



**Homeland  
Security**

Science and Technology

# Summary

**U.S. Department of Homeland Security**



The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions.

Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective assessments and validations on commercial equipment and systems, and provides those results along with other relevant equipment information to the emergency response community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

The SAVER Program is supported by a network of technical agents who perform 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?"

For more information on this and other technologies, contact the SAVER Program Support Office.

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## Spotting Scopes

(AEL reference number 03OE-02-SCOP)

Spotting scopes come in a variety of configurations and sizes and can be used in applications where long range surveillance and observation of people or objects is necessary. Spotting scopes may be used at long ranges by law enforcement personnel to provide situational awareness in public gathering areas, such as stadiums or airports. They may also be used to investigate suspicious packages or containers from a safe distance or to read vehicle license plates and hazardous material truck placards. In addition, spotting scopes are frequently used by marksmen and snipers to identify targets at long distances, beyond the range of conventional tactical binoculars.

In order to provide responders with information on currently available spotting scopes, the Space and Naval Warfare Systems Center (SPAWARSYSCEN) Atlantic conducted a comparative assessment of spotting scopes for the System Assessment and Validation for Emergency Responders (SAVER) Program in July 2011. Detailed findings are provided in the *Spotting Scopes Assessment Report*, which is available upon request at <https://www.rkb.us/saver>.

## Assessment Methodology

Prior to the assessment, seven responders were chosen from various jurisdictions to participate in a focus group. Participants possessed strong law enforcement backgrounds with specialties that included tactical trainer, explosive detection team, sniper team, special weapons and tactics (SWAT) teams, and patrol. The group identified evaluation criteria and recommended product selection criteria and possible scenarios for assessment.

After identifying evaluation criteria, the focus group assigned each criterion to one of the five SAVER categories, and then assigned a weight for its level of importance. Once the criteria were weighted, the five SAVER categories were assigned a percentage value to represent the level of each category's importance relative to the other categories.



Based on focus group recommendations and market research, the following spotting scopes were selected for assessment:

- Mark 4<sup>®</sup> 12-40x60mm Tactical with Mil-Dot Reticle, Leupold & Stevens Inc.;
- Excursion<sup>®</sup> FLP 15-45x60mm, Tactical, Bushnell Corporation;
- Mark 4 12-40x60mm Tactical with H-36 Reticle, Leupold & Stevens Inc.;
- Tactical 11-33x50 WP, Barska;
- 14-50x60IL Lynx Tactical Spotter, Kruger Optical Inc.;
- Firefall 15-45x60mm Straight, Yukon Advanced Optics Inc.;
- Fieldscope 13-30x50mm ED Angled, Nikon Inc.;
- Firefall 12-36x50mm Angled, Yukon Advanced Optics Inc.; and
- Spectre<sup>®</sup> 15-45x50 Spotting Scope, BSA Optics Inc.

## SAVER Category Definitions

**Affordability** groups criteria related to life-cycle costs of a piece of equipment or system.

**Capability** groups criteria related to the power, capacity, or features available for a piece of equipment or system to perform or assist the responder in performing one or more relevant tasks.

**Deployability** groups criteria related to the movement, installation, or implementation of a piece of equipment or system by responders at the site of its intended use.

**Maintainability** groups criteria related to the maintenance and restoration of a piece of equipment or system to operational condition by responders.

**Usability** groups criteria related to the quality of the responders' experience with the operational employment of a piece of equipment or system. This includes the relative ease of use, efficiency, and overall satisfaction of the responders with the equipment or system.

Six responders served as evaluators for this assessment. All evaluators had at least 6 years of law enforcement experience with specialties including explosive detection team, criminal investigations, high tech crimes section, SWAT teams, and patrol units.

During the assessment, evaluators rated the spotting scopes based on evaluation criteria established by the focus group. The assessment was separated into two phases: the specification assessment and the operational assessment. Evaluators assessed the spotting scopes based on vendor-provided information during the specification assessment. Hands-on experience with the products during an observation and identification scenario and a disparate lighting conditions scenario served as the basis for the operational assessment.

## Assessment Results

Table 1 displays the composite assessment scores as well as the category scores for each spotting scope. Higher scores indicate a higher rating by evaluators. The advantages and disadvantages of each spotting scope, as identified by evaluators, are listed in table 2. To view how each spotting scope scored against the evaluation criteria assigned to the SAVER categories, see table 3. For product specifications, see table 4.





According to evaluators, angled eyepieces are good for situations where responders are stationary, but for the most part, straight eyepieces are more versatile and make more sense for most emergency response applications. Evaluators also preferred reticles and tethered lens covers.

Responder agencies that may be considering the purchase of spotting scopes should review the detailed findings in the *Spotting Scopes Assessment Report* and carefully consider each spotting scope's overall capabilities and limitations in relation to their jurisdiction's operational needs. All reports in this series, as well as reports on other technologies, are available in the SAVER section of the Responder Knowledge Base (RKB) website at <https://www.rkb.us/saver>.

