New York State Board of Elections
Voting System Verification Testing

Master Technical
Data Package Review Plan

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Revision History

Date	Description of Revision	Author	Revision No.
3/10/08	Draft Initial Review Plan – SysTest Labs internal distribution and review	B. Phillips, R. Reed	Rev 0.1
3/25/08	Updated Draft of Master TDP Review Plan	J. Henry, D. Angell	Rev 0.2
3/26/08	Prepared Draft for Review	J. Henry, D. Angell	Rev 0.21
3/28/08	Updated Draft with Review Comments	J.Henry, D.Angell, S.Brown, P.Bialka, E.Froehlich	Rev 0.22
3/31/08	Updated Draft with Review Comments in preparation for the Red Team Review	J.Henry, D.Angell, S.Brown, P.Bialka, E.Froehlich	Rev 0.23
4/01/08	Updated Draft with Red Team Review Comments	J.Henry, D.Angell, S.Brown, P.Bialka, E.Froehlich	Rev 0.24
4/10/08	Delivery of Master Technical Data Package Review Plan	J.Henry, D.Angell, S.Brown, P.Bialka, E.Froehlich	Rev 1.0

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1 INTRODUCTION

1.1 Project Overview

The New York State Board of Elections (NYSBOE) requires that before any voting system may be eligible to be purchased in New York State, it must be certified by the NYSBOE that such system(s) meet the requirements of the NYS Election Law, Section 6209 of Subtitle V of Title 9 of the Official Compilation of Codes, Rules and Regulations of the State of New York, and the federal 2005 Voluntary Voting System Guidelines (VVSG), Volumes 1 and 2 (collectively referred to as the Requirements Matrix). SysTest Labs has been engaged by the NYSBOE to provide verification testing services to support the process of voting system verification by the NYSBOE.

1.2 Purpose

The purpose of this Master Technical Data Package (TDP) Review Plan (a component of ***Deliverable 5: Review of Technical Data Packages (TDP's)***) is to document a clear and precise plan of methods and processes that SysTest Labs, as NYSBOE's Independent Test Authority (ITA), will use throughout the course of voting system TDP review and assessment. This Master Technical Data Package (TDP) Review Plan was developed to the Institute of Electrical and Electronics Engineers (IEEE) Standard for Software Test Documentation, IEEE Std 829-1998, as these are more comprehensive than the 2005 VVSG, Volume 2 standards. Any VVSG standards that are not called for in the IEEE standards are included within this document to ensure this Master TDP Review Plan is all-inclusive.

Comment [rz1]: It would be beneficial to the NYSBOE for SysTest to indicate the areas where they have exceeded the VVSG Vol 2 testing requirements and utilized the IEEE standard.

Planning and documenting these methods and processes will serve as the basis for ensuring that all major milestones and activities required for effective TDP review and assessment can effectively and successfully be accomplished. This TDP Review Plan will be modified and enhanced as required throughout the verification testing engagement. The overall purpose of this document:

- Identifies the Vendors and proposed voting systems to be tested.
- Identifies the TDP items associated with each Voting System Under Test (VSUT).
- Defines the overall TDP review and assessment approach based on the criteria identified in the Requirements Matrix.
- Identifies forms and tools to be used to support the TDP review and assessment efforts.
- Defines the types of TDP review and assessments to be performed.
- Identifies and establishes traceability from the Requirements Matrix to the TDP review and assessment criteria.

Comment [NPE2]: Linkage should be bidirectional.

Comment [rz3]: For each TDP related requirement in the requirements matrix there should be (in the requirements matrix) a link to the assessment criteria use here if such a link assists the NYSBOE with how the requirement was evaluated. The final test results should also include a mapping to the relevant part(s) of the TDP that were used to evaluate the pass or fail status of the requirement.

- Defines the process for recording and reporting TDP review and assessment results.
- Defines the process for regression reviews and assessments, and closure of discrepancies.

1.3 Scope of TDP Review and Assessment

SysTest Labs will provide TDP review and assessment on each voting system identified by the NYSBOE based on the guidelines established for voting system TDP review and assessment as defined by the NYSBOE. This effort includes all levels of source code and documentation associated with a voting system required to demonstrate that each voting system meets the requirements of the 2005 VVSG, NYS laws and regulations, and associated Vendor specific requirements. SysTest Labs' high level tasks for voting system TDP review and assessment include:

- Physical Configuration Audit (PCA)
  - Iterative documentation review and assessment whenever discrepancies are resolved.
  - Iterative source code review and assessment whenever discrepancies are resolved.
  - Software and Hardware Configuration Audit. Verification of software and hardware functional and physical configurations
- Functional Configuration Audit (FCA)
  - Review of Vendor's Completed System Test Cases and Results
  - Review of Test Cases and Reports from prior ITAs, Election Assistance Commission (EAC) Voting System Test Labs (VSTL) and prior or current SysTest Labs engagements.
  - Review/Assessment of Vendor documentation and source code review by prior ITAs and/or Election Assistance Commission (EAC) Voting System Test Labs (VSTL) and prior or current SysTest Labs engagements
  - Review/Assessment and applicability of prior testing results by ITAs and/or Election Assistance Commission (EAC) Voting System Test Labs (VSTL) and prior or current SysTest Labs engagements.
  - Regression Reviews and Assessments
- Management of Vendor supplied deliverables and SysTest Labs' TDP review and assessment artifacts
- Traceability and tracking of TDP review and assessments to the requirements of the 2005 VVSG, NYS laws and regulations, and associated Vendor specific requirements.
- Reporting of all TDP review and assessment results in the TDP Review and Assessment Results and the Final Voting System Specific Test Report.

Comment [rz4]: Did NYSBOE provide these or is this comment in reference to the requirements matrix?

Comment [NPE5]: Some caution is required here since the only use of prior testing is if the submitted system is identical to the prior system.

Comment [rz6]: Concern of the constant reference to past results. SysTest should know if any prior ITA testing is usable by now. Given the public criticism of past ITA work SysTest should be sure to use past results only if the level of testing and repeatability is up to the NYS standard. It has been stated that only hardware testing results may possibly be usable.

Additionally the SysTest interpretation of the FCA seems very different from that stated within the VVSG volumes 1 and 2. SysTest should define the FCA as specified in the VVSG and update this section accordingly. In particular, "The Functional Configuration Audit (FCA) is an exhaustive verification of every system function and combination of functions cited in the vendor's documentation. Through use, the FCA verifies the accuracy and completeness of the system Technical Data Package (TDP).

SysTest Labs will develop and submit to the NYSBOE a Final Voting System Specific Test Report (defined as **Deliverable 10: Final Test Reports)** for each VSUT that includes all test results and findings as a result of each TDP review and assessment effort.

1.4 Assumptions

- The start of the TDP Review and assessment Document Review activities require that the Vendor identify and deliver all documents that are included in the Vendor's TDP. The Vendor must provide a listing of all documents provided or to be provided within the TDP.
    - If any TDP document is not received at the start of the Review, a discrepancy will be recorded in the Discrepancy Report. Upon receipt of the document(s), they will be formally checked-in using SysTest Labs check-in procedures and the discrepancy in the Discrepancy Report will be closed.
- The start of the TDP Review and assessment Source Code Review activities require that the Vendor: The Vendor must provide a listing of source code modules provided or to be provided within the TDP.
    - Identify all coding languages that are used to develop the source code included in the Vendor's TDP.
    - Deliver all published source code coding standards used in development of the source code.
    - If any source code module is not received at the start of the review, a discrepancy will be recorded in the Source Code Discrepancy Report. Upon receipt of the source code module(s), they will be formally checked-in using SysTest Labs check-in procedures and the discrepancy in the Source Code Discrepancy Report will be closed.
- The Vendor will have the opportunity to address and correct all discrepancies identified during the TDP review and assessment. Discrepancies will be resolved and fixes provided to SysTest Labs with sufficient time for review and assessment prior to the expected 'Source Code Review of Vendor Application' task completion date as identified in the Master Program Plan (MPP)[1].

Comment [rz7]: Can SysTest elaborate on the format of the Final Test report that results from the run for record? Please include a sample if that helps and detail on how what is documented will ensure there is enough evaluation evidence in the system run for record so an independent body, can determine what evaluation work was actually performed for each voting system requirement and can concur with the verdict

Comment [NPE8]: The final test report format should be designed and provided to NYSBOE in advance to head of any problems when they vote.

Comment [rz9]: This should read Required from the VVSG and NYS requirements.

Comment [rz10]: Typo here? The vendor must provide all required source code. The ITA should determine what constitutes COTS.

Comment [NPE11]: The source code required is defined in the NYSBOE Certified Voting System Escrow Requirements – Final document

[1] *STATE OF NEW YORK STATE BOARD OF ELECTIONS Integrated Master Program Plan For NYSBOE Voting System Examination And Certification Testing*, SysTest Labs, 28 February, 2008

- There will be no witness builds at the vendor's facility; all builds will be trusted builds performed at SysTest Labs. SysTest Labs will review the Quality Assurance Plan and the Configuration Management Plan contained within the TDP to examine the vendor's quality assurance and configuration management practices.
- IEEE standards specify that this document should contain the sections Responsibilities, Staffing and Training Needs, Schedule, and Risks and Contingencies. These are all covered as part of the MPP and are not part of this Master TDP Review Plan.

1.5 Applicable Standards and References

1.5.1 Required Voting System Standards

All reviews, assessments, and testing will determine whether or not each voting system meets the requirements from the following Standards, New York law and regulations, and US law:

1. 2005 VVSG, Volumes 1 and 2
2. NYS 2007 Election Law (Amended Through October 16, 2006)
3. NYS 6209 Regulations
4. New York State Office of General Services Purchasing Memorandum – Centralized Contracts for the Acquisition of Voting Systems and Ballot Marking Devices, November 6, 2007 (NYS BMD Requirements)

1.5.2 Applicable Test Method Standards

All reviews, assessments, and testing will be conducted based on the following testing standards and guidelines:

1. *Quality System Manual*, Version, 1.0.1, SysTest Labs, February 18, 2008
2. National Institute of Standards and Technology (NIST) 800-53A, Guide for Assessing Security Controls in Federal Information Systems, December 2007

Comment [rz12]: IEEE 829-1998?

1.5.3 References

The following references were used in development of SysTest Labs' Quality Assurance Manual.

1. *NIST HANDBOOK 150 2006 EDITION* National Voluntary Laboratory Accreditation Program PROCEDURES AND GENERAL REQUIREMENTS (February 2006)
2. *NIST HANDBOOK 150-22 2005* National Voluntary Laboratory Accreditation Program VOTING SYSTEM TESTING (DRAFT Version 1.0, 2005)

3. *NIST HANDBOOK 150-22 2007 Edition (DRAFT)* National Voluntary Laboratory Accreditation Program VOTING SYSTEM TESTING (DRAFT December 2007)
4. *EAC Testing and Certification Program Manual*, United States Election Assistance Commission, December 2006 (Version 1.0 Effective January 1, 2007)
5. *VSTL Accreditation Program Manual*, United States Election Assistance Commission (DRAFT December 2007, Version 1.0)
6. Help America Vote Act (HAVA) – Section 301
7. IEEE Standard for Software Test Documentation IEEE Std 829-1998, September 16, 1998
8. IEEE Standard for Software Verification and Validation IEEE Std 1012-1998, June 8, 2005
9. IEEE Standard for Software Quality Assurance Plans IEEE Std 730-1998, June 25, 1998
10. IEEE Standard for Software Configuration Management Plans IEEE Std 828-1998, June 25, 1998
11. IEEE Recommended Practice for Software Requirements Specifications IEEE Std 830-1998, October 20, 1998
12. IEEE Standard for Software Unit Testing IEEE Std 1008-1987, December 29, 1986
13. ISO 17025 General requirements for the competence of testing and calibration laboratories, Second edition, May, 15, 2005
14. IEEE Standard Glossary of Software Engineering Terminology IEEE Std 610.12-1990 (R2002), September 11, 2002

1.6 Terms, Abbreviations and Definitions

The following terms and definitions in Table 1 *– Terms, Abbreviations and Definitions* are used throughout this document:

Table 1 – Terms, Abbreviations and Definitions

Term	Abbreviation	Definition
American Association for Laboratory Accreditation	A2LA	A nonprofit, non-governmental, public service, membership society whose mission is to provide comprehensive services in laboratory accreditation and laboratory-related training.

Term	Abbreviation	Definition
Ballot Marking Device	BMD	An accessible computer-based voting system that produces a marked ballot (usually paper) that is the result of voter interaction with visual or audio prompts.
CaliberRM	n/a	A Borland application tool that manages requirements.
Compact Flash card	CF	This is a type of flash memory card in a standardized enclosure often used in voting systems to store ballot and/or vote results data.
Commercial Off the Shelf Software	COTS	Computer software that is ready-made and available for sale, lease, or license to the general public.
Direct Recording Electronic	DRE	Voting systems that, using Touch Screen or other user interfaces, directly record the voter's selections in each race or contest on the ballot in electronic form.
Election Assistance Commission	EAC	An independent, bipartisan commission created by the Help America Vote Act (HAVA) of 2002 that operates the federal government's voting system certification program.
Election Management System	EMS	Typically a database management system used to enter jurisdiction information (district, precincts, languages, etc.) as well as election specific information (races, candidates, voter groups (parties), etc.). In addition, the EMS is also used to layout the ballots, download the election data to the voting devices, upload the results and produce the final results reports.

Term	Abbreviation	Definition
Electromagnetic Compatibility	EMC	The goal of EMC is to validate the correct functioning of different equipment in the same environment and the avoidance of any interference effects between them.
Functional Configuration Audit	FCA	The testing activities associated with the Functional testing of the system.
Independent Test Authority	ITA	This is a test lab that is not connected with the vendor or manufacturer of the voting system.
Institute of Electrical and Electronics Engineers	IEEE	A non-profit organization, IEEE is the world's leading professional association for the advancement of technology.
Master Program Plan	MPP	A SysTest Labs' document defining the program responsibilities, staffing and training needs, schedule, and risks and contingencies.
National Institute of Standards and Technology	NIST	NIST is a non-regulatory federal agency within the U.S. Dept. of Commerce. Its mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.
National Voluntary Laboratory Accreditation Program	NVLAP	A division of NIST that provides third-party accreditation to testing and calibration laboratories.
New York State	NYS	Acronym for the State of New York.

Term	Abbreviation	Definition
New York State Board Of Elections	NYSBOE	The New York State Board of Elections is a bipartisan agency vested with the responsibility for administration and enforcement of all laws relating to elections in New York State.
New York State Technology Enterprise Corporation	NYSTEC	NYSTEC is a private, not-for-profit engineering company with offices in the state of New York. It acts as a trusted technology advisor to government agencies and private institutions.
Personal Computer Memory Card International Association	PCMCIA	An international standards body that defines and promotes the PC Card (formerly known as "PCMCIA card") and ExpressCard standards. This is another type of electronic memory card in a standardized enclosure often used in voting systems to store ballot and/or vote results data.
Physical Configuration Audit	PCA	The reviews, assessment, and testing activities associated with the physical aspects of the system (hardware, documentation, source code, etc.).
Request For Information (form)	RFI	A form used by testing laboratories to request, from the NYSBOE, interpretation of a technical issue related to testing of voting systems.
Requirements Matrix	n/a	This is the matrix created by NYSBOE/NYSTEC and maintained by SysTest Labs that traces the requirements to the various test cases, test steps, and test methods.

Term	Abbreviation	Definition
Technical Data Package	TDP	This is the data package that is supplied by the vendor and includes: Functional Requirements, Specifications, End-user documentation, Procedures, System Overview, Configuration Management Plan, Quality Assurance Program, and manuals for each of the required hardware, software, firmware components of each voting system.
Voluntary Voting Systems Guidelines Volumes1 & 2	VVSG	A set of specifications and requirements against which voting systems can be tested to determine if the systems provide all of the basic functionality, accessibility and usability, and security capabilities required of these systems.
Voter Verifiable Paper Audit Trail	VVPAT	An independent verification system for voting machines designed to allow voters to verify that their vote was cast correctly, to detect possible election fraud or malfunction, and to provide a means to audit the stored electronic results.
Voting System Test Lab	VSTL	This is the lab where the voting system is being tested.
Voting System Under Test	VSUT	The designation for a voting system that is currently being tested.

2 TEST ITEMS AND FEATURES

2.1 Features to be Reviewed and/or Assessed

The basis for all verification reviews, assessments, and testing for the NYSBOE is the Requirements Matrix - *NYS Voting NYSBOE LOT 1 Systems Master Requirements Matrix*. The Requirements Matrix is stored and maintained in SysTest Labs' CaliberRM™ requirements management tool and includes the following:

- 2005 VVSG, Volume 1
- 2005 VVSG, Volume 2
- NYS 2007 Election Law
- NYS 6209 Regulations
- NYS BMD Requirements
- Document Review Forms
- Source Code Review Forms
- Source Code Review Criteria
- Traceability from Requirements to TDP review and assessment activities

Comment [rz13]: The matrix may not be the most appropriate location for this and the remaining bullets.

Comment [NPE14]: I assume this is a list of what is in Caliber and not what is included in the matrix.

Each Vendor is required to produce and submit documentation to support independent testing of their products. The description of the TDP as defined in 2005 VVSG Volume 1, Section 8.7, and 2005 VVSG Volume 2, Section 2 and Section 5, identifies the documentation required and is shown in Table 2 - *Items to be Reviewed and/or Assessed*. These items form the core of the TDP review and assessment items for all NYSBOE TDP review and assessment activities and are explicitly defined in each Vendor's TDP submission to the NYSBOE. A detailed list of each Vendor and their TDP deliverables is in Section 9 *APPENDIX B - TDP ITEMS FOR EACH VOTING SYSTEM UNDER TEST (VSUT).*

Table 2 - Items to be Reviewed and/or Assessed

Item
Vendor Specific Documents
System Overview
System Configuration Overview
System Functionality Description
Software Design and Specification
System Hardware Specification
System Security Specification
System Test and Verification Specification
System Operations Procedures
System Maintenance Procedures

Item
Personnel Deployment and Training Requirements
Configuration Management Plan
Quality Assurance Program
System Change Notes (optional only if not a previously certified system)
Vendor Specific Software/Firmware
Initial Review of Documentation
Source Code Review

In addition to the items shown in Table 2, SysTest Labs will review the items shown in Table 3 - *Items to be Reviewed* to assess their applicability to each Vendor's specific voting system test effort. Per contractual obligations shown in the NYSBOE Request for Proposal (RFP) for Independent Testing Authority Services Proposal #1396[2] specific to **Deliverable 4: Evaluation of Prior Work,** results from the items in Table 3 may be used in the verification testing efforts and therefore, not require duplicate testing. Any results that SysTest Labs deems to be duplicate testing will be identified to the NYSBOE. The NYSBOE will be asked to provide approval and agreement that the previous tests were sufficient.

Comment [NPE15]: Some caution is required here since the only use of prior testing is if the submitted system is identical to the prior system.

Comment [rz16]: The RFP may only be referencing past work done by prior ITA for NYS. The RFP also states that all requirements must be tested by this ITA. Would this not make much of the table contents irrelevant?

The following criteria must be followed for any reuse of prior ITA work:
-System must be exactly the same as the systems currently under evaluation. This includes all hardware and software. Hash code validations must be used to prove (in part) that systems are identical.
- Any prior testing results must be evaluated to ensure the test cases are of the quality necessary for NYS
- Prior test results could potentially be valuable for the development of test cases by SysTest but they will never (other than perhaps hardware) mean that SysTest does not have to test all requirements for this certification.

