



Homeland Security
Science and Technology

Newsletter

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System Assessment and Validation for Emergency Responders

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 commercially available equipment and systems, and develops knowledge products that provide relevant equipment information to the emergency responder community.

SAVER Program knowledge products provide information on equipment that falls under the categories listed in the DHS Authorized Equipment List (AEL), focusing primarily on two main questions for the emergency responder community: "What equipment is available?" and "How does it perform?" These knowledge products are shared nationally with the responder community, providing a life- and cost-saving asset to DHS, as well as to Federal, state, and local responders.

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 the SAVER Program, contact the SAVER Program Support Office.
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Small Platform Tactical Robots



Small platform tactical robots are typically used for information gathering when deployed to potentially hazardous incidents.

Their use allows law enforcement personnel to maintain a safe distance and still obtain valuable data, such as video and audio. These robots may also facilitate communication between law enforcement personnel in a command post and those at the center of an incident. The Space and Naval Warfare Systems Center (SPAWARSYSCEN) Atlantic conducted a comparative assessment of small platform tactical robots in June 2014 to provide emergency responders with information that will assist with making operational and procurement decisions. The assessment was based on the recommendations of a focus group that met in November 2013.

The focus group recommended twenty evaluation criteria grouped within four SAVER categories. These criteria and their definitions can be found in the *Small Platform Tactical Robots Assessment Report*. The focus group also made recommendations regarding assessment scenarios and product selection.

During the assessment, four small platform tactical robots were assessed in two phases—the specification assessment and the operational assessment. During the specification assessment, the evaluators assessed each robot based on vendor-provided information and specifications. During the operational assessment, evaluators became familiar with each robot while reviewing its user manual. Evaluators then assessed each robot based on hands-on experience setting up the robot and then using it in a hostage barricade scenario.

The product familiarization period provided an opportunity for evaluators to operate each robot and acquaint themselves with the proper use, capabilities, and features of each robot. During this period, evaluators used each robot to complete the following tasks: turn a doorknob, pickup and carry a hard-sided case, navigate

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stairs, switch between camera views, and test one- or two-way communication (if equipped).

During the setup scenario, evaluators assembled each robot for deployment, which included installation of batteries in the robot and the command and control unit (CCU) and powering both on. Evaluators also switched between views on the CCU, used the zoom capabilities, and checked the brightness of the display in low-light conditions.

During the hostage/barricade scenario, evaluators drove each robot at top speed and over various terrains, conversed with each other over each robot's two-way communications (if equipped), used each robot's articulating arm, reviewed video quality in low-light conditions, navigated a flight of stairs, adjusted each robot's cameras, and used the CCU to right each robot after the robot was tipped onto its side.

As evaluators completed the assessment scenarios, they were given the opportunity to rate each robot based on its performance. Evaluators reviewed the ratings and comments for all of the robots at the conclusion of the assessment. SPAWARSYSCEN Atlantic published the results of this assessment in the assessment report.

In addition to the assessment, SPAWARSYSCEN Atlantic conducted market research to provide law enforcement personnel with information on small platform tactical robots, which can be found in the *Small Platform Tactical Robot Market Survey Report*.

Personal Cooling Systems

The body functions most efficiently within a limited temperature range, usually within a few degrees of 98.6°F; working at high temperatures can lead to fatigue, impaired concentration, heat exhaustion, and heat stroke. In order to work safely, rapidly, and efficiently, emergency responders must maintain a normal body temperature. Personal cooling systems are used by emergency responders to maintain normal body temperature when working in high-temperature environments and to reduce the possibility of heat stress-related illnesses when wearing protective clothing.

Personal cooling systems can be active or passive and are comprised of a cooling technology and a garment, usually a vest. Active devices use a circulating fluid and require a

power source, providing consistent, high-level cooling for the duration of use. In the past these devices required the user to be tethered to the stationary source of circulating fluid; however, technological advances have allowed these systems to become portable and light enough for responders to use.

Passive systems have no moving parts and do not require a power source; these systems cool the user for a limited amount of time. Active systems include liquid circulating systems and ambient air systems. Passive systems include evaporative cooling, gel/ice, and phase change material (PCM).

To provide emergency responders with information on personal cooling systems, the National Urban Security Technology Laboratory (NUSTL) produced the *Personal Cooling Systems Market Survey Report* on commercially available systems using either PCM or gel/ice as the cooling technology.