**Table 1. Spotting Scope Assessment Results**

Product	Composite Score	Affordability (14% Weighting)	Capability (34% Weighting)	Deployability (17% Weighting)	Maintainability (6% Weighting)	Usability (29% Weighting)
Mark 4® 12-40x60mm Tactical with Mil-Dot Reticle	4.1	4.3	3.8	4.0	4.6	4.1
Excursion® FLP 15-45x60mm, Tactical	3.8	3.5	3.8	3.9	3.3	4.1
Mark 4 12-40x60mm Tactical with H-36 Reticle	3.8	3.0	3.9	4.0	4.6	4.0
Tactical 11-33x50 WP	3.6	3.3	3.1	4.1	3.4	4.0
14-50x60IL Lynx Tactical Spotter	3.6	3.2	3.6	3.5	3.0	3.9
Firefall 15-45x60mm Straight	3.4	2.8	3.9	3.3	2.5	3.3
Fieldscope 13-30x50mm ED Angled	3.2	3.0	2.7	3.7	2.4	3.6
Firefall 12-36x50mm Angled	3.1	2.7	3.1	3.5	2.3	3.1
Spectre® 15-45x50 Spotting Scope	2.9	2.3	3.0	3.1	2.0	3.1

**Table 2. Spotting Scope Advantages and Disadvantages**

Product	Advantages	Disadvantages
 <b>Mark 4® 12-40x60mm Tactical with Mil-Dot Reticle</b> Composite Score: 4.1	<ul style="list-style-type: none"> <li>• Simple, streamlined design</li> <li>• Tactical design makes it easy to locate controls</li> <li>• Great warranty and customer service</li> <li>• Straight eyepiece</li> <li>• Loaner provided during repair</li> </ul>	<ul style="list-style-type: none"> <li>• Tripod attachment strap is not designed well</li> <li>• High cost</li> <li>• Stiff focus control</li> </ul>
 <b>Excursion® FLP 15-45x60mm, Tactical</b> Composite Score: 3.8	<ul style="list-style-type: none"> <li>• Image quality</li> <li>• Value</li> <li>• Compact</li> <li>• Smooth focus controls</li> <li>• Straight eyepiece</li> </ul>	<ul style="list-style-type: none"> <li>• Flawed reticle</li> <li>• No scratch-resistant coating on the lenses</li> <li>• Slow turnaround for repairs</li> <li>• Customer service</li> </ul>
 <b>Mark 4 12-40x60mm Tactical with H-36 Reticle</b> Composite Score: 3.8	<ul style="list-style-type: none"> <li>• Simple, streamlined design</li> <li>• Tactical design makes it easy to locate controls</li> <li>• Great warranty and customer service</li> <li>• Straight eyepiece</li> <li>• Loaner provided during repair</li> </ul>	<ul style="list-style-type: none"> <li>• Tripod attachment strap is not designed well</li> <li>• High cost</li> <li>• Stiff focus control</li> <li>• High additional cost for H-36 reticle</li> </ul>
 <b>Tactical 11-33x50 WP</b> Composite Score: 3.6	<ul style="list-style-type: none"> <li>• Compact and lightweight</li> <li>• Value</li> <li>• Quick target acquisition</li> <li>• Quick and easy to focus</li> </ul>	<ul style="list-style-type: none"> <li>• Customer service did not respond to calls during the assessment</li> <li>• Angled eyepiece</li> </ul>

**Table 2. Spotting Scope Advantages and Disadvantages (Continued)**












































































































































































































Product	Advantages	Disadvantages
 <b>14-50x60IL Lynx Tactical Spotter</b> Composite Score: 3.6	<ul style="list-style-type: none"> <li>• Reticle can be toggled on and off</li> <li>• Straight eyepiece</li> <li>• Good customer service</li> <li>• Outstanding operating and storage temperatures</li> </ul>	<ul style="list-style-type: none"> <li>• Reticle could accidentally be turned on</li> <li>• Reticle is tied to illumination, so when illumination fails, so does the reticle</li> <li>• No scratch-resistant coating on the lenses</li> <li>• Too bulky and heavy</li> </ul>
 <b>Firefall 15-45x60mm Straight</b> Composite Score: 3.4	<ul style="list-style-type: none"> <li>• Good customer service</li> <li>• Equipment color</li> <li>• Low cost</li> <li>• Simple to use</li> <li>• Straight eyepiece</li> </ul>	<ul style="list-style-type: none"> <li>• Lens covers are not tethered</li> <li>• Poor image quality</li> <li>• Not ruggedized for tactical use</li> <li>• No reticle</li> <li>• Low high-end operating temperature</li> </ul>
 <b>Fieldscope 13-30x50mm ED Angled</b> Composite Score: 3.2	<ul style="list-style-type: none"> <li>• Very good image resolution</li> <li>• Compact</li> <li>• Easy to focus</li> </ul>	<ul style="list-style-type: none"> <li>• Lens covers are not tethered</li> <li>• Customer service</li> <li>• Confusing magnification markings</li> <li>• Low high-end magnification</li> <li>• No reticle</li> <li>• Angled eyepiece</li> <li>• Not ruggedized for tactical use</li> </ul>
 <b>Firefall 12-36x50mm Angled</b> Composite Score: 3.1	<ul style="list-style-type: none"> <li>• Good customer service</li> <li>• Equipment color</li> <li>• Low cost</li> <li>• Simple to use</li> </ul>	<ul style="list-style-type: none"> <li>• Eyepiece broke during the assessment under normal conditions and use</li> <li>• Lens covers are not tethered</li> <li>• Poor image quality</li> <li>• Not ruggedized for tactical use</li> <li>• No reticle</li> <li>• Angled eyepiece</li> <li>• Low high-end operating temperature</li> </ul>
 <b>Spectre® 15-45x50 Spotting Scope</b> Composite Score: 2.9	<ul style="list-style-type: none"> <li>• Equipment color</li> <li>• Adjustable sunshade</li> <li>• Low cost</li> </ul>	<ul style="list-style-type: none"> <li>• Low-quality image</li> <li>• Loose lens covers that are not tethered and fall off easily</li> <li>• No operating or storage temperatures provided</li> <li>• No reticle</li> <li>• Not ruggedized for tactical use</li> <li>• Angled eyepiece</li> </ul>

