



Preparedness Directorate  
Office of Grants and Training

# Summary



The U.S. Department of Homeland Security, Preparedness Directorate, Office of Grants and Training (G&T) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders in performing their duties. The mission of the SAVER Program is to

- Provide impartial, practitioner relevant, and operationally oriented assessments and validations of emergency responder equipment.
- Provide information that enables decision-makers and responders to better select, procure, use, and maintain emergency responder equipment.
- Assess and validate the performance of products within a system, as well as systems within systems.
- Provide information and feedback to the user community through a well-maintained, Web-based database.

The SAVER Program established and is supported by a network of technical agents who perform the actual assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community, "What equipment is available?" and "How does it perform?"

To contact the SAVER Program Support Office  
Phone: 877-347-3371  
E-mail: [saver.odp@dhs.gov](mailto:saver.odp@dhs.gov)  
Visit the SAVER Web site: [www.dhs-saver.info](http://www.dhs-saver.info)

## Video Inspection Devices Assessment

Video inspection devices (VID) are used throughout the emergency response community and are an important tool in both day and night tactical and rescue applications. In seeking to meet a variety of applications, manufacturers have developed a variety of VID models.

In order to provide emergency responders with information on currently available technologies, capabilities, and limitations, Texas A&M Engineering, including Texas Engineering Extension Service (TEEX), Texas Engineering Experiment Station (TEES), and Texas Transportation Institute (TTI), with the support of the U.S. Department of Homeland Security, conducted comparative assessments on VID in February 2006 at Disaster City on the TEEX Brayton Fire Training Field, College Station, Texas. Texas A&M Engineering assessed nine VID models:

- Allen-Vanguard SM1 Eagle Video Search Kit
- AngioLaz VisionStick
- Flexbar Snake Eye video inspection system
- Remington Technologies Eyeball R1



Confined Space Search

- Sandpiper Wireless Probescope video inspection system
- SearchSystems SearchCam 2000 victim locator system
- Tactical Electronics PCSS1 Pole Camera System
- TacView 2600 Camera System
- Zistos Task Force Rescue System

documentation; and the purchasing process and after-sale support by manufacturers and vendors.

## Assessment Ratings

The SAVER process has established five categories to assist in the development of parameters and criteria for comparison of emergency response equipment. The categories are affordability, capability, deployability, maintainability, and usability. A focus group consisting of SMEs from the emergency response community was held to determine what criteria fell within each of the five SAVER categories. The SMEs also assigned weighted percentages to each criterion and category, as seen in table 1.

The rating system used by Texas A&M Engineering in the VID assessment is based on a 5-point scale where 1 is “poor” and 5 is “excellent.” In the tests that were conducted, the Flexbar unit rated highest. (The TacView unit did not complete the field tests and scores/SME

## Assessment Measures

Each VID system in the assessment was evaluated in the same manner, and operational conditions were controlled to make the evaluation of each system as similar as possible. The assessment was conducted in simulated search-and-rescue and law enforcement tactical scenarios by a team of emergency response subject matter experts (SMEs) from around the country. The assessment included operational performance based on field use of the systems by the SMEs; bench performance tests; individual system characteristics such as size, weight, and ease of set up and use; available maintenance, warranty, and operations

Affordability (10%)	Capability (25%)	Deployability (25%)	Maintainability (10%)	Usability (30%)
<ul style="list-style-type: none"> <li>• Initial purchase (25%)</li> <li>• Color vs. black &amp; white (20%)</li> <li>• Accessories (15%)</li> <li>• Maintenance, repair costs (15%)</li> <li>• Technology support (call out, field) (15%)</li> <li>• Modifications/system expansion (10%)</li> </ul>	<ul style="list-style-type: none"> <li>• Audio (receive) (30%)</li> <li>• Sunshade (25%)</li> <li>• Telescoping, extension pole (20%)</li> <li>• Cross-discipline: rescue vs. tactical (15%)</li> <li>• Audio (send) (10%)</li> </ul>	<ul style="list-style-type: none"> <li>• Ease of mobility (30%)</li> <li>• Field mobility (chest harness, back pack) (25%)</li> <li>• Weight (20%)</li> <li>• Packaging (carry case) (15%)</li> <li>• Field assembly (set up time) (10%)</li> </ul>	<ul style="list-style-type: none"> <li>• Mandatory maintenance (30%)</li> <li>• Field maintenance (30%)</li> <li>• Factory repair time (20%)</li> <li>• Factory maintenance (10%)</li> <li>• Ease of service (10%)</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-discipline void search (25%)</li> <li>• Search (collapsed structure) (20%)</li> <li>• Search (confined spaces)(15%)</li> <li>• Power source (15%)</li> <li>• Field of view (15%)</li> <li>• Ergonomics (10%)</li> </ul>

Table 1: Criteria listed under each SAVER category for video inspection devices.

comments were not obtained. See the Summary for further information.) Overall, the VID systems rated fairly close to each other with scores ranging between 3.1 and 3.8 out of 5 overall. These results are shown in table 2. The following section is a summary of each system’s performance in the assessment.

## Results

Comparatively, the Flexbar, Zistos, and Remington VIDs had the highest overall ratings of the test set, considering all measures.

The **Flexbar VID** was among the most affordable, and also was rated highly by SME users in deployability. The VID received lower scores for visual acuity.

The **Zistos VID** performed well across several capability measures. A higher vendor delivery score offset the system’s lower performance in SME observed deployability.

The **Remington VID** was rated highly by SME users in their observations of deployability and usability. However, the system did not perform as well in areas of effectiveness measurements.

The **Tactical Electronics VID** had consistently high ratings by SME users in their observations of capability, and deployability. The system scored lower in affordability.

