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Job No. T70251.01  
 Certification Test Plan No. T70251  
 January 10, 2013

## CERTIFICATION TEST PLAN

Prepared for:

<b>Manufacturer Name</b>	Dominion Voting Systems
<b>Manufacturer System</b>	Democracy Suite Version 4.14
<b>EAC Application No.</b>	DVS1201
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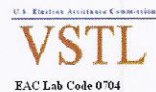
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NVLAP LAB CODE 2007-1-0

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## **1.0 INTRODUCTION**

The purpose of this National Certification Test Plan (Test Plan) is to document the procedures that Wyle Laboratories, Inc., will follow to perform certification testing of the Dominion Voting Systems, Democracy Suite 4.14 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, Dominion Voting Systems submitted an application to the EAC for certification of the Democracy Suite 4.14 System to the requirements of the EAC 2005 VVSG.

### **1.1 Scope**

The purpose of this modification is to introduce the upgrade from the Democracy Suite 4.0 to the Democracy Suite 4.14 system. The system modification will include both hardware and software upgrades from the previously certified system, as well as the introduction of new hardware:

1. Election Management System (EMS) – Software upgrades
2. ImageCast Evolution (ICE) – Hardware and software upgrades, and introduction of plastic ballot box
3. ImageCast Precinct (ICP) – Hardware and software upgrades
4. ImageCast Central (ICC) – Software upgrades, and introduction of an additional scanner

Preliminary EMI Quick Scans were performed on the ICE and ICP tabulators for comparison to the baseline emissions noted during the prior test campaign. The outcome revealed improved emission levels for both tabulators, which resulted in the acceptance of previous hardware tests as noted in tables 4-2 and 4-3.

The complete system shall be tested in a full system integration test to ensure all components interact properly in the current system configurations listed in the Dominion 4.14 Voting System scope.

At test conclusion, the results of all testing performed as part of this test program will be submitted to the EAC in the form of a final report.

### **1.2 References**

The documents listed below were used in the development of the Test Plan and are 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

**1.0 INTRODUCTION (Continued)**

**1.2 References (Continued)**

- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- 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, Revision 4
- 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](http://www.eac.gov))
- EAC Notices of Clarification (listed on [www.eac.gov](http://www.eac.gov))
- EAC Quality Monitoring Program residing on:  
[http://www.eac.gov/testing\\_and\\_certification/quality\\_monitoring\\_program.aspx](http://www.eac.gov/testing_and_certification/quality_monitoring_program.aspx)

A listing of the Democracy Suite 4.14 System Technical Data Package (TDP) Documents submitted for this certification test effort is listed in Section 3.4: Deliverable Materials.

**1.3 Terms and Abbreviations**

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

**Table 1-1 Terms and Abbreviations**

<b>Term</b>	<b>Abbreviation</b>	<b>Definition</b>
Americans with Disabilities Act of 1990 (Amended 2008)	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability.
EMS Audio Studio	AS	EMS application used to record audio files.
Audio Tactile Interface	ATI	Voter interface designed to not require visual reading of a ballot.
Conformité Européenne (European Conformity)	CE	---
Configuration Management	CM	---
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software

**1.0 INTRODUCTION (Continued)**

**1.3 Terms and Abbreviations (Continued)**

Direct Record Electronic	DRE	---
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.
EMS Election Event Designer	EED	EMS application used for election definition functionality.
Election Management System	EMS	The Election Management System equivalent for the Democracy Suite System.
Equipment Under Test	EUT	---
Functional Configuration Audit	FCA	Exhaustive verification of every system function and combination of functions cited in the manufacturer's documentation.
Federal Communications Commission	FCC	---
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
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.
ImageCast Central	ICC	High-speed central ballot scan tabulator.
ImageCast Evolution	ICE	Precinct-level optical scanner, ballot marker, and tabulator with audio voting.
ImageCast Precinct	ICP	Precinct-level optical scanner and tabulator with audio voting capabilities.
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 trusted build of the executable system is performed to ensure the certified release is built from tested components.
Quality Assurance	QA	---
EMS Results, Tally and Reporting	RTR	EMS application used to integrate election results and reporting.
System Under Test	SUT	---
Test Case Procedure Specifications	TCPS	Wyle-developed document that specifies test items, input specifications, output specifications, environmental needs, special procedural requirements, inter-case dependencies, and all validated test cases that will be executed during the area under test.
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	---

**1.0 INTRODUCTION (Continued)**

**1.3 Terms and Abbreviations (Continued)**

**Table 1-1 Terms and Abbreviations (Continued)**

Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Operating Procedure	WoP	Wyle Test Method or Test Procedure.

**1.4 Testing Responsibilities**

All core and non-core software and hardware certification testing will be conducted under the guidance of Wyle Laboratories, Inc., by personnel verified by Wyle to be qualified to perform the testing.

**1.4.1 Project Schedule**

This information is contained in a Wyle-generated Microsoft Project schedule. This schedule is presented in Appendix A “Dominion Voting Systems Project Schedule”. The dates on the schedule are not firm dates but planned estimates presented for informational purposes.

**1.4.1.1 Owner Assignments**

This information is contained in a Wyle generated Microsoft Project schedule. This schedule is presented in Appendix A “Dominion Voting Systems Project Schedule”.

**1.4.1.2 Test Case Development**

Wyle will utilize the “Wyle Baseline Test Cases” for the Functional Configuration Audit (FCA), Usability and System Integration Tests. These will be augmented with specially designed test cases tailored to the Dominion Voting Systems Democracy Suite 4.14. Wyle has designed specific election definitions for the Operational Status Check, Volume and Stress, and Accuracy Tests.

**1.4.1.3 Test Procedure Development and Validation**

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

**1.4.1.4 Third-Party Testing**

Wyle will not utilize any 3rd party testing during performance of the Dominion Democracy Suite 4.14 System test campaign.

**1.4.1.5 EAC and Manufacturer Dependencies**

This information is contained in a Wyle generated Microsoft Project schedule. This schedule is presented in Appendix A “Dominion Voting Systems Project Schedule”.

**1.5 Target of Evaluation Description**

The following sections address the design methodology and product description of the Democracy Suite 4.14 System, as taken from the Dominion Voting Systems technical documentation.



## 1.0 INTRODUCTION (Continued)

### 1.5 Target of Evaluation Description (Continued)

#### 1.5.1 System Overview

The Dominion Voting Systems Democracy Suite 4.14 System is a paper-based optical scan voting system. The Democracy Suite 4.14 System consists of four major components: the Election Management System (EMS), ImageCast Evolution (ICE) precinct scanner and ballot marking device, ImageCast Precinct (ICP) precinct scanner with audio ballot, and ImageCast Central (ICC) central count scanner.

#### Election Management System

The Dominion Voting Systems Democracy Suite 4.14 EMS consists of seven components running as either a front-end/client application or as a back-end/server application. Below is a list and brief description of each.

- Democracy Suite 4.14 EMS Election Event Designer client application - integrates election definition functionality and represents a main pre-voting phase end-user application.
- Democracy Suite 4.14 EMS Results Tally and Reporting client application - integrates election results acquisition, validation, tabulation, reporting and publishing capabilities and represents a main post-voting phase end-user application.
- Democracy Suite 4.14 EMS Audio Studio client application - represents an end-user helper application used to record audio files for a given election project. As such, it is utilized during the pre-voting phase of the election cycle.
- Democracy Suite 4.14 EMS Data Center Manager client application - represents a system level configuration application used in EMS back-end data center configuration.
- Democracy Suite 4.14 EMS Application Server application - represents a server side application responsible for executing long running processes, such as rendering ballots, generating audio files and election files, etc.
- Democracy Suite 4.14 EMS Network Attached Storage (NAS) Server application - represents a server side file repository for election project file based artifacts, such as ballots, audio files, reports, log files, election files, etc.
- Democracy Suite 4.14 EMS Database Server application - represents a server side RDBMS repository of the election project database which holds all the election project data, including pre-voting and post-voting data.

#### Precinct Ballot Tabulator: ImageCast Evolution (ICE)

The ICE Ballot Counter device is a precinct-level, optical scan, ballot counter (tabulator) designed to perform six major functions:

- Ballot scanning
- Tabulation
- Ballot review
- Second chance voting
- Accessible voting
- Ballot marking

1.0 INTRODUCTION (Continued)

1.5 Target of Evaluation Description (Continued)

1.5.1 System Overview (Continued)

**Precinct Ballot Tabulator: ImageCast Evolution (ICE)**

The Dominion Democracy Suite ImageCast Evolution system employs a precinct-level optical scan ballot counter (tabulator) in conjunction with an external plastic ballot box. This tabulator is designed to mark and/or scan paper ballots, interpret voting marks, communicate these interpretations back to the voter (either visually through the integrated LCD display or audibly via integrated headphones), and upon the voter's acceptance, deposit the ballots into the ballot box. The unit also features an Audio Tactile Interface (ATI) which permits voters who cannot negotiate a paper ballot to generate a synchronously human and machine-readable ballot from elector-input vote selections. In this sense, the ImageCast Evolution acts as a ballot marking device.



**Photograph 1: ImageCast Evolution (ICE)**

1.0 INTRODUCTION (Continued)

1.5 Target of Evaluation Description (Continued)

1.5.1 System Overview (Continued)

**Precinct Ballot Tabulator: ImageCast Precinct (ICP)**

The Dominion Democracy Suite ImageCast Precinct ballot counter is a precinct-based optical scan ballot tabulator that is used in conjunction with ImageCast compatible ballot storage boxes. The system is designed to scan marked paper ballots, interpret voter marks on the paper ballot and store and tabulate each vote from each paper ballot. The ICP contains a small touch-screen LCD to allow the poll worker to access diagnostic and configuration settings.

In addition, enhanced accessibility voting may be accomplished via optional accessories connected to the ImageCast unit. The ICP utilizes an ATI device to allow voters with disabilities to navigate and submit a voted ballot. This is accomplished by presenting the ballot to the voter in an audio format. The ATI is connected to the tabulator, and allows the voter to listen to an audio voting session consisting of contest and candidate names. The ATI also allows a voter to adjust the volume and speed of audio playback. The cast vote record is recorded electronically when the ATI is used to cast a ballot. There is no contemporaneous paper ballot or paper record produced when the ATI is utilized for voting. A ballot arising from the voter's choices may be printed from EMS at a later time.



**Photograph 2: ImageCast Precinct (ICP)**

**1.0 INTRODUCTION (Continued)**

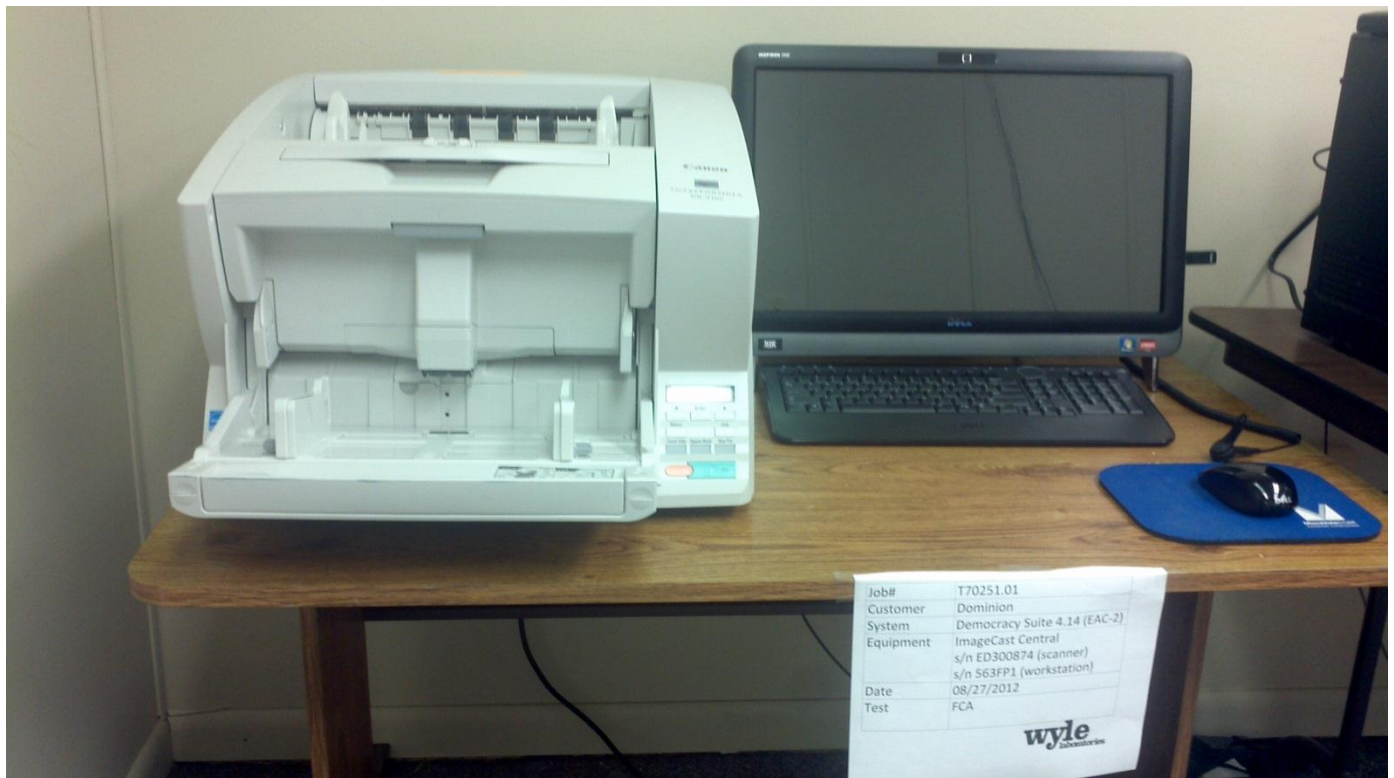
**1.5 Target of Evaluation Description (Continued)**

**1.5.1 System Overview (Continued)**

**Central Tabulator: ImageCast Central Count (ICC)**

The Dominion Democracy Suite ImageCast Central Count ballot counter system is a high-speed, central ballot scan tabulator based on COTS hardware, coupled with the custom-made ballot processing application software. It is used for high speed scanning and counting of paper ballots. Central Count scanning system hardware consists of a combination of two COTS devices used together to provide the required ballot scanning processing functionality:

- ImageCast Central Workstation: a COTS computer used for ballot image and election rules processing and results transfer to the EMS Datacenter. The ImageCast Central Workstation is hardware which executes the image processing and election rules software application.
- Canon DR-X10C Scanner: a COTS scanner used to provide ballot scanning and image transfers to the local ImageCast Central Workstation.
- DRS PhotoScribe 960 Scanner: a COTS scanner used to provide ballot scanning and image transfers to the local ImageCast Central Workstation.



**Photograph 3: Canon DR-X10C Scanner and ImageCast Central Workstation**



**Photograph 3: PhotoScribe PS960 Scanner**



1.0 INTRODUCTION (Continued)

1.5 Target of Evaluation Description (Continued)

1.5.2 Block Diagram

The entire system diagram is presented in Figure 1-1.

