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SUPPLY CHAIN SECURITY

Feasibility and Cost- Benefit Analysis Would Assist DHS and Congress in Assessing and Implementing the Requirement to Scan 100 Percent of U.S.- Bound Containers





Highlights

Highlights of GAO-10-12, a report to Congressional Requesters

Why GAO Did This Study

U.S. Customs and Border Protection (CBP), within the Department of Homeland Security (DHS) is responsible for, among other things, the security of cargo containers shipped to the United States. In fiscal year 2008, 611 ports shipped a total of 9.8 million containers to the country. The 9/11 Commission Act (9/11 Act) requires 100 percent of U.S.-bound cargo containers to be scanned by 2012, and CBP has begun implementing the Secure Freight Initiative (SFI) to address this requirement. GAO was requested to assess CBP's efforts to implement the 9/11 Act requirement. This report addresses (1) CBP's progress at the initial ports participating in the SFI program, (2) CBP plans to implement SFI, (3) the extent to which CBP has estimated costs and conducted a cost-benefit analysis of 100 percent scanning, and (4) any challenges to integrating 100 percent scanning with existing container security programs. GAO reviewed operating procedures for the SFI ports and analyzed cost data. GAO also visited six of the seven original SFI ports and spoke to officials from CBP, foreign governments, and private industry.

What GAO Recommends

GAO recommends CBP complete a feasibility analysis, cost estimates, and a cost-benefit analysis, and provide these results to Congress. DHS partially agreed. It stated it has published reports addressing most of the recommendations, but GAO analysis revealed that these reports did not fully satisfy the recommendations' intent.

View GAO-10-12 or key components. For more information, contact Stephen Caldwell at 202-512-9610 or caldwells@gao.gov.

SUPPLY CHAIN SECURITY

Feasibility and Cost-Benefit Analysis Would Assist DHS and Congress in Assessing and Implementing the Requirement to Scan 100 Percent of U.S.-Bound Containers

What GAO Found

CBP has made limited progress in scanning containers at the initial ports participating in the SFI program, leaving the feasibility of 100 percent scanning largely unproven. Since the inception of the SFI program, CBP has not been able to achieve 100 percent scanning at any participating port. While CBP has been able to scan a majority of the U.S.-bound cargo containers at the comparatively low volume ports, it has not achieved sustained scanning rates above five percent at the comparatively larger ports.

CBP has not developed a plan to scan 100 percent of U.S.-bound container cargo by 2012, but has a strategy to expand SFI to select ports where it will mitigate the greatest risk of WMD entering the United States. CBP does not have a plan to scan cargo containers at all ports because, according to agency officials, challenges encountered thus far in implementing SFI indicate that doing so worldwide will be difficult to achieve. However, CBP has not conducted a feasibility analysis of expanding 100 percent scanning, as required by the SAFE Port Act. Such an analysis could help both CBP and Congress determine the most effective way forward to enhance container security. Recognizing that its strategy will not meet the requirement to scan all U.S.-bound cargo containers, DHS plans to issue a blanket extension to all foreign ports by July 2012 to be in compliance with the 9/11 Act. DHS officials acknowledged that they may revisit this plan before the July 2012 deadline.

CBP, while identifying some SFI program costs, has not developed a complete estimate of U.S. program costs because of the lack of a decision on a clear path forward. CBP has also not conducted any cost-benefit analysis which would include other economic costs, including those borne outside the United States, which would be important to any analysis of alternatives to achieving the 100 percent scanning requirement. While uncertainties exist, a cost estimate and cost-benefit analysis, consistent with federal best practices, could assist DHS and CBP in better communicating the magnitude of the costs and benefits to Congress and in designing a clear path forward for enhancing cargo container security.

CPB faces a number of potential challenges in integrating the 100 percent scanning requirement into its existing container security programs. The 100 percent scanning requirement is a departure from existing container security programs in that it requires that all containers be scanned before CBP determines their potential risk level. Senior CBP officials and international trading partners say this change differs from CBP's current risk-based approach based on international supply chain security standards. Our work also indicates that the 100 percent scanning requirement could present challenges to the continued operation of existing container security programs—depending upon how the SFI program is implemented and 100 percent scanning is achieved. Some foreign governments have stated they may adopt a reciprocal requirement that all U.S. origin containers be scanned, which would present additional challenges at domestic U.S. ports.

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United States Government Accountability Office
Washington, DC 20548

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Congressional Requesters

Concerns about the ability of terrorists to smuggle weapons of mass destruction (WMD) inside cargo containers bound for the United States have heightened since the terrorist attacks of September 11, 2001.¹ Oceangoing cargo containers play a vital role in the movement of cargo between global trading partners. In fiscal year 2008, 611 foreign ports shipped a total of 9.8 million cargo containers to the United States. Balancing security concerns with the need to facilitate the free flow of commerce remains an ongoing challenge for the public and private sectors alike. While U.S. Customs and Border Protection (CBP), within the Department of Homeland Security (DHS), has maintained that the likelihood of terrorists smuggling WMD into the United States in cargo containers is relatively low, the consequence of such an action could be devastating. For example, studies have estimated costs of a WMD attack at a U.S. port to range from \$58 billion to as high as \$1 trillion.²

In the federal government, CBP is responsible for overseeing oceangoing container security and reducing the vulnerabilities associated with the supply chain—the flow of goods from manufacturers to retailers. As CBP performs this mission, it maintains two overarching and sometimes conflicting goals—increasing security while efficiently facilitating legitimate trade and commerce. CBP has developed a layered security strategy to address container security concerns. Core components of the layered security strategy include analyzing information to identify containers that may be at high-risk of transporting WMD, working with host governments to examine high-risk containers at foreign ports, and providing benefits to companies that comply with predetermined security measures. In addition to CBP's layered programs, the Department of Energy (DOE) provides radiation detection equipment to foreign governments to prevent terrorists from smuggling WMD in cargo containers through foreign seaports. Related to these U.S. container

¹ For the purpose of this report, WMD generally refers to radiological or nuclear materials.

² See M. Gerencser, J. Weinberg, and D. Vincent, *Port Security War Games: Implications for U.S. Supply Chains*, (Booz, Allen, and Hamilton, 2002) and C. Meade and R. Molander, *Considering the Effects of a Catastrophic Terrorist Attack*, (Rand Center for Terrorism Risk Management Policy, 2006).

security programs, CBP has worked through the World Customs Organization (WCO) to develop and promote implementation of the SAFE Framework of Standards for supply chain security, which as of June 2009, 157 countries have agreed to implement.³

To further address container security concerns, Congress passed, and the President signed, the Security and Accountability for Every (SAFE) Port Act in 2006.⁴ The SAFE Port Act requires that pilot projects be established at three ports to test the feasibility of scanning 100 percent of U.S.-bound containers at foreign ports.⁵ To fulfill this requirement and determine the overall feasibility and efficacy of 100 percent scanning, in December 2007, DHS, the Department of State, and DOE jointly announced the formation of the Secure Freight Initiative (SFI) pilot program. In August 2007, 2 months before the SFI pilot began operations,⁶ the Implementing Recommendations of the 9/11 Commission Act of 2007 (9/11 Act) was enacted,⁷ which requires, among other things, that by July 2012, 100 percent of all U.S.-bound cargo containers be scanned before being placed on a vessel at a foreign port, with possible extensions for ports at which certain conditions exist.⁸ While foreign ports are not required to participate, the 9/11 Act scanning requirement provides that cargo

³ The WCO is an independent international organization whose mission is to enhance the efficiency and effectiveness of customs administrations.

⁴ Pub. L. No. 109-347, 120 Stat. 1884.

⁵ 6 U.S.C. § 981. A similar requirement was enacted that same year by the Department of Homeland Security Appropriations Act, 2007 (Pub. L. No. 109-295, 120 Stat. 1355 (2006)) and is codified at 6 U.S.C. § 981a. Both statutes specify scanning as examination with both radiation detection equipment and non-intrusive imaging (NI) equipment. 6 U.S.C. §§ 981(a), 981a(a)(1). This scanning is done in order to identify radiation being emitted from a container and anomalies in a container's image which could indicate the presence of shielding material, respectively.

