

September 2009

SECURE BORDER INITIATIVE

Technology Deployment Delays Persist and the Impact of Border Fencing Has Not Been Assessed



GAO

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Highlights of [GAO-09-896](#), a report to congressional requesters

Why GAO Did This Study

Securing the nation's borders from illegal entry of aliens and contraband, including terrorists and weapons of mass destruction, continues to be a major challenge. In November 2005, the Department of Homeland Security (DHS) announced the launch of the Secure Border Initiative (SBI), a multiyear, multibillion dollar program aimed at securing U.S. borders and reducing illegal immigration. Within DHS, U.S. Customs and Border Protection's (CBP) SBI program is responsible for developing a comprehensive border protection system using technology, known as *SBI_{net}*, and tactical infrastructure—fencing, roads, and lighting. GAO was asked to provide periodic updates on the status of the program. This report addresses (1) the extent to which CBP has implemented *SBI_{net}* and the impact of delays that have occurred, and (2) the extent to which CBP has deployed tactical infrastructure and assessed its results. To do this work, GAO reviewed program schedules, status reports, and previous GAO work; interviewed DHS and CBP officials, among others; and visited three SBI sites where initial technology or fencing had been deployed at the time of GAO's review.

What GAO Recommends

GAO recommends that the Commissioner of CBP conduct a cost-effective evaluation of the impact of the tactical infrastructure's contribution to border security. DHS agreed with this recommendation.

[View GAO-09-896](#) or [key components](#). For more information, contact Richard Stana at (202) 512-8777 or stanar@gao.gov.

SECURE BORDER INITIATIVE

Technology Deployment Delays Persist and the Impact of Border Fencing Has Not Been Assessed

What GAO Found

SBI_{net} technology capabilities have not yet been deployed and delays require Border Patrol, a CBP component, to rely on existing technology for securing the border, rather than using newer technology planned to overcome the existing technology's limitations. Flaws found in testing and concerns about the impact of placing towers and access roads in environmentally sensitive locations caused delays. As of September 2006, *SBI_{net}* technology deployment for the southwest border was planned to be complete by early fiscal year 2009. When last reported in February 2009, the completion date had slipped to 2016. As a result of such delays, Border Patrol agents continue to use existing technology that has limitations, such as performance shortfalls and maintenance issues. For example, on the southwest border, Border Patrol relies on existing equipment such as cameras mounted on towers that have intermittent problems, including signal loss. Border Patrol has procured and delivered some new technology to fill gaps or augment existing equipment. However, incorporating *SBI_{net}* technology as soon as it is operationally available should better position CBP to identify and implement operational changes needed for securing the border.

Tactical infrastructure deployments are almost complete, but their impact on border security has not been measured. As of June 2009, CBP had completed 633 of the 661 miles of fencing it committed to deploy along the southwest border. However, delays continue due mainly to challenges in acquiring the necessary property rights from landowners. While fencing costs increased over the course of construction, because all construction contracts have been awarded, costs are less likely to change. CBP plans to use \$110 million in fiscal year 2009 funds to build 10 more miles of fencing, and fiscal year 2010 and 2011 funds for supporting infrastructure. CBP reported that tactical infrastructure, coupled with additional trained agents, had increased the miles of the southwest border under control, but despite a \$2.4 billion investment, it cannot account separately for the impact of tactical infrastructure. CBP measures miles of tactical infrastructure constructed and has completed analyses intended to show where fencing is more appropriate than other alternatives, such as more personnel, but these analyses were based primarily on the judgment of senior Border Patrol agents. Leading practices suggest that a program evaluation would complement those efforts. Until CBP determines the contribution of tactical infrastructure to border security, it is not positioned to address the impact of this investment.

Tactical Infrastructure Deployment Progress as of June 26, 2009

Infrastructure type	Miles in place before SBI	Miles		Target	Miles remaining to meet target
		deployed through SBI as of 6/26/09	Total miles in place as of 6/26/09		
Pedestrian fencing	67	264	331	358	27
Vehicle fencing	76	226	302	303	1
Total fencing	143	490	633	661	28

Source: GAO analysis of SBI data.

United States Government Accountability Office

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United States Government Accountability Office
Washington, DC 20548

September 9, 2009

Congressional Requesters

Securing the nation's borders from illegal entry of aliens and contraband, including terrorists and weapons of mass destruction, continues to be a major challenge. Much of the United States' 6,000 miles of international borders with Canada and Mexico remains vulnerable to illegal entry. Although the Department of Homeland Security (DHS) apprehends hundreds of thousands of people entering the country illegally each year, several hundreds of thousands of individuals also enter the United States illegally and undetected. In November 2005, DHS announced the launch of the Secure Border Initiative (SBI), a multiyear, multibillion dollar program aimed at securing U.S. borders and reducing illegal immigration. The U.S. Customs and Border Protection (CBP) supports the initiative by providing agents and officers to patrol the borders, secure the ports of entry,¹ and enforce immigration laws. In addition, CBP's SBI program is responsible for developing a comprehensive border protection system using technology, known as *SBI_{net}*, and tactical infrastructure—fencing, roads, and lighting.

Our previous reports on CBP's SBI program have outlined program challenges and delays.² Specifically, the initial segment of *SBI_{net}* technology, Project 28, encountered performance shortfalls and delays, including the following: users were not involved in developing the requirements, contractor oversight was limited, and project scope and complexity were underestimated. Program uncertainties, such as a lack of fully defined program expectations continued to delay planned *SBI_{net}* deployments following Project 28. In addition, the deployment of tactical

¹At a port of entry location, CBP officers secure the flow of people and cargo into and out of the country, while facilitating legitimate travel and trade.

²GAO, *Secure Border Initiative: Observations on Selected Aspects of SBI_{net} Program Implementation*, [GAO-08-131T](#) (Washington, D.C.: Oct. 24, 2007); *Secure Border Initiative: Observations on the Importance of Applying Lessons Learned to Future Projects*, [GAO-08-508T](#) (Washington, D.C.: Feb. 27, 2008); *Secure Border Initiative: Observations on Deployment Challenges*, [GAO-08-1141T](#) (Washington, D.C.: Sept. 10, 2008); *Secure Border Initiative: DHS Needs to Address Significant Risks in Delivering Key Technology Investment*, [GAO-08-1148T](#) (Washington, D.C.: Sept. 10, 2008); and, *Secure Border Initiative: DHS Needs to Address Significant Risks in Delivering Key Technology Investment*, [GAO-08-1086](#) (Washington, D.C.: Sept. 22, 2008).

infrastructure along the southwest border experienced challenges, such as increased costs, unknown life-cycle costs, and land acquisition issues.

You requested that we monitor CBP's SBI program and provide periodic updates on the status of the program. Accordingly, this report, the fourth in a series of reports, addresses the following questions:

- To what extent has CBP implemented the SBI^{net} technology program and what has been the impact of delays that have occurred?
- To what extent has CBP deployed the SBI tactical infrastructure program and assessed its results?

In addition, we are providing information, in appendix I, on the status of SBI program office staffing and the progress the office reports in achieving its human capital goals.

To address these questions, we analyzed DHS documents, including program schedules and status reports. We reviewed criteria in the Government Performance and Results Act of 1993,³ our prior work on results-oriented government and federal government best practices in human capital management, as well as DHS Office of Inspector General reports.⁴ We also interviewed DHS and CBP headquarters and field officials, including representatives of the SBI program office, the tactical infrastructure program office, Border Patrol (a component of CBP); and Department of Interior (DOI), including representatives of the Office of the Deputy Secretary and Office of Law Enforcement Security and Emergency Management. We visited the Border Patrol's Tucson, Yuma,

³Pub. L. No. 103-62, 107 Stat. 285 (1993). Among other things, the act requires agencies to develop strategic plans that include comprehensive mission statements, a set of goals and objectives for the agency's major functions and operations, and a description of how the agency intends to achieve these goals and objectives.

⁴See for example, GAO, *Agency Performance Plans: Examples of Practices That Can Improve Usefulness to Decisionmakers*, [GGD/AIMD-99-69](#) (Washington, D.C.: Feb. 26, 1999), *Executive Guide: Effectively Implementing the Government Performance and Results Act*, [GAO/GGD-96-118](#) (Washington, D.C.: June 1996), *Program Evaluation: Studies Helped Agencies Measure or Explain Program Performance*, [GAO/GGD-00-204](#) (Washington, D.C.: Sept. 2000), *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003), and DHS-OIG, *Progress in Addressing the Secure Border Initiative Operational Requirements and Constructing the Southwest Border Fence*, [OIG-09-56](#) (Washington, D.C.: Apr. 15, 2009).

and San Diego sectors⁵—sites where SBI*net* technology (Project 28) and/or fencing had been deployed at the time of our review. We determined that funding, staffing, and fencing mileage data provided by CBP were sufficiently reliable for the purposes of this report. We based our decision on an assessment of each respective area by questioning cognizant DHS officials about the source of the data and policies and procedures used to maintain the integrity of these data. We conducted this performance audit from September 2008 through September 2009 in accordance with generally accepted government auditing 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Within CBP, the SBI Program Executive Office, referred to in this report as the SBI program office, has overall responsibility for overseeing all SBI activities for acquisition and implementation, including establishing and meeting program goals, objectives, and schedules for overseeing contractor performance; and for coordinating among DHS agencies. However, the tactical infrastructure portion of the program is managed on a day-to-day basis by CBP's Office of Finance Facilities Management and Engineering division.⁶ Among other things, CBP's Border Patrol has responsibility for detecting and preventing the illegal entry of aliens into the United States between designated ports of entry.

DHS began funding the SBI program in fiscal year 2005 at a level of \$38 million, which it increased to \$325 million in fiscal year 2006. Starting in fiscal year 2007, DHS's annual appropriations acts have included specific SBI appropriations. Since fiscal year 2005, SBI's funding has amounted to over \$3.7 billion (see table 1). DHS has requested \$779 million in SBI funding for fiscal year 2010.