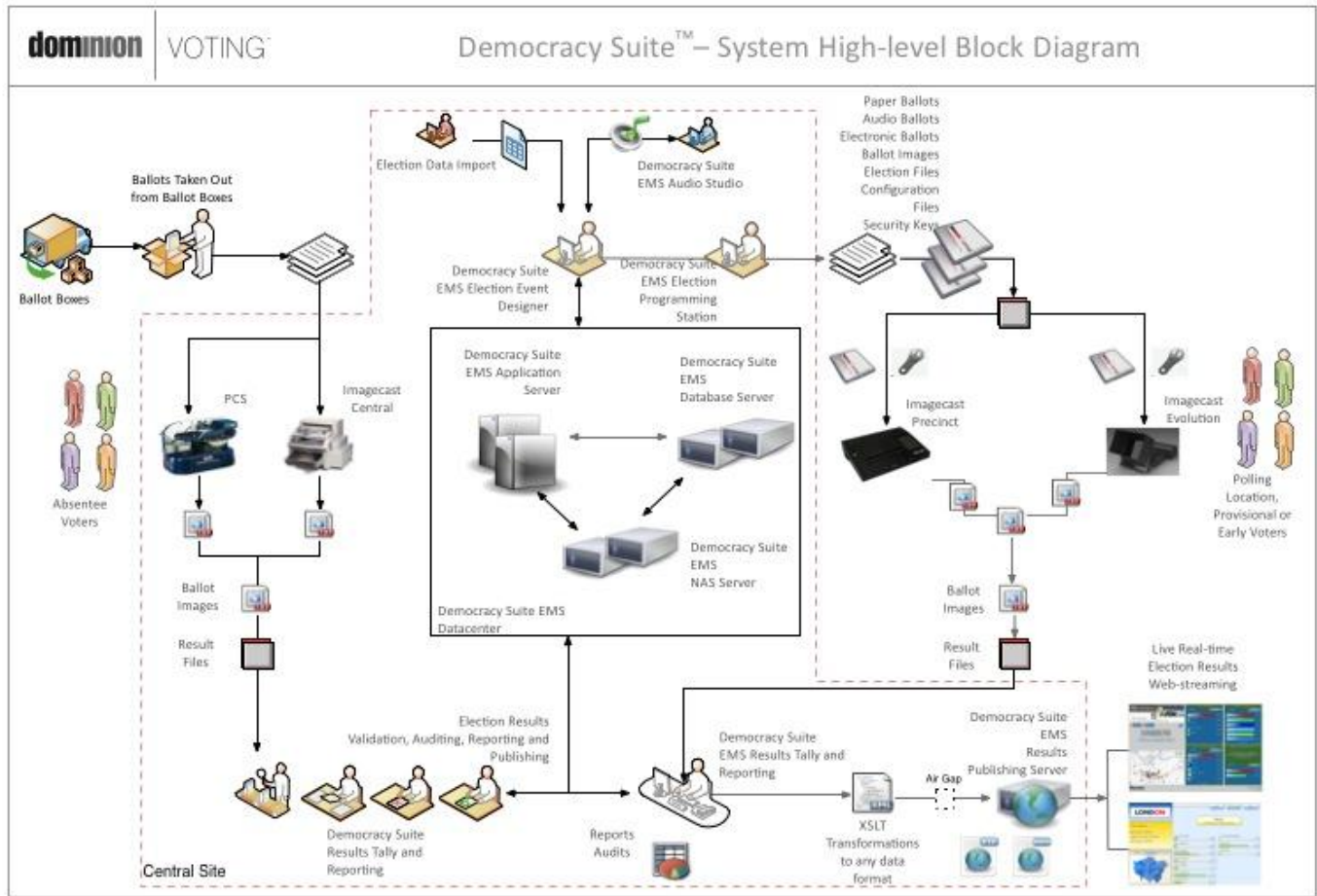


Figure 1-1 System Overview Diagram

**1.0 INTRODUCTION (Continued)**

**1.5 Target of Evaluation Description (Continued)**

**1.5.3 System Limits**

The EMS platform will be tested in both deployable physical hardware configurations:

- EMS Express hardware configuration - all EMS software components are installed on a single physical PC or laptop. This is a standalone configuration.
- EMS Standard hardware configuration - the EMS server components are installed on a single physical server, in addition to the Universal Power Supply (UPS) and Local Area Network (LAN) switch devices, while the EMS client components are installed on one or more physical PCs or laptops. All system components are interconnected in a client-server local LAN environment.

The system limits that Dominion Voting Systems has stated to be supported by the Democracy Suite 4.14 are compiled in the table below.

**Table 1-4 Democracy Suite 4.14 System Limits for Portrait Ballot Style**

Limit (Maximum Number of)	Value (by configuration)		Limiting Component
	Express	Standard	
Ballot Positions	462	462	22 Inch Portrait Ballot
Precincts in Election	250	1000	Memory
Contests in Election	250	1000	Memory
Candidates/Counters in Election	2500	10000	Memory
Candidates/Counters in Precinct	462	462	22 Inch Portrait Ballot
Candidates/Counters in Tabulator	2500	10000	Memory
Ballot Styles in Election	750	3000	Memory
Contests in a Ballot Style	156	156	22 Inch Portrait Ballot
Candidates in a Contest	231	231	22 Inch Portrait Ballot (Column Span 3)
Ballot Styles in a Precinct	10	10	Memory
Number of Parties	30	30	No Limitation
Vote For in Contest	30	30	No Limitation
Supported Languages per Election	8	10	Memory
Number of Write-ins	462	462	22 Inch Portrait Ballot

**1.0 INTRODUCTION (Continued)**

**1.5 Target of Evaluation Description (Continued)**

**1.5.3 System Limits (Continued)**

**Table 1-5 Democracy Suite EMS 4.14/ImageCast Ballot Target Limits for Portrait Ballot Style**

<b>Ballot Length</b>	<b>Maximum Positions (Row x Column)</b>
11 Inch	33 x 2
14 inch	45 x 3
17 Inch	57 x 3
20 Inch	69 x 3
22 Inch	77 x 3

**1.5.4 Supported Languages**

The following languages have been stated by Dominion Voting Systems to be supported by the Democracy Suite 4.14:

- Alaska Native
- Aleut
- Athabascan
- Eskimo
- Chinese
- Filipino
- French
- English
- Japanese
- Korean
- Vietnamese
- Spanish
- Native (other group specified)
  - Apache, Jicarilla, Keres, Navajo, Seminole, Towa, Ute, Yuman

Dominion Voting Systems also states that any language that has an ISO definition file can be supported by the Democracy Suite voting System.

Note: All stated languages will be verified to be supported; however, only English and Spanish ballots will be cast during functional testing. Wyle will test English, Spanish, and one character based language (Chinese) during System Integration Testing. Wyle will not be testing the accuracy of the translation of English to Spanish or English to Chinese.



## **1.0 INTRODUCTION (Continued)**

### **1.5 Target of Evaluation Description (Continued)**

#### **1.5.5 Supported Functionality**

The Democracy Suite 4.14 is designed to support the following voting variations:

- General Election
- Closed Primary
- Open Primary (if separate ballot id's/styles for the different political parties)
- Early Voting
- Partisan offices
- Non-Partisan offices
- Write-in voting
- Primary presidential delegation nominations
- Straight Ticket voting
- Split Precincts
- Ballot Rotation (equal time only)
- Vote for N of M
- Audio Ballot

#### **1.5.6 VVSG**

The Democracy Suite 4.14 will be tested to all applicable EAC 2005 VVSG requirements.

#### **1.5.7 Beyond VVSG**

Based on the scope of this modification, no additional test results have been submitted for consideration as part of this test campaign.

## **2.0 PRE-CERTIFICATION TESTING AND ISSUES**

Currently, no pre-certification testing has been completed. Per EAC Notice of Clarification (NOC) 09-001, Wyle views the Certification Test Plan as a living document. It will be updated with "As Run" testing and resubmitted to the EAC as major areas of testing have been completed.

Wyle has performed the first pass review for all source code submitted by Dominion for the Democracy Suite version 4.14 voting system. The issues with compliance to the EAC 2005 VVSG were reported back to the manufacturer for resolution. Subsequent submissions will be reviewed by comparing the new submission against the last submission to ensure all documented issues are resolved before the source code review is completed.

## 2.0 PRE-CERTIFICATION TESTING AND ISSUES (Continued)

An initial Technical Data Package (TDP) review was performed on the Dominion Democracy Suite version 4.14 voting system documents submitted as their TDP to determine compliance with the EAC 2005 VVSG and EAC requirements. Wyle found some documents were missing or included partial information, and the existing documentation contained information which was not consistent throughout the Dominion TDP. The results were reported to Dominion for resolution. Dominion has subsequently revised and resubmitted the TDP. Wyle is performing a review of these documents and will submit the results to Dominion as documented in Section 4.6 TDP Evaluation. Any incidences of non-certification issues (editing issues such as spelling or formatting) will be noted to Dominion as informational comments for them to decide whether to address them.

### 2.1 Evaluation of Prior VSTL Testing

Wyle will reutilize all previous testing from the approved Democracy Suite 4.0 (EAC CERTIFICATION NUMBER – DVS-40-G) where applicable or otherwise documented.

### 2.3 Known Field Issues

This system has never been fielded in the configuration submitted for EAC 2005 VVSG certification testing. The ImageCast Precinct has been utilized in a small number of elections in New York State. There were no systemic or significant issues traceable to voting system performance.

## 3.0 MATERIALS REQUIRED FOR TESTING

The materials required for certification testing of the Democracy Suite 4.14 voting system include software, hardware, test materials, and deliverable materials to enable the test campaign to occur will be delivered by Dominion Voting Systems to Wyle.

### 3.1 Software

The tables below list 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 security 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 Democracy Suite 4.14 EMS Software Platform Components**

Software Required For Testing	Software Version	Filename
Democracy Suite EMS EED Client Application	4.14	setup.exe, EED_FED_CERT.Setup_64b.msi
Democracy Suite EMS RTR Client Application	4.14	setup.exe, RTR_FED_CERT.Setup_x64.Setup.msi

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-1 Democracy Suite 4.14 EMS Software Platform Components (Continued)**

Software Required For Testing	Software Version	Filename
Democracy Suite EMS File System Service Client Application	4.14	setup.exe, DemocracySuiteEMS_FSS_Setup.msi
Democracy Suite EMS Audio Studio Client Application	4.14	setup.exe, EMSAS2010Setup.msi
Democracy Suite EMS Data Center Manager	4.14	DemocracySuiteEMS_DCM.exe
Democracy Suite EMS Application Server	4.14	setup.exe, EMSApplicationServer_FED_CERT.Setup_x64.Setup.msi

**Table 3-2 Democracy Suite 4.14 ImageCast Precinct Software Components**

Software Required For Testing	Software Version	Filename
Election Firmware	4.14.1-US	cf2xx.sig
Firmware Updater	4.14.1-US	firmUp.enc
Firmware Extractor	4.14.1-US	FirmwareExtract.enc
Kernel (uClinux)	4.14.1-US	Image.bin.gz
Boot Loader (COLILO)	20040221	colilo.bin

**Table 3-3 Democracy Suite 4.14 ImageCast Evolution Software Components**

Software Required For Testing	Software Version	Filename
Voting Machine	4.14.4	GApplication-4.14.4.vhd.7z
Election Application	4.14.4	dvs
Linux Kernel	2.6.30.9-dvs-21	uImage
Linux Device File	1.3	mpc8347dvs.dtb

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-3 Democracy Suite 4.14 ImageCast Evolution Software Components (Continued)**

<b>Software Required For Testing</b>	<b>Software Version</b>	<b>Filename</b>
Root File System	1.0.1	rfs
Ram Disk	1.0.1	initrd.img
Boot Startup Logo	4.0.0	logo_platform.bmp
Linux Startup Logo	4.0.0	logo_os.bmp
Boot Loader	1.3.4.26	u-boot.bin
Motherboard FPGA	1.1.2	ice2_mc_p1.bit
Scanner Board FPGA	1.1.1	ice2_scb_p2.bit
Logger Controller	1.0.11	logger.bin
Power Controller	2.0.3	power.bin
Integrated Printer	4.1.6	integratedPrinter.hex, printerFont.hex

**Table 3-4 Democracy Suite 4.14 ImageCast Central Software Components**

<b>Software Required For Testing</b>	<b>Software Version</b>	<b>Filename</b>
ImageCast Central Application	4.14.4	ImageCast Central.exe
Image-Analysis DLL	4.14.4	ImgProc.dll
PhotoScribe 960 firmware	2.2.5	This is COTS firmware
Windows 7	COTS	Operating System for COTS ICC computer when using Canon DR-X10C scanner
Windows XP SP3	COTS	Operating System for COTS DRS PhotoScribe 960 scanner

**Table 3-5 Democracy Suite 4.14 EMS Software Platform Third Party Software Components**

<b>Software Required For Testing</b>	<b>Software Version</b>	<b>Filename</b>
Infragistics NetAdvantage Win Forms 2011.1	2011 Vol.1	NetAdvantage_WinForms_20111.msi
TX Text Control Library for .NET	16.0	TX Text Control.NET for Windows Forms 16.0.exe

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-6 Democracy Suite 4.14 EMS Client Application Software Components**

Software Required For Testing	Software Version	Filename
Microsoft Windows 7 x64	6.1	Microsoft DVD provided
Windows Server 2008 R2 x64	6.1	Microsoft DVD provided
Adobe Reader	10.1.1	AdbeRdr1011_en_US.exe
Microsoft .NET Framework 4.0	4.0	dotNetFx40_Full_x86_x64.exe
Microsoft SQL Server 2008 R2 x64	10.0	Microsoft DVD provided
Microsoft SQL Server 2008 Express R2 x64	10.50.2500.0	SQLEXPADV_x64_ENU.exe
Microsoft SQL Server 2008 R2 SP1x64	10.51.2500.0	SQLServer2008R2SP1-KB2528583-x64-ENU.exe
Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64)	2.0	vjredist64.exe
1-Wire Driver version 4.0.3b x64	4.0.3	install_1_wire_drivers_x64_v403beta.msi
Java Runtime Environment 6.0 x64	6.0.290	jre-6u29-windows-x64.exe
Microsoft Visual C++ 2010 SP1 Redistributable Package(x86)	10.0.40219	vcredist_x86.exe

**Table 3-7 Democracy Suite 4.14 EMS Software Platforms Unmodified COTS Components**

Software Required For Testing	Software Version	Filename
Infragistics NetAdvantage Win Forms 2011.1	2011 Vol.1	NetAdvantage_WinForms_20111.msi (for details see document Components_3rdParty_1.0.xlsx)
TX Text Control Library for .NET	16.0	TX Text Control.NET for Windows Forms 16.0.exe (for details see document Components_3rdParty_1.0.xlsx)
Microsoft.Net Framework Library	4.0	dotNetFx40_Full_x86_x64.exe (for details see document Components_3rdParty_1.0.xlsx)

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-7 Democracy Suite 4.14 EMS Software Platforms Unmodified COTS Components (Continued)**

Software Required For Testing	Software Version	Filename
Sox	14.3.1	sox.exe, libgomp-1.dll, pthreadgc2.dll, zlib1.dll (for details see document Components_3rdParty_1.0.xlsx)
Log4net	1.2.10	log4net.dll, log4net.xml (for details see document Components_3rdParty_1.0.xlsx)
NLog	1.0.0.505	NLog.dll (for details see document Components_3rdParty_1.0.xlsx)
iTextSharp	5.0.5	itextsharp.dll (for details see document Components_3rdParty_1.0.xlsx)
OpenSSL	1.2	openssl.exe, lebeay32.dll, ssleay32.dll (for details see document Components_3rdParty_1.0.xlsx)
SQLite	1.0.65.0	System.Data.SQLite.DLL 32-bit and 64-bit (for details see document Components_3rdParty_1.0.xlsx)
Lame	3.99.4	lame.exe (for details see document Components_3rdParty_1.0.xlsx)
Speex	1.0.4	speexdec.exe and speexenc.exe (for details see document Components_3rdParty_1.0.xlsx)
Ghostscript	8.71	gsdll32.dll – both 32-bit and 64-bit (for details see document Components_3rdParty_1.0.xlsx)
PdfToImage	1.2	PdfToImage.dll (for details see document Components_3rdParty_1.0.xlsx)
SharpSSH package	1.1.1.13	Tamir.SharpSSH.dll, Diffie.Hellman.dll, Org.Mentalis.Security.dll (for details see document Components_3rdParty_1.0.xlsx)
One Wire API for .NET	4.0.2.0	OneWireAPI.NET.dll (for details see document Components_3rdParty_1.0.xlsx)
Avalon-framework-cvs-20020806	20020806	avalon-framework-cvs-20020806.jar (for details see document Components_3rdParty_1.0.xlsx)
Batik	0.20-5	batik.jar (for details see document Components_3rdParty_1.0.xlsx)
Fop	0.20-5	fop.jar (for details see document Components_3rdParty_1.0.xlsx)
Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64)	2.0	vjc.dll, vjsjbc.dll, vjslibcw.dll, vjsnativ.dll, vjssupuilib.dll, vjswv aux.dll (for details see document Components_3rdParty_1.0.xlsx)

