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CERTIFICATION TEST PLAN

Prepared for:

Manufacturer Name	ES&S
Manufacturer System	EVS 5.0.1.0
EAC Application No.	ESS1302
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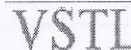
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1.0 INTRODUCTION

The purpose of this National Certification Test Plan is to document the procedures that Wyle Laboratories, Inc. will follow to perform certification testing of the Election Systems and Software (ES&S) EVS 5.0.1.0 Voting System to the requirements set forth for voting systems in the U.S. Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (EAC 2005 VVSG). Prior to submitting the system for certification testing, ES&S submitted an application to the EAC for certification of the EVS 5.0.1.0 modification to the previously-certified EVS 5.0.0.0 (Certification Number: ESSEVS5000) Voting System. This Test Plan follows Notice of Clarification 09-005: Development and Submission of Test Plans for Modifications to EAC Certified Systems and Notice of Clarification 13-02: Detailed Description of Changes for Modifications.

1.1 Established Baseline System

The baseline system for this modification is the EVS 5.0.0.0 Voting System. Table 1-1 describes the certified equipment and firmware versions. For full details about the EVS 5.0.0.0 test campaign refer to Wyle Laboratories' Test Report No. T59087.01-01 Rev A posted on the EAC website.

Table 1-1 EVS 5.0.0.0 Voting System Hardware Components

Component	Hardware Version	Firmware Version
DS200	1.2.1.0	2.7.0.0
AutoMARK™ A100	1.0	1.8.1.0
AutoMARK™ A200 (SBC 2.0)	1.1	1.8.1.0
AutoMARK™ A200 (SBC 2.5)	1.1	1.8.1.0
AutoMARK™ A300 (SBC 2.0)	1.3	1.8.1.0
AutoMARK™ A300 (SBC 2.5)	1.3	1.8.1.0
DS850	1.0	2.4.0.0

Table 1-2 EVS 5.0.0.0 Voting System Software Components

Component	Version
ElectionWare	4.1.0.0
Election Reporting Manager (ERM)	8.6.0.0
ES&S Event Log Service	1.5.0.0
VAT Previewer	1.8.1.0
Removable Media Service	1.4.0.0

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1.0 INTRODUCTION (Continued)

1.2 Scope of Modification

The purpose of this modification is to add the DS200 hardware Version 1.3 to the previously-certified voting system EVS 5.0.0.0. In addition, ES&S submitted the DS200 1.2 hardware with ECO 1281 applied (DS200 hardware Version 1.2.3.0). The system modification is limited to the DS200 hardware and DS200 software required to for the new hardware. No new features or functions are being introduced.

The changes to the DS200 hardware for version 1.3 include:

- New Motherboard – VT6070 Mini-ITX (Replace EOL, ‘End-of-Life’)
- New System RAM – DDR3 Ram Module (Replaced to fit new motherboard)
- New Scanner Board – (Replace EOL)
- Removal of the ATX power supply (now incorporated in the motherboard)
- ECO 1281 – DS200 Transport Assembly
 - Redesign spring plate (improve handling of damaged ballots)
 - Redesign beveled Contact Image Sensor (improve handling of damaged ballots)
 - Add the ultrasonic detect shield and grommet
 - Redesign closing linkage
 - Revise fit and tolerance on five sheet metal parts (improve manufacturing tolerances)
 - Right side of the transport assembly – change round holes to slots to allow horizontal adjustability in stainless steel guide plates
 - Bottom front stainless steel platen – add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
 - Drive belt cover on the left side of transport – added access holes for CIS mounting hardware
 - Bottom rear stainless steel platen – add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
 - Top front stainless steel platen – add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
- Replace CFL backlight with LED backlight (Replace EOL)
- Removable rails for attachment to ballot box (Replace built in feet)
- Battery access door
- Improve power/close switch fit
- Plastic housing change to update company logo

The changes to the DS200 hardware for version 1.2.3.0 include ECO 1281 (described above).

The changes to the DS200 2.7.0.0 software include:

- Print scanner board hardware type on tape
- Implemented the use of the 8-bit “Scanner ID” field to report the scanner board firmware
- Integrated ability to read and report Power Management Board firmware version
- Report motherboard version on configuration report and in log
- Modify HAL for new VIA motherboard

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1.0 INTRODUCTION (Continued)

1.3 Initial assessment

The DS200 Version 1.3 hardware has been submitted for testing in a previous state campaign for the State of Florida (FL EVS 4.5.0.0). Wyle Laboratories' personnel have analyzed the results of the EVS4500 testing, Wyle Test Report No. T71013.01-01, to determine prior testing acceptance. The details of this analysis are in Section 4.5.1 Hardware Qualitative Examination Design. Based on this analysis, the DS200 hardware Version 1.3 shall be subjected to functional configuration audit, accuracy, maintainability, accessibility, usability, security, PCA, system integration, reliability, and electrical supply testing. In addition, to verify that the modifications to the DS200 do not introduce any nonconformities or instabilities, the EMS and DS200 shall be subjected to a system integration test to ensure all components interact properly.

The DS200 Version 1.2.3.0 hardware incorporates ECO1281 into the previously-certified (EVS 5.0.0.0) 1.2.1.0 hardware. ECO1281 was conditionally approved by the EAC on the condition that the change will be tested in the next EAC certification effort. Based on the EAC response to ECO1281, Wyle Laboratories will conduct accuracy and reliability tests.

The software utilized for the EVS 5.0.1.0 campaign will comprise of the certified EVS 5.0.0.0 software (taken from the Wyle Trusted Build) with the addition of the DS200 2.7.1.0 code changes. The DS200 code will be compared to the EVS 5.0.0.0 Version to determine the extent of the source code review required. Based on this examination, Wyle Laboratories' personnel will perform a software code review on all modified code to ensure that all applicable VVSG requirements are met and changes to the software do not introduce any new functions or features outside of the modifications detailed above.

An initial assessment has been performed on the TDP submitted by ES&S for EVS 5.0.1.0. The initial assessment determined that all required documents were delivered to enable the TDP review. The TDP is constructed with the EVS 5.0.0.0 certified TDP and the EVS 5.0.1.0 changes as an addendum.

1.4 References

The documents listed below were used in the development of the Test Plan and will be utilized to perform certification testing.

- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines," and Volume II, Version 1.0, "National Certification Testing Guidelines," dated December 2005
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 1.0, effective date July 2008
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)," dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)," dated May 2008
- United States 107th Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002

1.0 INTRODUCTION (Continued)

1.4 References (Continued)

- Wyle Laboratories' Test Guidelines Documents: EMI-001A, "Wyle Laboratories' Test Guidelines for Performing Electromagnetic Interference (EMI) Testing," and EMI-002A, "Test Procedure for Testing and Documentation of Radiated and Conducted Emissions Performed on Commercial Products"
- Wyle Laboratories' Quality Assurance Program Manual, Current Revision
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation (listed on www.eac.gov)
- EAC Notices of Clarification (listed on www.eac.gov)
- EAC Quality Monitoring Program residing on:
http://www.eac.gov/testing_and_certification/quality_monitoring_program.aspx
- Wyle Test Report No. T71013.01-01 – Hardware Compliance Testing of Election Systems and Software EVS 4.5.0.0 DS200 Hardware Version 1.3
- Wyle Test Report No. T59087.01-01 – National Certification Test Report of Election Systems and Software EVS 5.0.0.0

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1.0 INTRODUCTION (Continued)

1.5 Terms and Abbreviations

This subsection defines all terms and abbreviations applicable to the development of this Test Plan.

Table 1-3 Terms and Abbreviations

Term	Abbreviation	Definition
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability.
Configuration Management	CM	---
Commercial Off the Shelf	COTS	---
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.
ES&S Event Log Service	ELS	---
Election Management System	EMS	Within the EVS 5.0.1.0 Voting System, the EMS is comprised of five components: ElectionWare, ERM, ES&S Event Log Service, and VAT Previewer.
Election Reporting Manager	ERM	EVS EMS reporting component.
Election Systems and Software	ES&S	---
Equipment Under Test	EUT	Refers to the individual system component or multiple piece of the same component
ES&S Voting System	EVS	---
Functional Configuration Audit	FCA	Verification of system functions and combination of functions cited in the manufacturer's documentation.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
Intelligent Mark Recognition	IMR	Visible light scanning technology to detect completed ballot targets.
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhances economic security and improves our quality of life.

