production.

Total Produced. Through 2013, we estimate that the contractor produced 21,551 SMAW-D/Bunker Defeat Munitions.

Application. A lightweight, man-portable, shoulder-fired multipurpose weapon system optimized

for use by infantrymen on the move. In addition to its primary "bunker-buster" application, the Bunker Defeat Munition provides a minimal anti-armor capability (up to BTR-60 level).

Price Range. The U.S. Army no longer maintains a budget line for the M141 BDM. According to U.S. Army FY14 budget request documentation (April 2013), the M141 BDM carried an FY12 unit price of \$17,867.83.

Contractors

Prime

| | |
|--|---|
| <p>Nammo Talley Defense Inc (formerly Talley Defense Systems)</p> | <p>http://www.NAMMO.com, 4051 N Higley Rd, PO Box 34299, Mesa, AZ 85277-4299 United States, Tel: + 1 (480) 898-2200, Fax: + 1 (480) 898-2358, Email: marketing@nammotalley.com, Prime</p> |
|--|---|

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 Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

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Technical Data

Note: *The following data reflect the limited amount of technical data available in the contractor's promotional literature for the Shoulder-Launched Multipurpose Assault Weapon-Disposable (SMAW-D), which the U.S. Army adopted as the M141 Bunker Defeat Munition.*

Dimensions. The following data reflect the production-standard SMAW-D with the 83mm Mk 118 Mod 0 High Explosive Dual-Purpose (HEDP) warhead.

| | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------------|-----------------|-------------------|
| Carry length | 81.3 cm | 32.0 in |
| Projectile diameter | 83 mm | 3.27 in |
| HEDP charge weight | 1.1 kg | 2.42 lb |
| Total weight | 7.26 kg | 15.97 lb |

Performance. The target perforation data reflect the performance of the standard 83mm Mk 118 Mod 0 HEDP warhead against reinforced concrete walls and triple brick walls, respectively.

| | <u>SI Units</u> | <u>U.S. Units</u> |
|--------------------|-----------------|-------------------|
| Speed | 220 mps | 721.78 fps |
| Altitude | line of sight | line of sight |
| Effective range | 250 m | 273.4 yd |
| Maximum range | 500 m | 546.8 yd |
| Target perforation | 20.32/30.48 cm | 8/12 in |

Propulsion. Solid-fuel rocket motor consisting of a number of double-base propellant sticks bonded to a pin plate.

Launcher Mode. The SMAW-D/Bunker Defeat Munition launcher consists of a disposable, telescoping tube. The launcher includes sealed end caps and a carrying sling as well as the sighting unit and firing mechanism. The operator discards the entire launch unit (except any attached optical sight) after use.

Control & Guidance. The launch tube features a standard Picatinny rail system so that the operator can supplement the simple sight unit with the PVS-4 night sight as well as the PAQ-4A infrared or PEQ-2 laser aiming systems.

Upon firing, eight ring-mounted, spring-loaded fins deploy to provide aerodynamic stabilization for the warhead in flight.

Warhead. The 83mm Mk 118 Mod 0 multipurpose HEDP warhead is optimized for the penetration of

concrete, building materials, sandbags, and similar materials. The warhead also incorporates a blast / fragmentation capability.

The SMAW-D fuze automatically selects the proper detonation mode to maximize destructive effects against soft or hard targets.

- Soft targets: fuze delays detonation until rocket buries itself deep into target.
- Hard targets: fuze detonates immediately upon impact with target.

The contractor claims the SMAW-D warhead and fuze combination produces "enormous" target holes, propelling large fragments inside a vehicle or behind a wall.

Additional warheads are reportedly in development, including one with a follow-through grenade and a flame warhead.

Variants/Upgrades

Variants. None.

Modernization and Retrofit Overview. Generally not applicable. The contractor integrates any product improvements as production cut-ins.

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Source: Nammo Talley Defense Inc

Program Review

Background. During Operation Just Cause in Panama (1989), the U.S. Army's need for a lightweight weapon to defeat bunkers, fortifications, and other built-up defensive structures became apparent. Although the U.S. Army senior staff subsequently identified a need for such a weapon, the Army had to resort to borrowing 125 Mk 150 Shoulder-Launched Multipurpose Assault Weapons (SMAW) from the U.S. Marine Corps during Operation Desert Storm (1991).