⁶ To address the requirements of the SAFE Port Act, the SFI program became operational in October 2007 at three ports: Qasim, Pakistan; Puerto Cortes, Honduras; and Southampton, United Kingdom.

⁷ Pub. L. No. 110-53, § 1701(a), 121 Stat. 266, 489-90 (amending 6 U.S.C. § 982(b)).

⁸ The 9/11 Act scanning provision includes possible extensions for a port or ports for which DHS certifies that at least two out of a list of specific conditions exist. Among others, these conditions include (1) adequate scanning equipment is not available or cannot be integrated with existing systems, (2) a port does not have the physical characteristics to install the equipment, or (3) use of the equipment will significantly impact trade capacity and the flow of cargo. See 6 U.S.C. § 982(b)(4). The entire set of conditions is discussed in more detail later in this report.

containers loaded on a vessel in a foreign port that have not been scanned are not to be allowed into the United States. This replaced a similar provision in the SAFE Port Act that called for 100 percent scanning but did not have a deadline for full implementation of the scanning requirement. The 9/11 Act did not, however, specify who is to conduct the container scans or who is to pay for scanning equipment or operations and maintenance. According to CBP officials, with the passage of the 9/11 Act, efforts to implement 100 percent scanning at participating ports changed from a pilot test of the operational feasibility of scanning 100 percent of U.S.-bound containers to an initial phasing in of the 100 percent scanning requirement.⁸

Both DHS and CBP, as well as foreign governments and customs organizations, have expressed serious concerns regarding the feasibility and efficacy of the 100 percent scanning requirement. In April 2009, the Acting Commissioner for CBP testified that much had been done to enhance the security of cargo containers relative to other modes of transportation, and added that the area of maritime security should not be overemphasized to the detriment of other transportation modes. He also emphasized that the threat of a significant nuclear weapon in a container remains remote and requested that the scanning requirement be thoughtfully reconsidered by Congress. In January 2009, the Secretary of the Department of Homeland Security also stated that any requirement regarding container scanning from Congress must be achievable and affordable and noted that the July 2012 deadline for 100 percent container scanning appeared to be unattainable. In April 2009, the Secretary determined that CBP would focus deployment of the SFI program to foreign locations of strategic importance in a way that will maximize security benefits given its limited resources. In addition to DHS' concerns that the requirement to scan all U.S.-bound cargo containers cannot be met, foreign governments and customs organizations have expressed their opposition to the requirement. For example, in June 2008, members of the WCO unanimously endorsed a resolution expressing concern that implementation of 100 percent scanning would be detrimental to world trade and could result in unreasonable delays, port congestion, and international trading difficulties.⁹ Similarly, in May 2008, the European

⁸ In addition to the three initial ports selected for the SFI Program, CBP also pursued four additional ports, the Port of Hong Kong; the Port of Busan, Korea; the Port Salalah, Oman; and the Port of Singapore for participation in the program.

⁹ The United States abstained from the vote.

Parliament issued a resolution calling for the United States to repeal the 100 percent scanning requirement.

In response to your request, we are providing you with information on CBP's efforts to implement the SAFE Port and 9/11 Acts. This report addresses the following questions:

- What progress has CBP made toward implementing 100 percent scanning at the initial ports participating in the SFI program?
- What planning efforts has CBP made to address the requirement to scan all U.S.-bound cargo containers by July 2012?
- What are the estimated costs to date of the SFI program, and to what extent have future implementation costs been estimated?
- What challenges, if any, does CBP face in integrating the 100 percent scanning requirement with its existing container security programs?

To address these questions, we compared data on the volume of U.S.-bound cargo containers and the number of containers scanned at SFI ports to the scanning requirement set forth in the 9/11 Act. After speaking with CBP officials to resolve inconsistencies with the scanning data, we determined that the data provided were sufficiently reliable for our purposes. We reviewed available CBP documentation on expanding the SFI program, including the SFI program management plan and implementation strategy, and assessed it *against A Guide to the Project Management Body of Knowledge*.¹¹ We obtained available data on costs for operating the SFI program as reported by CBP and DOE, which we determined to be sufficiently reliable after assessing how CBP and DOE collect and manage cost data. We assessed CBP's cost estimates for further implementation of the SFI program using the *GAO Cost Estimating and Assessment Guide*.¹² We reviewed the need to do a cost-benefit analysis using criteria in DHS' *Cost-Benefit Analysis Guidebook*.¹³

¹¹ The Project Management Institute, *A Guide to the Project Management Body of Knowledge*®, (Newton Square, Pa.: 2008).

¹² *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009).

¹³ Department of Homeland Security, *Cost-Benefit Analysis (CBA) Guidebook*, Version 2.0 (February 2006).

and Office of Management and Budget (OMB) Circulars.¹⁴ We reviewed bilateral and multilateral efforts to enhance container security, such as the WCO SAFE Framework of Standards. We conducted site visits at six of the seven foreign ports that have been involved in the SFI program, and spoke with foreign government, CBP, and terminal operator officials during these visits.¹⁵ While the results of these site visits and interviews cannot be generalized across all ports that ship cargo containers to the United States, by observing operations at six of the seven ports involved with the SFI program to date—Busan, South Korea; Puerto Cortes, Honduras; Salalah, Oman; Southampton, United Kingdom; Hong Kong; and Singapore—we gained an understanding of the factors and challenges associated with implementing SFI at foreign ports. In addition, we met with CBP, DOE, and State Department officials who have program responsibilities for SFI and other programs that are part of the U.S. government's layered maritime cargo container security strategy. Further, we met with representatives from the WCO and European Commission, and officials from seven foreign governments, five of which contain an SFI pilot port, to discuss multilateral and bilateral efforts to promote supply chain security. We also spoke with six members of CBP's Customs Trade Partnership against Terrorism (C-TPAT) program.¹⁶ Our interviews with these trade industry representatives were based on a nonprobability sample, so while they are not generalizable to the entire maritime trade industry, they provide insight into the relationship between the SFI and C-TPAT programs. We met with CBP officials at domestic ports, as well as domestic port authorities to understand the impact of a reciprocal scanning requirement. As appropriate, we also relied on our prior body of work on container security conducted over the last several years (see list of Related GAO Products at the end of this report).

We conducted this performance audit from August 2008 through October 2009 in accordance with generally accepted government auditing

¹⁴ See Circular No. A-11 *Preparation, Submission, and Execution of the Budget* (August 2009); Circular No. A-94 *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs* (October 1992); and Circular A-4 *Regulatory Analysis* (September 2003).

¹⁵ Due to ongoing security concerns, we did not conduct a site visit at Port Qasim, Pakistan. Instead, we observed CBP's remote operation of the SFI program in Qasim from the National Targeting Center-Cargo (NTC-C) in Virginia.

¹⁶ Through C-TPAT, CBP develops voluntary partnerships with members of the trade community where private companies agree to improve the security of their supply chains in return for various benefits, such as a reduced likelihood that their containers will be examined.

standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. A detailed discussion of our scope and methodology is contained in appendix I.

Results in Brief

CBP has made limited progress in working with the initial seven SFI ports to ensure the scanning of U.S.-bound container cargo, and the feasibility of 100 percent scanning remains largely unproven. CBP and DOE have been successful in integrating images of scanned containers onto a single computer screen that can be reviewed remotely from the United States. They have also been able to use these initial ports as a test bed for new applications of existing technology, such as mobile radiation scanners. However, the SFI ports' level of participation, in some cases, has been limited in terms of duration (e.g., the Port of Hong Kong stopped their participation in scanning after approximately 16 months) or scope (e.g., the Port of Busan, Korea allowed scanning in only one of the eight terminals). In addition, one port has withdrawn from the SFI program and another port has yet to begin scanning operations. Furthermore, since the inception of the SFI program in October 2007, no participating port has been able to achieve 100 percent scanning. While 54 to 86 percent of the U.S.-bound cargo containers were scanned at three comparatively low-volume ports that are responsible for less than 3 percent of container shipments to the United States, sustained scanning rates above 5 percent have not been achieved at two comparatively larger ports—the type of ports that ship most containers to the United States. Scanning operations at the initial SFI ports have encountered a number of challenges—including safety concerns, logistical problems with containers transferred from rail or other vessels, scanning equipment breakdowns, and poor quality scan images. Both CBP and GAO had previously identified many of these challenges, and CBP officials are concerned that they and the participating ports cannot overcome them. Thus, the feasibility of 100 percent scanning remains largely unproven.