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1.0 INTRODUCTION (Continued)

1.5 Terms and Abbreviations (Continued)

Table 1-3 Terms and Abbreviations (Continued)

Term	Abbreviation	Definition
Physical Configuration Audit	PCA	Review by accredited test laboratory to compare voting system components submitted for certification testing to the manufacturer’s technical documentation, and confirmation the documentation meets national certification requirements. A witnessed build of the executable system is performed to ensure the certified release is built from tested components.
Quality Assurance	QA	--
System Under Test	SUT	Refers to the system as a whole (all components)
Secure File Transfer Protocol	SFTP	A network protocol that provides file access, file transfer, and file management functionality over any reliable data stream.
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Underwriters Laboratories Inc.	UL	---
Uninterruptible Power Supply	UPS	---
Voter Assist Terminal	VAT	The electronic ballot marking device component is the ES&S AutoMARK™.
Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Laboratories, Inc.	Wyle	---
Wyle Operating Procedure	WoP	Wyle Laboratories Test Method or Test Procedure.
Voting System Test Laboratory	VSTL	Wyle Laboratories
Voluntary Voting System Guidelines	VVSG	EAC Voluntary Voting System Guidelines V. 1.0

1.6 Testing Responsibilities

Prior to the development of this test plan, Wyle Laboratories evaluated test results from two previous test campaigns performed by Wyle Laboratories. The purpose of this evaluation was to determine the scope of testing required for system certification. Following the review, Wyle Laboratories determined that testing from previous test campaigns could be utilized to satisfy the requirements of this test campaign. All other core and non-core software and hardware certification testing shall be conducted under the guidance of Wyle Laboratories’ personnel verified by Wyle Laboratories to be qualified to perform the testing.

1.6.1 Project Schedule

This information is contained in a Wyle Laboratories’ generated Microsoft Project schedule. This schedule is presented in Appendix A, “ES&S Project Schedule.” The dates on the schedule are not firm dates but planned estimates presented for informational purposes.

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1.0 INTRODUCTION (Continued)

1.6 Testing Responsibilities (Continued)

1.6.2 Test Case Development

Wyle Laboratories will utilize the “Wyle Baseline Test Cases” for the Usability and System Integration Tests. These shall be augmented with specially-designed test cases tailored to the EVS 5.0.1.0 Voting System. Wyle Laboratories has designed specific election definition and test cases for the Operational Status Check and the Accuracy Tests.

1.6.3 Test Procedure Development and Validation

Wyle Laboratories will utilize the Wyle Operating Procedures (WoPs) during the duration of this test program. The validated WoPs have been previously submitted to the EAC for review.

1.6.4 Third-Party Tests

Wyle Laboratories will not utilize any 3rd party testing during performance of the EVS 5.0.1.0 test campaign.

1.7 Target of Evaluation Description

The following sections address the design methodology and product description of the EVS 5.0.1.0 Voting System as taken from the ES&S technical documentation.

1.7.1 System Overview

The ES&S EVS 5.0.1.0 Voting System is a comprehensive suite of vote tabulation equipment and software solutions providing end-to-end election management. The EVS 5.0.1.0 Voting System includes the following core system components detailed in Tables 1-4 and 1-5.

Table 1-4 EVS 5.0.1.0 Voting System Hardware Components

Component	Hardware Version	Firmware Version
DS200	1.3	2.7.1.0
DS200	1.2.1.0	2.7.1.0
DS200	1.2.3.0	2.7.1.0
AutoMARK™ A100	1.0	1.8.1.0
AutoMARK™ A200 (SBC 2.0)	1.1	1.8.1.0
AutoMARK™ A200 (SBC 2.5)	1.1	1.8.1.0
AutoMARK™ A300 (SBC 2.0)	1.3	1.8.1.0
AutoMARK™ A300 (SBC 2.5)	1.3	1.8.1.0
DS850	1.0	2.4.0.0

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1.0 INTRODUCTION (Continued)

1.7 Target of Evaluation Description (Continued)

1.7.1 System Overview (Continued)

Table 1-5 EVS 5.0.1.0 Voting System Software Components

Component	Version
ElectionWare	4.1.0.0
Election Reporting Manager (ERM)	8.6.0.0
ES&S Event Log Service	1.5.0.0
VAT Previewer	1.8.1.0
Removable Media Service	1.4.0.0

Precinct Ballot Tabulator: DS200

The precinct ballot tabulator component is the DS200. The DS200 is a digital scan paper ballot tabulator designed for use at the polling place level. After the voter marks a paper ballot, their ballot is inserted into the unit and immediately tabulated. The tabulator uses a high-resolution image-scanning device to image the front and rear of the ballot simultaneously. The resulting ballot images are then decoded by a proprietary recognition engine.

The system includes a 12-inch touch screen display providing voter feedback and poll worker messaging. Once a ballot is tabulated and the system updates internal vote counters, the ballot is dropped into an integrated ballot box. The DS200 includes an internal thermal printer for the printing of the zero reports, log reports, and polling place totals upon the official closing of the polls.

Electronic Ballot Marking Device: AutoMARK™ Voter Assist Terminal (VAT)

The electronic ballot marking device component is the ES&S AutoMARK™ Voter Assist Terminal (VAT). The AutoMARK™ VAT assists voters with disabilities by marking optical scan ballots.

The AutoMARK™ VAT includes two user interfaces to accommodate voters who are visually or physically impaired or voters who are more comfortable reading or hearing instructions and choices in an alternative language. The AutoMARK™ is equipped with a touch-screen and keypad. The touch-screen interface includes various colors and effects to prompt and guide the voter through the ballot marking process. Each key has both Braille and printed text labels designed to indicate function and a related shape to help the voter determine its use.

Regardless whether the voter uses the touch-screen or other audio interface, changes can be made throughout the voting process by navigating back to the appropriate screen and selecting the change or altering selections at the mandatory vote summary screen that closes the ballot-marking session.

The A100, A200 and A300 all operate the same and have the same features. The difference between the models is the location of two printed circuit boards and related wiring harness and cables. In the A200, the Printer Engine Board and Power Supply Board were moved from under the machine to the top. The A300 has a different lock and label. Since this change is so minor, the A300 equipment will not be tested. However, the A300 will be included in the recommendation for certification.

1.0 INTRODUCTION (Continued)

1.7 Target of Evaluation Description (Continued)

1.7.1 System Overview (Continued)

Tabulator: DS850

The DS850 is a high-speed, digital scan central ballot counter. During scanning, the DS850 prints a continuous audit log to a dedicated audit log printer and can print results directly from the scanner to a second connected printer. The scanner saves results internally and to results collection media that officials can use to format and print results from a PC running Election Reporting Manager. The DS850 has an optimum throughput rate of 200 ballots per minute and uses cameras and imaging algorithms to image the front and back of a ballot, evaluate the results and sort ballots into discrete bins to maintain continuous scanning.

EMS Client/Server Configuration

EVS 5.0.1.0 Voting System Election Management System (EMS) will be configured with a Server running Windows Server 2008 R2 and a combination of a client laptop and a client desktop running Windows 7 Professional.

1.7.2 System Software

The EVS 5.0.1.0 Voting System EMS is an application suite comprised of five components: ElectionWare, Election Reporting Manager (ERM), Removable Media Service (RMS), ES&S Event Log Service (ELS), and VAT Previewer.

ElectionWare

ElectionWare integrates the election administration functionality into a unified application. Its intended use is to define an election and create the resultant media files used by the DS200 tabulator, AutoMARK™ Voter Assist Terminal (VAT), the DS850 Central Ballot Scanner, and Election Reporting Manager (ERM). An integrated ballot viewer allows election officials to view the scanned ballot and captured ballot data side-by-side and produce ballot reports.

Election Reporting Manager (ERM)

Election Reporting Manager (ERM) generates paper and electronic reports for election workers, candidates, and the media. Jurisdictions can use a separate ERM installation to display updated election totals on a monitor as ballot data is tabulated, and send the results' reports directly to the media outlets.

ERM supports accumulation and combination of ballot results data from all ES&S tabulators. Precinct and accumulated total reports provide a means to accommodate candidate and media requests for totals and are available upon demand. High-speed printers are configured as part of the system accumulation/reporting stations PC and related software.

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1.0 INTRODUCTION (Continued)

1.7 Target of Evaluation Description (Continued)

1.7.2 System Software (Continued)

Removable Media Service (RMS)

Removable Media Service (RMS) is an application that runs in the background of the EMS client workstation and supports the installation and removal of election and results media.

ES&S Event Log Service (ELS)

ES&S Event Log Service is a Windows Service that runs in the background of any active ES&S Election Management software application to monitor the proper functioning of the Windows Event Viewer. The ES&S Event Log Service closes any active ES&S software application if the system detects the improper deactivation of the Windows Event Viewer.

VAT Previewer

The VAT Previewer is an application within the EMS program that allows the user to preview audio text and screen layout prior to burning Election Day media for the AutoMARK™.

2.0 PRE-CERTIFICATION TESTING AND ISSUES

Wyle Laboratories has conducted a pre-certification review, and findings indicate that all system changes are consistent with the change items documented in the EAC Application ESS1302.

2.1 Evaluation of Prior VSTL Testing

ES&S submitted the following test report to Wyle Laboratories for reuse consideration. The report and item requested for reuse are as follows:

- Wyle Test Report No. T71013.01-01
 - Electrical Power Disturbance
 - Electromagnetic Radiation
 - Electrostatic Disruption
 - Electrical Power Disturbance
 - Electromagnetic Susceptibility
 - Electrical Fast Transient
 - Lightning Surge
 - Conducted RF Immunity
 - Magnetic Fields Immunity
 - Product Safety Review, UL60950-1
 - Temperature Power
 - High/Low Temperature
 - Humidity
 - Vibration
 - Bench Handling

For details of the acceptance of the above items, refer to Section 4.5.1 of this test plan.

