



Test Report for
EAC 2005 VVSG Certification Testing
Performed on Dominion Voting Systems 4.14-E

EAC CERTIFICATION NUMBER: DVS-DemSuite4.14-E

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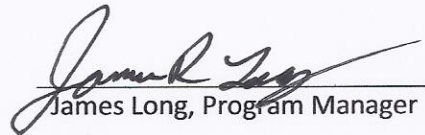
U.S. Election Assistance Commission


VSTL

EAC Lab Code 0704

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1.0 INTRODUCTION

The purpose of this National Certification Test Report is to document the findings from National Technical Systems, Inc. (NTS) certification testing of the Dominion Voting Systems (Dominion), herein referred to as manufacturer, Democracy Suite (D-Suite) 4.14-E voting system to the requirements set forth for Voting Systems in the U.S. Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (EAC 2005 VVSG). D-Suite 4.14-E is a modification to the previously 2005 VVSG certified D-Suite 4.14-D voting system (Certification number: DVS-DemSuite4.14-D), and as such, was tested by NTS Huntsville based on the “modified system” requirements set forth in section 4.4.2.3 of the EAC Testing and Certification Program Manual, Version 1.0.

1.1 Description of EAC Certified System Being Modified

The following subsection describes the EAC Certified System that is baseline for the submitted modification. All information was derived from the previous Certification Test Report and/or EAC Certificate of Conformance.

1.1.1 Baseline Certified System

The baseline system for this modification is the D-Suite 4.14-D voting system. Tables 1-1 and 1-2 describe the proprietary and commercial-off-the-shelf (COTS) hardware and software/firmware versions. For a complete description of the configuration and description of the D-Suite 4.14-D product, refer to the D-Suite 4.14-D Test Report located on the EAC’s website at <http://www.eac.gov>.

Table 1-1. Baseline Certified Software

Software Required For Testing	Software/Firmware Version
Proprietary	
EMS Election Event Designer (EED)	4.14.37
EMS Results Tally and Reporting (RTR)	4.14.37
EMS File System Service (FSS)	4.14.37
EMS Audio Studio (AS)	4.14.37
EMS Data Center Manager (DCM)	4.14.37
EMS Election Data Translator (EDT)	4.14.37
EMS Application Server (APPS)	4.14.37
EMS Adjudication	2.4.1.3201
ImageCast Central (ICC)	4.14.17
ImageCast Precinct (ICP)	4.14.17-US
ImageCast Evolution (ICE)	4.14.21
COTS	
Cepstral Voices	6.2.3.801
Microsoft Windows 7 x64	6.1
Windows Server 2008 R2 x64	6.1
Adobe Reader	10.1.1
Microsoft .NET Framework 4.0	4.0
Microsoft SQL Server 2008 R2 x64	10.0
Microsoft SQL Server 2008 Express R2 x64	10.50.4000.0
Microsoft SQL Server 2008 R2 SP2x64	10.50.4000.0

1.1.1 Baseline Certified System (Continued)

Table 1-1. Baseline Certified Software (Continued)

Software Required For Testing	Software/Firmware Version
COTS	
Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64)	2.0
1-Wire Driver version 4.0.3b x64	4.0.3
Java Runtime Environment 6.0 x64	6.0.290
Microsoft Visual C++ 2010 SP1 Redistributable Package(x86)	10.0.40219
Microsoft Access Database Engine 2010 Redistributable	1 (published 12/16/2010)

Table 1-2. Baseline Certified Voting System Equipment.