CBP has planned two initiatives to improve container security; however, neither initiative would achieve the 9/11 Act requirement to scan 100 percent of all U.S.-bound cargo by July 2012. The first initiative, the “strategic trade corridor strategy,” would involve scanning 100 percent of U.S.-bound containers at selected foreign ports where CBP believes it will mitigate the greatest risk of WMD entering the United States. The Secretary of Homeland Security approved this strategy and, according to

CBP, it is in negotiations with foreign governments to expand SFI to ports in those countries. Because negotiations are ongoing, details on the number of ports involved are not yet finalized. The second initiative, known as the "10+2" program, requires importers to provide 10 data elements and vessel carriers to provide 2 data elements on containers and their cargo to CBP, adding to the information available to CBP and improving its ability to identify containers that may pose a risk for terrorism for additional scrutiny—such as scanning or physical inspection. CBP believes the strategic trade corridor strategy, combined with its recently implemented 10+2 program, will enhance cargo container security. Based on discussions with DHS and CBP officials, it is unclear whether DHS intends for the strategic trade corridor strategy and 10+2 program to be implemented in lieu of the 100 percent scanning requirement or whether it is the first phase of implementation at all ports worldwide. While the strategic trade corridor strategy and 10+2 may improve container security, they do not achieve the legislative requirement to scan 100 percent of U.S.-bound containers. According to CBP, it does not have a plan for full-scale implementation of the statutory requirement by July 2012 because challenges encountered thus far in implementing the SFI program indicate that implementation of 100 percent scanning worldwide by the 2012 deadline will be difficult to achieve. However, it has not performed a feasibility analysis of the SFI pilot and expanding 100 percent scanning to other foreign ports as required by the SAFE Port Act. Furthermore, best practices for project management call for the feasibility of a program to be considered early on, which can be done through evaluating alternatives. The analysis should consider the scope, objectives, time line and resources needed to achieve 100 percent scanning to determine if it is feasible and if so what is the best way to achieve it, or if it is not feasible, what are the other alternatives. Given the challenges encountered in implementing SFI at the initial ports, such an analysis could help CBP and Congress determine the most effective way forward to enhance container security. Further, senior DHS and CBP officials acknowledge that most, if not all foreign ports, will not be able to meet the July 2012 target date for scanning all U.S.-bound cargo, and DHS will need to issue extensions to such ports to allow the continued flow of commerce and still comply with the 9/11 Act. DHS officials told us that the department had made a decision to grant a blanket extension to all foreign ports rather than on a port-by-port basis since some of the conditions listed in the 9/11 Act as a basis for granting extensions can be applied systemically to all ports. Specifically, DHS believes the last two conditions—that the use of the equipment would significantly impact trade capacity and the flow of cargo, and that scanning equipment does not adequately provide automatic notification of an anomaly in a container—

could apply to all foreign ports and, thus, warrant the use of a blanket extension because two conditions are sufficient to justify an extension under the statute. DHS officials acknowledged that this plan for extensions could be revisited if there are significant changes (e.g., advancements in scanning technology) before the July 2012 deadline.

CBP and DOE have tracked some information on their own costs for implementing SFI—about \$100 million to date—but CBP has not developed a comprehensive estimate for future U.S. program costs, or conducted a cost-benefit analysis that compares the costs and benefits of the 100 percent scanning requirement with other alternatives, such as the strategic trade corridor strategy. The SAFE Port Act requires CBP to report on costs for implementing the SFI program at foreign ports, but CBP has not yet estimated total U.S. program costs because of both the lack of a decision by DHS on a clear path forward and the unique set of challenges that each foreign port presents. While uncertainties exist regarding a path forward for the program, a credible cost estimate consistent with cost estimating best practices could better aid DHS and CBP in determining the most effective way forward for SFI and communicating the magnitude of the costs to Congress for use in annual appropriations. In evaluating the 9/11 Act, the Congressional Budget Office assumed that foreign ports would pay for implementing the scanning systems at their ports; however, CBP and DOE have paid the majority of SFI costs for operating the SFI program to date. The SAFE Port Act and 9/11 Act do not address the issue of who is expected to pay the cost of developing, maintaining, and using the infrastructure, equipment, and people needed for the 100 percent scanning requirement, but implementing the requirement would entail costs beyond U.S. government program costs, including those incurred by foreign governments, private terminal operators, and could result in higher prices for American consumers. CBP has not estimated these additional economic costs, though they are relevant in assessing the balance between improving security and maintaining trade capacity and the flow of cargo. Both the Office of Management and Budget and DHS guidance cite cost-benefit analysis as a key practice for agencies to use in making decisions and allocating resources. Conducting a cost-benefit analysis would allow CBP to evaluate the costs and benefits of achieving 100 percent scanning as well as other alternatives for enhancing container security. Such an analysis could provide important information to CBP and to Congress to determine the most effective way forward to enhance container security.

CBP faces a number of potential challenges in integrating the 100 percent scanning requirement with its existing container security programs as it

may hinder the continued operation of such programs, and its international trading partners have raised concerns regarding, among other things, the effectiveness of the 100 percent scanning requirement. The scanning requirement is a departure from existing container security programs because it requires CBP to apply the scrutiny of scanning to all containers rather than conducting analyses to determine the containers' potential risk level to determine whether scanning is needed. Senior CBP officials have stated that the 100 percent scanning requirement differs from the risk-based strategy it uses to identify containers that may require more scrutiny—such as scanning and physical inspection. Our work also indicates that the 100 percent scanning requirement could present potential challenges to the continued operation of other existing container security programs, depending upon how the SFI program is expanded and 100 percent scanning is implemented. For example, at one of the pilot ports we visited, the continued operation of the SFI program reduced the willingness of the foreign government to work with CBP to identify and physically inspect containers under an existing bilateral program. The implementation of 100 percent scanning could also present challenges by reducing the willingness of private companies to partner with CBP to improve their internal security programs. For example, as a benefit, when importers currently partner with CBP through the C-TPAT program (and share information on their internal security practices), their containers generally receive less scrutiny. With the potential worldwide requirement to scan all U.S.-bound containers, regardless of the importer's membership in C-TPAT, importers could lose one of the key benefits of participating in C-TPAT. The new requirement has also created challenges for CBP in its overall working relationships with foreign governments. Because of the global nature of the supply chain, international cooperation has been a key tenant of U.S. maritime security strategy and practices. However, the 100 percent scanning requirement is being put forth solely by the United States, in contrast to some existing container security programs that were negotiated multilaterally or bilaterally with willing partners. Officials at international organizations and foreign governments we spoke with have raised concerns to CBP about 100 percent scanning, stating that that the new requirement is inconsistent with the risk-based strategy adopted in international standards for supply chain security that CBP uses in its existing programs. The officials also stated the new requirement will diminish security by reducing resources available to focus on high-risk containers. If the United States enforces the 100 percent scanning requirement, the European Commission has stated the European Union may impose a reciprocal scanning requirement. This could present further challenges to CBP. CBP officials and terminal operators at domestic U.S. ports we met with stated that they would have a difficult time meeting

such a foreign-required scanning process and it could come at the expense of their ability to secure the United States from inbound containers that might contain WMD.