⁵The U.S. Border Patrol has 20 sectors responsible for detecting, interdicting, and apprehending those who engage in illegal activity across U.S. borders between official ports of entry. In addition to illegal entry, examples of illegal activity include smuggling of people, including terrorists, and contraband, including weapons of mass destruction.

⁶We refer to the Office of Finance Facilities Management and Engineering division's Tactical Infrastructure program office as the tactical infrastructure program office in this report.

Table 1: SBI Funding, Fiscal Years 2005-2009 (dollars in thousands)

Fiscal year	SBI funding
2005	\$38,480
2006	325,000
2007 ^a	1,187,565
2008	1,302,587 ^b
2009	875,000 ^c
Total	\$3,728,632

Source: CBP budget data and DHS's annual appropriations acts.

^aDepartment of Homeland Security Appropriations Act, 2007, Pub. L. No. 109-295, 120 Stat. 1355, 1359-60 (2006). SBI funds from this appropriation act are no-year dollars, meaning they do not expire at the end of a given fiscal year.

^bIncludes approximately \$77.6 million of reprogrammed funds from other DHS accounts, plus \$1,225 million appropriated through the Consolidated Appropriations Act, 2008, Pub. L. No. 110-161, 121 Stat. 1844, 2047-49 (2007). SBI funds from this appropriations act are no-year dollars.

^cIncludes \$100 million from the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 162, 302 (2009), which expires at the end of fiscal year 2010, plus \$775 million appropriated through the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009, 122 Stat. 3574, 3655-57 (2008), which are no-year dollars.

The primary focus of the SBI program is on the southwest border areas (see fig. 1) between the ports of entry that CBP has designated as having the greatest need for enhanced border security because of serious vulnerabilities. Although some tactical infrastructure exists in all the southwest border sectors, most of what has been built through the SBI program is located in the San Diego, Yuma, Tucson, El Paso, and Rio Grande Valley sectors. *SBI_{net}* technology is to be initially deployed in the Tucson sector.

Figure 1: Map of Border Patrol Sectors along the Southwest Border



Source: GAO analysis of CBP data; Map Resources (Map).

*SBI*net is the program for acquiring, developing, integrating, and deploying an appropriate mix of surveillance technologies and command, control, communications, and intelligence (C3I) technologies. *SBI*net surveillance technologies are to include sensors, cameras, and radars. Additional technologies, such as aerial assets (e.g., helicopters and unmanned aerial surveillance aircraft) and Mobile Surveillance Systems (MSS) may be added in the future, but as of August 2009, whether and to what extent the additional technologies would be included in the configuration of the long-

term *SBI_{net}* systems solution had not been determined, according to SBI officials.⁷

The C3I technologies are to include software and hardware to produce a Common Operating Picture (COP)—a uniform presentation of activities within specific areas along the border. The sensors, radars, and cameras are to gather information along the border and the system is to transmit this information to the COP terminals located in command centers to provide CBP agents with border situational awareness. The COP technology is to allow agents to (1) view data from radars and sensors that detect and track movement in the border areas, (2) control cameras to help identify and classify illegal entries, (3) correlate entries with the positions of nearby agents, and (4) enhance tactical decision making regarding the appropriate response to apprehend an entry, if necessary.

In September 2006, CBP awarded a prime contract for *SBI_{net}* development to the Boeing Company for 3 years, with three additional 1-year options. As of July 2009, CBP was in the process of completing action to extend its contract with Boeing for the first option year. As the prime contractor, Boeing is responsible for acquiring, deploying, and sustaining selected SBI technology, deploying selected tactical infrastructure projects, and providing supply chain management for some tactical infrastructure projects.⁸ In this way, Boeing has extensive involvement in the SBI specifications development, design, production, integration, testing, and maintenance and support of SBI projects. Moreover, Boeing is responsible for selecting and managing a team of subcontractors that provide individual components for Boeing to integrate into the *SBI_{net}* system. The *SBI_{net}* contract is largely performance-based—that is, CBP has set requirements for the project and Boeing and CBP coordinate and collaborate to develop solutions to meet these requirements—and is designed to maximize the use of commercial off-the-shelf technology. CBP's SBI program office oversees and manages the Boeing-led SBI contractor team. CBP is completing its part of its SBI activities through a series of task orders to Boeing for individual projects. As of July 8, 2009 CBP had awarded 13 task orders to Boeing for a total amount of

⁷MSSs are truck-mounted systems that use cameras, radar, lasers, and global positioning systems.

⁸The objective of the supply and supply chain management support system is to ensure that sufficient quantities of construction materials are readily available to meet the fence construction needs and schedules along the southwest border.

approximately \$1.1 billion. See appendix II for a summary of the task orders awarded to Boeing for SBI projects.

The first *SBI*net deployment task order was for an effort known as Project 28. The scope of Project 28, as described in an October 2006 task order to Boeing, was to provide a system with the capabilities required to control 28 miles of border in Arizona. Project 28 was accepted by the government for deployment in February 2008—8 months behind schedule. This delay occurred because the contractor-delivered system did not perform as intended. For example, Boeing was unable to integrate components, such as towers, cameras, and radars with the COP software. Project 28 is currently operating along 28 miles of the southwest border in the Tucson sector of Arizona (see fig. 2).

Figure 2: Project 28 Mobile Sensor Tower Deployed in the Tucson Sector



Source: GAO.

Future *SBI*net capabilities are to be deployed in “blocks.” For example, Block 1 is described as the first phase of an effort to design, develop, integrate, test, and deploy a technology system of hardware, software, and communications. Each block is to include a release or version of the COP. According to the *Fiscal Year 2009 SBI Expenditure Plan*, Block 1 is to include the Tucson and Yuma sectors and Block 2 is to include the sectors of El Paso, Rio Grande Valley, Laredo, Del Rio, San Diego, and El Centro.

While the SBI program office is responsible for deploying *SBI_{net}* technology, the tactical infrastructure program office, which was realigned to the Office of Finance, Facilities Management and Engineering in March 2009, is responsible for deploying tactical infrastructure—pedestrian and vehicular fencing, roads, and lighting—along the southwest border to deter smugglers and aliens attempting illegal entry. The Secure Fence Act of 2006, as amended, required DHS to construct not less than 700 miles of reinforced fencing along the southwest border where fencing would be most practical and effective, and to provide for the installation of additional physical barriers, roads, lighting, cameras, and sensors to gain operational control of the southwest border.⁹ Although the act did not impose any statutory deadlines with respect to the deployment of *SBI_{net}* technology, it did require DHS to complete a portion of the required 700 miles of reinforced fencing by December 31, 2008.¹⁰ This interim construction deadline applied to 370 of the required 700 miles of reinforced fencing, to be located wherever the Secretary determined it would be most practical and effective in deterring smugglers and aliens attempting illegal entry.¹¹

The Secure Fence Act of 2006, as amended, provided the Secretary of Homeland Security with some discretion regarding its mileage requirements. Notwithstanding the total mileage requirement of 700 miles, the act stated that the Secretary was not required to install fencing, physical barriers, roads, lighting, cameras, and sensors in a particular location “if the Secretary determines that the use or placement of such resources is not the most appropriate means to achieve and maintain operational control over the international border at such location.”¹² According to DHS, under this authority, the Secretary determined that fencing was the most appropriate means to achieve and maintain operational control over 670 miles, rather than 700 miles, of the border. Furthermore, the act also gave the Secretary discretion, through December 31, 2008, to set an alternative mileage goal for the interim

⁹Pub. L. No. 110-161, div. E, § 564(a)(2)(B)(ii), 121 Stat. 1844, 2090-91 (2007) (amending section 102(b)(1) of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, Pub. L. No. 104-208, div. C, 110 Stat. 3009-546, 3009-554, as amended by section 3(2) of the Secure Fence Act of 2006, Pub. L. No. 109-367, 120 Stat. 2638, 2639). The provisions, as amended, are codified at 8 U.S.C. § 1103 note.

¹⁰8 U.S.C. § 1103 note.

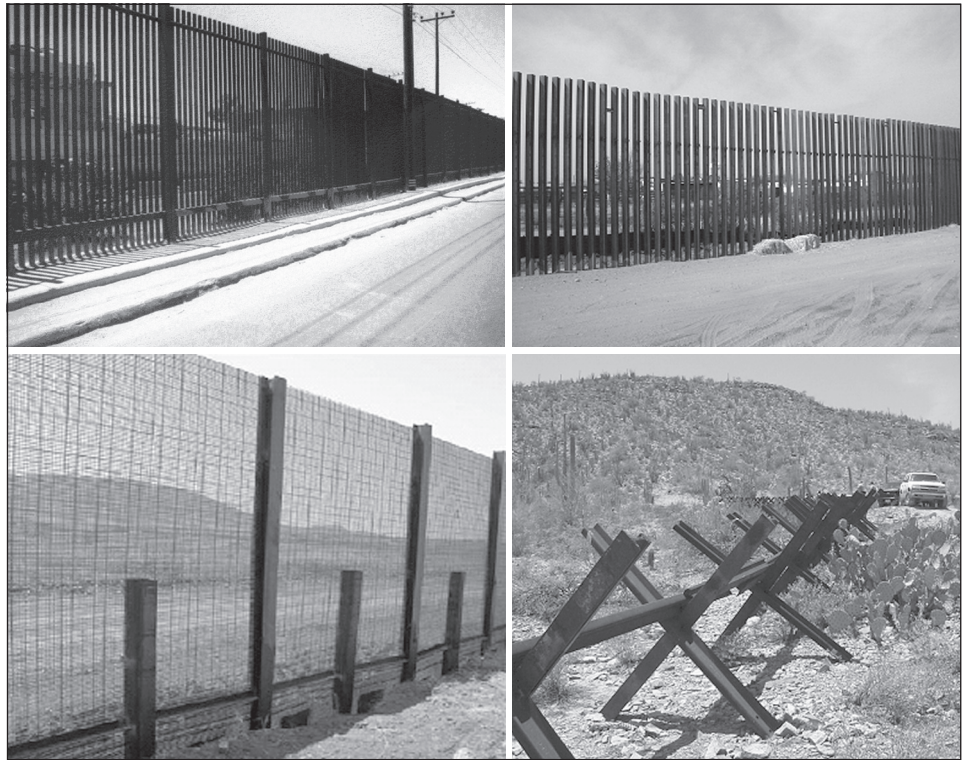
¹¹8 U.S.C. § 1103 note.