2.0 PRE-CERTIFICATION TESTING AND ISSUES (Continued)

2.2 Known Field Issues

This system is a modification to previously certified systems. There were no systemic or significant issues traceable to any of the previously certified systems.

3.0 MATERIALS REQUIRED FOR TESTING

The materials required for certification testing of the EVS 5.0.1.0 Voting System include software, hardware, test materials, and deliverable materials to enable the test campaign to occur were shipped directly to Wyle Laboratories by ES&S. The equipment that will be used during this test is the same equipment used during the original certification campaign.

3.1 Software

Table 3-1 lists the software the manufacturer must submit for testing. This section lists all software required for operation and testing of the voting system being certified. This includes the software used for testing accuracy and system integration; as well as supporting software required for the test environment including compilers, assemblers, and database managers, etc. Both COTS and non-COTS software components are listed in this section

Table 3-1 EVS 5.0.1.0 Software Submitted for Testing

Software Required For Testing	Software Version
Proprietary Software	
ES&S Event Log Service	1.5.0.0
ElectionWare	4.1.0.0
Election Reporting Manager (ERM)	8.6.0.0
Removable Media Service	1.4.0.0
DS200	2.7.1.0
AutoMARK™	1.8.1.0
VAT Previewer	1.8.1.0

3.2 Equipment

This subsection categorizes the equipment the manufacturer submitted for testing listed in Table 3-2. Each test element is included in the list of equipment required for testing of that element, including system hardware, general purpose data processing and communications equipment, and any required test instrumentation.

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3.0 MATERIALS REQUIRED FOR TESTING (Continued)

3.2 Equipment (Continued)

Table 3-2 EVS 5.0.1.0 Voting System Equipment Description

Equipment	Description	Serial Numbers/Designation
DS200 <ul style="list-style-type: none"> • Hardware v. 1.2.1 .0 • Firmware v. 2.7.1.0 	Precinct Count Optical Scanner	ES0108340026
DS200 <ul style="list-style-type: none"> • Hardware v. 1.2 .1.0 • Firmware v. 2.7.1.0 	Precinct Count Optical Scanner	DS0113340087
DS200 <ul style="list-style-type: none"> • Hardware v. 1.2.3.0 • Firmware v. 2.7.1.0 	Precinct Count Optical Scanner	DS0113360186
DS200 <ul style="list-style-type: none"> • Hardware v. 1.3 • Firmware v. 2.7.1.0 	Precinct Count Optical Scanner	DS0313350002
DS200 <ul style="list-style-type: none"> • Hardware v. 1.3 • Firmware v. 2.7.1.0 	Precinct Count Optical Scanner	DS0313350010
AutoMARK™ A100 <ul style="list-style-type: none"> • Hardware v. 1.0 • Firmware v. 1.8.1.0 	Accessible voting Station	AM0106431607
AutoMARK™ A200 <ul style="list-style-type: none"> • Hardware v. 1.1 • Firmware v. 1.8.1.0 	Accessible voting Station	AM0308421809
Ballot Box Hardware v. 1.2 & 1.3	Plastic Ballot Box	Box1; Box 2; Box 3; Box 4; Box 5; Box 01; Box 02; E089; E099
Ballot Box Hardware v. 1.0, 1.1, & 1.2	Metal Box with Diverter	Box 12
Server PC	Dell PowerEdge T410	4D6BQM1
Server PC	Dell PowerEdge T710	JPZ6VR1
Client PC	Dell OptiPlex 980	3TZJFQ1
Client PC	Dell Latitude E6410	232F0M1
Transport Media (USB Flash Drives)	Delkin 512MB Delkin 1GB Delkin 2 GB Delkin 4GB Delkin 8GB	Wyle-assigned: TM-XXX*
Compact Flash	Delkin Devices 1 GB Compact Flash	Wyle-assigned: CF-XXX*
Report Printer	OKI B6300	USQX074394
Headphones	Avid FV 60	HP-57936-1- 9

3.0 MATERIALS REQUIRED FOR TESTING (Continued)

3.2 Equipment (Continued)

A list of equipment/materials used is available upon request to the EAC and will be made available to NVLAP and EAC audit teams.

3.3 Deliverable Materials

The materials listed in Table 3-3 are to be delivered as part of the EVS 5.0.1.0 Voting System to the users.

Table 3-3 Deliverable Materials

Deliverable Material	Version	Description
ERM	8.6.0.0	EMS
ElectionWare	4.1.0.0	EMS
ES&S Event Log Service	1.5.0.0	EMS
Removable Media Services	1.4.0.0	EMS
VAT Previewer	1.8.1.0	EMS
DS200	Firmware 2.7.1.0; Hardware 1.2.1.0	Precinct ballot scanner
DS200	Firmware 2.7.1.0; Hardware 1.2.3.0	Precinct ballot scanner
DS200	Firmware 2.7.1.0; Hardware 1.3	Precinct ballot scanner
AutoMARK™ A100	Firmware 1.8.1.0; Hardware 1.0	Voter Assist Terminal
AutoMARK™ A200	Firmware 1.8.1.0; Hardware 1.1	Voter Assist Terminal
AutoMARK™ A300	Firmware 1.8.1.0; Hardware 1.3	Voter Assist Terminal
DS850	Firmware 2.4.0.0; Hardware 1.0	Central ballot scanner
OKI Printer	B430dn and B431dn	Laser Report Printer
OKI Printer	Microline 420	Dot Matrix Printer
Headphones	Avid FV 60	Stereo headphones
Voting System Overview EVS 5.0.1.0	17.0	TDP Document
ES&S ElectionWare 4.1 Vol I: Administrator's Guide	4.8	TDP Document
ES&S ElectionWare 4.1 Vol II: Define User's Guide	4.0	TDP Document
ES&S ElectionWare 4.1 Vol III: Design User's Guide	3.2	TDP Document
ES&S ElectionWare 4.1 Vol IV: Deliver User's Guide	5.6	TDP Document

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3.0 MATERIALS REQUIRED FOR TESTING (Continued)

3.3 Deliverable Materials (Continued)

Table 3-3 Deliverable Materials (Continued)

Deliverable Material	Version	Description
ES&S ElectionWare 4.1 Vol V: Results User's Guide	1.5	TDP Document
ES&S DS200 System Operations Procedures Hardware version 1.2	10.1	TDP Document
ES&S DS200 System Operations Procedures Hardware version 1.3	1.0	TDP Document
ES&S DS850 System Operations Procedures	11.1	TDP Document
AutoMARK™ system Operations Procedures	5.0	TDP Document
ES&S ERM System Operations Procedures	13.1	TDP Document
Network Configuration Guide	3.1	TDP Document
EVS Event Logging Service System Operations Procedures	1.0	TDP Document
Voting System Security Specification EVS 5.0.0.0	3.1	TDP Document
Hardening the EMS PC Guide	4.3	TDP Document

4.0 TEST SPECIFICATIONS

Modification testing of the EVS 5.0.1.0 is the configuration submitted in the EAC application ESS1302. Wyle Laboratories' qualified personnel will ensure that all certification testing performed on the manufacturer's voting system follows Wyle Laboratories' procedures for testing and the specific test cases to ensure the requirements of the EAC 2005 VVSG and EAC Testing and Certification Program Manual are met.

All RFI's and NOC's applicable, as of the date of this document, shall apply to this test campaign unless otherwise noted.

4.1 Requirements (Strategy of Evaluation)

To evaluate the system test requirements, each section of the EAC 2005 VVSG will be analyzed to determine the applicable tests. The EAC 2005 VVSG Volume I sections, along with the strategy for evaluation, are described below:

- **Section 2: Functional Requirements** – The requirements in this section will be tested during the FCA and System Integration test utilizing the “Wyle Baseline Test Cases” along with test cases specially designed for the ES&S EVS 5.0.1.0 per sections 4.4.3 and 4.4.4. The data input during these tests will be the predefined election definitions submitted as part of the Test Plan Package.
- **Section 3: Usability and Accessibility** – The requirements in this section will be tested during this test campaign on the DS200 tabulator. These tabulators were previously certified under the 2002 VSS, and during this campaign the tabulators will be verified to meet the Usability and Accessibility requirements of the 2005 VVSG.
- **Section 4: Hardware Requirements** – The requirements in this section will be evaluated utilizing data obtained during prior VSTL test campaigns.

4.0 TEST SPECIFICATIONS (Continued)

4.1 Requirements (Strategy of Evaluation) (Continued)

- **Section 5: Software Requirements** – The requirements in this section will be tested during source code review, TDP review, and FCA. A combination of review and functional testing will be performed to ensure these requirements are met.
- **Section 7: Security Requirements** – The requirements in this section will be tested during source code review, FCA, and Security Tests.

Wyle Laboratories' personnel shall maintain a test log of the procedure(s) employed. This log identifies the system and equipment by model and serial number. In the event that the project engineer deems it necessary to deviate from Wyle Test Cases or Wyle Operating Procedures (WoPs) pertaining to the test environment, the equipment arrangement and method of operation, the specified test procedure, or the provision of test instrumentation and facilities, shall be recorded in the test log. (A discussion of the reasons for the deviation and the effect of the deviation on the validity of the test procedure shall also be provided and approved by the Project Engineer and Program Manager.)