Component	Make	Model
Proprietary		
ImageCast Precinct (ICP)	Dominion	PCOS-320A and PCOS 320-C
ImageCast Evolution (ICE)	Dominion	PCOS-410A
ICE – Plastic ballot box	Dominion	Box-410A
ICE – Coroplast Ballot Box	Dominion	Box-420A
ICP – Metal ballot box	Dominion	Box-310A
ICP – Plastic Ballot Box	Dominion	Box-330C
ICP – Coroplast Ballot Box	Dominion	Box-340C
ICP – Coroplast Ballot Box w/latch	Dominion	Box-341-C
COTS		
ImageCast Central (ICC)*	Canon	DR-G1130 and DR-X10C
USB reader/Writer	Maxim	USB R/W: DS9490R
iButton (SHA-1)	Maxim	DS1963S
ICE external LCD monitor	AOC	E1649FWU
LCD Monitor	Soyo	18.5" wide LCD
LCD Monitor	Samsung	23" wide LCD
LCD Monitor	Dell	1909W
LCD Monitor	Dell	N445N
Footswitch Pair	Kinesis	N/A
Audio Adapter	Soundwave	USB Soundwave 7.1 Audio Adapter
PCI Software	Soundwave	Soundwave 7.1 PCI Software
USB Software	Soundwave	USB Soundwave 7.1 Software
Compact Flash Cards	RiData	CFC-14A
		RDCF8G-233XMCB2-1
		RDCF16G-233XMCB2-1
		RDCF32G-233XMCB2-1
	SanDisk Extreme	SDCFX-016G
		SDCFX-032G
	SanDisk	8 GB

1.1.1 Baseline Certified System (Continued)

Table 1-2. Baseline Certified Voting System Equipment (Continued)

Component	Make	Model
COTS		
Compact Flash Reader	SanDisk	USB
	GGI Gear	USB
Networking Switch	D-Link	D-Link DES-1105 5-Port Switch
Headphones	Cyber Acoustics	ACM-70
Sip & Puff	Origin Instruments	Air Voter
UPS for ICC	APC	SMC1000
UPS for EMS		SMC1500

1.2 References

- 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
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 1.0
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)," dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)," dated May 2008
- United States 107th Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- NTS Quality Assurance Program Manual, Current Revision
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation and Notices of Clarification (listed on www.eac.gov)
- EAC Quality Monitoring Program residing on:
http://www.eac.gov/testing_and_certification/quality_monitoring_program.aspx
- Dominion Voting Systems' Democracy Suite 4.14-D Modification VSTL Certification Test Report Rev. C (listed on www.eac.gov)
- Dominion Voting Systems Democracy Suite 4.14-D Technical Data Package
- Dominion Voting Systems Democracy Suite 4.14-E Technical Data Package

1.3 Terms and Abbreviations

Table 1-3 defines all terms and abbreviations applicable to this Test Report.

Table 1-3. Terms and Abbreviations

Term	Abbreviation	Definition
Anomaly	--	A result and/or event that deviates from what is standard, normal, or expected in which no root cause has been determined.
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability.
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. The same ATI is utilized for both the ICP and ICE.
Configuration Management	CM	---
Commercial Off-the-Shelf	COTS	Commercial, readily available hardware devices (such as card readers, printers or personal computers) or software products (such as operating systems, programming language compilers, or database management systems)
Deficiency	--	Any repeatable test result or event that is counter to the expected result or violates the specified requirements.
Direct Record Electronic	DRE	An electronic voting system that utilizes electronic components for the functions of ballot presentation, vote capture, vote recording, and tabulation which are logically and physically integrated into a single unit. A DRE produces a tabulation of the voting data stored in a removable memory component and in printed hardcopy.
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	An umbrella term for the software application used to define and report election projects.
Functional Configuration Audit	FCA	Exhaustive verification of every system function and combination of functions cited in the manufacturer's documentation.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
ImageCast Precinct	ICP	Precinct-level optical scanner and tabulator with audio voting capabilities.
ImageCast Evolution	ICE	Precinct-level optical scanner, tabulator with audio voting and integrated Ballot-marking Device.
ImageCast Central	ICC	COTS High-speed central ballot scan tabulator.