Table 3. Spotting Scopes Criteria Ratings<sup>1</sup>

KEY										
Least Favorable	➔ Most Favorable									
<b>Affordability</b>										
Value										
<b>Capability</b>										
Eyepiece										
Magnification										
Exit pupil										
Sunshade										
Anti-reflective device										
<b>Deployability</b>										
Operating/storage temp. ranges										
Size										
Weight										
Equipment color										
<b>Maintainability</b>										
Warranty										
Ruggedized										
Lens protection										
<b>Usability</b>										
Image resolution										
Ergonomics										
Field of view										
Ease of focus										
Simplicity										
Eye relief										
Reticle appearance										

Note:

<sup>1</sup> Averaged criteria ratings for each assessed product are graphically represented by colored and shaded circles. Highest ratings are represented by full green circles.



**Table 4. Spotting Scopes Specifications<sup>1</sup>**

Specification	Mark 4® 12-40x60mm Tactical with Mil-Dot Reticle	Excursion® FLP 15-45x60mm, Tactical	Mark 4 12-40x60mm Tactical with H-36 Reticle	Tactical 11-33x50 WP	14-50x60 IL Lynx Tactical Spotter	Firefall 15-45x60mm Straight	Fieldscope 13-30x50mm ED Angled	Firefall 12-36x50mm Angled	Spectre® 15-45x50 Spotting Scope
MSRP	\$1,599.00	\$662.95	\$2,399.00	\$317.50	\$1,529.41	\$119.99	\$799.95	\$99.99	\$114.95
Warranty	Full lifetime	Limited lifetime	Full lifetime	Limited lifetime	Limited lifetime (optics) 2 years (electronics)	Limited lifetime	Limited 25 years	Limited lifetime	Limited lifetime
Magnification	12x to 40x	15x to 45x	12x to 40x	11x to 33x	14x to 50x	15x to 45x	13x to 30x	12x to 36x	15x to 45x
Exit pupil	4.8 mm	4.0 mm	4.8 mm	5.0 mm	4.0 mm	4.0 mm	4.0 mm	4.1 mm	3.3 mm
Sunshade	Not available	Not available	Not available	Not available	Not available	Included	Not available	Included	Included
Anti-reflective device	Compatible	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Not compatible	Not compatible
Operating temp.	-20° to 120°F	0° to 150°F	-20° to 120°F	15° to 120°F	-20° to 145°F	32° to 104°F	35° to 115°F	32° to 104°F	Data not available
Storage temp.	-40° to 160°F	0° to 150°F	-40° to 160°F	15° to 120°F	-40° to 185°F	14° to 122°F	35° to 115°F	14° to 122°F	Data not available
Size (L x W x H)	12.4x2.9x4.9 in.	11.7x4.5x6.5 in.	12.4x2.9x4.9 in.	9.7x2.4x4.5 in.	12.6x4.8x4.0 in.	13.8x3.9x3.0 in.	11.2x2.8x5.3 in.	10.5x2.3x5.5 in.	11.5x3.3x6.0 in.
Weight	2 lbs 5 oz	2 lbs 15 oz	2 lbs 5 oz	1 lb 7 oz	3 lbs 8 oz	1 lb 6 oz	1 lb 12 oz	1 lb 5 oz	1 lb 9 oz
Equipment color	Matte black	Matte black	Matte black	Black	Black	Dark green	Black/Gray	Dark green	Dark green
Shock resistant	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Scratch-resistant lens coating	Included	Not available	Included	Included	Not available	Not available	Not available	Not available	Not available
Reticle	Included	Included	Included	Included	Included	Not available	Not available	Not available	Not available
Eyepiece	Straight	Straight	Straight	Angled	Straight	Straight	Angled	Angled	Angled

Notes:

<sup>1</sup> Information was provided by manufacturers and has not been independently verified by the SAVER Program.

°F = degrees Fahrenheit  
H = height  
in. = inches  
L = length

lbs = pounds  
mm = millimeters  
MSRP = manufacturer's suggested retail price  
oz = ounces

temp. = temperature  
W = width