

## Department of Homeland Security Secondary Reachback

As part of its radiological and nuclear countermeasures program, the Department of Homeland Security has deployed radiation portal monitors (RPMs) at a number of checkpoints, such as border crossings. When these portal monitors detect a radiological source, an attempt is made to determine the character of the source on-site at the location of the deployment. If needed, the DHS responders on-site will call back to Primary Reachback at the Customs and Border Protection (CBP) Laboratories and Scientific Services, who will provide further assistance and analysis in resolving the alarm. The CBP laboratories may, in turn, call back to Secondary Reachback for a more in-depth analysis of the event.

The Secondary Reachback (SRB) program is part of the recently established Joint Analysis Center of the DHS Domestic Nuclear Detection Office. The participants in the program are Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories. The program's capability consists of three areas:

- A 24/7 on-call operational presence that can provide quick-turnaround analysis in response to calls from Primary Reachback personnel, based on radiation spectra and situational awareness.
- A data mining and data analysis effort, tasked with providing general trend and operational analysis based on the data generated by the RPMs.
- A quality assurance effort, tasked with providing training and ensuring the quality controls needed to maintain a consistent level of performance throughout the process.



Figure 1. Truck passing through an RPM screening.

Sandia participates in all three components of the program. As part of the operational effort, we have a number of spectroscopists and analysts that support the 24/7 on-call presence, by participating in the rotation list and in training drills and exercises. For the quality assurance effort, we contribute analysis and file handling tools, complete with user documentation, training classes, and other related materials.

The main focus of Sandia's SRB activities is on the data mining and data analysis effort. We have developed an extensive set of data management tools to provide rapid access to archives of the data generated by the RPMs.



We provide a number of data mining reports, such as:

- Site-specific characterization reports for various DHS sites. These reports describe observed trends and typical events at a site.
- Analysis reports on various radioactive commodities encountered in commerce. Each report summarizes key characteristics of a commodity and presents information that would be useful in resolving events involving the commodity.
- Analysis and characterization of the RPM response, both for fielded units and in support of the DHS testing and evaluation process.

To support our data analyses, we model the RPM installations and simulate the RPM response. This activity involves simulating the setup at the RPM installation, the radiation transport, and the detector response.

We also provide quick-turnaround data mining and historical trend analysis in response to requests from DHS Headquarters during some of the more difficult alarms in the field.

Finally, Sandia also participates in the ongoing DHS program to develop and deploy a reachback program for state and local law enforcement and first responders. We provide input to the various working groups that support this effort, and we participate in technical workshops, pilot deployments, and exercises leading to the deployment of the full program.

Figure 2. Example of an energy spectrum.