¹²8 U.S.C. § 1103 note.

construction deadline of 370 miles.¹³ Pursuant to this authority, the Secretary committed to complete all 670 miles of fencing by December 31, 2008. Of these miles, DHS planned about 370 miles of pedestrian fencing—fencing that prevents people on foot from crossing the border, and about 300 miles of vehicle fencing—barriers used primarily in remote areas to prohibit vehicles engaged in drug trafficking and alien smuggling operations from crossing the border. In September 2008, DHS revised its goal of completing the full 670 miles of fencing by December 31, 2008. As an interim step, DHS committed to have 661 miles either built, under construction, or under contract by December 31, 2008, but did not set a goal for the number of miles it planned to complete by December 31, 2008. As of December 31, 2008, DHS had completed 578 miles of fencing, meeting the interim statutory goal to complete 370 miles of fencing by that time. (See fig. 3 for examples of fencing.)

¹³8 U.S.C. § 1103 note.

Figure 3: Examples of Fencing Styles along the Southwest Border



Source: CBP.

The Picket Fence (upper left), Bollard Fence (upper right) and Post & Rail with wire mesh (lower left) are examples of pedestrian fencing; the Normandy Vehicle Fence (lower right) is an example of vehicle fencing.

SBI*net* Deployment Delays Require Border Patrol to Rely on Existing Technology Which Has Limitations That Newer Technology Is Planned to Overcome

SBI*net* technology deployments continue to experience delays due to flaws found in testing and potential environmental impacts. User evaluations by Border Patrol agents found that improvements to the new technology that would correct inconsistent system performance needed to be made. SBI officials believed that some issues raised about the technology during user evaluation were a result of the Border Patrol agents' unfamiliarity with the equipment; however, Border Patrol officials said that they selected agents who were familiar with existing technology and that some training was provided to these agents before testing took place. Until SBI*net* is deployed, Border Patrol agents continue to rely on existing technology that has limitations such as performance shortfalls and maintenance issues. CBP cannot determine what operational changes it will need to make as a result of the new technology, and Border Patrol will not be able to realize the potential of this technology until it is deployed.

SBI*net* Deployment Delays Continue Due to Flaws Found in Testing and Environmental Considerations

Our previous work has shown that CBP's efforts to deploy SBI*net* technology across the southwest border have fallen behind its planned schedule.¹⁴ For example, according to the Boeing contract signed in September 2006, an initial set of operational capabilities was planned to be deployed along the entire southwest border in early fiscal year 2009, and a full set of operational capabilities along the southern and northern borders was planned by later in fiscal year 2009. As of the December 2006, the SBI*net* Expenditure Plan reported that the schedule had changed such that all deployments in the Yuma and Tucson sectors were estimated to be complete by October and December 2008, respectively and the entire southwest border by October 2011. The Expenditure Plan did not provide a time frame for deployment to the northern border. By October 2007, SBI program officials expected to complete all of the first planned deployment of southwest border technology projects in the Tucson, Yuma, and El Paso sectors by the end of calendar year 2008, and deployments in Rio Grande Valley, Laredo, and Del Rio by the end of calendar year 2009. In February 2008, the SBI program office again modified its deployment plans, and reported that the first deployment of technology projects within Block 1 were to take place in two geographic areas within the Tucson sector — designated as Tucson-1 and Ajo-1—by the end of calendar year 2008, with the remainder of deployments to the Tucson, Yuma, and El Paso sectors to be completed by the end of calendar year 2011. Other than the dates for

¹⁴GAO-08-131T, GAO-08-508T, GAO-08-1141T, GAO-08-1148T, and GAO-08-1086.

the Tucson, Yuma, and El Paso sectors, no other deployment dates were established for the remainder of the southern or northern borders at that time.

We reported in September 2008 on *SBI_{net}* program uncertainties, including that the program remained ambiguous and in a continued state of flux making it unclear and uncertain what technology capabilities are to be delivered, when and where they are to be delivered, and how they will be delivered.¹⁵ We recommended, among other things, that the CBP Commissioner establish and baseline the specific program commitments, including the specific system functional and performance capabilities, which are to be deployed to the Tucson, Yuma, and El Paso sectors, and establish when these capabilities are to be deployed and are to be operational. Partially in response to our recommendations, in September 2008, the DHS Acquisition Review Board—a departmental executive board that reviews certain acquisitions—required a re-plan of the program.¹⁶ The re-plan was to include, among other things, a revised and detailed program schedule with key milestones.¹⁷ In addition, during the re-plan, a portion of *SBI_{net}* technology funds were reallocated to fund cost increases associated with the higher priority vehicle and pedestrian fencing. The Acquisition Review Board noted that this reallocation of funds and the desire to include additional field testing would result in a delay of the Tucson-1 and Ajo-1 deployments. SBI program office officials said that the reallocation of funds was made possible because the program was in the middle of the re-plan which required additional field testing prior to the start of construction in Tucson-1. By December 2008, the SBI program office's revised schedule showed final acceptance of Tucson-1 in September 2009, and final acceptance of Ajo-1 in December 2009.¹⁸ By February 2009, the schedule had slipped and final acceptance of Tucson-1 was expected in November 2009 and Ajo-1 in March 2010. Further, our

¹⁵[GAO-08-1086](#). We have ongoing work to assess actions taken by DHS to address the recommendations made in this report.

¹⁶A re-plan refers to an adjustment to *SBI_{net}*'s initial development, test, and deployment plan.

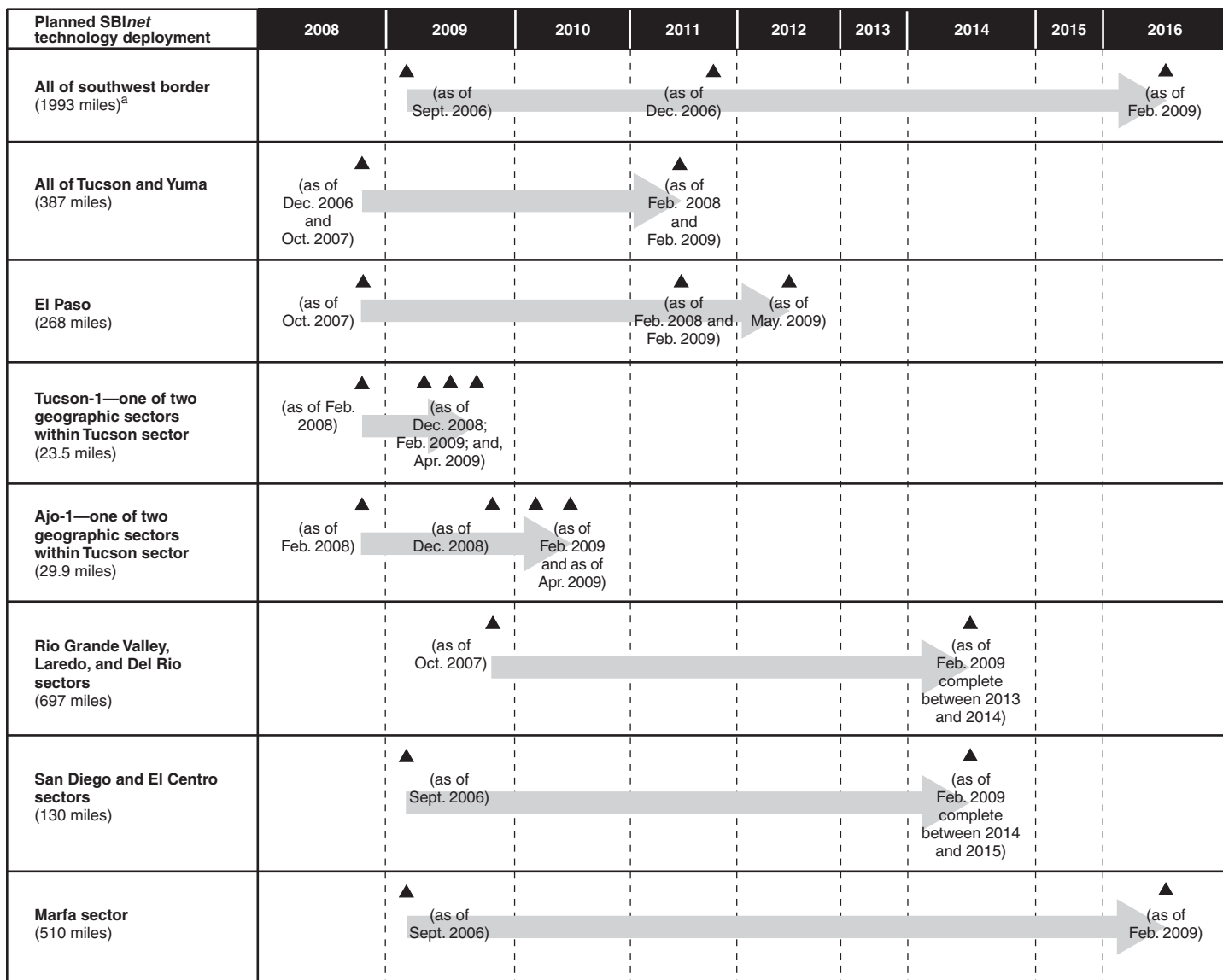
¹⁷The Acquisition Review Board was formerly known as the Investment Review Board. As part of the DHS investment process, the Acquisition Review Board reviews all acquisition investments with an annual expenditure level or acquisition cost greater than \$100 million.