To better position DHS to comply with the scanning provisions of the SAFE Port and 9/11 Acts, improve container security, and better inform Congress on CBP's efforts to implement 100 percent scanning, we are recommending that the Secretary of Homeland Security, working with the Commissioner of CBP and in consultation with the Secretaries of Energy and State as appropriate (1) conduct a feasibility analysis of implementing the 100 percent scanning requirement in light of the challenges faced; (2) develop comprehensive and credible estimates of total U.S. program costs; (3) conduct a cost-benefit analysis (including all significant economic costs) of 100 percent scanning and alternative container security programs, and (4) report the results of the feasibility analysis, cost estimates, and cost benefit analysis to Congress, to assist DHS and Congress in addressing existing challenges and determining the best path forward to enhance container security.

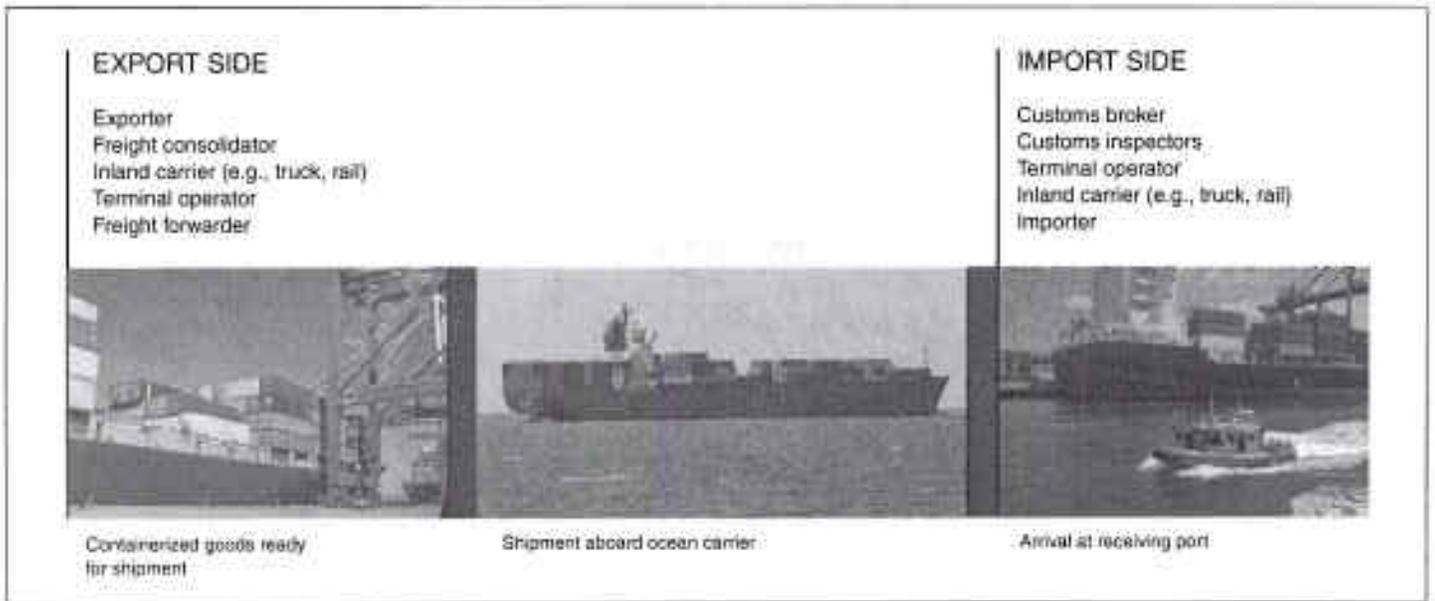
In commenting on a draft of this report, DHS stated that it concurred with three of our recommendations related to developing a feasibility analysis and a comprehensive cost estimate and providing the results of these and other analyses to Congress, but that it had already published reports that had addressed these recommendations. We disagree because our analysis of these reports reveals that DHS has not fully satisfied the intent of the recommendations as its reports do not include a feasibility analysis that includes specific elements required by the SAFE Port Act and its cost estimates are not comprehensive. DHS also said that it agreed in part with our recommendation that it develop a cost benefit analysis of 100 percent scanning, acknowledging that the recommended analyses would better inform Congress, but stated the recommendations should be directed to the Congressional Budget Office. While CBO does prepare cost estimates for pending legislation, we think the recommendation is appropriately directed to CBP. DHS's comments are reprinted in Appendix III. CBP and the State Department also provided technical comments, which we incorporated as appropriate.

Background

Vulnerabilities of Containers in the International Supply Chain

Ports are critical gateways for the movement of commerce through the international supply chain. The facilities, vessels, and infrastructure within ports, and the cargo containers passing through them, all have vulnerabilities that terrorists could exploit. Containers carrying goods that are shipped in oceangoing vessels are of particular concern because they can be filled overseas at many different locations and are transported through complex logistics networks before reaching U.S. ports. In addition, transporting a shipping container from its international point of origin to its final destination involves many different participants and many points of transfer. The container, or material in it, can be affected not only by the manufacturer or supplier of the material being shipped, but also by carriers who are responsible for getting the material to a port, as well as by personnel who load containers onto the ships. Others who interact with the cargo or have access to the records of the goods being shipped include exporters who make arrangements for shipping and loading, freight consolidators who package disparate cargo into containers, and forwarders who manage and process the information about what is being loaded onto the ship. Figure 1 illustrates many of the key participants and points of transfer involved from the time that a container is loaded for shipping to its arrival at the destination port and ultimately the importer.

Figure 1: Overview of Key Participants Involved in Shipping Containers in the International Supply Chain



Source: GAO, DHS.

Several studies of maritime security conducted by federal, academic, nonprofit, and business organizations have concluded that the movement of oceangoing cargo in containers is vulnerable to some form of terrorist action. Every time responsibility for cargo in containers changes hands along the supply chain there is the potential for a security breach. As a result, vulnerabilities exist that terrorists could take advantage of by, for example, placing a WMD into a container for shipment to the United States or elsewhere. U.S. government officials believe that the likelihood of terrorists smuggling WMD into the United States in cargo containers is relatively low. While there have been no known incidents of containers being used to transport WMD, criminals have exploited containers for other illegal purposes, such as smuggling weapons, people, and illicit substances.

The U.S. Government Is Engaged in Efforts to Secure Containers in the International Supply Chain

In the federal government, CBP is responsible for overseeing oceangoing container security and reducing the vulnerabilities associated with the supply chain. While CBP officials at domestic ports continue efforts to identify and examine imports arriving in containers that may pose a risk for terrorism, CBP's post-9/11 strategy also involves focusing security

efforts beyond U.S. borders to target and examine cargo that may pose a risk for terrorism before it enters U.S. ports. CBP's strategy is based on a layered approach of related initiatives that attempt to focus limited resources on potentially risky cargo shipped in containers bound for the United States while allowing other containers carrying cargo to proceed without unduly disrupting commerce. CBP's layered strategy to address container security is complimented by DOE's efforts to prevent the proliferation of nuclear materials. DOE has led U.S. efforts to detect radioactive material in cargo containers originating at foreign ports. A brief description of CBP and DOE initiatives is provided in table 1.

Table 1: Description of DHS and DOE Cargo Security Initiatives

Initiative and year introduced	Department currently responsible	Description
Automated Targeting System (ATS), 1999	DHS	CBP uses ATS—a mathematical model that uses weighted rules to assign a risk score to arriving cargo shipments based on shipping information—to help identify and prevent potential terrorists and terrorist weapons from entering the United States. ATS is a computerized decision support tool used by CBP to review documentation, including cargo manifest information ⁷ submitted by the ocean carriers on all arriving shipments, and entry data (more detailed information about the cargo) submitted by brokers, to develop risk scores that help identify containers for additional examination.
24-hour Rule, 2002	DHS	CBP generally requires ocean carriers to electronically transmit cargo manifests to CBP's Automated Manifest System 24 hours before the U.S.-bound cargo is loaded onto a vessel at a foreign port. Carriers and importers are to provide information to CBP that is used to strengthen how ATS assigns risk scores. The cargo manifest information is submitted by ocean carriers on all arriving cargo shipments.
Container Security Initiative (CSI), 2002	DHS	CBP places staff at participating foreign ports to work with host country customs officials to target and examine high-risk container cargo for weapons of mass destruction before they are shipped to the United States. CBP officials identify the containers that may pose a risk for terrorism and request that their foreign counterparts examine the contents of the containers.
Customs-Trade Partnership Against Terrorism (C-TPAT), 2001	DHS	CBP develops voluntary partnerships with members of the international trade community comprised of importers; customs brokers; forwarders; air, sea, and land carriers; and contract logistics providers. Private companies agree to improve the security of their supply chains in return for various benefits, such as a reduced likelihood that their containers will be examined.
Megaports Initiative, 2003	DOE	DOE installs radiation detection equipment at key foreign ports, enabling foreign government personnel to use radiation detection equipment to screen shipping containers entering and leaving these ports, regardless of the containers' destination, for nuclear and other radioactive material that could be used against the United States and its allies. As of June 2009, the Megaports Initiative was fully operational at 23 foreign ports and in various stages of implementation at 21 others.