3.0 MATERIALS REQUIRED FOR TESTING (Continued)

3.1 Software (Continued)

Table 3-8 Democracy Suite 4.14 ImageCast Precinct Unmodified COTS Software Components

Software Required For Testing	Software Version	Filename
PNG Reference Library	1.2.24	libpng-1.2.24.tar.gz
OpenSSL	1.1.2	Openssl-fips-1.1.2.tar.gz
Zlib	1.2.3	Zlib-1.2.3.tar.gz

Table 3-9 Democracy Suite 4.14 ImageCast Evolution Unmodified COTS Software Components

Software Required For Testing	Software Version	Filename
autoconf	2.57	autoconf-2.57.tar.bz2
bison	2.3	bison-2.3.tar.bz2
busybox	1.20.2	busybox-1.18.5.tar.bz2
ccache	2.4	ccache-2.4.tar.gz
cksum	19990607	cksum-19990607.tar.gz
cramfs	20081121	cramfs-20081121.tar.gz
distcc	2.18.3	distcc-2.18.3.tar.bz2
dtc	1.2.0	dtc-1.2.0.tar.gz
e2fsprogs	1.42.2	e2fsprogs-1.41.14.tar.gz
expat	2.0.1	expat-2.0.1.tar.gz
flex	2.5.33	flex-2.5.33.tar.gz
fontconfig	2.9.0	fontconfig-2.8.0.tar.gz
freetype	2.4.9	freetype-2.4.4.tar.bz2
genext2fs	1.4.1	genext2fs-1.4.1.tar.gz
gen_init_cpio	2.6.25-rc7	gen_init_cpio-2.6.25-rc7.tar.gz
genromfs	0.5.1	genromfs-0.5.1.tar.gz
git	1.5.6.5	git-1.5.6.5.tar.gz
i2c-tools	3.1.0	i2c-tools-3.0.3.tar.bz2
jpegsrc	v8d	jpegsrc.v8c.tar.gz
libogg	1.3.0	libogg-1.2.2.tar.gz

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-9 Democracy Suite 4.14 ImageCast Evolution Unmodified COTS Software Components  
 (Continued)**

Software Required For Testing	Software Version	Filename
Libpng	1.5.10	libpng-1.5.4.tar.gz
libtool	1.5	libtool-1.5.tar.gz
libusb	1.0.8	libusb-1.0.8.tar.bz2
libusb-compat	0.1.3	libusb-compat-0.1.3.tar.bz2
linux	2.6.30.9	linux-2.6.30.9.tar.bz2
lkc	1.4	lkc-1.4.tar.gz
mkspoolinks	3.4	mkspoolinks-3.4.tar.gz
mtd-utils	20060302	mtd-utils-20060302.tar.bz2
mux_server		mux_server.c
openssl-fips	1.2.3	openssl-fips-1.2.3.tar.gz
pkg-config	0.21	pkg-config-0.21.tar.gz
ppp	2.4.5	ppp-2.4.5.tar.gz
qt-everywhere	4.7.3	qt-everywhere-opensource-src-4.7.3.tar.gz
skell	1.19	skell-1.19.tar.gz
soundtouch	1.5.0	soundtouch-1.5.0.tar.gz
sparse	0.4	sparse-0.4.tar.gz
speex	1.2rc1	speex-1.2rc1.tar.gz
sqlite	3.7.13	sqlite-autoconf-3070701.tar.gz
sysfsutils	2.1.0	sysfsutils-2.1.0.tar.gz
texinfo	4.8	texinfo-4.8.tar.bz2
tiff	4.0.1	tiff-3.9.5.tar.gz
tunctl	1.5	tunctl-1.5.tar.gz
tzcode	2012b	tzcode2011g.tar.gz
tzdata	2012c	tzdata2011h.tar.gz
u-boot-tools	1.1.6	u-boot-tools-1.1.6.tar.bz2
unifdef	1.0	unifdef-1.0.tar.gz
usb-modeswitch	1.1.7	usb-modeswitch-1.1.7.tar.bz2
usb-modeswitch-data	20110227	usb-modeswitch-data-20110227.tar.bz2
wget	1.9.1	wget-1.9.1.tar.gz
yaffs_utils	20060418	yaffs_utils-20060418.tar.gz



3.0 MATERIALS REQUIRED FOR TESTING (Continued)

3.1 Software (Continued)

Table 3-9 Democracy Suite 4.14 ImageCast Evolution Unmodified COTS Software Components  
(Continued)

Software Required For Testing	Software Version	Filename
zlib	1.2.7	zlib-1.2.5.tar.bz2
rpm	4.0.4	rpm-4.0.4.tar.gz

Table 3-10 Democracy Suite 4.14 - ImageCast Central Build Environment Software Build Components  
(Unmodified COTS)

Software Required For Build	Software Version	Filename
Windows 7	Home Premium	OEM installed, or full CD from Microsoft
Windows XP	Professional	OEM installed, or full CD from Microsoft
Visual Studio	2005	Full CD from Microsoft

Table 3-11 Democracy Suite 4.14 - ImageCast Central Build Environment Setup Software Utilities  
(Unmodified COTS)

Software Required For Build	Software Version	Filename
7-Zip	9.20	7z920.exe
Active Perl 64-bit	5.12.4.1205	ActivePerl-5.12.4.1205-MSWin32-x64-294981.msi
Nasm	2.09.07	nasm-2.09.07-win32.zip

Table 3-12 Democracy Suite 4.14 - ImageCast Central Software Build Library Source Code  
(Unmodified COTS)

Software Required For Build	Software Version	Filename
OpenSSL	FIPS 1.2.3	openssl-fips-1.2.3.tar.gz

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-13 Democracy Suite 4.14 - ImageCast Central Runtime Software Components (Unmodified COTS)**

Software Required For Testing ICC application	Software Version	Filename
Imgcomp.dll	2.11	apiman.zip
1 Wire driver 64-bit	4.03	install_1_wire_drivers_x64_v403.msi
Kofax VRS	4.50	Full CD from Kofax
VCredist	4/10/2006	vcredist_x86.exe

**Table 3-14 Democracy Suite 4.14 ImageCast Precinct Modified COTS Software Components**

Software Required For Testing	Software Version	Filename
uClinux	20070130	uClinux-dist-20070130.tar.gz
COLILO Boot Loader	20040221	Colilo20040221.tar.gz

**Table 3-15 Democracy Suite 4.14 ImageCast Evolution Modified COTS Software Components**

Software Required For Testing	Software Version	Filename
Kernel	2.6.30.9-dvs-21	uImage
U-BOOT	1.3.4.26	u-boot.bin

**Table 3-16 Democracy Suite 4.14 EMS Software Build Environment Components**

Software Required For Testing	Software Version	Filename
Microsoft Windows Server 2008 R2 x64	6.1	Microsoft DVD provided
7-Zip	9.20	7z920-x64.msi
Microsoft Visual Studio 2010	10.0	Microsoft DVD provided

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-16 Democracy Suite 4.14 EMS Software Build Environment Components (Continued)**

Software Required For Testing	Software Version	Filename
Microsoft SDK for Windows 7	7.1	GRMSDKX_EN_DVD.iso
Microsoft.NET Framework Library	4.0	
Microsoft Visual Studio 2010 Service Pack 1	10.0 SP1	VS2010SP1dvd1.iso
Microsoft patch KB2286556	N/A	VS10-KB2286556-x86.exe
ImgBurn	2.5.7.0	SetupImgBurn_2.5.7.0.exe
Infragistics NetAdvantage Win Forms 2011.1	2011 Vol.1	NetAdvantage_WinForms_20111.msi
TX Text Control Library for .NET	16.0	TX Text Control.NET for Windows Forms 16.0.exe
Speex	1.0.4	speex_win32_1.0.4_setup.exe
Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64)	2.0	vjredist64.exe
ActivePerl	5.12.4	ActivePerl-5.12.4.1205-MSWin32-x64-294981.msi

**Table 3-17 Democracy Suite 4.14 ImageCast Precinct Election Firmware Compiler**

Software Required For Testing	Software Version	Filename
g++ (GNU C++ compiler)	gcc3.4.0-20040603	m68k-uclinux-tools-c++-gcc3.4.0-20040603.sh

**Table 3-18 Democracy Suite 4.14 ImageCast Evolution Election Firmware Compiler**

Software Required For Testing	Software Version	Filename
g++ (GNU C++ compiler)	gcc-4.5.38-eglibc-2.11.38	freescale-powerpc-linux-gnu-2011.03-38.i686.rpm

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.1 Software (Continued)**

**Table 3-19 Democracy Suite 4.14 ImageCast Precinct Firmware Build Environment Components**

Software Required For Testing	Software Version	Filename
Ubuntu 10.04 LTS – Long-term support	10.04	ubuntu-10.04.2-desktop-amd64.iso
Toolchain Installation Script	N/A	Toolchain.sh
m68k uClinux tools base gcc	3.4.0-20040603	m68k-uclinux-tools-base-gcc3.4.0-20040603.sh
m68k uClinux tools c++ gcc	3.4.0-20040603	m68k-uclinux-tools-c++-gcc3.4.0-20040603.sh
m68k uClinux tools gdb	20040603	m68k-uclinux-tools-gdb-20040603.sh
OpenSSL	1.1.2	Openssl-fips-1.1.2.tar.gz

**Table 3-20 Democracy Suite 4.14 ImageCast Evolution Firmware Build Environment Components**

Software Required For Testing	Software Version	Filename
Ubuntu	10.04 LTS	ubuntu-10.04.3-desktop-i386.iso
LTIB	10.1.1a	ltib-10-1-1a-sv.tar.gz
g++ (GNU C++ compiler)	gcc-4.5.38-eglibc-2.11.38	freescale-powerpc-linux-gnu-2011.03-38.i686.rpm

**3.2 Equipment**

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

Every effort is made to verify that the COTS equipment has not been modified for use. Wyle will perform research using the COTS equipment manufacturers’ websites based on the serial and service tag numbers for each piece of equipment and will evaluate COTS hardware, system software and communications components for proven performance in commercial applications other than elections. For PCs, laptops, and servers, the service tag information is compared to the system information found on each machine. Physical external and internal examination is also performed to the best of Wyle’s abilities when the equipment is easily accessible without the possibility of damage. Hard drives, RAM memory, and other components are examined to verify that the components match the information found on the COTS equipment manufacturers’ websites.

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

The manufacturer provided the hardware listed in Table 3-21 for the purpose of testing two documented system configurations: Standard and Express. This hardware consists of PCs, Application/Database Servers, encrypted Network Attached Storage (NAS) servers, and ruggedized encrypted portable hard drives.

The system configurations consist of:

- **Standard:** (1) PC, (1) Application Server/ Database Server, (1) encrypted NAS for Application/Database Server
- **Express:** (1) PC and (1) Portable Hard Drive

**Table 3-21 Democracy 4.14 Voting System Equipment Descriptions**

Equipment	Manufacturer	Version/Model	Specifications	Serial Number
PC1	Dell	Precision T1500	Processor: Intel Core i7-860 2.8 GHz, Memory: 4x 1GB 1333MHz DDR3, Hard Drive Capacity: 500 GB	61VNNM1
PC2	Dell	Precision T1500	Processor: Intel Core i7-860 2.8 GHz, Memory: 4x 1GB 1333MHz DDR3, Hard Drive Capacity: 500 GB	61TPNM1
PC3	Dell	Precision T1500	Processor: Intel Core i7-860 2.8 GHz, Memory: 4x 1GB 1333MHz DDR3, Hard Drive Capacity: 500 GB	61YMMN1
PC4	Dell	Precision T1500	Processor: Intel Core i7-860 2.8 GHz, Memory: 4x 1GB 1333MHz DDR3, Hard Drive Capacity: 500 GB	61TNNM1
PC5	Dell	Inspiron One 2305	Processor: AMD Athlon II X2 240e 2.8 GHz, Memory: 8GB Dual Channel 1333MHz DDR3, Hard Drive Capacity: 1 TB	564C3P1
SERVER1	Dell	PowerEdge R610	Processor: Intel Xeon E5620 2.4 GHz, Memory: 8x 2GB 1333MHz DDR3, Hard Drive Capacity: 2x 500 GB	5M9NNM1
SERVER2	Dell	PowerEdge R610	Processor: Intel Xeon E5620 2.4 GHz, Memory: 8x 2GB 1333MHz DDR3, Hard Drive Capacity: 2x 500 GB	5M8PNM1
SERVER3	Dell	PowerEdge R610	Processor: Intel Xeon E5620 2.4 GHz, Memory: 8x 2GB 1333MHz DDR3, Hard Drive Capacity: 2x 500 GB	5M8QNM1

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

**Table 3-21 Democracy 4.14 Voting System Equipment Descriptions (Continued)**

Equipment	Manufacturer	Version/Model	Specifications	Serial Number
STORAGE1	Rocstor	Guardian 4RM Raid System	Disk space: 2 TB (Striped + Mirrored), Processor: 400 MHz storage I/O, Hot bus interface: eSATA, Drive bus interface: SATA II	ROC7326210 47/SB090101 54
STORAGE2	Rocstor	Guardian 4RM Raid System	Disk space: 2 TB, Processor: 400 MHz storage I/O, Hot bus interface: eSATA, Drive bus interface: SATA II	ROC7326210 45/SB090101 57
STORAGE3	Rocstor	Guardian 4RM Raid System	Disk space: 2 TB, Processor: 400 MHz storage I/O, Hot bus interface: eSATA, Drive bus interface: SATA II	ROC7326210 46/SB090101 61
STORAGE4	Rocstor	Commander 2UE Portable Hard Drive	Hard Drive Capacity: 500 GB	5VJ6V8HL
STORAGE5	Rocstor	Commander 2UE Portable Hard Drive	Hard Drive Capacity: 500 GB	5VJ48VFJ

In order to perform the software Witness and Trusted Builds, one Personal Computer has been provided as a build machine. The build machine is described in the table below:

**Table 3-22 Build Machine Description**

Equipment	Manufacturer	Version/Model	Serial Number	COTS/ Non-COTS
Build 1	Super Micro PC w/4 Hard Drives	PC w/4 Hard Drives	BM-57381-001	COTS

To support the test program, Dominion has provided additional supporting hardware for the provided Personal Computers. A list of these items is provided in Table 3-23.