Table 3 - Items to be Reviewed

Item
Vendor's Completed Test Cases and Results
Prior ITA TDP Review and Assessment: • Test Cases • Documentation Reviews • Source Code Reviews • Hardware Testing Results and Reports Functional Testing Results and Reports
Prior VSTL TDP Review and Assessment: • Test Cases

[2] A Request for Proposal (RFP) is being solicited by the New York State Office of General Services On behalf of the New York State Board of Elections for Independent Testing Authority Services for Voting System Examination and Certification Testing, Proposal Number 1396, September 4, 2007

Item
• Documentation Reviews • Source Code Reviews • Hardware Testing Results and Reports Functional Testing Results and Reports
Prior or current SysTest Labs Engagements: • Test Cases • Documentation Reviews • Source Code Reviews • Hardware Testing Results and Reports • Functional Testing Results and Reports

2.2 Features Not to be Reviewed or Assessed

There are no defined features of a voting system's TDP that will not be reviewed and assessed.

2.3 TDP Review and Assessment Pass/Fail Criteria

SysTest Labs will evaluate review and assessment results against the associated requirements in the Requirements Matrix and the documents and source code provided by each Vendor in their submitted TDP. Voting system TDP performance to pass/fail criteria shall be measured against documented criteria for each TDP item contained in the PCA and FCA review forms. The initial set of pass/fail criteria defined for both source code and documents are defined in Section 8 *APPENDIX A – TDP REVIEW AND ASSESSMENT CRITERIA* and within the Requirements Matrix. These are intended to provide a high level definition for the success criteria for the TDP review and assessment.

Comment [rz17]: Publishing these review forms along with the source code review forms would greatly enhance the value of this document. Please included these evaluation forms and any others that will be use in the appendix.

When documenting the pass/fail status there will be enough evaluation evidence for an independent body to determine what evaluation work was actually done for each voting system and can concur with the result.

Comment [rz18]: Good, this will help SysTest to ensure repeatable results and should be included in all assessment reports.

2.4 Review/Assessment Suspension Criteria and Resumption Requirements

There are several situations that can cause suspension of a TDP review and assessment. These include the severity and type of discrepancies encountered during the TDP review and assessment, moderate/significant delays in the delivery of items required for the TDP review and assessment,

the introduction of a moderate/significant amount of new requirements and/or related source code after the TDP review and assessment has begun. These situations can impact the TDP review and assessment as well as other, outside TDP review and assessments that may rely upon the same personnel and resources. To ensure a timely, efficient, and effective use of resources, this section defines the criteria, as shown in Table 4 – *Review/Assessment Suspension Criteria and Resumption Requirements* below, for suspending and resuming testing. The Vendor is expected to provide resolution to any test suspension items in a timeframe that allows SysTest Labs to meet the expected TDP Review and Assessment task timelines as identified in the MPP.

Table 4 – Review/Assessment Suspension Criteria and Resumption Requirements

Comment [rz19]: NYSBOE should be informed immediately of any pending decision to stop or restart any TDP review/assessment activity. NYSBOE should approve any decision to stop or start.

Suspension Item	Criteria	Criteria for Resumption
Type/Severity of Discrepancy	• Vendor Documentation - Critical Discrepancy • Test Cases – Critical information missing or partially available • Source Code – Critical discrepancy, missing code, unsecure code, malicious code	• Receipt and check-in of updated documentation from vendor. Documents added to appropriate folders and formally reviewed. Personnel and environment resources available to resume TDP Review effort. • Receipt of correcting information relevant to Test Case. • Receipt, check-in and review of updated source code TDP documents received, checked-in and added to PCA/FCA. Personnel and environment resources available to resume TDP Review effort.
Delay in Delivery of Items Required for the TDP review and assessment	• Expected TDP documents and source code not received.	• TDP documents and source code received checked-in and added to appropriate folders. Personnel and environment resources available to resume TDP Review effort.

New Requirements	• New requirements that are not currently accommodated in existing PCA/FCA review documentation.	• Existing PCA/FCA review documentation updated and approvals obtained from all stakeholders. Personnel and environment resources available to resume TDP Review effort.
New Functionality	• New TDP documents and/or source code received.	• TDP documents and/or source code received checked-in and added to appropriate folders. Personnel and environment resources available to resume TDP Review effort.

3 TDP REVIEW AND ASSESSMENT TYPES

This section of the Plan defines the overall types of TDP review and assessments that SysTest Labs will use for each Vendor's Voting System TDP for the NYSBOE.

3.1 Physical Configuration Audit

3.1.1 Documentation Review and Assessment

SysTest Labs will conduct a PCA review and assessment of all documents submitted in the initial delivery of each Vendor's TDP. The first step of the documentation review and assessment is to determine if the TDP contains all the required documentation. If there is undelivered documentation, a discrepancy report will be written. Each document included in the Vendor's TDP will be reviewed for compliance with the 2005 VVSG and NY laws and requirements as identified in the Requirements Matrix.

Subsequent reviews of documentation will be the result of fixes to discrepancies identified in the Documentation Review activity or because of documentation deliveries that were expected, but not included in the TDP. Each Vendor is expected to deliver documentation with sufficient time for SysTest Labs to complete the reviews and assessments within the 'PCA Review – TDP Documents' task timeframe as identified within the MPP.

Results from the review and assessment will provide inputs into the development of the Vendor's Voting System Specific Test Cases. The tasks for PCA review and assessment of all documents are detailed below in Section 5.1.1 *Document Review.*

Comment [rz20]: Excellent

3.1.2 Source Code Review

SysTest Labs will conduct a full source code review of all source code submitted in each Vendor's TDP. Each source code module included in each Vendor's TDP will be reviewed for compliance to the coding requirements and best practices defined in the 2005 VVSG and within the Requirements Matrix. This includes a source code review to ensure protection against all identified and approved vulnerabilities.

Comment [rz21]: What are approved vulnerabilities? Believe this should state that a check will be made to ensure that known vendor vulnerabilities that have been identified in prior assessments and within the public sector have been resolved.

Subsequent reviews of source code will be the result of fixes to discrepancies identified in the Source Code Review activity or because of source code deliveries that were expected, but not included in the initial source code. Each Vendor is expected to deliver source code with sufficient time for SysTest Labs to complete the reviews and assessments within the 'Source Code Review of Vendor Applications' task timeframe

Comment [rz22]: ITA must ensure that regression testing practices are followed for any source code changes. The ITA should reference their regression testing process here and how it will be used to determine when a source code (software or firmware) change results it the invalidation of prior test results.

Please state that once the run for record begins, no source code changes will be permitted and all tests must be run.

as identified within the MPP. Each Vendor's Voting System Specific Test Plan will provide a detailed listing of each module associated with the Vendor's voting system software and firmware.

Results from the review and assessment will provide inputs into the development of the Vendor's Voting System Specific Test Cases. The tasks for source code review are detailed below in Section 5.1.2 *Source Code Review*.

3.1.3 Software and Hardware Configuration Audit

The software and hardware configuration audit will be conducted prior to SysTest Labs' test execution efforts and will be completed on site at SysTest Labs' facility. The purpose of the software and hardware configuration audit is to:

- Verify that the system configuration conforms to vendor specifications of the system under test, including TDP documentation (can include hardware and software specifications, approved parts list, etc.).
- Verify that the system configuration is consistent with the configuration assessed in any previous ITA reports.
- Verify that the system configuration is consistent with the system used in hardware environmental tests for the current ITA test campaign.
- Perform an operational status check.

The tasks for Software and Hardware Configuration Audit are detailed below in Section 5.1.3 *Software and Hardware Configuration Audit*.

3.2 Functional Configuration Audit

3.2.1 Review of Vendor's Completed System Test Cases and Results

SysTest Labs will evaluate the quality and coverage of system testing completed by the Vendors prior to the voting system's submission to the NYSBOE for verification. This activity provides SysTest Labs with an indication of the amount of system testing coverage obtained during the Vendor's own internal quality assurance and system testing activities prior to delivery to SysTest Labs. This is not an evaluation of their QA or CM processes. The document created during this review will be included in **Deliverable 4: Evaluation of Prior Work**. The tasks for the review of vendor's completed system test cases and results are detailed below in Section 5.2.1 *Review of Vendor's Completed System Test Cases and Results*.

Comment [rz23]: This will also be related to satisfying the VVSG Vol2 2.7.1 requirements.

Comment [rz24]: The review of the vendors tests would be unrelated to the SysTest review of the prior ITA work. Document should be corrected.

3.2.2 Review of Prior VSTL/ITA TDP Review and Assessment Results

Comment [rz25]: Need clarification here on RFP statement. As stated this effort would seem to add little value. If SysTest is evaluating past assessments to ensure that vulnerabilities discovered are now corrected then this would add significant value.

Need to make sure that NYSBOE agrees.

As part of its contractual obligation, SysTest Labs will evaluate the quality and coverage of prior certification reviews, assessments, and testing completed by EAC accredited VSTLs, the previous NYSBOE ITAs, and current or prior SysTest Labs' validation and certification testing efforts. This activity will include documentation reviews and assessments, source code reviews and assessments, test plans, test cases, hardware testing results and reports, and functional testing results and reports. This activity will determine if any of the prior certification test results can be substituted for current verification testing activities. The goal is to leverage the efforts completed by NVLAP accredited test labs that have tested the exact same versions of voting systems or voting system components and therefore, save both time and money while ensuring testing effectiveness. The document created during this review will be included as part of **Deliverable 4: Evaluation of Prior Work.** The tasks for prior ITA TDP review and assessment results are detailed below in Section 5.2.2

Review of Prior VSTL/ITA TDP Review and Assessment Results.

3.2.3 Regression Reviews and Assessments

Comment [rz26]: Reference regression testing plan here.

Regression reviews and assessments validate a fix to a specific discrepancy and comprehensive reassessment of any potential affected areas after the fix to the discrepancy or series of discrepancies has been made. Regression reviews and assessments will rely on the procedure used to uncover the discrepancy to validate that changes made meet the requirements. Any time a fix is provided by the Vendor, a complete review of the source code must be done before the code is included in a Trusted Build. The tasks for regression reviews and assessments are detailed below in Section 5.2.3 *Regression Reviews and Assessments*.

3.2.4 Discrepancy Closure

A discrepancy can be closed if the response from the vendor adequately describes how the vendor has made modifications to the code, hardware and/or documentation to meet the requirement and SysTest Labs has confirmed through review and/or testing that the requirement has been met. The tasks for discrepancy closure are detailed below in Section 5.2.4 *Discrepancy Closure*.

4 TDP REVIEW AND ASSESSMENT ARTIFACTS

An illustration of the documentation and deliverables that will be developed and submitted as a part of the NYSBOE TDP review and assessment effort are shown in Figure 1 - *TDP Review and Assessment Artifacts*. All grayed out items in Figure 1 are not part of this document and details can be found in the Final Master Test Plan (**Deliverable 6: Final Master Test Plan**). A list of the other test related deliverables is shown in Table 5 - *Verification Review and Assessment Deliverables.*

Figure 1 - TDP Review and Assessment Artifacts

Table 5 - Verification Review and Assessment Deliverables

Item	Description
Master TDP Review Plan	A clear and precise plan (this document) of overall TDP review and assessment methods and processes that SysTest Labs will use throughout the course of voting system TDP review and assessment. This document is defined as a component of ***Deliverable 5: Review of Technical Data Packages (TDP's).***
Document Review Forms	Document review forms provide checklists to verify that document requirements are met. These automated forms include criteria by which each document will be assessed and provides mechanisms to record and cross-reference results.
Source Code Review Forms	Source code review forms provide checklists to verify that source code requirements are met. These automated forms include criteria by which each line of source code in a module will be assessed and provides mechanisms to record and cross-reference results.
Source Code Review Criteria	The criteria contained within the Requirements Matrix by which each line of source code in a module will be assessed. Source Code Reviews are performed under two circumstances. Initial reviews are performed the first time a voting system is reviewed for validation. All source code is reviewed. Also, any fixes to the source code are reviewed and follow the same process as the initial review. Source code reviews are an iterative process comprised of the following tasks. • Examine the source code. Review 2005 VVSG, NYS Laws, 6209 regulations and BMD requirements for subject area of review. Record initial findings in the appropriate Source Code review form. Record discrepancies for areas not in compliance with these requirements. • Peer review of code evaluation. Indicate source code review form progression.

Comment [rz27]: Including these in the appendix would add value to this document.

Comment [rz28]: Including these in the appendix would add value to this document.

Comment [rz29]: Add or referenced by the requirements matrix

Comment [rz30]: There must also be source code review that is part of the functional testing.

Actually the whole element of security related source code reviews to compliment functional testing as per the requirements matrix is absent from this criteria description.

Item	Description
	• Receive vendor response and re-review. Vendor responds with comments and updated source code. Record re-review findings in source code review form and/or source code review discrepancy report. Source Code Review will be performed to meet the following criteria (as paraphrased from IEEE standards): • Verification that the software product satisfies requirements where appropriate. • Verification of conformance of code to vendor referenced standards through automated and manual, visual source code review. • Identification of deviations from standards and specifications.
Document Review Criteria	The criteria contained within the Requirements Matrix by which each document will be assessed.
TDP Review and Assessment Results	The detailed results (pass/fail) of all review and assessment activities.
Discrepancy Reports	There will be two distinct types of discrepancy reports created or updated during each TDP review and assessment effort. These are "Discrepancy Reports" and "Source Code Discrepancy Reports". Discrepancy reports refer to documentation-related problems, defects, discrepancies, etc. identified during a TDP review and assessment or Source Code-related problems, discrepancies, or defects identified during review of the source code. In either case, discrepancies entered into each Report document the inability of the voting system to satisfy a specific requirement as defined in the Requirements Matrix. Informational- refers to discrepancies that are encountered during review and assessment, but are not related to the Requirements Matrix.

Comment [rz31]: Shouldn't the use of source code analysis tools me included in this section?

Item	Description
Document Review Summary	A report containing all results from the Document Review including a summary of the review activities, results, a list of all discrepancies discovered during the course of the review and any associated resolutions or recommendations.
Source Code Review Summary	A report containing all results from the Source Code Review including a summary of the review activities, results, a list of all discrepancies discovered during the course of the review and associated resolutions or and recommendations.
Final Voting System Specific Test Report	A document, in hard copy and electronic format for the NYSBOE that provides a Pass/Fail summary for the voting system and details of all of the results from examinations, assessments, evaluations, and testing performed. Each Final Voting System Specific Test Report will provide the following information: • The results from review and validation of TDP documentation including a listing of all resolved discrepancies and associated resolutions along with any unresolved discrepancies • The results from review and validation of source code including a listing of all resolved discrepancies, associated resolutions along with any unresolved discrepancies. • A listing of all Test Cases, election definitions, ballot definitions and any other data created and used during test execution. • A complete analysis of the results from software and systems testing including a listing of all resolved discrepancies and associated resolutions along with any unresolved discrepancies. • The results from all required hardware environmental analysis and testing including a listing of all resolved discrepancies and associated resolutions along with any unresolved discrepancies. • A final assessment and evaluation of the voting

Comment [rz32]: The final report must include the time and date that each test was run, and initials by the tester and the observer. Where possible the person running the test should not be the person who wrote the test case.

Comment [rz33]: Must include the actual test cases, test procedures and results

Item	Description
	system's ability to comply with the Requirements Matrix.

5 REVIEW AND ASSESSMENT TASKS

NYSBOE Verification TDP review and assessment tasks required to ensure compliance to the approved Requirements Matrix are provided in this section. High level TDP review and assessment criteria associated with TDP review and assessment activities are provided in Section 8 *APPENDIX A – TDP REVIEW AND ASSESSMENT CRITERIA*. It should be noted that the results and discrepancy reports for each of the TDP review and assessment activities are documented and maintained throughout each activity until the activity has been completed. Upon completion of the verification test engagement, all results are provided in the Final Test Report (***Deliverable 10: Final Test Reports***) and archived with all testing artifacts.

5.1 Physical Configuration Audit

5.1.1 Document Review

5.1.1.1 General

Document review and assessment activities relative to NYSBOE verification test efforts involve the following primary tasks and subtasks:

- Examine content of TDP.
  - Determine if all documentation has been delivered.
  - Record a discrepancy for each missing document.
- Examine content of Vendor documents.
  - Review voting standard requirements.
  - Review Vendor documents for compliance with requirements.
  - Establish whether the TDP documents submitted are sufficient to enable:
    - Source Code review.
    - Design and perform tests at every level of the software structure to verify that software meets vendor's design specifications and performance requirements.
- Record results of examination.
  - Record initial findings in the appropriate review form.
  - Record discrepancies.
- Peer review of examination.
- Vendor response to examination.
  - Receive Vendor responses: comments and updated documents.
  - Review updated documents.

- Update review form and discrepancy report.

- Complete documentation reviews and prepare Document Review Summary.
- Provide input into the Voting System Specific Test Cases being developed.

Refer to Section 7.3 *TDP Review and Assessment Sequence* for the sequence of the TDP review and assessment.

Refer to Table 2 *- Items to be Reviewed and/or Assessed* for identification of the documentation required for the validation effort.

5.1.1.2 Security

Security focused Document Review insures that documentation adequately addresses all Security and Access Control Policies defined in the Requirements Matrix.

Comment [rz34]: The requirements matrix lists requirements related to Access Control Policies. The document review must ensure that all security related requirements in the matrix are met. Whenever a requirement is met, the matrix (or final test report) must made to include a reference to the specific TDP document page number and section that satisfies the requirement (or causes a failure)

There are numerous areas within the documentation that will be evaluated for Security and Access Control Policies best practices. Table 6 *- Areas of Security Focused Document Review* provides a high level description of the area of focus for security related document review. This list is not intended to be all inclusive.

Table 6 - Areas of Security Focused Document Review

Type of Review	Description
Documentation	All vendor documentation is reviewed to validate all Vendor Security and Access Control Policies pertaining to: • General, software, hardware access controls • Communications • Effective password management • Protection abilities of a particular operating system • General characteristics of supervisory access privileges • Segregation of duties • Vendor's access privileges • Access control measures • Physical security measures • Polling place security • Central count location security

Type of Review	Description
	• Software security • Software and firmware installation • Protection against malicious software • Data integrity • Data interception prevention • Protection against external threats • Identification of COTS products • Use of protective software • Monitoring and responding to external threats • Shared operating environment • Access to incomplete election returns and interactive queries • Documentation of mandatory security activities • Any other relevant characteristics

5.1.2 Source Code Review

5.1.2.1 General

The source code review encompasses examinations of all application and related source code and firmware source code for compliance against the requirements in 2005 VVSG Vol1, Vol2, and all applicable NYS specific requirements identified in the Requirements Matrix. SysTest Labs will review the vendor's source code, at a minimum, for programming completeness, consistency, correctness, modifiability, structure, and traceability, along with its modularity and construction. Results from the source code review will provide input into the Vendor's Voting System Specific Test Cases.

SysTest Labs inspects all modified or modifiable COTS generated software source code (as defined in Certified voting System Software and Source Code Escrow Requirements[3]), e.g., .NET forms, WOW for COBOL, etc., for embedded code or unauthorized changes.

Unmodified COTS source code is not subjected to code review (as defined in certified voting System Software and Source Code Escrow

[3] *Certified Voting System Software and Source Code Escrow Requirements for New York State Board*, New York State Technology Enterprise Corporation, January 21, 2008

Requirements). For purposes of source code review, the COTS units shall be treated as unexpanded macros.

The Source Code Review activities relative to NYSBOE verification test efforts involve the following tasks and subtasks, identified within the MPP as task 'Source Code Review Preparation':

- Establish the Source Code Review Criteria.
  - Review the 2005 VVSG and the NYS laws and requirements.
  - Review the Vendor's published coding standards.
  - Update the review definitions and specific review criteria for the Vendor's specific coding language and published Coding Standards.
  - Create Vendor specific Source Code Review Criteria .
- Execute Automated Tools, e.g., static analysis tools.
- Conduct the Language Specific source code review.
  - Review each source code module for compliance to the Source Code Review Criteria.
  - Record initial findings.
  - Record discrepancies for areas not in compliance with 2005 VVSG and the NYS laws and requirements.
- Peer review of code evaluation.
  - Submit source code review results to NYSBOE for Review.
  - Submit source code review results to Vendor for review after the NYSBOE review is completed.
  - Submit source code review discrepancies to NYSBOE for review and Vendor for resolution.
- Receive Vendor response and re-review.
  - Vendor responds with comments and updated source code.
  - Record re-review findings in source code review form and/or source code review discrepancy report.
- Complete source code reviews and prepare Source Code Review Summary.
- Provide input into the Voting System Specific Test Cases being developed.