Initiative and year introduced	Department currently responsible	Description
Standards to Secure and Facilitate Global Trade (SAFE) Framework of Standards, 2005	DHS	CBP, along with international partners developed the WCO Framework of Standards to Secure and Facilitate Global Trade (commonly referred to as the SAFE Framework), the core concepts of which are based on components in CBP's CSI and C-TPAT programs. In June 2005, the 173-member customs administrations of the World Customs Organization adopted the SAFE Framework and as of June 2009, 157 member countries, including the United States, had signed letters of intent for implementing the SAFE Framework.
Secure Freight Initiative (SFI), 2006	DHS, DOE	CBP and DOE program at selected ports to scan 100 percent of U.S.-bound container cargo for nuclear and radiological materials overseas using integrated examination systems that couple non-intrusive inspection (NII) and radiation detection equipment.
Domestic Port Radiation Detection Scanning, 2007	DHS	CBP program to scan 100 percent of containers arriving in the United States with radiation detection equipment prior to leaving a domestic port. As of April 2009, CBP had 409 radiation portal monitors deployed at domestic ports, through which approximately 98 percent of all arriving containers passed through.
Mutual Recognition Arrangements, 2007, 2008, 2009	DHS	CBP bilateral program to develop mutual recognition of Authorized Economic Operator (AEO) programs. ³ This occurs when customs administrations agree to recognize the members of their respective programs. As of June 2009, CBP has signed mutual recognition arrangements with New Zealand, Canada, Jordan, and Japan. Furthermore, the United States is in discussions with the European Union regarding the possibility of entering into a nonbinding mutual recognition arrangement.
Importer Security Filing and Additional Carrier Requirements (also known as 10+2), 2009	DHS	CBP regulation that requires importers and vessel carriers to provide additional data elements for improved identification of containers that may pose a risk for terrorism. The importer is responsible for supplying CBP with 10 shipping data elements 24 hours prior to lading while the vessel carrier is required to provide 2 data elements in addition to those previously required.

Source: GAO summary of information obtained from DHS, DOE, and WCO.

³Cargo manifests are prepared by the ocean carrier and are composed of bills of lading for each shipment of cargo loaded on a vessel to describe the contents of the shipment.

⁴Authorized Economic Operators are those companies that participate in a country's customs-to-business partnership programs and may include, for example, manufacturers, importers, and exporters. Incentives for businesses participating in AEO programs are defined and offered by the individual member states.

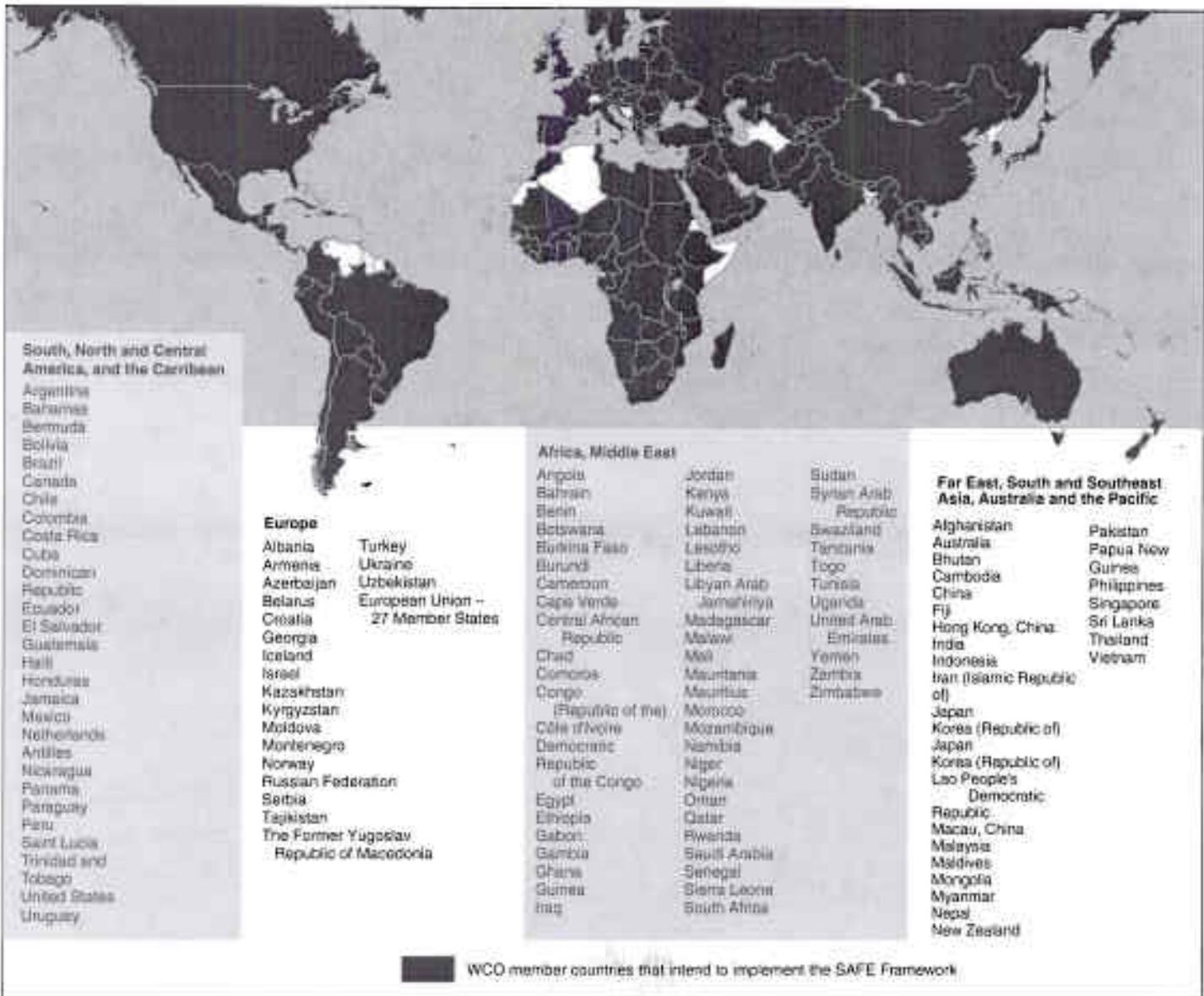
CBP Has Taken Steps to Promote Customs Security Standards Internationally

CBP has taken a lead role in working with foreign customs administrations on approaches to standardize supply chain security worldwide. In 2004, CBP, along with 11 other member customs administrations of the WCO, formed the High Level Strategic Group to develop international standards for customs security practices. The group developed the WCO Framework of Standards to Secure and Facilitate Global Trade (commonly referred to as the SAFE Framework), the core concepts of which are based on components in CBP's CSI and C-TPAT programs. For example, just as in the CSI program, the SAFE Framework states that members should use a risk-management system to target and identify cargo that may pose a risk for terrorism. Similar to C-TPAT, the SAFE Framework incorporates the

concept of the Authorized Economic Operator (AEO) and provides technical guidance for customs administrations to develop an AEO program that offers incentives to companies that comply with predetermined minimum supply chain security standards. According to data from the WCO, as of July 2009, about 70 countries, including the 27 members states of the European Union, have implemented or have begun developing AEO programs. In the United States, C-TPAT is the designated AEO program and businesses participating in the program are Authorized Economic Operators. In June 2005, the 173-member customs administrations of the WCO adopted the SAFE Framework. Further, as of June 2009, 157 WCO members, including the United States, had signed letters of intent to implement the SAFE Framework (see fig. 2).

