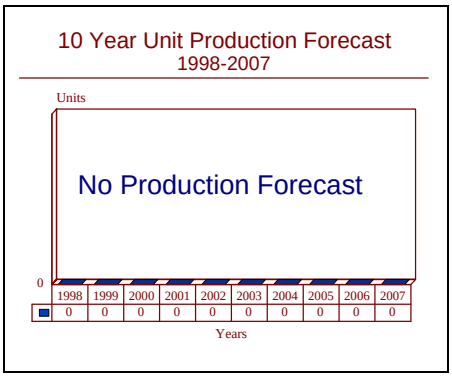
VAS-3 - Archived 10/99

Outlook

- Kuwait is the only customer
- US Army chose VAS-5 DVE instead
- **THIS REPORT WILL BE DROPPED NEXT YEAR, 1999**



Orientation

Description. Driver's Thermal Viewer (DTV).

Sponsor
US Army
Research Development & Engineering Center
Building 312
Ft. Belvoir, Virginia (VA) 22060-5606
USA

Contractors
Raytheon Systems Company
(formerly Hughes Electronics Corporation)
PO Box 80028
7200 Hughes Terrace
Los Angeles, California (CA) 90080-0020
USA

Status. Out of production.

Total Produced. Approximately 257 units (26 preproduction and 231 production models) were built through 1997.

Application. Armored vehicles, including the M1 tank and M2/M3 Bradley Fighting Vehicle.

Price Range. Based on the sole production contract, the unit price was an estimated US$50,000 (1993 dollars).

Technical Data

Characteristics

Size:	7,375.5 cm^3 (450 in^3)
Weight:	11.4 kg (24.7 lb)
Spectral Band:	7.5-12 µm
Power:	Less than 55 W, 18 to 32 VDC vehicle supply
Field of View:	40^o in azimuth, 20^o in elevation
Field of Regard:	100^o in azimuth, 40^o in elevation
CM Detector/Dewar:	DT-591A/UA - 60 element array
CM Cooler:	Cryo, Split Stirling Cycle - 0.25 W, linear-driven

Frame/Field Rate:	25 Hz/100 Hz
Video Output:	X-Y sweep gen. (non-standard TV)
Display:	Electrostatic CRT
Aspect Ratio:	2:1

Design Features. The VAS-3 DTV is a passive, real-time thermal imaging system applicable for use in tanks and light armored vehicles for surveillance and target acquisition. It is a lightweight, ruggedized system designed to operate under extreme environmental conditions. Its design was based on common module technology, and thus allows direct replacement of the driver's standard day periscope.

Operational Characteristics. Operating in the 7.5-12 μm spectral band, the DTV senses variations in temperature between objects and their backgrounds to produce a TV-like image, and thus is not dependent at all on visible light for viewing. It is a follow-on to previous-generation systems that only amplified existing light.

Infrared energy enters through infrared optics in the DTV periscope and is scanned to attain a rectangular field of view. A 60-element DT-591A/UA array of Split Stirling Cycle, cryogenically cooled mercury cadmium telluride detectors photoconductively converts the scanned infrared radiation into electrical signals. These are then converted to a visible image using a cathode ray tube and sent to a binocular eyepiece in real time. The system's reliability mean time between failures (MTBF) is greater than 1,080 hours.

Variants/Upgrades

No variants have been identified.

Program Review

Background. The VAS-3 was developed as a replacement for the VVS-2 driver's viewer, to increase vehicle mobility under reduced-visibility conditions. The Army initiated full-scale development in FY85. Hughes beat ITT, Litton, Varo, Varian and Ni-Tec for an experimental production deal to provide 18 units for testing.

The device underwent testing in 1989 to evaluate its performance on the M1 Abrams tank and Bradley Fighting Vehicle. Force-on-force combat exercises held at Ft. Hood, Texas, and the Ft. Irwin National Training Center in California proved the system to be capable beyond expectations. Drivers were able to attain speeds in excess of 25 miles per hour – virtually impossible using the VVS-2.

So impressed was the US Army that nine of the 26 developmental units were used on the Bradley Fighting Vehicles of the 24th Mechanized Infantry Division in Operation Desert Storm while it was still in the developmental stage. The system proved especially useful in the desert, where wind-blown sand can reduce visibility to almost zero. In addition to being able to spot potential enemy ambushes through darkness, see through battlefield smoke and haze, and spot mines, road hazards, and unexploded bombs, the device could detect and identify chemical-agent clouds. It also provided a surveillance capability during silent watch and had sufficient range to allow close-up target recognition. Not surprisingly, it became the first US Army-qualified infrared system for armored vehicle drivers.

Seemingly custom-designed for desert warfare, it appears logical that the VAS-3's first sale was made to Kuwait. As part of a 218 M1A2 MBT purchase in FY93, Kuwait ordered 231 DTVs for deliveries starting in June 1994. With the US Army's decision to procure the VAS-5 Driver's Vision Enhancer in the mid-1990s, the production line closed after the Kuwaiti order was completed.

Funding

None identified.

Recent Contracts

Contractor	Award ($ millions)	Date/Description

Hughes	12	Oct 1993 – Foreign Military Sales contract for 231 DTVs to Kuwait.

Timetable

Month	Year	Major Development
	FY85	Full-scale development initiated
	1987	Hughes wins production decision
	1989	Operational testing
	1991	Developmental units used in Operation Desert Storm
Oct	1993	Kuwait becomes first FMS customer
Jun	1994	First deliveries commenced
	1996[(a)]	Kuwaiti order completed; VAS-3 out of production

[(a)]Estimated

Worldwide Distribution

The **US** procured 26 engineering development models**.** **Kuwait** was the first and only customer for production units.

Forecast Rationale

The US Army procured 26 known engineering development models of the VAS-3 DTV. Some of these were used in Operation Desert Storm and later in Somalia, indicating US endorsement of the system. However, the service went instead with the Texas Instruments (subsequently Raytheon Systems Company) VAS-5 Driver's Vision Enhancer (DVE).

According to Raytheon, production of the VAS-3 has ended. Kuwait is the sole customer for this equipment.

Ten-Year Outlook

The forecast chart has been omitted. **THIS REPORT WILL BE DROPPED NEXT YEAR, 1999.**

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