The coding languages anticipated for each voting system may include the following:

- C/C++
- VB.NET
- C#
- COBOL
- Assembler

- Visual Basic
- Java
- Perl
- Delphi
- HTML
- PowerBuilder

5.1.2.2 Security

Security focused Source Code Review insures source code meets the coding guidelines defined in the Requirements Matrix and provides additional protection against security flaws into the system. Potential security issues may include:

- Incomplete parameter validation
- Inconsistent parameter validation
- Implicit sharing of privileges/confidential data
- Asynchronous validation/inadequate serialization
- Inadequate identification/authentication/authorization
- Violable prohibition/limit
- Exploitable logic error

There are numerous areas within the source code that will be evaluated for secure best practices. Security Source Code Review applies to a number of the requirements from the VVSG, NY Law, and 6209 Regulations. For a list of applicable requirements, please see the Requirements Matrix. For each applicable requirement, the following programming languages are supported:

- C/C++
- C#
- HTML
- Java

Table 7 - *Areas of Security Focused Source Code Review* provides a high level description of the area of focus for security related source code review. This list is not intended to be all-inclusive.

Table 7 - Areas of Security Focused Source Code Review

Type of Review	Description
Buffer Overflow	Writing outside the bounds of allocated memory can corrupt data, crash the program, or cause the execution of an attack payload.

Type of Review	Description
Command Injection	Executing commands from an untrusted source or in an untrusted environment can cause an application to execute malicious commands on behalf of an attacker.
Format String	Allowing an attacker to control a function's format string may result in a buffer overflow.
Illegal Pointer Value	This function can return a pointer to memory outside of the buffer to be searched. Subsequent operations on the pointer may have unintended consequences.
Integer Overflow	Not accounting for integer overflow can result in logic errors or buffer overflows.
Log Forging	Writing unvalidated user input into log files can allow an attacker to forge log entries or inject malicious content into logs.
Path Manipulation	Allowing user input to control paths used by the application may enable an attacker to access otherwise protected files.
Process Control	Executing commands or loading libraries from an untrusted source or in an untrusted environment can cause an application to execute malicious commands (and payloads) on behalf of an attacker.
Resource Injection	Allowing user input to control resource identifiers may enable an attacker to access or modify otherwise protected system resources.
Setting Manipulation	Allowing external control of system settings can disrupt service or cause an application to behave in unexpected ways.
SQL Injection	Constructing a dynamic SQL statement with user input may allow an attacker to modify the statement's meaning or to execute arbitrary SQL commands.

Type of Review	Description
String Termination Error	Relying on proper string termination may result in a buffer overflow.
Struts: Duplicate Validation Forms.	Multiple validation forms with the same name indicate that validation logic is not up-to-date.
Struts: Erroneous validate() Method.	The validator form defines a validate() method but fails to call super.validate().
Struts: Form Bean Does Not Extend Validation Class.	All Struts forms should extend a Validator class.
Struts: Form Field Without Validator	Every field in a form should be validated in the corresponding validation form.
Struts: Plug-in Framework Not In Use	Use the Struts Validator to prevent vulnerabilities that result from unchecked input.
Struts: Unused Validation Form	An unused validation form indicates that validation logic is not up-to-date.
Struts: Unvalidated Action Form	Every Action Form must have a corresponding validation form.
Struts: Validator Turned Off	This Action Form mapping disables the form's validate() method.
Struts: Validator Without Form Field	Validation fields that do not appear in forms they are associated with indicate that the validation logic is out of date.
Unsafe JNI	Improper use of the Java Native Interface (JNI) can render Java applications vulnerable to security bugs in other languages. Language-based encapsulation is broken.
Unsafe Reflection	An attacker may be able to create unexpected control flow paths through the application, potentially bypassing security checks.
XML Validation	Failure to enable validation when parsing XML gives an attacker the opportunity to supply malicious input.

Type of Review	Description
Dangerous Function	Functions that cannot be used safely should never be used.
Directory Restriction	Improper use of the chroot() system call may allow attackers to escape a chroot jail.
Heap Inspection	Do not use realloc() to resize buffers that store sensitive information.
J2EE Bad Practices: getConnection()	The J2EE standard forbids the direct management of connections.
J2EE Bad Practices: Sockets	Socket-based communication in web applications is prone to error.
Often Misused: Authentication	Do not rely on the name getlogin() family of functions returns because it is easy to spoof.
Often Misused: Exception Handling	A dangerous function can throw an exception, potentially causing the program to crash.
Often Misused: File System	Passing an inadequately- sized output buffer to a path manipulation function can result in a buffer overflow.
Often Misused: Privilege Management	Failure to adhere to the principle of least privilege amplifies the risk posed by other vulnerabilities.
Often Misused: Strings	Functions that manipulate strings encourage buffer overflows.
Unchecked Return Value	Ignoring a method's return value can cause the program to overlook unexpected states and conditions.
Insecure Randomness	Standard pseudo-random number generators cannot withstand cryptographic attacks.
Least Privilege Violation	The elevated privilege level required to perform operations such as chroot() should be dropped immediately after the operation is performed.

Type of Review	Description
Missing Access Control	The program does not perform access control checks in a consistent manner across all potential execution paths.
Password Management	Storing a password in plaintext may result in a system compromise.
Password Management: Empty Password in Config File	Using an empty string as a password is insecure.
Password Management: Hard-Coded Password	Hard coded passwords may compromise system security in a way that cannot be easily remedied.
Password Management: Password in Config File	Storing a password in a configuration file may result in system compromise.
Password Management: Weak Cryptography	Obscuring a password with a trivial encoding does not protect the password.
Privacy Violation	Mishandling private information, such as customer passwords or social security numbers, can compromise user privacy and is often illegal.

5.1.2.3 Source Code Review Tools

SysTest Labs employs the use of several tools for specific voting system source code reviews. These tools are summarized in Table 8 - *Source Code Review Tools* to provide a basic overview of their functionality.

Table 8 - Source Code Review Tools

Tool Name	Description	Files/Languages Supported	Company
Beyond Compare	GUI tool that shows if differences exist between files or folders containing files. It allows for side-by-side folder comparisons and has several display filters for easy viewing. Reviewing tool for possible use.	text and zip	Scooter Software
Ccount	GUI tool that is used for the analysis of the syntactic readability of source code. It has several metrics that count various aspects of source code.	C	Joerg Lawrenz – Universita et Karlsruhe
CodeWizard, JTest, C++Test	GUI tools that enforce coding standards based on patented Source Code Analysis technology. They enforce over 70 coding standards and provide detailed information for any violations. Have used sparingly on code review engagements and are continuing to review the tools for benefits & possible use.	C++ & Java	ParaSoft Corporation
ExamDiff Pro	GUI tool that shows if differences exist between files or folders containing files. It highlights document syntax and allows side-by-side file comparison at the line level. Used in preparation for manual Static Source Code Review.	text and binary	PrestoSoft
Fortify SCA	GUI tool that performs security and static source code analysis. It finds more than 200 different security issues and vulnerabilities in multiple software languages.	ASP, ColdFusion, Java, .NET, C/C++, PLSQL, XML	Fortify Software

Tool Name	Description	Files/Languages Supported	Company
FxCop	GUI or command line tool that does static code analysis of .NET managed code. It checks compiled object code, not source code, for more than 200 defects.	.NET source code	Microsoft
KEdit	A commercial text editor application running a SysTest Labs proprietary macro used to parse module names from COBOL code and populate the identified module names into the review document.	COBOL	Mansfield Software Group, Inc.
Module Finder	A SysTest Labs proprietary application used to parse module names from C/C++ and VB code and populate the resulting module names into the review work documents.	C/C++ and VB	SysTest Labs
Practiline Line Counter	A commercial application used to determine the counts of executable and comment lines.	All	Practiline Software
Project Analyzer	GUI tool that performs a source code quality check. It can calculate metrics and report coding issues.	VB	Aivosto Oy

Tool Name	Description	Files/Languages Supported	Company
Rough Auditing Tool for Security (RATS)	GUI tool that scans source code and flags common security related programming errors. It performs a rough analysis, so it may miss items and flag items that are not errors.	C/C++, Perl, PHP, Python	Fortify Software
RSM	GUI tool that performs source code analysis for code reviews and acceptance testing. It measures source code quality metrics and cyclic complexity. Reviewing tool for possible use.	C/C++, Java, C#	M Squared Technologies
Sclc	GUI tool that is used for statistical information in providing various source code attribute counts.	Ada, Assembly, Awk, C/C++, Eiffel, Java, Lisp, Pascal, Perl, Tcl, shell, make	Brad Appleton – Distributed under the Perl license
Sha1deep.exe	Command line tool that generates 160 bit SHA hash values. Source code review trusted build process.	All	
Understand for C++	GUI tool that performs reverse engineering, documentation and metrics checks for source code. It is an IDE designed to help maintain and understand large amounts of legacy or newly created source code.	C/C++	Scientific Tool Inc.
WinDiff	GUI tool that shows if differences exist between ASCII text files or folders containing ASCII text files. It displays file results in an output list or a detailed line-by-line single file comparison. Used in preparation for manual Static Source Code Review.	ASCII text files	Microsoft

5.1.3 Software and Hardware Configuration Audit

The PCA compares the voting system components (hardware and software) to the TDP package submitted by the vendor. The vendor provides a list of all documentation and data to be audited, cross-referenced to the contents of the TDP. This audit establishes a configuration baseline of the software and hardware to be tested. Software and hardware configuration audit tasks relative to the NYSBOE test campaigns involve the following tasks and subtasks:

- Set up the system test environment
  - Set up, install and configure the received software/hardware system per the vendor's product user manual.
- Audit the configuration: hardware, software and media
  - Verify the test environment setup whereby all existing components are properly documented in the vendor's user documentation. This examination shall establish the system hardware baseline associated with the software baseline.
  - Verify the vendor's documentation is sufficient for a user to install, validate, operate, and maintain the voting system.
  - Verify the vendor's submitted source code conforms to the vendor's baseline documentation. If changes are made to the version, SysTest Labs shall verify that the vendor's engineering and test data are for the software version submitted for verification.
  - Verify that any physical system changes that occur during testing are documented and that any necessary updates are made to test plans, cases, or procedures regarding system changes that occur during testing.
  - All changes to the system hardware or software that may produce a change in system operation shall also be subject to additional examination.
- Perform an operational status check
  - The operational status check will be performed at either SysTest Labs' hardware test subcontractor site or SysTest Labs.
  - Using the Operational Status Check Test Case created from the Vendor's submitted test case(s), operate the equipment in all modes, demonstrating all functions and features that would be used during election operations:
    - Configure the system for normal operation.
    - Power up, allowing sufficient time for the system to reach optimal operating temperature.

- Perform any additional actions necessary to ensure normal operation.
- Run the voting system in all modes, exercising all functions and features used during election operations, verifying they perform acceptably.

o Complete software and hardware configuration audit and prepare Software and Hardware Configuration Audit Summary.

5.2 Functional Configuration Audit

5.2.1 Review of Vendor's Completed System Test Cases and Results

The results of SysTest Labs evaluation of the quality and coverage of system testing completed by the Vendors prior to submission to the NYSBOE for verification will provide input into the Vendor- System Specific Test Cases.

Comment [rz35]: This seems not appropriate here. SysTest should use the vendor test cases and results submitted for this testing effort and us them to develop test cases. If there is extra time in the preparation of test cases prior to the start of testing then looking at a prior submission may be valuable.

Specific tasks associated with this FCA vendor test review include:

- Locate the vendor test trace and vendor test documentation
- Review the vendor test documentation – Ensure that the Vendor tests are evaluated for both positive and negative testing.
- Record review results
- Submit results for peer review
- Update review results after peer review and save a new revision of the FCA vendor test review for use in creating Vendor-Specific Test Cases..

5.2.2 Review of Prior VSTL/ITA TDP Review and Assessment Results

Review of Prior VSTL/ITA Review and Assessment Results and current or prior SysTest Labs' validation and certification testing efforts, will be made to the same standards as review and assessment of Vendor TDP's.

The acceptance and use of prior certification reviews, assessments, and testing performed by accredited VSTLs or the previous NYSBOE ITA and SysTest Labs current or prior SysTest Labs' validation and certification testing efforts is based on the following criteria:

- The configuration of the equipment being used in testing is substantially identical to the equipment that was previously used in testing and that all changes made to the hardware configuration of the equipment being used in the NYSBOE verification testing efforts, from the hardware that was previously used in prior verification testing are confirmed to be de minimis changes
- The previous testing and verification was performed against the 2005 VVSG.
- There have been no significant changes to the test methods.
- The lab that completed the prior verification testing meets the EAC's requirements for VSTL accreditation and is currently an NVLAP accredited ITA or the lab is the previous NYSBOE ITA.

Comment [rz36]: Substantially identical? If its not 100% identical that regression testing analysis must be done. See prior comments on this issue.

Comment [NPE37]: Some caution is required here since the only use of prior testing is if the submitted system is identical to the prior system.

If "Substantially Identical " is the criteria than that must be defined so it is not subjective.

This effort will require access to all prior certification documentation and source code reviews and assessments, test plans, test reports, and test results as well as detailed information regarding the configurations and versions of each component within the voting system.

The documents to be reviewed in this effort Include:

- Prior ITA TDP Review and Assessment:
  - Test Cases,
  - Documentation Reviews,
  - Source Code Reviews,
  - Hardware Testing Results and Reports
  - Functional Testing Results and Reports:
- Prior VSTL TDP Review and Assessment:
  - Test Cases,
  - Documentation Reviews,
  - Source Code Reviews,
  - Hardware Testing Results and Reports
  - Functional Testing Results and Reports
- Prior or current SysTest Labs Engagements:
  - Test Cases, Documentation Reviews,
  - Source Code Reviews,
  - Hardware Testing Results and Reports

- Functional Testing Results and Reports

Specific tasks associated with this review and assessment include:

- Examine content of documents from prior verification testing).
  - Review voting standard requirements.
  - Review prior VSTL/ITA or SysTest Labs documents for compliance with requirements.
- Record results of examination.
- Record initial findings in the appropriate review form.
- Peer review of examination.
- Complete documentation reviews and prepare a summary of findings for referral to the NYSBOE for action.

The deliverable from this activity (defined as **Deliverable 4: Evaluation of Prior Work**) will be a list of system tests that will not be required to be included in this current verification testing effort for a specific Vendor's voting system. Any results that SysTest Labs deems to be duplicate testing will be identified to the NYSBOE. The NYSBOE will be asked to provide approval and agreement that the previous tests were sufficient. The tests and results that are accepted are then exempted from the current NYSBOE verification test effort and will be reflected as such in the Requirements Matrix specified for the voting system.

5.2.3 Regression Reviews and Assessments

Comment [rz38]: SysTest should reference their regression testing plan and simply state that it will be used to determine what additional testing is done after changes are made. A change in source code may invalidate other test results.

SysTest Labs' approach to regression reviews and assessments against the documentation or source code discrepancies found during the TDP review is defined below. Regression testing performed after the TDP review and assessment is completed is identified in the Master Test Plan, Section 5.2.6.1.

- Compare the updated documentation or source code against the original documentation or source code that the discrepancy was written against to determine the extent of the changes provided with the fix.
- If other sections of documentation or source code were added or modified in support of the fix, these will be reviewed to determine impact.
- The updated documentation or source code will be assessed against the applicable requirements.
- Security tools will be rerun against any code that is delivered.
- If the document or code is unacceptable, it will be sent back to the Vendor and the discrepancy will not be resolved.
- Depending on how much information is provided by the Vendor's development organization, an evaluation of the magnitude of the

changes to fix the discrepancy, the associated modules affected, and the interface touch points will be done to determine the level of additional documentation or source code review that will be required.

5.2.4 Discrepancy Closure

A discrepancy can be closed if the response from the Vendor adequately describes how the Vendor has made modifications to the code, hardware and/or documentation to meet the requirement in the Requirements Matrix and SysTest Labs has confirmed through re-review and/or re-testing that the requirement has been met.

- A description of the reason why the discrepancy can be closed must be noted in the Description field of the appropriate Discrepancy Report, along with the date it was added and the name of the person making the entry.

- If a Vendor's response indicates that they believe that the identified discrepancy is NOT a discrepancy per the Requirements Matrix, an Interpretation Request must be prepared and submitted to the NYSBOE.

6 MATERIALS REQUIRED FOR TDP REVIEW AND ASSESSMENT

6.1 Materials

Items identified in Table 9 - *TDP Review and Assessment Materials* reflect a high level of the TDP review and assessment materials required to perform the PCA activities. The vendor specific details can be found in Section 9 *APPENDIX B - TDP ITEMS FOR EACH VOTING SYSTEM UNDER TEST (VSUT)*

Table 9 - TDP Review and Assessment Materials

Item
Documents from the TDP
Source Code Review Forms
Document Review Forms
Source Code Coding Standards
Source Code Modules from the TDP

6.2 Proprietary Data

SysTest Labs will indicate which portions of reports are considered proprietary information. SysTest Labs understands that material not classified as proprietary, including test plans and test reports, will become available to the public. Proprietary information will be submitted to the NYSBOE in a separate attachment marked "Proprietary."

7 PROCEDURES AND CONDITIONS

7.1 Facility Requirements

All TDP review and assessments will be performed on site at SysTest Labs in Colorado. All TDP and test documentation is stored in the secure project directory on SysTest Labs' secure NYSBOE Server.

7.2 Setup

Each Vendor's voting system test platform will be configured, as part of the PCA, in the standard configuration identified in the Vendor's TDP documents. Following documented procedures, the software will be installed, versions verified and made operational. In addition, using the documented procedures, the hardware will also be configured and versions verified according to the Vendor's TDP documents.

7.3 TDP Review and Assessment Sequence

While there is no required sequence for performing voting system TDP review and assessment, there are prerequisite tasks for some activities. Tasks and any applicable predecessor tasks, as outlined in 2005 VVSG, Volume 2: Section 1.4, are identified in Table 10 - *High-Level TDP Review and Assessment Milestones in Sequence*.

Table 10 - High-Level TDP Review and Assessment Milestones in Sequence

Verification Task	Prerequisite Task
Scope Definition	Ascertain previous verification Information for the voting system, if applicable.
Quality Assurance Program (QAP) and Configuration Management Plan (CMP) Examination	Scope Definition.
NYSBOE Master TDP Review Plan	QAP and CMP Examination.
PCA – Voting System Specific document review criteria development	Mapping of voting system specific requirements and supported functionality to the Requirements Matrix.

Verification Task	Prerequisite Task
PCA – Voting System Specific source code review criteria development	Mapping of voting system specific requirements for the specific coding languages and supported functionality to the Requirements Matrix.
PCA – System Configuration Audit	Equipment received at SysTest Labs, staff trained on system, and documentation available.
Documentation Review Verification Report	Successful completion of all TDP document review and assessment tasks.
Source Code Review Verification Report	Successful completion of all TDP source code review and assessment tasks.
PCA –Discrepancy Reporting	All TDP review and assessment discrepancies are reported as encountered during TDP review and assessment.
PCA – Regression and Discrepancy Re-Reviews	Receipt of applicable discrepancy fixes (source code or documentation) and/or Vendor's response.

7.4 TDP Review and Assessment Procedures

SysTest Labs will perform an inventory to verify the TDP received contains documentation and source code elements as defined by the Vendor.