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Figure 2: World Map Indicating the 157 WCO Customs Administrations That Have Signed Letters of Intent to Implement the WCO SAFE Framework



Source: GAO (map art), Map Resources (map), WCO (data).

Note: Countries' names and geographic regions have been defined by WCO.

While CBP has developed cooperative relationships with foreign governments to enhance the security of U.S.-bound cargo containers before they are placed on a vessel, several factors at foreign ports that

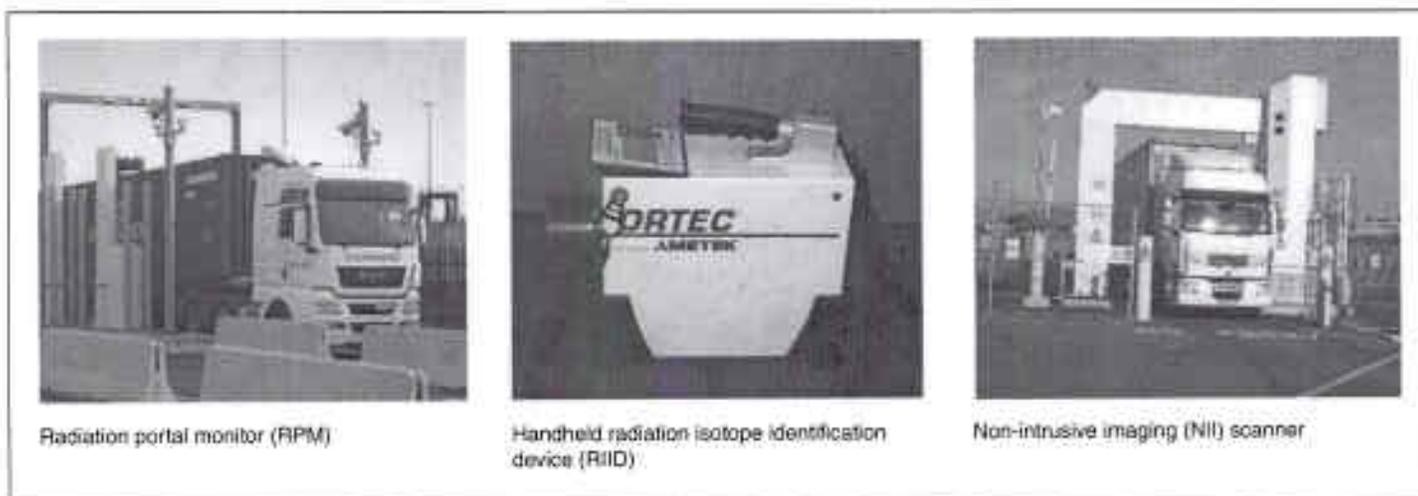
impact the security of cargo are beyond CBP's control. For example, while CBP has developed specific standards for the inspection equipment used to scan cargo containers at domestic ports, CBP has potentially limited assurance that this inspection equipment is capable of detecting and identifying potential WMD at foreign ports. Additionally, while CBP can issue a "do not load" order so that a specific cargo container would not be allowed on a U.S.-bound vessel, it has no authority to compel host governments to participate in security programs or to scan cargo containers that it has determined may pose some risk. For example, when CBP determines that cargo in a particular container at a CSI or SFI port poses some risk, it must request that the host government's customs service conduct a physical examination of the container since CBP has no authority to do so itself. Similarly, unlike domestic ports, CBP cannot compel private sector entities operating at foreign ports to participate in security initiatives. For example, at one port, for a period of approximately 2 months, the terminal operator ceased to provide CBP information on which containers leaving the port were bound for the United States. As a result, CBP had greater difficulty determining which containers were U.S.-bound and, therefore, should be scanned with imaging equipment. Under these circumstances, CBP would still have the option of preventing the cargo containers from being loaded onto U.S. bound vessels, or flagging the containers for further inspection once they arrive in the United States.

Equipment Used to Conduct Examinations of Cargo Containers

There are generally two types of cargo container examinations—scanning equipment and physical searches—used as part of the SFI and CSI programs. There are two basic types of scanning equipment currently used to examine cargo containers that do not require the container to be opened: (1) radiation detection equipment, including radiation portal monitors, and (2) non-intrusive imaging equipment (NII), which may use X-rays or gamma rays. Radiation detection equipment, such as radiation portal monitors (RPM) and radiation isotope identification devices (RIID) detect the presence of radioactive material that may be in a container. RIIDs and certain types of RPMs can identify the type of material emitting the radiation and whether the material poses a threat or is a naturally

occurring radioactive material, such as that found in certain ceramic tiles.¹⁷ We observed at domestic and foreign ports that if radioactive emissions were detected from a cargo container, customs officials used a handheld RIID to determine whether the radiation being emitted posed a threat. The second type of equipment, referred to as NII, uses X-rays or gamma rays to scan a container and create images of the container's contents without opening it. Examples of a RPM, handheld RIID, and NII are depicted in figure 3.

Figure 3: Examples of Scanning Equipment Used at SFI Ports



Radiation portal monitor (RPM)

Handheld radiation isotope identification device (RIID)

Non-intrusive imaging (NII) scanner

Source: GAO.

CBP officials, along with host government officials, review the images produced with the NII to detect anomalies or shielding that could indicate the presence of WMD. The 100 percent scanning provision of the 9/11 Act requires containers to be scanned with both radiation detection and NII equipment; doing so may identify WMD material that is successfully shielded from detection by RPM. The average time at which a container is

¹⁷ DHS, through its Domestic Nuclear Detection Office (DNDO), is currently sponsoring testing of the Advanced Spectroscopic Portal (ASP) monitors, which are designed to both detect and identify the specific type of source material. We have previously identified deficiencies associated with testing the ASP. For additional details see *Combating Nuclear Smuggling: DHS Improved Testing of Advanced Radiation Detection Portal Monitors, but Preliminary Results Show Limits of New Technology*, GAO-09-655 (Washington, D.C.: May 21, 2009).

processed through the scanning system is 3 to 5 minutes. If the use of the RIID is necessary, the average time increases another 5 to 10 minutes.

Secure Freight Initiative (SFI)

In response to the SAFE Port Act requirement to implement a pilot program to determine the feasibility of scanning 100 percent of U.S.-bound containers with both RPM and NII equipment, CBP, the State Department, and DOE jointly announced the formation of SFI in December 2006 as an effort to build upon existing container security measures by enhancing the U.S. government's ability to ensure containers are scanned for nuclear and radiological material overseas and better assess the risk of inbound containers. In essence, SFI builds upon the CSI and Megaports programs by combining each program's scanning technology equipment. To accomplish this, CBP met with terminal operators to identify foreign ports for inclusion in the pilot program to scan 100 percent of U.S.-bound containers. Based on discussions with terminal operators and subsequent discussions with host government officials, three ports were selected to implement the SAFE Port Act pilot program: Qasim, Pakistan; Puerto Cortes, Honduras; and Southampton, United Kingdom. According to CBP officials, while initiating the SFI program at these ports satisfied the SAFE Port Act requirement to implement the program at three ports,¹⁸ CBP also selected the ports of Hong Kong; Busan, South Korea; and Salalah, Oman to more fully demonstrate the capability of the integrated scanning system at larger, more complex ports with higher percentages of transshipment container cargo—cargo containers from one port that are taken off a vessel at another port to be placed on another vessel bound for the United States. For example, port officials told us that at the Ports of Hong Kong, Singapore, and Salalah, transshipment cargo constitutes about 50 percent, 87 percent, and 99 percent of U.S.-bound containers, respectively. CBP officials also stated that with the passage of the 9/11 Act, the focus of the SFI program shifted from determining the feasibility of 100 percent scanning to becoming the first phase of CBP's phased-in approach to implementing the 100 percent scanning requirement.

