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NIST HANDBOOK 150-22 CHECKLIST VOTING SYSTEM TESTING PROGRAM

Instructions to the Assessor: This checklist addresses the general accreditation criteria prescribed in the NIST Handbook 150-22, *NVLAP Voting System Testing* (2008 Edition). The checklist items are numbered to correspond to the requirements found in Clauses 4 and 5 of the handbook.

Place an "X" beside each checklist item that represents a nonconformity. Place a "C" beside each item on which you are commenting for other reasons. Record the item number and written nonconformity explanation and/or comment on the comment sheet(s) at the end of the checklist. Write "OK" beside all other items you observed or verified as compliant at the laboratory.

Note: This document is a Microsoft Word form that has been protected to allow only certain types of editing. To fill out this protected form, you may enter information into the gray-shaded areas and click on the check box drop-down menus. Use the Tab key to move from one form field to another. Enter the date and the NVLAP Lab Code on page one and this information will automatically be printed in the header of all pages that follow. For additional tips on working with Microsoft Word forms, please visit the Assessor Resources page of the NVLAP web site.

4 Management requirements for accreditation

4.1 Organization

4.1.1

___ The laboratory shall establish and maintain policies and procedures for maintaining laboratory impartiality and integrity in the conduct of voting system testing.

When conducting testing under HAVA, the laboratory policies and procedures shall ensure that:

___ a) The laboratory cannot perform both developmental testing and accredited testing of a particular voting system or system component;

___ b) The laboratory cannot provide consultation or other services to a voting system developer such that the independence, or appearance of independence, in the testing of a voting system or system component would be compromised.

___ 4.1.2 The laboratory shall have physical and electronic controls augmented with an explicit policy and set of procedures for maintaining separation, both physical and electronic, between the laboratory test personnel and laboratory consultants, product developers, system integrators, and others who may have an interest in and/or may unduly influence the outcome of the test.

4.2 Management system**4.2.1**

- ___ a) The controlled version of the laboratory management system documentation may be paper-based or computer-based. Version control shall be maintained in either case.

- ___ b) If both methods are used, one or the other will be identified as a primary source with the other having the status of a copy (e.g., historical, archive, working, distribution).

4.2.2 The following general management system procedures (required, but not limited to) should be available for assessor examination prior to the on-site visit (if requested), but in any event shall be part of the on-site assessment process:

- ___ a) internal audits and management review;

- ___ b) writing and implementing system procedures;

- ___ c) writing and implementing system instructions;

- ___ d) staff training and individual development plans;

- ___ e) contract review;

- ___ f) staff members who work at home and at alternate work sites outside the laboratory (e.g., telecommuting);

- ___ g) referencing NVLAP accreditation and use of the NVLAP symbol.

4.2.3 The following program-specific procedures (required, but not limited to) should be available for assessor examination prior to the on-site visit (if requested), but in any event shall be part of the on-site assessment process:

- ___ a) Review of the vendor Technical Data Package (VSS-2002, Volume II, Section 2 and VVSG-2005, Volume II, Section 2);

- ___ b) selecting the laboratory staff for the certification test campaign;

- ___ c) writing a Certification Test Plan for first-time testing and testing of modified systems (VSS-2002, Volume II, Appendix A and VVSG-2005, Volume II, Appendix A);

- ___ d) writing Test Operation Procedures (VSS-2002, Volume II, Appendix A.6.4 and VVSG-2005, Volume II, Appendix A.6.4);

- ___ e) conducting testing at a customer's site (if the laboratory offers such services);

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- ___ f) writing a National Certification Test Report (VSS-2002, Volume II, Appendix B and VVSG-2005, Volume II, Appendix B);
- ___ g) reviewing the Configuration Management Plan (VSS-2002, Volume II, Section 2.11 and VVSG-2005, Volume II, Section 2.11);
- ___ h) ensuring the protection of proprietary information against threats from persons outside the laboratory, from visitors to the laboratory, from laboratory personnel without a need to know, and from other unauthorized persons;
- ___ i) performing security testing, (VSS-2002, Volume II, Section 6.4 and VVSG-2005, Volume II, Section 6.4);
- ___ j) cooperating with the EAC during test campaigns;
- ___ k) witnessing of system build and installation;
- ___ l) matrix cross-referencing the laboratory's test methods to the voting system standard. Specific test methods will be checked for compliance with the standard.