The PCA will include verification that the system can be configured using the system operations manuals.

Throughout the TDP review and assessment effort, the review forms will be marked as follows:

- *Accept* – accepted as successful.
- *Reject* – rejected as unsuccessful.
- *NT* – Not Testable is used for assessments that cannot be followed. For example, if failure of one assessment precludes attempting subsequent assessments, the latter will be marked as *NT*.
- *NS* – Not Supported is used for requirements not supported in the configuration.

- *NA* – Not Applicable - If an assessment is not applicable to the current verification TDP review and assessment effort, it will be marked as *NA*.

TDP review and assessment results marked as *Reject, NT,* and *NA* will include comments by the Reviewer explaining the reason for the result.

Discrepancies encountered during TDP review and assessment will be documented in a discrepancy report. Discrepancies that do not conform to the Requirements Matrix will be marked as *Document Discrepancies or Source Code Discrepancies* (a discrepancy occurs when the documentation or source code does not meet criteria established to ensure compliance to the requirements in the Requirements Matrix). Each discrepancy will contain, at a minimum, the following information:

- A unique identifier
- Vendor's Name
- Voting System Name and Version
- Date Discrepancy Opened
- Status (*Open, Awaiting Vendor Response, In Regression Test, Closed*)
- Date of Last Update to Discrepancy
- Type of Discrepancy (*Document, Source Code, Informational*)
- Details of Discrepancy (PCA Doc <name>, Assessment Form Identification, Requirement, Narrative and Comments, etc.)
- Tester Names
- Type of Review (*Documentation, Source Code*)
- Applicable Requirement(s)
- Vendor's Response

Each Vendor must address all discrepancies. Discrepancies that are encountered during TDP review and assessment, but are not related to the Requirements Matrix will be added to the discrepancy report and noted as *Informational*. All responses by each Vendor are included in the associated discrepancy report. All discrepancy reports will be included as an attachment to the Voting System Individual Test Reports (***Deliverable 9: Voting System Individual Test Reports***).

8 APPENDIX A – TDP REVIEW AND ASSESSMENT CRITERIA

8.1 Source Code Review Criteria

8.1.1 General

Table 11 - *General Source Code Review Criteria* indicates which criteria from the 2005 VVSG is applied to each anticipated unique programming language.

Table 11 - General Source Code Review Criteria

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
v.1: 5.2.2	**Self-modifying code**	Self-modifying, dynamically loaded, or interpreted code is prohibited	✓	✓	✓			✓	✓	✓	✓	✓	✓
v.1: 5.2.3.a	**Specific function**	Module performs a specific function	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.b	**Module has unique name**	Uniquely and mnemonically named using names that differ by more than a single character		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
v.1: 5.2.3.b 5.2.7 (a, a.i-a.vi)	**Module has header**	Header describes purpose, other units needed, inputs, outputs, files read or written, globals, revision records (for modules greater than 10 lines) Header comments shall provide the following information: 1) The purpose of the unit and how it works; 2) Other units called and the calling sequence; 3) A description of input parameters and outputs; 4) File references by name and method of access (read, write, modify , append, etc.); 5) Global variables used; and 6) Date of creation and a revision record;	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.c	**Required resources**	All required resources, such as data accessed by the module, should either be contained within the module or explicitly identified	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.d v.2: 5.4.2.l	**File's functions' line count**	On the Application level, no more than 50% exceeding 60 lines, no more than 5% exceeding 120 lines, and none exceeding 240 lines without justification.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.e	**Single Entry Point**	Module has a single entry point	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.e	**Single Exit Point**	Module has a single exit point		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.3.f	**Control structures**	Sequence, Conditionals, Top & Bottom tested loops, Switch.Case, For loops		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.1: 5.2.4.a	**Acceptable Constructs**	Acceptable constructs are Sequence, If-Then-Else, Do-While, Do-Until, Case, and the General loop (including the special case for loop); Note: This criteria will be "Accept" except in the case where the vendor defines code constructs.		✓	✓	✓		✓	✓	✓	✓	✓	✓

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
v.1: 5.2.4.l	**Vendor Defined Constructs with Justification**	If the programming language used does not provide these control constructs, the vendor shall provide them (that is, comparable control structure logic). The constructs shall be used consistently throughout the code. No other constructs shall be used to control program logic and execution;	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.4.ii	**Execution through Control Constructs**	While some programming languages do not create programs as linear processes, stepping from an initial condition, through changes, to a conclusion, the program components nonetheless contain procedures (such as "methods" in object-oriented languages). Even in these programming languages, the procedures must execute through these control constructs (or their equivalents, as defined and provided by the vendor);		✓	✓			✓	✓	✓	✓	✓	✓
v.1: 5.2.4.iii	**Program re-direction**	Logic that evaluates received or stored data shall not re-direct program control		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.1: 5.2.5.b 5.2.5.c	**Class, function and variable names**	Consistent names chosen so as to enhance the readability; Unique within their scope		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.1: 5.2.5.d	**Keyword**	Keywords shall not be used as names		✓	✓			✓	✓	✓	✓	✓	✓
v.2: 5.4.2.a	**Uniform calling sequences**	Module code uses uniform calling sequences		✓	✓		✓	✓	✓	✓	✓	✓	✓
v.2: 5.4.2.a	**Parameters type and range validation**	All parameters shall either be validated for type and range on entry into each unit or the unit comments shall explicitly identify the types and ranges		✓	✓			✓	✓	✓	✓	✓	✓
v.2: 5.4.2.b	**Explicit return values**	The return is explicitly defined for functions and explicitly assigned		✓	✓			✓	✓	✓	✓	✓	
v.2: 5.4.2.c	**Macros**	Does not use macros that contain returns or pass control beyond the next statement		✓					✓	✓			✓

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
v.2: 5.4.2.d	**Unbound arrays**	Provides controls to prevent writing beyond the array, string, or buffer boundaries		✓	✓	✓		✓	✓	✓	✓	✓	
v.2: 5.4.2.e	**Pointers**	Provides controls that prevent pointers from being used to overwrite executable instructions or to access areas where vote counts or audit records are stored		✓	✓					✓	✓	✓	✓
v.2: 5.4.2.f	**Case statements**	Default Case explicitly defined		✓	✓	✓		✓		✓	✓	✓	✓
v.2: 5.4.2.g	**Vote counter overflowing**	Provides controls to prevent any vote counter from overflowing	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.h	**Indentation**	Code is consistently indented	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.2: 5.4.2.j	**Code generator**	Generated code should be marked as such with comments	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.k	**Line Length**	No line of code exceeds 80 columns in width without justification	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.2: 5.4.2.l	**Executable statement**	Only one executable statement for each line		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.m	**Embedded executable statement**	Single embedded statement may be considered a part of the conditional expression		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.n	**Mixed-mode operations**	Before a mixed-mode expression can be evaluated, the operands must be converted, or promoted, to a common data type		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.o	**Exit() message**	Upon exit() at any point, presents a message to the user indicating the reason		✓	✓	✓		✓		✓	✓	✓	✓
v.2: 5.4.2.p	**Format of messages**	Separate and consistent formats to distinguish between normal status and error or exception messages		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.q	**References variables**	Code references variables by fewer than five levels of indirection (i.e. a.b.c.d or a[b].c->d)		✓	✓			✓	✓	✓	✓	✓	✓
v.2: 5.4.2.r	**Levels of indented scope**	Fewer than six levels of indented scope		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
v.2: 5.4.2.s	**Variable initialization**	Initializes every variable upon declaration where permitted, Class members initialized in the constructor	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓ excluding classes
v.2: 5.4.2.t	**Constant Definitions**	All constants other than "0" and "1" defined or enumerated	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
v.2: 5.4.2.u	**Ternary Operator**	Only contains the minimum implementation of the "a = b ? c : d" syntax. Expansions such as "j=a?(b?c:d):e;" are prohibited.		✓	✓		✓	✓	✓	✓	✓	✓	✓
v.2: 5.4.2.w	**Assert() statement**	All assert() statements coded such that they are absent from a production compilation		✓	✓			✓		✓	✓	✓	✓
	Blank Lines	Blank lines improve readability by setting off sections of code that are logically related.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Blank Spaces	Blank spaces should be used to improve the readability of the code.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
v.1: 5.2.7.b	**Variables**	Comments at the point of declaration	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
v.1: 5.2.7.c	**In-Line Comments**	In-line comments provided to facilitate interpretation of functional operations, tests, and branching		✓	✓	✓		✓	✓	✓	✓	✓	✓
v.1: 5.2.7.d	**Assembly code**	Contains descriptive and informative comments	✓	✓	✓				✓	✓	✓	✓	✓
v.1: 5.2.7.e	**Comments in uniform format**	Comments formatted in a uniform manner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Source File Organization	All source file names have the correct suffix. The corresponding object file has a suffix of .o.		✓	✓			✓	✓	✓	✓	✓	
	Header File Conventions	Whenever possible a header file should be created rather than repeating externs or data structure definitions in source code.		✓	✓	✓		✓	✓	✓	✓	✓	✓

VVSG Section	General Description	VVSG Description	Assembler	C/C++	C#	COBOL	HTML	Java	Perl	Power Builder	VB	VB.net	Delphi
	Error Handling	All error handling should be at the bottom of the method before returning. Avoid doing it at multiple places throughout the method.		✓	✓			✓		✓	✓	✓	✓
	Thread safe	Code that executes in a multi-threaded environment must avoid unwanted interactions with other threads (e.g., non-atomic access to shared data structures).		✓	✓			✓					✓
	Transaction protection	Transaction-oriented code must ensure database consistency by apply the correct sequence of database primitives (e.g., logging, locking) to ensure that transactions are fully committed or can be rolled back.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	No unhandled exceptions	All exceptions should be correctly handled. Code must check error returns from called functions and handle them appropriately.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

8.2 Document Review Criteria

Table 12 - *Document Review Criteria* indicates which criteria from the VVSG are applied to each required document. This criterion is taken from SysTest Labs' Document Review templates and is not to be considered all-inclusive.

Comment [rz39]: The criteria should be taken from the Test Matrix

Table 12 - Document Review Criteria

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
2	**Technical Data Package**												
2.1	**Scope**												
2.1.1	**Content and Format**												
2.1.1.1	**Required Content for Initial Verification** *(Indicate "*" if this document does not fall into the identified category of documentation.)*												
a.	At minimum, the TDP shall contain the following documentation: System configuration overview;	✓											
b.	At minimum, the TDP shall contain the following documentation: System functionality description;		✓										
c.	At minimum, the TDP shall contain the following documentation: System hardware specifications;			✓									
d.	At minimum, the TDP shall contain the following documentation: Software design and specifications;				✓								
e.	At minimum, the TDP shall contain the following documentation: System test and verification specifications;					✓							
f.	At minimum, the TDP shall contain the following documentation: System security specifications;						✓						
g.	At minimum, the TDP shall contain the following documentation: User/system operations procedures;							✓					
h.	At minimum, the TDP shall contain the following documentation: System maintenance procedures;								✓				
i.	At minimum, the TDP shall contain the following documentation: Personnel deployment and training requirements;									✓			
j.	At minimum, the TDP shall contain the following documentation: Configuration management plan;										✓		

Comment [rz40]:
The table below looks to be a way to categorize TDP review related requirements. It is unclear how this table will help a tester complete a TDP review as it is essentially a restatement of the VVSG requirements.

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
k.	At minimum, the TDP shall contain the following documentation: Quality assurance program;											✓	
l.	At minimum, the TDP shall contain the following documentation:: System change notes.												✓
2.1.1.2	**Required Content for System Changes and Re-verification**												
	For systems seeking re-verification, vendors shall submit System Change Notes as described in Section 2.13, as well as current versions of all documents that have been updated to reflect system changes.												✓
	Vendors may also submit other information relevant to the evaluation of the system, such as test documentation, and records of the system's performance history, failure analysis and corrective actions.					✓							
2.1.1.3	**Format**												
	The requirements for formatting the TDP are general in nature; specific format details are of the vendor's choosing. The TDP shall include a detailed table of contents for the required documents, an abstract of each document and a listing of each of the informational sections and appendices presented. A cross-index shall be provided indicating the portions of the documents that are responsive to documentation requirements for any item presented.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.1.2	**Other Uses for Documentation**												
	Although all of the TDP documentation is required for national certification testing, some of these same items may also be required during the state verification process and local level acceptance testing. Therefore, it is recommended that the technical documentation required for verification and acceptance testing be deposited in escrow.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.1.3	**Protection of Proprietary Information**												

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
	The vendor shall identify all documents, or portions of documents, containing proprietary information not approved for public release. Any person or test agency receiving proprietary information shall agree to use it solely for the purpose of analyzing and testing the system, and shall agree to refrain from otherwise using the proprietary information or disclosing it to any other person or agency without the prior written consent of the vendor, unless disclosure is legally compelled.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.2	**System Overview**												
	In the system overview, the vendor shall provide information that enables the test lab to identify the functional and physical components of the system, how the components are structured, and the interfaces between them.	✓											
2.2.1	**System Description**												
a.	The system description shall include written descriptions, drawings and diagrams that present: A description of the functional components (or subsystems) as defined by the vendor (e.g., environment, election management and control, vote recording, vote conversion, reporting, and their logical relationships)	✓											
b.	The system description shall include written descriptions, drawings and diagrams that present: A description of the operational environment of the system that provides an overview of the hardware, software, and communications structure	✓											
c.	The system description shall include written descriptions, drawings and diagrams that present: A concept of operations that explains each system function, and how the function is achieved in the design	✓											
d.	The system description shall include written descriptions, drawings and diagrams that present: Descriptions of the functional and physical interfaces between subsystems and components	✓											

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
e.	The system description shall include written descriptions, drawings and diagrams that present: Identification of all COTS hardware and software products and communications services used in the development and/or operation of the voting system, identifying the name, vendor and version used for each such component, including: 1. Operating systems; 2. Database software; 3. Communications routers; 4. Modem drivers; and 5. Dial-up networking software	✓											
f.	The system description shall include written descriptions, drawings and diagrams that present: Interfaces among internal components, and interfaces with external systems. For components that interface with other components for which multiple products may be used, the TDP shall provide an identification of: i. File specifications, data objects, or other means used for information exchange; ii. The public standard used for such file specifications, data objects, or other means;	✓											
g.	The system description shall include written descriptions, drawings and diagrams that present: Benchmark directory listings for all software (including firmware elements) and associated documentation included in the vendor's release in order of how each piece of software would normally be installed upon setup and installation.	✓											
2.2.2	**System Performance**												
a.	The vendor shall provide system performance information including: The performance characteristics of each operating mode and function in terms of expected and maximum speed, throughput capacity, maximum volume (maximum number of voting positions and maximum number of ballot styles supported), and processing frequency	✓											
b.	The vendor shall provide system performance information including: Quality attributes such as reliability, maintainability, availability, usability, and portability;	✓											

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
c.	The vendor shall provide system performance information including: Provisions for safety, security, privacy, and continuity of operation	✓											
d.	The vendor shall provide system performance information including: Design constraints, applicable standards, and compatibility requirements.	✓											
2.3	**System Functionality Description**												
	The vendor shall declare the scope of the system's functional capabilities, thereby establishing the performance, design, test, manufacture, and acceptance context for the system.		✓										
	The vendor shall provide a listing of the system's functional processing capabilities, encompassing capabilities required by the Guidelines and any additional capabilities provided by the system. This listing shall provide a simple description of each capability. Detailed specifications shall be provided in other documentation required for the TDP.		✓										
a.	The vendor shall organize the presentation of required capabilities in a manner that corresponds to the structure and sequence of functional capabilities indicated in Volume I, Section 2. The contents of Volume I, Section 2 may be used as the basis for a checklist to indicate the specific functions provided and those not provided by the system		✓										
b.	Additional capabilities shall be clearly indicated. They may be presented using the same structure as that used for required capabilities (i.e., overall system capabilities, pre-voting functions, voting functions, post-voting functions), or may be presented in another format of the vendor's choosing.		✓										
c.	Required capabilities that may be bypassed or deactivated during installation or operation by the user shall be clearly indicated.		✓										
d.	Additional capabilities that function only when activated during installation or operation by the user shall be clearly indicated.		✓										

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
e.	Additional capabilities that normally are active but may be bypassed or deactivated during installation or operation by the user shall be clearly indicated.		✓										
2.4	**System Hardware Specifications**												
	The vendor shall expand on the system overview by providing detailed specifications of the hardware components of the system, including specifications of hardware used to support the telecommunications capabilities of the system, if applicable.			✓									
2.4.1	**System Hardware Characteristics**												
	The vendor shall provide a detailed discussion of the characteristics of the system, indicating how the hardware meets individual requirements defined in Volume I, Section 4, including:			✓									
a.	**Performance characteristics:** This discussion addresses basic system performance attributes and operational scenarios that describe the manner in which system functions are invoked, describe environmental capabilities, describe life expectancy, and describe any other essential aspects of system performance;			✓									
b.	**Physical Characteristics**: This discussion addresses suitability for intended use, requirements for transportation and storage, health and safety criteria, security criteria, and vulnerability to adverse environmental factors;			✓									
c.	**Reliability:** This discussion addresses system and component reliability stated in terms of the systems operating functions, and identification of items that require special handling or operation to sustain system reliability;			✓									
d.	**Maintainability:** Maintainability represents the ease with which maintenance actions can be performed based on the design characteristics of equipment and software and the processes the vendor and election officials have in place for preventing failures and for reacting to failures. Maintainability includes the ability of equipment and software to self-diagnose problems and make non-technical election workers aware of a problem. Maintainability also addresses a range of scheduled and unscheduled events;			✓									

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
e.	**Environmental conditions:** This discussion addresses the ability of the system to withstand natural environments, and operational constraints in normal and test environments, including all requirements and restrictions regarding electrical service, telecommunications services, environmental protection, and any additional facilities or resources required to install and operate the system.			✓									
2.4.2	**Design and Construction**			✓									
	The vendor shall provide sufficient data, or references to data, to identify unequivocally the details of the system configuration submitted for testing.			✓									
	The vendor shall provide a list of materials and components used in the system and a description of their assembly into major system components and the system as a whole.			✓									
a.	Paragraphs and diagrams shall be provided that describe: Materials, processes, and parts used in the system, their assembly, and the configuration control measures to ensure compliance with the system specification;			✓									
b.	Paragraphs and diagrams shall be provided that describe: The electromagnetic environment generated by the system;			✓									
c.	Paragraphs and diagrams shall be provided that describe: Operator and voter safety considerations, and any constraints on system operations or the use environment;			✓									
d.	Paragraphs and diagrams shall be provided that describe: Human factors considerations, including provisions for access by disabled voters.			✓									
2.5	**Software Design and Specification**												

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
	The vendor shall expand on the system overview by providing detailed specifications of the software components of the system, including software used to support the telecommunications capabilities of the system, if applicable.				✓								
2.5.1	**Purpose and Scope**												
	The vendor shall describe the function or functions that are performed by the software programs that comprise the system, including software used to support the telecommunications capabilities of the system, if applicable.				✓								
2.5.2	**Applicable Documents**												
	The vendor shall list all documents controlling the development of the software and its specifications. Documents shall be listed in order of precedence.				✓								
2.5.3	**Software Overview**												
a.	The vendor shall provide an overview of the software that includes the following items: A description of the software system concept, including specific software design objectives, and the logic structure and algorithms used to accomplish these objectives.				✓								
b.	The vendor shall provide an overview of the software that includes the following items: The general design, operational considerations, and constraints influencing the design of the software.				✓								
c.	The vendor shall provide an overview of the software that includes the following items: Identification of all software items, indicating items that were: i. Written in-house; ii. Procured and not modified; iii. Procured and modified, including descriptions of the modifications to the software and to the default configuration options.				✓								