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

**Table 3-23 Dominion 4.14 COTS Voting System Support Equipment**

Test Material	Make	Model	Quantity	Serial Number
COTS Central High Speed Scanner	Canon	DR-X10C	2	ED300874, ED300880
COTS Central high Speed Scanner	DRS	PhotoScribe 960	2	9002790-26, 9002547-25
iButton (SHA-1) with USB Reader/Writer	Maxim	USB R/W: DS9490R iButton: DS1963S	3	4D027C, 4C9CF5, 514DFD
iButton (SHA-1)	Maxim	DS1963S	2	4CE4C9, 4D064A
LCD Monitor	Soyo	18.5" wide LCD	1	DYLM19R6-KLE-10202
LCD Monitor	Samsung	23" wide LCD	1	MY23HVMS701197B
LCD Monitor	Dell	1909W	4	07E-4EUS, 07F-071S, 07F-06US, 07F-074S
LCD Monitor	Dell	N445N	3	2TWC, 2UOC, 2U6C
Audio Adapter	Soundwave	USB Soundwave 7.1 Audio Adapter	2	SW-57381-001, SW-57381-002
PCI Software	Soundwave	Soundwave 7.1 PCI Software	2	n/a
USB Software	Soundwave	USB Soundwave 7.1 Software	1	n/a
Networking Switch	D-Link	D-Link DES-1105 5-Port Switch	1	DRL728A001397
Mouse	Dell	USB w/rollerball	4	G1A00M0M, 10203JTI, LZA30491960, 438027372
Mouse	Microsoft	USB w/rollerball	1	X800898
Keyboard	Kensington	USB	1	D0713000487
Keyboard	Microsoft	USB	1	6968200717217
Keyboard	IBM	USB	1	2162079
Compact Flash Reader	SanDisk	USB	3	0171618, 0201833, 0171631
Networking Switch	D-Link	DGS-2208 8-Port Switch	2	F36J69C004821, F36J69C004824
Headphones	Radio Shack	33-276-01	1	Headphones
eSATA PCI Card (Installed into Servers and PCs)	SIIG, Inc.	eSATA II PCIe Pro Card	7	n/a
Card Reader	GGI Gear	Compact Flash Card Reader	4	CFRW-57381-001 thru 004
Sony	Headphone	MDR-G45LP-01	1	Sony

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

**Table 3-23 Dominion 4.14 COTS Voting System Support Equipment (Continued)**

Test Material	Make	Model	Quantity	Serial Number
Cyber Acoustics Headphone	Cyber Acoustics	ACM-70	2	DVS23000048
Sip & Puff	Origin Instruments	Air Voter	7	AV-57381-001 thru 003, 002251, 002268, 002267
Footswitch Pair	4	Kinesis	4	FS-57381-001 thru 004
#970 Armrest Sip & Puff Attachment	6	Enabling Devices	6	AR-57381-001 thru 006
Compact Flash	RiData	CFC-14A	50	Wyle-assigned numbers: CF-XXX

The table below provides the serial numbers of the equipment submitted for testing:

**Table 3-24 Democracy 4.14 Voting System Equipment**

Equipment	Description	Serial Number
ICP	Precinct Count Optical Scanner PCOS 320C	WLDAFBH0005, WLDAFBH0018, WLDAFBH0023
ICE	Precinct Count Optical Scanner PCOS 410A	T70251-ICE-01, T70251-ICE-02, T70251-ICE-03
ICP Ballot Box	Externally secure plastic ballot box	T70251-Box-04
	Externally secure metal ballot box	Box-57381-012, Box-57381-014
ICE Ballot Box	Externally secure plastic ballot box	T70251-Box-02, T70251-Box-03

**3.3 Test Support Materials**

This subsection enumerates any and all test materials needed to perform voter system testing. The scope of testing determines the quantity of a specific material required.

The following test materials are required to support the Democracy Suite 4.14 certification testing:

**Table 3-25 Democracy Suite 4.14 Test Support Materials**

Test Material	Quantity	Make	Model
Hasp Locks (red)	50	N/A	N/A
Tamper Evident Seals	50	N/A	SE-37
Disposable Gloves	3	N/A	N/A
Gloves and Mouthpiece Kit	17	N/A	N/A
Green and White Mouthpiece Kit	5	N/A	N/A
Black and Clear Mouthpiece	2	N/A	N/A
ATI Handsets	12	Dominion	ATI-57381-001 thru 012



**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

**Table 3-25 Democracy Suite 4.14 Test Support Materials (Continued)**

Test Material	Quantity	Make	Model
Black Ballot Privacy Sleeves	4	Dominion	N/A
White Ballot Privacy Sleeves	4	Dominion	N/A
Black Privacy Panels (set of 2 pieces)	4	Dominion	N/A
White Privacy Panels	4	Dominion	N/A
Thermal Printer Rolls	100	N/A	N/A
Combination Lock	2	MASTER Lock	646T
Keyed Lock	4	MASTER Lock	121Q
Security Keys	50	Maxim	N/A
Ballots	6000	Dominion	N/A
Dominion Cleaning Kit	2	Dominion	N/A
Permanent Markers	20	p/n SHARPIE1 BK	N/A

The materials listed below are to be delivered as part of the Democracy 4.14 System to the users:

**Table 3-26 Deliverable Materials**

Deliverable Material	Version	Description
Election Event Designer	4.14.8	EMS client application
Results Tally and Reporting	4.14.8	EMS client application
Audio Studio	4.14.8	EMS client application
Application Server	4.14.8	EMS server application
Datacenter Manager	4.14.8	EMS server application
ImageCast Evolution	400A w/Firmware version 4.14.6.1 loaded	Precinct ballot scanner and ADA accessible voting device
ImageCast Precinct	320A w/Firmware version 4.14.4 loaded	Precinct ballot scanner and ADA accessible voting device
ImageCast Central Count	Canon DR-X10C w/Firmware version 4.14.4 loaded AND/OR DRS PhotoScribe 960 w/firmware version 4.14.4	Central ballot scanner
ImageCast Evolution Plastic Ballot Box	BOX-410A	ICE Plastic Ballot box
ImageCast Precinct Metal Ballot Box	BOX-310A	ICP Metal Ballot box
ImageCast Precinct Plastic Ballot Box	BOX-330A	ICP Plastic Ballot box

**3.0 MATERIALS REQUIRED FOR TESTING (Continued)**

**3.2 Equipment (Continued)**

**Table 3-26 Deliverable Materials (Continued)**

<b>Deliverable Material</b>	<b>Version</b>	<b>Description</b>
Rocstor Encrypted NAS	Dell PowerEdge R610	Encrypted Network Attached Storage module for server and data backup
Rocstor Portable Hard Drive	Rocstor Commander 2UE Portable Hard Drive	Encrypted and ruggedized external hard drive
iButton with Reader/Writer	Maxim USB R/W: DS9490R iButton: DS1963S	Security authentication token with programmer
Gigabit Network Switch	D-Link DGS-2208 8-Port Switch	Network switch for standard or enterprise configuration
ICE/ICP Headphones	Cyber Acoustics	Headphones used for audio voting
Sip/Puff Device	Origin Instruments Air Voter	Binary input device for disabled voters
ICP System Operation Procedures	1.1.0::155	TDP Document
EMS System Operation Procedures	1.2.0::413	TDP Document
ICE System Operation Procedures	1.0.0::95	TDP Document
ICC System Operation Procedures	1.1.0::76	TDP Document
ICP System Maintenance Manual	1.1.0::66	TDP Document
ICE System Maintenance Manual	1.1.0::115	TDP Document
EMS System Maintenance Manual	1.0.0::50	TDP Document
Election Event Designer User's Guide	1.0.0::61	TDP Document
Results Tally and Reporting User's Guide	1.0.0::67	TDP Document
Audio Studio User's Guide	1.0.0::24	TDP Document

**4.0 TEST SPECIFICATIONS**

Modification testing of the Democracy Suite 4.14 is the configuration submitted in the EAC application DVS-1201. Wyle qualified personnel will ensure that all certification testing performed on the manufacturer's voting system follows Wyle's 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.

Below is a list of EAC Request for Interpretations (RFI) and Notice of Clarifications (NOC) that will be incorporated in the test campaign:

#### 4.0 TEST SPECIFICATIONS (Continued)

##### Interpretations

2012-06 EAC Decision on Use of Public Telecommunications Networks and Data Transmission  
2012-05 EAC Decision on Public Telecommunications and Cryptography  
2012-04 EAC Decision on Software Setup Validation  
2012-03 EAC Decision on Configuration of COTS Products  
2012-02 EAC Decision on Transmission of Results (Official and Unofficial Results)  
2012-01 EAC Decision on Ballot Handling – Multi-feed  
2010-08 EAC Decision on Calling Sequence  
2010-07 EAC Decision on Module Length  
2010-06 EAC Decision on DRE Accessibility Requirements and Other Accessible Voting stations  
2010-05 EAC Decision on Testing of Modifications to a Certified System  
2010-04 EAC Decision on Functional Requirements with Respect to Security  
2010-03 EAC Decision on Database Coding Conventions  
2010-01 EAC Decision on Voltage Levels and ESD Test  
2009-06 EAC Decision on Temperature and Power Variation  
2009-05 EAC Decision on T-Coil Requirements  
2009-04 EAC Decision on Audit Log Events  
2009-03 EAC Decision on Battery Backup for Central Count Systems  
2009-02 EAC Decision on Alternate Languages  
2009-01 EAC Decision on VVPAT Accessibility New  
2008-12 AC Decision on Ballot Marking Device/Scope of Testing  
2008-10 EAC Decision on Electrical Fast Transient  
2008-09 EAC Decision on Safety Testing  
2008-08 EAC Decision on Automatic Bar Code Readers  
2008-07 EAC Decision on Zero Count to Start Election  
2008-06 EAC Decision on Battery Backup for Central Count  
2008-05 EAC Decision on Durability  
2008-04 EAC Decision on Supported Languages  
2008-03 EAC Decision on OS Configuration  
2008-02 EAC Decision on Battery Backup for Optical Scan Voting Machines  
2008-01 EAC Decision on Temperature and Power Variation  
2007-06 EAC Decision on Recording and Reporting Undervotes  
2007-05 EAC Decision on Testing Focus and Applicability  
2007-04 EAC Decision on Presentation of Alternative Language

#### 4.0 TEST SPECIFICATIONS (Continued)

2007-03 EAC Decision on Summative Usability Testing

2007-02 EAC Decision on Variable Names

2007-01 EAC Decision on Accessible Design

##### Notice of Clarifications

NOC 2012-02 – Clarification of System Identification Tool Functionality

NOC 2012-01 – Clarification of COTS Product Equivalency for De Minimis Change

NOC 2011-01 – Clarification of De Minimis Change Determination Requirements Related to Data

NOC 09-005 – Development and Submission of Test Plans for Modifications to EAC Certified Systems

NOC 09-004 – Development and Submission of Test Reports

NOC 09-003 – De Minimis Change Determination Requirement

NOC 09-002 -- Laboratory Independence Requirement

NOC 09-001 -- Requirements for Test Lab Development and Submission of Test Plans

NOC 08-003 -- EAC Conformance Testing Requirements

NOC 08-002 -- EAC Mark of Certification

NOC 08-001 -- Validity of Prior Non-core Hardware Environmental and EMC Testing

NOC 07-005 -- Voting System Test Laboratory Responsibilities in the Management and Oversight of Third Party Testing

NOC 07-004 -- Voting System Manufacturing Facilities

NOC 07-003 -- State Testing Done in Conjunction with Federal Testing within the EAC Program

NOC 07-002 -- VSTL Work with Manufacturers Outside of Voting System Certification Engagements

NOC 07-001 -- Timely Submission of Certification Application

#### 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 Dominion Democracy Suite 4.14 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 the Usability Test utilizing a combination of the “Wyle Baseline Test Cases” and the “Wyle Baseline Usability Test Cases”. The data input during this test will be the predefined election definitions submitted as part of the Test Plan Package.

#### 4.0 TEST SPECIFICATIONS (Continued)

##### 4.1 Requirements (Strategy of Evaluation)

- **Section 4: Hardware Requirements** – The requirements in this section will be tested and/or evaluated by trained Wyle personnel per sections 4.4.2 and the table in section 6.
- **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 6: Telecommunication** – A test of the telecommunication technologies utilized by the Dominion Democracy Suite 4.14 will be tested for data accuracy and correctness by analyzing the packet level information being transmitted. Section 6.2.6 will be excluded since the Democracy Suite 4.14 does not support the use of public networks.
- **Section 7: Security Requirements** – The requirements in this section will be tested during source code review, FCA, System Integration, and Security Tests.
- **Section 8: Quality Assurance (QA) Requirements** – The requirements in this section will be tested throughout the test campaign via various methods. TDP review will be performed on the Dominion QA documentation to determine compliance to EAC 2005 VVSG requirements and the requirements stated in the Dominion Voting Systems QA Program document. All source code will be checked to ensure that proper QA documentation has been completed. All equipment received for initial testing and follow up testing will be checked against Dominion documentation to ensure their QA process is being followed. Wyle personnel will complete the requirements of EAC 2005 VVSG Vol. 2 Section 7, Quality Assurance Testing and Section 1.3.1.5, Focus of Vendor Documentation that requires Wyle personnel to physically examine documents at Dominion’s location or conduct an external evaluation utilizing equipment, documents and support information provided by Dominion during the test campaign.
- **Section 9: Configuration Management (CM) Requirements** – The requirements in this section will be tested throughout the test campaign. TDP review will be performed on the Dominion configuration management documentation to determine EAC 2005 VVSG compliance and to further determine whether Dominion is following its documented CM requirements within the TDP. During source code review, Wyle qualified personnel will verify that Dominion Voting Systems is following EAC 2005 VVSG CM requirements as well as Dominion CM requirements. Any anomalies will be formally reported to Dominion and the EAC. All equipment received for testing will be checked against Dominion documentation to ensure their CM process is being followed.

Wyle 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 requirements pertaining to the test environment, the equipment arrangement and method of operation, the specified test procedure, or the provision of test instrumentation and facilities, the deviation 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.)

Wyle 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 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.

#### 4.0 TEST SPECIFICATIONS (Continued)

#### 4.1 Requirements (Strategy of Evaluation) (Continued)

The designated Wyle Operating Procedures (WoP's) 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 WoP's 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 9 Electromagnetic Emissions
- WoP 21 Environmental Operating\_Accuracy\_Reliability (Temp/Power)
- WoP 24 1 – 1g Usability
- WoP 24 2 – 2h Accessibility
- WoP 25 Physical Configuration Audit
- WoP 26 Functional Configuration Audit
- WoP 27 Maintainability
- Wop 28 Availability
- Wop 29 Electrical Supply
- WoP 30 System Integration Test
- WoP 31 Telecommunications
- WoP 34 Test Report
- WoP 36 Vote Recording Requirements
- Wop 40 System Level Stress Test
- WoP 41 Logic & Accuracy

#### 4.1.1 Rationale for 'Not Applicable' Requirements

The Dominion Voting Systems Democracy Suite 4.14 is a paper-based precinct counting system that supports a closed network (does not support transmission over public networks). Therefore, all EAC 2005 VVSG requirements, with the exceptions listed below, will be evaluated as part of this test campaign.

**4.0 TEST SPECIFICATIONS (Continued)**

**4.1.1 Rationale for ‘Not Applicable’ Requirements (Continued)**

- Volume I Section 6.2.6 (Telecommunication Requirements)
- Volume I Section 7.5.2 – 7.5.4 (Telecommunications and Data Transmission)
- Volume I Section 7.6 (Use of Public Communication Networks)
- Volume I Section 7.7 (Wireless Communications)
- Volume I Section 7.9 (Voter Verifiable Paper Audit Trail Requirements)

The rationale for not evaluating the Democracy Suite 4.14 to the requirements contained in the indicated sections of the EAC 2005 VVSG is described below.

**Table 4-1 Not Applicable Requirements**

EAC 2005 VVSG Volume I Section	Rationale for ‘Not Applicable’
6.2.6, 7.5.2, and 7.5.3	These requirements are written for use of public networks. The Dominion Democracy Suite 4.14 does not use public networks.
7.5.4	This section was intended for a shared operating environment on ballot recording and vote counting equipment. The ICE and ICP use dedicated operating environments and will be excluded from this requirement. The EMS and ICC components do use a shared operating environment and will be tested to this VVSG clause.
7.6	This section pertains to “Voting systems that transmit data over public telecommunications...” The Dominion Democracy Suite 4.14 does not support transmission over public networks.
7.7	No wireless technology is present in the Dominion Democracy Suite 4.14.
7.9	The Dominion Democracy Suite 4.14 is a paper based system.

**4.2 Hardware Configuration and Design**

The Dominion Voting Systems Democracy Suite is a paper-based optical scan voting system. The Democracy Suite system consists of four major components: the EMS, ICE precinct scanner and ballot marking device, ICP precinct scanner, and ICC central count scanner. The Democracy Suite is comprised of two proprietary pieces of hardware (ICE and ICP) and one piece of COTS hardware (ICC). All EMS functions are handled by proprietary software running on COTS PC/laptops/servers. Wyle 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.

ICP – Wyle Laboratories previously performed testing to the EAC 2005 VVSG during the Democracy Suite 4.0 approved certification testing (EAC CERTIFICATION NUMBER – DVS-40-G). Wyle will be utilizing the data obtained during that test effort to satisfy requirements for this modification test campaign.

ICE - ICE will be set on the ballot box to simulate the actual election configuration. During operational tests the unit will be in auto feed mode (“Shoe-Shine”) and scan test ballots for the duration of the operational test.

#### 4.0 TEST SPECIFICATIONS (Continued)

#### 4.2 Hardware Configuration and Design (Continued)

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 test to be further analyzed, compiled and included in the Reliability and Availability Test results.