¹⁸The SBI program office defines final acceptance as the SBI program office taking ownership of the *SBI_{net}* technology system from the contractor and comes before handing the technology over to Border Patrol.

assimilation of available information from multiple program sources, including the *Fiscal Year 2009 SBI Expenditure Plan*, indicated that deployments throughout the rest of the Tucson and Yuma sectors were to be completed by 2011; deployments in El Paso, Rio Grande Valley, Laredo, Del Rio, San Diego, and El Centro sectors between 2012 and 2015; and deployments in the Marfa sector by 2016. Nevertheless, the timing of planned *SBI*net deployments continued to slip. As of April 2009, Tuscon-1 was scheduled for final acceptance by December 2009 and Ajo-1 had slipped to June 2010. Our previous work emphasizes that a key aspect of managing large programs like *SBI*net is having a schedule that defines the sequence and timing of key activities. In addition, our research has identified best practices associated with effective schedule estimating.¹⁹ We have an ongoing review to report separately on *SBI*net and whether DHS has established a comprehensive, accurate, and realistic schedule that reflects the scope, timing, and sequencing of the work needed to achieve commitments, and which provides key information to DHS and congressional decisionmakers. Figure 4 shows the changes in the planned deployment schedule over time.

¹⁹ GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: March 2009).

Figure 4: Depiction of Changes in the SBInet Deployment Schedule from September 2006 through May 2009



▲ Estimated completion date

Source: CBP's SBI program office and Border Patrol.

^aMiles represent the area of responsibility of the sector(s).

According to SBI program office officials, the results of testing activities are contributing to the recent delays of Tucson-1 and Ajo-1. For example, one of the changes that resulted from the re-plan was a requirement for

additional testing of *SBI*net technology, which SBI addressed through additional testing performed at a test facility intended to emulate deployment conditions at project sites. SBI program office officials emphasized, and we agree, that testing is a necessary step of deployment and ensures that the technology capabilities perform as required.²⁰ By February 2009, preliminary results of testing revealed problems that would limit the usefulness of the system for Border Patrol agents, including the instability of the camera under adverse weather conditions, mechanical problems with the radar at the tower, and issues with the sensitivity of the radar. In March 2009, CBP's Acting Commissioner testified on the testing activity, among other things, stating that although the system did not meet all testing objectives during the December testing, CBP did not perceive "any show-stopper issues."²¹ Based on the testing results, the DHS Acquisition Review Board deferred approval of Tucson-1 equipment installation and Ajo-1 site preparation and equipment installation until the successful resolution of testing objectives which contributed to an Ajo-1 schedule delay of 30 days from April to May 2009. The SBI program office oversaw Boeing's efforts to re-work and re-test these issues, but as of May 2009, the SBI program office reported that they were still working to address some issues such as difficulties aligning the radar.

Although DHS received the necessary environmental permit to begin construction of towers on Tucson-1 in October 2008, the need to obtain environmental permits was another contributing factor in the Ajo-1 delays. DOI and DHS are coordinating their efforts to permit tower construction sites in Ajo-1, with the two agencies in negotiations over the location of towers and discussions on Border Patrol operations.²² As of May 2009, the agencies had not reached agreement on the amount of information Border Patrol should provide DOI regarding how Border Patrol operations are to change after the deployment of *SBI*net technology. However, according to DOI's National Borderland Coordinator, DOI and Border Patrol have made progress in identifying and discussing Border Patrol's operational

²⁰ [GAO-08-1086](#).

²¹ Statement of the Acting Commissioner of CBP before the House Appropriations Committee, Subcommittee on Homeland Security, *Secure Border Initiative (SBI), Control of the Land Border, and DHS Response to Violence on the Border with Mexico* (Mar. 10, 2009).

²² The Secretary of Homeland Security is required to consult with numerous entities, including the Secretary of the Interior, to minimize the impact to the environment, culture, commerce, and quality of life resulting from the installation of required fencing and border security infrastructure along the southwest border. See 8 U.S.C. § 1103 note.

activities as they pertain to the Ajo-1 site. For example, prior to Border Patrol's completion of an environmental assessment,²³ Border Patrol and DOI engaged in discussions to address DOI questions on how Border Patrol activities are affected by the SBInet deployment. Border Patrol stated that its expectation is that SBInet technology in Ajo-1 will allow focused interdiction, reducing the number of personnel required to locate violators. On May 20, 2009, SBI submitted a draft description of proposed action in Ajo-1, which was followed by discussions between DHS and DOI officials on unresolved issues related to tower placement within the range of environmentally sensitive lands. On June 10, 2009, DOI, CBP, and SBI senior officials met to discuss these unresolved issues. According to DOI's National Borderland Coordinator, agreement was reached to proceed with completion of a final description of proposed action in Ajo-1. DOI officials received CBP's final description of proposed action on July 24, 2009, and DOI is now scheduled to issue a biological opinion associated with the endangered species in the Ajo-1 project area by September 22, 2009. Once DHS receives the biological opinion, it plans to issue a finding as to whether there will be any significant impact to the endangered species as a result of the project. DOI plans to issue permits for the Ajo-1 project within 5 days of receipt of a finding of no significant impact

Border Patrol Agents Are Providing User Feedback on Block 1 Development, and Have Noted That Some Improvements Could Be Made

While involvement was limited for Project 28, SBI program office officials recognized the need to involve intended operators—Border Patrol agents—in Block 1 development, including testing activities. For example, CBP reported using feedback and input from Border Patrol agents to complete detailed plans for tower locations and access roads to support SBInet deployment to the Tucson, Yuma, and El Paso sectors. In addition, from March 27 to April 4, 2009, Border Patrol agents had an opportunity to operate Block 1 technology in a test environment and participate in an early assessment of the suitability and effectiveness of the SBInet technology. The operators' initial observations included insight comparing the performance capabilities of existing technology—Project 28 and MSS—and new technology—SBInet Block 1 (see fig. 5).²⁴ For example,

²³The National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970), requires federal agencies to evaluate the likely environmental effects of projects they are proposing using an environmental assessment or, if the projects likely would significantly affect the environment, a more detailed environmental impact statement.

²⁴According to the *Fiscal Year 2009 SBI Expenditure Plan*, the use of integrated SBInet technology allows CBP agents and officers to efficiently detect, identify, classify, track, and resolve illegal incursions. The radars detect persons and vehicles moving in the border areas. Once detected, operators use cameras to help identify and classify the entry.

the operators indicated that on windy days the Block 1 radar had issues that resulted in an excessive number of false detections and that the capability was not adequate for optimal operational effectiveness. The operators also compared the Project 28, MSS, and Block 1 cameras and indicated that the features of the Block 1 camera were insufficient in comparison to features of the Project 28 and MSS cameras. Overall, the feedback from operators indicated “the need for a number of relatively small, but critical enhancements” to the COP and overall concerns about inconsistent system performance.

Figure 5: Example of an MSS Unit



Source: CBP.

SBI program officials explained that this assessment was an initial user evaluation. The officials also said that in reviewing the results, they determined that some of the issues raised by the Border Patrol operators occurred because the operators were not familiar with and had not been trained to use the equipment; other issues, such as those with the radar were likely due to incorrect settings across all radars in the test configuration. The Border Patrol said that it selected agents to participate who had experience with the MSSs and/or Project 28 and that the COP operators were given a 2-day course provided by agents familiar with the Block 1 COP prior to the assessment. However, the Border Patrol agreed that the lack of experience with the Block 1 system may have led to some of the issues found during the user evaluation. Nonetheless, because of

the agents' experience with the MSS and Project 28 systems, the Border Patrol said that the issues and concerns generated should be considered operationally relevant. SBI program officials said that operator training is to take place before all Block 1 capabilities are deployed and that additional emphasis is to be placed on ensuring the operators' familiarity with the equipment. Once all Block 1 capabilities are deployed in Tucson-1, the Border Patrol is to perform and complete operational testing. This testing is to include insights from the operators' initial evaluations of the system's capabilities. Provided there are no additional schedule changes, this testing of Tucson-1 is scheduled to begin in January 2010.

Until SBInet Technology Is in Place, Border Patrol Agents Continue to Use Existing Equipment and CBP Is Limited in Its Ability to Fully Implement the Objectives of the Border Patrol Strategy

Until SBInet capabilities are deployed across the southwest border, Border Patrol agents are using existing capabilities, including Project 28 and legacy equipment supplemented by more recently procured MSS, but all have limitations. As stated previously, Project 28 encountered performance shortfalls and delays. During our site visit to the Tucson sector in March 2009, Border Patrol agents told us, as they had during our previous visits, that the system had improved their operational capabilities, but that they must continue to work around ongoing problems, such as finding good signal strength for the wireless network, remotely controlling cameras, and modifying radar sensitivity. Furthermore, they said, and we observed, that few of the agents were currently using the mobile data terminals installed in 50 of the sector's vehicles, instead relying on agents operating the COP to relay information about the whereabouts of suspected illegal migrants. One reason agents do not use the mobile data terminals is that it can take up to an hour to log into the system depending on signal strength and because the signal, once gained, is sometimes lost multiple times during a shift. In all southwest border sectors, Border Patrol relies on legacy equipment, such as cameras mounted on towers. In the Tucson and San Diego sectors, Border Patrol agents rely on cameras that have been in place since before calendar year 2000. Border Patrol officials told us that in the three sectors, the cameras have intermittent problems, including signal loss and problems with power and weather. In the Tucson sector, officials noted that the legacy cameras should be updated to gain compatibility with SBInet. To fill gaps or augment the legacy equipment, the SBI program office procured and delivered a total of 40 MSSs. These units were delivered to the Border Patrol's Tucson sector (23 units), Yuma sector (7 units), and, El Paso sector (8 units) in fiscal year 2008. In addition, a total of 4 units are planned for delivery to the San Diego sector (1 unit) and the northern border (3 units) in fiscal year 2009. During our visit to the Tucson sector in March 2009, we observed a Border Patrol agent using a MSS unit. The

agent showed us the radar capabilities including the maximum range, the ability to minimize the range and limit the speed of the radar and cameras, which have a 360 degree view. According to Border Patrol officials, the MSS represents increased operational capabilities for the Border Patrol. However, SBI program officials and Border Patrol noted that at any given time, a unit may not be operational because of the need for repairs. As of April 2009, 15 of the 23 units at the Border Patrol's Tucson sector were operational. At that time, in the Yuma sector, 4 of the 7 units were operational, although during our visit to the Yuma sector 1 unit was operational. Border Patrol officials explained that in the Yuma sector these units have not worked well because of extreme heat issues. Despite these performance shortfalls, and maintenance issues, agents continue to use existing technology while waiting for the *SBI*net deployment which will supplement the existing technology.