¹⁸ The act required CBP to identify three distinct ports through which containers pass or are transhipped to the United States with unique features and differing levels of trade volume. 6 U.S.C. § 981(a).

CBP's Progress with SFI Implementation and Operation to Date Has Been Limited, Leaving the Feasibility of 100 Percent Scanning Largely Unproven

While CBP and DOE have made progress in integrating new technologies as part of the SFI program, progress in implementing and expanding the scanning of U.S.-bound cargo containers at participating ports has been limited. Some ports that initially agreed to participate in the SFI program did so for a limited time, or on a limited basis. Logistical, technological, and other problems at participating ports, as well as concerns regarding the safety of the NII equipment used for the SFI program, have prevented any of the participating ports from achieving 100 percent scanning, as ultimately required by the 9/11 Act, leaving the feasibility and efficacy of 100 percent scanning largely unproven. Moreover, attempts to implement 100 percent scanning at these foreign ports have confirmed challenges previously identified by CBP and GAO.¹⁹

CBP and DOE Have Made Progress in Integrating and Modifying Scanning Equipment

CBP has been successful in integrating outputs from the various types of scanning equipment used to scan cargo containers at foreign ports participating in the SFI program. CBP and DOE were able to integrate the outputs from RPM and NII equipment with the Automated Targeting System (ATS) so a CBP officer can review all the data and information associated with a container on a single screen.²⁰ CBP officers can also access scanning information remotely and do not need to be present at an SFI port to analyze the RPM results and NII images of containers. For example, at the National Targeting Center-Cargo (NTCC), we observed that outputs from RPM and NII equipment located at Port Qasim in Pakistan were accessible to CBP officers located in the United States.²¹ These officers could observe the scanning equipment outputs in combination with information from ATS to make determinations as to whether to request that the cargo container being scanned be more closely examined by host government personnel. CBP officers could also observe scans of cargo containers being conducted at the port in real time via

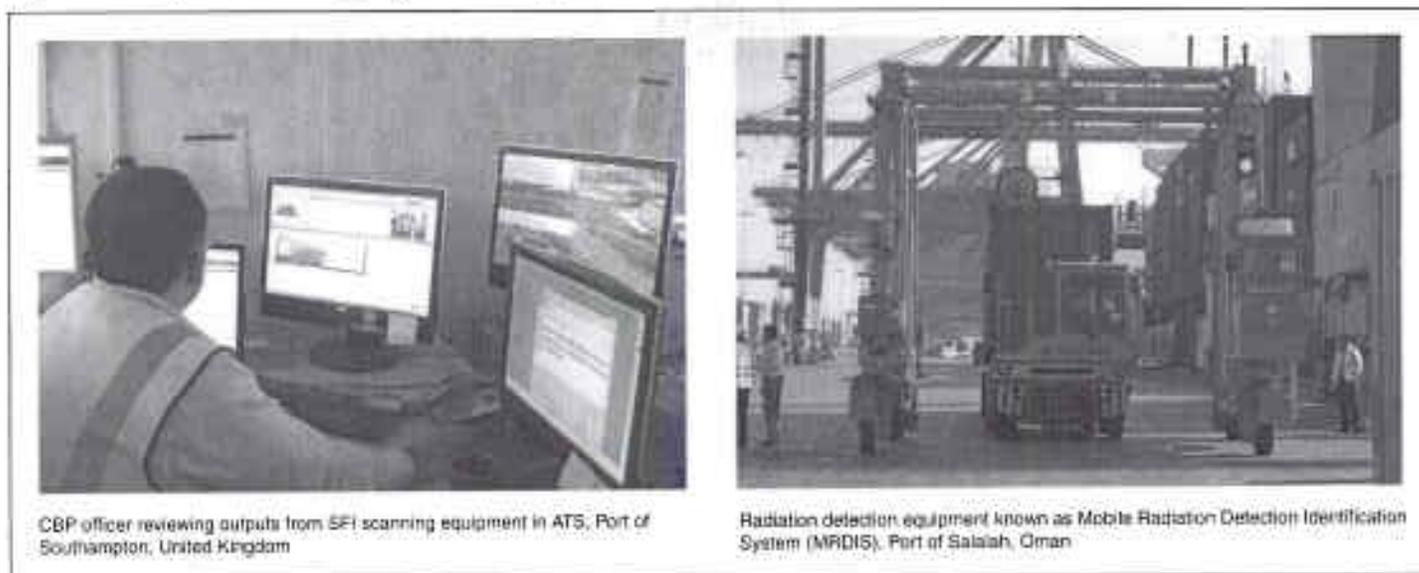
¹⁹ GAO, *Supply Chain Security: Challenges to Scanning 100 Percent of U.S.-Bound Cargo Containers*, GAO-08-533T (Washington, D.C.: June 12, 2008).

²⁰ ATS is a computerized decision support tool to review electronic documentation, including electronic manifest information submitted by ocean carriers to help identify shipments requiring additional scrutiny.

²¹ According to CBP, the National Targeting Center (NTC) was established in response to the need for proactive targeting aimed at preventing acts of terror and to seize, deter, and disrupt terrorists and implements of terror. NTC originally combined both passenger and cargo targeting in one facility. It was later divided into the NTC-C and the National Targeting Center-Passenger. For purposes of this report, we use NTC-C in our references since its mission is to support CBP cargo-targeting operations.

cameras that can be operated remotely from the United States. Examples of scanning outputs and equipment used at an SFI port are shown in figure 4.

Figure 4: Example of Scanning Outputs and Equipment at SFI Ports



Source: GAO

This integration of technologies has also allowed CBP to transfer targeting efforts involving the Port of Southampton, United Kingdom, to domestic ports. Currently, CBP officers in Newark, Baltimore, Savannah, and other domestic port locations have been trained to incorporate the scanned data from the Port of Southampton into their targeting methodology and coordinate secondary examinations with the SFI team at the port. Similarly, at Puerto Cortes in Honduras, we observed that scan data from imaging and RPM equipment were available for review by CBP and Honduran Customs officials almost instantly after the images were generated by the inspection equipment. Honduran Customs officials stated that, in addition to CBP's interest in detecting WMD, having this information available greatly assisted in their efforts to detect and identify contraband, such as narcotics, being shipped in cargo containers through the port.

Ports participating in the SFI program have also been able to serve as a testing ground for new inspection technologies. For example, at the Port

of Salalah in Oman, we observed the testing of mobile platforms to carry large format radiation detection equipment, known as Mobile Radiation Detection Identification Systems (MRDIS) that Pacific Northwest National Laboratory, in conjunction with DOE, has developed (see fig. 4). The MRDIS units were built to more effectively capture transshipment cargo (cargo taken off of one vessel to be placed on a U.S.-bound vessel) as it is being unloaded from a vessel without creating congestion. However, the effectiveness of the MRDIS, and its impact on the flow of containers, has not been fully tested because the SFI program is not yet operational at the Port of Oman.

Foreign Port Participation in the SFI Program Has Been Limited

CBP reached arrangements with foreign governments to implement the SFI program at seven foreign ports. As of June 2009, SFI operations have been conducted at five ports, but in some cases for a limited time or on a limited basis. In addition, one port has withdrawn and another has yet to begin scanning operations.

As shown in table 2, the SFI program has operated continuously since October 2007 at Port Qasim, Pakistan; Puerto Cortes, Honduras; and the Port of Southampton, United Kingdom and the majority of U.S.-bound cargo containers from these ports have been scanned. Host government officials at Puerto Cortes have expressed a desire to continue with the SFI program and have allocated personnel to support program operations. At the Port of Southampton, the host government has allowed SFI operations to continue, but withdrew customs personnel originally allocated to support program operations after the 6-month arrangement it had with CBP to participate in the SFI program came to an end. Customs officials in the United Kingdom stated that the costs associated with assigning personnel to assist CBP with SFI program operations were preventing these officials from fulfilling their domestic responsibilities, such as detecting drugs. As a result, the SFI program at the Port of Southampton is now solely supported by CBP officers working directly with the terminal operator.