1.3 Terms and Abbreviations (Continued)

Table 1-3. Terms and Abbreviations (Continued)

Term	Abbreviation	Definition
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.
Notice of Clarification	NOC	Provides further guidance and explanation on the requirements and procedures of the EAC's Voting System Certification or Voting System Testing Laboratory programs.
Operating Procedure	OP	Test Method or Test Procedure.
Relational Database Management System	RDBMS	A database management system (DBMS) that is based on the relational model.
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.
Quality Assurance	QA	---
Request for Interpretation	RFI	A means by which a registered Manufacturer or Voting System Test Laboratory (VSTL) may seek clarification on a specific Voluntary Voting System Guidelines (VVSG) standard.
Results, Tally and Reporting	RTR	EMS application used to integrate election results and reporting.
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Trusted Build	---	Final build of source code performed by a trusted source and overseen by the manufacturer which is delivered to the EAC designated repository; also referred to as a "Witness Build".
Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Virtual Review Tool	VRT	Test campaign management software used by the EAC, VSTLs and vendors applying for qualification testing.
Voting System Test Laboratory	VSTL	An independent, non-federal laboratory qualified to test voting systems to Federal standards.

2.0 CERTIFICATION TEST BACKGROUND

NTS Huntsville is an independent testing laboratory for systems and components under harsh environments, including dynamic and climatic extremes as well as the testing of electronic voting systems. NTS Huntsville holds the following accreditations:

- ISO-9001:2000
- NVLAP Accredited ISO 17025:2005
- EAC Accredited VSTL, NIST 150,150-22
- A2LA Accredited (Certification No.'s 0214.40, 0214.41, and 0214.42)
- FCC Approved Contractor Test Site (Part 15, 18)

2.1 Revision History

Table 2-1 describes the version history of the submitted voting system.

Table 2-1. Voting System Revision History

System Version	Certification Type	System Modified	Certification Date	Certification Number
D-Suite 4.0	New System	Original	05/10/2012	DVS-40-G-10
D-Suite 4.14	Modification	D-Suite 4.0	07/18/2013	DemSuite-4-14
D-Suite 4.14-A	Modification	D-Suite 4.14	09/20/2013	DemSuite-4-14-A
D-Suite 4.14-A.1	Modification	D-Suite 4.14-A	06/16/2014	DVS-DemSuite-4-14-A.1
D-Suite 4.14-B	Modification	D-Suite 4.14-A	01/07/2014	DVS-DemSuite4.14-B
D-Suite 4.14-D	Modification	D-Suite 4.14-B	11/25/2014	DVS-DemSuite4.14-D
D-Suite 4.14-E	Modification	D-Suite 4.14-D	TBD	DVS-DemSuite4.14-E

2.2 Scope of Testing

The focus of the D-Suite 4.14-E test campaign was to verify functionality of modifications applied to the previously certified D-Suite 4.14-D voting system. This report is valid only for the system identified in section 1.1, Description of EAC Certified System Being Modified. In addition, modifications summarized herein represent the only changes that were reviewed by NTS. Any changes, revisions, or corrections not listed in this report or made to the system after this evaluation are required to be submitted to the EAC for assessment.

2.2.1 Modification Overview

Modifications outlined below transition Dominion Suite 4.14 revision D to revision E and were submitted by the manufacturer for testing.

1. On the ICE, captured write-in images are printed on the paper tape reports for ballot layouts at precinct using a General and a Primary election database.
2. On the ICE, candidate order for consolidated split precincts is printed on the paper tape report printouts in the candidate order for the ballot layouts for that precinct using a General and a Primary election database.
3. On the ICE, exclusive inclusion of Blank Ballot violation notice is in AuditMark image (bottom left corner) when casting a blank ballot in Open Primary election.
4. On the ICE, when a dynamic audio file is missing for the second language, the English audio plays as a default using a General and a Primary election database rather than playing “The audio file is missing” error message.
5. On the ICP, Captured write-in images are printed on the paper tape reports for ballot layouts at precinct using a General and a Primary election database. Print ability of write-in images on paper tape report printouts for ballot layouts at precinct.
6. On the EMS, Ballot layout file changed where term “Write-In” appears in a ballot layout, allowing for flexibility in size and layout of write-in box and position of term “Write-In relative to other elements.