Filling a Capabilities Gap

However, while the Marines' Mk 150 SMAW could defeat the bunkers and similar targets, it was far too long and heavy for use by paratroopers. The Army's standard AT4/M136 exhibits similar limitations; it is also unsuitable for the bunker-busting requirement.

Consequently, the U.S. Army initiated the Multi-Purpose Individual Munition (MPIM) program in September 1991 with the publication of an Operational Needs Statement for U.S. Army Forces Command (FORSCOM). In early 1993, the U.S. Army made an initial down-selection of competing systems. In March 1993, the U.S. Army awarded contracts for 200 units each of the three finalists' systems for a nine-month competitive evaluation beginning later that year. This evaluation was essentially a "shoot-off" of production-design weapons.

In September 1994, the U.S. Army selected the Talley Defense Systems SMAW-D for limited procurement; it was type-classified as the XM141 Bunker Defeat Munition.

Congress Gets Involved

However, as the result of congressional meddling over the proposed merging of the Bunker Defeat Munition

program and the U.S. Marine Corps Predator program, initial deliveries of the Bunker Defeat Munition slipped to November 1997. Congress then issued a mandate that the U.S. Army procure only 6,000 Bunker Defeat Munitions, sufficient to equip the XVIII Airborne Corps (Fort Bragg, North Carolina). In 2000, Congress raised the limit to 8,000 units.

In May 2001, the U.S. Army canceled the Multi-Purpose Individual Munition program. In the aftermath, there were calls for Congress to lift the mandated production cap for the Bunker Defeat Munition and fund its large-scale procurement. Subsequent defense budgets have maintained the line-item procurement of the M141 Bunker Defeat Munition.

Talley continues to promote export sales of the SMAW-D/Bunker Defeat Munition, albeit without any success to date.

Corporate Evolution

In April 2007, Nammo AS (Raufoss, Norway) acquired Talley Defense Systems. The U.S. contractor continues to operate as Nammo Talley, a component of the Nammo Group.

Description. The Bunker Defeat Munition is essentially a single-shot, disposable version of the Mk 150 SMAW. The telescoping launch tube features sealed end caps, a carrying sling, and a Picatinny rail system for a variety of day/night sighting system options. The contractor claims the weapon is simple to place into operation under any battlefield condition. The launch tube features a decal with detailed firing instructions. The SMAW-D/Bunker Defeat Munition is airdrop certified and easily transported by one soldier.

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Sequence of Operation

To prepare the SMAW-D/Bunker Defeat Munition for firing, the operator attaches the appropriate optical sighting device to the integral Picatinny rail mount, if desired. He then extends the launch tube and mounts the tube on his shoulder. After acquiring the target through the integral open sights or the attached optical unit, the operator fires the weapon via the firing mechanism on the tube. The rocket motor burns out before exiting the launcher at a velocity of 220 meters per second (721.78 fps). After firing, the operator disconnects the optical sighting device from the launcher and discards the expended launch tube.

Pressure from the motor firing initiates the warhead arming process; a mechanical timer completes the process after the warhead travels 15 meters (49.2 ft) downrange of the launcher. The warhead self-destructs upon impact. At a 250-meter (273.4-yd) range, hit probability is 90 percent.

Multipurpose Assault Weapon

Through its employment with the U.S. Marine Corps Mk 150 SMAW, the basic 83mm HEDP warhead

amassed a proven combat record in Operation Just Cause (1989) and Operation Desert Storm (1991). In the Bunker Defeat Munition application, the 83mm HEDP round has further proven itself during Operation Enduring Freedom (2001-present) and Operation Iraqi Freedom/Operation New Dawn (2003-2011).

Like the Israeli B-300 and the Mk 150 SMAW, the SMAW-D/Bunker Defeat Munition is, at best, an effective bunker buster with only minimal anti-armor capability. The warhead technology is effective only against non-explosive reactive armor.

The SMAW-D/Bunker Defeat Munition is not primarily an anti-armor weapon; it is actually a multipurpose assault weapon, a class of weapon gaining significant interest on the international market. While we do not expect the SMAW-D/Bunker Defeat Munition to garner any significant export sales, the basic weapon design will likely become the technological basis for new designs.