Wyle Laboratories utilizes an internal bug tracking system in order to capture and track all issues and discrepancies found during the testing campaign. This allows for all issues and discrepancies to be monitored for reoccurrence, tracks the root cause analysis, and provides a resolution status. Wyle Laboratories shall verify all items logged into the bug tracking system are resolved prior to the completion of testing and before any recommendation may be made for certification.

The designated WoPs for this program are listed below together with the identification and a brief description of the hardware and software to be tested and any special considerations that affect the test design and procedure.

The specific Wyle WoPs to be used during testing include the following:

- WoP 1 Operations Status Checks
- WoP 2 Receipt Inspection
- WoP 3 Technical Data Package Review
- WoP 4 Test Plan Preparation (*This document*)
- WoP 5a-d Source Code Review
- WoP 6a-d Security
- WoP 7 Trusted Build
- WoP 24 1 – 1g Usability
- WoP 25 Physical Configuration Audit
- WoP 26 Functional Configuration Audit
- WoP 27 Maintainability
- WoP 29 Electrical Supply
- WoP 30 System Integration Test
- WoP 34 Test Report
- WoP 36 Vote Recording Requirements
- WoP 41 Logic & Accuracy

4.0 TEST SPECIFICATIONS (Continued)

4.2 Hardware Configuration and Design

The EVS 5.0.1.0 Voting System is a paper-based precinct voting system using touch-screen and scan technology to scan and validate ballots, provide voter-assisted ballots, and tabulate precinct results. The Election Management System is an application suite consisting of ElectionWare, Election Reporting Manager (ERM), Removable Media Service (RMS), ES&S Event Log Service (ELS), and VAT Previewer. The precinct counting device is the DS200. It is responsible for scanning, validating and tabulating voter ballots at the precinct level. EVS 5.0.1.0 Voting System contains multiple voter assistance terminals. It can be configured with the AutoMARK™ Model A100, A200, or A300 to facilitate special needs voters. The DS850 is the high-speed digital scanner that processes large ballot batches at a central location. All EMS are functions handled by proprietary software running on COTS PC/laptops/servers. Wyle Laboratories has determined that these COTS PC/laptops/servers are not subject to hardware testing per the EAC 2005 VVSG. The provided PC/laptops/servers documented in Section 3, Materials Required for Testing, all contained CE, UL, and FCC labeling.

Each unit will be loaded with the Operational Status Check Hardware election definition configured for early voting. This will allow all the data generated for the Pre-operational, Operational, and Post-operational tests to be further analyzed, compiled and included in the Reliability and Availability Test results.

4.3 Software System Functions

The EVS 5.0.1.0 Voting System software is comprised of multiple applications written in many languages. The system software is broken down into four areas: EMS, Precinct tabulator software acting as firmware, central count software running as firmware and ADA device software running as firmware. The main components and their subcomponents are as follows:

- ElectionWare (Java)
- ElectionWare/SQL
- ElectionWare PaperBallot
- ERM
- Event Log Service
- Removable Media Service
- DS200 – CoNG, HAL, PresentationLayer
- DS850 – CoNG, MCP, UI
- AutoMARK™

4.4 Test Case Design

Wyle Laboratories uses the V-Model Life Cycle as defined by the Institute of Electrical and Electronics Engineers (IEEE). The IEEE definition of the V-Model Life Cycle uses two concepts “Verification” and “Validation.” Wyle Laboratories’ test approach is to incorporate the use of both “Verification” and “Validation”. There are four basic levels of testing in the V-Model Life Cycle: Component, Integration, System, and Acceptance. Wyle Laboratories will be evaluating the ES&S EVS 5.0.1.0 to all four levels.

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4.0 TEST SPECIFICATIONS (Continued)

4.4 Test Case Design (Continued)

4.4.1 Hardware Qualitative Examination Design

ES&S submitted the results of previous testing in the form of the following test reports:

- Wyle Test Report No. T71013.01-01
- Wyle Test Report No. T59087.01-01

Wyle Laboratories performed a hardware qualitative examination to assess if the testing was performed under the guidelines of the EAC program, if the tests were performed per the EAC 2005 VVSG, and the scope of the engineering changes implemented since test performance. The results from this examination deemed that the hardware testing performed under the T71013.01 campaign were tested to the EAC 2005 VVSG and in accordance with the EAC Testing and Certification Program Manual. Wyle Laboratories recommends that reuse be approved for all hardware test requirements.

The summary of acceptable testing is provided in Table 4-1. Wyle Laboratories will verify all hardware during the PCA and those results will determine if the hardware is compliant with the previous tested versions. All testing that is deemed rejected shall be performed by Wyle Laboratories' personnel under this test campaign. The details of those tests are presented in Section 6.0.

Table 4-1 Hardware Test Examination Results

Test/EAC 2005 VVSG Section	Procedure/Description	EVS 5.0.1.0 Voting System Component
		DS200 1.3
Electromagnetic Radiation/4.1.2.9	FCC Part 15 Class B for both radiated and conducted emissions	Accept EVS 4.5.0.0
Low Temperature/4.1.2.14	MIL-STD-810D minimum temperature shall be -4°F	Accept EVS 4.5.0.0
Vibration/4.1.2.14	MIL-STD-810D, Method 514.3 physical shock and vibration during handling and transport	Accept EVS 4.5.0.0
Lightning Surge/4.1.2.7	IEC 61000-4-5 (1995-02)	Accept EVS 4.5.0.0
High Temperature/4.1.2.14	MIL-STD-810D, Method 501.2 maximum temperature shall be 140°F	Accept EVS 4.5.0.0
Bench Handling	MIL-STD-810D, Method 516.3 Procedure VI six 4" drops on each edge totaling 24 drops	Accept EVS 4.5.0.0
Electrical Fast Transient/4.1.2.6	IEC 61000-4-4 (2004)	Accept EVS 4.5.0.0

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4.0 TEST SPECIFICATIONS (Continued)

4.4 Test Case Design (Continued)

4.4.1 Hardware Qualitative Examination Design (Continued)

Table 4-1 Hardware Test Examination Results (Continued)

Test/EAC 2005 VVSG Section	Procedure/Description	EVS 5.0.1.0 Voting System Component
		DS200
Humidity Test/4.1.2.14	MIL-STD-810D, Method 501.2 ten 24 hour humidity cycles	Accept EVS 4.5.0.0
Electrostatic Disruption/4.1.2.8	IEC 61000-4-2 (1995-01) 15kV air discharge and 8kV contact discharge	Accept EVS 4.5.0.0
Electromagnetic Susceptibility/4.1.2.10	IEC 61000-4-3 (2006) electromagnetic field of 10V/m modulated by a 1kHz, 80% AM modulation at 80MHz to 1000MHz frequency	Accept EVS 4.5.0.0
Conducted RF Immunity/4.1.2.11	IEC 61000-4-6 (1996-04) conducted radio frequency energy	Accept EVS 4.5.0.0
Magnetic Fields Immunity/4.1.2.12	IEC 61000-4-8 (1993-06) AC magnetic fields of 30 A/m at 60Hz	Accept EVS 4.5.0.0
Electrical Power Disturbance/4.1.2.5	IEC 61000-4-11 (1994-06) power surges and dips	Accept EVS 4.5.0.0
Temperature/Power Variation/4.1.2.13	MIL-STD-810D, Method 502.2 and Method 501.2 163 hours at 50°F to 95°F	Accept EVS 4.5.0.0
Safety/4.3.8	UL 60950-1 product safety review	Accept EVS 4.5.0.0

4.4.2 Software Module Test Case Design and Data

Wyle Laboratories implements Component Level Testing during the FCA for each component and subcomponent, exercising the functionality of each as designed and documented. Wyle Laboratories will utilize limited structural-based techniques (white-box testing) mainly in the area of Source Code Review, Compliance Builds, and Security Testing and Review. Wyle Laboratories will depend heavily on specification-based techniques (black-box testing) for the individual software components.

The most common specification-based techniques applied to the ES&S EVS 5.0.1.0 during the software testing portion of testing will be “equivalence partitioning” and “boundary value testing.”

- “Equivalence partitioning” will be used to evaluate specific software functions and data entry points of the EVS 5.0.1.0 for valid and invalid data during the FCA. For software functions and data entry points, an entry will be made for a valid data requirement and at least one invalid data requirement to test for normal and abnormal conditions.

4.0 TEST SPECIFICATIONS (Continued)

4.4 Test Case Design (Continued)

4.4.2 Software Module Test Case Design and Data (Continued)

- “Boundary Value Testing” will be used to evaluate specific software functions and data entry points for minimums and maximums during the FCA. For software functions and data entry points, an entry will be made for all minimum and all maximum documented requirements to test for normal and abnormal conditions. This technique will be used for numeric ranges as well as non-numeric ranges.