All other software and documentation from the D-Suite 4.14-D system, with the exception of the ICE, ICP, and EMS application software and the MBS/DCF configuration file (and related records), is included in the D-Suite 4.14-E system.

2.2.2 Test Materials

D-Suite 4.14-E system proprietary software and hardware submitted by the manufacturer for testing is listed in Tables 2-2 and 2-3 respectively. All COTS hardware and software is unchanged from the baseline certification listed in section 1.1.1.

Table 2-2. Dominion-Suite 4.14-E Proprietary Software

Software Required For Testing	Software Version
Election Event Designer (EED)	4.14.38
Results Tally and Reporting (RTR)	4.14.38
File System Service (FSS)	4.14.38
Audio Studio (AS)	4.14.38
Data Center Manager	4.14.38
Application Server	4.14.38
EMS Adjudication	2.4.1.3201
EMS Database Server	4.14.38
EMS Election Data Translator (EDT)	4.14.38
EMS NAS Server	4.14.38
ImageCast Evolution	4.14.25
ImageCast Precinct	4.14.20
ImageCast Central	4.14.17

2.2.2 Test Materials (Continued)

Table 2-3. Dominion -Suite 4.14-E Proprietary Hardware

Equipment	Model
ImageCast Precinct (ICP)	PCOS-320A and PCOS 320-C
ImageCast Evolution (ICE)	PCOS-410A
ICE – Plastic ballot box	Box-410A
ICE – Coroplast Ballot Box	Box-420A
ICP – Metal ballot box	Box-310A
ICP – Plastic Ballot Box	Box-330C
ICP – Coroplast Ballot Box	Box-340C
ICP – Coroplast Ballot Box w/latch	Box-341-C

2.2.3 Block Diagram

Dominion’s D-Suite 4.14-E is a paper-based, optical scan voting system. Figure 2-1 provides a visual system overview.