4.3 Document control

There are no requirements additional to those set forth in NIST Handbook 150.

4.4 Review of requests, tenders and contracts

- ___ 4.4.1 The procedures for review of contracts shall include procedures to ensure that the customer understands that its products and systems must meet the requirements of HAVA, the VSS-2002, VVSG-2005, and the EAC.
- ___ 4.4.2 The review shall include (but is not limited to):
- ___ a) laboratory competencies and resources to provide the service,
- ___ b) vendor-supplied documentation,
- ___ c) tests to be conducted,
- ___ d) testing in additional Certification Testing,
- ___ e) and subcontracting.
- ___ 4.4.3 Procedures for the review of requests, tenders, and contracts should include provisions to ensure that any state certification testing does not replace or dilute National Certification requirements.

- ___ 4.4.4 When conducting a contract review, the VSTL should determine if there are any special or changed requirements from the EAC or from state or local election authorities.

4.5 Subcontracting of tests and calibrations

4.5.1

- a) Subcontracting of tests is the use of laboratory services outside of the VSTL to perform tests, e.g., electromagnetic compatibility testing, environmental testing, shock and vibration testing, and FIPS 140 validation.

- b) It may also include contracting of services for equipment needed to support testing but not part of the core test requirements such as test equipment calibration or the monitoring and operation of an environmental test chamber to support the 48-hour environment portion of the accuracy and reliability tests.

- c) The word *subcontracting* is not used to describe a mechanism by which the laboratory employs staff members (see 5.2.7).

- ___ 4.5.2 All core voting system testing shall be conducted by a VSTL. If the VSTL subcontracts testing for any test within its scope of accreditation, the subcontracted laboratory shall also be an EAC-accredited VSTL authorized to do business in the United States.

4.5.3

- a) Subcontractors for non-core testing do not need to be accredited under the VST LAP. If laboratories accredited in another LAP are available for non-core testing, VSTLs shall use accredited laboratories.

- b) When an accredited laboratory is not available for non-core testing, the VSTL shall conduct an audit of the subcontracted laboratory and shall document that the laboratory is competent and qualified for use.

4.5.4

- a) When a VSTL subcontracts to another laboratory, the VSTL is responsible for ensuring that setup, configuration, testing, and reporting is competent, appropriate, and conducted by qualified people.

- b) The VSTL shall ensure that there are no gaps in the knowledge required to conduct the testing. For example, a VSTL subcontracting with another laboratory to conduct temperature cycling tests should conduct the functional testing itself rather than allowing the subcontractor to do so.

- c) The VSTL is responsible for ensuring that the entire voting system is properly tested.

4.6 Purchasing services and supplies

There are no requirements additional to those set forth in NIST Handbook 150.

4.7 Service to the customer

There are no requirements additional to those set forth in NIST Handbook 150.

4.8 Complaints

There are no requirements additional to those set forth in NIST Handbook 150.

4.9 Control of nonconforming testing

There are no requirements additional to those set forth in NIST Handbook 150.

4.10 Improvement

There are no requirements additional to those set forth in NIST Handbook 150.

4.11 Corrective action

There are no requirements additional to those set forth in NIST Handbook 150.

4.12 Preventive action

There are no requirements additional to those set forth in NIST Handbook 150.

4.13 Control of records

- ___ **4.13.1** The laboratory shall set policies and procedures on the retention of records that meet the requirements of HAVA and the EAC and meet the needs of its customers as agreed in a contract.

- ___ **4.13.2** Laboratory records shall be maintained, released, or destroyed in accordance with the laboratory's policy on proprietary information and contractual agreements with customers.

- ___ **4.13.3** The Certification Test Report plus the laboratory's records of the certification test shall contain sufficient information to allow repeating, reproducing and/or auditing the entire certification test.

4.14 Internal audits

- ___ **4.14.1** The internal audit shall cover the laboratory management system and the application of the management system to all laboratory activities, including compliance with NVLAP, HAVA, VSS-2002, VVSG-2005, contractual, laboratory management system, and any additional EAC requirements.

4.14.2

a) In the case where only one member of the laboratory staff is competent to conduct a specific aspect of a test method, and performing an audit of work in this area would result in that person auditing his or her own work, then the audit may be conducted by another staff member. External experts may also be used in these situations.

b) The audit shall cover the methodology for that test method and shall include a review of documented procedures and instructions, adherence to procedures and instructions, and review of previous audit reports.