Wyle Laboratories will document an expected result for each test. The ACCEPT/REJECT criteria at the Component Level will be based on the expected result. If the System Under Test (SUT) performs as expected, the results will be accepted. If the SUT does not perform as expected, the test will be evaluated for tester error. If it is determined there was no tester error, the test will be repeated in an attempt to reproduce the results. If the results can be reproduced and the expected results are not met, the SUT will have failed the test. If the results cannot be reproduced, the manufacturer and VSTL will determine the root cause of the error. If the root cause has been corrected and the SUT performs as expected, then the results will be accepted. If the root cause cannot be determined, the problem has not been corrected, or the SUT still does not perform as expected, the SUT will have failed the test.

Wyle Laboratories will document the error and track the error through resolution. Wyle Laboratories will not move to the next level of testing until all documented errors are resolved to try and minimize errors that might occur farther along in the test campaign. Engineering analysis will be performed to determine what effect the resolution has on the component. A determination will be made whether Regression Testing will be sufficient or a complete re-test is necessary.

The test approach to be used for the ES&S EVS 5.0.1.0 will be a bottom-up approach where the lower-level components will be tested first and then used to facilitate the testing of higher-level components. The specification-based technique used by Wyle Laboratories at the Integration Level is “Use Case.” The actors that have been identified to use the ES&S EVS 5.0.1.0 are the following:

- Election Administrator – the actor with responsibility of entering the election definition with translation and audio. This actor is also responsible for maintaining EMS users and the election database.
- Warehouse Technician – the actor responsible for loading the election definition onto DS200, AutoMARK™ VAT, and DS850. This actor also runs diagnostic test and maintains the units.
- Poll Worker- the actor at the precinct location to set up and close down the DS200, AutoMARK™ VAT, and DS850 on Election Day.
- Voter – the actor who physically casts the ballot on Election Day.
- ADA Voter – the actor with special needs who has to vote unassisted on Election Day.
- Election Official – the actor who reports and audits the election result post-Election Day.

“Use Case” will be used during the FCA with a single pass through each component using only valid data. This pass will be considered the “Master Copy” of data to be passed between interfacing points of applications during Integration level testing. If a component downstream in the test process needs data from previous processes, the “Master Copy” of data can be used or altered to accelerate the test process.

4.0 TEST SPECIFICATIONS (Continued)

4.4 Test Case Design (Continued)

4.4.2 Software Module Test Case Design and Data (Continued)

Known tests that will utilize the “Master Copy” of data at the Integration Level are Security, Telecommunication, and Usability. During test performance, if an error occurs between data interfaces or in the process flow, an engineering analysis will be performed to determine if the error is data, process, or tester error.

The ACCEPT/REJECT criteria for Integration Level testing is whether the components and applications interface using the documented process for each actor. If there is an error interfacing between components, the error will be documented and tracked through to resolution. Engineering analysis will be performed to determine what effect the resolution has on the component. A determination will be made whether Regression Testing will be sufficient or a complete re-test is necessary.

4.4.3 System Level Test Case Design

Wyle Laboratories implements System Level testing focusing on a complete system including all proprietary software, proprietary hardware, proprietary peripherals, COTS software, COTS hardware, and COTS peripherals in a configuration of the system’s intended use. The ES&S EVS 5.0.1.0 is intended to support both large and small jurisdictions. Wyle Laboratories’ approach for ES&S EVS 5.0.1.0 will be to execute System Level Testing with a variety of elections that include various combinations of jurisdictions, parties, and ballot styles.

Wyle Laboratories will test the function of all hardware, software, and peripherals of the complete system during System Level Testing. The ACCEPT/REJECT criteria for System Level testing is whether the system can continue in testing.

The two scenarios are: Accept or Reject. Accept is either 1) if no errors are found, or 2) if an error is encountered, but the system continues to operate and engineering analysis determines that the root cause does not affect testing. Reject if the system is too unstable to continue or engineering analysis determines the root cause could affect further testing.

Wyle Laboratories implements Acceptance Level testing focusing on all the data collected during the entire test campaign along with performing the “Trusted Build” for the system. All data from pre-testing, hardware testing, software testing, functional testing, security testing, telecommunication testing, usability testing, accessibility testing, and reliability testing activities will be combined to ensure all requirements that are supported by the ES&S EVS 5.0.1.0 in the EAC 2005 VVSG have been tested. All requirements will be checked against the test data to ensure the EAC 2005 VVSG requirements are met. Items not supported by ES&S EVS 5.0.1.0 will be documented. Any issues documented during testing will be resolved or annotated in the test report.

Wyle Laboratories will test every EAC 2005 VVSG requirement supported by the ES&S EVS 5.0.1.0 Voting System. Wyle Laboratories will report all issues discovered during this test campaign to ES&S and the EAC. If Wyle Laboratories determine there is not enough data to ensure a requirement was met, the test plan will be altered and further testing will be done. The EAC has the final decision as to whether the system meets all the requirements for an EAC-certified system. Wyle Laboratories will either recommend approval, if the system meets all applicable sections of the VVSG or recommend disapproval, if the system does not meet all applicable sections of the VVSG.

4.0 TEST SPECIFICATIONS (Continued)

4.5 TDP Evaluation

Wyle Laboratories' qualified personnel will perform a comprehensive review of the ES&S TDP to determine compliance to the EAC 2005 VVSG requirements and ES&S-specific requirements.

Wyle Laboratories' qualified personnel utilize a TDP Review Matrix which lists every EAC 2005 VVSG requirement pertaining to TDP review. Wyle Laboratories' qualified personnel will record the results of the review of each document to the applicable requirements listed in the TDP Review Matrix.

During the TDP review process, each document will be reviewed for completeness, clarity, and correctness, and continuity between the TDP documents. The review results will be formally reported to ES&S for resolution. If a revised document is received, it will be re-reviewed as discussed in this section. The TDP will be continued to be reviewed during the entire testing process as these documents will be utilized to set up the systems, verify correct operational results and numerous other tests. At the end of the TDP review process, an Anomaly Report will be issued listing the non-compliant items on a document-by-document basis, if applicable.

A listing of all documents contained in the ES&S EVS 5.0.1.0 System TDP is provided in Table 4-2.

Table 4-2 EVS 5.0.1.0 Voting System TDP Documents

EVS 5.0.1.0 TDP Documents	Version	Doc #	Document Code
Voting System Overview	17.0	01-01	EVS5010_OVR00
<i>System Functionality Description</i>			
System Functionality Description – Voting System	9.0	02-01	EVS5010_SFD00
<i>System Hardware Specification</i>			
System Hardware Specification – DS850	3.0	03-01	EVS5000_SHS00_DS850
System Hardware Specification – DS200 HW 1.2	1.0	03-02	DS200HW_M_SPC_0312_HWSpec
System Hardware Specification – DS200 HW 1.3	3.0	03-03	DS200HW_M_SPC_0313_HWSpec
AutoMARK™ System Hardware Overview	5.0	03-04	AutoMARK™_ESS_System_Hardware_Overview_AQS-18-5002-000-S
AutoMARK™ System Hardware Specification	5.0	03-05	AutoMARK™_ESS_System_Hardware_Specification_AQS-18-5000-001-F
<i>Software Design and Specification</i>			
Software Design and Specification –ES&S Event Logging Service	1.0	04-01	EVS5000_SDS00_UELS
Software Design and Specification - ElectionWare	7.0	04-02	EVS5000_SDS00_ElectionWare

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4.0 TEST SPECIFICATIONS (Continued)

4.5 TDP Evaluation (Continued)

Table 4-2 EVS 5.0.1.0 Voting System TDP Documents (Continued)

EVS 5.0.1.0 TDP Documents	Version	Doc #	Document Code
Software Design and Specification – ERM	3.0	04-03	EVS5000_SDS00_ERM
Software Design and Specification – DS850	10.0	04-04	EVS5000_SDS00_DS850
Software Design and Specification – DS200	1.0	04-05	EVS5010_SDS00_DS200
Software Design and Specification – AutoMARK™	1.8	04-06	EVS5000_SDS00_AutoMARK™ SDS Overview
<i>System Test/Verification Specification</i>			
Voting System Test Plan	4.0	05-01	EVS5000_STP00
Test Cases - ElectionWare: Manage	4.1.0.0	05-02	EVS5000_TC00_ElectionWare01_Manage
Test Cases - ElectionWare: Define	4.1.0.0	05-03	EVS5000_TC00_ElectionWare02_Define
Test Cases - ElectionWare: Design	3.3	05-04	EVS5000_TC00_Electionware03_Design
Test Cases - ElectionWare: Deliver	4.1.0.0	05-05	EVS5000_TC00_Electionware04_Deliver
Test Cases - ElectionWare: Resolve	4.2.0.0	05-06	EVS5000_TC00_Electionware05_Resolve
Test Cases - ERM	8.6.0.0	05-07	EVS5000_TC00_ERM
Test Cases - DS850	2.4.0.0	05-08	EVS5000_TC00_DS850
Test Cases - DS200	2.7.0.0	05-09	EVS5000_TC00_DS200
Test Cases - AutoMARK™	1.8.1.0	05-10	EVS5000_TC00_AutoMARK™
<i>System Security Specification</i>			
System Security Specification	3.1	06-01	EVS5000_SSS00
AutoMARK™ System Security Specifications	6.0	06-02	AutoMARK™ ESS System Security Specification AQS-18-5002-001-S
<i>System Operations Procedure</i>			
System Operations Procedures - ELS	1.0	07-01	EVS5000_SOP00_ELS
User's Guide- ElectionWare Admin	4.8	07-02	EVS5000_SOP00_ElectionWare02_Admin
User's Guide- ElectionWare Define	4.0	07-03	EVS5000_SOP00_ElectionWare02_Define
User's Guide - ElectionWare Design	3.2	07-04	EVS5000_SOP00_ElectionWare03_Design
User's Guide - ElectionWare Deliver	5.6	07-05	EVS5000_SOP00_ElectionWare04_Deliver

