United States Government Accountability Office

GAO

Report to the Chairman, Committee on House Administration, House of Representatives

September 2008

ELECTIONS

Federal Programs for Accrediting Laboratories That Test Voting Systems Need to Be Better Defined and Implemented

GAO-08-770

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Federal Programs for Accrediting Laboratories That Test Voting Systems Need to Be Better Defined and Implemented

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-08-770, a report to the Chairman, Committee on House Administration, House of Representatives

Why GAO Did This Study

The 2002 Help America Vote Act (HAVA) created the Election Assistance Commission (EAC) and assigned both it and the National Institute of Standards and Technology (NIST) responsibilities for accrediting laboratories that test voting systems. NIST assesses a laboratory's technical qualifications and makes recommendations to EAC, which makes a final accreditation decision. In view of the continuing concerns about voting systems and the important roles that NIST and EAC play in accrediting the laboratories that test these systems, GAO was asked to determine whether each organization has defined an effective approach for accrediting laboratories that test voting systems and whether each is following its defined approach. To accomplish this, GAO compared NIST and EAC policies, guidelines, and procedures against applicable legislation and guidance, and reviewed both agencies' efforts to implement them.

What GAO Recommends

GAO is making recommendations to NIST and EAC aimed at further defining and implementing their respective accreditation programs in a way that better ensures that voting system laboratory accreditations are performed consistently and are verifiable. NIST and EAC generally agreed with the need for their respective programs to continuously improve and both sought clarification on the report's recommendations, which GAO has added.

To view the full product, including the scope and methodology, click on GAO-08-770. For more information, contact Randolph C. Hite at (202) 512-3439 or hiter@gao.gov.

What GAO Found

NIST has largely defined and implemented an approach for accrediting voting system testing laboratories that incorporates many aspects of an effective program. In particular, its approach addresses relevant HAVA requirements and reflects relevant laboratory accreditation guidance, including standards accepted by the international standards community. However, NIST's defined approach does not, for example, cite explicit qualifications for the persons who conduct accreditation technical assessments, as called for in federal accreditation program guidance. Instead, NIST officials said that they rely on individuals who have prior experience in reviewing such laboratories. Further, even though the EAC requires that laboratory accreditation be based on demonstrated capabilities to test against the latest voting system standards, NIST's defined approach has not always cited these current standards. As a result, two of the four laboratories accredited to date were assessed using assessment tools that were not linked to the latest standards. Moreover, available documentation for the four laboratory assessments was not sufficient to determine how the checklists were applied and how decisions were reached. According to NIST officials, the four laboratories were consistently assessed. Moreover, they said that they intend to evolve NIST's accreditation approach to, for example, clearly provide for sufficient documentation of how accreditation reviews are conducted and decisions are reached. However, they had yet to develop specific plans for accomplishing this.

EAC recently developed a draft laboratory accreditation program manual, but this draft manual does not adequately define all aspects of an effective approach, and it was not used in the four laboratory accreditations performed to date. Specifically, while this draft manual addresses relevant HAVA requirements, such as the requirement for the commissioners to vote on the accreditation of any laboratory that NIST recommends for accreditation, it does not include a methodology governing how laboratories are to be evaluated or criteria for granting accreditation. Because the manual was not approved at the time EAC accredited four laboratories, these accreditations were governed by a more broadly defined accreditation review process that was described in correspondence sent to each laboratory and a related document receipt checklist. As a result, these accreditations were based on review steps that were not sufficiently defined to permit them to be executed in a repeatable manner. According to EAC officials, including the official who conducted the accreditation reviews for the four laboratories, using the same person to conduct the reviews ensured that the steps performed on the first laboratory were repeated on the other three. However, given that both the steps and the results were not documented, GAO could not verify this. EAC officials stated that they intend to evolve the program manual over time and apply it to future accreditations and reaccreditations. However, they did not have specific plans for accomplishing this. Further, although EAC very recently approved an initial version of its program manual, this did not occur until after EAC provided comments, and GAO had finalized, this report.

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Abbreviations

EAC	Election Assistance Commission
HAVA	Help America Vote Act
ISO	International Organization for Standardization
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
VSTL	voting system testing laboratory
VSS	Voting Systems Standards
VVSG	Voluntary Voting System Guidelines

GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

September 9, 2008

The Honorable Robert A. Brady
Chairman
Committee on House Administration
House of Representatives

Dear Mr. Chairman:

In the wake of the 2000 and 2004 general elections, we issued a series of reports and testified[1] on virtually every aspect of our nation's overall election system, including the many challenges and opportunities associated with various types of voting systems. In this regard, we emphasized that voting systems alone were neither the sole contributor nor solution to the problems that were experienced during the 2000 and 2004 elections, and that the overall election system depended on the effective interplay of people, process, and technology and involved all levels of government. Among many things, we specifically reported in 2001[2] that no federal entity was responsible for accrediting the laboratories that tested voting systems, and we raised the establishment of such an entity as a matter for congressional consideration.

Subsequently, Congress passed the Help America Vote Act (HAVA), which created the Election Assistance Commission (EAC) and assigned both it and the National Institute of Standards and Technology (NIST) separate but related responsibilities for accrediting laboratories that test voting systems.[3] In general, NIST is responsible for assessing a laboratory's technical qualifications and making an accreditation recommendation to

[1]See, for example, GAO, *Elections: Perspectives on Activities and Challenges Across the Nation*, GAO-02-3 (Washington, D.C.: Oct. 15, 2001); *Elections: Status and Use of Federal Voting Equipment Standards*, GAO-02-52 (Washington, D.C.: Oct. 15, 2001); *Elections: A Framework for Evaluating Reform Proposals*, GAO-02-90 (Washington, D.C.: Oct. 15, 2001); *Elections: Federal Efforts to Improve Security and Reliability of Electronic Voting Systems Are Under Way, but Key Activities Need to Be Completed*, GAO-05-956 (Washington, D.C.: Sept. 21, 2005); and *Elections: All Levels of Government Are Needed to Address Electronic Voting System Challenges*, GAO-07-576T (Washington, D.C.: Mar. 7, 2007).

[2]GAO-02-52.

[3]42 U.S.C. § 15371.

EAC, while EAC is to use the assessment results and recommendation, along with its own review of related laboratory capabilities, to reach an accreditation decision. In 2004 and 2007, NIST and EAC established voting system testing laboratory accreditation programs, respectively. To date, EAC has accredited four laboratories. In view of the continuing concerns about voting systems and the important roles that both NIST and EAC play in accrediting the laboratories that test these systems, you asked us to determine whether NIST and EAC have each defined an effective laboratory accreditation approach and whether each is following its defined approach.

To accomplish this, we reviewed NIST and EAC policies, guidelines, and procedures governing voting system testing laboratory accreditation, deaccreditation, and reaccreditation and compared them, as appropriate, to applicable statute, such as HAVA, and guidance published by NIST, the International Organization for Standardization, and us. We then compared NIST and EAC actions and artifacts that were used for accrediting four voting system testing laboratories to their respective policies, guidelines, and procedures. We did not review a fifth laboratory because NIST was in the process of assessing it when we started our review, and had yet to recommend the laboratory to EAC for final accreditation. In addition, we interviewed officials from NIST, EAC, and the four laboratories to understand and clarify approaches taken, documentation provided, and decisions reached.

We conducted this performance audit at EAC and NIST offices in Washington, D.C., and Gaithersburg, Maryland, respectively, from September 2007 to September 2008 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 audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Further details of our objective, scope, and methodology are included in appendix I.

Results in Brief

NIST has largely defined and implemented an approach for accrediting voting system testing laboratories that incorporates many aspects of an effective program. In particular, its approach addresses relevant HAVA requirements and reflects relevant laboratory accreditation standards that have been accepted by the international community. However, NIST's defined approach does not cite explicit qualifications or training

requirements for accreditation technical assessors, which, according to NIST, is a characteristic of an effective accreditation program. Instead, the program has relied, in part, on a small and specialized field of potential assessors in the voting system arena. Further, until recently, NIST's laboratory accreditation guidance cited different versions of required standards. As a result, two of the four accredited laboratories were assessed using checklists linked to the current standards and two were not. Moreover, NIST's documentation of these assessments was not sufficient to determine how the checklists were applied and how decisions were reached. According to NIST officials, the four laboratories were consistently assessed, and they intend to ensure that sufficient documentation is produced to show how assessments are conducted and decisions are reached. However, they said that they do not have a documented plan for accomplishing this.

EAC recently developed a draft of a voting system testing laboratory accreditation program manual, but the draft manual does not adequately define all aspects of an effective approach and was not used in accrediting the four laboratories. EAC's draft manual addresses applicable HAVA requirements, but does not include either a methodology governing how laboratories are to be reviewed or certain criteria relevant to granting accreditation. Because the draft manual was not available for laboratory assessments until recently, EAC instead used a more broadly defined accreditation review process contained in correspondence with the laboratories and a related checklist that were not specific enough to ensure that review steps were executed in a repeatable manner. According to EAC officials, using the same person to conduct the reviews ensured that the reviews were consistently performed. However, because both the steps and the results were not documented, we could not verify this. In addition, EAC officials told us that they intend to evolve the program manual over time and apply it to future accreditations and reaccreditations; however, they do not have a documented plan for accomplishing this.[4]

To assist NIST and EAC in evolving their respective voting system testing laboratory accreditation programs, we are making recommendations to NIST and EAC to develop and execute plans, with specific tasks,

[4]In August 2008, after EAC provided comments on, and we had finalized, this report, the commission announced that it had approved its draft accreditation program manual. As a result, we did not review the approved manual.

milestones, resources, and measures, which are aimed at adding consistency and specificity to their defined approaches and ensuring that the approaches are fully implemented and documented.

NIST and EAC provided written comments on a draft of this report, signed by the Deputy Director of NIST and the Executive Director of EAC, respectively. More specifically, NIST stated that it appreciated our careful review of its voting system testing laboratory accreditation program and added that it generally concurs with our findings that this program must continue to evolve and improve. NIST also provided comments that were intended to clarify the current status of the program relative to three of our findings. For various reasons discussed in the agency comments section of this report, we do not believe that these comments affect any of the three findings. Therefore, we have not modified the report's presentation of them. In light of NIST's recent actions to address one of the findings, we updated our report to reflect these actions and have removed the associated recommendation from our final report. Further, in order to avoid the possibility of any misunderstanding about the actions needed to address one other finding, we have slightly modified the recommendation associated with it.

With respect to EAC's comments, the commission described our review and report as helpful to the commission as it works to fully develop and implement its voting system testing laboratory accreditation program. It also stated that it agrees with the report's conclusions that additional written internal procedures, standards, and documentation are needed to ensure more consistent and repeatable implementation of the program. Further, it stated that it generally accepts our recommendations, adding that it will work hard to implement them. However, it sought clarification about two of the recommendations. In response, we have slightly modified both recommendations to avoid any confusion as to their intent. Both the NIST and EAC comments are discussed in detail in the agency comments section of this report, and are reprinted in their entirety in appendixes II and III, respectively.

Background

All levels of government share responsibility in the overall U.S. election system. At the federal level, Congress has authority under the Constitution to regulate presidential and congressional elections and to enforce prohibitions against specific discriminatory practices in all federal, state, and local elections. Congress has passed legislation that addresses voter registration, absentee voting, accessibility provisions for the elderly and persons with disabilities, and prohibitions against discriminatory

practices.[5] At the state level, individual states are responsible for the administration of both federal elections and their own elections. States regulate the election process, including, for example, the adoption of voluntary voting system guidelines, the state certification and acceptance testing of voting systems, ballot access, registration procedures, absentee voting requirements, the establishment of voting places, the provision of election day workers, and the counting and certification of the vote.