4.14.3 The laboratory shall perform at least one complete internal audit of its management system prior to the first on-site assessment.

4.15 Management reviews

The laboratory shall perform at least one management review prior to the first on-site assessment.

5 Technical requirements for accreditation**5.1 General**

The quality manual shall contain, or refer to, documentation that describes and details the laboratory's implementation of procedures covering all of the technical requirements in NIST Handbook 150 and this handbook.

5.2 Personnel

5.2.1 The laboratory shall maintain a competent administrative and technical staff appropriate for testing voting systems to be recognized by the EAC under HAVA.

5.2.2 The laboratory shall maintain a list of personnel designated to fulfill NVLAP requirements including: technical manager, Authorized Representative, Approved Signatories, and team leaders.

5.2.3 The laboratory shall notify both NVLAP and the EAC within 30 days of any change in key personnel. When key personnel are added to the staff, the notification of changes shall include a current resume for each new staff member.

5.2.4 Laboratories shall document the required qualifications for each technical staff position

5.2.5

a) The laboratory shall have documented a detailed description of its training program for new and current staff members.

b) Each new staff member shall be trained for assigned duties.

- ___ c) The training program shall be updated and current staff members shall be retrained when the VSS-2002 and VVSG-2005 changes, or when the individuals are assigned new responsibilities.
- ___ **5.2.6** The laboratory shall review annually the competence of each staff member for each test method the staff member is authorized to conduct. A record of the annual review of each staff member shall be dated and signed by the supervisor and the employee
- ___ **5.2.7** Individuals hired to perform testing activities are sometimes referred to as *subcontractors*. NVLAP does not make a distinction between full-time laboratory employees and individuals hired on a contract. NVLAP requires that the VSTL maintain responsibility for and control of any work performed within its scope of accreditation. To that end, the VSTL shall ensure all individuals performing testing activities satisfy all NVLAP requirements, irrespective of the means by which individuals are compensated (e.g., the VSTL shall ensure all test personnel receive proper training and are subject to annual performance reviews, etc.).
- ___ **5.2.8** The records for each person having an effect on the outcome of the testing shall include:
- ___ a) position description;
- ___ b) resume/bio to match the person to the position;
- ___ c) duties assigned;
- ___ d) annual competence review;
- ___ e) training records and training plans.
- ___ **5.2.9** In order to maintain confidentiality and impartiality, the laboratory shall maintain proper separation between personnel conducting testing and other personnel inside the laboratory or outside the laboratory, but inside the parent organization.
- 5.3 Accommodation and environmental conditions**
- 5.3.1**
- ___ a) The laboratory shall have adequate facilities to conduct the voting system testing that it offers.
- ___ b) If testing activities are conducted at more than one location, all locations shall meet the NVLAP requirements.

___ **5.3.2** A protection system shall be in place to safeguard customer proprietary hardware, software, test data, electronic and paper records, and other materials. This system shall protect the proprietary materials and information from personnel outside the laboratory, visitors to the laboratory, laboratory personnel without a need to know, and other unauthorized persons.

___ **5.3.3**
a) Laboratories shall have systems (e.g., firewall, intrusion detection) in place to protect internal systems from distrusted external entities.

___ b) The laboratory shall have regularly updated protection for all systems against viruses and other malware.

___ **5.3.4** If the laboratory is conducting multiple, simultaneous tests, it shall maintain a system of separation between the products of different customers. This includes the product itself, the test platform, peripherals, documentation, electronic media, manuals, testing area, office space, and records.

___ **5.3.5** If testing activities will be conducted outside of the laboratory, the management system shall include procedures for conducting activities at customer sites or other off-site locations. For example, procedures may explain how to secure the site, where to store records and documentation, and how to control access to the test facility.

___ **5.3.6**
a) If the laboratory is conducting its tests at a customer site or other location outside the laboratory facility, the environment shall conform, as appropriate, to the requirements for a laboratory environment.

___ b) If a customer's system on which a test is conducted is potentially open to access by unauthorized entities during test, the VSTL shall control the test environment. This is to ensure that the systems are in a defined state compliant with the requirements for the test before starting to perform testing work and that the systems ensure that unauthorized entities do not gain access during testing.