The initial deployment of *SBI*net technology in the Tucson-1 and Ajo-1 project sites is intended to provide CBP agents and officers a greatly enhanced ability to detect, identify, and classify illegal cross-border activity, as well as facilitate a coordinated response to the activity. These goals directly support the broader SBI goal and Border Patrol strategy to gain effective control of the nation's borders. While Border Patrol agents have been stakeholders in the development and testing of *SBI*net technology, Border Patrol officials said that a full assessment of *SBI*net technology's impact cannot be made until the technology is in use. Therefore, until technology is in place, CBP is limited in its ability to fully identify and implement operational changes in methods, tactics and approaches, and resources needed to address objectives of the Border Patrol Strategy, and will not be able to realize the potential of this technology in its efforts to secure the border.

Tactical Infrastructure Deployments Are Almost Complete, but Their Impact on Border Security Has Not Been Measured

The deployment of 661 miles of tactical infrastructure projects along the southwest border is nearing completion, but delays persist, due mainly to property acquisition issues. In addition, per mile costs, which had climbed substantially, are now less likely to change because contracts for the 661 miles of fence have been awarded. CBP plans to complete 10 more miles of fencing using fiscal year 2009 funds, and fiscal year 2010 and 2011 funds are to be used primarily for supporting infrastructure. A life cycle cost study has been completed which estimates deployment, operations, and future maintenance for the tactical infrastructure will total \$6.5 billion. Despite the investment in tactical infrastructure, its impact on securing the border has not been measured because DHS has not assessed the impact

of the tactical infrastructure on gains or losses in the level of effective control.

CBP Is Close to Completing Initially Planned Tactical Infrastructure, but Delays Persist

CBP is close to accomplishing its goal to build 661 miles of fencing along the southwest border. As of June 2009, 633 miles had been completed (see table 2). CBP was scheduled to complete the remaining 28 miles by November 2009. However, fence deployment continues to face delays due to challenges in constructing tactical infrastructure on difficult terrain and acquiring the necessary property rights from landowners. For example, in the San Diego sector, one 3.6 mile tactical infrastructure project previously scheduled to be completed by December 2008 and now due to be completed by October 2009, involves construction on rugged mountainous terrain that is not easily accessible. According to tactical infrastructure officials, they realized before December 2008 that it would not be possible to complete this segment until October 2009 because of these factors. In addition, as of June 29, 2009, fence projects totaling about 20 miles in the Rio Grande Valley sector with originally planned completion dates of December 2008 are now scheduled for completion by October 2009, with the exception of one segment, because of litigation related to property acquisition that was not resolved in time to meet the original dates. The segment that will not be complete by October 2009 was delayed due to difficulties obtaining materials for the bridge construction associated with the segment. As a result, this segment is anticipated to be completed in November 2009. As of June 29, 2009, of an estimated 96 cases where the government sued to acquire property through condemnation proceedings because the landowner would not voluntarily sell to the government, the property associated with 39 of those cases had yet to be acquired.²⁵ However, of the 39 cases, 7 are required to be settled to complete fence construction. The remaining 32 properties are being sought in anticipation of future fencing needs and for other purposes, such as operations and maintenance of the fence. Nonetheless, the U.S. Army Corps of Engineers (USACE) officials said that completion of fencing construction projects usually takes 90 to 120 days. Because the properties have yet to be acquired, the October 2009 projected completion date is likely to slip.

²⁵In cases where the property owner does not agree to a right of entry for the government or does not accept an offer to sell, the Department of Justice files a lawsuit against the landowner on behalf of the United States of America at the request of the Secretary of Homeland Security for the condemnation and taking of the property.

Table 2: Tactical Infrastructure Deployment Progress as of June 26, 2009

Infrastructure type	Miles in place before SBI ^a	Miles deployed through SBI as of 6/26/09	Total miles in place as of 6/26/09	Target	Miles remaining to meet target
Pedestrian fencing	67	264	331	358	27
Vehicle fencing	76	226	302	303	1
Total fencing	143	490	633	661	28

Source: GAO analysis of SBI data.

^a Seventy-eight miles of pedestrian fencing and 57 miles of vehicle fencing were in place before the SBI program began. However, since SBI began construction, some miles of fencing have been removed, replaced, or retrofitted resulting in mileage totals that are different from those we have reported in earlier reports.

While fencing costs increased over the course of construction, because all construction contracts have been awarded, cost estimates are less likely to change. Fencing miles completed as of October 31, 2008, cost an average of \$3.9 million per mile for pedestrian fencing and \$1.0 million per mile for vehicle fencing.²⁶ However, once contracts were awarded, the average per mile costs had increased to \$6.5 million per mile for pedestrian fencing and \$1.8 million per mile for vehicle fencing. Tactical infrastructure program officials said the per mile costs increased over time due to various factors, such as property acquisition costs incurred for these miles that were not a factor for many of the previous miles and costs for labor and materials increased.²⁷ Also, as we reported in September 2008, as tactical infrastructure officials were in the process of finalizing construction contracts, cost estimates for pedestrian fencing in Texas began to increase.²⁸ Tactical infrastructure program office officials attributed the cost increases to a short supply of labor and materials, as well as the compressed timeline. For example, the officials said that as a result of a construction boom in Texas, labor was in short supply and contractors reported that they needed to provide premium pay and overtime to attract workers. In terms of materials, USACE officials stated that the price of cement and steel had increased and in some areas within

²⁶ [GAO-09-244R](#).

²⁷ The land where this fencing was built has been publicly owned since 1907 when President Theodore Roosevelt reserved a 60-foot strip along the international boundary with Mexico for the United States to maintain the area free from obstructions as a protection against the smuggling of goods between the United States and Mexico. In effect, the Roosevelt easement provided the federal government with a 60-foot border right-of-way on which it could build the fence.

²⁸ [GAO-08-1141T](#).

Texas obtaining cement near the fence construction site was difficult. Tactical infrastructure program office officials said that they worked to mitigate the cost increases where possible. For example, they said that although their decision to purchase steel in bulk was made to ensure its availability, the purchase also resulted in savings. Tactical infrastructure program office officials said that based on data showing that the price of steel products almost doubled from January 2008 through August 2008, they estimate that they saved over \$72 million with the bulk steel purchase. However, due to the construction delays, the tactical infrastructure program office has had to extend the contract for storage of the steel, and is to soon begin negotiations for a long-term storage contract. The need to continue to store the leftover steel will result in increased costs. Despite these additional costs, tactical infrastructure program office officials said that, according to their estimates, they will still realize cost savings on their bulk steel purchase. In addition, the officials estimated that there will be approximately 25,000 tons of steel remaining after all fencing segments are built. They said it will be used if additional fencing is built and will be used to maintain the fencing already deployed.

Few Miles of Fencing Are to Be Built with Fiscal Year 2009 Funds and Fiscal Year 2010 and 2011 Funds Are to Be Used Primarily for Supporting Infrastructure

Ten miles of additional fencing is scheduled to be built with fiscal year 2009 funds, and fiscal years 2010 and 2011 funds are planned to be used primarily for supporting infrastructure. For fiscal years 2009 and 2010, \$110 million has been allocated to tactical infrastructure. With the fiscal year 2009 funding, the tactical infrastructure program office plans to construct approximately 3 miles of vehicle fence in the Tucson sector and about 7 miles of pedestrian fence in the Marfa, Rio Grande Valley, and El Paso sectors. The program office also plans to use the funding for enhancements to existing fencing, such as gates and canal crossovers, and real estate planning and acquisition for fiscal year 2010 projects. Due to the long lead time associated with real estate acquisition, DHS also plans to use fiscal year 2009 funds to conduct real estate planning and acquisition activities for projects slated for completion in fiscal years 2010 and 2011. By conducting real estate activities 1 to 2 years in advance, CBP seeks to limit construction delays due to lack of real estate. Also, as of June 2009, the program office had obligated about \$21 million of its fiscal year 2009 funds for additional costs caused by construction delays and changes on projects under way. With fiscal year 2010 funds, plans as of June 2009 include replacing surf fencing and constructing all-weather roads and lighting in the San Diego sector; constructing bridges, a third layer of fencing and lighting in the El Centro sector; and clearing brush in the Yuma sector. For fiscal year 2011, plans as of June 2009 were to,

among other things, construct all-weather roads in the El Paso and Del Rio sectors; and construct roads, bridges, and low-water crossings and to clear brush in the Laredo sector.

A Tactical Infrastructure Life-Cycle Cost Study Has Been Completed

The summary of a life-cycle cost study prepared by a contractor for CBP shows that total life-cycle costs for all tactical infrastructure constructed to date, including pre-SBI infrastructure as well as that planned for fiscal years 2009, 2010, and 2011, are estimated at about \$6.5 billion. The life-cycle cost estimates include deployment and operations and future maintenance costs for all tactical infrastructure, including the fence, roads, and lighting, among other things. Previously, CBP had reported that the fence is to have a lifespan of approximately 20 years, and plans to obligate \$75 million to operations and maintenance of the fence for fiscal year 2009, and again requested \$75 million for fiscal year 2010. A significant use of the operations and maintenance funding is to repair breaches in the fence. According to tactical infrastructure program office data, as of May 14, 2009, there had been 3,363 breaches in the fence, with each breach costing an average of \$1,300 to repair. Because of its construction, the older pre-SBI fencing is easier to breach and most breaches occurred in these types of fencing. Of the newer fencing, the fewest breaches occurred in the bollard-style fencing, while more occurred in the wire mesh fence. Examples of breaches are shown in figure 6.

Figure 6: Examples of Repaired Breaches in Newer Fencing



Source: GAO.

A repaired fence breach in bollard fence with honeycomb design, an environmental feature that allows debris and water to pass through.



Source: GAO.

Steel mesh fence showing repaired fence breaches.