In total, the overall U.S. election system can be seen as an assemblage of 55 distinct election systems—those of the 50 states, 4 U.S. territories, and the District of Columbia. Further, although election policy and procedures are legislated primarily at the state level, states typically have decentralized election systems, so that the details of administering elections are carried out at the city or county levels, and voting is done at the local level. As we reported in 2001,[6] local election jurisdictions number more than 10,000, and their sizes vary enormously—from a rural county with about 200 voters to a large urban county, such as Los Angeles County, where the total number of registered voters for the 2000 elections exceeded the registered voter totals in 41 states. Further, these thousands of jurisdictions rely on many different types of voting methods that employ a wide range of voting system makes, models, and versions. Because of the prominent role played by electronic voting systems, testing these systems against national standards is critical to ensuring their security and reliability. Equally critical is ensuring that the laboratories that perform these tests are competent to carry out testing activities.

The Overall U.S. Election System Depends on Effective Interactions among People, Processes, and Technology

In the United States today, most votes are cast and counted by electronic voting systems, and many states require use of systems that have been certified nationally or by state authorities. However, voting systems are but one facet of a multifaceted, continuous overall election system that involves the interplay of people, processes, and technology during the entire life of a system. All levels of government, as well as commercial voting system manufacturers and system testing laboratories, play key roles in ensuring that voting systems perform as intended.

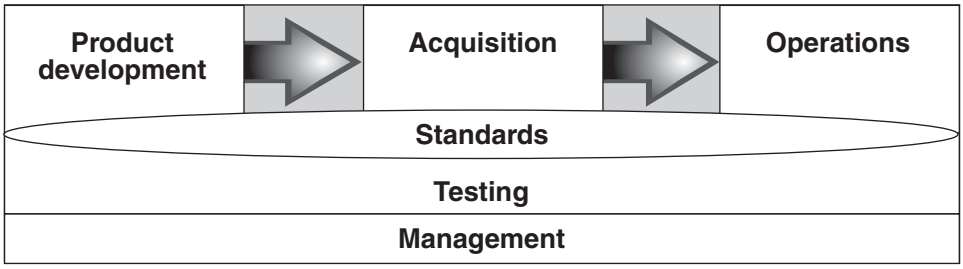
Electronic voting systems are typically developed by manufacturers, then purchased as commercial, off-the-shelf products and operated by state and

[5]GAO-02-3.

[6]GAO-02-3.

local election administrators. Viewed at a high level, these activities make up three phases of a system life cycle: product development, acquisition, and operations. (See fig. 1.) Key processes that span these life cycle phases include managing the people, processes, and technologies within each phase and across phases, and testing the systems and components during and at the end of each phase. Additionally, voting system standards are important through all of the phases because they provide criteria for developing, testing, and acquiring voting systems, and they specify the necessary documentation for operating the systems.

Figure 1: A Voting System Life Cycle Model



Source: GAO analysis of EAC, NIST, and Institute of Electrical and Electronics Engineers (IEEE) publications.

- The *product development* phase includes activities such as establishing requirements for the system, designing a system architecture, developing software, and integrating components. Activities in this phase are performed by the system vendor.

- The *acquisition* phase includes activities such as publishing a solicitation, evaluating offers, choosing a voting technology and a vendor, and awarding and administering contracts. For voting systems, activities in this phase are primarily the responsibility of state and local governments but entail some responsibilities that are shared with the system vendor (e.g., entering into the contract).

- The *operations* phase consists of activities such as ballot design and programming, setup of systems before voting, pre-election testing, vote capture and counting during elections, recounts and system audits after elections, and storage of systems between elections. Responsibility for activities in this phase typically resides with local jurisdictions, whose officials may, in turn, rely on or obtain assistance from system vendors for aspects of these activities.

- *Standards* for voting systems, as will be discussed in a later section, were developed at the national level by the Federal Election Commission in

1990 and 2002 and were updated by EAC in 2005. In the product development phase, voting system standards serve as requirements to meet for developers to build systems. In the acquisition phase, they also provide a framework that state and local governments can use to evaluate systems. In the operations phase, they specify the necessary documentation for operating the systems.

- *Testing* processes are conducted throughout the life cycle of a voting system. Voting system vendors conduct product testing during development of the system and its components. Federal certification testing of products submitted by system vendors is conducted by national voting system testing laboratories (VSTL). States may conduct evaluation testing before acquiring a system to determine how well products meet their state-specific specifications, or they may conduct certification testing to ensure that a system performs its functions as specified by state laws and requirements. Once a voting system is delivered by the system vendor, states and local jurisdictions may conduct acceptance testing to ensure that the system satisfies functional requirements. Finally, local jurisdictions typically conduct logic and accuracy tests related to each election and sometimes subject portions of the system to parallel testing during each election to ensure that the system components perform accurately.

- *Management* processes ensure that each life cycle phase produces a desirable outcome. Typical management activities that span the system life cycle include planning, configuration management, system performance review and evaluation, problem tracking and correction, human capital management, and user training. These activities are conducted by the responsible parties in each life cycle phase.

In 2004, we reported[7] that the performance of electronic voting systems, like any type of automated information system, can be judged on several bases, including their security, accuracy, ease of use, efficiency, and cost. We also reported that voting system performance depends on how the system was designed, developed, and implemented.

[7]GAO, *Elections: Electronic Voting Offers Opportunities and Presents Challenges*, GAO-04-975T (Washington, D.C.: July 20, 2004).

Laboratory Accreditation Plays an Important Role in Ensuring Accurate, Reliable, and Secure Voting Systems

Since the passage of HAVA, the use of electronic voting systems has increased and become the predominant method of voting. However, concerns have been raised about the security and reliability of these systems. As we have previously reported,[8] testing and certifying voting systems is one critical step in acquiring, deploying, operating, and administering voting systems, which better ensures that they perform securely and reliably. Among other things, rigorous execution and careful documentation of system testing is a proven way to help ensure that system problems are found before the systems are deployed and used in an election. To accomplish this, it is vital that the organizations that test the systems be qualified and competent to do so. For voting systems, a key testing organization is a federally accredited, national VSTL.

In general, accreditation is the formal recognition that a laboratory is competent to carry out specific types of tests or calibrations. Federally accredited laboratories perform many different types of testing and related activities on various products, ranging from inspecting grain to certifying maritime cargo gear. The genesis of laboratory accreditation programs owes largely to agencies' need to assure themselves of the competency of the organizations responsible for testing products or services that involve the use of federal funds.

To provide national recognition for competent laboratories, the NIST Director established the National Voluntary Laboratory Accreditation Program (NVLAP) in 1976 at the request of the private sector. Under this program, which is based on internationally accepted standards, NIST accredits laboratories that it finds competent to perform specific types of tests or calibrations. In June 2004, NVLAP announced the establishment, in accordance with HAVA, of an accreditation program for laboratories that test voting systems using standards determined by EAC.

HAVA Assigned EAC and NIST Responsibility for Accrediting VSTLs

Enacted in October 2002, HAVA affected nearly every aspect of the voting process, from voting technology to provisional ballots and from voter registration to poll worker training.[9] In particular, the act authorized $3.86 billion in funding over several fiscal years to replace punch card and mechanical lever voting equipment, improve election administration and accessibility, train poll workers, and perform research and pilot studies.

[8]GAO-05-956.

[9]Help America Vote Act, Pub. L. No. 107-252 (Oct. 29. 2002).

HAVA also established EAC, provided for the appointment of four commissioners, and specified the process for selecting an executive director. Generally speaking, EAC is to assist in the administration of federal elections and provide assistance in administering certain federal election laws and programs.

Since the passage of HAVA in 2002, the federal government has taken steps to implement the act's provisions. For example, after beginning operations in January 2004, EAC updated the existing federal voluntary standards for voting systems, including strengthening provisions related to security and reliability. Additionally, EAC established an interim VSTL accreditation program that leveraged a predecessor program run by the National Association of State Elections Directors, and EAC and NIST then established companion accreditation programs that replaced the interim program.

EAC Updated the Federal Voluntary Standards for Voting Systems

Federal standards for voting systems were first issued in 1990 when the Federal Election Commission published standards.[10] These federal standards identified minimum functional and performance requirements, which states were free to adopt in whole, in part, or not at all, for electronic voting equipment, and specified test procedures to ensure that the equipment met those requirements. In 2002, the Federal Election Commission issued its Voting System Standards (VSS), which updated the 1990 standards to reflect more modern voting system technologies. In 2005, we reported[11] that these standards identified minimum functional and performance requirements for voting systems but were not sufficient to ensure secure and reliable voting systems. As a result, we recommended that EAC work to define specific tasks, measurable outcomes, milestones, and resource needs to improve the voting system standards. Until then, election administrators were at risk of relying on voting systems that were not developed, acquired, tested, operated, or managed in accordance with rigorous security and reliability standards—potentially affecting the reliability of future elections and voter confidence in the accuracy of the vote count.

Following the enactment of HAVA in 2002 and the establishment of EAC in 2004, EAC adopted the Voluntary Voting System Guidelines (VVSG) in

[10]Federal Election Commission, *Performance and Test Standards for Punchcard, Marksense, and Direct Recording Electronic Voting Systems* (January 1990).

[11]GAO-05-956.

2005.[12] The VVSG specify the functional requirements, performance characteristics, documentation requirements, and test evaluation criteria for the national certification of voting systems. Accredited testing laboratories are to use the VVSG to develop test plans and procedures for the analysis and testing of systems in support of EAC's voting system certification program.[13] The VVSG are also used by voting system manufacturers as the basis for designing and deploying systems that can be federally certified.

EAC Established an Interim Accreditation Program

We reported in 2001[14] that the National Association of State Elections Directors was accrediting independent test authorities to test voting equipment against the Federal Election Commission standards. Under this program, three laboratories were accredited. Under HAVA, NIST is to recommend laboratories for EAC accreditation. In 2006, NIST notified EAC that its initial recommendations might not be available until sometime in 2007. As a result, EAC initiated an interim accreditation program and invited the three laboratories accredited by the state elections directors to apply.[15] As part of the interim program, laboratories were required to attest to a set of EAC-required conditions and practices, including certifying the integrity of personnel, the absence of conflicts of interest, and the financial stability of the laboratory. In August and September 2006, EAC granted interim accreditation to two of the three laboratories invited to apply. EAC terminated its interim program in March 2007.

EAC and NIST Have Established Separate but Related Laboratory Accreditation Programs

HAVA assigned responsibilities for laboratory accreditation to both EAC and NIST. In general, to reach an accreditation decision, NIST is to focus on assessing laboratory technical qualifications, while EAC is to use those assessment results and recommendations and augment them with its own review of related laboratory capabilities. See table 1 for the two agencies' HAVA responsibilities.

[12]The VVSG did not take effect until December 2007.

[13]We have ongoing work to review EAC's certification program for the House Committee on House Administration.

[14]GAO-02-90.

[15]The state elections directors' accreditation program was discontinued in July 2006.