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4.0 TEST SPECIFICATIONS (Continued)

4.5 TDP Evaluation (Continued)

Table 4-2 EVS 5.0.1.0 Voting System TDP Documents (Continued)

EVS 5.0.1.0 TDP Documents	Version	Doc #	Document Code
User's Guide - ElectionWare Results	1.5	07-06	EVS5000_SOP00_ElectionWare05_Results
User's Guide - ERM	13.1	07-07	EVS5000_SOP00_ERM
Operator's Guide - DS850	11.1	07-08	EVS5000_SOP00_DS850
Operator's Guide - DS200	1.0	07-09	EVS5010_SOP00_DS200
System Operations Procedures - AutoMARK™	5.0	07-10	EVS5000_SOP00_AMVAT
Network Configuration Guide	3.1	07-12	EVS5000_SOP00_NetworkConfigGuide
<i>System Maintenance Manuals</i>			
Maintenance Guide- DS850	3.1	08-01	EVS5000_SMM00_DS850
Maintenance Guide- DS200	1.0	08-02	EVS5010_SMM00_DS200
Maintenance Guide- AutoMARK™	4.0	08-03	EVS5000_SMM00_AMVAT
<i>Personnel Deployment and Training</i>			
Personnel Deployment and Training Program	1.0	09-01	ESSSYS_T_D_1000_TrainingProgram
<i>Configuration Management Plan</i>			
ES&S Configuration Management Program	1.0	10-1	ESSSYS_CM_P_1000_ESSCMPProgram
CM Plan Appendices	---	10-2	Multiple Documents
<i>QA Program</i>			
Manufacturing Quality Assurance Plan	1.0	11-01	ESSSYS_M_P_1000_MNFQualityAssurancePlan
Engineering Change Order Process	2.0	11-02	ESSSYS_M_P_0500_ECOProcess
Software Quality Assurance Program	1.0	11-03	ESSSYS_Q_P_0100_SoftwareQualityAssuranceProgram
<i>Other TDP Documents</i>			
ES&S Ballot Production Guide	4.0	13-01	EVS5000_ORPT02_BallotProductionGuide

4.6 Source Code Review

The strategy for evaluating EVS 5.0.1.0 will be based on the previously identified modification to the system. All changes from EVS 5.0.0.0 (ESSEVS5000) will be reviewed to the EAC 2005 VVSG coding standards and the manufacturer-supplied coding standards (ESSSYS_D_D_0100_Coding Standards).

As the source code is received, a SHA1 hash value will be created for each source code file. The source code team will conduct a visual scan of each line of source code for an initial review and every line of modified source code for acceptance of all languages other than Java. For applications written in Java, Wyle Laboratories will utilize automated tools (Checkstyle and NetBeans) to augment source code review. This is done to verify compliance of EAC 2005 VVSG coding standards or manufacturer -supplied coding standards. Each identified violation shall be recorded by making notes of the standards violation along with directory name, file name, and line number.

4.0 TEST SPECIFICATIONS (Continued)

4.6 Source Code Review (Continued)

All identified violations will be recorded by making notes of the standards violation along with the directory name, file name, and line number. A technical report of all identified violations will be sent to ES&S for resolution on a regular basis. All revised source code will be checked for corrections until the final issue is resolved. At the end of the Source Code review process, an Anomaly Report will be issued listing all non-compliance on an individual basis to the EAC and ES&S. The results will be included in the final test report.

A “Compliance Build” shall be performed by Wyle Laboratories from the reviewed source code using the Compliance Build Procedure to build iterative builds throughout the test campaign. This process follows the documented procedures of a “Trusted Build” in the EAC Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007. A Compliance Build differs from a Trusted Build because of two exceptions: The image products will not be submitted to the EAC, and no manufacturer representative shall be required to be present or on-site for these builds.

The final step in the source code review shall be to create a Trusted Build from the reviewed source code. The Trusted Build will be performed by completing the following tasks in the order listed:

- Clean the build machine of existing software
- Retrieve the compliant source code
- Construct the build environment
- Create digital signatures of the build environment
- Load the compliant source code into the build environment
- Create a digital signature of the pre build environment
- Create a disk image of the pre-build environment
- Build executable code
- Create a digital signature of executable code
- Create a disk image of the post-build environment
- Build installation media
- Create a digital signature of the installation media
- Install executable code onto the system and validate the software/firmware
- Deliver source code with digital signature, disk image of pre-build environment with digital signatures, disk image of post-build environment with digital signatures, executable code with digital signatures, and installation media with signatures to the EAC Approved Repository.

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4.0 TEST SPECIFICATIONS (Continued)

4.6 Source Code Review (Continued)

The “Trusted Build” for the ES&S EVS 5.0.1.0 includes source code, data, and script files, in clear text form. The build also includes COTS software on commercially available media, COTS software downloaded by the VSTL, COTS software verified by SHA1 from the software supplier, and picture and sound files in binary format provided by ES&S. The first step of the process is to clean the hard drives by writing data to every spot on the hard drive, so the drive is cleared of existing data. The appropriate operating system will then be loaded and the applications from the VSTL reviewed source along with the VSTL verified COTS software will be built. The final step is installing the applications on the hardware.

4.7 QA and CM System Review

The ES&S QA Plan and CM Plan will be reviewed to determine compliance with EAC 2005 VVSG Volume II Section 2, and Volume I Sections 8 and 9, with EAC stated requirements, and with the requirements of the internal ES&S documentation.

Also, the ES&S TDP documentation package will be reviewed to determine if the ES&S QA Plan and the CM Plan are being followed. The results of the TDP review will be entered on a spreadsheet as previously described in Section 4.6 TDP Evaluation. The results of the TDP review, including the QA and CM compliance results, will also be included in the final Test Report.

5.0 Test Data

5.1 Test Data Recording

All equipment utilized for test data recording shall be identified in the test data package. For hardware environmental and operational testing, the equipment will be listed on the Instrumentation Equipment Sheet for each test. The output test data will be recorded in an appropriate manner as to allow for data analysis.

For source code and TDP reviews, results will be compiled in output reports and discrepancies submitted to ES&S for resolution. Additionally, all test results, including functional test data, will be recorded on relevant Wyle Operating Procedures and Test Cases. Results will also be recorded real-time in engineering log books.

Wyle Laboratories, Inc. will evaluate all test results against the ES&S provided technical documentation for EVS 5.0.1.0 and the requirements set forth in the EAC 2005 VVSG. EVS 5.0.1.0 shall be evaluated for its performance against the EAC 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the EVS 5.0.1.0 documentation. Per the EAC 2005 VVSG, these parameters shall encompass the test tolerances and samples to define the minimum number of combinations or alternatives of input and output conditions that can be exercised to constitute an acceptable test of the parameters involved. The parameters will also include events which criteria define the maximum number of interrupts, halts, or other system breaks that may occur due to non-test conditions (excluding events from which recovery occurs automatically or where a relevant status message is displayed).

5.2 Test Data Reduction

Test data shall be processed and recorded in the relevant Wyle Operating Procedures and Test Cases. Results will also be recorded real-time in engineering log books.

6.0 TEST PROCEDURES AND CONDITIONS

The following subsections describe test procedures and a statement of the criteria by which readiness and successful completion shall be indicated and measured.

6.1 Facility Requirements

All testing will be conducted at Wyle Laboratories Huntsville, AL facility unless otherwise annotated. Hardware environmental non-operating (storage) and operating testing will be conducted utilizing an adequately sized environmental test chamber or dynamic vibration (shaker) system equipped with the required data gathering support equipment. All remaining operating hardware tests will be conducted at the appropriate test site with the required support equipment. All instrumentation, measuring, and test equipment used in the performance of this test program will be listed on the Instrumentation Equipment Sheet for each test and shall be calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCCL Z540-1 and ISO 10012-1.

Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

Unless otherwise specified herein, all remaining tests, including system level functional testing, shall be performed at standard ambient conditions:

- Temperature: 68 to 75° Fahrenheit ($\pm 4^{\circ}\text{F}$)
- Relative Humidity: 20 to 90%
- Atmospheric Pressure: Local Site Pressure

Unless otherwise specified herein, the following tolerances shall be used:

- Time $\pm 5\%$
- Temperature $\pm 3.6^{\circ}\text{F}$ (2°C)
- Vibration Amplitude $\pm 10\%$
- Vibration Frequency $\pm 2\%$
- Random Vibration Acceleration
 - 20 to 500 Hertz $\pm 1.5 \text{ dB}$
 - 500 to 2000 Hertz $\pm 3.0 \text{ dB}$
- Random Overall grms $\pm 1.5 \text{ dB}$
- Acoustic Overall Sound Pressure Level $+4/-2 \text{ dB}$

Deviations to the above tolerances may be submitted by the responsible test laboratory with sufficient engineering information to substantiate the deviation request, but only when best effort technique and system limitations indicate the need for a deviation.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up

All voting machine equipment (hardware and software) shall be received and documented utilizing Wyle Laboratories' Receiving Ticket (WL-218, Nov'85) and proper QA procedures. When voting system hardware is received, Wyle Laboratories' Shipping and Receiving personnel will notify Wyle Laboratories' QA personnel. With Wyle Laboratories' QA personnel present, each test article will be unpacked and inspected for obvious signs of degradation and/or damage that may have occurred during transit. Noticeable degradation and/or damage, if present, shall be recorded, photographs shall be taken, and the ES&S representative shall be notified.