ICC - ICC consists of COTS scanners and COTS Workstation PCs. The Canon DR-X10C scanners, the DRS PhotoScribe 960 scanners, and the Dell Inspiron One 2305 Workstation PCs contain CE, UL, and FCC labeling. The PhotoScribe 960 scanners will be submitted for Temperature and Power Variation testing during this test campaign, while the hardware testing for the Canon DR-X10C scanners will be accepted from the original Democracy Suite 4.0 (EAC CERTIFICATION NUMBER – DVS-40-G).

#### 4.3 Software System Functions

The Dominion Democracy Suite 4.14 System software is written in the C, C++, C# (C Sharp) programming languages. The system software is broken into three areas: EMS, Precinct tabulator software acting as firmware, and central count application running on a COTS workstation.

The Democracy Suite EMS software consists of the seven components listed below:

- Election Event Designer
- Results Tally and Reporting
- Audio Studio
- Datacenter Manager
- Application Server
- Network Attached Storage Server
- Database Server

The Democracy Suite 4.14 contains two precinct tabulators. Both tabulators run software that is treated as firmware. The software applications are ICP and ICE. The Democracy Suite 4.14 has an independent workstation running proprietary software. The ICC application provides the central tabulation function for the system.

#### 4.4 Test Case Design

Wyle 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’s test approach is to use both “Verification” and “Validation” to some degree. There are four basic levels of testing in the V-Model Life Cycle: Component, Integration, System, and Acceptance. Wyle will be evaluating the Dominion Democracy Suite 4.14 to all four levels.

##### 4.4.1 Hardware Qualitative Examination Design

###### ICP Testing

Wyle Laboratories previously performed testing to the EAC 2005 VVSG during the Democracy Suite 4.0 approved certification testing (EAC CERTIFICATION NUMBER – DVS-40-G). Wyle will be utilizing the data obtained during that test effort to satisfy requirements for this modification test campaign.



**4.0 TEST SPECIFICATIONS (Continued)**

**4.4.1 Hardware Qualitative Examination Design (Continued)**

A PCA and quick scan was performed on the ICE component to verify the changes and effects caused by the changes to the unit. No additional hardware testing will be required based on the findings of the evaluation.

The summary of acceptable testing is provided in the table below. The details of those tests are presented in Section 6.0.

**Table 4-2 ICP Hardware Test Examination Results**

<b>Test/EAC 2005 VVSG Section</b>	<b>Procedure/Description</b>	<b>Configuration Tested</b>	<b>Status</b>
<i>Usability/3.1</i>	Measure of the effectiveness, efficiency, and satisfaction achieved by a specified set of users	ICP	Accept
<i>Accessibility/3.2</i>	Tests the voting system to ensure accessibility for individuals with disabilities to include, but not limited to visually impaired voters by providing the same access and participation opportunity.	ICP	Accept
<i>Security/7</i>	Tests the ability of the system to detect, prevent, log, and recover from a broad range of security risks identified.	ICP	Accept
<i>Maintainability/4.3.4</i>	Tests the ease in which preventative and corrective maintenance actions can be performed based on design, software, and documentation.	ICP	Accept
<i>Availability/4.3.5</i>	Tests the voting system to help ensure the probability that the equipment will be operational and accomplish set functions. This shall be calculated using the following formula at a 99% availability rate: $A_i = (MTBF) / (MTBF + MTTR)$	ICP	Accept
<i>Safety/4.3.8</i>	UL 60950-1 product safety review	ICP	Accept*
<i>Electrical Supply/4.1.2.4</i>	Meets voltage and power requirements of EAC 2005 VVSG Vol. 1 Section 4.1.2.4	ICP	Accept
<i>Electromagnetic Radiation/4.1.2.9</i>	FCC Part 15 Class B for both radiated and conducted emissions	ICP	Wyle 7/13/12
<i>Electromagnetic Susceptibility/4.1.2.10</i>	IEC 61000-4-3 electromagnetic field of 10V/m modulated by a 1kHz, 80% AM modulation at 80MHz to 1000MHz frequency	ICP	Accept
<i>Temperature/Power Variation/4.1.2.13</i>	MIL-STD-810D, Method 502.2 and Method 501.2 163 hours at 50 degrees to 95 degrees	ICP	Accept
<i>High Temperature/4.1.2.14</i>	MIL-STD-810D, Method 501.2 maximum temperature shall be 140 degrees F	ICP	Accept
<i>Low Temperature/4.1.2.14</i>	MIL-STD-810D minimum temperature shall be -4 degrees F	ICP	Accept
<i>Bench Handling</i>	MIL-STD-810D, Method 516.3 Procedure VI six 4" drops on each edge totaling 24 drops	ICP	Accept

**4.0 TEST SPECIFICATIONS (Continued)**

**4.4.1 Hardware Qualitative Examination Design (Continued)**

**Table 4-2 ICP Hardware Test Examination Results (Continued)**

<b>Test/EAC 2005 VVSG Section</b>	<b>Procedure/Description</b>	<b>Configuration Tested</b>	<b>Status</b>
<i>Vibration/4.1.2.14</i>	MIL-STD-810D, Method 514.3 physical shock and vibration during handling and transport	ICP	Accept
<i>Humidity Test/4.1.2.14</i>	MIL-STD-810D, Method 501.2 ten 24 hour humidity cycles	ICP	Accept
<i>Electrical Power Disturbance/4.1.2.5</i>	IEC 61000-4-11 (1994-06) power surges and dips	ICP	Accept
<i>Electrical Fast Transient/4.1.2.6</i>	IEC 61000-4-4 (1995-01)	ICP	Accept
<i>Lightning Surge/4.1.2.7</i>	IEC 61000-4-5 (1995-02)	ICP	Accept
<i>Electrostatic Disruption/4.1.2.8</i>	IEC 61000-4-2 (1995-01) 15kV air discharge and 8kV contact discharge	ICP	Accept
<i>Conducted RF Immunity/4.1.2.11</i>	IEC 61000-4-6 (1996-04) conducted radio frequency energy	ICP	Accept
<i>Magnetic Fields Immunity/4.1.2.12</i>	IEC 61000-4-8 (1993-06) AC magnetic fields of 30 A/m at 60Hz	ICP	Accept

\*Safety testing was witnessed by Wyle at a third party laboratory

ICE Testing

The Dominion Democracy Suite 4.14 ICE hardware will be tested by the Wyle Laboratories' EMI, Dynamics, and Environmental test facilities for testing to the hardware requirements in accordance with Wyle Laboratories A2LA certifications 845.01-.03. All EMI testing will be performed per the following 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". These proprietary documents shall be submitted under separate cover for reference. All hardware testing will be performed per the guidelines of ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements", and ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment" and the governing MIL-STD to which the test is required. All pre-voting and post-voting tests will be conducted by Wyle qualified personnel at the Wyle Huntsville, AL facility.

Wyle Laboratories previously performed testing to the EAC 2005 VVSG during the Democracy Suite 4.0 approved certification testing (EAC CERTIFICATION NUMBER – DVS-40-G). Wyle will be utilizing a portion of the data obtained during that test effort to satisfy requirements for this modification test campaign.

A PCA and quick scan was performed on the ICE component to verify the changes and effects caused by the changes to the unit. No additional hardware testing will be required based on the findings of the evaluation. Additional testing as documented in table 4-3 will be required based on the introduction of a new plastic ballot box.

The summary of acceptable testing is provided in the table below. The details of those tests are presented in Section 6.0.

**4.0 TEST SPECIFICATIONS (Continued)**

**4.4.1 Hardware Qualitative Examination Design (Continued)**

**Table 4-3 ICE Hardware Test Examination Results**

<b>Test/EAC 2005 VVSG Section</b>	<b>Procedure/Description</b>	<b>Configuration Tested</b>	<b>Status</b>
<i>Usability/3.1</i>	Measure of the effectiveness, efficiency, and satisfaction achieved by a specified set of users	ICE	Reject
<i>Accessibility/3.2</i>	Tests the voting system to ensure accessibility for individuals with disabilities to include, but not limited to visually impaired voters by providing the same access and participation opportunity.	ICE	Reject
<i>Security/7</i>	Tests the ability of the system to detect, prevent, log, and recover from a broad range of security risks identified.	ICE	Reject
<i>Maintainability/4.3.4</i>	Tests the ease in which preventative and corrective maintenance actions can be performed based on design, software, and documentation.	ICE	Accept
<i>Availability/4.3.5</i>	Tests the voting system to help ensure the probability that the equipment will be operational and accomplish set functions. This shall be calculated using the following formula at a 99% availability rate: $A_i = (MTBF) / (MTBF + MTTR)$	ICE	Accept
<i>Safety/4.3.8</i>	UL 60950-1 product safety review	ICE	Accept*
<i>Electrical Supply/4.1.2.4</i>	Meets voltage and power requirements of EAC 2005 VVSG Vol. 1 Section 4.1.2.4	ICE	Accept
<i>Electromagnetic Radiation/4.1.2.9</i>	FCC Part 15 Class B for both radiated and conducted emissions	ICE	Wyle 7/13/12
<i>Electromagnetic Susceptibility/4.1.2.10</i>	IEC 61000-4-3 electromagnetic field of 10V/m modulated by a 1kHz, 80% AM modulation at 80MHz to 1000MHz frequency	ICE	Accept
<i>Temperature/Power Variation/4.1.2.13</i>	MIL-STD-810D, Method 502.2 and Method 501.2 163 hours at 50 degrees to 95 degrees	ICE	Accept
<i>High Temperature/4.1.2.14</i>	MIL-STD-810D, Method 501.2 maximum temperature shall be 140 degrees F	ICE	Accept
<i>Low Temperature/4.1.2.14</i>	MIL-STD-810D minimum temperature shall be -4 degrees F	ICE	Accept
<i>Bench Handling</i>	MIL-STD-810D, Method 516.3 Procedure VI six 4" drops on each edge totaling 24 drops	ICE	Accept
<i>Vibration/4.1.2.14</i>	MIL-STD-810D, Method 514.3 physical shock and vibration during handling and transport	ICE	Accept
<i>Humidity Test/4.1.2.14</i>	MIL-STD-810D, Method 501.2 ten 24 hour humidity cycles	ICE	Accept

**4.0 TEST SPECIFICATIONS (Continued)**

**4.4.1 Hardware Qualitative Examination Design (Continued)**

**Table 4-3 ICE Hardware Test Examination Results (Continued)**

Test/EAC 2005 VVSG Section	Procedure/Description	Configuration Tested	Status
<i>Electrical Power Disturbance/4.1.2.5</i>	IEC 61000-4-11 (1994-06) power surges and dips	ICE	Accept
<i>Electrical Fast Transient/4.1.2.6</i>	IEC 61000-4-4 (1995-01)	ICE	Accept
<i>Lightning Surge/4.1.2.7</i>	IEC 61000-4-5 (1995-02)	ICE	Accept
<i>Electrostatic Disruption/4.1.2.8</i>	IEC 61000-4-2 (1995-01) 15kV air discharge and 8kV contact discharge	ICE	Accept
<i>Conducted RF Immunity/4.1.2.11</i>	IEC 61000-4-6 (1996-04) conducted radio frequency energy	ICE	Accept
<i>Magnetic Fields Immunity/4.1.2.12</i>	IEC 61000-4-8 (1993-06) AC magnetic fields of 30 A/m at 60Hz	ICE	Accept

\*Safety testing was witnessed by Wyle at a third party laboratory

ICC Testing

ICC - ICC consists of COTS scanners and COTS Workstation PCs. The Canon DR-X10C scanners, the DRS PhotoScribe 960 scanners, and the Dell Inspiron One 2305 Workstation PCs contain CE, UL, and FCC labeling. The PhotoScribe 960 scanners will be submitted for the following hardware tests during this test campaign: Maintainability, Electrical Supply, and Temperature and Power Variation. These hardware tests, however, were performed on the Canon DR-X10C scanners and results will be accepted for this test campaign.

**Table 4-4 ICC Hardware Test Examination Results**

Test/EAC 2005 VVSG Section	Procedure/Description	Configuration Tested	Status
<i>Maintainability/4.3.4</i>	Tests the ease in which preventative and corrective maintenance actions can be performed based on design, software, and documentation.	ICC	Accept for Canon DR-X10C
<i>Electrical Supply/4.1.2.4</i>	Meets voltage and power requirements of EAC 2005 VVSG Vol. 1 Section 4.1.2.4	ICC	Accept for Canon DR-X10C
<i>Temperature/Power Variation/4.1.2.13</i>	MIL-STD-810D, Method 502.2 and Method 501.2 163 hours at 50 degrees to 95 degrees	ICC	Accept for Canon DR-X10C
<i>Availability/4.3.5</i>	Tests the voting system to help ensure the probability that the equipment will be operational and accomplish set functions. This shall be calculated using the following formula at a 99% availability rate: $A_i = (MTBF) / (MTBF + MTTR)$	ICC	Accept for Canon DR-X10C

## 4.0 TEST SPECIFICATIONS (Continued)

### 4.4.1 Hardware Qualitative Examination Design (Continued)

#### Support Equipment

Dominion submitted COTS PCs and Laptops to be used during the test campaign that were labeled CE, UL, and FCC compliant. Wyle reviewed this documentation to ensure that it meets the requirements of the EAC 2005 VVSG.

### 4.4.2 Software Module Test Case Design and Data

Wyle implements Component Level Testing during the FCA for each component and subcomponent, exercising the functionality of each component and subcomponent as designed and documented. Wyle 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 will depend heavily on specification-based techniques (black-box testing) for the individual software components.

The most common specification-based techniques applied to the Dominion Voting Systems Democracy Suite 4.14 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 Democracy Suite 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.
- “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 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 has not been corrected or the SUT still does not perform as expected, the SUT will have failed the test.

Wyle will document the error and track the error through resolution. Wyle 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.

### 4.4.3 Software Functional Test Case Design and Data

Wyle implements Integration Level Testing primarily focusing on the interface between components and applications.

## 4.0 TEST SPECIFICATIONS (Continued)

### 4.4.3 Software Functional Test Case Design and Data (Continued)

The test approach to be used for the Dominion Democracy Suite 4.14 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 at the Integration Level is “Use Case”. The actors that have been identified to use the Dominion Democracy Suite 4.14 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 the ICE and ICP units. This actor also runs diagnostic tests and maintains the units
- Poll Worker- the actor at the precinct location to set up and close down the ICE and ICP 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 results 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.

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.

### 4.4.4 System-Level Test Case Design

Wyle 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 Dominion Democracy Suite 4.14 is intended to support both large and small jurisdictions. Wyle’s approach for Dominion Democracy Suite 4.14 will be to execute System Level Testing with a variety of elections that include various combinations of jurisdictions, parties, and ballot styles. Wyle will have three different test setup configurations for the EMS components as referenced in section 1.4.1 of this document.

Wyle 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.

## **4.0 TEST SPECIFICATIONS (Continued)**

### **4.4.4 System-Level Test Case Design (Continued)**

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 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, volume testing, stress testing, telecommunication testing, usability testing, accessibility testing, and reliability testing activities will be combined to ensure all requirements that are supported by the Dominion Democracy Suite 4.14 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 Dominion Democracy Suite 4.14 will be documented. Any issues documented during testing will be resolved or annotated in the test report.

Wyle will report all issues discovered during this test campaign to the EAC. The EAC has the final determination on whether the system meets all the requirements for an EAC certified system. The ACCEPT/REJECT criteria for Acceptance Level testing is whether or not the data for the test campaign supports a recommendation for certification by the EAC. If Wyle determines there is not enough data to ensure a requirement was met, the test plan will be altered and further testing will be done.

## **4.5 Security Functions**

The purpose of the security testing will be to evaluate the effectiveness of the Democracy Suite in detecting, preventing, logging, reporting, and recovering from any security risks identified by simulating attacks on the system. To accomplish this, Wyle has developed internal operating procedures to evaluate the Dominion Democracy Suite 4.14 to the security requirements set forth in the EAC 2005 VVSG.