Table 1: EAC and NIST Responsibilities under HAVA

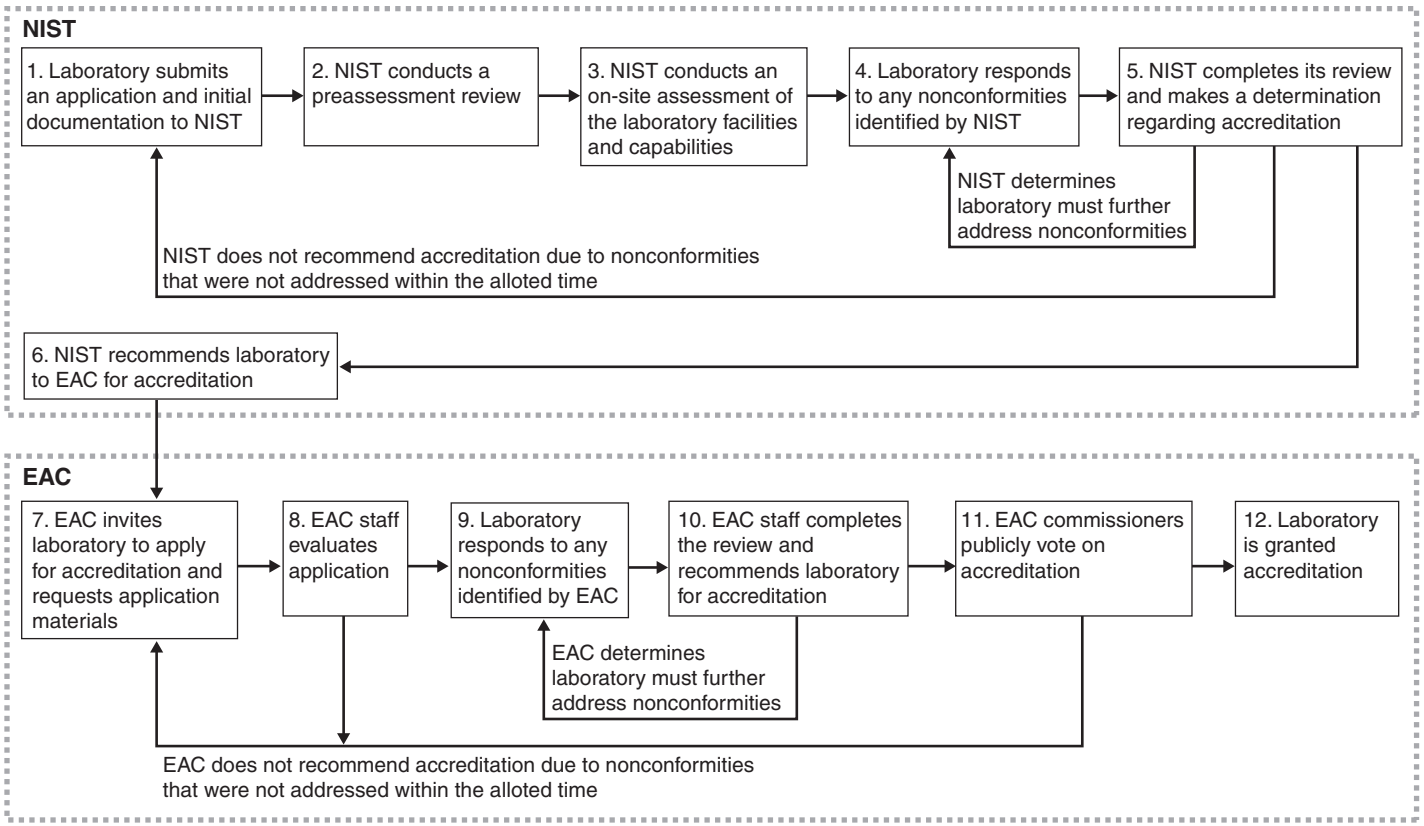
HAVA responsibility	Responsible entity	
	EAC	NIST
Provide for the testing, certification, decertification, and recertification of voting system hardware and software by accredited laboratories.	X	
Conduct evaluations of independent, nonfederal laboratories and submit to EAC a list of those laboratories proposed for accreditation.		X
Vote on the accreditation of any laboratory, taking into consideration the NIST recommendation for it. No laboratory may be accredited unless its accreditation is approved by a vote of EAC.	X	
Publish an explanation for the accreditation of any laboratory not included on the list submitted for recommendation by NIST.	X	
Monitor and review the performance of laboratories accredited by EAC and make recommendations to EAC with respect to the continuing accreditation of laboratories, including recommendations to revoke the accreditation of laboratories.		X
Revoke the accreditation of a laboratory only when approved by a vote of EAC.	X	

Source: GAO analysis of United States Code.

The tasks that NIST is to perform in meeting HAVA's requirements are addressed in an annual interagency agreement executed between the institute and EAC each year. For example, the 2008 interagency agreement states that NVLAP will continue to assess VSTLs and will coordinate with EAC to continually monitor and review the performance of the laboratories. Additionally, the agreement states that the two agencies will coordinate to maintain continuity between their respective accreditation programs.

The NIST and EAC accreditation programs can be viewed together as forming a federal VSTL accreditation process that consists of a series of 12 complementary steps. These steps are depicted in figure 2, where the numbers correspond to a detailed narrative description below.

Figure 2: Overall NIST and EAC Accreditation Processes



Source: GAO analysis.

1. Laboratory Application to NIST

The accreditation process begins when a laboratory submits a completed application to NIST, along with administrative information about the laboratory, the scope of accreditation being applied for, and an agreement to the conditions of accreditation (i.e. practices that must be followed to obtain and maintain accreditation). In addition, the laboratory submits documentation that supports the application, including the laboratory's quality control manual.

2. NIST Preassessment

Using the application and supporting documentation, NIST conducts a preassessment review. Among other things, this review includes

comparing the quality control manual against the requirements in NIST accreditation program guidance. If deficiencies in the documentation are found, NIST requests corrections to satisfy program requirements.

3. NIST On-site Assessment

Following satisfactory completion of the preassessment review, a NIST team visits the laboratory facilities to conduct an on-site assessment. This assessment includes staff interviews, reviews of laboratory records and audit reports, and demonstrations of staff competence to execute planned test methods and procedures. It concludes with the NIST team presenting its findings to laboratory management. While conducting the on-site assessment, the team records its observations and comments.

4. NIST Nonconformity Resolution

NIST prepares a final report, including a list of any nonconformities, and provides it to the laboratory. The laboratory has 30 days to respond as to how it will address the areas of nonconformity. NIST evaluates the laboratory's response and determines whether the nonconformities have been sufficiently addressed. If so, NIST renders an accreditation decision. If not, NIST may contact the laboratory for additional information or may deny accreditation. If a laboratory is denied accreditation, it may reapply to NIST.

5. NIST Accreditation Decision

When a laboratory has no areas of nonconformity, the voting systems program manager makes an accreditation recommendation to the Chief of NVLAP, who is responsible for all NVLAP accreditation decisions and issues all NVLAP accreditation certificates.

6. NIST Recommendation to EAC

In addition to granting the NVLAP accreditation, the Chief provides a recommendation to the Director of NIST. The recommendation is reviewed by NIST's general counsel, and then a letter is sent to EAC that recommends the laboratory for accreditation as a VSTL in accordance with HAVA.

7. Accreditation Application to EAC

After receiving the NIST recommendation, EAC sends the recommended laboratory an invitation to apply to the EAC accreditation program. In the letter, EAC specifies a list of information and documentation that the laboratory must provide.

8. EAC Accreditation Review

The laboratory submits an application and supporting information to EAC. EAC staff review the application package for completeness. In addition, staff review the supporting materials vis-a-vis accreditation program requirements. During the course of the review, staff may contact the laboratory to clarify the information provided or to inform the laboratory of requirements that are not sufficiently addressed.

9. EAC Nonconformity Resolution

EAC submits correspondence (generally through e-mail) to the laboratory identifying areas of nonconformity. The laboratory then provides the missing and/or clarifying documentation. EAC staff determines if the provided information adequately addresses the nonconformity issues, contacting the laboratory as needed.

10. Recommendation to EAC Commissioners

The EAC accreditation program director, through the EAC executive director, makes a recommendation to the EAC commissioners as to whether the laboratory should be accredited by EAC. Along with the recommendation, the program director provides the review results, as well as laboratory-provided materials.

11. Vote by EAC Commissioners

The commissioners review the material provided and may request additional clarification, as needed. At a public meeting, the commissioners vote on whether to accredit the laboratory. Should the EAC commissioners vote to deny the accreditation, the laboratory must wait for EAC to invite the laboratory to reapply.

12. EAC Accreditation Granted

When the commissioners vote to accredit a laboratory, EAC's executive director issues an accreditation certificate identifying the scope and effective dates of the VSTL accreditation. In addition, the program director makes information about the laboratory's accreditation publicly available via the EAC Web site. At this point, the laboratory is authorized to operate as a VSTL under EAC's testing and certification program.

Postaccreditation Monitoring Activities

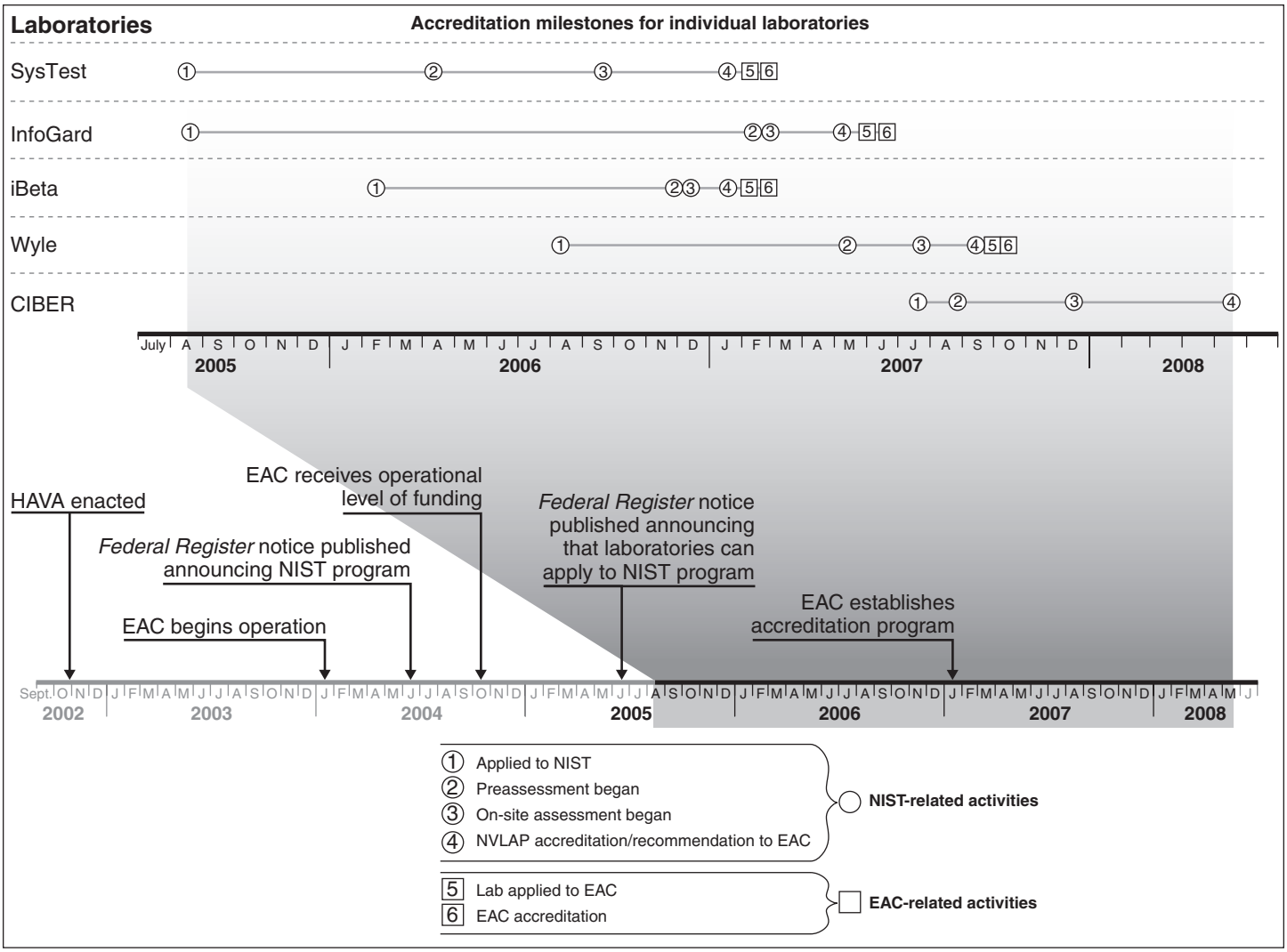
Once a laboratory has been accredited, both NIST and EAC are to monitor its compliance with the terms of its accreditation. In doing so, NVLAP staff may visit a laboratory at any time, whether for cause or on a random selection basis, and these visits can be either scheduled in advance with the laboratory or unannounced. If a laboratory is found to not be in compliance, the accreditation may either be suspended[16] or revoked, depending on the nature of the issues involved. A suspension provides the opportunity for the laboratory to address the identified issues. EAC also monitors the procedures and practices of accredited laboratories through documentation reviews and visits. If a VSTL is unable to remedy identified compliance issues, the EAC program director can propose that the accreditation be suspended and ultimately revoked. As provided for under HAVA, the EAC commissioners would vote on any proposed revocation.