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
d.	The vendor shall provide an overview of the software that includes the following items: Additional information for each item that includes: i. Item identification; ii. General description; iii. Software requirements performed by the item; iv. Identification of interfaces with other items that provide data to, or receive data from, the item; and v. Concept of execution for the item;				✓								
2.5.3 END	The vendor shall also include a certification that procured software items were obtained directly from the manufacturer or a licensed dealer or distributor.				✓								
2.5.4	**Software Standards and Conventions**												
	The vendor shall provide information that can be used by an accredited test lab or state certification board to support software analysis and test design. The information shall address standards and conventions developed internally by the vendor as well as published industry standards that have been applied by the vendor.				✓								
a.	The vendor shall provide information that addresses the following standards and conventions: Software system development methodology;				✓								
b.	The vendor shall provide information that addresses the following standards and conventions: Software design standards, including internal vendor procedures;				✓								
c.	The vendor shall provide information that addresses the following standards and conventions: Software specification standards, including internal vendor procedures;				✓								
d.	The vendor shall provide information that addresses the following standards and conventions: Software coding standards, including internal vendor procedures;				✓								

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e.	The vendor shall provide information that addresses the following standards and conventions: Testing and verification standards, including internal vendor procedures, that can assist in determining the program's correctness and ACCEPT/REJECT criteria;				✓								
f.	The vendor shall provide information that addresses the following standards and conventions: Quality assurance standards or other documents that can be used to examine and test the software. These documents include standards for program flow and control charts, program documentation, test planning, and test data acquisition and reporting.				✓								
2.5.5	**Software Operating Environment**												
	This section shall describe or make reference to all operating environment factors that influence the software design.				✓								
2.5.5.1	**Hardware Environment and Constraints**												
2.5.5.1 a.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: The logic and arithmetic capability of the processor;				✓								
2.5.5.1 b.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: Memory read-write characteristics;				✓								
2.5.5.1 c.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: External memory device characteristics;				✓								
2.5.5.1 d.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: Peripheral device interface hardware;				✓								
2.5.5.1 e.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: Data input/output device protocols;				✓								

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2.5.5.1 f.	The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as: Operator controls, indicators, and displays.				✓								
2.5.5.2	**Software Environment**												
	The vendor shall identify the compilers or assemblers used in the generation of executable code, and describe the operating system or system monitor.				✓								
2.5.6	**Software Functional Specification**												
	The vendor shall provide a description of the operating modes of the system and of software capabilities to perform specific functions.				✓								
2.5.6.1	**Configurations and Operating Modes**												
	The vendor shall describe all software configurations and operating modes of the system, such as ballot preparation, election programming, preparation for opening the polling place, recording votes and/or counting ballots, closing the polling place, and generating reports.				✓								
a.	For each software function or operating mode, the vendor shall provide: A definition of the inputs to the function or mode (with characteristics, tolerances or acceptable ranges, as applicable);				✓								
b.	For each software function or operating mode, the vendor shall provide: An explanation of how the inputs are processed;				✓								
c.	For each software function or operating mode, the vendor shall provide: A definition of the outputs produced (again, with characteristics, tolerances, or acceptable ranges as applicable).				✓								
2.5.6.2	**Software Functions**												
a.	The vendor shall describe the software's capabilities or methods for detecting or handling: Exception conditions;				✓								

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b.	The vendor shall describe the software's capabilities or methods for detecting or handling: System failures;				✓								
c.	The vendor shall describe the software's capabilities or methods for detecting or handling: Data input/output errors;				✓								
d.	The vendor shall describe the software's capabilities or methods for detecting or handling: Error logging for audit record generation;				✓								
e.	The vendor shall describe the software's capabilities or methods for detecting or handling: Production of statistical ballot data;				✓								
f.	The vendor shall describe the software's capabilities or methods for detecting or handling: Data quality assessment;				✓								
g.	The vendor shall describe the software's capabilities or methods for detecting or handling: Security monitoring and control.				✓								
2.5.7	**Programming Specifications**												
	The vendor shall provide in this section an overview of the software design, its structure, and implementation algorithms and detailed specifications for individual software modules.				✓								
2.5.7.1	**Programming Specifications Overview**												
	This overview shall include such items as flowcharts, data flow diagrams, and other graphical techniques that facilitate understanding of the programming specifications. This section shall be prepared to facilitate understanding of the internal functioning of the individual software modules. Implementation of the functions shall be described in terms of the software architecture, algorithms, and data structures.				✓								
2.5.7.2	**Programming Specifications Details**												

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	The programming specifications shall describe individual software modules and their component units, if applicable.				✓								
a.	For each module and unit, the vendor shall provide the following information: Module and unit design decisions, if any, such as algorithms used;				✓								
b.	For each module and unit, the vendor shall provide the following information: Any constraints, limitations, or unusual features in the design of the software module or unit;				✓								
c.	For each module and unit, the vendor shall provide the following information: The programming language to be used and rationale for its use if other than the specified module or unit language;				✓								
d.	For each module and unit, the vendor shall provide the following information: If the software module or unit consists of, or contains, procedural commands (such as menu selections in a database management system for defining forms and reports, on-line queries for database access and manipulation, input to a graphical user interface builder for automated code generation, commands to the operating system, or shell scripts), a list of the procedural commands and reference to user manuals or other documents that explain them;				✓								
e.	For each module and unit, the vendor shall provide the following information: If the software module or unit contains, receives, or outputs data, a description of its inputs, outputs, and other data elements as applicable. (Section 2.5.9 describes the requirements for documenting system interfaces.) Data local to the software module or unit shall be described separately from data input to, or output from, the software module or unit;				✓								

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f.	For each module and unit, the vendor shall provide the following information: If the software module or unit contains logic, the logic to be used by the software unit, including, as applicable: i. Conditions in effect within the software module or unit when its execution is initiated; ii. Conditions under which control is passed to other software modules or units; iii. Response and response time to each input, including data conversion, renaming, and data transfer operations; iv. Sequence of operations and dynamically controlled sequencing during the software module's or unit's operation, including: • The method for sequence control; • The logic and input conditions of that method, such as timing variations, priority assignments; • Data transfer in and out of memory; and • The sensing of discrete input signals, and timing relationships between interrupt operations within the software module or unit;				✓								
g.	For each module and unit, the vendor shall provide the following information: Exception and error handling				✓								
h.	For each module and unit, the vendor shall provide the following information: If the software module is a database, provide the information described in Volume II, Section 2.5.8.				✓								
2.5.8	**System Database**												
	The vendor shall identify and provide a diagram and narrative description of the system's databases, and any external files used for data input or output.				✓								
a.	The information provided shall include for each database or external file: The number of levels of design and the names of those levels (such as conceptual, internal, logical, and physical);				✓								

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b.	The information provided shall include for each database or external file: Design conventions and standards (which may be incorporated by reference) needed to understand the design;				✓								
c.	The information provided shall include for each database or external file: Identification and description of all database entities and how they are implemented physically (e.g., tables, files);				✓								
d.	The information provided shall include for each database or external file: Entity relationship diagrams and description of relationships;				✓								
e.	The information provided shall include for each database or external file: Details of table, record or file contents (as applicable) to include individual data elements and their specifications, including: i. Names/identifiers; ii. Data type (alphanumeric, integer, etc.); iii. Size and format (such as length and punctuation of a character string); iv. Units of measurement (such as meters, dollars, nanoseconds); v. Range or enumeration of possible values (such as 0-99); vi. Accuracy (how correct) and precision (number of significant digits); vii. Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply; viii. Security and privacy constraints; ix. Sources (setting/sending entities) and recipients (using/receiving entities).				✓								
f.	The information provided shall include for each database or external file: For external files, a description of the procedures for file maintenance, management of access privileges, and security.				✓								
2.5.9	**Interfaces**												
	The vendor shall identify and provide a complete description of all internal and external interfaces, using a combination of text and diagrams.				✓								

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2.5.9.1	**Interface Identification**												
a.	For each interface identified in the system overview, the vendor shall: Provide a unique identifier assigned to the interface;				✓								
b.	For each interface identified in the system overview, the vendor shall: Identify the interfacing entities (systems, configuration items, users, etc.) by name, number, version, and documentation references, as applicable;				✓								
c.	For each interface identified in the system overview, the vendor shall: Identify which entities have fixed interface characteristics (and therefore impose interface requirements on interfacing entities) and which are being developed or modified (thus having interface requirements imposed on them).				✓								
2.5.9.2	**Interface Description**												
a.	For each interface identified in the system overview, the vendor shall provide information that describes: The type of interface (such as real-time data transfer, storage-and-retrieval of data) to be implemented;				✓								

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b.	For each interface identified in the system overview, the vendor shall provide information that describes: Characteristics of individual data elements that the interfacing entity(ies) will provide, store, send, access, receive, etc., such as: i. Names/identifiers; ii. Data type (alphanumeric, integer, etc.); iii. Size and format (such as length and punctuation of a character string); iv. Units of measurement (such as meters, dollars, nanoseconds); v. Range or enumeration of possible values (such as 0-99); vi. Accuracy (how correct) and precision (number of significant digits); vii. Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply; viii. Security and privacy constraints; and ix. Sources (setting/sending entities) and recipients (using/receiving entities);				✓								
c.	For each interface identified in the system overview, the vendor shall provide information that describes: Characteristics of communication methods that the interfacing entity(ies) will use for the interface, such as: i. Communication links/bands/frequencies/media and their characteristics; ii. Message formatting; iii. Flow control (such as sequence numbering and buffer allocation); iv. Data transfer rate, whether periodic/aperiodic, and interval between transfers; v. Routing, addressing, and naming conventions; vi. Transmission services, including priority and grade; and vii. Safety/security/privacy considerations, such as encryption, user authentication, compartmentalization, and auditing;				✓								

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d.	For each interface identified in the system overview, the vendor shall provide information that describes: Characteristics of protocols the interfacing entity(ies) will use for the interface, such as: i. Priority/layer of the protocol; ii. Packeting, including fragmentation and reassembly, routing, and addressing; iii. Legality checks, error control, and recovery procedures; iv. Synchronization, including connection establishment, maintenance, termination; and v. Status, identification, and any other reporting features;				✓								
e.	For each interface identified in the system overview, the vendor shall provide information that describes: Other characteristics, such as physical compatibility of the interfacing entity(ies) (such as dimensions, tolerances, loads, voltages, plug compatibility).				✓								
2.5.10	**Appendices**												
	The vendor may provide descriptive material and data supplementing the various sections of the body of the Software Specifications. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for amplification or treatment in appendix form include: A. Glossary: A listing and brief definition of all software module names and variable names, with reference to their locations in the software structure. Abbreviations, acronyms, and terms should be included, if they are either uncommon in data processing and software development or are used in an unorthodox semantic; B. References: A list of references to all related vendor documents, data, standards, and technical sources used in software development and testing; **C.** Program Analysis: The results of software configuration analysis algorithm analysis and selection, timing studies, and hardware interface studies that are reflected in the final software design and coding.				✓								
2.6	**System Security Specification**												

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	Vendors shall submit a system security specification that addresses the security requirements of Volume I, Section 7. This specification shall describe the level of security provided by the system in terms of the specific security risks addressed by the system, the means by which each risk is addressed, the process used to test and verify the effective operation of security capabilities and, for systems that use public telecommunications networks as defined in Volume I, Section 6, the means used to keep the security capabilities of the system current to respond to the evolving threats against these systems. Information provided by the vendor in this section of the TDP may be duplicative of information required by other sections. Vendors may cross reference to information provided in other sections provided that the means used provides a clear mapping to the requirements of this section. Information submitted by the vendor shall be used to assist in developing and executing the system verification test plan. The Security Specification shall contain the sections identified below.						✓						
2.6.1	**Access Control Policy**												
	The vendor shall specify the features and capabilities of the access control policy recommended to purchasing jurisdictions to provide effective voting system security. The access control policy shall address the general features and capabilities and individual access privileges indicated in Volume I, Subsection 7.2.						✓						
2.6.2	**Access Control Measures**												
	The vendor shall provide a detailed description of all system access control measures and mandatory procedures designed to permit access to system states in accordance with the access policy, and to prevent all other types of access to meet the specific requirements of Volume I, Subsection 7.2.						✓						
	The vendor also shall define and provide a detailed description of the methods used to preclude unauthorized access to the access control capabilities of the system itself.						✓						

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2.6.3	**Equipment and Data Security**												
	The vendor shall provide a detailed description of system capabilities and mandatory procedures for purchasing jurisdictions to prevent disruption of the voting process and corruption of voting data to meet the specific requirements of Volume I, Subsection 7.3. This information shall address measures for polling place security and central count location security.						✓						
2.6.4	**Software Installation**												
	The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Subsection 7.4. This information shall address software installation for all system components.						✓						
2.6.5	**Telecommunications & Data Transmission Security**												
	The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure data transmission to meet the specific requirements of Volume I, Subsection 7.5:						✓						
a.	For all systems, this information shall address access control, and prevention of data interception;						✓						

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b.	For systems that use public communications networks as defined in Volume I Section 6, this information shall also include: i. Capabilities used to provide protection against threats to third party products and services; ii. Policies and processes used by the vendor to ensure that such protection is updated to remain effective over time; iii. Policies and procedures used by the vendor to ensure that current versions of such capabilities are distributed to user jurisdictions and are installed effectively by the jurisdiction; iv. A detailed description of the system capabilities and procedures to be employed by the jurisdiction to diagnose the occurrence of a denial of service attack, to use an alternate method of voting, to determine when it is appropriate to resume voting over the network, and to consolidate votes cast using the alternate method; v. A detailed description of all activities to be performed in setting up the system for operation that are mandatory to ensure effective system security, including testing of security before an election; and vi. A detailed description of all activities that should be prohibited during system setup and during the timeframe for voting operations, including both the hours when polls are open and when polls are closed.						✓						
2.6.6	**Other Elements of an Effective Security Program**												
	The vendor shall provide a detailed description of additional procedures required for use by the purchasing jurisdiction; including:						✓						
a.	Administrative and management controls for the voting system and election management, including access controls;						✓						
b.	Internal security procedures, including operating procedures for maintaining the security of the software for each system function and operating mode;						✓						

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c.	Adherence to, and enforcement of, operational procedures (e.g., effective password management);						✓						
d.	Physical facilities and arrangements;						✓						
e.	Organizational responsibilities and personnel screening.						✓						
END	This documentation shall be prepared such that these requirements can be integrated by the jurisdiction into local administrative and operating procedures.						✓						
2.7	**System Test and Verification Specification**												
a.	The vendor shall provide test and verification specifications for: Development test specifications;					✓							
b.	The vendor shall provide test and verification specifications for: National Certification test specifications.					✓							
2.7.1	**Development Test Specifications**												
	The vendor shall describe the plans, procedures, and data used during software development and system integration to verify system logic correctness, data quality, and security.					✓							
a.	This description shall include: Test identification and design, including: i. Test structure; ii. Test sequence or progression; and iii. Test conditions;					✓							

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b.	This description shall include: Standard test procedures, including any assumptions or constraints;					✓							
c.	This description shall include: Special purpose test procedures including any assumptions or constraints;					✓							
d.	This description shall include: Test data, test data source, whether it is real or simulated, and how test data are controlled;					✓							
e.	This description shall include: Expected test results;					✓							
f.	This description shall include: Criteria for evaluating test results.					✓							
END	Additional details for these requirements are provided by MIL-STD-498, Software Test Plan and Software Test Description. In the event that test data are not available, the accredited test lab shall design test cases and procedures equivalent to those ordinarily used during product verification.					✓							
2.7.2	**National Certification Test Specifications**												
	The vendor shall provide specifications for verification and validation of overall software performance.					✓							
a	These specifications shall cover: Control and data input/output;					✓							
b.	These specifications shall cover: Acceptance criteria;					✓							

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c.	These specifications shall cover: Processing accuracy;					✓							
d.	These specifications shall cover: Data quality assessment and maintenance;					✓							
e.	These specifications shall cover: Ballot interpretation logic;					✓							
f.	These specifications shall cover: Exception handling;					✓							
g.	These specifications shall cover: Security;					✓							
h.	These specifications shall cover: Production of audit trails and statistical data.					✓							
2.7.2 END	The specifications shall identify procedures for assessing and demonstrating the suitability of the software for election use.					✓							
2.8	**System Operations Procedures**												
	This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3 above. The nature of the instructions for operating personnel will depend upon the overall system design and required skill level of system operations support personnel.							✓					

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	The system operations procedures shall contain all information that is required for the preparation of detailed system operating procedures, and for operator training, as described below:							✓					
2.8.1	**Introduction**												
	The vendor shall provide a summary of system operating functions and modes, in sufficient detail to permit understanding of the system's capabilities and constraints. The roles of operating personnel shall be identified and related to the operating modes of the system. Decision criteria and conditional operator functions (such as error and failure recovery actions) shall be described.							✓					
	The vendor shall also list all reference and supporting documents pertaining to the use of the system during elections operations.							✓					
2.8.2	**Operational Environment**												
	The vendor shall describe the system environment, and the interface between the user or operator and the system.							✓					
a.	The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment operations, including equipment that operates at the: Polling place;							✓					
b.	The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment operations, including equipment that operates at the: Central count facility;							✓					
c.	The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment operations, including equipment that operates at the: Other locations.							✓					
2.8.3	**System Installation and Test Specification**												
	The vendor shall provide specifications for validation of system installation, acceptance, and readiness.							✓					

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a.	These specifications shall address all components of the system and all locations of installation (e.g., polling place central count facility), and shall address all elements of system functionality and operations identified in Section 2.3 above, including: Pre-voting functions;							✓					
b.	These specifications shall address all components of the system and all locations of installation (e.g., polling place central count facility), and shall address all elements of system functionality and operations identified in Section 2.3 above, including: Voting functions;							✓					
c.	These specifications shall address all components of the system and all locations of installation (e.g., polling place central count facility), and shall address all elements of system functionality and operations identified in Section 2.3 above, including: Post-voting functions.							✓					
d.	These specifications shall address all components of the system and all locations of installation (e.g., polling place central count facility), and shall address all elements of system functionality and operations identified in Section 2.3 above, including: General capabilities.							✓					
END	These specifications also serve to provide guidance to the procuring agency in developing its acceptance test plan and procedure according to the agency's contract provisions, and the election laws of the state.							✓					
2.8.4	**Operational Features**												
a.	The vendor shall provide documentation of system operating features that meets the following requirements: A detailed description of all input, output, control, and display features accessible to the operator or voter;							✓					
b.	The vendor shall provide documentation of system operating features that meets the following requirements: Examples of simulated interactions in order to facilitate understanding of the system and its capabilities;							✓					

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c.	The vendor shall provide documentation of system operating features that meets the following requirements: Sample data formats and output reports;							✓					
d.	The vendor shall provide documentation of system operating features that meets the following requirements: Illustrate and describe all status indicators and information messages.							✓					
2.8.5	**Operating Procedures**												
a.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Provides a detailed description of procedures required to initiate, control, and verify proper system operation;							✓					
b.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Provides procedures that clearly enable the operator to assess the correct flow of system functions (as evidenced by system-generated status and information messages);							✓					
c.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Provides procedures that clearly enable the operator to intervene in system operations to recover from an abnormal system state;							✓					
d.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Defines and illustrates the procedures and system prompts for situations where operator intervention is required to load, initialize, and start the system;							✓					

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e.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Defines and illustrates procedures to enable and control the external interface to the system operating environment if supporting hardware and software are involved. Such information shall also be provided for the interaction of the system with other data processing systems or data interchange protocols;							✓					
f.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Provides administrative procedures and off-line operator duties (if any) if they relate to the initiation or termination of system operations, to the assessment of system status, or to the development of an audit trail;							✓					
g.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Supports successful ballot and program installation and control by election officials, provides a detailed work plan or other form of documentation providing a schedule and steps for the software and ballot installation, which includes a table outlining the key dates, events and deliverables							✓					
h.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Supports diagnostic testing, specifies diagnostic tests that may be employed to identify problems in the system, verifies the correction of maintenance problems; and isolates and diagnoses faults from various systems states.							✓					
2.8.6	**Operations Support**												
a.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Defines the procedures required to support system acquisition, installation, and readiness testing. These procedures may be provided by reference, if they are contained either in the system hardware specifications, or in other vendor documentation;							✓					