Related News

Russian RPGs Dominate Man-Portable Anti-Armor Weapon Market – As combat operations continue to demonstrate, the man-portable anti-armor weapon remains a particularly significant asset on the modern asymmetric battlefield. The role of the man-portable anti-armor weapon continues to morph from a dedicated anti-tank weapon to a general-purpose fire support asset for light and medium forces.

Despite the glut of available weapons systems, the international market for man-portable anti-armor and bunker-buster weapons remains a highly competitive and dynamic environment, populated by the established market powerhouses and an influx of energetic new players. The Forecast International Weapons Group expects that the market will produce nearly 1.3 million man-portable anti-armor and bunker-buster weapons, worth over \$3.45 billion, through 2023.

The Russian Federation virtually dominates this market. Russian defense contractors, under the auspices of the Rosoboronexport organization, will account for 79.13 percent of man-portable anti-armor and bunker-buster weapon production, worth 60.93 percent of the total market value, through 2023.

While the Russian-design RPG-7 series of weapons remains ubiquitous worldwide, the most significant new production continues to involve the RPG-26 and RPG-27 weapons, broadly based on the American M72 LAW (Light Anti-tank Weapon). Combined production of the RPG-26 and RPG-27 – by the State Research and Production Enterprise "Bazalt" and the State Enterprise "Signal" – will account for 64.64 percent of all new production, worth 39.18 percent of the total market value, through 2023. (FI, 12/13)

Forecast International Projects \$9.7 Billion Anti-Armor Missile Market over the Next 10 Years – A new Forecast International analysis of the anti-armor missile market projects that manufacturers will produce more than 200,000 missiles worth nearly \$10 billion through 2022. Like many other defense segments, the anti-armor missile market is evolving. Combat operations in Iraq, Afghanistan, and elsewhere have spurred anti-armor purchases by the U.S. and other militaries. Ironically, these missiles are not engaging tanks, but rather a host of other target types – from terrorist hideouts to unarmored pickup trucks. Established market players have benefitted from this evolving trend.

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"U.S. and Israeli firms still have the largest share of the anti-armor missile market," said Larry Dickerson, Forecast International's senior missile analyst. During this period, "Lockheed Martin, Raytheon and Rafael will earn \$2.8 billion selling anti-armor missiles to customers worldwide," Dickerson said.

The market positions of these manufacturers have become increasingly intertwined. For example, Lockheed Martin has cooperated with Raytheon in the development and production – and marketing – of the FGM-148 Javelin man-portable anti-armor missile system. The Javelin is the U.S. Department of Defense's standard man-portable anti-tank guided weapon, and nearly a dozen nations employ it.

The Pentagon is interested in a more capable Javelin, the so-called Javelin ER, which would offer greater range than the original version and possibly some guidance enhancements and better performance against targets other than armored vehicle targets (e.g., bunkers and other reinforced structures). However, budget issues have scaled back some programs or forced their cancellation.

The first blow to these companies came with the Pentagon's decision to cancel the Non-Line-of-Sight-Launch System program. The NLOS-LS program had an estimated worth of \$2 billion. The Pentagon then began backtracking on its support for the Joint Air-to-Ground Missile (JAGM) program, which was aimed at replacing the AGM-114 HELLFIRE and AGM-65 Maverick. Now, JAGM has suffered the same fate as its predecessor, the Joint Common Missile (JCM). Another acronym may take over for JAGM; however, until a new missile is ready, the Pentagon will continue to purchase HELLFIRES, Mavericks, and TOWs.

Meanwhile, new systems are emerging overseas. "Europe is working on next-generation systems to win back the market share it once had," Dickerson said. These include the Missile Moyenne Portee (MMP) and the Missile Longue Portee (MLP), which will replace MILAN and HOT, respectively. For its part, Rafael Advanced Defense Systems is Israel's leading anti-armor missile manufacturer. Against most expectations, Israel has slowly secured export production contracts for its anti-armor missiles and from an area once thought to present few opportunities – Europe. Rafael can count seven European countries as customers of its family of SPIKE anti-armor missiles, providing a stable production base for the company.