5.4 Test methods and method validation

___ **5.4.1** The test methods for this program are given in the VSS-2002 and VVSG-2005. In the VSS-2002 and VVSG-2005, there are specified test methods, test methods that require adaptation, and requirements for which the laboratory shall have to develop test methods. When the EAC publishes amendments or augmentations to the standards or guidelines, the laboratory shall develop procedures for implementation of the new requirements.

___ **5.4.2** Where the laboratory has developed or modified test methods to meet the requirements of the VSS-2002 and VVSG-2005, validation of the test methods shall be referenced in the test report.

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- ___ **5.4.3**
- a) For the purposes of achieving product certification under HAVA, laboratories shall comply with interpretations of the test methods as provided by the EAC.
- ___ b) When exceptions to the testing methodology may be necessary for technical reasons, the laboratory shall ask the EAC for an interpretation, the customer shall be informed, and details of an interpretation shall be described in the test report.
- ___ **5.4.4** As a part of the testing procedure, the laboratory shall describe by whom and how the voting system will be configured. If the customer configures any part of the voting system, then the laboratory shall verify the configuration, including all software.
- ___ **5.4.5**
- a) Testing may be conducted at the customer site, the laboratory or another location that is mutually agreed to by the laboratory and the customer.
- ___ b) When testing activities are conducted outside the laboratory, the laboratory shall have additional procedures to ensure the integrity of all tests and recorded results. These procedures shall also ensure that the same requirements that apply in the laboratory are maintained at the non-laboratory site.
- ___ **5.4.6** The laboratory shall clearly identify any test methods included in the test campaign that are outside of the laboratory's scope of accreditation.
- 5.5 Equipment**
- 5.5.1** For the purposes of this section "equipment" is defined as test equipment used in the testing process. Test equipment includes software and hardware products or other assessment mechanisms used by the laboratory to support the testing of products and systems.
- ___ **5.5.2**
- a) The laboratory shall document and maintain records on all test equipment used during testing.
- ___ b) The laboratory shall have procedures to configure and operate all equipment within its control.
- ___ **5.5.3**
- a) Equipment used during the conduct of testing shall be under configuration control.
- ___ b) The laboratory shall have procedures to ensure that any equipment used for testing is in a known state prior to use for testing.

5.5.4

a) VSS-2002 and VVSG-2005 require the documentation of the test software and supporting hardware in the certification. Any software test tools shall be validated to be sure that they are accurately testing to the standard.

b) They shall also be examined to ensure they do not interfere with the conduct of the test and do not modify or impact the integrity of the product under test in any way.

5.6 Measurement traceability

All developed test methods and tests performed within the test campaign shall be traceable to the VSS-2002 and VVSG-2005. This validation shall be documented (e.g., cross-reference matrix).

5.7 Sampling

This section does not apply to the VST LAP since testing to the entire standard is required.

5.8 Handling of test and calibration items

5.8.1 The laboratory shall maintain separation between and control over the items from different tests, to include the product being tested, its platform, peripherals, and all documentation.

5.8.2 When the product being tested includes software components, the laboratory shall ensure that configuration management mechanisms are in place to prevent inadvertent modifications to the software components during the testing process. This includes the customer's software, test tools, and commercial off-the-shelf (COTS) software.

5.9 Assuring the quality of test and calibration results

The laboratory procedures for test method validation shall include tests for abnormal conditions as well as normal operations where the program functionality includes requirements to detect and respond to invalid data, operator actions, or hardware malfunctions.

5.10 Reporting the results**5.10.1**

a) Reports shall be submitted in the form and by the method specified in VSS-2002 and VVSG-2005.

b) Information required to reproduce the test but not included in the Certification Test Report shall be kept by the laboratory as part of the testing records. For example, the report shall contain sufficient information for state certification officials to identify what testing was completed for the purpose of ascertaining what additional testing may be necessary at the state level.

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___ **5.10.2** Reports intended for use only by the customer shall meet customer-laboratory contract obligations and be complete, but need not necessarily meet all other requirements.

___ **5.10.3** The section of a Certification Test Report that meets the VSS-2002 and VVSG-2005 requirements for a summary or the recommendation section of a test report for a customer shall also meet the requirements of NIST Handbook 150 on opinions and interpretations under *Reporting the results*.