Status of Completed VSTL Accreditation Activities

As of May 2008, EAC has accredited four laboratories. These laboratories are SysTest Labs, LLC; Wyle Laboratories, Inc.; iBeta Quality Assurance; and InfoGard Laboratories, Inc. A fifth laboratory, CIBER Inc., has been granted NVLAP accreditation and has been recommended to, but not yet accredited by, EAC. InfoGard Laboratories, Inc., whose NVLAP accreditation expires in June 2008, has recently notified NIST and EAC that it would not apply to renew its accreditation, citing the volatility of the voting system environment as one reason. The timeline for each of these accreditations, and other accreditation program activities, is found in figure 3.

[16]A suspension provides the laboratory an opportunity to address the identified issues.

Figure 3: VSTL Accreditation Program Activities



Source: GAO based on NIST- and EAC-provided data.

NIST Has Defined and Implemented an Accreditation Approach That Reflects Relevant Standards but Is Missing Details Needed for Consistent and Verifiable Implementation

NIST's defined approach to accrediting voting system laboratories largely reflects applicable HAVA requirements and relevant international standards, both of which are necessary to an effective program. However, this approach is continuing to evolve based on issues realized during NIST's implementation experience to date. In particular, because NIST's defined program does not, for example, specify the nature and extent of assessment documentation to generate or retain or specify the version of the voting system standards to be used, our analysis of NIST's efforts in accrediting four laboratories could not confirm that the agency has consistently followed its defined accreditation program. NIST officials stated that these limitations are due in part to the relative newness of the program and that they will be addressed by updating the accreditation program handbook. However, they said that they do not have documented plans to accomplish this. Until these limitations are addressed, NIST will be challenged in accrediting voting system laboratories in a consistent and verifiable manner.

NIST Voting System Accreditation Program Reflects HAVA Requirements

NIST has defined its voting system accreditation program to address relevant HAVA requirements. According to HAVA, NIST is to

- conduct reviews of independent, nonfederal voting system testing laboratories and submit to EAC a list of proposed voting system testing laboratories and
- monitor and review the performance of those proposed laboratories that EAC accredits, including making recommendations to EAC regarding accreditation continuance and revocation.

NIST's defined voting system accreditation program satisfies both of these requirements. With respect to the first, NIST announced in June 2004 the establishment of its voting system testing laboratory accreditation program as part of NVLAP, a statutorily created program for unbiased, third parties to establish the competence of national independent laboratories. As such, NIST adopted its NVLAP handbook[17] as the basis for

[17]NIST, *NIST Handbook 150: National Voluntary Laboratory Accreditation Program Procedures and General Requirements* (Gaithersburg, Md.: February 2006).

its defined approach to reviewing VSTLs and has supplemented it with a handbook that is specific to voting system testing.[18]

With respect to the second HAVA requirement, the supplemental handbook cited above states that the NIST Director will recommend NVLAP-accredited VSTLs to EAC for subsequent commission accreditation. Additionally, NIST's handbooks provide for both monitoring accredited laboratories and for making recommendations regarding a laboratory's continued accreditation. For example, the handbook states that a monitoring visit may occur at both scheduled and unscheduled times and the scope may be limited to a few items or include a full review. It also states that a reaccreditation review shall be conducted in accordance with the procedures used to initially accredit laboratories. Further, the handbook also identifies accreditation or reaccreditation decision options, including granting, denying, or modifying the scope of an accreditation.

According to NIST officials, these HAVA requirements are relevant and important to defining an effective voting system testing laboratory accreditation program. By incorporating them, NIST has reflected one key aspect of an effectively defined program.

NIST Has Incorporated Relevant International Accreditation Standards into Its VSTL Accreditation Program

NIST's VSTL accreditation program reflects internationally recognized standards for establishing and conducting accreditation activities. These standards are published by the International Organization for Standardization (ISO), and the two that are germane to this accreditation program are (1) ISO/IEC 17011,[19] which establishes general requirements for accreditation bodies and (2) ISO/IEC 17025,[20] which establishes the general requirements for reviewing the competence of laboratories. According to NIST program documentation, this allows NVLAP to both operate as an unbiased, third party accreditation body and to utilize a quality management system compliant with international standards. As a

[18]NIST, *NIST Handbook 150-22: National Voluntary Laboratory Accreditation Program: Voting System Testing* (Gaithersburg, Md.: December 2005).

[19]ISO, *ISO/IEC 17011: Conformity Assessment: General Requirements for Accreditation Bodies Accrediting Conformity Assessment Bodies* (Geneva, Switzerland: Feb. 15, 2005).

[20]ISO, *ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories* (Geneva, Switzerland: May 15, 2005).

result, NIST has incorporated key aspects of an effective accreditation body into its voting system accreditation program.

NIST Program Meets ISO Accreditation Body Requirements

ISO/IEC 17011 requires that an accrediting body have, among other things, (1) a management system for accreditation activities, (2) a policy defining the types of records to be retained and how those records will be maintained, (3) a clear description of the accreditation process that covers the rights and responsibilities of those seeking accreditation, and (4) a clear description of the accreditation activities to be performed.

NIST VSTL accreditation program-related documentation, including its program handbooks, satisfies each of these requirements. In fact, NIST has cross-referenced its documentation to each ISO/IEC 17011 requirement. Specifically, the first requirement is cross-referenced to the NVLAP Management System Manual,[21] which describes the overall accreditation program's management policies and control structure, and the second is cross-referenced to the program's record keeping policy, which specifies what types of records should be maintained and how they should be maintained. The third and fourth requirements are cross-referenced to the accreditation process descriptions in both the Management System Manual and the general handbook. Together, these documents contain, for example, (1) the rights of laboratories applying for accreditation and (2) the scope of accreditation activities to be performed, including a preassessment review, an on-site review, and a final on-site assessment report.

NIST Program Meets ISO Laboratory Accreditation Review Requirements

ISO/IEC 17025 requires that accreditation reviews cover specific topics. These include (1) laboratory personnel independence and conflicts of interest; (2) a laboratory system for quality control (i.e., a framework for producing reliable results and continuous improvement to laboratory procedures); and (3) a laboratory mechanism for collecting and responding to customer complaints. Additionally, the standard establishes basic technical requirements that a laboratory has to meet, and thus that reviews are to cover, including (1) competent laboratory personnel who are capable of executing the planned tests, (2) appropriate tests and test methods, and (3) clear and accurate test result documentation.

[21]NIST, *National Voluntary Laboratory Accreditation Program: Management System Manual, Revision 2* (Gaithersburg, Md.: Mar. 25, 2008).

NIST voting system testing laboratory accreditation program-related documents, including its program handbooks, satisfy these requirements. First, the general handbook defines the requirement for a laboratory to have personnel that are independent and free of any conflict of interest. Second, the handbook requires that a laboratory have a management quality control system and that this system provide for reliable results and continuous improvement to laboratory procedures. Third, the handbook requires that a laboratory have a mechanism for receiving and responding to customer complaints. Last, the handbook establishes certain technical requirements that a laboratory must meet, such as having competent laboratory personnel capable of executing the planned tests, using appropriate tests and test methods, and documenting test results in a clear and accurate manner.

For several of these requirements, NIST's voting-specific supplemental handbook augments the general handbook. For example, this supplemental handbook requires laboratories to submit a quality control manual, as well as information to demonstrate the competence of laboratory administrative and technical staff. Further, it requires that a laboratory's training program be updated so that staff can be retrained as new versions of voting system standards are issued.

NIST Voting System Accreditation Program Does Not Reflect Its Own Findings on the Need for Assessor Qualifications and Training and Key Assessment Criteria

NIST has reported on the importance of ensuring that those persons who perform accreditation assessments are sufficiently qualified and that the assessments themselves are based on explicitly defined criteria and are adequately documented. Nevertheless, NIST has not fully reflected key aspects of these findings in its defined approach to accrediting voting system testing laboratories. For example, it has not specified the basis for determining the qualifications of its accreditation assessors, and while a draft update to its handbook now includes the specific voting system standards to be used when performing an accreditation assessment, this handbook was only recently approved. According to NIST officials, these gaps are due to the newness of the accreditation program and will be addressed in the near future. Because these gaps have confused laboratories as to what standards they were to meet, and may have resulted in differences in how accreditations have been performed to date, it is important that the gaps be addressed.

NIST Has Not Specified Requirements for Assessor Qualifications and Training

NIST has reported[22] on the importance of having competent and qualified human resources to support accreditation programs. According to these findings, an accreditation program should, among other things, provide for

- having experienced and qualified assessors to perform accreditation activities;
- demonstrating an assessors' qualifications using defined documentation and explicit criteria that encompass the person's education, experience, and training; and
- training (initial and continuing) for assessors.

NIST's defined approach to VSTL accreditation does not provide for all these requirements. To its credit, its program handbook identifies the need for experienced and qualified assessors in the execution of accreditation activities and provides for each assessor's qualifications to be documented. Further, it has defined generic training that applies to all of its accreditation assessors. For example, the NVLAP Assessor Training Syllabus includes training on ISO/IEC 17011 and 17025, as well as training on the NVLAP general handbook. In addition, the VSTL accreditation program manager stated that new assessors receive training on the 2002 VSS and 2005 VVSG and that periodic training seminars are provided to assessors on changes to either the general handbook or the 2005 VVSG.

In addition, the program manager told us that candidate assessors must submit some form of documentation (e.g., a resume), and that this documentation is used to evaluate, rank, and select candidates that are best qualified. The NIST VSTL assessors that we interviewed confirmed that they were required to submit such documentation at NIST's request.

However, NIST's defined approach does not cite the explicit capabilities and qualifications that an assessor must meet or the associated documentation needed to demonstrate these capabilities and qualifications. According to the program manager, this is because the field of potential assessors in the voting system arena is small and specialized and because they focused on defining other aspects of the program that were higher priorities. Further, NIST has not defined and documented the specific training requirements needed to be a VSTL lead assessor or a

[22]NIST, *The ABC's of the U.S. Conformity Assessment System*, NISTIR 6014 (Gaithersburg, Md.: April 1997).

technical assessor for the VSTL program. According to the program manager, this is because these assessors receive all the training they need by working on the job with more experienced assessors. Not specifying criteria governing assessor qualifications and training is of concern because differences in assessors' capabilities could cause inconsistencies in how assessments are performed.

NIST's Approach Does Not Fully Specify Criteria for Evaluating and Documenting VSTL Capabilities

NIST recognizes the importance of specifying explicit criteria against which all candidate laboratories will be assessed and fully documenting the assessments that are performed. Specifically, the general handbook provides the criteria and requirements that will be used to evaluate basic laboratory capabilities. It also states that technical requirements specific to a given field of accreditation are published in program-specific handbooks. To that end, NIST published a supplemental program-specific handbook in December 2005 that provided the voting-specific requirements to be used to evaluate VSTLs, additional guidance, and related interpretive information.[23]

NIST's 2005 supplemental handbook does not contain sufficient criteria against which to evaluate VSTLs. It identifies specific requirements that laboratories are to demonstrate relative to the 2002 VSS but not the 2005 VVSG. For example, the handbook states that laboratories are expected to develop, validate, and document test methods that meet the 2002 VSS. However, it does not refer to the 2005 VVSG. In addition, the program-specific checklist that accompanies this version of the handbook does not identify all the 2005 VVSG standards against which laboratories are evaluated. Specifically, this checklist makes reference to the VVSG in relation to just a few checklist requirements.