These procedures have been specifically tailored to assess the Dominion Democracy Suite 4.14 to the applicable requirements. Wyle will attempt to defeat the access controls and physical security measures documented in the Dominion technical data package. A threat matrix will be created to determine the risks and vulnerabilities. Wyle will utilize a combination of functional testing, source code review, and Fortify™ SCA to evaluate the Democracy Suite 4.14 Voting System. Wyle’s strategy for evaluating the Democracy Suite will be to utilize the Express Hardware Configuration and the Standard Hardware Configuration.

The following areas are not applicable to the Democracy Suite 4.14 and are therefore not included in the scope of the security testing:

- Use of Public Networks
- Wireless Communication

Wyle will report all issues discovered during this test campaign to Dominion and the EAC. A report containing all findings shall be issued to the EAC as an addendum to the final test report.

## **4.6 TDP Evaluation**

Wyle qualified personnel will perform a comprehensive review of the Dominion TDP to determine compliance to the EAC 2005 VVSG requirements and Dominion-specific requirements.

**4.0 TEST SPECIFICATIONS (Continued)**

**4.6 TDP Evaluation (Continued)**

Wyle qualified personnel utilize a TDP Review Matrix which lists every EAC 2005 VVSG requirement pertaining to TDP review. Wyle 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 Dominion 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 Dominion Democracy Suite 4.14 System TDP is provided in Table 4-5.

**Table 4-5 Democracy Suite 4.14 TDP Documents**

Democracy Suite System Overview	All	1.2.0::240	10-16-2012	2.02
System Security Specification	All	1.1.0::305	10-16-2012	2.06
Configuration Management Process	All	1.2.0::165	10-16-2012	2.11
Quality Assurance Program	All	1.2.0::80	10-16-2012	2.12
System Test and Verification	All	1.1.0::104	10-16-2012	2.07
System Test and Verification Suites	All	1.2.0::3	1-26-2012	2.07
Personnel Deployment and Training Requirements	All	1.1.0::49	10-16-2012	2.10
<i>Documents describing functionality, hardware, software design, maintenance, and operation:</i>				
EMS Functionality Description	EMS	1.1.0::227	10-16-2012	2.03
ICE Functionality Description	ICE	1.2.0::66	10-16-2012	2.03
ICP Functionality Description	ICP	1.1.0::109	10-16-2012	2.03
ICC Functionality Description	ICC	1.1.0::55	10-16-2012	2.03
ICE System Hardware Specification	ICE	1.2.0::274	10-16-2012	2.04
ICP System Hardware Specification	ICP	1.1.0::73	10-16-2012	2.04
ICE System Hardware Characteristics	ICE	1.2.0::84	10-16-2012	2.04
ICP System Hardware Characteristics	ICP	1.1.0::44	10-16-2012	2.04
EMS Software Design and Specification	EMS	1.0.0::200	10-16-2012	2.05
ICE Software Design and Specification	ICE	1.0.0::80	10-16-2012	2.05
ICP Software Design and Specification	ICP	1.1.0:101	10-16-2012	2.05
ICC Software Design and Specification	ICC	1.0.0::34	10-16-2012	2.05
ICP System Operation Procedures	ICP	1.1.0::155	10-16-2012	2.08
EMS System Operation Procedures	EMS	1.2.0::413	10-16-2012	2.08
ICE System Operation Procedures	ICE	1.0.0::95	10-16-2012	2.08
ICC System Operation Procedures	ICC	1.1.0::76	10-16-2012	2.08
ICP System Maintenance Manual	ICP	1.1.0::66	10-16-2012	2.09
ICE System Maintenance Manual	ICE	1.1.0::115	10-16-2012	2.09
EMS System Maintenance Manual	EMS	1.0.0::50	10-16-2012	2.09



**4.0 TEST SPECIFICATIONS (Continued)**

**4.6 TDP Evaluation (Continued)**

**Table 4-5 Democracy Suite 4.14 TDP Documents (Continued)**

EMS Election Event Designer User's Guide	EMS	1.0.0::61	10-16-2012	N/A
EMS Results Tally & Reporting User's Guide	EMS	1.0.0::67	10-16-2012	N/A
EMS Audio Studio User's Manual	EMS	1.0.0::24	10-16-2012	N/A
EMS Build and Install	EMS	2.1.0::5	10-3-2012	N/A
ICP Approved Parts List	ICP	V3	5-11-2011	N/A
ImageCast Precinct Device Configuration Files	ICP	1.0.0::22	7-27-2012	N/A
ImageCast Election Definition Files	ICP	3.0.6	9-25-2012	N/A
ImageCast Precinct Firmware Build and Install	ICP	1.0.0::25	10-3-2012	N/A
ImageCast Precinct Firmware Update Procedure	ICP	1.0.0::10	7-27-2012	N/A
ImageCast Precinct Technical Guide	ICP	1.0.0::8	7-27-2012	N/A
ICE Technical Guide	ICE	1.0.0::59	5-17-2012	N/A
ICE Build Procedure	ICE	1.0.0::36	7-27-2012	N/A
ICE Firmware Installation Procedure	ICE	1.0.0::27	7-27-2012	N/A
Engineering Product Development Processes	ICP	P0.2	7-23-2011	N/A
Dominion Voting C C++ Coding Standard	All	1.0.0::8	7-27-2012	N/A
Dominion Voting Usability Study	ICP	1.0.0::26	7-27-2012	N/A
Dominion Voting Usability Study	ICE	1.0.0::36	7-13-2012	N/A

**4.7 Source Code Review**

As part of the pre-testing activities, the Dominion Democracy Suite 4.14 source code will be reviewed to the EAC 2005 VVSG coding standards and the manufacturer supplied coding standards. The review will be conducted per the guidelines described in the following paragraphs.

As the source code is received, an SHA1 hash value will be created for each source code file. The source code team will then conducted a visual scan of every line of source code for an initial review and every line of modified source code for a re-review.

This is done to identify any violation of EAC 2005 VVSG coding standards or manufacturer supplied coding standards. Each identified violation will be recorded by making notes of the standards violation along with directory name, file name, and line number.

If the review was the initial review, the source code team performed a peer-review on a percentage of the code. This was done to evaluate the correctness of the review and look for standards violations that may have been missed or violations that were noted in error. Any standards violations that the team concluded were recorded in error or missed were then corrected in the code review notes.

A technical summary report of all identified standards violations will be sent to Dominion for resolution. Dominion will then correct all standards violations and re-submit the source code for re-review. This process will be repeated as many times as necessary, until all identified standards violations are corrected.

#### **4.0 TEST SPECIFICATIONS (Continued)**

#### **4.7 Source Code Review (Continued)**

All reports will be included in an anomaly report for source code and submitted to the EAC and included in the final test report.

Dominion Voting Systems uses an auto-feed option designed in the system to repetitively feed ballots in and out of the scanner. This feature is documented as “Auto-Feed” mode or “Shoe Shine” mode. As part of the source code review this function will be inspected in detail to meet the requirements of EAC 2005 VVSG Volume 1 Section 2.2.4 g and h. The final step will 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.

The “Trusted Build” for the Dominion Democracy Suite 4.14 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 Dominion Voting Systems. 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.

#### **4.8 QA and CM System Review**

The Dominion QA Plan and CM Plan state that they comply with ISO 9001 and cite internal Dominion ISO 9001 documentation for details. Both the Dominion 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 Dominion ISO documentation.

#### **4.0 TEST SPECIFICATIONS (Continued)**

#### **4.8 QA and CM System Review (Continued)**

Also, the Dominion TDP documentation package will be reviewed to determine if the Dominion 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 of this test plan. 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 Dominion Voting Systems for resolution. Additionally, all test results, including functional test data, will be recorded on the relevant Wyle Laboratories' Operating Procedure and Test Cases. Results will also be recorded real-time in engineering log books.

Wyle Laboratories, Inc. will evaluate all test results against the Dominion Voting Systems provided technical documentation for the Democracy Suite 4.14 and the requirements set forth in the EAC 2005 VVSG. The Democracy Suite 4.14 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 Democracy Suite 4.14 documentation. Per the EAC 2005 VVSG, these parameters shall encompass the test tolerances, 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, and 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 Laboratories' 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 the Wyle 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/NCSL Z540-1 and ISO 10012-1.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.1 Facility Requirements (Continued)

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 degrees 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  $\pm 3.6^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ )
- 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 test responsible agency with sufficient engineering information to substantiate the deviation request, but only when best effort technique and system limitations indicate the need for a deviation.

### 6.2 Test Set-Up

All voting machine equipment (hardware and software), shall be received and documented utilizing Wyle Receiving Ticket (WL-218, Nov'85) and proper QA procedures. When voting system hardware is received, Wyle Shipping and Receiving personnel will notify Wyle QA personnel. With Wyle 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 Dominion Voting Systems, Inc., representative shall be notified.

Wyle 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 Dominion Voting Systems, Inc., representative for resolution. TDP items, including all manuals, and all source code modules received will be inventoried and maintained by the Wyle Project Engineer assigned to testing.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.2 Test Set-Up (Continued)

For hardware test setup, the system will be configured as would for normal field use. This includes connecting all supporting equipment and peripherals. Wyle personnel will properly configure and initialize the system, and verify that it is ready to be tested, by following the procedures detailed in the Democracy Suite 4.14 technical documentation.

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

Wyle 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 Democracy Suite 4.14 System, during the operational hardware tests, and prior to and immediately following the non-operational hardware tests.

#### Accuracy

This test must exercise all possible voting positions for the ballot.

#### 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

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.2 Test Set-Up (Continued)

- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

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. Test Pattern 8 was chosen for audio input in an alternative language because it is a basic voting pattern using an ADA device. Test pattern 9 was chosen for audio input to demonstrate support for write-in voting using an ADA device. Test Pattern 3 was chosen for Spanish language input because it is a basic vote pattern using Spanish. Test Pattern 10 was chosen for Spanish language input because it exercises write-in using Spanish.

#### 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

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.2 Test Set-Up (Continued)

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 election will be an early voting election with at least one machine running all precincts. Voting options for overvoting and undervoting will be exercised. Ballots 7 and 16 were selected for Spanish based language input. Ballots 13 and 17 were selected for casting of ballot using the ADA Audio capability.

#### 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

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. Test patterns 3 and 4 were chosen for input in the Spanish language because they are a basic voting pattern with a write-in. Test patterns 5 and 6 were chosen for audio input using the Spanish language to demonstrate support for write-in voting using an ADA device with an alternative language. Test pattern 7 was chosen for character-based language input because it is a basic vote pattern using Chinese.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.2 Test Set-Up (Continued)

Test pattern 8 was chosen for character-based language using an ADA device to demonstrate support for character-based ADA device support. Test pattern 9 was chosen for binary input to show support for ADA binary input device. Test pattern 10 was chosen for binary input using ADA audio device to show support for binary input and ADA support.

#### Primary Election: PRIM-01

An open primary election in two precincts, 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: 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: 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

This election designed to functionally test an open primary with multiple ballot styles, support for two languages, and support for common voting variations. Test patterns 5 and 18 are input in an alternative language. Test patterns 8 and 18 are input using an ADA audio device. These patterns were select to exercise the write-in functionality in a primary election.



## 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.

- Closed Primary: No
- Open Primary: Yes
- Partisan Offices: Yes
- Non-Partisan Offices: Yes
- Write-in Voting: Yes
- Primary Presidential Delegation Nominations: Yes
- Ballot Rotation: No
- Straight Party voting: No
- Cross-Party Endorsement: Yes
- Split Precincts: No
- Vote for N of M: No
- Recall Issues With Options: No
- Cumulative Voting: No
- Ranked Order Voting: No
- Provisional or Challenged Ballots: No
- Early Voting: No

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 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. Ballots 5 and 18 were selected for Spanish based language input. Ballots 8 and 17 were selected for casting of ballot using the ADA Audio capability.

## 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

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. Test patterns 3 and 4 were chosen for input in the Spanish language because it is a basic voting pattern with a write-in. Test patterns 5 and 6 were chosen for audio input using the Spanish language to demonstrate support for write-in voting using an ADA device with and alternative language. Test pattern 7 was chosen for Ideographic based language input because it is a basic vote pattern using Chinese. Test pattern 8 was chosen for character based language using an ADA device to demonstrate support for Ideographic based ADA device support. Test pattern 9 was chosen for binary input to show support for ADA binary input device. Test pattern 10 was chosen for binary input using ADA audio deceive to show support for binary input and ADA support.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.3 Test Sequence

The ICE component of the Democracy Suite 4.14 underwent a PCA and quick scan to verify the changes and effects caused by the changes to the unit. No Additional testing will be required based on the findings of the evaluation. There is not a required sequence for the tests to be performed and only the tests utilized during the quick scan shall be listed. The following sections provide a brief description of the each quick scan test:

#### 6.3.1 Hardware Test Description

Hardware tests are divided into two categories: Non-Operating and Operating. The Non-Operating tests are intended to simulate the storage and transport of equipment between the storage facility and the polling location. The Operating tests are intended to simulate conditions that the EUT may encounter during operation. Prior to and immediately following Operating test, the EUT will be subjected to an operational status check.

The Operating tests included the following:

Electromagnetic Radiation (emissions) – This test verifies that radiated and conducted emissions from the voting system hardware do not exceed the allowable limits of Title 47CFR, Part 15, Class B. The test for electromagnetic radiation shall be conducted in compliance with the FCC Part 15 Class B requirements by testing per ANSI C63.4 (Volume II, Section 4.8.b).

This test was completed on the ICP and ICE tabulators. The purpose was to ensure radiated emissions were not negatively affected as a result of the hardware modifications introduced for the current test campaign. The results of this test were compared to the baseline results produced during the original Democracy Suite 4.0 test campaign, and indicated that the radiated emissions for both tabulators were lower than the baseline emissions. The successful results of this test were the determining factor for Wyle to accept additional previous hardware tests conducted on the tabulators.

#### 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. 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 Democracy 4.14 System Software, Firmware, and Utilities– Before testing can begin a compliance build of all the applications will be constructed by Wyle 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.

6.0 TEST PROCEDURES AND CONDITIONS (Continued)

6.3 Test Sequence (Continued)

6.3.2 Software Test Description (Continued)

However, Wyle Laboratories personnel will examine such software to confirm the specific version of software being used against the design specification to confirm that the software has not been modified. Wyle 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 is unmodified.

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, as per Volume II, Section 5.2 of the EAC 2005 VVSG.

Baseline of EMS Operating and Build Machine OS – Wyle will review the submitted NIST SCAP FDCC checklist for the EMS Operating System and Build Machine OS Dominion. The review will be performed for completeness, clarity, and consistency.

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. Both a manual line by line review and an automated analysis of the source code will be performed.

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 Democracy Suite 4.14 System Software Test Sequence

Test	Description	Procedure	Test Level	Specimen
<i>Compliance Source Code Review</i>	Source code review for compliance	WHVS07.2 WOP 5a	Component	Democracy Suite 4.14 Source Code Package

**6.0 TEST PROCEDURES AND CONDITIONS (Continued)**

**6.3 Test Sequence (Continued)**

**6.3.2 Software Test Description (Continued)**

**Table 6-1 Democracy Suite 4.14 System Software Test Sequence (Continued)**

<i>Compliance Build</i>	Using the build documents and source code to construct the EMS	WHVS07.3 WOP 7b	Component	Democracy Suite 4.14
<i>Source Code COTS Review</i>	Source code review to examine 3 <sup>rd</sup> party products for modification and versions	WHVS07.2 WOP 5d	Component	Democracy Suite 4.14 Source Code Package
<i>Baseline OS</i>	RFI 2008-03 OS Configuration	WHVS07.3 WOP 25	Component	Democracy Suite 4.14
<i>Source Code Functional Review</i>	Source code review for functionality and high level software design	WHVS07.2 WOP5b	Component & Integration	Democracy Suite 4.14 Source Code Package
<i>Source Code Security Review (manual – automated)</i>	Source code review for specific security concerns and an automated review using Fortify	WHVS07.2 WOP5c WOP 6a	Component & Integration	Democracy Suite 4.14 Source Code Package

**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
- 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

**6.0 TEST PROCEDURES AND CONDITIONS (Continued)**

**6.3 Test Sequence (Continued)**

**6.3.3 System Testing (Continued)**

Functional Configuration Audit – The functional configuration audit encompasses an examination of manufacturer’s tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the manufacturer’s documentation submitted for the TDP. In addition to functioning according to the manufacturer’s documentation, tests shall be conducted to ensure all applicable EAC 2005 VVSG requirements are met. This testing is accomplished through a process called sequencing.