Wyle Laboratories' QA personnel shall record the serial numbers and part numbers. Comparison shall be made between those numbers recorded and those listed on the shipper's manifest. Any discrepancies noted shall be brought to the attention of the ES&S representative for resolution. TDP items, including all manuals, and all source code modules received will be inventoried and maintained by the Wyle Laboratories' Project Engineer assigned to testing.

For hardware test setup, the system will be configured as would for normal field use. This includes connecting all supporting equipment and peripherals. Wyle Laboratories' personnel will properly configure and initialize the system, and verify that it is ready to be tested, by following the procedures detailed in the EVS 5.0.1.0 technical documentation.

Wyle Laboratories will develop an operational status test to be performed prior to and immediately following each hardware test. Wyle Laboratories will develop the system performance levels to be measured during operational tests.

Wyle Laboratories has developed eight election definitions to be used during this test campaign.

Operational Status Check

This election definition will exercise the operational status of the EVS 5.0.1.0 System, prior to and immediately following all tests.

Accuracy

This test will exercise all possible voting positions for the ballot to verify that the EUT meets the accuracy requirements in section 4.1.1 or the 2005 VVSG.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

General Election: GEN-01

A basic election held in four precincts, one of which is a split precinct, containing nineteen contests compiled into four ballot styles. Five of the contests are in all four ballot styles. The other fifteen contests are split between at least two of the precincts with a maximum of four different contests spread across the four precincts. This election was designed to functionally test the handling of multiple ballot styles, support for at least two languages, support for common voting variations, and audio support for at least two languages.

The parameters of this election are listed below:

- Closed Primary: No
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: Yes
- Straight Party voting: Yes
- Cross-party endorsement: No
- Split Precincts: Yes
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

In addition to the parameters listed above, audio input in an alternative language will be exercised for a basic voting pattern using an ADA device. Audio input to demonstrate support for write-in voting will be exercised using an ADA device. Spanish language input will be exercised for a basic voting pattern using Spanish. Spanish language input will be exercised to demonstrate support for write-in voting using Spanish.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

General Election: GEN-02

A basic election held in three precincts. This election contains fifteen contests compiled into three ballot styles. Ten of the contests are in all three ballot styles with the other five split across the three precincts. This election was designed to functionally test the handling of multiple ballot styles, support for ballot rotation, support for two languages, support for complex voting variations, and audio support for multiple languages.

The parameters of this election are listed below:

- Closed Primary: No
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: Yes
- Straight Party voting: No
- Cross-party endorsement: No
- Split Precincts: No
- Vote for N of M: Yes
- Recall issues, with options: Yes
- Cumulative voting: No
- Ranked order voting: Yes
- Provisional or challenged ballots: No
- Early Voting: Yes

In addition to the parameters listed above, this election will be an early voting election with at least one machine running all precincts. Voting options for Over-voting and Under-voting will be exercised. Spanish language voting will be exercised. Casting of ballots using the ADA Audio capability will be exercised.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

General Election: GEN-03

A basic election held in two precincts. This election contains eight contests compiled into two ballot styles. Four of the contests are in both ballot styles. The other four contests are split between the two precincts. This election was designed to functionally test the handling of multiple ballot styles, support for at least three languages including a character-based language, support for common voting variations, and audio support for at least three languages and an ADA binary input device.

The parameters of this election are listed below:

- Closed Primary: No
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: No
- Straight Party voting: No
- Cross-party endorsement: No
- Split Precincts: No
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

In addition to the parameters listed above, input in the Spanish language with a basic voting pattern and a write-in will be exercised. Audio input using the Spanish language to demonstrate support for write-in voting using an ADA device will be exercised. A character-based language input with a basic voting pattern will be exercised. A character-based language using an ADA device will be exercised to demonstrate support for ADA device. A binary input to show support for ADA binary input device will be exercised. A binary input using an ADA audio device will be exercised to show support for binary input and ADA audio device.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

Primary Election: PRIM-01

A closed primary election in two precincts (one precinct is a split), containing thirty contests compiled into five ballot styles. Each ballot style contains six contests. This election was designed to functionally test an open primary with multiple ballot styles, support for two languages, and support for common voting variations.

The parameters of this election are listed below:

- Closed Primary: Yes
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: No
- Straight Party voting: No
- Cross-party endorsement: No
- Split Precincts: Yes
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

In addition to the parameters listed above, input in an alternative language will be exercised with write-in voting. Input using an ADA audio device with write-in voting will be exercised. These inputs were selected to exercise the write-in functionality in a primary election.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

Primary Election: PRIM-02

A basic election held in two precincts. This election contains thirteen contests compiled into three ballot styles. One contest is in all three ballot styles and all other contests are independent. This election was designed to functionally test the handling of multiple ballot styles, support for Primary presidential delegation nominations, support for two languages, support for complex voting variations, and audio support for multiple languages.

The parameters of this election are listed below:

- Closed Primary: No
- Open Primary: Yes
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: No
- Straight Party voting: No
- Cross-party endorsement: Yes
- Split Precincts: No
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: No
- Early Voting: No

In addition to the parameters listed above, this election will be an open primary election with one machine running for each precinct. Voting options for Over-voting, Under-voting and write-in voting will be exercised. Input in the Spanish language will be exercised. Casting of ballots using the ADA Audio capability will be exercised.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.2 Test Set-Up (Continued)

Primary Election: PRIM-03

A basic election held in two precincts. This election contains ten contests and is compiled into two ballot styles. Two of the contests are in both ballot styles. The other eight contests are split between the two parties ballots. This election was designed to functionally test the handling of multiple ballot styles, support for at least three languages including an Ideographic based language, support for common voting variations, and audio support for at least three languages and an ADA binary input device.

The parameters of this election are listed below:

- Closed Primary: Yes
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: No
- Straight Party voting: No
- Cross-party endorsement: No
- Split Precincts: No
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

In addition to the parameters listed above, input in the Spanish language with a basic voting pattern and a write-in will be exercised. Audio input using the Spanish language to demonstrate support for write-in voting using an ADA device will be exercised. A character-based language input with a basic voting pattern will be exercised. A character-based language using an ADA device will be exercised to demonstrate support for ADA device. A binary input to show support for ADA binary input device will be exercised. A binary input using an ADA audio device will be exercised to show support for binary input and ADA audio device.

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6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.3 Test Sequence

The components of the EVS 5.0.1.0 voting system will undergo testing to verify that the modification performs as describe by ES&S and meets the requirements of the 2005 VVSG. The following sections provide a list of each test and a brief description of each test. Wyle Laboratories will utilize a combination of functional testing and TDP reviews to evaluate the system performance. The list of tests is not in a specific sequence.

6.3.1 Hardware Test Descriptions

The modification of the DS200 hardware may impact the EUT ability to meet the two-hour battery backup requirement in Section 4.1.2.4.c. The EUT shall be subjected to an operational status check before and after the testing to ensure the EUT functions properly.

Electrical Supply – This requirement addresses the battery power source for providing electrical supply during a power failure.

Maintainability – Maintainability represents the ease with which preventive and corrective maintenance actions can be performed based on the design characteristics of equipment and software and the processes the manufacturer and election officials have in place for preventing failures and for reacting to failures.

6.3.2 Software Test Description

The software tests include the following:

Source Code Compliance Review – Wyle Laboratories' personnel will compare the source code to the manufacturer's software design documentation to ascertain how completely the software conforms to the manufacturer's specifications. A listing of the TDP documents for Software Design and Specification can be found in Table 4-2 of this document. Source code inspection shall also assess the extent to which the code adheres to the requirements in Section 5 of Volumes I and II.

Compliance Build of the System Software, Firmware, and Utilities – Before testing can begin a compliance build of all the applications will be constructed by Wyle Laboratories' personnel using the build environment, build documentation and reviewed source code. This is to ensure the software being tested is constructed from the same source code that was reviewed.

COTS Source Code Review – Unmodified, general purpose COTS non-voting software (e.g., operating systems, programming language compilers, data base management systems, and Web browsers) is not subject to the detailed examinations specified in this section. However, Wyle Laboratories' personnel will examine such software to ensure that the specific version of software being used is identical to the design specification in order to confirm that the software has not been modified. Wyle Laboratories will verify by downloading the software directly from the manufacturer site, verifying against NRSL, or by being provided original OEM discs.