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b.	The vendor shall provide documentation of system operating procedures that meets the following requirements: Describes procedures for providing technical support, system maintenance and correction of defects, and for incorporating hardware upgrades and new software releases.							✓					
2.8.7	**Appendices**												
	The vendor may provide descriptive material and data supplementing the various sections of the body of the System Operations Manual. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for discussion include: **Glossary:** A listing and brief definition of all terms that may be unfamiliar to persons not trained in either voting systems or computer operations; **References:** A list of references to all vendor documents and to other sources related to operation of the system; **Detailed Examples:** Detailed scenarios that outline correct system responses to faulty operator input. Alternative procedures may be specified depending on the system state; and **Vendor's Recommended Security Procedures**: This appendix shall contain the security procedures that are to be executed by the system operator.							✓					
2.9	**System Maintenance Procedures**												
	The system maintenance procedures shall provide information in sufficient detail to support election workers, information systems personnel, or maintenance personnel in the adjustment or removal and replacement of components or modules in the field. Technical documentation needed solely to support the repair of defective components or modules ordinarily done by the Vendor or software developer is not required.								✓				

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
	Recommended service actions to correct malfunctions or problems shall be discussed, along with personnel and expertise required to repair and maintain the system; and equipment, materials, and facilities needed for proper maintenance. This manual shall include the sections listed below.								✓				
2.9.1	**Introduction**												
	The vendor shall describe the structure and function of the equipment (and related software) for election preparation, programming, vote recording, tabulation, and reporting in sufficient detail to provide an overview of the system for maintenance, and for identification of faulty hardware or software.								✓				
a.	The description shall include a concept of operations that fully describes such items as: The electrical and mechanical functions of the equipment;								✓				
b.	The description shall include a concept of operations that fully describes such items as: How the processes of ballot handling and reading are performed (paper-based systems);								✓				
c.	The description shall include a concept of operations that fully describes such items as: How vote selection and casting of the ballot are performed (DRE systems);								✓				
d.	The description shall include a concept of operations that fully describes such items as: How transmission of data over a network is performed (DRE systems, where applicable);								✓				
e.	The description shall include a concept of operations that fully describes such items as: How data are handled in the processor and memory units;								✓				
f.	The description shall include a concept of operations that fully describes such items as: How data output is initiated and controlled;								✓				
g.	The description shall include a concept of operations that fully describes such items as: How power is converted or conditioned;								✓				

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
h.	The description shall include a concept of operations that fully describes such items as: How test and diagnostic information is acquired and used.								✓				
2.9.2	**Maintenance Procedures**												
	The vendor shall describe preventive and corrective maintenance procedures for hardware and software.								✓				
2.9.2.1	**Preventative Maintenance Procedures**												
a.	The vendor shall identify and describe: All required and recommended preventive maintenance tasks, including software tasks such as software backup, database performance analysis, and database tuning;								✓				
b.	The vendor shall identify and describe: Number and skill levels of personnel required for each task;								✓				
c.	The vendor shall identify and describe: Parts, supplies, special maintenance equipment, software tools, or other resources needed for maintenance;								✓				
d.	The vendor shall identify and describe: Any maintenance tasks that must be coordinated with the vendor or a third party (such as coordination that may be needed for off-the-shelf items used in the system).								✓				
2.9.2.2	**Corrective Maintenance Procedures**												
	The vendor shall provide fault detection, fault isolation, correction procedures, and logic diagrams for all operational abnormalities identified by design analysis and operating experience.								✓				
	The vendor shall identify specific procedures to be used in diagnosing and correcting problems in the system hardware (or user-controlled software).								✓				
a.	Descriptions shall include: Steps to replace failed or deficient equipment;								✓				

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
b.	Descriptions shall include: Steps to correct deficiencies or faulty operations in software;								✓				
c.	Descriptions shall include: Modifications that are necessary to coordinate any modified or upgraded software with other software modules;								✓				
d.	Descriptions shall include: The number and skill levels of personnel needed to accomplish each procedure;								✓				
e.	Descriptions shall include: Special maintenance equipment, parts, supplies, or other resources needed to accomplish each procedure;								✓				
f.	Descriptions shall include: Any coordination required with the vendor, or other party, for off the shelf items.								✓				
2.9.3	**Maintenance Equipment**												
	The vendor shall identify and describe any special purpose test or maintenance equipment recommended for fault isolation and diagnostic purposes.								✓				
2.9.4	**Parts and Materials**												
	Vendors shall provide detailed documentation of parts and materials needed to operate and maintain the system. Additional requirements apply for paper-based systems.								✓				
2.9.4.1	**Common Standards**												
	The vendor shall provide a complete list of approved parts and materials needed for maintenance.								✓				
a.	This list shall contain sufficient descriptive information to identify all parts by: Type								✓				

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
b.	This list shall contain sufficient descriptive information to identify all parts by: Size								✓				
c.	This list shall contain sufficient descriptive information to identify all parts by: Value or range								✓				
d.	This list shall contain sufficient descriptive information to identify all parts by: Vendor's designation;								✓				
e.	This list shall contain sufficient descriptive information to identify all parts by: Individual quantities needed								✓				
f.	This list shall contain sufficient descriptive information to identify all parts by: Source from which they may be obtained								✓				
2.9.4.2	**Paper-Based Systems**												
	For marking devices manufactured by multiple external sources, the vendor shall provide a listing of sources and model numbers that are compatible with the system.								✓				
	The TDP shall specify the required paper stock, size, shape, opacity, color, watermarks, field layout, orientation, size and style of printing, size and location of punch or mark fields used for vote response fields and to identify unique ballot formats, placement of alignment marks, ink for printing, and folding and bleed-through limitations for preparation of ballots that are compatible with the system								✓				
2.9.5	**Maintenance Facilities and Support**												
	The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment maintenance. In addition, vendors shall specify the assumptions made with regard to any parameters that impact the mean time to repair.								✓				

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
a.	These factors shall include at a minimum: Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation;								✓				
b.	These factors shall include at a minimum: Recommended number and locations of qualified maintenance personnel who need to be available to support repair calls during system operation;								✓				
c.	These factors shall include at a minimum: Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel.								✓				
2.9.6	**Appendices**												
	The vendor may provide descriptive material and data supplementing the various sections of the body of the System Maintenance Manual. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for amplification or treatment in appendix include: **Glossary:** A listing and brief definition of all terms that may be unfamiliar to persons not trained in either voting systems or computer maintenance; **References:** A list of references to all vendor documents and other sources related to maintenance of the system; **Detailed Examples:** Detailed scenarios that outline correct system responses to every conceivable faulty operator input. Alternative procedures may be specified depending on the system state; and **Maintenance and Security Procedures:** This appendix shall contain technical illustrations and schematic representations of electronic circuits unique to the system.								✓				
2.10	**Personnel Deployment and Training Requirements**												
2.10.1	**Personnel**												
	The vendor shall describe the personnel resources and training required for a jurisdiction to operate and maintain the system.									✓			

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
a.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: Pre-election or election preparation functions (e.g., entering an election, contest and candidate information; designing a ballot; generating pre-election reports;									✓			
b.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: System operations for voting system functions performed at the polling place;									✓			
c.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: System operations for voting system functions performed at the central count facility;									✓			
d.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: Preventive maintenance tasks;									✓			
e.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: Diagnosis of faulty hardware or software;									✓			
f.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: Corrective maintenance tasks;									✓			
g.	The vendor shall specify the number of personnel and skill levels required to perform each of the following functions: Testing to verify the correction of problems.									✓			
	A description shall be presented of which functions may be carried out by user personnel, and those that must be performed by vendor personnel.									✓			
2.10.2	**Training**												

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
a.	The vendor shall specify requirements for the orientation and training of the following personnel: Poll workers supporting polling place operations;									✓			
b.	The vendor shall specify requirements for the orientation and training of the following personnel: System support personnel involved in election programming;									✓			
c.	The vendor shall specify requirements for the orientation and training of the following personnel: User system maintenance technicians;									✓			
d.	The vendor shall specify requirements for the orientation and training of the following personnel: Network/system administration personnel (if a network is used);									✓			
e.	The vendor shall specify requirements for the orientation and training of the following personnel: Information systems personnel;									✓			
f.	The vendor shall specify requirements for the orientation and training of the following personnel: Vendor personnel.									✓			
2.11	**Configuration Management Plan**												
	Vendors shall submit a Configuration Management Plan that addresses the configuration management requirements of Volume I, Section 9. This plan shall describe all policies, processes, and procedures employed by the vendor to carry out these requirements. Information submitted by the vendor shall be used by the accredited test lab to assist in developing and executing the system verification test plan. This information is particularly important to support the design of test plans for system modifications. A well-organized, robust and detailed Configuration Management Plan will enable the accredited test lab to more readily determine the nature and scope of tests needed to fully test the modifications. The Configuration Management Plan shall contain the sections identified below.										✓		

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
2.11.1	**Configuration Management Policy**												
	The vendor shall provide a description of its organizational policies for configuration management, addressing the specific requirements of Volume I, Subsection 9.2.										✓		
a.	These requirements pertain to: Scope and nature of configuration management program activities;										✓		
b.	These requirements pertain to: Breadth of application of vendor's policy and practices to the voting system.										✓		
2.11.2	**Configuration Identification**												
	The vendor shall provide a description of the procedures and naming conventions used to address the specific requirements of Volume I, Section 9.3.										✓		
a.	These requirements pertain to: Classifying configuration items into categories and subcategories;										✓		
b.	These requirements pertain to: Uniquely numbering or otherwise identifying configuration items;										✓		
c.	These requirements pertain to: Naming configuration items.										✓		
2.11.3	**Baseline and Promotion**												
	The vendor shall provide a description of the procedures and naming conventions used to address the specific requirements of Volume I, Subsection 9.4.										✓		
a.	These requirements pertain to: Establishing a particular instance of a system component as the starting baseline;										✓		

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
b.	These requirements pertain to: Promoting subsequent instances of a component to baseline throughout the system development process for the first complete version of the system submitted for testing;										✓		
c.	These requirements pertain to: Promoting subsequent instances of a component to baseline status as the component is maintained throughout its life cycle until system retirement (i.e., the system is no longer sold or maintained)										✓		
2.11.4	**Configuration Control Procedures**												
	The vendor shall provide a description of the procedures used by the vendor to approve and implement changes to a configuration item to prevent unauthorized additions, changes, or deletions to address the specific requirements of Volume I, Subsection 9.5.										✓		
a.	These requirements pertain to: Developing and maintaining internally developed items;										✓		
b.	These requirements pertain to: Developing and maintaining third-party items;										✓		
c.	These requirements pertain to: Resolving internally identified defects;										✓		
d.	These requirements pertain to: Resolving externally identified and reported defects.										✓		
2.11.5	**Release Process**												
	The vendor shall provide a description of the contents of a system release, and the procedures and related conventions by which the vendor installs, transfers, or migrates the system to accredited voting system testing laboratories and customers to address the specific requirements of Volume I, Subsection 9.6.										✓		

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
a.	These requirements pertain to: A first release of the system to an accredited test lab;										✓		
b.	These requirements pertain to: A subsequent maintenance or upgrade release of a system, or particular components, to an accredited test lab;										✓		
c.	These requirements pertain to: The initial delivery and installation of the system to a customer;										✓		
d.	These requirements pertain to: A subsequent maintenance or upgrade release of a system, or particular components, to a customer.										✓		
2.11.6	**Configuration Audits**												
	The vendor shall provide a description of the procedures and related conventions for the two audits required by Volume I, Subsection 9.7.										✓		
a.	These requirements pertain to: Physical configuration audit that verifies the voting system components submitted for verification to the vendor's technical documentation;										✓		
b.	These requirements pertain to: Functional configuration audit that verifies the system performs all the functions described in the system documentation.										✓		
2.11.7	**Configuration Management Resources**												
	The vendor shall provide a description of the procedures and related conventions for maintaining information about configuration management tools required by Volume I, Subsection 9.8.										✓		
a.	These requirements pertain to information regarding: Specific tools used, current version, and operating environment;										✓		

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
b.	These requirements pertain to information regarding: Physical location of the tools, including designation of computer directories and files;										✓		
c.	These requirements pertain to information regarding: Procedures and training materials for using the tools.										✓		
2.12	**Quality Assurance Program**												
	Vendors shall submit a Quality Assurance Program that addresses the quality assurance requirements of Volume I, Section 8. This plan shall describe all policies, processes and procedures employed by the vendor to ensure the overall quality of the system for its initial development and release and for subsequent modifications and releases. This information is particularly important to support the design of test plans by the accredited test lab. A well-organized, robust and detailed Quality Assurance Program will enable the accredited test lab to more readily determine the nature and scope of tests needed to test the system appropriately. The Quality Assurance Program shall, at a minimum, address the topics indicated below.											✓	
2.12.1	**Quality Assurance Policy**												
a.	The vendor shall provide a description of its organizational policies for quality assurance, including: Scope and nature of Quality Assurance activities;											✓	
b.	The vendor shall provide a description of its organizational policies for quality assurance, including: Breadth of application of vendor's policy and practices to the voting system.											✓	
2.12.2	**Parts & Materials Tests**												
	The vendor shall provide a description of its practices for parts and materials tests and examinations that meet the requirements of Volume I, Subsection 8.5.											✓	
2.12.3	**Quality Conformance Inspections**												

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
	The vendor shall provide a description of its practices for quality conformance inspections that meet the requirements of Volume I, Subsection 8.6.											✓	
a.	For each test performed, the record of tests provided shall include: Test location;											✓	
b.	For each test performed, the record of tests provided shall include: Test date;											✓	
c.	For each test performed, the record of tests provided shall include: Individual who conducted the test;											✓	
d.	For each test performed, the record of tests provided shall include: Test outcomes.											✓	
2.12.4	**Documentation**												
	The vendor shall provide a description of its practices for documentation of the system and system development process that meet the requirements of Volume I, Subsection 8.7.											✓	
2.13	**System Change Notes**												
	Vendors submitting modifications for a system that has been tested previously and received national verification shall submit system change notes. These will be used by the accredited test lab to assist in developing and executing the test plan for the modified system.												✓
a.	The system change notes shall include the following information: Summary description of the nature and scope of the changes, and reasons for each changes;												✓
b.	The system change notes shall include the following information: A listing of the specific changes made, citing the specific system configuration items changed and providing detailed references to the documentation sections changed;												✓

VVSG Section	VVSG Description	System Overview	System Functionality Description	System Hardware Specification	Software Design and Specification	System Test and Verification Specification	System Security Specification	System User/Operations Procedures	System Maintenance Procedures	Personnel Deployment and Training	Configuration Management Plan	Quality Assurance Program	System Change Notes (optional)
c.	The system change notes shall include the following information: The specific sections of the documentation that are changed (or completely revised documents, if more suitable to address a large number of changes).												✓
d.	The system change notes shall include the following information: Documentation of the test plan and procedures executed by the vendor for testing the individual changes and the system as a whole, and records of test results.												✓

9 APPENDIX B - TDP ITEMS FOR EACH VOTING SYSTEM UNDER TEST (VSUT)

9.1 Dominion

VVSG Document Reference	TDP Document Name
System Overview	Democracy Suite System Configuration Overview
System functionality description	Democracy Suite EMS Functional Description Democracy Suite Imagecast Precinct Tabulator Functional Specification
System hardware specifications	ImageCast System Hardware Specification ImageCast System Hardware Characteristics
Software design/specifications	Democracy Suite EMS Software Design and Specification ImageCast Precinct Software Design and Specification ImageCast Precinct Authenticating Flash Contents ImageCast Precinct FlashAuth Data File Creation Document
System security specifications	Democracy Suite System Security Specification
System test specs/test documentation	Democracy Suite Test and Verification Specification VVSG Vendor Testing and TDP Trace Rev06a
User/system operations procedure	Democracy Suite EMS System Operations Procedures Imagecast Precinct Operations Procedures Democracy Suite EMS EED Users Guide ImageCast Ballot Marker Operator Manual PLAN A ImageCast Ballot Marker Operator Manual PLAN B
System maintenance procedures	ImageCast System Maintenance Procedures
Personnel deployment/training requirements	Democracy Suite Personnel Deployment and Training Requirements
Configuration management plan	Democracy Suite Configuration Management ProcessQuality assurance program
Quality assurance program	Democracy Suite Quality Assurance Program

9.2 ES & S

VVSG Document Reference	TDP Document Name
System Overview	System Overview SYSTEM INTRODUCTION
System functionality description	Audit Manager Software Functionality Description DS200 System Functionality Description Digital Scan Image Manager System Functionality Description Election Reporting Manager System Functionality Description Requirements of the FECVSS 2002 Trace to Vendor Testing and Technical Data Package SYSTEM FUNCTIONALITY
System hardware specifications	DS200 System Hardware Specification ElectionWare Database Schema SYSTEM HARDWARE SPECIFICATIONS Cable Schematics - Power Inlet to PSU PRINTER ENGINE BOARD POWER SUPPLY BOARD Graphics Controller Scanner Gas Gage Board Switch Interface Board Ultrasonic Sheet Detector (USD) Complete detector System Hardware Specification GRAPHICAL USER INTERFACE (GUI) DESIGN SPECIFICATIONS
Software design/specifications	Appendix A – DS200 Flowcharts Digital Scan 200 Software Design and Specifications Appendix B – DS200 Report Examples Digital Scan 200 Software Design and Specifications DSIM (EML) XML File Schema DS200 Software Design and Specifications Digital Scan Image Manager Software Design and Specifications Election Data Manager Software Design and Specifications ElectionWare Software Design and Specifications

VVSG Document Reference	TDP Document Name
	Election Reporting Manager Software Design and Specifications Jurisdiction Security Procedures Election Systems and Software Audit Manager Software Design Specifications COMPACT FLASH MEMORY CARD DESIGN SPECIFICATIONS Programming Specifications Details SOFTWARE DESIGN SPECIFICATIONS BALLOT IMAGE PROCESSING SPECIFICATIONS BALLOT SCANNING AND PRINTING SPECIFICATION DRIVER APPLICATION PROGRAMING INTERFACE (API) SPECIFICATIONS OPERATING SOFTWARE DESIGN SPECIFICATIONS Programming Specifications Details Rapid Application Development Methodology (RAD) SOFTWARE DESIGN SPECIFICATIONS SOFTWARE DEVELOPMENT ENVIRONMENT SPECIFICATIONS SOFTWARE STANDARDS SPECIFICATION EMBEDDED DATABASE INTERFACE SPECIFICATION OPERATIONS AND DIAGNOSTIC LOG SPECIFICATIONS
System security specifications	SYSTEM SECURITY SPECIFICATIONS
System test specs/test documentation	Audit Manager Test Case Specifications New York Unity 2.0 DS200 Test Cases DS200 Test Case Specifications DSIM Test Case Specifications Election Data Manager Test Case Specifications ElectionWare Test Case Specifications Election Reporting Manager Test Case Specifications Unity Test Plan Requirements of the 2005 VVSG Trace to Vendor Testing and Technical Data Package Validating Boot Block Memory Device SOFTWARE DIAGNOSTIC SPECIFICATIONS SYSTEM SECURITY TEST CASES SYSTEM SECURITY TEST PROCEDURES