Companies are also working on new lightweight missiles that can perform various missions and demonstrate the blurring between different markets. "Missiles are slowly evolving, becoming more than just a weapon for use against tanks or aircraft or bunkers," Dickerson said. "Eventually, the anti-tank missile market will cease to be an independent entity, becoming submerged in a larger strike weapons market." (FI, 12/13)

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Funding

The following table reflects U.S. Department of Defense budget request documentation related to procurement of the M141 Bunker Defeat Munition. All amounts are in millions of U.S. dollars.

| | | U.S. FUNDING | | | | | |
|------------------------------|--|---------------------|-------------|-------------|-------------|-------------|-------------|
| | | FY11 | FY11 | FY12 | FY12 | FY13 | FY13 |
| | | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> |
| U.S. Army Procurement | | | | | | | |
| M141 BDM | | 1,485 | 19.4 | 388 | 10.0 | - | - |
| | | <u>FY14</u> | <u>FY14</u> | <u>FY15</u> | <u>FY15</u> | <u>FY16</u> | <u>FY16</u> |
| | | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> |
| U.S. Army Procurement | | | | | | | |
| M141 BDM | | - | - | - | - | - | - |
| | | <u>FY17</u> | <u>FY17</u> | <u>FY18</u> | <u>FY18</u> | <u>FY19</u> | <u>FY19</u> |
| | | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> | <u>QTY</u> | <u>AMT</u> |
| U.S. Army Procurement | | | | | | | |
| M141 BDM | | - | - | - | - | - | - |

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Contracts/Orders & Options

Since Jan 1, 2008, the U.S. Army has awarded the following procurement contract for the M141 Bunker Defeat Munition.

| Date | Contract | Contractor | Amount | Description |
|------------|------------------|--------------------------|--------------|---|
| 2008/03/21 | W15QKN-08-D-0422 | Nammo Talley Defense Inc | \$26,136,932 | Unspecified number of M141 Bunker Defeat Munitions. |
| | | | | |

Timetable

| Month | Year | Major Development |
|-------|------|---|
| | 1990 | U.S. Army defines requirement for bunker-busting weapon following Operation Just Cause |
| Sep | 1991 | FORSCOM drafts operational needs statement |
| Mar | 1993 | U.S. Army awards competitive evaluation contracts |
| Apr | 1994 | Competitive evaluations completed |
| Jun | 1994 | Congress mandates termination of Bunker Defeat Munition program and integration of Multi-Purpose Individual Munition warhead technology with Predator program |
| Sep | 1994 | U.S. Army selects Talley Defense Systems SMAW-D for interim Bunker Defeat Munition, type-classified M141 for limited procurement |
| Apr | 2007 | Nammo AS completes acquisition of Talley Defense Systems |
| | 2014 | Production of remaining U.S. Army order ongoing; marketing continues |

Worldwide Distribution/Inventories

Export Potential. The international market has shown at least a moderate level of interest in the SMAW-D/Bunker Defeat Munition in light of the weapon's performance during Operation Enduring Freedom and Operation Iraqi Freedom/Operation New Dawn. However, this interest has yet to translate into export sales.

Countries. United States.

Forecast Rationale

According to U.S. Army budget request documentation, serial production of the M141 Bunker Defeat Munition under the existing U.S. Army procurement contract was scheduled to be completed by June 2014.

Limited Procurement

While U.S. military operations in Afghanistan and Iraq have validated the need for a relatively inexpensive shoulder-fired weapon capable of destroying fixed structures, the U.S. Army has shown only limited interest in funding the Bunker Defeat Munition program. Indeed, FY12 was the final year of funding for the Army's BDM procurement program.

Lack of Export Sales

Nammo Talley continues to offer the SMAW-D/Bunker Defeat Munition for export. However, while the international market has shown at least a moderate level of interest in this weapon system, this interest has yet to translate into sales.

Revised Procurement Still Falls Short

The U.S. Army's procurement objective for the M141 Bunker Defeat Munition remains at 23,540 units. Nevertheless, this revised figure still falls far short of the original 40,000-unit procurement objective. Indeed, it now appears unlikely the U.S. Army will ever meet this revised procurement objective.

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Ten-Year Outlook

| ESTIMATED CALENDAR YEAR UNIT PRODUCTION | | | | | | | | | | | | |
|---|-----------|-----------------|------|------|------|-----------------|------|------|-------------|------|------|-------|
| Designation or Program | Thru 2013 | High Confidence | | | | Good Confidence | | | Speculative | | | Total |
| | | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | |
| Nammo Talley Defense Inc | | | | | | | | | | | | |
| M141 Tube <> United States | | | | | | | | | | | | |
| | 21,551 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 148 |
| Total | 21,551 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 148 |