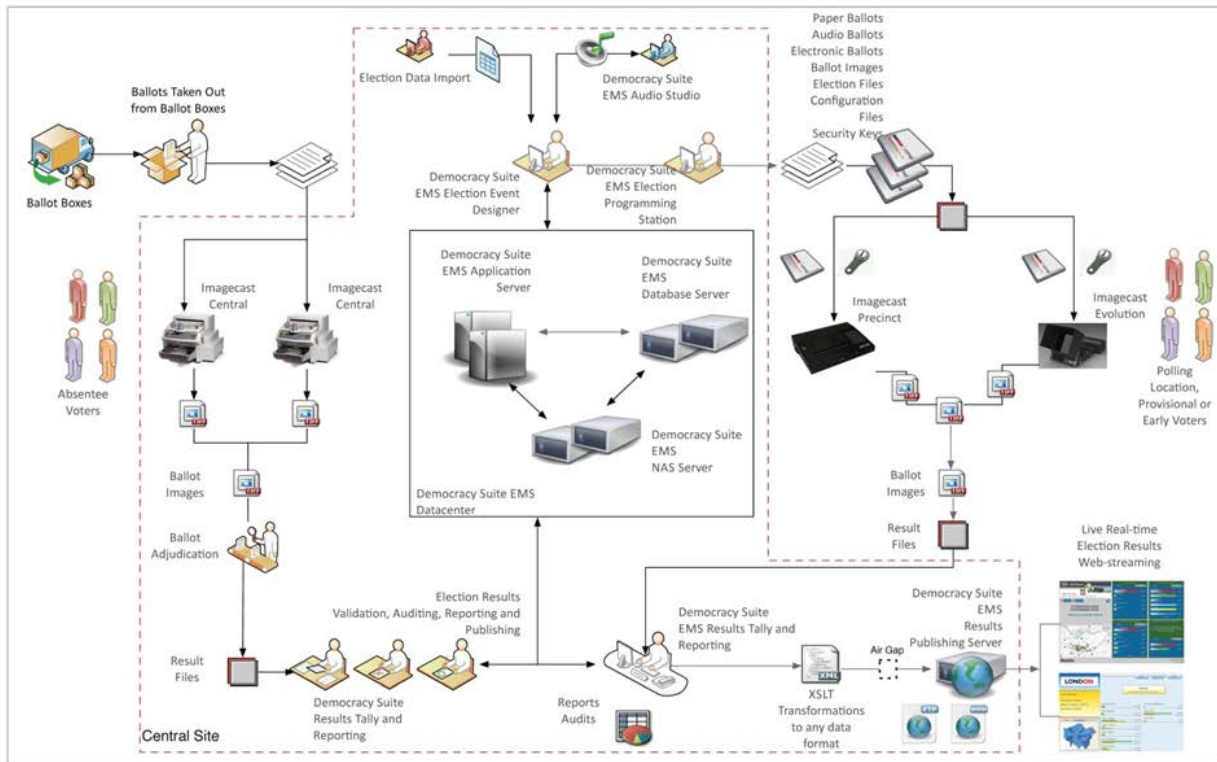


Figure 2-1. D-Suite 4.14-E System Overview

2.2.4 Supported Languages

Table 2-4 list the languages supported by the submitted D-Suite 4.14-E voting system.

Table 2-4. D-Suite 4.14-E Supported Languages

System Supported Languages				
Alaska Native - Aleut	Filipino	Korean	Native American - See Below	
Athabascan	French	Spanish	Apache	Seminole
Chinese	Hindi	Thai	Jicarilla	Towa
English	Japanese	Vietnamese	Keres	Ute
Eskimo	Khmer	--	Navajo	Yuma

2.2.5 RFIs

Table 2-5 lists the applicable RFIs the EAC has released as of the date of the Plan as it pertains to this test campaign.

Table 2-5. Applicable RFIs

RFI ID	Name
2007-02	EAC Decision on Variable Names
2009-04	EAC Decision on Audit Log Events
2010-02	EAC Decision on Coding Conventions
2010-03	EAC Decision on Database Coding Conventions
2010-05	EAC Decision on Testing of Modifications to a Certified System
2010-07	EAC Decision on Module Length
2010-08	EAC Decision on Calling Sequence
2012-04	EAC Decision on Software Setup Validation
2013-03	EAC Decision on Timestamps

2.2.6 NOCs

Table 2-6 lists the applicable NOCs the EAC has released as of the date of the Plan as it pertains to this test campaign.

Table 2-6. Applicable NOCs

NOC ID	Name
2008-003	EAC Conformance Testing Requirements
2009-002	Laboratory Independence Requirement
2009-005	Development and Submission of Test Plans for Modifications to EAC Certified Systems
2012-02	Clarification of System Identification Tool Functionality
2013-02	Detailed Description of Changes for Modifications

3.0 TEST FINDINGS

The Dominion Voting Systems Democracy Suite 4.14-E Voting System, as identified in Section 2.2.1 of this report, was subjected to the tests as summarized in this section.

3.1 Summary Finding

NTS Huntsville performed system level testing on ICE, ICP, and EMS software of the Dominion D-Suite 4.1.4-E Voting System due to modifications made to the Democracy Suite 4.1.4-D Voting System. There were no anomalies nor additional findings associated with this test campaign. Source Code Review deficiencies are listed in Section 3.1.3 and details of deficiencies are in the Deficiency Report located in Appendix B. There are no State Test Reports included in this test report.

3.1.1 Hardware Testing

There were no hardware configuration or design changes submitted for D-Suite 4.14-E, therefore, no hardware testing was required.

3.1.2 System Level Testing

System-level testing examines the ability of proprietary software, hardware, and peripherals in addition to the COTS software, hardware, and peripherals to operate as a complete system. NTS Huntsville utilizes test cases designed to ensure that integrated components function as specified by the manufacturer's documentation and meet the requirements of the VVSG.