VVSG Document Reference	TDP Document Name
	SYSTEM SECURITY SPECIFICATIONS
	ENVIRONMENTAL TEST CASES
	ENVIRONMENTAL TEST PLAN
	Environmental Test Procedures
	OPERATIONS & DIAGNOSTIC LOG TEST CASES
	System Level Test Cases
	SYSTEM LEVEL TEST PLAN
	System Level Test Procedures
User/system operations procedure	ES&S Audit Manager System Operations Procedures
	ES&S DS200 System Operations Procedures
	DSIM SOP Manual
	ES&S ElectionWare System Operations Procedures
	ES&S Election Reporting Manager System Operations Procedures
	ES&S DS200 System Maintenance Manual
	DSIM Training Manual
	Election Data Manager Training Manual
	ElectionWare Training Manual
	Election Reporting Manager Election Day Training Manual
	Election Reporting Manager Pre-Election Day Training Manual
	Personnel Deployment and Training Requirements
	ElectionWare Build Environment Compile-Install Guide
	DS200 Operating System Installing/Replacing CompactFlash® Procedure
	DS200 Firmware to USB Update Media File Copy Procedure
	Development Practices and Coding Standards
	Election Systems and Software
	DS200 System Disk Validation Procedure
	DS200 Precinct Ballot Scanner Election Day Training Manual
	DS200 Precinct Ballot Scanner Pre-Election Day Checklist
	Software Validation Utility Instructions
	System Limitations Election Systems and Software Unity 2.0.0.0

VVSG Document Reference	TDP Document Name
	Election Official's Guide SYSTEM OPERATIONS PROCEDURES OPERATIONS & DIAGNOSTIC LOG TEST PROCEDURES Jurisdiction Guide Voter's Guide System Installation and Maintenance Guide AutoMARK 3010 Poll Workers Guide Using an Assistive Technology Device to MARK your ballot
System maintenance procedures	
Personnel deployment/training requirements	ES&S Ballot Production Handbook ATS EMPLOYEE TRAINING PROCEDURE Personnel Deployment and Training Requirements
Configuration management plan	Configuration Management Plan VAT Software and Firmware Compilation Instructions Configuration Management Policy ATS 3010 Software and Hardware Release Process AQS-13-2011-000-R CONFIGURATION MANAGEMENT PLAN Initial Software Installation Procedure
Quality assurance program	Quality Assurance Program Software and Firmware Verification Quality Assurance Program Manufacturing QUALITY ASSURANCE POLICY & PROCEDURES AIMS Quality Assurance Test Cases AIMS QUALITY ASSURANCE TEST PROCEDURES CORRECTIVE ACTION Control Log Design Review Attendance Sheet Design Review Minutes Document Change Order Document Change Pending Release Engineering Change Order/Change Request Form System Bug Report Form

VVSG Document Reference	TDP Document Name
	Quality System Audit Schedule
	Quality Systems Procedures Master List
	Integration & Testing Bug Report
	Release Notes
	AutoMARK VAT Requirements Trace Matrix
	SOFTWARE QUALITY ASSURANCE TEST PLAN
	SOFTWARE QUALITY ASSURANCE TEST CASES
	SOFTWARE QUALITY ASSURANCE TEST PROCEDURES
	Component Storage and Handling Procedure
	Design Review Policy
	Document Change and Issue Procedure
	Document Control Policy
	Engineering Change Request/Change Order Process
	Engineering Development Policy
	Purchasing Procedure
	QUALITY ASSURANCE POLICY
	Quality System Audit Process
	Receiving Procedure
	System Report (Bug Reporting) Procedure

9.3 Liberty

VVSG Document Reference	TDP Document Name
System Overview	LIBERTY CONTROL SYSTEM CONFIGURATION AND INSTALLATION
	SOFTWARE VERSION DESCRIPTION AND SURVEY OF CHANGES LIBERTYCONTROL/EMS
	SYSTEM OVERVIEW
	DOCUMENT SURVEY LIBERTY ELECTION SYSTEM
	TDP CLASSIFICATION OVERVIEW
	LibertyControl Introduction Guide
	SYSTEM OVERVIEW LIBERTY ELECTION SYSTEM WITH BMD
	DOCUMENT SURVEY LIBERTY ELECTION SYSTEM BMD
System functionality description	FUNCTIONAL SPECIFICATION SSU1; NEDAP LIBERTYVOTE

VVSG Document Reference	TDP Document Name
	(VM-SYS)
	FUNCTIONAL SPECIFICATION SPU1; NEDAP LIBERTYMARK
	FUNCTIONAL SPECIFICATION PRU U1
System hardware specifications	TDP REQUIREMENTS CROSSINDEX
	PCB information (VM-HW)
	PCB information Control Panel (VM-HW)
	PCB layout voter panel junction board (VM-HW)
	PCB information connection PCB led current
	PCB information ballot module 16Mbit (VM-HW)
	PCB information mainboard XS (VM-HW)
	PCB information headphone connection (VM-HW)
	PCB documentation connection board disabled (VM-HW)
	LibertyVote Electronic Voting Machine (VM-HW)
	SOD LED INDICATION PCB (VM-HW)
	component layout led indication PCB (VM-HW)
	Parts list led indication PBA ESU1 (VM-HW)
	schematic led indication PCB (VM-HW)
	HARDWARE SPECIFICATION LED INDICATION PCB (VM-HW)
	PCB TEST LED INDICATION BOARD (VM-HW)
	SOD CONTROL PANEL PCB (VM-HW)
	PCB Control Panel ESU1 (VM-HW)
	PCB information control panel PBA Parts List (VM-HW)
	schematic control panel PCB (VM-HW)
	HARDWARE SPECIFICATION CONTROL PANEL PCB (VM-HW)
	PCB TEST SPECIFICATION CONTROL PANEL PCB (VM-HW)
	SOD VOTER PANEL JUNCTION PCB (VM-HW)
	PCB Junction Voter Panel ESU1 (VM-HW)
	Parts list voter panel junction board (VM-HW)
	PCB Junction Voter Panel ESU1 (VM-HW)
	HARDWARE SPECIFICATION VOTER PANEL JUNCTION BOARD (VM-HW)
	PCB TEST VOTER PANEL JUNCTION BOARD(VM-HW)
	PCB information mainboard XS Parts List (VM-HW)
	SOD CONNECTION LED CURRENT PCB (VM-HW)

VVSG Document Reference	TDP Document Name
	PCB Connection ESU1 (VM-HW)
	Parts list connection PCB led current (VM-HW)
	PBC Connection ESU1 (VM-HW)
	HARDWARE SPECIFICATION CONNECTION BOARD ESU1 (VM-HW)
	PBA TEST CONNECTION BOARD CURRENT MEASUREMENT(VM-HW)
	SOD POWER SUPPLY ESIV (VM-HW)
	power supply ESIV component layout B (VM-HW)
	SOD BALLOT MODULE 16MBIT (VM-HW)
	PCB information ballot module 16Mbit (VM-HW)
	Parts list ballot module 16Mbit (VM-HW)
	schematic ballot module 16Mbit (VM-HW)
	HARDWARE SPECIFICATION 16 MBIT BALLOT MODULE (VM-HW)
	Main Board Voting Machine ES3 SMD (VM-HW)
	Main Board Voting Machine ES3 smd (VM-HW)
	PBA TESTPLAN MAINBOARD XS (VM-HW)
	SOD HEADPHONE CONNECTION (VM-HW)
	PCB Headphone Connection (VM-HW)
	Parts list headphone connections (VM-HW)
	Specification Power supply Voting machine ESIV (VM-HW)
	SOD CONNECTION BOARD DISABLED PCB (VM-HW)
	Connection Board Disabled (VM-HW)
	Parts list connection board disabled PBA (VM-HW)
	Connection Box Disabled (VM-HW)
	HARDWARE SPECIFICATION CONNECTION BOARD DISABLED (VM-HW)
	PCB TEST CONNECTION BOARD DISABLED (VM-HW)
	LINE THERMAL PRINTER MECHANISM (LTP251) TECHNICAL REFERENCE (VM-HW)
	Quadravox QV5N MP3 Sound Module (VM-HW)
	SPECIFICATION THERMAL PRINTER CONTROLLER PRN251-001 (VM-HW)
	MECHANICAL PROPERTIES (VM-HW)
	ESU1 VOTING MACHINE HARDWARE TEST PLAN (VM-HW)

VVSG Document Reference	TDP Document Name
	ESU1 VOTING MACHINE HARDWARE TEST RESULTS (VM-HW) PARTS LISTS ESU1 VOTING MACHINE (VM-HW) ESU1 SYSTEM HARDWARE DOCUMENT (VM-HW) PRODUCT STRUCTURE ESU1 (VM-HW) END OF LINE TEST VOTING MACHINE ESU1 PRU END OF LINE TEST (VM-HW) UNIVERSAL PRU HARDWARE DOCUMENT U1 (VM-HW) VVPAT-P PRODUCT SPECIFICATION (VM-HW) ESU1 POWER STATION HARDWARE DOCUMENT (VM-HW) PCB ASSY POWER SUPPLY ES IV (VM-HW) Power Supply ES4 (VM-HW) Power Supply ES4 PFC and Mains Failure Circuit (VM-HW) ES IV power supply (VM-HW) HARDWARE DOCUMENTATION ESU1; VERSION 2.00 (VM-HW) SOD PCB DOCUMENTATION MAINBOARD XS HARDWARE SPECIFICATION VOTING MACHINE MAINBOARD XS BALLOT MODULE PBA TEST PLAN
Software design/specifications	LIBERTY CONTROL DATABASE SCHEMA LibertyControl Ballot Layout Specification CODING STANDARD SOFTWARE VERSION DESCRIPTION AND SURVEY OF CHANGES SIPRU SIPRU INTERFACE DESCRIPTION SOFTWARE VERSION DESCRIPTION AND SURVEY OF CHANGES SSU1 (VM-SW) SOFTWARE DESIGN DOCUMENT SSU1 (VM-SW) SOFTWARE SPECIFICATION AND DESIGN SSU1 (VM-SW) "LES Software authentication (VM-SW) procedures" INTERFACE SPECIFICATION VVPAT PAPER BALLOT (VM-SYS) RELIABILITY OF THE VOTING MACHINE (VM-SYS)
System security specifications	LES security description user guide SECURITY RISK ANALYSIS LES

VVSG Document Reference	TDP Document Name
	LES security description user guide for BMD
	SECURITY RISK ANALYSIS LES WITH BMD'S
System test specs/test documentation	FUNCTIONAL SPECIFICATION PRU U1
	User Acceptance Procedure LibertyVote/ESU1
	SYSTEM ACCEPTANCE TEST PLAN
	NYSBOE PRE-QUALIFICATION TEST PLAN
	SOFTWARE TEST PLAN SSU1 (VM-SW)
	Static test description Software SSU1 (VM-SW)
	SYSTEM TEST DESCRIPTION LIBERTYVOTE ESU1/SSU1 (VM-SYS)
	TEST REPORT IEC 60950-1 and/or EN 60950-1 Information technology equipment – Reading Unit
	TEST REPORT IEC 60950-1 and/or EN 60950-1
	Information technology equipment – Voting System
	DELIVERY REPORT LES1_01_16
User/system operations procedure	LES personnel deployment and training user guide
	Liberty Control Election Manager User Guide
	LibertyControl Ballot Manager User Guide
	LibertyControl Pollsite Manager
	User Guide
	Liberty Control Results Manager User Guide
	LibertyControl Report Manager User Guide
	LibertyControl Audit Manager
	User Guide
	Liberty Control Introduction Guide
	LES operational procedures user guide
	Voting System Operator's Guide (VM-SYS)
	Maintenance Manual LibertyVote (VM-SYS)
	Liberty Control Election Manager User Guide
	LibertyControl Ballot Manager User Guide
	LibertyControl Pollsite Manager User Guide
	LibertyControl Audit Manager User Guide
	LibertyControl Ballot Layout Specification
	User Acceptance Procedure LibertyMark/EPU1
	LibertyMark (BMD) Operator's Guide

VVSG Document Reference	TDP Document Name
	Maintenance Manual LibertyMark LES operational procedures user guide (BMD) Voter Verification Instructions
System maintenance procedures	
Personnel deployment/training requirements	LES personnel deployment and training user guide
Configuration management plan	CONFIGURATION AND CHANGE MANAGEMENT PLAN CONFIGURATION AND CHANGE MANAGEMENT PLAN LIBERTY ELECTION SYSTEM LIBERTY CONTROL SYSTEM CONFIGURATION AND INSTALLATION
Quality assurance program	C coding standard Nedap Specials QUALITY ASSURANCE PLAN FOR THE DEVELOPMENT OF THE LIBERTY ELECTION SYSTEM QUALITY ASSURANCE PLAN

9.4 Premier

VVSG Document Reference	TDP Document Name
System Overview	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Overview 2005 VVSG AccuVote-OSX Technical Data Package Introduction 2005 VVSG AccuVote-OSX Technical Data Package System Overview 2005 VVSG ASM 1.1.1 Technical Data Package System Overview 2005 VVSG GEMS 1.21.1 Technical Data Package System Overview 2005 VVSG PCS 2.1.1 Technical Data Package System Overview System Overview (ASSURE 1.2 TDP Appendix A) ASSURE 1.2 Product Overview Guide (ASSURE 1.2 TDP Appendix W) AutomarkTM INFORMATION MANAGEMENT SYSTEM (AIMS)SYSTEM OVERVIEW

VVSG Document Reference	TDP Document Name
	Automark System Introduction AutoMARKTM SYSTEM OVERVIEW 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Introduction
System functionality description	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Functionality Description 2005 VVSG AccuVote-OSX Technical Data Package System Functionality Description AVOSX Functional Specification Approval (AccuVote-OSX TDP Appendix A) 2005 VVSG ASM 1.1.1 Technical Data Package System Functionality Description 2005 VVSG GEMS 1.21.1 Technical Data Package System Functionality Description 2005 VVSG PCS 2.1.1 Technical Data Package System Functionality Description AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)System Functionality AutoMARKTM SYSTEM FUNCTIONALITY 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix E: Redundant Storage Logic 2005 VVSG GEMS 1.21.1 Technical Data Package Appendix H: System and Data Integrity 2005 VVSG GEMS 1.21.1 Technical Data Package Appendix I: Performance Metrics Ballot Station Smart Card Format 1.0 (AccuVote-OSX 1.1.1 TDP Appendix D)
System hardware specifications	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Hardware Specification 2005 VVSG AccuVote-OSX Technical Data Package System Hardware Specification 2005 VVSG AccuVote-OSX Technical Data Package Appendix B: Hardware Specifications 2005 VVSG AccuVote-OSX Technical Data Package Appendix I: System and Data Integrity Battery charger & fuel gauge, Board, Components, Labels, Wiring (AccuVote-OSX TDP Appendix C Drawings\AccuVote-OSX) Miotors Ballot Box Drawings (AccuVote-OSX TDP Appendix

VVSG Document Reference	TDP Document Name
	C\ Ballot Box)
	Audio Jack, Battery, LCD, Memory Card, Modem, Power Jack, Power Supply, Printer, Scan Head Specifications (AccuVote-OSX TDP Appendix D)
	2005 VVSG AccuVote-OSX Technical Data Package Appendix E: Materials Specifications
	LNP* Stat-kon* Compounds: A Guide to Thermoplastic Compounds for Electrostatic Discharge Protection (AccuVote-OSX TDP Appendix E)
	Combined Data Sheet (AccuVote-OSX TDP Appendix E)
	SABIC Innovative Plastics - DATASHEETS (AccuVote-OSX TDP Appendix E)
	Engineering Change Request (AccuVote-OSX TDP Appendix G)
	2005 VVSG ASM 1.1.1 Technical Data Package System Hardware Specification
	2005 VVSG GEMS 1.21.1 Technical Data Package System Hardware Specification
	2005 VVSG PCS 2.1.1 Technical Data Package System Hardware Specification
	ASSURE 1.2 Technical Data Package Appendix F: Surface Specification Standards
	Hardware Development (ASSURE 1.2 TDP Appendix C)
	QSP00004 Design and Development (ASSURE 1.2 TDP Appendix C)
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)System Hardware Specification
	Automark Cable Phase 2 POWER INLET TO PSU
	Automark PRINTER ENGINE BOARD
	Automark POWER SUPPLY BOARD
	Automark SBC Schematics
	Automark Scanner P1211MC
	Automark Gas Gauge Board (GGB)
	Automark Switch Interface Board (SIB)
	Automark Ultrasonic Sheet Detector (USD)
	AutoMARK System Hardware Specification
	QEPB0001 DESI Certification Process Map (ASSURE 1.2 TDP Appendix C)

VVSG Document Reference	TDP Document Name
	Part and Model Number Scheme (ASSURE 1.2 TDP Appendix C) QMIMM002 EC Flow for Manufacturing (ASSURE 1.2 TDP Appendix C) QSP00023 Section3 - Part Number Control (ASSURE 1.2 TDP Appendix C) QSP00023 Section 5 Engineering Change Process (ASSURE 1.2 TDP Appendix C) QSP00023 Development & Manufacturing Standards (ASSURE 1.2 TDP Appendix C) QSP00023 Section 6 Product Appearance (ASSURE 1.2 TDP Appendix C) QPPB0001 DESI Product & Project Management Process Map (ASSURE 1.2 TDP Appendix C) QSI0A019 S_PAP (Supplier Part Approval Process) (ASSURE 1.2 TDP Appendix C) QSI0A021 Conformance of ten (10) (ASSURE 1.2 TDP Appendix C) QSP00006 Purchasing (ASSURE 1.2 TDP Appendix C) QSF00104 Supplier Certification Brochure (ASSURE 1.2 TDP Appendix C)
Software design/specifications	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Software Design and Specification 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix A: Software Specifications 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix B: Program Specifications GEMS AVServer Ballot Station Protocol 1.0 (AccuVote-OSX 1.1.1 TDP Appendix H) GEMS AVServer Ballot Station Upload Message Format 1.0 (AccuVote-OSX 1.1.1 TDP Appendix H) GEMS AVServer Download Message Format 2.0 (AccuVote-OSX 1.1.1 TDP Appendix H) TCPIP (AccuVote-OSX 1.1.1 TDP Appendix H) 2005 VVSG ASM 1.1.1 Technical Data Package Software Design and Specification 2005 VVSG ASM 1.1.1 Technical Data Package Appendix A: Software Specifications 2005 VVSG ASM 1.1.1 Technical Data Package Appendix B: Program Specifications

VVSG Document Reference	TDP Document Name
	ASSURE Security Manager Smart Card Format 1.0 (ASM 1.1.1 TDP Appendix D)
	Model Specification (ASM 1.1.1 TDP Appendix F)
	2005 VVSG GEMS 1.21.1 Technical Data Package Software Design and Specification
	2005 VVSG GEMS 1.21.1 Technical Data Package Appendix A: Software Specifications
	2005 VVSG GEMS 1.21.1 Technical Data Package Appendix B: Program Specifications
	2005 VVSG GEMS 1.21.1 Technical Data Package Appendix C: Program Structure and Flow
	GEMS Voter Card Data Export Format 2.1 (GEMS 1.21.1 TDP Appendix F)
	GEMS Voter Card Data Export Format 2.2 (GEMS 1.21.1 TDP Appendix F)
	GEMS AccuVote-OS Central Count Protocol 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AccuVote-OS Precinct Count Protocol 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Ballot Station Download Message Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Ballot Station Protocol 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Ballot Station Upload Message Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer CTS Download Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Download Message Format 2.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Vote Center List Message Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS AVServer Vote Center Queue Message Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS Region Server Upload Message Format 1.0 (GEMS 1.21.1 TDP Appendix G)
	GEMS Region Server Upload Message Format 2.0 (GEMS 1.21.1 TDP Appendix G)
	2005 VVSG PCS 2.1.1 Technical Data Package Software Design and Specification
	2005 VVSG PCS 2.1.1 Technical Data Package Appendix

