

## HAND EMPLACED – WIDE AREA MUNITION (WAM)



### Army ACAT II Program

Total Number of Systems:	33,391
Total Program Cost (TY\$):	\$1,725M
Average Unit Cost (TY\$):	\$51.7K
Full-rate production:	FY04

### Prime Contractor

Textron Defense Systems

### SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Wide Area Munition (WAM) is a smart, autonomous, top-attack, anti-tank munition designed to defeat armored combat vehicles from a stand-off distance. It utilizes acoustic and seismic sensors in its ground platform to detect, track, and classify potential targets, and then launches an infrared detecting submunition or "sublet" over the top of the selected tracked target. Once the sublet detects the target, it fires an Explosively Formed Penetrator (EFP) to defeat the target. Target vehicles include tanks (e.g., T-72 and T-80), breachers (e.g., KMT-4/5), and lightly armored tracked vehicles (e.g., BMP-2). The variant currently in production is the Hand Emplaced WAM (HE-WAM), also referred to as the Hornet. It is designed to be carried and emplaced by one person, have a stand-off lethal radius of 100 meters 360 degrees around, and be fully autonomous from final arming to target engagement. The WAM, when fielded, will contribute to *precision engagement* for the Army in the *Joint Vision 2020* scenario.

HE-WAM is the first fielded member of the WAM family of munitions. The WAM program did not qualify for operational test oversight from this office due to its funding threshold, but it did meet the lower funding threshold for LFT&E oversight.

## **BACKGROUND INFORMATION**

The WAM Required Operational Capability approved in March 1990 envisioned a "Family of WAM" concept of three variants: (1) hand-emplaced; (2) Volcano-delivered; and (3) deep attack Army Tactical Missile System delivered. Although the Family of WAM has since been designated an Acquisition Category II program, only the HE-WAM version has been developed. HE-WAM was approved for LRIP in September 1996; however, full-rate production was delayed indefinitely. The Directors' Live Fire Evaluation report was submitted to Congress in July 1999. The combination of test activities was adequate to support an assessment of the lethality of HE-WAM against its expected targets and draw some inferences regarding the weapons' effectiveness.

The Army decided not to enter full-rate production of HE-WAM. Instead, the program has been restructured to include a Product Improvement Program (PIP) called the Advanced Hornet. The Advanced Hornet is expected to include two types of improvements. First, the ability of the user to communicate wirelessly with the emplaced HE-WAMs will be improved and a remote disarm capability will be added. These changes are not intended to affect lethality. However, a second area of the PIP addresses the submunition. The current HE-WAM submunition, including its sensor and warhead, will be replaced with one similar to that developed for the Air Force Sensor Fuzed Weapon (SFW) P<sup>3</sup>I program by the HE-WAM contractor. The new warhead from the SFW P<sup>3</sup>I program will differ substantially from the HE-WAM. In particular, HE-WAM has used a single EFP made from tantalum, whereas the SFW warhead is a multiple-fragment EFP of copper. Also, the SFW P<sup>3</sup>I submunition uses a different sensor, which could affect the distribution of hit points on the targets of interest, which include heavy wheeled vehicles.

## **TEST & EVALUATION ACTIVITY**

There was no LFT&E-related testing in FY00. The Live Fire IPT, however, did conclude that another lethality Live Fire program is required for the Advanced Hornet HE-WAM since the original warhead will be replaced. The Live Fire IPT, with DOT&E participation, has begun work on an LFT&E strategy. Although the strategy has not been completed, a key data source for LFT&E is expected to be a robust set of end-to-end firings against representative threat targets under varying tactical engagement conditions. If the Advanced Hornet is planned to have greater capability against heavy wheeled vehicles than the basic HE-WAM, such targets will be included in the test program. Since the SFW P<sup>3</sup>I is also under LFT&E oversight, some of the lethality data from its LFT&E program may be applicable to the Advanced Hornet.

## **TEST & EVALUATION ASSESSMENT**

Live Fire Testing of the current HE-WAM against actual threat vehicles demonstrated its lethality given a hit against tanks and light armored vehicles, but only when critical areas were struck. As tested, HE-WAM was not effective out to its required range, and was only marginally effective at half the required range. If the full potential of the warhead is to be achieved, improvements are needed in the accuracy of the submunition relative to the critical areas of the targets.

## **LESSONS LEARNED**

The shotlines for the current HE-WAM warheads statically fired from a tower at a T-72 or BMP-2 were selected from a large set of potential hit points generated by an engagement model using data from ground and captive flight testing. The damage inflicted by the tower shots generally led to substantial degradation in mobility of the targets (and sometimes catastrophic loss) resulting from shotlines impacting potentially critical target areas. In contrast, the end-to-end firings of tactical HE-WAMs against moving T-72 tanks tended to hit areas at the rear and edges of the targets where there were fewer critical components, and thus, less loss of target function from impacts. This scenario illustrates the value of realistic testing, where tactical munitions attack actual operating/moving threat targets under quasi-operational conditions. Such an approach will be used for the Advanced Hornet.