The Number of Southwest Border Miles That CBP Reports as Being under Effective Control Has Increased, but the Impact of Tactical Infrastructure Has Not Been Measured

CBP reported that tactical infrastructure, coupled with additional trained Border Patrol agents, had increased the miles of the southwest border under effective control, but despite a \$2.4 billion investment, it cannot account separately for the impact of tactical infrastructure. DHS defines effective control of the U.S. borders as the ability to consistently (1) detect illegal entries into the United States between the port of entry, (2) identify and classify these entries to determine the level of threat involved, (3) effectively respond to these entries, and (4) bring events to a satisfactory law enforcement resolution. Border Patrol personnel, technology, and tactical infrastructure are the contributing elements to effective control. CBP measures miles under effective control through Border Patrol's quarterly assessments using information on apprehensions; vehicle drive-through traffic; and, intelligence, operational reports, and the experience and expertise of senior Border Patrol agents, among other things. CBP recognizes that its measure of effective control is limited in that its source relies partially on subjective information and it does not reflect all CBP efforts along the border. CBP officials report that they are working to create a CBP-wide border control measure to inform resource decision making, but are having difficulty determining appropriate data sources and the appropriate measure and, therefore, have not set a date for completion of this measure.

According to *CBP's Fiscal Year 2008 Performance and Accountability Report*, 757 of the 8,607 miles the Border Patrol is responsible for were under effective control, increasing the miles under effective control by 158 over those miles controlled in fiscal year 2007. According to the *Fiscal Year 2009 SBI Expenditure Plan*, between fiscal years 2007 and 2008, an additional 36 miles in the Tucson sector were under effective control partially as a result of added tactical infrastructure. In the Yuma sector where some of the early SBI fencing was constructed, apprehensions were down 78 percent in fiscal year 2008 compared with fiscal year 2007. CBP reported that apprehensions declined partially because of the fencing and also because of non-fencing reasons, such as the increase in Border Patrol agents during fiscal year 2008. In addition, CBP reported that as a direct result of increased tactical infrastructure, vehicle drive-through traffic declined from 213 incursions in fiscal year 2007 to 2 in fiscal year 2008. Overall, the Yuma sector's vehicle drive-through traffic declined by 50 percent and the number of miles under effective control for the sector climbed from 70 in fiscal year 2007 to 118 of the sector's 125 miles in fiscal year 2008. In the San Diego sector, 3 miles of effective control were gained between fiscal years 2007 and 2008, and apprehensions were up 7 percent. Table 3 shows the changes in effective control for these three sectors from fiscal year 2007 to fiscal year 2008.

Table 3: Miles under Effective Control and Change in Apprehensions in Select Southwest Border Sectors from Fiscal Year 2007 through Fiscal Year 2008

Sector	Total miles	Miles under effective control		Change in miles under effective control	Change in apprehensions
		FY2007	FY2008		
Tucson	262	67	103	36 mile increase	16% ▼
Yuma	125	70	118	48 mile increase	78% ▼
San Diego	60	19	22	3 mile increase	7% ▲

Source: GAO analysis of CBP data.

However, Border Patrol data show that apprehensions for all southwest border sectors except San Diego also declined between fiscal years 2006 and 2007, before the majority of the tactical infrastructure was deployed. Therefore, the impact of tactical infrastructure on apprehensions is unclear as there are other factors that could contribute to the decline. For example, in its *Fiscal Year 2008 4th Quarter Congressional Status Report on Border Security and Resources*, CBP stated that the end of “catch and release,” increases in Border Patrol agents, more tactical infrastructure on the border, expanded use of expedited removal, and support from the National Guard during Operation Jump Start have had a significant deterrent effect, contributing to the marked decline in apprehensions.²⁹ Other factors, such as the decreasing number of migrants attempting to cross the border due to the economy may also have impacted apprehensions.

CBP has not systematically evaluated the impact of tactical infrastructure on gains or losses in the level of effective border control, controlling for the influences of other potential factors on border control efforts. The current performance measure for tactical infrastructure is miles constructed. While this measure provides useful information it does not demonstrate the program’s discrete contribution to effective control. In addition, CBP has, as part of its *Fiscal Year 2009 SBI Expenditure Plan*, completed an analysis of each tactical infrastructure segment to be built compared to other, alternative means of achieving effective control such

²⁹“Catch and release” refers to the practice of apprehending removable aliens from countries other than Mexico and then releasing them on their own recognizance pending removal proceedings. Expedited removal refers to returning non-Mexican removable aliens to their country of origin as soon as circumstances will allow, generally without formal removal proceedings in an immigration court. Operation Jump Start refers to the deployment of United States National Guard troops along the U.S.–Mexico border to support enforcement of border security.

as investments in technology and enforcement personnel.³⁰ This analysis was intended to show where physical fencing was most appropriate given cost, level of effective control, possible unintended effects on communities, and other critical factors. However, these analyses were largely subjective because they were based primarily on the experience and expertise of senior border patrol agents.

Federal agencies are increasingly expected to focus on achieving results and to demonstrate, in annual performance reports and budget requests, how their activities help achieve agency or governmentwide goals. The Government Performance and Results Act of 1993 (GPRA) requires federal agencies to report annually on their achievement of performance goals, explain why any goals were not met, and summarize the findings of any program evaluations conducted during the year.³¹ For programs that have readily observable results or outcomes, performance measurement may provide sufficient information to demonstrate program results. In some programs, however, outcomes are not quickly achieved or readily observed, or their relationship to the program is uncertain. In such cases, program evaluations may be needed, in addition to performance measurement, to examine the extent to which a program is achieving its objectives. Our previous work identified program evaluations as a way for agencies to explore the benefits of a program as well as ways to improve program performance.³²

An evaluation of the tactical infrastructure already deployed along the southwest border would help demonstrate its contribution to effective control of the border and help CBP to determine whether more tactical infrastructure would be appropriate, given other alternatives and constraints. For instance, a statistical analysis could be conducted to show the effect of tactical infrastructure within each sector and

³⁰CBP submitted its *Fiscal Year 2009 SBI Expenditure Plan* pursuant to a requirement in the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009, Pub. L. No. 110-329, 122 Stat. 3574, 3655-57 (2008). The act required that the expenditure plan be submitted within 90 days after the enactment of the act. Condition 11 of the expenditure plan required an analysis by the Secretary for each segment—defined as no more than 15 miles, of fencing or tactical infrastructure—of the selected approach compared to other, alternative means of achieving operational control, including cost, level of operational control, possible unintended effects on communities, and other factors critical to the decision-making process.

³¹ Pub. L. No. 103-62, § 4, 107 Stat. 285, 288-289 (1993).

³²[GAO/GGD-00-204](#).

throughout the southwest border, controlling for other potential factors.³³ This analysis could include, among other data, apprehension data and data on illegal migrants' and smugglers' methods, routes, and modes of transportation before and after tactical infrastructure deployment. CBP could use the information collected during program evaluations to complement its performance measurement data and thereby more fully assess these often difficult-to-measure activities and to inform its efforts to improve its performance measures. Our work has shown that analyses such as these further complement performance management initiatives and are useful to inform resource decision making and in helping to effectively implement performance measures.³⁴

CBP officials said that they would like to conduct a study, but lack the resources. In our previous work, we found that through a number of strategies, agencies developed and maintained a capacity to produce and use evaluations. First, to leverage their evaluation resources and expertise, agencies engaged in collaborations or actively educated and solicited the support and involvement of their program partners and stakeholders. Second, agency managers sustained a commitment to accountability and to improving program performance. Third, they improved administrative systems or turned to special data collections to obtain better quality data. Finally, they sought out—through external sources or development of staff—whatever expertise was needed to ensure the credibility of analyses and conclusions.³⁵ Furthermore, in our efforts to assist agencies' program evaluation efforts, we identified agencies that initiated evaluation studies resulting in recommendations to address program performance and a strategy for the future.³⁶ The evaluations conducted by these agencies helped them improve their measurement of program performance or understanding of performance and how it might be improved, or both. Accordingly, information gained through an evaluation may help CBP more effectively allocate its limited resources, inform its future decisions about investing in tactical infrastructure, and ensure that existing tools are adequately supported and

³³In impact evaluation, scientific research methods are used to establish a causal connection between program activities and outcomes and to isolate the program's contributions to them. [GAO/GGD-00-204](#)

³⁴[GAO/AIMD-99-69](#).

³⁵[GAO-03-454](#).

³⁶[GAO/GGD-00-204](#).

maintained. Such an evaluation would also help CBP determine whether the tactical infrastructure it has deployed meets the mandate in the Secure Fence Act of 2006, as amended, to use physical infrastructure enhancements to help prevent unlawful U.S. entries; facilitate access by CBP personnel to enable a rapid and effective response to illegal activities; and help DHS and CBP achieve and maintain operational control of U.S. borders.³⁷ Until CBP determines the contribution of tactical infrastructure to border security beyond a measure of miles covered by tactical infrastructure, it is not positioned to address the impact this costly resource has had in each sector or might have if deployed in other locations across the southwest border.

Conclusions

While the *SBI*net program continues to test and evaluate potential technology applications, a major part of DHS's effort to secure the nation's borders from the illegal entry of aliens and contraband has been the deployment of tactical infrastructure. Along with technology and additional Border Patrol personnel, CBP relies on tactical infrastructure to help gain and maintain effective control of the border. Controlling, managing, and securing the border were the principal purposes of the mandate to construct fencing along the southwest border. Deploying this infrastructure has been expensive and costs have risen during its construction. However, despite a \$2.4 billion investment in this infrastructure, its contribution to effective control of the border has not been measured because CBP has not evaluated the impact of tactical infrastructure on gains or losses in the level of effective control. Given the large investment made in tactical infrastructure and to help CBP more effectively allocate its limited resources, inform future decisions about whether to build more fencing, and ensure that existing tools are adequately supported and maintained, it is important that CBP assess the impact of tactical infrastructure on effective control as it examines the costs and benefits of different methods of deterrence.

Recommendation for Executive Action

To improve the quality of information available to allocate resources and determine tactical infrastructure's contribution to effective control of the border, we recommend that the Commissioner of CBP conduct a cost-effective evaluation of the impact of tactical infrastructure on effective control of the border.