Blue Force Tracking

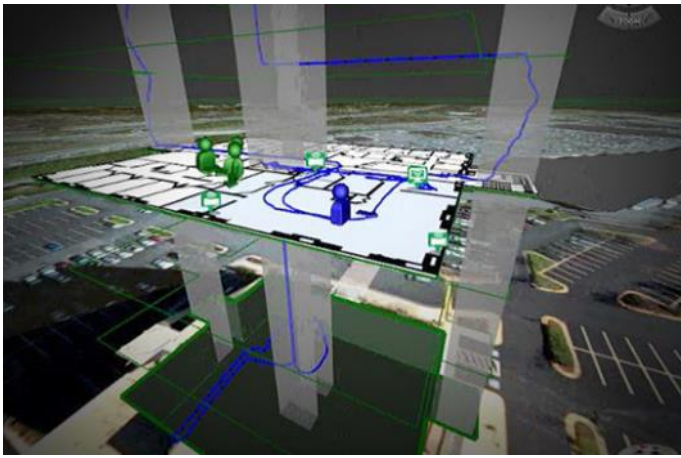
'Blue force tracking,' is a term coined by the U.S. military that refers to monitoring the location of friendly forces' personnel and resources, including those of civilian emergency responders, in a particular area of operation. Blue force tracking systems use a variety of technologies to track personnel and assets in real time or at specified intervals.

Many emergency responder agencies have mutual aid agreements in place that significantly expand their areas of potential responsibility. These systems can help identify fellow members of multidisciplinary and multijurisdictional teams operating together and lessen the risk of friendly fire accidents.

In order to provide emergency responders with information on blue force tracking systems, SPAWARSYSCEN Atlantic produced the *GPS Blue Force Tracking Systems Application Note*. The application note provides an overview of the technology



*Personal Cooling System.
Photo courtesy of Glacier Tek.*



Blue Force Tracking. Image courtesy of TRX Systems.

and also discusses applications and operational considerations.

In addition to the application note, the *Blue Force Tracking in GPS-Denied Areas TechNote* was also produced. The technote discusses an emerging technology hybrid of methods and technological advances that can be used to locate personnel in multi-story structures, underground, or in tunnels—locations with traditionally poor GPS signal conditions.

Recent SAVER TechNotes

The SAVER Program produces several types of documents to disseminate information to the emergency responder community. One such document, the technote, provides responders with a high-level introduction to a technology area by answering basic questions about the technology such as “What is it?” “What is it used for?” “Who is using it?” “How does it work?” “Why is it important to the responder community?” and “Where can I find more information on this?”

As a technical agent, NUSTL recently completed several technotes for the SAVER Program. These technotes are described in the following paragraphs.

Dosimeters for Response and Recovery

Dosimeters are radiation safety devices worn to monitor an individual’s personal radiation dose received from external sources. To ensure safety during response and recovery operations, emergency responders need to know their doses in order to take actions to prevent acute radiation effects and to minimize potential long-term health effects.

Handheld Radiation Survey Meters

Handheld radiation survey meters are portable instruments used where radioactivity is suspected or known to be present in order to locate the source or to assess the radiation intensity. These meters may be used to screen suspicious packages, confirm radiation detected by another type of instrument, determine the nature and extent of radioactive contamination, delineate protection zones, or scan people for contamination.

Handheld Radionuclide Identification Devices

Handheld radionuclide identification devices are used to identify the specific radionuclides present when radioactive materials are detected by other types of devices. Law enforcement personnel use these devices to distinguish between nonthreatening radioactive materials and high-level threats. Firefighters, hazmat teams, and other responders use these devices to identify the specific radionuclides present and minimize their effects.

Personal Radiation Detectors

Personal radiation detectors are small electronic devices used to detect the illicit transport of radioactive materials. They are designed to be worn by law enforcement personnel or customs inspectors to provide an indication of elevated radiation levels. Also known as radiation pagers, they may be used for screening during patrols or at events.

The publications listed in the Winter 2015 Newsletter can be found in the SAVER section of the *FirstResponder.gov* website, www.FirstResponder.gov/SAVER. These publications are available to the responder community.



(Left to right) *Dosimeters for Response and Recovery, Handheld Radiation Survey Meters, Handheld Radionuclide Identification Devices, and Personal Radiation Detectors TechNotes.*