3.1.2.1 TDP Review

The Democracy Suite 4.14-E Voting System TDP was reviewed to the 2005 VVSG. This review was performed as part of the testing activities. The TDP review only included the revised and new documents submitted for this testing campaign. The documents were reviewed for accuracy, completeness, and compliance to the 2005 VVSG.

The review results were recorded in a worksheet that provided the pass/fail compliance to each applicable VVSG requirement. There were nine deficiencies reported to Dominion and internally tracked by NTS Huntsville as test exceptions until verified that the applicable documents had been corrected. Dominion corrected nonconformance observations and resubmitted the associated documents for review. This process continued until the TDP complied with the applicable TDP standards in the EAC 2005 VVSG.

Summary Findings

A total of nine TDP deficiencies were discovered during testing. The deficiencies were as follows:

- Some required documents were missing.
- Some documents included were older versions.
- Some content needed to be updated to properly describe the submitted modifications.

All identified TDP deficiencies were resolved prior to the conclusion of the TDP review process.

3.1.2.2 Functional Configuration Audit (FCA)

A Functional Configuration Audit of the Democracy Suite 4.14-E was performed in accordance with Section 6.7 of Volume II of the VVSG. The purpose of the FCA was to verify that the submitted modifications listed in section 2.2.1 performed as documented in the manufacturer supplied technical documentation during pre-voting, voting, and post-voting activities and validated that the modifications meet the requirements of the EAC 2005 VVSG. The FCA for the Democracy Suite 4.14-E campaign included elements of the EMS, ICPs, and ICEs. The FCA tests were designed to ensure compatibility of voting machine functions using the referenced firmware. During the FCA, both normal and abnormal data was input into the system to attempt to introduce errors and test for error recovery.

Summary Findings

One deficiency was discovered during the FCA test. During testing, the ICP stopped responding while printing the write-in report. Full details of the deficiency can be found in Appendix B – Deficiency Report. After correcting the deficiency, the FCA was conducted without further incident or deficiencies.

3.1.3 Source Code Review

As part of testing activities, the source code submitted for the Democracy Suite 4.14-E System was compared to the baseline version included in the Democracy Suite 4.14-D System. Any code changes were reviewed by NTS to determine its compliance to the 2005 VVSG and manufacturer coding standards. Three software suites were examined during this test campaign; EMS, ICE, ICP.

Summary Findings

A total of seventy-five source code deficiencies were discovered during testing. The deficiencies were as follows:

ICP:		EMS:	
Header Return	1	No issues	
Header Purpose	3		
Header File References	7		
Header Revision History	16	ICE:	
Header Globals Missing	3	Header File References	1
Units Called	10	Header Globals Missing	1
Unit Size Too Large	1	Units Called	12
No Parameter Validation	2	Inconsistent- Indenting	1
Line Too Long	1	Non Enumerated Constant	9
Non Enumerated Constant	1		
Header or File Name Missing	6		

All identified source code deficiencies were resolved prior to the conclusion of the source code review process.

3.2 Anomalies

NTS Huntsville defines an anomaly as any unexpected result and/or event that deviates from what is standard, normal, or expected in which no root cause has been determined. All anomalies are logged and monitored throughout the test campaign and subsequent testing efforts. Anomalies may become deficiencies when a root cause is established.

No anomalies occurred during testing of the Democracy Suite 4.14-E System.

3.3 Deficiencies and Resolutions

NTS Huntsville defines a deficiency as any repeatable test result or event that is counter to the expected result or violates the specified requirements. Deficiencies are placed into the NTS deficiency tracking system (Mantis) and the EAC's Virtual Review Tool (VRT) for disposition and resolution.

Deficiencies encountered during testing were successfully resolved prior to test completion. Deficiencies are summarized in the summary findings of the respective test section of the test report and their resolutions are presented in their entirety in Appendix B – Deficiency Report.