Table 2: Information on Ports Initially Agreeing to Participate in the SFI Program

SFI port	Date of SFI operations
Qasim, Pakistan	October 12, 2007 to present
Puerto Cortes, Honduras	October 12, 2007 to present
Southampton, United Kingdom	October 12, 2007 to present ^a
Hong Kong	January 11, 2008 to April 30, 2009
Busan, South Korea	March 18, 2009 to present
Salalah, Oman	Program postponed with no planned initiation date
Singapore ^b	CBP and the Government of Singapore mutually agreed the Port of Singapore would not participate in SFI prior to operations beginning

Source: GAO analysis of data provided by CBP.

^aAlthough SFI operations at the Port of Southampton are ongoing, the SFI program is operated solely by CBP officials. United Kingdom customs withdrew its participation from the program in April 2008, after the 6-month arrangement it had to participate came to an end.

^bWhile CBP and the Government of Singapore initially signed a declaration of principles in December 2007 to establish the Port of Singapore's participation in the SFI program, this decision was later mutually rescinded.

Among ports that participated in the SFI program, the largest port in terms of container volume shipped to the United States, the Port of Hong Kong, participated in the program for about 16 months—scanning containers at one of the nine terminals on a voluntary basis. The program ended as scheduled in April 2009 and was not renewed at the mutual decision of the Hong Kong government and DHS. Discussing their decision not to extend SFI, Hong Kong port officials observed that CBP-provided statistics showed no trade facilitation benefits for containers passing through SFI scanning and noted CBP's efforts to focus container scanning at those ports where there was greater risk. They also stated that they saw no benefit to participation in the program in terms of their own port security and expressed concerns that equipment and infrastructure costs, as well as costs to port efficiency, would make full implementation of the SFI program at all of its terminals unfeasible.

Similarly, according to CBP officials, the government of South Korea agreed to allow the Port of Busan to participate in the SFI program for 6 months at one terminal at the port. CBP officials stated that the South Korean government has agreed to extend the program for another 6 months, but no permanent arrangement has been reached.

In addition, two ports that had initially agreed to participate in the program have since withdrawn or postponed their operations. DHS and

the government of Singapore mutually agreed to suspend the SFI program at the Port of Singapore before the program began scanning operations, noting concerns about the potential adverse impact on port efficiencies due to the large volume and complexity of operations at the port. In this instance, both DHS and Singapore agreed that the benefits of initiating the program with existing technology were outweighed by the potential impact the operations could have on trade flow through the port. Also, according to CBP officials, Port Salalah in Oman had initially agreed to participate in the SFI program for 6 months. However, according to U.S.-government officials, implementation of the SFI program at Port Salalah has been postponed due to port management concerns regarding the scope, time line, and criteria for success for the program. The officials said that U.S. government personnel are working with Omani Customs to find a path forward, but no firm plans or time line yet exist for initiating SFI operations at the Port of Salalah.

Government officials we spoke with in Asia and Europe generally stated that they viewed the implementation and operation of the SFI program to be a pilot—with a definite start and end date—to determine the feasibility and usefulness of further implementation. As such, they stated that they do not view the SFI program as being permanent.

Scanning Rates at Larger SFI Ports Have Been Far Short of 100 Percent

While CBP has been able to scan a majority of U.S.-bound cargo containers from three comparatively low-volume ports participating in the SFI program, at two higher volume ports—which constitute approximately 17 percent of containers arriving in the United States—it has been able to scan no more than 5 percent of U.S.-bound cargo containers, on average, most of which were scanned after they were determined to be high risk by CBP officers as part of the CSI program, according to CBP officials.²² As shown in table 3, at Port Qasim, Puerto Cortes, and the Port of Southampton—which together account for 2.4 percent of U.S.-bound cargo containers with little or no transshipment cargo containers—CBP has been able to scan, on average, 54 percent to 86 percent of the U.S.-bound cargo containers. In contrast, at the Ports of Hong Kong and Busan—which together account for 16.6 percent of U.S.-bound cargo containers and have larger percentages of transshipped cargo—CBP has

²² Under the CSI program, CBP personnel work with host country customs officials to identify high-risk cargo before it is loaded on a U.S.-bound vessel. CBP officials then request that their foreign counterparts examine the contents of the container.

been able to scan, on average, 3 to 5 percent of the U.S.-bound cargo containers. CBP officials stated that while scanning percentages are low, operations at these ports have been limited to a single terminal or to an area within a single terminal. They added that these larger ports would only agree to participate in the program if SFI operations were limited in scope, and the agency has worked with host governments to expand operations. However, as of yet, CBP has not made arrangements to expand operations at these ports.

Table 3: Data on Containers Scanned and Container Volume at SFI Ports

SFI port	Average percentage of U.S.-bound containers scanned during SFI program		Number of U.S.-bound containers exported from SFI ports, fiscal year 2008	Rank of SFI ports in terms of volume of containers exported to the U.S., fiscal year 2008	Percentage of all cargo containers that arrived in U.S. from SFI ports, fiscal year 2008
	RPM ^a	NII			
Qasim ^b	85	86	29,191	61st	0.3
Puerto Cortes ^c	76	78	188,438	21st	1.9
Southampton ^b	54	56	20,687	63rd	0.2
Hong Kong ^d	3	3	894,080	3rd	9.2
Busan ^e	5	5	720,582	4th	7.4
Salalah	Not yet operational		55,053	37th	0.6

Source: GAO analysis of data provided by CBP.

^aThe radiation detection equipment used to scan containers are referred to as radiation portal monitors (RPM).

^bScanning percentages at Port Qasim, Puerto Cortes, and the Port of Southampton reflect operations conducted from November 2007 through May 2009.

^cScanning percentages at the Port of Hong Kong reflect operations conducted from February 2008 through April 2009.

^dScanning percentages at the Port of Busan reflect operations conducted from April 2009 through May 2009.

The Feasibility of 100 Percent Scanning Remains Largely Unproven as Efforts to Implement and Operate the SFI Program at Participating Ports Have Confirmed Previously Identified Challenges

To date, attempts to implement 100 percent scanning at foreign ports have confirmed challenges, some of which we and CBP have previously reported.²³ For example, challenges associated with the perceived safety of the NII scanning equipment, scanning cargo containers arriving at a port by rail, or scanning transshipment cargo containers, among other things, have prevented CBP from achieving 100 percent scanning at participating ports.²⁴ Specifically:

- **Safety Concerns:** Port officials at five of the seven ports that initially agreed to participate in the SFI program expressed concerns regarding the safety of drivers and port operators who work near NII scanning equipment, which generates radiation in order to generate an image of a container's contents. CBP provided information or conducted town hall meetings on the safety of the equipment to officials and workers at participating ports. However, to address these concerns and allow for the equipment to be used, port officials required that passage through the NII equipment at the ports of Hong Kong and Busan be voluntary, thus limiting efforts to test the feasibility of using the NII equipment, as well as the SFI program's overall effectiveness.
- **Logistics:** Logistics issues and costs associated with moving cargo containers to scanning areas at the Port of Southampton resulted in the cessation of scans of cargo containers arriving by rail. Initially, CBP and the terminal operator agreed that the terminal operator would absorb the costs to place cargo containers arriving by rail onto trucks so that those containers could pass through SFI scanning systems, at a cost of approximately \$60 per container, but this arrangement ended in April 2008.
- **Transshipment:** Transshipment cargo containers—those taken off of one vessel to be placed on a U.S.-bound vessel—present significant challenges to scanning because of logistical difficulties associated with

²³ GAO-08-567T. In this testimony we cited the following potential challenges to conducting 100 percent scanning: workforce planning, host nation examination practices, measuring performance, resource responsibilities, logistics, technology and infrastructure, use and ownership of data, consistency with risk management, and reciprocity and trade concerns.

²⁴ Some examples of these challenges cannot be included in this report due to the security sensitive nature of the information. Rather, we have included examples from public documents.