Portions of COTS software that have been modified by the manufacturer in any manner are subject to review. Unmodified COTS software is not subject to code examination. However, source code generated by a COTS package and embedded in software modules for compilation or interpretation will be provided in human readable form to Wyle Laboratories. Wyle Laboratories' personnel may inspect COTS source code units to determine testing requirements or to verify the code has not been modified.

6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.3 Test Sequence

6.3.2 Software Test Description (Continued)

Wyle Laboratories may inspect the COTS generated software source code in preparation of test plans and to provide some minimal scanning or sampling to check for embedded code or unauthorized changes. Otherwise, the COTS source code is not subject to the full code review and testing. For purposes of code analysis, the COTS units shall be treated as unexpanded macros.

Error Recovery Test – This will be tested to ensure that unit is capable of recovering from a non- catastrophic failure of a device, or from any error or malfunction that is within the operator’s ability to correct and restoration of the device gracefully from the failures. Testing will include powering units off while operating, disconnecting various cables and components to ensure operation once restored.

Security Source Code Review – The security source code review is a detailed review of the functionality of the source code that has been submitted. A manual line by line review will then be utilized, which can be augmented by an automated analysis of the source code utilizing Checkstyle and NetBeans when the code is written in Java.

Trusted Build – The trusted build is a process of converting the reviewed source code into machine-readable binary instructions for a computer. This test will follow Section 5.6 of the EAC Testing and Certification Program manual.

Table 6-1 EVS 5.0.1.0 Voting System Software Test Sequence

Test	Description	Procedure	Test Level	Specimen
Compliance Source Code Review	Source code review for compliance	WHVS07.2 WOP 5a	Component	Source Code
Compliance Build	Using the build documents and source code to construct the EMS	WHVS07.3 WOP 25	Component	Source Code
Source Code Functional Review	Source code review for functionality and high level software design	WHVS07.2 WOP5b	Component & Integration	Source Code

6.3.3 System Testing

Physical Configuration Audit – The Physical Configuration Audit compares the voting system components submitted for qualification to the manufacturer’s technical documentation, and shall include the following activities:

- Establish a configuration baseline of software and hardware to be tested; confirm whether manufacturer’s documentation is sufficient for the user to install, validate, operate, and maintain the voting system

6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.3 Test Sequence (Continued)

6.3.3 System Testing (Continued)

- Verify software conforms to the manufacturer's specifications; inspect all records of manufacturer's release control system; if changes have been made to the baseline version, verify manufacturer's engineering and test data are for the software version submitted for certification
- Review drawings, specifications, technical data, and test data associated with system hardware, if non-COTS, to establish system hardware baseline associated with software baseline
- Review manufacturer's documents of user acceptance test procedures and data against system's functional specifications; resolve any discrepancy or inadequacy in manufacturer's plan or data prior to beginning system integration functional and performance tests
- Subsequent changes to baseline software configuration made during testing, as well as system hardware changes that may produce a change in software operation are subject to re-examination

TDP Review – The technical data package must be submitted as a precondition of national certification testing. These items are necessary to define the product and its method of operation; to provide technical and test data supporting the manufacturer's claims of the system's functional capabilities and performance levels; and to document instructions and procedures governing system operation and field maintenance. Any information relevant to the system evaluation shall be submitted to include source code, object code, and sample output report formats

Security Test – The security test is designed and performed to test the capabilities of the voting system against the requirements defined in Volume I, Section 7. These procedures shall focus on the ability of the system to detect, prevent, log, and recover from a broad range of security risks identified. This test will also examine system capabilities and safeguards claimed by ES&S in the TDP to go beyond these risks. The range of risks tested is determined by the design of the system and potential exposure to risk.

Usability/Accessibility – The usability test is a measure of the effectiveness, efficiency, and satisfaction achieved by a specified set of users with a given product in the performance of specified tasks. This test applies to the requirements for Volume I, Section 3 of the EAC 2005 VVSG

Accuracy – The accuracy test ensures that each component of the voting system can each process 1,549,703 consecutive ballot positions correctly within the allowable target error rate. The Accuracy test is designed to test the ability of the system to “capture, record, store, consolidate and report” specific selections and absences of a selection. The required accuracy is defined as an error rate. This rate is the maximum number of errors allowed while processing a specified volume of data. For paper-based voting systems, the ballot positions on a paper ballot must be scanned to detect selections for individual candidates and contests and the conversion of those selections detected on the paper ballot converted into digital data.

In an effort to achieve this and to verify the proper functionality of the units under test, the following methods will be used to test each component of the voting system:

The accuracy requirements for the DS200 will be met by the execution of the standard accuracy test.

6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.3 Test Sequence (Continued)

6.3.3 System Testing (Continued)

- Stand-Alone Precinct Scanner – Tested by utilizing a combination of hand marked (70%) and pre-marked (30%) ballots to achieve accuracy rate greater than 1,549,703 correct ballot positions.

System Integration – System Level certification test address the integrated operation of both hardware and software, along with any telecommunication capabilities. Compatibility of the voting system software components or subsystems with one another, and with other components of the voting system environment, shall be determined through functional tests integrating the voting system software with the remainder of the system.

Additionally, the system shall be configured exactly as it would for normal field use. This includes connecting all supporting equipment and peripherals including ballot boxes, voting booths (regular and accessible), and any physical security equipment such as locks and ties. Wyle Laboratories personnel will properly configure and test the system by following the procedures detailed in the EVS 5.0.1.0 Voting System technical documentation.

Functional test to verify ECO1281 – This test will utilize the DS200 autocast mode to ensure that the changes in ECO1281 did not affect the reliability of the DS200. A total of 4000 ballots will be cast (each orientation of each ballot size will be cast 250 times).

Regression Testing – Regression Testing will be performed on all applicable system components to verify all firmware and application software modifications are working as expected.

7.0 TEST OPERATIONS PROCEDURES

7.1 Proprietary Data

All proprietary data that is marked will be distributed only to those persons that the manufacturer or EAC identifies as needing the information to conduct qualification testing. The manufacturer is required to mark all proprietary documents as such. All organizations and individuals receiving proprietary documents will ensure those documents are not available to non-authorized persons.

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APPENDIX A
ES&S PROJECT SCHEDULE

Appendix A, Page No. A- 2 of 2
Certification Test Plan T71352.01

Task Name	Duration	Start	Finish
EAC Application submitted	3 days	Fri 11/1/13	Tue 11/5/13
EAC Kickoff Meeting (Conference Call)	1 day	Wed 11/20/13	Wed 11/20/13
Source Code Review	1 day	Wed 11/6/13	Wed 11/6/13
DS200	1 day	Wed 11/6/13	Wed 11/6/13
Compliance Build	14 days	Fri 11/8/13	Wed 11/27/13
DS200	1 day	Fri 11/8/13	Fri 11/8/13
Load Compliance Builds Checkout	1 day	Wed 11/27/13	Wed 11/27/13
Test Plan	56 days	Wed 11/6/13	Thu 1/30/14
Draft Test Plan	15 days	Wed 11/6/13	Tue 11/26/13
Manufacturer Review	4 days	Wed 11/27/13	Wed 12/4/13
Draft Test Plan Update	1 day	Thu 12/5/13	Thu 12/5/13
Test Plan to EAC	1 day	Fri 12/6/13	Fri 12/6/13
EAC Review	20 days	Mon 12/9/13	Wed 1/8/14
Review TR's Comments	2 days	Thu 1/9/14	Fri 1/10/14
Revise Test Plan	2 days	Mon 1/13/14	Tue 1/14/14
Resubmit Test Plan to EAC	1 day	Wed 1/15/14	Wed 1/15/14
EAC approval	10 days	Thu 1/16/14	Thu 1/30/14
TDP Review of Changes	30 days	Wed 11/6/13	Thu 12/19/13
Equipment Check in and Set up	2 days	Mon 11/25/13	Tue 11/26/13
PCA	2 days	Wed 11/27/13	Mon 12/2/13
Electrical Supply	2 days	Tue 12/3/13	Wed 12/4/13
Functional	2 days	Thu 12/5/13	Fri 12/6/13
Accuracy	5 days	Mon 12/9/13	Fri 12/13/13
System Integration Testing	5 days	Mon 12/16/13	Fri 12/20/13
Final Trusted Build	7 days	Mon 12/30/13	Wed 1/8/14
Verifv Build Environment	1 dav	Mon 12/30/13	Mon 12/30/13
Trusted Build	2 days	Tue 12/31/13	Thu 1/2/14
Install and Verify System Build	1 day	Fri 1/3/14	Fri 1/3/14
Final Trusted Build Complete	1 day	Mon 1/6/14	Mon 1/6/14
Delivery of Images to EAC Repository	2 days	Tue 1/7/14	Wed 1/8/14
Regression Testing Final Build Loads	3 days	Thu 1/9/14	Mon 1/13/14
Certification Report	33 days	Mon 12/23/13	Tue 2/11/14
Initial Draft Report	10 days	Mon 12/23/13	Wed 1/8/14
Manufacturer Review	2 days	Thu 1/9/14	Fri 1/10/14
Submit Test Report to EAC	1 day	Mon 1/13/14	Mon 1/13/14
EAC Review	20 days	Tue 1/14/14	Tue 2/11/14