According to the NIST program manager, the 2005 handbook did not refer to the 2005 VVSG requirements because only the 2002 VSS requirements were mandatory at the time it was published. He further stated that, despite the fact that the 2005 VVSG requirements were not included in that handbook, NIST assessors were expected to use them when performing the first laboratory assessments. Representatives for two laboratories stated that because these requirements were not documented or identified in the NIST handbooks, they did not learn that they would be required to demonstrate 2005 VVSG-based capabilities until the NIST on-site assessment teams arrived.

[23]NIST, *NIST Handbook 150-22*.

In December 2007, NIST released draft revisions of the voting program-specific handbook and checklist, stating that labs are expected to meet both 2002 VSS and 2005 VVSG. In addition, the 2007 draft handbook clearly specifies that laboratories must demonstrate how developed test methods and planned tests trace back to and satisfy both the 2002 VSS and the 2005 VVSG. Taken together, the new handbook and checklist should better identify the requirements and criteria used to evaluate a laboratory and document the results. According to NIST, the new handbook and checklist have recently been finalized, and both are now in use.[24]

Available Documentation Does Not Show That NIST Has Consistently Followed All Aspects of Its Defined Accreditation Approach

NIST has found that reliable and accurate documentation provides assurance that laboratory accreditation activities have been effectively fulfilled.[25] However, in its efforts to date in accrediting four VSTLs, documentation of the assessments does not show that NIST has fully followed its defined accreditation approach. While we could not determine whether this is due to incomplete documentation of the steps performed and the decisions made during an assessment or due to steps not being performed as defined, this absence of verifiable evidence raises questions about the consistency of the assessments and the resultant accreditations. Without adequately documenting each assessment, including all steps performed and the basis for any steps not performed, such questions may continue to be raised.

To NIST's credit, available documentation shows that it consistently followed some aspects of its defined approach in accrediting the four laboratories. For example, we verified that NIST received an application from each of the laboratories as required, and our review of completed checklists and summary reports shows that preassessment reviews and on-site assessments were performed for each laboratory, as was required. According to a lead assessor, this review usually focused on the laboratories' quality assurance manuals. Moreover, the completed checklists identified whether the requirement was met or not for each listed requirement, and included comments, in some cases, as to how a laboratory addressed a requirement. Also as required, NIST received

[24]NIST, *Handbook 150-22 2008 Edition: National Voluntary Laboratory Accreditation Program: Voting System Testing* (Gaithersburg, Md.: May 2008); *NIST Handbook 150-22 Checklist: Voting System Testing Program (Rev. 2008-06-25)*.

[25]NIST, *National Voluntary Laboratory Accreditation Program: Management System Manual, Revision 2*.

laboratory responses describing how unmet requirements were addressed within specified time frames, used the responses in making accreditation decisions, and notified EAC of its decisions via letters of recommendation. Furthermore, NIST has recently begun reaccreditation reviews at two laboratories, as required.

However, documentation does not show that NIST has consistently followed other aspects of its defined approach. Our analysis of the checklists that are to be used to both guide and document a given assessment, including identifying unmet requirements and capturing assessor comments and observations, shows some differences. For example:

- One type of checklist (the supplemental handbook checklist) was prepared for only two of the four laboratory assessments. According to the program manager, this is because even though a draft revision of this checklist was actually used to assess the other two laboratories, the assessment results were recorded on a different checklist (the general handbook checklist). While this is indicated on one of the two checklists, it is not indicated on the other.

- On the checklist used for one laboratory, an assessor marked several sections as "TA" with no explanation as to what this means. Also, the checklist used for another laboratory did not identify whether most of the requirements were met or not met. Further, the checklist for a third laboratory had one section marked as "not applicable" but included no explanation as to why that section did not apply, while the checklist for a different laboratory marked the same section as "not applicable" but included a reason for doing so.

Notwithstanding these differences, the program manager told us that each laboratory was assessed using the same requirements and all assessments to date were performed in a consistent manner. On the basis of available documentation, however, we could not verify that this is the case. As a result, it is not clear that NIST has consistently followed its defined approach.

Available documentation also does not show that NIST followed other aspects of its approach. For example:

- The program handbook states that each laboratory is to identify the requested scope of accreditation in its application package. However, our analysis of the four application packages shows that two laboratories did

not specify a requested scope of accreditation. According to the program manager, the scope of accreditation for all laboratories was the 2002 VSS and 2005 VVSG because, even though the latter standards were not yet in effect at the time, they were anticipated to be in effect in the near future.[26] However, NIST did not have documentation that notified the laboratories of this scope of accreditation or that indicated whether this scope was established by EAC, NIST, or the laboratories.

- The program handbook states that after receiving a laboratory's application package, NIST will acknowledge its receipt in writing and will inform the laboratory of the next steps in the accreditation process. However, NIST did not have documentation demonstrating that this was done. According to the program manager, this was handled via telephone conversations. However, representatives for several laboratories noted that these calls did not clearly establish expectations, adding that some expectations were not communicated until the NIST team assessors arrived to conduct the on-site assessment.

The program manager stated that these deviations from the defined approach are attributable to the relative newness of the program, but despite these discrepancies, each laboratory was assessed consistently. However, we could not verify this, and thus it is not clear that NIST has consistently followed its defined approach. According to this official, future versions of the program handbook would address these limitations. However, documented plans for doing so have not been developed.

EAC's Recently Drafted Accreditation Approach and Its Earlier Performed Laboratory Accreditations Lack Key Effectiveness Factors and Features

EAC has recently defined its voting system laboratory accreditation approach in a draft program manual. However, this draft manual omits important content. While addressing relevant HAVA requirements, the draft manual does not adequately define key accreditation factors that NIST has identified, and a key accreditation feature that we have previously reported as being integral to an effective accreditation program. Moreover, not all factors and features that the draft manual does include have been defined to a level that would ensure thorough, consistent, and verifiable implementation. Because this manual was not available for EAC to use on the four laboratory accreditations that it has completed, the accreditations were performed using a largely undocumented series of steps. As a result, the thoroughness and consistency of these accreditations is not clear. According to EAC

[26]As mentioned earlier, these guidelines became effective in December 2007.

officials, these gaps are due to the agency's limited resources being focused on other issues, and will be addressed as its accreditation program evolves. However, they said that they do not yet have documented plans to accomplish this. Until EAC fully defines a repeatable VSTL accreditation approach, it will be challenged in its ability to treat all laboratories consistently and produce verifiable results.

EAC Has Defined a Draft Accreditation Approach that Meets HAVA Requirements

In February 2008, EAC issued a draft version of a VSTL accreditation program manual[27] for public comment. According to HAVA, EAC's accreditation program is to meet certain requirements. Specifically, it is to provide for voting system hardware and software testing, certification, decertification, and recertification by accredited laboratories. Additionally, it is to base laboratory accreditation decisions, including decisions to revoke an accreditation, on a vote of the commissioners, and it is to provide for a published explanation of any commission decision to accredit any laboratory that was not first recommended for accreditation by NIST.

To EAC's credit, its draft accreditation program manual addresses each of these requirements. First, the manual defines the role that the laboratories are to play relative to voting system testing, certification, recertification and decertification, and it incorporates by reference an EAC companion voting system certification manual[28] that defines requirements and process steps for voting system testing and certification-related activities.

With respect to the remaining three HAVA requirements, the draft EAC accreditation manual also requires (1) that the commissioners vote on the accreditation of laboratories recommended by NIST for accreditation, (2) that EAC publish an explanation for the accreditation of any laboratory not recommended by NIST for accreditation, and (3) that the commissioners vote on the proposed revocation of a laboratory's accreditation.

According to EAC officials, its draft approach incorporates HAVA requirements because the commission is focused on meeting its legal obligations in all aspects of its operations, including VSTL accreditation. In

[27]EAC, *Voting System Test Laboratory Accreditation Program Manual* (draft, Washington, D.C., February 2008).

[28]EAC, *Testing and Certification Program Manual* (Washington, D.C.: January 2007).

doing so, EAC has addressed one important aspect of having an effective accreditation program.

EAC Draft Approach Does Not Adequately Define Key Accreditation-Related Steps and Decision Criteria

Beyond addressing relevant HAVA requirements, EAC's draft accreditation manual defines an accreditation process, including program phases, requirements, and certain evaluation criteria. However, it does not do so in a manner that fully satisfies factors that NIST has reported can affect the effectiveness of accreditation programs.[29] Moreover, it does not adequately address a set of features that our research shows are common to federal accreditation programs[30] and that can influence a program's effectiveness. According to EAC officials, these factors and features are not fully addressed in the draft program manual because its accreditation program is still in its early stages of development and is still evolving. Until they are fully addressed, EAC's accreditation program's effectiveness will be limited.

Key NIST Accreditation Factors Not Fully Addressed

According to NIST, having confidence in and ensuring appropriate use of an accredited testing laboratory requires that accreditation stakeholders have an adequate understanding of the accreditation process, scope, and related criteria. NIST further reports that confidence in the accreditation process can be traced to a number of factors that will influence the thoroughness and competence of accreditation programs, and thus these factors can be viewed as essential accreditation program characteristics. They include having

- published procedures governing how the accreditation program is to be executed, such as procedures for granting, maintaining, modifying, suspending, and withdrawing accreditation;
- specific instructions, steps, and criteria for those who conduct an accreditation assessment (assessors) to follow, such as a test methodology that is acceptable to the accreditation program;
- knowledgeable and experienced assessors to execute the instructions and steps and apply the related criteria; and

[29]NIST, *The ABC's of the U.S. Conformity Assessment System*, *NISTIR 6014*.

[30]GAO, *Laboratory Accreditation: Requirements Vary Throughout the Federal Government*, GAO/RCED-89-102 (Washington, D.C.: Mar. 28, 1989).

- complete records on the data collected, results found, and reports prepared relative to each assessment performed.

EAC's draft accreditation program manual addresses one of these factors but it does not fully address the other three. (See table 2.) For example, while the manual requires that EAC maintain records, it only addresses the retention of records associated with the testing of voting systems and not those associated with the accreditation of laboratories. EAC officials told us that testing records are meant to include accreditation records, although they added that this is not explicit in the manual and needs to be clarified. Further, the manual is silent on the steps to be followed and criteria to be applied in reviewing a laboratory's application and the qualifications required for accreditation reviewers. By not fully addressing these factors, EAC increases the risk that its accreditation reviews will not be performed consistently and comprehensively.

Table 2: Summary of Extent to Which EAC Draft Approach Addresses NIST-Identified Accreditation Factors

Accreditation program factor	Addressed by EAC?
Published accreditation program procedures	Yes
Specific accreditation instructions	No
Established accreditation personnel qualifications	No
Adequate maintenance of records	Partially

Source: GAO analysis of EAC data.

All but One Key GAO-Reported Accreditation Program Feature Has Been Addressed

As we have previously reported,[31] the nature and focus of federal programs for accrediting laboratories vary, but nevertheless include certain common features. In particular, these programs require laboratories to provide certain information to the accrediting body, and they provide for evaluation of this information by the accrediting body in making an accreditation determination. As we reported, the required information is to include, among other things, the laboratory's (1) organizational information, (2) records and record-keeping policy, (3) test methods and procedures, (4) conflict of interest policy, and (5) financial stability.

To its credit, EAC's draft accreditation manual provides for laboratories to submit information relative to each of these features that are common to federal accreditation programs. For example, it provides for laboratories

[31] GAO/RCED-89-102.

to submit organizational information, such as location(s), ownership, and organizational chart; a written policy for maintaining accreditation-related records for 5 years; conflict of interest policies and procedures; test-related polices and procedures, as well as system-specific test plans; and financial information needed to demonstrate stability. Moreover, for four of the five features, the manual identifies the specific types of information needed for accreditation and how the information is to be evaluated, including the criteria that are to be used in evaluating it. However, for the financial stability feature, the manual does not describe what specific documents are required from the laboratory to satisfy this requirement, nor does the manual indicate how information provided by a laboratory will be evaluated.