VVSG Document Reference	TDP Document Name
	A: Software Specifications
	FEC 2002 PCS 2.1.1 Technical Data Package Appendix B: Program Specifications
	2005 VVSG PCS 2.1.1 Technical Data Package Appendix G: System and Data Integrity
	Premier Central Scan Election Data Format 3.0 (PCS 2.1.1 TDP Appendix C)
	ASSURE Security Manager Smart Card Format 1.0 (PCS 2.1.1 TDP Appendix D)
	GEMS AVServer Ballot Station Protocol 1.0 (PCS 2.1.1 TDP Appendix F)
	GEMS AVServer Ballot Station Upload Message Format 1.0 (PCS 2.1.1 TDP Appendix F)
	GEMS AVServer Download Message Format 2.0(PCS 2.1.1 TDP Appendix F)
	ASSURE 1.2 Technical Data Package Appendix J: File Management
	C/C++ Coding Style (ASSURE 1.2 TDP Appendix H)
	SSL Protocol 3.0 Specifications (ASSURE 1.2 TDP Appendix K)
	SECURE HASH STANDARD (ASSURE 1.2 TDP Appendix V)
	AccuVote Software Validation Utility Software Design Document 1.0.1 (ASSURE 1.2 TDP Appendix X)
	AccuVote Software Validation Utility Software Requirements Specification 1.0.1 (ASSURE 1.2 TDP Appendix X)
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS) COMPACT FLASH MEMORY CARD DESIGN SPECIFICATIONS
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS) Programming Specifications Details
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)SOFTWARE DESIGN SPECIFICATIONS
	AutoMARK BALLOT SCANNING AND PRINTING SPECIFICATION
	AutoMARK DRIVER APPLICATION PROGRAMING INTERFACE (API) SPECIFICATIONS
	AutoMARK EMBEDDED DATABASE INTERFACE SPECIFICATION
	AutoMARK GRAPHICAL USER INTERFACE (GUI) DESIGN SPECIFICATIONS

VVSG Document Reference	TDP Document Name
	AutoMARK OPERATING SOFTWARE DESIGN SPECIFICATIONS AutoMARK Programming Specifications Details AutoMARK Rapid Application Development Methodology (RAD) AutoMARK SOFTWARE DESIGN SPECIFICATIONS AutoMARK SOFTWARE DIAGNOSTIC SPECIFICATIONS AutoMARK SOFTWARE STANDARDS SPECIFICATION AutoMARK BALLOT IMAGE PROCESSING SPECIFICATIONS AutoMARK SOFTWARE DEVELOPMENT ENVIRONMENT SPECIFICATIONS AutoMARK OPERATIONS AND DIAGNOSTIC LOG SPECIFICATIONS Ballot Station Smart Card Format 1.0 (AccuVote-OSX 1.1.1 TDP Appendix D)
System security specifications	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Security Specification 2005 VVSG AccuVote-OSX Technical Data Package System Security Specification 2005 VVSG ASM 1.1.1 Technical Data Package System Security Specification 2005 VVSG GEMS 1.21.1 Technical Data Package System Security Specification 2005 VVSG PCS 2.1.1 Technical Data Package System Security Specification Premier's Client Security Policy (ASSURE 1.2 TDP Appendix W) Premier's Windows Security Updates Policy AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)SYSTEM SECURITY SPECIFICATIONS AutoMARK SYSTEM SECURITY SPECIFICATIONS
System test specs/test documentation	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Test and Verification Specification 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix I: System and Data Integrity 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix L: Administrative Test Plans AccuVote-OSX Election Data Format 1.0 (AccuVote-OSX 1.1.1 TDP Appendix C)

VVSG Document Reference	TDP Document Name
	Regression Test Plan (AccuVote-OSX 1.1.1 TDP Appendix K\Executed Test Plans)
	Regression Test Plan (AccuVote-OSX 1.1.1 TDP Appendix K\Test Plan)
	AccuVote-OSX 1.1.1 Test Specifications (\AccuVote-OSX 1.1.1 TDP Appendix K\Test Specifications)
	Test Summary (AccuVote-OSX 1.1.1 TDP Appendix K Test Plans\Testing Summary)
	VERIFICATION TEST PLAN (AccuVote-OSX 1.1.1 TDP Appendix K Test Plans\Verification List)
	2005 VVSG AccuVote-OSX Technical Data Package System Test and Verification Specification
	2005 VVSG AccuVote-OSX Technical Data Package Usability and Accessibility Requirements
	Requirements of the 2005 VVSG Trace to Vendor Testing and Technical Data Package
	2005 VVSG AccuVote-OSX Technical Data Package Appendix M: Administrative Test Plans
	SABIC Innovative Plastics - DATASHEETS (AccuVote-OSX TDP Appendix E)
	REGRESSION TEST (AccuVote-OSX TDP Appendix L Test Plans\Executed Test Plans)
	REGRESSION TEST (AccuVote-OSX TDP Appendix L\Test Plans)
	AccuVote-OSX 1.1.1 Test Specifications (AccuVote-OSX TDP Appendix L Test Plans\Test Specifications)
	TS_AVOSx_1-0-2.pdf (AccuVote-OSX TDP Appendix L Test Plans\Testing Summary)
	Test Summary (AccuVote-OSX TDP Appendix L Test Plans\Testing Summary)
	VERIFICATION TEST PLAN (AccuVote-OSX TDP Appendix L)
	2005 VVSG ASM 1.1.1 Technical Data Package System Test and Verification Specification
	2005 VVSG ASM 1.1.1 Technical Data Package Appendix H: Performance Metrics
	2005 VVSG ASM 1.1.1 Technical Data Package Appendix J: Administrative Test Plans
	MAIN FUNCTIONALITY Executed Test Plan (ASM 1.1.1 TDP Appendix I)
	MAIN FUNCTIONALITY Test Plans (ASM 1.1.1 TDP Appendix I)

VVSG Document Reference	TDP Document Name
	ASM 1.1.1 Test Specifications (ASM 1.1.1 TDP Appendix I)
	2005 VVSG GEMS 1.21.1 Technical Data Package System Test and Verification Specification
	2005 VVSG GEMS 1.21.1 Technical Data Package Appendix K: Administrative Test Plans
	GEMS 1.20 REGRESSION TEST (GEMS 1.21.1 TDP Appendix J Test Plans\Executed Test Plans)
	GEMS 1.21 REGRESSION TEST (GEMS 1.21.1 TDP Appendix J Test Plans\Executed Test Plans)
	GEMS 1.21.1 Test Specifications (\GEMS 1.21.1 TDP Appendix J Test Plans\Test Specifications)
	Test Summary (GEMS 1.21.1 TDP Appendix J Test Plans)
	2005 VVSG PCS 2.1.1 Technical Data Package System Test and Verification Specification
	2005 VVSG PCS 2.1.1 Technical Data Package Appendix I: Performance Metrics
	2005 VVSG PCS 2.1.1 Technical Data Package Appendix K: Administrative Test Plans
	PCS MAIN FUNCTIONALITY (PCS 2.1.1 TDP Appendix J Test)
	PCS MAIN FUNCTIONALITY (PCS 2.1.1 TDP Appendix J)
	PCS 2.1.1 Test Specifications (PCS 2.1.1 TDP Appendix J)
	QSP00011 Control of Inspection, Measuring and Test Equipment (ASSURE 1.2 TDP Appendix E)
	Requirements of the FECVSS 2002 Trace to Vendor Testing and Technical Data Package
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Integration & Testing Bug Report
	AutoMARK SYSTEM SECURITY TEST CASES
	AutoMARK SYSTEM SECURITY TEST PROCEDURES
	AutoMARK ENVIRONMENTAL TEST CASES
	AutoMARK ENVIRONMENTAL TEST PLAN
	AutoMARK Environmental Test Procedures
	AutoMARK OPERATIONS & DIAGNOSTIC LOG TEST CASES
	AutoMARK OPERATIONS & DIAGNOSTIC LOG TEST PROCEDURES
	AutoMARK SOFTWARE QUALITY ASSURANCE TEST CASES
	AutoMARK SOFTWARE QUALITY ASSURANCE TEST PROCEDURES

VVSG Document Reference	TDP Document Name
	AutoMARK System Level Test Cases AutoMARK SYSTEM LEVEL TEST PLAN AutoMARK System Level Test Procedures AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Quality Assurance Test Cases AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)QUALITY ASSURANCE TEST PROCEDURES AutoMARK SOFTWARE QUALITY ASSURANCE TEST PLAN
User/system operations procedure	ABasic 2.2.4 Reports Guide (2005 VVSG AccuVote-OSX 1.1.1 TDP Revision 1.0 Product documentation) AccuVote-OSX 1.1.1 System Administrator's Guide (2005 VVSG AccuVote-OSX 1.1.1 TDP Revision 1.0 Product documentation) AccuVote-OSX 1.1.1 User's Guide (2005 VVSG AccuVote-OSX 1.1.1 TDP Revision 1.0 Product documentation) 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Operations Procedures AccuVote-OSX Hardware Guide (2005 VVSG AccuVote-OSX TDP Revision 1.0 Product documentation) AccuVote-OSX Pollworker's Guide (2005 VVSG AccuVote-OSX TDP Revision 1.0 Product documentation) Ballot Specifications Guide (2005 VVSG AccuVote-OSX TDP Revision 1.0 Product documentation) 2005 VVSG AccuVote-OSX Technical Data Package System Operations Procedures ASSURE Security Manager 1.1.1 User's Guide (2005 VVSG ASM 1.1.1 TDP Revision 1.0 Product documentation) 2005 VVSG ASM 1.1.1 Technical Data Package System Operations Procedures ABasic 2.2.4 Reports Guide (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation) GEMS 1.20 Results Server File Format 1.1 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation) GEMS 1.21.1 Election Administrator's Guide (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation) GEMS 1.21.1 Reference Guide (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation) GEMS 1.21.1 System Administrator's Guide (2005 VVSG

VVSG Document Reference	TDP Document Name
	GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS 1.21.1 User's Guide (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Audio Import Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS BCWin Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS California Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Card Data Export Format 1.1 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Comma Delimited Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Delaware Import Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Delaware Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS DIMS Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Florida Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS L.A. Import Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Michigan Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Minnesota Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Mississippi Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Ohio Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS RTF Export-Import Format 2.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Standard Import Format 1.5 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Standard Results Export Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Voter Registration Import Format 1.0 (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	GEMS Wisconsin Results Export Format 1.0 (2005 VVSG

VVSG Document Reference	TDP Document Name
	GEMS 1.21.1 TDP Revision 1.0 Product documentation)
	2005 VVSG GEMS 1.21.1 Technical Data Package System Operations Procedures
	2005 VVSG GEMS 1.21.1 Technical Data Package Usability and Accessibility Requirements
	AccuFeed Hardware Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	AccuVote-OS Central Count 2.0.13 User's Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	AccuVote-OS Hardware Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	ASSURE Security Manager 1.1.1 User's Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	Ballot Specifications Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	Premier Central Scan 2.1.1 System Administrator's Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	Premier Central Scan 2.1.1 User's Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	DRS PhotoScribe PS900 iM2/PS960 Hardware Guide (2005 VVSG PCS 2.1.1 TDP Revision 1.0 Product documentation)
	2005 VVSG PCS 2.1.1 Technical Data Package System Operations Procedures
	LRC1000 User Guide and Specifications.pdf (PCS 2.1.1 TDP Appendix H)
	QSP00001 Management Responsibilities (ASSURE 1.2 TDP Appendix C)
	QSP10001 Policy and Procedure for Engineering Development (ASSURE 1.2 TDP Appendix C)
	Bugzilla User's Guide (ASSURE 1.2 TDP Appendix G)
	Development Office Backup Guide (ASSURE 1.2 TDP Appendix M)
	DESI Help Desk Charter (ASSURE 1.2 TDP Appendix N)
	DESI Help Desk Quick Reference (ASSURE 1.2 TDP Appendix N)
	DESI Help Desk Work Flow Updated (ASSURE 1.2 TDP Appendix N)
	Help Desk Brochure (ASSURE 1.2 TDP Appendix N)
	Premier Product Advisory Notice Revision 1.0 (ASSURE 1.2

VVSG Document Reference	TDP Document Name
	TDP Appendix T) AccuBasic 2.2 User's Guide (ASSURE 1.2 TDP Appendix U) GEMS 1.20.2 Election Administrator's Guide (ASSURE 1.2 TDP Appendix W) AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)SYSTEM OPERATIONS PROCEDURES AutoMARK Jurisdiction Guide AutoMark Poll Worker's Guide AutoMARK Voters Guide AutoMARK Information Management System Election Official's Guide 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Usability and Accessibility Requirements TSText 4.1.16 Reference Guide (2005 VVSG GEMS 1.21.1 TDP Revision 1.0 Product documentation) 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix J: Performance Metrics
System maintenance procedures	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package System Maintenance Manual 2005 VVSG AccuVote-OSX Technical Data Package System Maintenance Manual 2005 VVSG ASM 1.1.1 Technical Data Package System Maintenance Manual 2005 VVSG GEMS 1.21.1 Technical Data Package System Maintenance Manual 2005 VVSG PCS 2.1.1 Technical Data Package System Maintenance Manual QSP00022 Regulatory and Type Approval Procedures (ASSURE 1.2 TDP Appendix C) AutoMARK System Installation and Maintenance Guide
Personnel deployment/training requirements	005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Personnel Deployment and Training Requirements 2005 VVSG AccuVote-OSX Technical Data Package Personnel Deployment and Training Requirements 2005 VVSG ASM 1.1.1 Technical Data Package Personnel Deployment and Training Requirements 2005 VVSG GEMS 1.21.1 Technical Data Package Personnel Deployment and Training Requirements 2005 VVSG PCS 2.1.1 Technical Data Package Personnel

VVSG Document Reference	TDP Document Name
	Deployment and Training Requirements AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Personnel Deployment and Training Requirements AutoMARK ATS EMPLOYEE TRAINING PROCEDURE AutoMARK Personnel Deployment and Training Requirements
Configuration management plan	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Configuration Management Plan 2005 VVSG AccuVote-OSX Technical Data Package Configuration Management Plan 2005 VVSG ASM 1.1.1 Technical Data Package Configuration Management Plan 2005 VVSG GEMS 1.21.1 Technical Data Package Configuration Management Plan 2005 VVSG PCS 2.1.1 Technical Data Package Configuration Management Plan QSP00006 Purchasing (ASSURE 1.2 TDP Appendix B) QSF00104 Supplier Certification Brochure (ASSURE 1.2 TDP Appendix B) Configuration Management (ASSURE 1.2 TDP Appendix B) Configuration Management (ASSURE 1.2 TDP Appendix C) ASSURE 1.2 Technical Data Package Appendix C: Hardware Configuration Management Premier's Windows Configuration Guide (ASSURE 1.2 TDP Appendix W) AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)CONFIGURATION MANAGEMENT PLAN AutoMARK ATS Election Systems Configuration Management Policy AutoMARK ATS Software and Hardware Release Process AutoMARK CONFIGURATION MANAGEMENT PLAN AutoMARK Premier VAT Software and Firmware Compilation Instructions AutoMARK ATS Component Storage and Handling Procedure QEPB0001 DESI Certification Process Map (ASSURE 1.2 TDP Appendix C) Part and Model Number Scheme (ASSURE 1.2 TDP

VVSG Document Reference	TDP Document Name
	Appendix C) QMIMM002 EC Flow for Manufacturing (ASSURE 1.2 TDP Appendix C) QSP00023 Section3 - Part Number Control (ASSURE 1.2 TDP Appendix C) QSP00023 Section 5 Engineering Change Process (ASSURE 1.2 TDP Appendix C) QSP00023 Development & Manufacturing Standards (ASSURE 1.2 TDP Appendix C) QSP00023 Section 6 Product Appearance (ASSURE 1.2 TDP Appendix C) QPPB0001 DESI Product & Project Management Process Map (ASSURE 1.2 TDP Appendix C) QSI0A019 S_PAP (Supplier Part Approval Process) (ASSURE 1.2 TDP Appendix C) QSI0A021 Conformance of ten (10) (ASSURE 1.2 TDP Appendix C) QSP00006 Purchasing (ASSURE 1.2 TDP Appendix C) QSF00104 Supplier Certification Brochure (ASSURE 1.2 TDP Appendix C)
Quality assurance program	2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Appendix J: Performance Metrics 2005 VVSG AccuVote-OSX 1.1.1 Technical Data Package Quality Assurance Program 2005 VVSG AccuVote-OSX Technical Data Package Quality Assurance Program 2005 VVSG ASM 1.1.1 Technical Data Package Quality Assurance Program 2005 VVSG ASM 1.1.1 Technical Data Package Appendix G: System and Data Integrity 2005 VVSG GEMS 1.21.1 Technical Data Package Quality Assurance Program 2005 VVSG PCS 2.1.1 Technical Data Package Quality Assurance Program QSP00004 Design and Development (ASSURE 1.2 TDP Appendix B) QSP00017 Internal Quality Audits (ASSURE 1.2 TDP Appendix B) QSM00001 North America Quality System Manual (ASSURE 1.2 TDP Appendix C)

VVSG Document Reference	TDP Document Name
	QSP00009 Process Control (ASSURE 1.2 TDP Appendix C)
	QSP00013 Control of Nonconforming Product (ASSURE 1.2 TDP Appendix C)
	QSP00014 Corrective and Preventive Action (ASSURE 1.2 TDP Appendix C)
	QSP00015 Preservation of Products (ASSURE 1.2 TDP Appendix C)
	QSP00017_Internal_Quality_Audits (ASSURE 1.2 TDP Appendix C)
	QSI0A030 Tool Development & Maintenance
	Quality Assurance Methodology (ASSURE 1.2 TDP Appendix D)
	QCMP0002 Partners for Excellence (ASSURE 1.2 TDP Appendix E)
	QSP00012 Inspection and Test Status (ASSURE 1.2 TDP Appendix E)
	QCI20057 Material Review Process (ASSURE 1.2 TDP Appendix E)
	QCPB0004 Touch Screens Incoming Inspection Process Map (ASSURE 1.2 TDP Appendix E)
	QEPB0002 DESI Configuration Testing Process Map (ASSURE 1.2 TDP Appendix E)
	QSP00005 Document and Data Control Procedure (ASSURE 1.2 TDP Appendix I)
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)QUALITY ASSURANCE POLICY & PROCEDURES
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Design Review Attendance Form
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Design Review Minutes Form
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Quality Systems Procedures Master List Form
	AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Quality System Audit Master Schedule
	Automark Technical Systems Design Review Policy
	AutoMARK ATS Document Change and Issue Procedure
	AutoMARK ATS Document Control Policy
	AutoMARK ATS Engineering Change Request/Change Order Process

VVSG Document Reference	TDP Document Name
	AutoMARK ATS Engineering Development Policy AutoMARK ATS Purchasing Procedure AutoMARK ATS QUALITY ASSURANCE POLICY AutoMARK ATS Quality System Audit Process AutoMARK ATS Receiving Procedure AutoMARK ATS System Report (Bug Reporting) Procedure AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Corrective Action Control Log Form ASSURE Security Manager Election Data Format 1.1 (ASM 1.1.1 TDP Appendix C) AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)Quality Assurance Test Cases AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS)QUALITY ASSURANCE TEST PROCEDURES AutoMARK SOFTWARE QUALITY ASSURANCE TEST PLAN

APPROVAL SIGNATURES

Signing below indicates approval of this Master TDP Review Plan for the NYSBOE Voting System Examination and Verification Testing project.

Rex Reed, PMP, SysTest Labs, Senior Project Manager Test Plan Author and Program Manager	Date
Glenn Truglio, SysTest Labs, Chief Operating Officer Project Director and Project Advisory Board	Date
Robert Warren, NYSBOE, Verification Project Manager	Date
Tarry Breads, NYSBOE, Administrative Project Manager	Date
Anna Svizzero, NYSBOE, Director Of Election Operations	Date
Kim Galvin, NYSBOE Deputy Director Of Election Operations	Date

End of Master TDP Review Plan