Sequencing is the act of navigating through the user interface to verify that the system performs as described by the manufacturer and does not violate any of the VVSG requirements. The path that the tester navigates follows the logical flow of accomplishing task required to conduct an election or otherwise exercise a function. For example, a task in conducting an election is to add a candidate. The tester will follow the flow of the user interface to add the candidate to a contest. If there are multiple ways to achieve this, then each method will be tested. This process will continue until all tasks for conducting an election are completed. Any paths, or combination of paths, that are determined to be at risk for failure that are outside of the normal flow of the interface will be tested on an individual basis.

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 Dominion 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.

Telecommunication Test – The telecommunication test focuses on system hardware and software function and performance for the transmission of data that is used to operate the system and report election results. This test applies to the requirements for Volume I, Section 6 of the EAC 2005 VVSG.

Usability – 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.

Volume/Stress/Reliability – Tests to investigate the system’s response to conditions that tend to overload the system’s capacity to process, store, and report data. The test parameters will focus on the system’s stated limits and the ballot logic for areas such as the maximum number of active voting positions, maximum number of ballot styles, maximum candidates, maximum contests, and stated limits within the EMS. This test will be utilized to ensure the system can achieve the manufacturer’s TDP claims of what the system can support. Testing will be performed by exercising an election definition and test cases developed specifically to test for volume and stress conditions of the system being tested.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.3 Test Sequence (Continued)

#### 6.3.3 System Testing (Continued)

Each sub-component will be subjected to the test as outlined in the EAC 2005 VVSG as follows:

- The EMS shall be subjected to overload conditions such as processing more than the expected number of ballots/voters per precinct and processing more than expected number of precincts.
- The ICE and ICP shall be subjected to ballot processing at the high volume rates at which the equipment can be operated to evaluate software response to hardware-generated interrupts and wait states.
- The ICC shall be subjected to overload conditions.

Wyle will verify the audit log records for error and exception activity to verify proper documentation and recovery action for all functional tests performed.

A details listing of all audit log entries shall be provided by Dominion. During testing, audit log entries will be compared to this list to ensure that all expected events were recorded. To ensure the system's ability to gracefully shutdown and recover from error conditions, negative test cases will be performed to introduce such error conditions. The error conditions introduced will be based on the system limits specified within the vendors TDP documentation

Accuracy – The accuracy test ensures that each component of the voting system (ICC, ICE and ICP) 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 test requirements for the ICE will be met by the execution of two accuracy tests, in keeping with the Accuracy test philosophy utilized on the Democracy Suite 4.0 test campaign. Since Wyle considers the ICE as both a paper based scanner and a ballot marker, the first accuracy test for the ICE will be performed by using both paper-based and audio ballots. The majority of the vote processing will be utilizing the paper-based functionality, while audio votes are being cast at defined intervals between ballot scans. After analyzing the processes and researching past testing, Wyle believes the architecture, data flow, and integration of the recording process of an audio ballot and the scanning of a paper ballot in an ICE unit are similar and use many of the same software modules. Based on this, Wyle has concluded that the audio feature should not be subjected to the full requirement of Volume II, Section 4.7.1.1; therefore during test performance, 5000 audio ballot positions will be cast to satisfy the execution of the feature. The remaining ballot positions will be captured with paper-based voting. All results will be validated and verified against the election definition voting matrix for expected results.

## 6.0 TEST PROCEDURES AND CONDITIONS (Continued)

### 6.3 Test Sequence (Continued)

#### 6.3.3 System Testing (Continued)

If the ICE processes the minimum number of ballot positions without error, the test shall be accepted. If the ICE should not process the minimum requirement, an evaluation will be performed to determine the root cause and the test will not be accepted.

The second accuracy test will consist of the ICE Ballot Marking Device (BMD). Wyle will utilize a maximum position ballot with the ICE, which will be manually voted in order to verify the components correctly tabulate 1,549,703 ballot positions within the allowable target error rate. All results will be validated and verified against the election definition voting matrix for expected results. If the ICE processes the minimum number of ballot positions, during both tests, without error the test shall be accepted. If the ICE should not process the minimum requirement an evaluation will be performed to determine the root cause and the test will not be accepted.

ICC accuracy will be exercised by using only paper-based ballots. All results will be validated and verified against the election definition voting matrix for expected results. If the ICC processes the minimum number of ballot positions without error the test shall be accepted. If the ICC should not process the minimum requirement an evaluation will be performed to determine the root cause and the test will not be accepted.

ICP accuracy will be executed by the use of paper-based ballots and audio voting sessions. The majority of the vote processing will be utilizing the paper-based functionality, while audio votes are being cast at defined intervals between ballot scans. After analyzing the processes and researching past testing, Wyle believes the architecture, data flow, and integration of the recording process of an audio ballot and the scanning of a paper ballot in an ICP unit are similar and use many of the same software modules.

Based on this, Wyle has concluded that the audio feature should not be subjected to the full requirement of Volume II, Section 4.7.1.1; therefore during test performance, 5000 audio ballot positions will be cast to satisfy the execution of the feature. The remaining ballot positions will be captured with paper-based voting. All results will be validated and verified against the election definition voting matrix for expected results. If the ICP processes the minimum number of ballot positions without error the test shall be accepted. If the ICP should not process the minimum requirement an evaluation will be performed to determine the root cause and the test will not be accepted.

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. The ICE and ICP will include both hand marked ballots and ballots created by the ADA input devices (Sip & Puff, Foot Pedals, and ATI).



**6.0 TEST PROCEDURES AND CONDITIONS (Continued)**

**6.3 Test Sequence (Continued)**

**6.3.3 System Testing (Continued)**

The ICE will also include ballots that are marked by the ballot marking device (BMD) in which the marked ballots will then be utilized to create the test deck for the ICC system integration test. The use of the BMD marked ballots shall allow the system to utilize all ballot creation styles and produce the same expected outcome during the execution of the test.

Appendix B describes additional capabilities associated to the Dominion Democracy Suite system 4.14. These will be tested during System Testing as needed.

Regression Testing

Regression Testing will be performed on all applicable system components to verify all firmware and application software modifications.

**Table 6-2 Democracy 4.14 System Testing Sequence**

<b>Test</b>	<b>Description</b>	<b>Procedure</b>	<b>Test Level</b>	<b>Specimen</b>	<b>Election Data</b>
<i>Technical Data Package (TDP) Review</i>	Documentation review for compliance, correctness, and completeness	WHVS07.1 WOP 3	Document	TDP package	---
<i>Physical Configuration Audit</i>	Audit hardware and software models and versions	WHVS07.3 WOP 25	Component & System	System hardware and software	---
<i>Functional Configuration Audit</i>	Functional testing to the system documentation and EAC 2005 VVSG requirements	WHVS07.4 WOP 26 WOP30a	Component & Integration	System	Gen-01 Prim-01
<i>Telecommunication</i>	Test of telecommunication technology of the system for accuracy and correctness	WHVS07.6 WOP 31	Integration & System	System	Gen-01 Volume & Stress
<i>Usability/ Accessibility</i>	Testing to the system documentation and EAC 2005 VVSG requirements	WOP 22 WOP 24-1a-g WOP 24-2 a-f	Integration	System	Gen-01 Prim-01
<i>Volume, Stress, &amp; Reliability Test</i>	Test to investigate the system's response to larger amounts of data than it is expecting.	WOP 21 WOP 30	System	System	Volume and Stress Election

**6.0 TEST PROCEDURES AND CONDITIONS (Continued)**

**6.3 Test Sequence (Continued)**

**6.3.3 System Testing (Continued)**

**Table 6-2 Democracy 4.14 System Testing Sequence (Continued)**

<i>Security</i>	Assess the system to the 2005 VVSG requirements and execute basic system security tests.	WHVS07.7 WOP 6 WOP 6a WOP 6b WOP 6c WOP 6d	Integration & System	System	Gen-01 Prim -01
<i>Logic and Accuracy</i>	Test of accuracy to ~1.6 million ballot positions per system component (ICC, ICE, and ICP)	WHVS07.9 WOP 30 WOP 21	System	System	L&A Election
<i>System Integration Test</i>	Test of all system hardware, software and peripherals.	WOP 30	System	System	Gen-01-03 Prim-01&03
<i>Trusted Build</i>	Creation and installation of the final system software	WHVS07.6 WOP 7 WOP 7a	Component	System software	Democrac y Suite 4.14 Source Code Package

**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.

**APPENDIX A**  
**DOMINION PROJECT SCHEDULE**

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan				
ID	Task Name	Duration	Start	Finish
1	✓ EAC Application	0 days	Tue 5/1/12	Tue 5/1/12
2	✓ EAC Kickoff Meeting	3 days	Mon 5/21/12	Thu 5/24/12
3	<b>Technical Data Package Review</b>	<b>129.94 days</b>	<b>Mon 7/16/12</b>	<b>Fri 1/11/13</b>
4	✓ Partial Document Submission	3 days	Mon 7/16/12	Thu 7/19/12
5	✓ Document Review for VVSG Requirements	15 days	Mon 10/8/12	Mon 10/29/12
6	✓ Document Discrepancy Report	1 day	Fri 11/16/12	Fri 11/16/12
7	✓ Dominion Review of Report and Correct Documents	15 days	Mon 11/19/12	Mon 12/10/12
8	✓ Document Re-Review	5 days	Tue 12/11/12	Tue 12/18/12
9	✓ Document Accepted	1 day	Tue 12/18/12	Wed 12/19/12
10	Final Report TDP Review	5 days	Mon 1/7/13	Fri 1/11/13
11	<b>Source Code Review</b>	<b>64 days</b>	<b>Mon 11/12/12</b>	<b>Fri 2/8/13</b>
12	<b>EMS Source Code Review</b>	<b>45.94 days</b>	<b>Mon 11/12/12</b>	<b>Mon 1/14/13</b>
13	✓ Initial Submission of EMS Coding Standards	0 days	Mon 11/12/12	Mon 11/12/12
14	✓ First Pass	10 days	Wed 11/14/12	Tue 11/27/12
15	✓ Report First Pass	1 day	Tue 11/27/12	Wed 11/28/12
16	✓ Manufacturer Review	3 days	Thu 11/29/12	Tue 12/4/12
17	✓ Wyle receives Revised Code	1 day	Wed 12/5/12	Wed 12/5/12
18	✓ Second Pass	2 days	Thu 12/6/12	Mon 12/10/12
19	✓ Report Second Pass	1 day	Mon 12/10/12	Tue 12/11/12
20	✓ Manufacturer Review	3 days	Tue 12/11/12	Fri 12/14/12
21	✓ Wyle receives Second Revised Code	1 day	Fri 12/14/12	Mon 12/17/12
22	✓ Third Pass	5 days	Mon 12/17/12	Mon 12/24/12
23	✓ Report Third Pass	1 day	Mon 12/24/12	Tue 12/25/12
24	✓ Manufacturer Review	5 days	Tue 12/25/12	Tue 1/1/13

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
25	✓ Fourth Pass	3 days	Wed 1/2/13	Fri 1/4/13	
26	✓ Report Fourth Pass	1 day	Mon 1/7/13	Mon 1/7/13	
27	Manufacturer Review	3 days	Tue 1/8/13	Thu 1/10/13	
28	Compliance Build	2 days	Fri 1/11/13	Mon 1/14/13	
29	<b>Review ICP Firmware</b>	<b>31.94 days</b>	<b>Thu 12/13/12</b>	<b>Fri 1/25/13</b>	
30	✓ Submission of ICP Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
31	✓ Review ICP Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
32	✓ ICP Code Submission	0 days	Thu 12/13/12	Thu 12/13/12	
33	<b>ICP Source Code Review</b>	<b>18 days</b>	<b>Wed 1/2/13</b>	<b>Fri 1/25/13</b>	
34	✓ First Pass	5 days	Wed 1/2/13	Tue 1/8/13	
35	Report First Pass	1 day	Wed 1/9/13	Wed 1/9/13	
36	Manufacturer Review	4 days	Thu 1/10/13	Tue 1/15/13	
37	Wyle receives Revised Code	1 day	Wed 1/16/13	Wed 1/16/13	
38	Second Pass	2 days	Thu 1/17/13	Fri 1/18/13	
39	Report Second Pass	1 day	Mon 1/21/13	Mon 1/21/13	
40	Manufacturer Review	3 days	Tue 1/22/13	Thu 1/24/13	
41	Compliance Build	1 day	Fri 1/25/13	Fri 1/25/13	
42	<b>Review ICE Firmware</b>	<b>32.94 days</b>	<b>Thu 12/13/12</b>	<b>Mon 1/28/13</b>	
43	✓ Submission of ICE Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
44	✓ Review ICE Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
45	✓ ICE Code Submission	0 days	Thu 12/13/12	Thu 12/13/12	
46	<b>ICE Source Code Review</b>	<b>19 days</b>	<b>Wed 1/2/13</b>	<b>Mon 1/28/13</b>	
47	✓ First Pass	5 days	Wed 1/2/13	Tue 1/8/13	
48	✓ Report First Pass	0 days	Tue 1/8/13	Tue 1/8/13	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
49	Manufacturer Review	4 days	Wed 1/9/13	Mon 1/14/13	
50	Wyle receives Revised Code	1 day	Tue 1/15/13	Tue 1/15/13	
51	Second Pass	2 days	Wed 1/16/13	Thu 1/17/13	
52	Report Second Pass	0 days	Thu 1/17/13	Thu 1/17/13	
53	Manufacturer Review	3 days	Fri 1/18/13	Tue 1/22/13	
54	Wyle receives Second Revised Code	0 days	Tue 1/22/13	Tue 1/22/13	
55	Final Review	2 days	Wed 1/23/13	Thu 1/24/13	
56	Compliance Build	2 days	Fri 1/25/13	Mon 1/28/13	
57	<b>Review ICC Firmware</b>	<b>40 days</b>	<b>Thu 12/13/12</b>	<b>Thu 2/7/13</b>	
58	✓ Submission of ICC Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
59	✓ Review ICC Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
60	✓ Central Count Code Submission	0 days	Mon 1/7/13	Mon 1/7/13	
61	<b>ICC Source Code Review</b>	<b>14 days</b>	<b>Fri 1/18/13</b>	<b>Thu 2/7/13</b>	
62	First Pass	5 days	Fri 1/18/13	Fri 1/25/13	
63	Report First Pass	0 days	Fri 1/25/13	Fri 1/25/13	
64	Manufacturer Review	3 days	Fri 1/25/13	Wed 1/30/13	
65	Wyle receives Revised Code	0 days	Wed 1/30/13	Wed 1/30/13	
66	Second Pass	3 days	Wed 1/30/13	Mon 2/4/13	
67	Final Review	1 day	Mon 2/4/13	Tue 2/5/13	
68	Compliance Build	2 days	Tue 2/5/13	Thu 2/7/13	
69	<b>Review Adjudication Source Code</b>	<b>26 days</b>	<b>Thu 12/13/12</b>	<b>Fri 1/18/13</b>	
70	✓ Submission of Adjudication Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
71	✓ Review Adjudication Coding Standards	0 days	Thu 12/13/12	Thu 12/13/12	
72	✓ Adjudication Code Submission	0 days	Mon 12/17/12	Mon 12/17/12	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
73	<b>Adjudication Source Code Review</b>	<b>24 days</b>	<b>Mon 12/17/12</b>	<b>Fri 1/18/13</b>	
74	✓ First Pass	5 days	Mon 12/17/12	Mon 12/24/12	
75	✓ Report First Pass	0 days	Fri 12/28/12	Fri 12/28/12	
76	✓ Manufacturer Review	3 days	Wed 1/2/13	Mon 1/7/13	
77	✓ Wyle receives Revised Code	0 days	Mon 1/7/13	Mon 1/7/13	
78	✓ Second Pass	3 days	Mon 1/7/13	Thu 1/10/13	
79	Final Review	1 day	Fri 1/11/13	Mon 1/14/13	
80	Compliance Build	2 days	Wed 1/16/13	Fri 1/18/13	
81	<b>Review Adjudication Transmission Source Code</b>	<b>24 days</b>	<b>Mon 12/17/12</b>	<b>Fri 1/18/13</b>	
82	✓ Submission of Adjudication Transmission Coding Standards	0 days	Mon 12/17/12	Mon 12/17/12	
83	✓ Review Adjudication Transmission Coding Standards	0 days	Mon 12/17/12	Mon 12/17/12	
84	✓ Adjudication Transmission Code Submission	0 days	Mon 12/17/12	Mon 12/17/12	
85	<b>Adjudication Transmission Source Code Review</b>	<b>24 days</b>	<b>Mon 12/17/12</b>	<b>Fri 1/18/13</b>	
86	✓ First Pass	5 days	Mon 12/17/12	Mon 12/24/12	
87	✓ Report First Pass	0 days	Fri 12/28/12	Fri 12/28/12	
88	✓ Manufacturer Review	3 days	Wed 1/2/13	Mon 1/7/13	
89	✓ Wyle receives Revised Code	0 days	Fri 1/4/13	Fri 1/4/13	
90	Second Pass	3 days	Mon 1/7/13	Thu 1/10/13	
91	Final Review	1 day	Fri 1/11/13	Mon 1/14/13	
92	Compliance Build	2 days	Wed 1/16/13	Fri 1/18/13	
93	<b>Source Code Review Completion</b>	<b>1 day</b>	<b>Thu 2/7/13</b>	<b>Fri 2/8/13</b>	
94	Final Report Source Code Review Test	1 day	Thu 2/7/13	Fri 2/8/13	
95	<b>Test Plan</b>	<b>116.94 days</b>	<b>Mon 9/17/12</b>	<b>Tue 2/26/13</b>	
96	✓ Receive Documentation	11 days	Mon 9/17/12	Tue 10/2/12	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
97	✓ Draft Test Plan	35 days	Mon 11/19/12	Mon 1/7/13	
98	Wyle/Dominion Review of Test Plan	4 days	Mon 1/7/13	Thu 1/10/13	
99	Submit Draft to EAC	0 days	Thu 1/10/13	Thu 1/10/13	
100	EAC Review	20 days	Thu 1/10/13	Thu 2/7/13	
101	Review TR's Comments	1 day	Fri 2/8/13	Fri 2/8/13	
102	Re-submit Test Plan to EAC	1 day	Mon 2/11/13	Mon 2/11/13	
103	EAC Review	10 days	Tue 2/12/13	Mon 2/25/13	
104	Test Plan Approved by EAC	1 day	Tue 2/26/13	Tue 2/26/13	
105	✓ <b>Physical Configuration Audit</b>	<b>5.06 days</b>	<b>Mon 10/15/12</b>	<b>Mon 10/22/12</b>	
106	✓ <b>PCA Hardware Configuration</b>	<b>5.06 days</b>	<b>Mon 10/15/12</b>	<b>Mon 10/22/12</b>	
107	✓ PCA Initial Hardware Submitted	1 day	Mon 10/15/12	Tue 10/16/12	
108	✓ PCA Proprietary Hardware Documentation Submitted	1 day	Mon 10/15/12	Mon 10/15/12	
109	✓ PCA Initial Hardware Photographed	2 days	Tue 10/16/12	Thu 10/18/12	
110	✓ Report PCA Test	2 days	Thu 10/18/12	Mon 10/22/12	
111	<b>Functional Configuration Audit</b>	<b>38 days</b>	<b>Mon 1/14/13</b>	<b>Thu 3/7/13</b>	
112	<b>Pre FCA Setup/Test Case Sequencing</b>	<b>15 days</b>	<b>Mon 1/14/13</b>	<b>Mon 2/4/13</b>	
113	EMS	3 days	Mon 1/14/13	Thu 1/17/13	
114	ICE	3 days	Thu 1/17/13	Tue 1/22/13	
115	ICP	3 days	Tue 1/22/13	Fri 1/25/13	
116	ICC	3 days	Fri 1/25/13	Wed 1/30/13	
117	Adjudication	3 days	Wed 1/30/13	Mon 2/4/13	
118	<b>FCA Execution</b>	<b>17 days</b>	<b>Mon 2/4/13</b>	<b>Wed 2/27/13</b>	
119	EMS	5 days	Mon 2/4/13	Mon 2/11/13	
120	ICE	3 days	Mon 2/11/13	Thu 2/14/13	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	