Table 3: Summary of Extent to Which EAC Satisfies Features Common to Federal Accreditation Programs

Accreditation program feature	EAC requires information?	EAC specifies information scope and level of detail?	EAC specifies how information is to be evaluated and criteria to be used?
Organizational information	Yes	Yes	Yes
Records and record-keeping	Yes	Yes	Yes
Test methods and procedures	Yes	Yes	Yes
Conflict of interest policy	Yes	Yes	Yes
Assurance of financial stability	Yes	No	No

Source: GAO analysis of EAC data.

At the time of our review, EAC's Director of Voting System Testing and Certification[32] told us that the draft accreditation manual was to be submitted for approval and that this draft did not address all of the limitations cited above.[33] For example, it would not contain the information needed and the evaluation approach and criteria to be used in

[32]The EAC Director of Voting System Testing and Certification also manages EAC's VSTL accreditation program.

[33]On August 4, 2008, EAC reported that it approved an initial version of its program manual. However, we did not evaluate this initial version to determine the extent to which it addresses limitations that we found in the draft manual because it was approved after EAC provided comments on a draft of, and we had finalized, this report.

making determinations about financial stability because this decision is to be based on what the director referred to as a "reasonableness" test that involves EAC evaluation of the information relative to that provided by other laboratories. Further, while EAC officials said that they plan to evolve their approach to VSTL accreditation and to address these gaps, EAC does not have documented plans for accomplishing this. Without clearly defining information to be used and how it is to be used, EAC increases the risk that financial stability determinations will not be consistently and thoroughly made.

Available Documentation Does Not Demonstrate EAC's Basis for Accrediting Laboratories to Date

As of May 2008, EAC has accredited four laboratories,[34] but the documentation associated with each of these accreditations is not sufficient to recreate a meaningful understanding of how each evaluation was performed and how decisions were made, and thus, the bases for each accreditation were not clear. Specifically, each of the accreditations occurred before EAC had defined its approach for conducting them. Because of this, EAC performed each one using a broadly defined process outlined in a letter to each laboratory and an associated checklist that only indicated whether certain documents were received. Our analysis of these letters showed that the correspondence sent to each laboratory was all the same, identifying three basic review steps to be performed and citing a list of documents that the laboratories were to provide as part of their applications.[35] However, the letters did not describe in any manner how EAC would review the submitted material, including the criteria to be used.

According to EAC officials, the review steps were not documented. Instead, they were derived by a single reviewer using (1) the applications and accompanying documents submitted by the laboratories, (2) familiarity with the materials used by the state election directors-sponsored accreditation program, and (3) the judgment of each reviewer. Further, while the reviews were supported by a checklist that covered

[34]According to the NIST program manager, a fifth laboratory has been accredited by NVLAP but not yet recommended to EAC.

[35]The steps were to: 1) provide information, such as the laboratory's conflict of interest policy, evidence of insurance coverage limits, and audited financial statements; 2) provide a signed, standardized letter of agreement to abide by the EAC program terms; and 3) provide a signed certification of laboratory practices and conditions, such as having policies in place with respect to personnel practices, record-keeping requirements, and financial stability.

each of the items that was to be included in the laboratory applications and provided space for the reviewer(s) to make notes relative to each of these items, the checklists did not include any guidance or methodology, including criteria, for evaluating the submitted items. Rather, the EAC accreditation program director told us that he was the reviewer on all the accreditations and he applied his own, but undocumented, tests for reasonableness in deciding on the submissions' adequacy and acceptability.

Our analysis of the checklists for each laboratory accreditation showed that while the same checklist was used for each laboratory, the checklists did not provide a basis for evaluating and documenting the basis for the sufficiency of those documents. In some cases, additional communications occurred between the reviewer and the laboratory to obtain additional documents. However, no documentation was available to demonstrate what standards or other criteria the laboratories were held to or how their submissions were otherwise reviewed. For example, each of the checklists indicated that each laboratory provided "a copy of the laboratory's conflict of interest policy." However, they did not specify, for example, whether the policy adequately addressed particular requirements. Nevertheless, for three of the four accredited laboratories, documentation shows that EAC sought clarification on or modification to the policies provided, thus suggesting that some form of review was performed against more detailed requirements. Similarly, while the checklists indicate that the laboratories disclosed their respective coverage limits for general liability insurance policies, and in one case EAC communicated to the laboratory that the limits appeared to be low, no documentation specifies the expected coverage limits. According to the EAC Director of Voting System Testing and Certification, this determination was made after comparing limits among the laboratories and was not based on any predetermined threshold. Further, while the checklists indicate that each laboratory provided audited financial statements, there is no documentation indicating how these statements were reviewed.

According to the EAC program director, the lack of documentation demonstrating the basis for EAC's laboratory accreditations is due to the need at the time to move quickly in accrediting the laboratories and the fact that use of the same individual to review the accreditation evaluation negated the need for greater documentation. Without such documentation, however, we could not fully establish how the accreditations were performed, including whether there was an adequate basis for the

accreditation decisions reached and whether they were performed consistently.

Conclusions

The effectiveness of our nation's overall election system depends on many interrelated and interdependent variables, including the security and reliability of voting systems. Both NIST and EAC play critical roles in ensuring that the laboratories that test these two variables have the capability, experience, and competence necessary to test a voting system against the relevant standards. NIST has recently established an accreditation program that largely accomplishes this, and while EAC is not as far along, it has a foundation upon which it can build.

However, important elements are still missing from both programs. Specifically, the current NIST approach does not define requirements for assessor qualifications and training or ensure that assessments are fully documented. Additionally, EAC has not developed program management practices that are fully consistent with what NIST has found to be hallmarks of an effective accreditation program, nor has the agency adequately specified how evaluations are to be performed and documented. As a result, opportunities exist for NIST and EAC to further define and implement their respective programs in ways that promote greater consistency, repeatability, and transparency—and thus improve the results achieved. It is also important for NIST and EAC to follow through on their stated intentions to evolve their respective programs, building on what they have already accomplished through the development and execution of well-defined plans of action. If they do not, both will be challenged in their ability to consistently provide the American people with adequate assurance that accredited laboratories are qualified to test the voting systems that will eventually be used in U.S. elections.

Recommendations for Executive Action

To help NIST in evolving its VSTL accreditation program, we recommend that the Director of NIST ensure that the accreditation program manager develops and executes plans that specify tasks, milestones, resources, and performance measures that provide for the following two actions:

- Establish and implement transparent requirements for the technical qualifications and training of accreditation assessors.

- Ensure that each laboratory accreditation review is fully and consistently documented in accordance with NIST program requirements.

To help EAC in evolving its VSTL accreditation program, we recommend that the Chair of the EAC ensure that the EAC Executive Director develops and executes plans that specify tasks, milestones, resources, and performance measures that provide for the following action:

- Establish and implement practices for the VSTL accreditation program consistent with accreditation program management guidance published by NIST and GAO, including
  - documentation of specific accreditation steps and criteria to guide assessors in conducting each laboratory review;
  - transparent requirements for the qualifications of accreditation reviewers;
  - requirements for the adequate maintenance of records related to the VSTL accreditation program; and
  - requirements for determining laboratory financial stability.

Agency Comments and Our Evaluation

Both NIST and EAC provided written comments on a draft of this report, signed by the Deputy Director of NIST and the Executive Director of EAC, respectively. These comments are described below along with our response to them.

In its comments, NIST stated that it appreciates our careful review of its VSTL program and generally concurs with our conclusions that its program must continue to evolve and improve. However, NIST also provided comments to clarify the current status of the program relative to three of our findings.

- With respect to our finding that NIST's defined approach for accrediting VSTLs does not cite explicit qualifications for the persons who conduct the technical assessments, the institute stated that it does explicitly cite assessor qualifications for its overall national laboratory accreditation program, adding that this approach to specifying assessor qualifications has a proven record of success. It also stated that the overall program's management manual requires all assessors to meet defined criteria in such areas as laboratory experience, assessment skills, and technical knowledge, and that candidate assessors must submit information

addressing each of these areas as well as factors addressing technical competence in a given laboratory's focus area (e.g., voting systems). Further, it stated that candidate assessors' qualification ratings and rankings are captured in work sheets.

In response, we do not disagree with any of these statements. However, our finding is that NIST's defined approach for VSTL accreditation does not specify requirements for persons who assess those laboratories that specifically test voting systems. In this regard, NIST's own written comments confirm this, stating that specific requirements for assessors are not separately documented for each of its national laboratory accreditation programs, such as the VSTL program. Therefore, we have not modified this finding or the related recommendation.

- Regarding our finding that NIST's defined approach for accrediting VSTLs has not always cited the current voting system standards, the institute affirmed this in its comments by stating that the VSTL program handbook that it provided to us only cites the 2002 system standards, as these were the only standards in place when the handbook was published. However, NIST also noted that when the 2005 system guidelines were adopted in December 2005, it began the process of updating the handbook and associated assessment checklist, and that the handbook update was recently finalized for publication and is now being used.

  In response, we stand by our finding that NIST's defined approach has not always cited the current voting system standards, which NIST acknowledges in its comments. However, we also recognize that NIST has recently addressed this inconsistency by finalizing its new handbook and the associated assessment checklist. In light of NIST's recent actions, we have updated the report to acknowledge the finalization of the handbook and checklist, and removed the associated recommendation that was contained in our draft report for NIST to ensure that its defined approach addresses all required voting system standards.

- Regarding our finding that available documentation from completed accreditations does not show that NIST has consistently followed all aspects of its defined approach, the institute stated that, among other things, all required documents for its VSTL accreditation program are currently in use and reflect the recent update to its handbook and checklist, and that all these documents are securely maintained.
  In response, we do not question these statements; however, they are not pertinent to our finding. Specifically, our finding is that the four completed accreditations that we reviewed were not consistently documented. As we

state in our report, we reviewed the documentation associated with the accreditation assessments for these four laboratories, and we found that all four were not documented in a similar manner, even though they were based on the same version of the program handbook. For example, neither the laboratory notifications of the scope of the assessment nor the next steps in the accreditation process were consistently documented. Therefore, we have not modified our finding, but have slightly modified our recommendation to make it clear that its intent is to ensure that all phases of the accreditation review are fully and consistently documented.

In its comments, EAC described our review and report as being helpful to the commission as it works to fully develop and implement its VSTL program. It also stated that it agrees with the report's conclusions that additional written internal procedures, standards, and documentation are needed to ensure more consistent and repeatable implementation of the program. The commission added that it generally accepts our recommendations and will work hard to implement them. To assist it in doing so, it sought clarification about two of our recommendations, as discussed below.

- EAC stated that the recommendation in our draft report for the commission to develop specific accreditation steps and criteria was broadly worded, and thus the recommendation's intent was not clear. EAC also stated that it interpreted the recommendation to mean that it should define internal instructions to guide assessors in performing an accreditation, and that the recommendation was not intended to have any impact on its published requirements and procedures governing, for example, granting, suspending, or withdrawing an accreditation. We agree with EAC's interpretation, as it is in line with the intent of our recommendation. To avoid the potential for any future misunderstanding, we have modified the wording of the recommendation to clarify its intent.

- EAC stated that the recommendation in our draft report for the commission to develop transparent technical requirements for the qualifications of its assessors may be confusing because, as we state in our report, only NIST performs a technical accreditation review, as EAC's review is administrative, non-technical in nature. To avoid the potential for any confusion, we have modified the wording of the recommendation to eliminate any reference to technical qualification requirements.