³⁷ Pub. L. No. 109-367, § 2, 120 Stat. 2638 (2006)(codified at 8 U.S.C. 1701 note).

Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Homeland Security for its review and comment. In an August 31, 2009, letter, the Department of Homeland Security provided written comments, which are summarized below and included in appendix III. The department stated that it agrees with our recommendation and generally concurred with our report, but said that the report does not acknowledge some of the significant factors that have contributed to program volatility and delays.

With respect to our recommendation, DHS concurred and described actions recently completed, underway, and planned that it said will address our recommendation to conduct a cost-effective evaluation of the impact of tactical infrastructure on effective control of the border. DHS commented that its Office of Border Patrol was already committed to examining evaluation options, as evidenced by the Office of Border Patrol's completion of analyses of alternatives to guide field personnel through the process of considering and determining what and how much infrastructure would be most effective. We discuss the analyses of alternatives in our report, as well as the fact that they are largely subjective because they were based primarily on the experience and expertise of senior Border Patrol agents. DHS also commented that it is considering using independent researchers to conduct evaluations and using modeling and simulation technology to gauge the effects of resource deployments. We believe that such efforts would be consistent with our recommendation, further complement performance management initiatives, and be useful to inform resource decision making.

In its technical comments, DHS elaborated on some of the significant factors that have contributed to program volatility and delays. DHS stated that although SBI has experienced performance issues that have delayed Block 1 deployment, there have been other significant factors that have had an impact on the program schedule, such as their decision to reallocate funds to higher priority fencing projects, and external pressures—such as the need to obtain environmental clearances for tower placement. Our report included the environmental issues as a contributing factor to the delays. We have added information to our report to reflect the decision to reallocate funds. These reallocations and environmental issues notwithstanding, SBI program office officials told us that the program was not ready to use the funding that was reallocated in fiscal year 2008 due to the additional testing that needed to take place before deployment. We were unable to reprint DHS's technical comments in this report because they contain sensitive information; however, we have incorporated them into the report, as appropriate.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution until 30 days after the date of this report. At that time, we will send copies of this report to the Senate and House committees and subcommittees that have authorization and oversight responsibilities for homeland security. We will also send copies of this report to the Secretary of Homeland Security, the Commissioner of U.S. Customs and Border Protection, and the Office of Management and Budget. In addition, this report will be available at no cost on the GAO Web site at <http://www.gao.gov>.

Should your offices have any questions on matters discussed in this report, please contact me at (202) 512-8777 or at stanar@gao.gov. Contact points for our offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix IV.



Richard M. Stana, Director
Homeland Security and Justice Issues

List of Requesters

The Honorable Bennie G. Thompson
Chairman
Committee on Homeland Security
House of Representatives

The Honorable Loretta Sánchez
Chairwoman
The Honorable Mark E. Souder
Ranking Member
Subcommittee on Border, Maritime and Global Counterterrorism
Committee on Homeland Security
House of Representatives

The Honorable Mike Rogers
Ranking Member
Subcommittee on Emergency Communications,
Preparedness, and Response
Committee on Homeland Security
House of Representatives

The Honorable Christopher P. Carney
Chairman
The Honorable Gus Michael Bilirakis
Ranking Member
Subcommittee on Management, Investigations, and Oversight
Committee on Homeland Security
House of Representatives

The Honorable Kendrick B. Meek
House of Representatives

Appendix I: The Status of SBI Program Office Staffing and the Progress the Office Reports in Achieving Its Human Capital Goals

The SBI program office has been reorganized, developed new staffing goals, and completed a new human capital plan for fiscal years 2009 through 2010; however, meeting the plan's revised human capital goals may be difficult. Under the new organizational structure, the tactical infrastructure program office has moved to the CBP Office of Finance's Facilities Management and Engineering division and the SBI program office has been restructured. The restructuring of the SBI program office involved placing a greater emphasis on contractor oversight and creation of offices of operational integration, business management operations, and systems engineering, in addition to the *SBI*net program office. The SBI program's Executive Director's goal is to have a total of 236 employees—181 full-time government employees and 55 contractors—in place by March 2010.¹ He said that the goal to have 236 employees represents the number needed to move forward with the program based on his previous experience and the need to have government employees representing key procurement competencies, meaning an increase in the ratio of government employees to contractors. For example, as of May 31, 2009, SBI program office staffing consisted of a total of 167 employees—72 government and 95 contractors, or a ratio of 1.3 contractors to each government employee.² The new staffing goal calls for a ratio of 3.3 government employees to each contractor. The SBI Executive Director said that having more government employees is important because he wants more in-house expertise to oversee the contractors. According to the SBI Executive Director, increasing the ratio of government employees to contractors in the SBI program office may be difficult because of a shortage of some personnel, such as systems engineers. He said he anticipates hiring 8 government employees a month, but acknowledges that it may take between 4 and 6 months to bring new hires on board. In the meantime, he said the SBI office will continue to supplement its workforce with contract support staff.

In December 2008, the second version of its *Strategic Human Capital Management Plan* was provisionally certified and as of June 2009, the SBI program office continued to implement the plan. The new version of the human capital plan spans 2 fiscal years, reflecting a longer-term staffing vision for SBI. The SBI program office's plan outlines seven main goals for the office and includes planned activities to accomplish those goals, which

¹This goal includes staff in the tactical infrastructure program office.

²These totals do not include 18 detailed personnel or 27 staff—10 government employees and 17 contractors—who were transferred to the Office of Finance.

align to federal government best practices.³ As of May 2009, the SBI program office had taken several steps to implement the plan. For example, the SBI program office had completed a training plan which was undergoing review and had tentatively selected 43 candidates to fill 70 vacancies. In addition, the program office had finalized an awards and recognition policy and had implemented the policy. However, the SBI program office had deferred completion of its succession management plan until the final quarter of fiscal year 2009.

To implement and review the human capital plan, the SBI program office is partnering with the DHS Chief Human Capital Officer's office as well as CBP's Office of Human Resources. In a December 8, 2008, letter that accompanied CBP's *Fiscal Year 2009 SBI Expenditure Plan*, the Chief Human Capital Officer noted that the SBI human capital plan provided specific initiatives to address hiring, development, and retention of employees, and described metrics to measure progress and results of these initiatives. However, the Chief Human Capital Officer also noted that human capital management challenges remain. For example, according to the letter, competition for qualified employees could present staffing challenges for SBI in achieving its goals to hire additional program managers, auditors, engineers, and environmental specialists and to shift the current ratio of contractors to federal employees and hire more federal employees and fewer contractors. Furthermore, still to be determined succession management plans and finalization of the training plan reflect unfinished human capital planning efforts. This gap in planning could present challenges in training employees and preparing for a longer-term SBI vision. The letter noted that the DHS Chief Human Capital Officer planned to reevaluate SBI's human capital plan in May 2009 to ensure that SBI was on track to achieve its staffing goals. According to the SBI Executive Director, this review is ongoing through a series of meetings and data exchanges. Table 4 summarizes the seven human capital goals, and the SBI program office's planned activities and steps taken to accomplish these activities, as of May 2009.

³These best practices are contained in the governmentwide *Human Capital Assessment and Accountability Framework* which was developed by the Office of Management and Budget, the Office of Personnel Management, and GAO.

**Appendix I: The Status of SBI Program Office
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Table 4: Human Capital Goals, Planned Activities, and Steps Taken

SBI human capital goals	Planned activities	Steps taken as of May 2009, as reported by the SBI program office
1. Develop a coherent framework of human capital policies, programs, and practices to achieve a shared vision integrated with SBI's strategic plan.	<ul style="list-style-type: none"> Update the SBI Strategic Human Capital Management Plan and ensure alignment to the SBI Strategic Implementation Plan and CBP Strategic Plan. Establish a human capital leadership team. 	<ul style="list-style-type: none"> An appendix to the human capital management plan has been created to demonstrate alignment with the CBP strategic plan. Further updates to the human capital plan are not expected during fiscal year 2009. A human capital leadership team has been established.
2. Prepare leaders to lead and manage the workforce.	<ul style="list-style-type: none"> Ensure continuity with required management certifications. Create a learning culture that provides opportunities for continuous development. Leverage and utilize the DHS and CBP Senior Executive Service (SES) candidacy development program. 	<ul style="list-style-type: none"> Six employees have received project manager certification. SBI is using outside training sources to provide training courses and has held several brown bag training sessions. SBI has not enrolled any employees in the SES candidacy development program
3. Create and instill within the organization a value-driven culture.	<ul style="list-style-type: none"> Leaders will maintain high standards of honesty and ethics. Leadership will foster an environment of open communication and forum to share strategic vision. SBI leadership will inspire employee commitment and integrity. 	<ul style="list-style-type: none"> SBI requires annual mandatory security and ethics training. All employees were to have completed the security training by June 1, 2009. The SBI Executive Director holds monthly staff meetings. Frequent SBI-wide e-mails highlighting accomplishments, areas of risk and general status updates are sent. An SBI senior staff offsite was held.
4. Develop and implement a succession management plan.	<ul style="list-style-type: none"> Develop a succession strategy for mission-critical positions. Systematically provide a shared knowledge management system to perform work and gather and share knowledge. 	<ul style="list-style-type: none"> Mission-critical positions have been identified; completion of the succession management plan deferred until the last quarter of fiscal year 2009. SBI uses a shared knowledge management system to disseminate knowledge, share documents, and perform work.
5. Define the performance culture (reward excellence).	<ul style="list-style-type: none"> Continue to supplement the current CBP Awards and Recognition Program with recurring award ceremonies. Continue to adhere to DHS and CBP policies on performance management. Employees to develop and be responsible for meeting goals in Individual Development Plans. 	<ul style="list-style-type: none"> The awards and recognition policy has been finalized and approved. Awards are presented quarterly. Employees were provided with guidance on completing their fiscal year 2009 performance goals.

