



Highlights of [GAO-09-655](#), a report to congressional requesters

Why GAO Did This Study

The Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) is testing new advanced spectroscopic portal (ASP) radiation detection monitors. DNDO expects ASPs to reduce both the risk of missed threats and the rate of innocent alarms, which DNDO considers to be key limitations of radiation detection equipment currently used by Customs and Border Protection (CBP) at U.S. ports of entry. Congress has required that the Secretary of DHS certify that ASPs provide a significant increase in operational effectiveness before obligating funds for full-scale procurement. GAO was asked to review (1) the degree to which DHS's criteria for a significant increase in operational effectiveness address the limitations of existing radiation detection equipment, (2) the rigor of ASP testing and preliminary test results, and (3) the ASP test schedule. GAO reviewed the DHS criteria, analyzed test plans, and interviewed DHS officials.

What GAO Recommends

GAO recommends that DHS assess ASPs against the full potential of current equipment and revise the program schedule to allow time to conduct computer simulations of ASPs' capabilities and to uncover and resolve problems with ASPs before full-scale deployment. DHS agreed to a phased deployment that should allow time to uncover ASP problems but disagreed with GAO's other recommendations. GAO believes its recommendations remain valid.

View [GAO-09-655](#) or [key components](#). For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

COMBATING NUCLEAR SMUGGLING

DHS Improved Testing of Advanced Radiation Detection Portal Monitors, but Preliminary Results Show Limits of the New Technology

What GAO Found

The DHS criteria for a significant increase in operational effectiveness require a minimal improvement in the detection of threats and a large reduction in innocent alarms. Specifically, the criteria require a marginal improvement in the detection of certain weapons-usable nuclear materials, considered to be a key limitation of current-generation portal monitors. The criteria require improved performance over the current detection threshold, which for certain nuclear materials is based on the equipment's limited sensitivity to anything more than lightly shielded materials, but do not specify a level of shielding that smugglers could realistically use. In addition, DNDO has not completed efforts to improve current-generation portal monitors' performance. As a result, the criteria do not take the current equipment's full potential into account. With regard to innocent alarms, the other key limitation of current equipment, meeting the criteria could result in hundreds fewer innocent alarms per day, thereby reducing CBP's workload and delays to commerce.

DHS increased the rigor of ASP testing in comparison with previous tests. For example, DNDO mitigated the potential for bias in performance testing (a concern GAO raised about prior testing) by stipulating that there would be no ASP contractor involvement in test execution. Such improvements added credibility to the test results. However, the testing still had limitations, such as a limited set of scenarios used in performance testing to conceal test objects from detection. Moreover, the preliminary results are mixed. The results show that the new portal monitors have a limited ability to detect certain nuclear materials at anything more than light shielding levels: ASPs performed better than current-generation portal monitors in detection of such materials concealed by light shielding approximating the threat guidance for setting detection thresholds, but differences in sensitivity were less notable when shielding was slightly below or above that level. Testing also uncovered multiple problems in ASPs meeting the requirements for successful integration into operations at ports of entry. CBP officials anticipate that, if ASPs are certified, new problems will appear during the first few years of deployment in the field.

While DNDO's schedule underestimated the time needed for ASP testing, test delays have allowed more time for review and analysis of results. DNDO's original schedule anticipated completion in September 2008. Problems uncovered during testing of ASPs' readiness to be integrated into operations at U.S. ports of entry caused the greatest delays to this schedule. DHS's most recent schedule anticipated a decision on ASP certification as early as May 2009, but DHS recently suspended field validation due to ASP performance problems and has not updated its schedule for testing and certification. In any case, DNDO does not plan to complete computer simulations that could provide additional insight into ASP capabilities and limitations prior to certification even though delays have allowed more time to conduct the simulations. DNDO officials believe the other tests are sufficient for ASPs to demonstrate a significant increase in operational effectiveness.