We are sending copies of this report to the Ranking Member of the House Committee on House Administration, the Chairman and Ranking Member of the Senate Committee on Rules and Administration, the Chairmen and Ranking Members of the Subcommittees on Financial Services and General Government, Senate and House Committees on Appropriations, and the Chairman and Ranking Member of the House Committee on Oversight and Government Reform. We are also sending copies to the Chair and Executive Director of EAC, the Secretary of Commerce, the Deputy Director of NIST, and other interested parties. We will also make copies available to others on request. In addition, this report will be available at no charge on the GAO Website at http://www.gao.gov.

Should you or your staffs have any questions on matters discussed in this report, please contact me at (202) 512-3439 or at hiter@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.

Sincerely yours,

Randolph C. Hite
Director, Information Technology Architecture
and System Issues

Appendix I: Objectives, Scope, and Methodology

Our objectives were to determine whether the National Institute of Standards and Technology (NIST) and the Election Assistance Commission (EAC) have defined effective voting system testing laboratory (VSTL) accreditation approaches, and whether each is following its defined approach.

To determine whether NIST has defined an effective accreditation approach, we reviewed documentation from its VSTL accreditation program, such as handbooks and program manuals for the National Voluntary Laboratory Accreditation Program (NVLAP), of which the VSTL accreditation program is a part. In doing so, we compared these documents with applicable statute, guidance, and best practices, primarily the Help America Vote Act of 2002 (HAVA), internationally recognized standards from the International Organization for Standardization (ISO), and federal accreditation program management guidance published by NIST. We compared program documentation with HAVA's NIST-specific accreditation requirements to determine the extent to which the agency was fulfilling its HAVA responsibilities. We also reviewed program documentation against ISO/IEC 17011,[1] which establishes general requirements for accreditation bodies, and ISO/IEC 17025,[2] which establishes the general requirements for assessing the competence of laboratories, to determine the extent to which NIST's accreditation program was based on internationally recognized standards. We also compared the documentation against NIST publication NISTIR 6014,[3] which contains sections that provide guidance for laboratory accreditation programs, to determine whether the VSTL accreditation program had defined other elements of effective accreditation programs. We also interviewed the voting accreditation program manager to determine how these documents were used to guide the program.

To determine whether NIST has followed its defined approach, we examined artifacts from the accreditation assessments of five VSTLs, including one laboratory accredited by NVLAP, but not yet recommended to EAC. This material included completed assessment checklists derived

[1]ISO, *ISO/IEC 17011: Conformity Assessment: General Requirements for Accreditation Bodies Accrediting Conformity Assessment Bodies* (Geneva, Switzerland: Feb. 15, 2005).

[2]ISO, *ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories* (Geneva, Switzerland: May 15, 2005).

[3]NIST, *The ABC's of the U.S. Conformity Assessment System*, NISTIR 6014 (Gaithersburg, Md.: April 1997).

from the accreditation program handbooks, additional documents supporting the assessments, and laboratory accreditation applications and supporting documentation. We compared artifacts from these assessments to program guidance to determine the extent to which the defined process was followed. In addition, we interviewed officials from NIST and NIST contract assessors and officials from EAC and the four EAC-accredited VSTLs to understand how the NIST process was implemented and how it related to the process managed by EAC.

To determine whether EAC has defined an effective accreditation approach, we reviewed documentation from its VSTL accreditation program, such as the draft *Voting System Test Laboratory Accreditation Program Manual*.[4] In doing so, we compared this document with applicable statute and best practices, primarily HAVA and federal accreditation program management guidance published by NIST. We compared the draft program manual with HAVA's EAC-specific accreditation requirements to determine the extent to which the agency was fulfilling its HAVA responsibilities. We also compared the documentation against the accreditation guidance in NISTIR 6014 to determine whether the accreditation program had defined other elements of effective accreditation programs. We also interviewed the EAC voting program director and executive director to determine how these documents were used to guide the program and to understand EAC's defined accreditation approach prior to the development of the draft manual.

To determine whether EAC has followed its defined approach, we compared artifacts from the accreditation reviews of four VSTLs. We did not review a fifth laboratory, which had been accredited by NVLAP, but not yet recommended to EAC. The materials reviewed included checklists completed by EAC in the absence of an approved program manual. In doing so, we compared the review artifacts to accreditation program requirements, as communicated to the laboratories, to determine the extent to which the agency followed its process, as verbally described to us. We did not compare accreditation submissions or EAC review artifacts with the draft accreditation manual because agency officials stated that the draft manual had not been used in the review of any laboratory. In

[4]EAC, *Voting System Test Laboratory Accreditation Program Manual* (draft, Washington, D.C.: February 2008). EAC approved the program manual for publication in July 2008; however this was accomplished too late for GAO to review the manual's contents for this report.

addition, we interviewed officials from NIST, EAC, and the four EAC-accredited VSTLs[5] to understand how the EAC process was implemented and how it related to the process managed by NIST.

To assess data reliability, we reviewed program documentation to substantiate data provided in interviews with knowledgeable agency officials. We have also made appropriate attribution indicating the data's sources.

We conducted this performance audit at EAC and NIST offices in Washington, D.C., and Gaithersburg, Maryland, respectively, from September 2007 to September 2008 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 audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[5]In June 2008, NIST granted NVLAP accreditation to a fifth laboratory, CIBER Inc., and recommended it for EAC accreditation. As of August 2008, that accreditation had yet to be granted.

Appendix II: Comments from the National Institute of Standards and Technology

JUL 10 2008

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-0001
OFFICE OF THE DIRECTOR

MEMORANDUM FOR Randolph C. Hite
Director, Information Technology Architecture
and System Issues
Government Accountability Office

From: James M. Turner, Ph.D.
Deputy Director

Subject: Comments on Government Accountability Office (GAO) Draft Report Entitled "ELECTIONS: Federal Programs for Accrediting Laboratories that Test Voting Systems Need to Be Better Defined and Implemented" (GAO-08-770)

This is in response to your draft report dated March 2008, entitled "ELECTIONS: Federal Programs for Accrediting Laboratories that Test Voting Systems Need to Be Better Defined and Implemented." Thank you for the opportunity to review and comment on this draft.

I appreciate the GAO team's careful review of the NIST/NVLAP program to accredit voting system testing laboratories under the EAC program. I am pleased that the GAO review found that the NIST voting system accreditation program reflects HAVA requirements, incorporates relevant international accreditation standards and meets International Organization for Standardization (ISO) accreditation body requirements, and laboratory accreditation review requirements.

The draft report also states, however, that the NIST program is missing details needed for consistent and verifiable implementation. While NIST generally concurs with the GAO findings that the Voting System Testing Laboratory (VSTL) program must continue to evolve and be enhanced over time, we think it is important to clarify the current state of the program, particularly the state of the documentation associated with the program's consistent and verifiable implementation. In the attachment to this memorandum, we respond to the three areas of specific concern identified in the draft report regarding NIST's role in the voting system accreditation process provided for under HAVA.

I am confident that the accreditation program implemented by NVLAP currently fully meets the requirements of HAVA and will lead to increased confidence in the electronic voting process. NIST remains committed to improving the operation of the program as we move forward.

We are looking forward to receiving your final report. Please contact Steve Willett on (301) 975-8707 should you have any questions regarding this response.

Attachment

NIST

ATTACHMENT

Below is the NIST response to the three areas of specific concern identified in the draft report regarding NIST's role in the voting system accreditation process provided for under HAVA.

(1) First, the draft findings state that NIST has not specified requirements for assessor qualifications and training. Specifically, "*NIST's defined approach does not, for example, cite explicit qualifications for the persons who conduct accreditation technical assessments, as called for in federal accreditation program guidance.*"

Response – The NVLAP program does cite explicit qualifications for technical assessors, as required under the provisions of ISO/IEC 17011:2004, the international standard that establishes general requirements for accreditation bodies. This standard is incorporated in the NVLAP Management System Manual. Section 6.3.2.1 of the manual, which addresses assessor selection criteria, states, "NVLAP uses the services of assessors and technical experts who meet defined criteria in the areas of laboratory experience, communication, assessment skills, technical knowledge, quality management, professional activities, and education and training." Candidate assessors must submit biographies and supporting information that address each of the above criteria, in each case specifically addressing factors that demonstrate technical competence relevant to a specific NVLAP laboratory accreditation program or programs, e.g., voting system testing.

To evaluate a potential assessor, NVLAP relies on the assessor biography, interviews, and recommendations to prepare an assessor summary sheet that documents the basis for selection. Rating work sheets are used to rank the assessor's knowledge and ability in the areas of: education, lab experience, communication skills, assessment experience, lab management experience, and professional association affiliations. While specific requirements for assessors are not separately documented for each NVLAP program, the procedure currently in use has a proven record of success within NVLAP and other accreditation bodies. NVLAP also monitors its assessors and solicits written comments from customer laboratories covering many issues, including assessor technical competence. Initial qualification, monitoring and laboratory feedback information is documented and maintained in the assessor files in a secured file room.

The GAO report also states that, "NIST officials said that they rely on individuals who have prior experience in reviewing such laboratories." All NVLAP programs rely on experts that have prior experience; this is viewed as an asset. Assessors are selected for their technical expertise and trained in assessment techniques and NIST Handbook 150 (NVLAP's version of ISO/IEC 17025). This is accomplished by NVLAP through workshops, on the job training, and/or one-on-one training. The NVLAP technical assessor supporting the voting system testing laboratory program has both extensive prior experience in voting system testing and evaluating technical competence through the National Association of State Election Directors (NASED) assessment program and current experience as an EAC evaluator. This is documented in his assessor file. The voting system lead assessor has over 10 years of experience as a NVLAP lead management system assessor and as a technical

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assessor in the area of electromagnetic compatibility and telecommunications. He has attended courses offered periodically by NVLAP to its assessors and has been qualified as a NVLAP assessor with the appropriate certificate. This is documented in his assessor file.

(2) Second, the draft findings state that the current NIST approach does not fully specify criteria for evaluating and documenting VSTL capabilities. Specifically, "E*ven though the EAC requires that laboratory accreditation be based on demonstrated capabilities to test against the latest voting system standards, NIST's defined approach has not always cited these current standards*." The draft report cites instances where the technical (program specific) checklists were not always consistent for the on-site assessments and notes that some laboratories stated they did not know what was expected of them. This finding refers to the development and implementation of the program specific handbook and checklist.

Response - When the NVLAP voting system accreditation program was first made available to interested laboratories in June 2005, the 2002 VVS was the only approved standard in existence. Therefore, NVLAP's initial program specific handbook took only this standard into account. The EAC formally adopted the 2005 VVSG in December 2005, with an effective date of December 2007. NVLAP informed the candidate VSTLs in early 2006 that their scope of accreditation would include both the 2002 VVS and 2005 VVSG. The process was begun at that time to revise the initial program specific handbook to reflect both standards.

Candidate VSTLs were clearly told by NIST that the accreditation would be to both the 2002 VVS and 2005 VVSG. The labs were informed that in order to be accredited as Voting System Testing Laboratories by NVLAP they would have to be accredited to the core set of test methods contained in both standards. This was communicated to the labs during the pre-assessments, in e-mail and phone communications, and at the on-site assessment visit. In addition the candidate VSTLs should have known this since the same information was available on the EAC website.

NVLAP conducted no-cost pre-assessments of each candidate VSTL, beginning in February 2006. In parallel, a program specific checklist was being developed to encompass both standards. During these pre-assessments (lasting an average of two days), the laboratory's technical and quality systems were reviewed, personnel interviewed and issues discussed. The program specific handbook was updated and approved at the NVLAP level in December 2007. It was denoted as being in draft form at that time because it had not been through a NIST internal editorial review process needed for hardcopy publication. This editorial process has been completed and the handbook has been finalized for publication. Final versions of the program specific handbook and checklist are now in use. Each VSTL has been assessed to both the 2002 VVS and 2005 VVSG.