The **Search Systems VID** was rated highly by SME users in their observations of maintainability and usability but did not perform as well in other measures of system performance.

The **Allen-Vanguard VID** was rated highly by SME users in capability, and the system also scored well in fire and rescue field effectiveness. However, the system was rated lower by SME users in observations of deployability.

The **Sandpiper VID** scored well in areas of fire, rescue, and law enforcement effectiveness, and level of maintenance and operations information provided. However, the system was rated lower by SME users in observations of maintainability.

The **AngioLaz VID** scored well in areas of vendor delivery and level of operations information provided. However, the system had lower scores in manufacturer warranty.

The **TacView VID** did not complete the assessment activities, and did not receive an overall rating because it

VID/Category	Overall	Affordability	Capability	Deployability	Maintainability	Usability
Flexbar	3.8	4.9	2.6	4.3	4.1	3.9
Zistos	3.6	2.3	4.3	2.7	4.1	4.0
Remington	3.6	3.9	2.7	4.1	3.9	3.7
Tactical Electronics	3.3	1.8	3.3	3.5	3.4	3.7
Search Systems	3.2	0.6	3.6	3.0	3.7	3.9
Allen Vanguard	3.2	4.8	2.8	3.6	3.0	2.8
Sandpiper	3.2	3.3	3.2	2.9	3.3	3.2
AngioLaz	3.1	3.1	3.1	3.5	2.9	3.1

Table 2: Overall weighted category scores.

was not able to be rated by SME users during the field scenario analysis. There was a power supply problem early in the field testing, which the manufacturer repaired rapidly but prevented the camera from completing the tests.

## For Further Information

For complete VID assessment recommendations, visit the SAVER Web site. All of Texas A&M Engineering's reports pertaining to the VID assessment can be found on the Web site, along with reports on other technology assessed as part of the SAVER Program.

The QuickLook chart for the VID assessment is also available on the SAVER Web site (figure 1). The QuickLook chart offers responders a mechanism to select equipment items based on characteristics that are of most importance to their department. Using the QuickLook chart, responders can emphasize and de-emphasize the five SAVER categories to fully refine their search for equipment items.

SAVER is sponsored by the U.S. Department of Homeland Security, Preparedness Directorate, Office of Grants and Training.

For more information on the video inspection devices project please see the SAVER Web site or contact the SAVER Program Support Office.

SAVER Program Support Office  
Phone: 877-347-3371 Fax: 443-402-9489  
E-Mail: [saver.odp@dhs.gov](mailto:saver.odp@dhs.gov)  
Web: <http://www.dhs-saver.info>



Void Search

Vehicle Search

Product		COMPOSITE AFFORDABILITY CAPABILITY DEPLOYABILITY MAINTAINABILITY USABILITY					Features
		     	8-foot - 15-foot telescoping wand				
<b>Flexbar</b> Snake Eye video inspection system							
		     	Cullman Monopod and Ground Spike				
<b>Remington Technologies</b> Eyeball R1							
		     					
<b>Zistos</b> Task Force Rescue System							
		     	Wireless handheld monitor and "Quick Change" extension pole				
<b>Tactical Electronics</b> PCSS1 Pole Camera System							
		     					
<b>Search Systems</b> SearchCam 2000 victim locator system							

Figure 1: SAVER QuickLook chart.

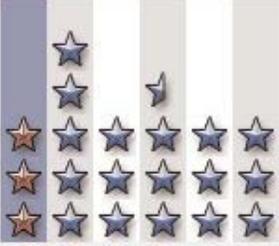
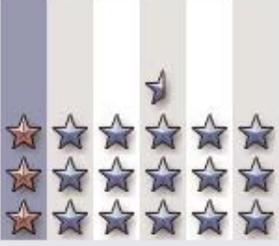
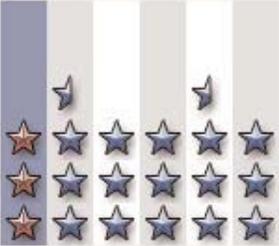
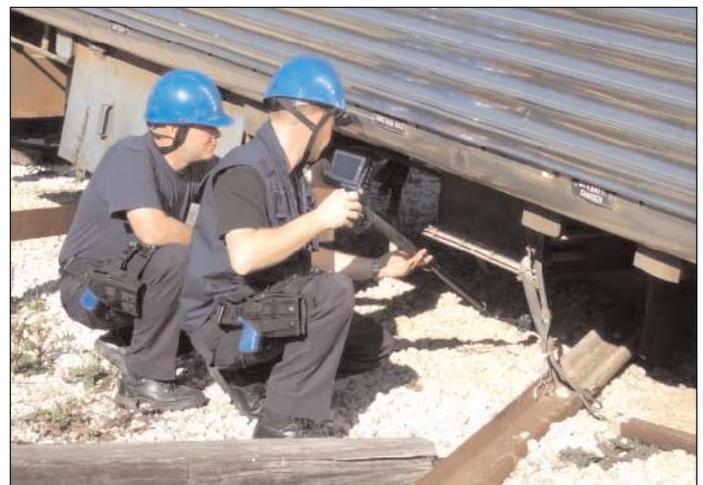
Product		COMPOSITE AFFORDABILITY CAPABILITY DEPLOYABILITY MAINTAINABILITY USABILITY					Features
							
<b>Allen-Vanguard SM Eagle Video Search Kit</b>							
			Double joint and audio system				
<b>AngioLaz Vision Stick</b>							
			16-foot aluminum pole				
<b>Sandpiper Wireless Probescope video inspection system with combination IR/White Light LED Camera</b>							

Figure 1, continued: SAVER QuickLook chart.



Railcar Search



Railcar Search