**Appendix I: The Status of SBI Program Office
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SBI human capital goals	Planned activities	Steps taken as of May 2009, as reported by the SBI program office
6) Hire, recruit, develop, and retain employees with the skills for mission accomplishment.	<ul style="list-style-type: none"> • Develop and enhance relationships with professional organizations and colleges/universities and attend job fairs. • Create human capital strategies that will attract, acquire, promote, and retain quality talent. • Craft a recruiting approach that builds the public's knowledge of and desire to join the public sector. 	<ul style="list-style-type: none"> • SBI works with CBP human capital resources on networking and coordination of recruiting efforts. SBI has attended several career and job fairs. • SBI updated its Web site with information on mission and goals to help attract job applicants and has created SBI "branded" paraphernalia to hand out at orientation and career fairs. • Recruitment efforts are underway to fill 70 open SBI positions; 43 candidates have been tentatively selected.
7) Establish leadership accountability for human capital management.	<ul style="list-style-type: none"> • Identify human capital management processes and points of contact to ensure accountability. • Incorporate periodic assessments to analyze human capital data, assess results, identify risk, and ensure controls are in place to address problems and modify strategies and activities. 	<ul style="list-style-type: none"> • SBI uses a human capital scorecard to maintain accountability for human capital goals. • SBI receives workforce profiles from the CBP Human Resources Management Office that highlight areas of progress and risk. • SBI holds reoccurring meetings with representatives from the Chief Human Capital Office and the CBP Office of Human Resources.

Source: CBP.

Appendix II: Task Orders Awarded to Boeing for SBI Projects as of July 8, 2009

(Dollars in millions)			
Task order description	Date awarded	Ceiling of funds ^a	Task order obligation
Program Management: The mission engineering, facilities and infrastructure, systems engineering, test and evaluation, and program management services to develop and deploy the SBI ^{net} system.	09/21/2006	\$146.9	\$146.9
Project 28: Boeing's pilot project and initial implementation of SBI ^{net} technology for 28 miles of the border in the Tucson sector.	10/20/2006	20.7	20.7
Barry M. Goldwater Range: The construction of 32 miles of vehicle and pedestrian barriers on the southern border of the Barry M. Goldwater Range in the Yuma Sector.	01/12/2007	122.2	122.2
Fence Lab: The testing of potential pedestrian and vehicle fence and barrier solutions.	03/14/2007	0.7	0.7
Design: SBI ^{net} deployment design solution including design, environmental-clearance support, and locations for the SBI ^{net} technology solution in the Yuma, Tucson, and El Paso sectors.	08/01/2007	93.1	93.1
Project 28 Contractor Maintenance and Logistics Support: Provides Project 28 with the required maintenance and logistics support to operate the system.	12/07/2007	10.6	10.6
Command, Control, Communications and Intelligence (C3I) and Common Operating Picture: The development of the next version of the SBI ^{net} operating software to design, develop, and demonstrate a functional SBI ^{net} C3I/COP system.	12/07/2007	83.0	66.6
SBI^{net} System: A follow-on to the program management task order, this task order specifies the program management and system engineering activities required to achieve an integrated program across all task orders issued under the SBI contract.	04/15/2008	221.4	139.5
Supply and Supply Chain Management: The development and implementation of a supply and supply chain management system solution to execute tactical infrastructure projects.	01/07/2008	318.6	318.6
Arizona Deployment Task Order: Boeing's deployment of two projects of the SBI ^{net} system along approximately 53 miles of the southwest border in the Tucson sector.	06/25/2008	90.6	90.6
Integrated Logistics Support: Provides SBI ^{net} with the required maintenance and logistics support to operate the system.	08/16/2008	35.3	26.7
Design for Buffalo Sector: Provides for the design of a remote video surveillance system (RVSS) capability—a system of towers with cameras that transmit information to video monitors at a sector's headquarters—in the Buffalo sector.	02/05/2009	0.6	0.6
Northern Border Project Task Order: Provides for the design, installation, and deployment of surveillance technology capabilities in the Detroit and Buffalo Border Patrol sectors.	03/31/2009	22.4	20.9
Total		\$1,166	\$1,058

Source: GAO analysis of CBP data.

^a This is the maximum value of the task order. For example, the Integrated Logistics Support task order has a "ceiling" of \$35.3 million; however, at this time, obligations under the task order are only \$26.7 million because the project is being incrementally funded to complete work in periods.

Appendix III: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

August 31, 2009

Mr. Richard M. Stana
Director
Homeland Security and Justice Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Stana:

Re: Draft Report GAO-09-896, Secure Border Initiative: Technology Deployment
Delays Persist and the Impact of Border Fencing Has Not Been Assessed
(GAO Job Code 440763)

The Department of Homeland Security (Department) appreciates the opportunity to review and comment on the U.S. Government Accountability Office's (GAO's) draft report referenced above. The Department, particularly U.S. Customs and Border Protection (CBP) where the Secure Border Initiative program is located, agrees with the recommendation contained therein.

GAO found that *SBInet* technology capabilities have not yet been deployed and delays require Border Patrol agents to rely on existing technology for securing the border, rather than using newer technology planned to overcome the existing technology's limitations. GAO also reported that tactical infrastructure deployments are almost complete, but their impact on border security has not been measured.

Although the Department generally concurs with the report, the draft does not acknowledge some of the significant factors that have contributed to program volatility and delays. CBP separately is providing technical comments requesting that several additions be considered.

To improve the quality of information available to allocate resources and determine tactical infrastructure's contribution to effective control of the border, GAO recommends that CBP conduct a cost-effective evaluation of the impact of tactical infrastructure on effective control of the border.

Effective control of the border is gained by applying the proper mix of tactical infrastructure, personnel, technology, and consequences for illegal entry in the targeted area. In addition, there are other contributing factors that influence where, when and how illegal cross-border activity occurs including but not limited to terrain, population centers, and egress routes from the immediate border area. Any study of the effects of tactical infrastructure on border

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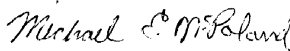
control will necessarily have to take into consideration these other factors. Any attempt to measure the efficacy of tactical infrastructure in isolation from these other factors will not produce an accurate or useful product.

In many locations along the border, CBP has applied the personnel and tactical infrastructure required, but as stated in the report, the technology to be provided by *SBI_{net}* has been delayed. The situational awareness provided by this technology is an important component of the enforcement model, and the full benefit of the tactical infrastructure cannot be realized until this technology is deployed.

The Office of Border Patrol (OBP) within CBP was already committed to investigating several evaluation options when GAO made its recommendation. In May 2008, OBP created the analysis of alternatives (AOA) to guide field personnel through the process of considering and determining what and how much infrastructure would be most effective in gaining effective control in a given area. To further augment the AOA process, OBP is considering the use of independent researchers to conduct evaluations and propose objective recommendations to form future decisions.

One option is to have the SBI Operations Integration Division evaluate proposals from various companies to purchase rudimentary modeling and simulation technology. Currently, this technology is not being developed as a tool to gauge effective control, but rather as a tool that can help to identify capability gaps, provide insights, and develop operational strategies that might be required to handle various threats along the international border. Although a pilot program and not initially designed to address levels of control, this modeling technology will have an architectural platform that can be expanded to gauge the effects of resource deployments. Other options that are already being pursued include the use of specialized services from the Department's Office of Immigration Services, the University of Texas at El Paso, and the University of Arizona Centers for Excellence, or an outside contractor. During this fiscal year, CBP will meet with these research organizations to initiate discussions. If they elect to award this project to an academic institution or a contractor, the action should be completed by the end of calendar year 2010. The intent is for a comprehensive assessment to be completed by the end of calendar year 2011 subject to available funding.

Sincerely,



Jerald E. Levine
Director
Departmental GAO/OIG Liaison Office

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Richard M. Stana (202) 512-8777 or stanar@gao.com

Acknowledgments

In addition to the contact named above, Susan Quinlan, Assistant Director, and Jeanette Espinola, Assistant Director, managed this assignment. Sylvia Bascopé, Claudia Becker, Frances Cook, Christine Davis, Katherine Davis, Jeremy Rothgerber, Erin Smith, and Meghan Squires made significant contributions to the work.

Related GAO Products

U.S. Customs and Border Protection's Secure Border Initiative Fiscal Year 2009 Expenditure Plan. [GAO-09-274R](#). Washington, D.C.: April 30, 2009.

Secure Border Initiative Fence Construction Costs. [GAO-09-244R](#). Washington, D.C.: January 29, 2009.

Secure Border Initiative: DHS Needs to Address Significant Risks in Delivering Key Technology Investment. [GAO-08-1086](#). Washington, D.C.: September 22, 2008.

Secure Border Initiative: Observations on Deployment Challenges. [GAO-08-1141T](#). Washington, D.C.: September 10, 2008.

Secure Border Initiative: DHS Needs to Address Significant Risks in Delivering Key Technology Investment. [GAO-08-1148T](#). Washington, D.C.: September 10, 2008.

Secure Border Initiative: Fiscal Year 2008 Expenditure Plan Shows Improvement, but Deficiencies Limit Congressional Oversight and DHS Accountability. [GAO-08-739R](#). Washington, D.C.: June 26, 2008.

Department of Homeland Security: Better Planning and Oversight Needed to Improve Complex Service Acquisition Outcomes. [GAO-08-765T](#). Washington, D.C.: May 8, 2008.

Department of Homeland Security: Better Planning and Assessment Needed to Improve Outcomes for Complex Service Acquisitions [GAO-08-263](#). Washington, D.C.: April 22, 2008.

Secure Border Initiative: Observations on the Importance of Applying Lessons Learned to Future Projects. [GAO-08-508T](#). Washington, D.C.: February 27, 2008.

Secure Border Initiative: Observations on Selected Aspects of SBInet Program Implementation. [GAO-08-131T](#). Washington, D.C.: October 24, 2007.

Secure Border Initiative: SBInet Planning and Management Improvements Needed to Control Risks. [GAO-07-504T](#). Washington, D.C.: February 27, 2007.

Related GAO Products

Secure Border Initiative: SBInet Expenditure Plan Needs to Better Support Oversight and Accountability. [GAO-07-309](#). Washington, D.C.: February 15, 2007.

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