NVLAP's general requirements are found in NIST Handbook 150. Program specific handbooks and checklists are provided by NVLAP as a tool for identifying and documenting assessment findings and nonconformities relative to the test methods being assessed. They incorporate the same numbering system and section headings as Handbook 150. The difference between the general and program specific handbooks is that the program specific

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handbook (Handbook 150-22 in the case of the voting program) provides additional guidance for coverage of specific test methods without repeating the general criterion in Handbook 150. In the case of the voting system testing program, the specific test methods are found in 2002 VVS and 2005 VVSG. There are roughly one thousand test methods in the 2005 VVSG alone. The goal of Handbook 150-22 is not to reiterate every requirement in the technical standards, since these are already stated in the standards themselves, but to provide a framework so the laboratory will know where elements of the standard will be considered and recorded in our documentation. NVLAP's function is not to educate the laboratories in the standard but to document their competency in applying voting system standards to equipment under test.

(3) The third finding was that available documentation does not show that NIST has consistently followed all aspects of its defined accreditation approach. Specifically, the GAO report recommends that the NIST/NVLAP program manager needs to provide actions for, "*Ensuring that each laboratory accreditation review is fully documented.*"

Response: All required documents for the voting system testing program are currently in use and include the most recent, up-to-date Handbook 150-22 with its checklist.
The documentation used for accreditation review by NVLAP includes: the lab application, laboratory management system manual, on-site report, lab responses to nonconformities, and documentation to support the laboratory's response. The on-site report consists of the general operations checklist, program specific checklist, signature sheet, narrative summary, and assessment summary. All these documents remain on file in a secure NVLAP file room.

Every NVLAP program documents the evaluation using the NVLAP On-site Assessment Review form. Additionally, as part of the on-site assessment report, the assessor completes a narrative summary addressing the overall findings of each section of the standard as well as the assessment checklists for both the NVLAP general and program specific handbooks. The assessment process requires that the assessor leave copies of the assessment report with the lab on the last day of the on-site assessment.

Unlike NVLAP's other programs, where strict confidentiality is observed, the voting program must exhibit a level of transparency in order to remain open to the public. To accomplish this, the on-site report, lab responses, and evaluation form are made available on the NIST voting website. Proprietary information in the nonconformity response documentation is not posted.

Over the past several years NIST has worked to provide the American public with a comprehensive accreditation program capable of assessing the competency of voting system testing laboratories to current standards while also maintaining a process which will allow the program to accommodate the development of new standards. NIST recognizes the need for an unbiased assessment of its process and commends the GAO for providing this service. The NVLAP voting system testing laboratory program has gone through a maturation process since 2004. NIST is confident that the accreditation program implemented by NVLAP currently fully meets the requirements of HAVA and will lead to increased

confidence in the electronic voting process. We remain committed to improving the operation of the program as we move forward. In particular, as recommended by the GAO, we will continue to enhance the transparency of NVLAP requirements for the technical qualifications and training of assessors, ensure that all required voting system standards are addressed, and ensure that each laboratory accreditation review is fully documented.

Appendix III: Comments from the Election Assistance Commission

U. S. ELECTION ASSISTANCE COMMISSION
OFFICE OF THE EXECUTIVE DIRECTOR
1225 New York Avenue, NW, Suite 1100
Washington, DC. 20005

July 8, 2008

Mr. Randolph C. Hite, Director
Information Technology Architecture and Systems
United States Government Accountability Office

RE: Draft Report GAO 08-770, *Elections: Federal Programs for Accrediting Laboratories that Test Voting Systems Need to Be Better Defined and Implemented*

Thank you for the opportunity to provide comments on GAO Report 08-770 regarding Federal voting system test laboratory accreditation programs. The U.S. Election Assistance Commission (EAC) appreciates the time and effort put forth by GAO during the preparation of this document and the willingness of GAO staff to discuss pertinent issues at length with the EAC, NIST and other key stakeholders in the voting system testing community. The EAC has found both the review process and report helpful as it works to fully develop and implement its new Laboratory Accreditation Program.

GAO recognized that EAC has successfully "*published procedures governing how the accreditation program is to be executed*" (pgs 31-32) and that its program includes requirements for all five recognized accreditation program features (pgs 33-34). The EAC agrees with the report's conclusion that while EAC's accreditation program has effectively laid out its program requirements, additional written internal procedures, standards and documentation are needed to ensure a more consistent and repeatable review process. The EAC is currently developing written, internal procedures to better implement and document its Laboratory Accreditation Manual. As the EAC implements the various aspects of its accreditation program, it will incorporate the recommendations provided in the GAO report.

The report provides four recommendations for the EAC to better conform to accreditation program management guidance published by NIST and GAO. Generally, the EAC accepts the recommendations provided with little comment. However, in one instance the phrasing of a recommendation is questioned in light of the report's findings. Additionally, the EAC expresses concern that certain technical responsibilities under the purview of NIST are placed upon the EAC. The following are EAC's comments in response to each recommendation.

1. Documentation of specific accreditation steps and criteria. This recommendation is stated broadly and, as a result, is unclear in light of the content of the report. Despite its

broad language, the EAC does not read this recommendation as impacting the program's laboratory accreditation requirements, as the report has found that the EAC has properly "*published procedures governing how the accreditation program is to be executed, such as procedures for granting, maintaining, modifying, suspending, and withdrawing accreditation.*" (pg 31 – 32). Rather, based upon the discussion on page 31-32 of the report, the EAC reads this recommendation as advising that EAC develop additional "*instructions, steps, and criteria for those who conduct an accreditation assessment*…."

Based upon this reading, the EAC concurs with GAO's recommendation to develop a more formalized internal process for reviewing accreditation applications. The EAC has a checklist in place to guide the process; however we will review the document with an eye toward improving it by developing additional internal procedures and criteria for reviewing applications.

2. Transparent technical requirements for the qualifications of accreditation reviewers. EAC is concerned that this recommendation may confuse readers of this report regarding the distinct roles of EAC and NIST in the laboratory accreditation process. According to HAVA, NIST is responsible for the technical review of voting system test laboratories; the EAC performs a "nontechnical" review of laboratories after the technical review by NIST is completed. As the GAO report notes, "*NIST is to focus on assessing laboratory technical qualifications, while the EAC is to use those assessment results and recommendations, and augment them with its own review of related laboratory capabilities, to reach an accreditation decision.*" (pg 13). EAC's review is administrative, and it is initiated only after receiving a laboratory accreditation recommendation from NIST.

After it has received technical recommendation from NIST, the EAC conducts an administrative review of the applicant laboratory. This includes collecting: (1) laboratory information required by Section 3.4.1. of EAC Draft Voting System Test Laboratory Program Manual (Accreditation Manual); (2) a signed agreement affirming that the laboratory will meet all elements of the EAC Accreditation Program (Chapter 2 of the Accreditation Manual); and (3) a Certification of Laboratory Conditions and Practices (Attachment A of the Accreditation Manual) documenting that the laboratory has certain conditions and required policies in place (specifically: a conflict of interest policy, a personnel policy, a recordkeeping policy and evidence of sufficient resources and financial stability). Thus, the EAC's nontechnical review is limited to (1) determining whether required information and the signed agreement and certification are, in fact, provided and (2) determining whether the certifications of the laboratory (concerning its conflict of interest policy, personnel policy, recordkeeping policy and resources and financial stability) are acceptable by comparing the policies provided with the EAC program requirements.

EAC's staff has the appropriate credentials for nontechnical reviews of laboratory applicants in accordance with the accreditation process contained in HAVA. These qualifications include a detailed understanding of EAC's Accreditation Program and its

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requirements. The EAC will place this qualification and any others deemed necessary in the internal procedures it is creating (as noted above).

3. Requirements for the adequate maintenance of records related to the VSTL accreditation program. This recommendation is similar to 1 and 2, above. EAC agrees that more formalized review procedures would benefit its accreditation program. Documentation is a key element of such action. The adoption of EAC's Accreditation Manual (anticipated date of approval, July, 2008) will go a long way to assist with improving the laboratory accreditation process. The manual prescribes an application package which includes a certification form, an agreement document and specific information. As noted above, EAC is already using an application checklist which it plans to amend consistent with GAO recommendations. Moreover, the Commission will ensure that its internal procedures require formal documentation of each EAC action and basis for it. The EAC is making documentation a priority throughout its Laboratory Accreditation Program.

The EAC has made it a priority to provide the public with program information, including correspondence and many other program-related materials. This information is readily available at www.eac.gov, and stakeholders including State and local election officials, voting system manufacturers, test laboratories and the voting public are notified frequently about program updates. The EAC also provides links to program material generated by NIST's technical reviews of the laboratories.

4. Requirements for determining laboratory financial stability. The GAO Report specifies five program features (or areas of required information) that an accreditation program should include. As the GAO report notes, EAC's Accreditation Program Manual contains requirements for each of these features, including: organizational information, records and record keeping, test methods and procedures, conflict of interest policy and assurance of financial stability. However, for the last requirement, GAO has recommended that the EAC provide additional criteria for review and obtain additional laboratory information.

EAC's Draft Accreditation Manual provides a concise requirement for laboratory financial stability. "*As a condition of accreditation, all VSTLs shall allocate sufficient resources to enable the laboratory to properly use and maintain its test equipment, personnel, and facility and to satisfactorily perform all required laboratory functions. The laboratory shall maintain insurance policies sufficient to indemnify itself against financial liabilities or penalties that may result from its operations.*" (Accreditation Manual §2.14). The EAC agrees that this requirement should look more like its other four program features and provide more specific criteria. The EAC will amend its draft manual to reflect GAO's recommendations before the document's final publication in July. In addition, the EAC will require additional information with respect to the issue of financial stability. Presently the draft manual requires the submission of insurance, workman's compensation, staffing, facilities, and financial reporting information. (Accreditation Manual §3.4.1).

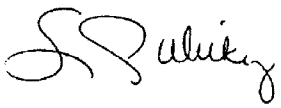
The EAC recognizes that the Federal government's first voting system test laboratory accreditation program must have a solid foundation. The EAC continues to evaluate its progress and identify issues of concern to ensure that this new program is robust and thorough. For instance, the EAC recently asked NIST (Attachment; EAC letter to NIST Standards Services Division Chief Mary Saunders, March 13, 2008. Also available at www.eac.gov under the Voting Systems Center.) to address and report back to the EAC on some areas of concern noted by the EAC in its review of VSTL work products.
We also requested NIST to review the laboratories' management process for assigning appropriate levels of staff, the qualifications of laboratory employees and how federal testing assignments are prioritized. Further, we requested a review of the laboratories' test methods and the validation process used to ensure that "NIST remains confident of each VSTL's ability to test voting systems."

The EAC will continue to work with NIST to ensure that the laboratory accreditation process is monitored very closely, and after NIST produce this additional information, we will provide it to GAO, Congress, and the public.

Keeping stakeholders and the general public informed about program activities, milestones and challenges continues to be a top priority. A May 2, 2008 memo (attached and available at www.eac.gov under Voting System Center), to election officials from Program Director Brian Hancock indicated that challenges remain in the certification process, such as the length of time it takes accredited laboratories to evaluate voting systems. Some participants in the certification program are experiencing challenges meeting the requirements of a more robust and thorough testing process, as evidenced by the submission of nine test plans from a single testing engagement. All draft and final test plans as well as test reports are available at www.eac.gov under the Voting System Center.

The EAC thanks GAO for its work in assisting the Commission in its efforts to improve and develop the Voting System Laboratory Accreditation Program. The EAC is committed to continuous improvement in all of it programs and will work hard to implement the recommendations made in this report. The EAC is committed to making its accreditation process part of a world class testing and certification program.

Sincerely,



Thomas R. Wilkey
Executive Director

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Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Randolph C. Hite, (202) 512-3439 or hiter@gao.gov

Staff Acknowledgments

Paula Moore, Assistant Director; Justin Booth; Timothy Case; Neil Doherty; Timothy Eagle; Nancy Glover; Dave Hinchman; Rebecca LaPaze; Freda Paintsil; Nik Rapelje; and Jeffrey Woodward made key contributions to this report.

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