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1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
121	ICP	3 days	Thu 2/14/13	Tue 2/19/13	
122	ICC	3 days	Tue 2/19/13	Fri 2/22/13	
123	Adjudication	3 days	Fri 2/22/13	Wed 2/27/13	
124	<b>FCA Completion</b>	<b>2 days</b>	<b>Fri 2/22/13</b>	<b>Tue 2/26/13</b>	
125	Report FCA Test	2 days	Fri 2/22/13	Tue 2/26/13	
126	<b>Usability Execution</b>	<b>7 days</b>	<b>Tue 2/26/13</b>	<b>Thu 3/7/13</b>	
127	Usability Start	0 days	Tue 2/26/13	Tue 2/26/13	
128	Complete Usability	5 days	Tue 2/26/13	Tue 3/5/13	
129	Report Usability	2 days	Tue 3/5/13	Thu 3/7/13	
130	<b>Hardware Testing</b>	<b>178.06 days?</b>	<b>Fri 7/13/12</b>	<b>Wed 3/20/13</b>	
131	✓ <b>Electrical Tests - ICP/ICE</b>	<b>1 day</b>	<b>Fri 7/13/12</b>	<b>Fri 7/13/12</b>	
132	✓ EMC Quick Scan - First Pass	1 day	Fri 7/13/12	Fri 7/13/12	
133	EMC Quick Scan - Second Pass	1 day?	Mon 2/11/13	Tue 2/12/13	
134	Electrical Tests Complete	1 day	Mon 7/16/12	Tue 2/12/13	
135	<b>Environmental Transportation Tests</b>	<b>2 days</b>	<b>Thu 3/7/13</b>	<b>Mon 3/11/13</b>	
136	Bench Handling	1 day	Thu 3/7/13	Fri 3/8/13	
137	Vibration	1 day	Fri 3/8/13	Mon 3/11/13	
138	Environmental Test Complete	0 days	Mon 3/11/13	Mon 3/11/13	
139	<b>Other Hardware Tests</b>	<b>5 days</b>	<b>Mon 3/11/13</b>	<b>Mon 3/18/13</b>	
140	Temperature Power/Reliability	5 days	Mon 3/11/13	Mon 3/18/13	
141	Other Hardware Test Complete	0 days	Mon 3/18/13	Mon 3/18/13	
142	<b>Completion of All Hardware Testing</b>	<b>2 days</b>	<b>Mon 3/18/13</b>	<b>Wed 3/20/13</b>	
143	Hardware Test Report	2 days	Mon 3/18/13	Wed 3/20/13	
144	<b>System Level Performance Testing</b>	<b>176.06 days</b>	<b>Tue 7/31/12</b>	<b>Wed 4/3/13</b>	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan					
ID	Task Name	Duration	Start	Finish	
145	<b>Accuracy Test</b>	<b>6 days</b>	<b>Mon 3/18/13</b>	<b>Tue 3/26/13</b>	
146	Execution of Accuracy Test	5 days	Mon 3/18/13	Mon 3/25/13	
147	Completion of Accuracy Test	1 day	Mon 3/25/13	Tue 3/26/13	
148	<b>Volume and Stress Test</b>	<b>6 days</b>	<b>Tue 3/26/13</b>	<b>Wed 4/3/13</b>	
149	Execution of Volume and Stress Test	5 days	Tue 3/26/13	Tue 4/2/13	
150	Completion of Volume and Stress Test	1 day	Tue 4/2/13	Wed 4/3/13	
151	✓ <b>Security Test</b>	<b>6 days</b>	<b>Tue 7/31/12</b>	<b>Tue 8/7/12</b>	
152	✓ <b>Access Controls Review (WoP 6)</b>	<b>2 days</b>	<b>Tue 7/31/12</b>	<b>Wed 8/1/12</b>	
153	✓ Completion of Access Control Review	2 days	Tue 7/31/12	Wed 8/1/12	
154	✓ <b>Security Assessment</b>	<b>3 days</b>	<b>Thu 8/2/12</b>	<b>Mon 8/6/12</b>	
155	✓ Report Security Assessment	3 days	Thu 8/2/12	Mon 8/6/12	
156	✓ <b>Completion of Security Test</b>	<b>1 day</b>	<b>Tue 8/7/12</b>	<b>Tue 8/7/12</b>	
157	✓ Final Report Security Assessment	1 day	Tue 8/7/12	Tue 8/7/12	
158	<b>System Integration Testing</b>	<b>5 days</b>	<b>Wed 4/3/13</b>	<b>Wed 4/10/13</b>	
159	<b>GEN 01 - Contests, Candidates, Alt Language, Split Precinct, and Audio</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>	
160	GEN 01 Setup	1 day	Wed 4/3/13	Thu 4/4/13	
161	GEN 01 Execution	2 days	Thu 4/4/13	Mon 4/8/13	
162	GEN 01 Complete	1 day	Mon 4/8/13	Tue 4/9/13	
163	<b>GEN 02 - N of M, Recall, Ranked Order, Early Voting, Alt Language and</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>	
164	GEN 02 Setup	1 day	Wed 4/3/13	Thu 4/4/13	
165	GEN 02 Execution	2 days	Thu 4/4/13	Mon 4/8/13	
166	GEN 02 Complete	1 day	Mon 4/8/13	Tue 4/9/13	
167	<b>GEN 03 - Ideographic Language, Audio Ballot, and ADA Devices</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>	
168	GEN 03 Setup	1 day	Wed 4/3/13	Thu 4/4/13	

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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1-9-13 Dominion Project Plan				
ID	Task Name	Duration	Start	Finish
169	GEN 03 Execution	2 days	Thu 4/4/13	Mon 4/8/13
170	GEN 03 Complete	1 day	Mon 4/8/13	Tue 4/9/13
171	<b>PRIM 01 - Closed Primary, Split Precinct, Multiple Ballot Styles, and A u</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>
172	PRIM 01 Setup	1 day	Wed 4/3/13	Thu 4/4/13
173	PRIM 01 Execution	2 days	Thu 4/4/13	Mon 4/8/13
174	PRIM 01 Complete	1 day	Mon 4/8/13	Tue 4/9/13
175	<b>PRIM 02 - Open Primary, Multiple Ballot Styles, Slate Voting, Cross-pa</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>
176	PRIM 02 Setup	1 day	Wed 4/3/13	Thu 4/4/13
177	PRIM 02 Execution	2 days	Thu 4/4/13	Mon 4/8/13
178	PRIM 02 Complete	1 day	Mon 4/8/13	Tue 4/9/13
179	<b>PRIM 03 - Closed Primary, Ideographic Language, and ADA devices</b>	<b>4 days</b>	<b>Wed 4/3/13</b>	<b>Tue 4/9/13</b>
180	PRIM 03 Setup	1 day	Wed 4/3/13	Thu 4/4/13
181	PRIM 03 Execution	2 days	Thu 4/4/13	Mon 4/8/13
182	PRIM 03 Complete	1 day	Mon 4/8/13	Tue 4/9/13
183	<b>Completion of System Integration Testing</b>	<b>1 day</b>	<b>Tue 4/9/13</b>	<b>Wed 4/10/13</b>
184	Final Report System Integration Tests	1 day	Tue 4/9/13	Wed 4/10/13
185	<b>All Testing Activities Completed</b>	<b>1 day</b>	<b>Wed 4/10/13</b>	<b>Thu 4/11/13</b>
186	Verification and compilation of all test data	1 day	Wed 4/10/13	Thu 4/11/13
187	<b>Final Trusted Build</b>	<b>14 days</b>	<b>Thu 4/11/13</b>	<b>Wed 5/1/13</b>
188	Verify Build Environment	3 days	Thu 4/11/13	Tue 4/16/13
189	Trusted Build	4 days	Tue 4/16/13	Mon 4/22/13
190	Install and Verify System Build	2 days	Mon 4/22/13	Wed 4/24/13
191	Final Trusted Build Complete	0 days	Wed 4/24/13	Wed 4/24/13
192	Delivery of Images to EAC Repository	5 days	Wed 4/24/13	Wed 5/1/13

Critical		Finish-only		Manual Summary	
Critical Split		Duration-only		Project Summary	
Critical Progress		Baseline		External Tasks	
Task		Baseline Split		External Milestone	
Split		Baseline Milestone		Inactive Task	
Task Progress		Milestone		Inactive Milestone	
Manual Task		Summary Progress		Inactive Summary	
Start-only		Summary		Deadline	

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**Certification Test Plan T70251.01-01**

1-9-13 Dominion Project Plan				
ID	Task Name	Duration	Start	Finish
193	<b>Post Testing Activities</b>	<b>58 days</b>	<b>Thu 4/11/13</b>	<b>Tue 7/2/13</b>
194	<b>Certification Report</b>	<b>58 days</b>	<b>Thu 4/11/13</b>	<b>Tue 7/2/13</b>
195	Initial Draft Report	10 days	Thu 4/11/13	Thu 4/25/13
196	Manufacturer Review	3 days	Thu 4/25/13	Tue 4/30/13
197	Final Test Report for Submission to EAC for Review	5 days	Tue 4/30/13	Tue 5/7/13
198	EAC Test Report Review	20 days	Tue 5/7/13	Tue 6/4/13
199	Address Comments From TR's	8 days	Tue 6/4/13	Fri 6/14/13
200	Submit Final Report	2 days	Fri 6/14/13	Tue 6/18/13
201	EAC Test Report Review	10 days	Tue 6/18/13	Tue 7/2/13

Critical  Critical Split  Critical Progress  Task  Split  Task Progress  Manual Task  Start-only	Finish-only  Duration-only  Baseline  Baseline Split  Baseline Milestone  Milestone  Summary Progress  Summary	Manual Summary  Project Summary  External Tasks  External Milestone  Inactive Task  Inactive Milestone  Inactive Summary  Deadline
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**APPENDIX B**  
**TESTING TO REFLECT ADDITIONAL CAPABILITIES**

## 1.0 Introduction

The Voluntary Voting System Guidelines (VVSG) allows for vendors to provide additional system capabilities in order to respond to the requirements of individual states. The scope of testing for these additional capabilities is defined by the vendor rather than the Election Assistance Commission's 2005 Voluntary Voting System Guidelines.

## 2.0 Scope

The Democracy Suite 4.14 System includes an additional module called the EMS Adjudication application. This application represents a standalone module that reviews voter intent on a ballot-per-ballot basis. This application represents a new component of the Democracy Suite system. The scope of testing is limited to the following:

### 1. Source code review

- a. Selection of programming languages
- b. Software integrity
- c. Software modularity and programming
- d. Control constructs
- e. Naming conventions
- f. Coding conventions
- g. Comment conventions

### 2. Technical Data Package review

- a. Application Hardware Requirements
- b. Application Installation Procedures
- c. Application Functionality Description

### 3. Functionality Testing

- a. Installation and Uninstallation
- b. Adding/Deleting application user accounts
- c. Transmitting election results from the Central Count server
- d. Removing a contest from adjudication
- e. Adding/Removing Write-ins
- f. Submitting a batch to tally
- g. Removing a batch from tally
- h. Reopening a ballot
- i. Producing reports
- j. General navigation throughout the application ensuring high-level error conditions are met

## 3.0 Deliverables

The VSTL will provide a report for State certification authorities detailing the functionality tested, along with the functions not tested. Additionally, any functional issues identified during testing will be logged and identified in the letter. However, Dominion Voting Systems will be responsible for determining if the issues are resolved prior to releasing the application or they may choose to correct these issues and have the additional capabilities re-tested.