4.0 RECOMMENDATION FOR CERTIFICATION

NTS Huntsville performed conformance testing on the Dominion Democracy Suite 4.14-E Voting System to the EAC 2005 VVSG (Version 1.0). NTS determined that the modifications met the requirements of the EAC 2005 VVSG and the manufacturer's technical documentation. Based on test findings, NTS Huntsville recommends the EAC grant the Democracy Suite 4.14-E Voting System certification to the EAC 2005 VVSG. This report is valid only for the equipment identified in Section 2.0 of this report. Due to the varying requirements of individual jurisdictions, it is recommended by the EAC 2005 VVSG that local jurisdictions perform acceptance tests on all systems prior to their implementation within their jurisdiction.

APPENDIX A. ADDITIONAL FINDINGS

This page INTENTIONALLY LEFT BLANK as there were no ADDITIONAL FINDINGS associated with this Test Campaign.

APPENDIX B. DEFICIENCY REPORT

B.1 DEFICIENCY REPORT

Table B-1 describes the functional deficiency and resolution discovered during the D-Suite 4.14-E test campaign.

Table B-1. Functional Deficiency Report

EAC VRT ID ¹	Deficiency Summary	Resolutions
173	During FCA testing of the ICP the unit experienced a freeze up while printing the write-in report. Testers were able to duplicate failure multiple times with two outcomes. Either the unit would freeze up while printing or completely power down.	The deficiency was related to code changes made in response to the ICP source code review. A variable name had been changed. The variable name was corrected and the deficiency has been resolved.

¹ The ID numbers may not be sequential. The deficiency tracking system (VRT) that is utilized by the EAC creates unique ID numbers based on overall entries within the database and not within individual projects.

APPENDIX C. ANOMALY REPORT

This page INTENTIONALLY LEFT BLANK as no Anomalies occurred during this Test Campaign.

APPENDIX D. TEST PLAN

D.1 AS-RUN TEST PLAN

The following change was made to the test plan as a result of testing:

- On page 14, Table 3-1 Proprietary Software Utilized for Testing, The software version for ImageCast Precinct was changed from 4.14.18 to 4.14.20.

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APPENDIX E. TECHNICAL DATA PACKAGE

E.1 DEMOCRACY SUITE 4.14-E TECHNICAL DATA PACKAGE

The documents listed in Table E-1 comprise the Democracy Suite 4.14-E Voting System TDP

Table E-1. Democracy 4.14-E Voting System TDP

Document Title	Version	Date	Document Number
System Overview	4.14.E::324	4/6/15	2.02
System Security Specification	4.14.E::436	5/13/15	2.06
Configuration Management Plan	4.14.D::205	10/22/14	2.11
Quality Assurance Program	1.2.0::80	10/16/12	2.12
System Test and Verification	4.14.D::1	8/21/14	2.07
System Test and Verification Suites	2.0.0::1	2/27/13	2.07
Personnel Training and Deployment Requirements	1.1.0::53	4/9/13	2.10
System Change Notes	4.14.E::101	4/9/15	2.13
EMS Functionality Description	4.14.D::251	7/22/14	2.03
ICE Functionality Description	4.14-D::80	10/2/14	2.03
ICP Functionality Description	4.14.E::136	3/31/15	2.03
ICC Functionality Description	4.14.D::88	10/17/14	2.03
ICE System Hardware Specification	1.2.0::305	10/20/14	2.04
ICP System Hardware Specification	1.1.0::98	10/20/14	2.04
ICE System Hardware Characteristics	1.2.0::95	10/20/14	2.04.1
ICP System Hardware Characteristics	1.1.0::56	10/20/14	2.04.1
EMS Software Design and Specification	4.14.D::219	7/22/14	2.05
ICE Software Design and Specification	4.14.E::121	3/31/15	2.05
ICP Software Design and Specification	4.14.E::116	3/31/15	2.05
ICC Software Design and Specification	1.0.0::34	11/30/12	2.05
Adjudication Software Design and Specification	4.14.D::25	7/22/14	2.05
ICP System Operation Procedures	4.14.E::227	5/12/15	2.08
EMS System Operation Procedures	4.14.E::629	5/13/15	2.08
ICE System Operation Procedures	4.14.E::174	5/13/15	2.08
ICC System Operation Procedures	4.14.D::122	10/16/14	2.08
ICP System Maintenance Manual	1.1.0::66	10/16/12	2.09
ICE System Maintenance Manual	1.1.0::115	10/16/12	2.09
EMS System Maintenance Manual	1.0.0::50	10/16/12	2.09
Adjudication System Maintenance Manual	4.14D::9	7/27/14	2.09
EMS Election Event Designer User's Guide	4.14.E::253	5/12/15	N/A
EMS Results Tally & Reporting User's Guide	4.14.D::153	9/23/14	N/A
EMS Audio Studio User's Manual	4.14.D::49	10/1/14	N/A
Adjudication User's Manual	4.14.D::41	7/28/14	N/A
Election Data Translator User's Guide	4.14.D::57	9/23/14	N/A
EMS Build and Install	2.1.0::18	8/11/14	N/A
ImageCast Precinct Approved Part List	R13	7/28/14	N/A
ImageCast Precinct Device Configuration Files	4.14.E::37	4/1/15	N/A
ICP Extracting Firmware Contents	1.0.0::4	8/12/11	N/A
ImageCast Election Definition Files	3.0.13	4/9/14	N/A
ICP Firmware Build and Install	4.2.16	10/3/12	N/A
ICP Firmware Update Procedure	1.0.0::15	8/14/14	N/A
ICP Technical Guide	1.0.0::9	10/17/12	N/A
ImageCast Precinct Test Specification and Reports	3.0.4	6/28/11	N/A
ImageCast Evolution Approved Parts List	R50	7/21/14	N/A
ICE Technical Guide	1.0.0::60	10/17/12	N/A

E.1 Democracy Suite 4.14-E Technical data Package (Continued)

Table E-1. Democracy 4.14-E Voting System TDP (Continued)

Document Title	Version	Date	Document Number
ICE Build Procedure	4.14.D::49	7/21/14	N/A
ICE Firmware Installation Procedure	4.14.E::46	3/31/15	N/A
ImageCast Evolution Machine Behavioral Settings	4.14.E::48	4/01/15	N/A
ICE Software Installation, Update and Verification Procedures	1.0.0::25	4/17/13	N/A
ImageCast Central Application Installation	4.14.D::23	7/23/14	N/A
ImageCast Central Build Environment Setup	4.14.D::17	8/22/14	N/A
ImageCast Central DR-X10C Scanner Driver Installation	4.14.D::11	7/23/14	N/A
ImageCast Central DR-G1130 Scanner Driver Installation	4.14.D::15	7/22/14	N/A
ImageCast Central Software Build Procedure	2.1.8::24	7/16/13	N/A
Canon DR-X10C User Manual	N/A	N/A	N/A
Canon DR-G1130 User Manual	N/A	N/A	N/A
Replacing DCF File in EMS Build	2.1.0::19	1/15/14	N/A
Adjudication Application Build Procedure	0.12	7/16/13	N/A
TreeViewEx Build	0.4	8/21/14	N/A
Adjudication Installation and Configuration Procedures	4.14.D::52	7/22/14	N/A
Readiness Test Procedure	1.2.0::95	9/25/12	N/A
Dominion Voting C# Automated Code Review Guidelines and Config	0.8	8/04/14	N/A
Engineering Product Development Processes	P0.2	7/23/11	N/A
SCAP Checklist	.02	3/16/11	N/A
ImageCast Printing Specification	1.0.0::23	11/8/13	N/A
ImageCast Total Results File	1.0.0::5	7/27/12	N/A
Coroplast Ballot Box Assembly for ImageCast Precinct and ImageCast Evolution	1.0.0::9	11/4/13	N/A
Dominion Voting C C++ Coding Standard	1.0.0::8	7/27/12	N/A
Dominion Voting Usability Study – ICP	1.0.0::26	7/27/12	N/A
Dominion Voting Usability Study – ICE	1.0.0::36	7/13/12	N/A