Voting System Qualification Test Report

Dominion Voting Systems, Inc.

Democracy Suite, Release 4.14.37, Version 1

For Publication

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Florida Department of State
Division of Elections
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Contents

Executive Summary

Dominion Voting Systems, Inc., (DVS) submitted an application requesting Florida voting system certification of *Democracy Suite Release 4.14.37, Version 1*. Previous releases of the Democracy Suite voting system have been certified in Florida, the latest being *Democracy Suite Release 4.14.17, Version 3* (certified May 26, 2015).

The Democracy Suite voting system is a paper-based voting system that complies with the Help America Vote Act (HAVA)[1] provisions for accessibility voting. The voting system consists of an election management system (EMS); two types of optical scan precinct count tabulators—the ImageCast Precinct (ICP) and the ImageCast Evolution (ICE); and a digital scan central count tabulator, the ImageCast Central (ICC). This certification effort introduces a modified line-up of modems for precinct reporting, a more robust environment for the Standard configuration of the EMS, and other enhancements to improve performance.

The Bureau of Voting Systems Certification (BVSC) conducted the certification qualification testing in two phases. Phase I consisted of a physical audit to verify the setup configuration of the EMS, the restoration of elections, and a functional audit. In this phase, the bureau also conducted mock elections and all election cycle events. BVSC also conducted other tests to verify compliance with the Florida Voting System Standards (FVSS)[2], Florida statutes and rules, and HAVA, as well as to observe specific features and functions of the voting system. In Phase II, BVSC conducted a mass ballot count on the ICP precinct tabulator, and a mass ballot count on the Canon brand of ICC central count scanners.

The qualification test results affirm that *Democracy Suite Release 4.14.37, Version 1* met applicable requirements of the Florida Voting Systems Standards, the Florida Statutes and rules, and HAVA for usability and accessibility. BVSC, therefore, recommends certification of the referenced voting system. However, BVSC will not recommend the approval of any future release of this voting system unless the issues in the Continuous Improvements/Recommendations section of this report are addressed or are no longer an issue.

[1] 52 U.S.C. § 20901 – 52 U.S.C. § 21145.

[2] DS-DE 101 (Rule 1S-5.001, Florida Administrative Code)

Introduction

Dominion Voting Systems, Inc., (DVS) submitted an application requesting Florida voting system certification of *Democracy Suite Release 4.14.37, Version 1.* This voting system is a new release of a previously certified voting system, *Democracy Suite Release 4.14.17, Version 3* (Certificate #150526, approved on May 26, 2015). The new release for which DVS is seeking certification includes additional features and hardware to augment the previously certified system.

The Democracy Suite voting system is a paper-based voting system that complies with HAVA provisions for accessibility voting. The voting system consists of an election management system (EMS); two types of optical scan precinct count tabulators—the ImageCast Precinct (ICP) and the ImageCast Evolution (ICE); and a digital scan central count tabulator, the ImageCast Central (ICC). This certification campaign introduces a modified line-up of modems for precinct reporting, a more robust environment for the Standard configuration of the EMS, and other enhancements to improve performance.

BVSC conducted the certification qualification testing in two phases. Phase I consisted of a physical audit to verify the setup configuration of the EMS, the restoration of general and primary elections with their required media, and a functional audit. Phase I also comprised the conduct of mock elections and all election cycle events, including loading the tabulators with the requisite media, opening polls activities and reports, feeding ballots, closing polls activities and reports, and election night and post-election reporting. BVSC conducted tests to verify compliance with standards for sound pressure, as well as other tests to verify compliance of the voting system. In Phase II, BVSC conducted mass ballot counts, a required test for tabulators that undergo any configuration and/or parts modification.

Background

Dominion Voting System's *Democracy Suite 4.14.37, Version 1* is the latest release of previously-certified versions of the Democracy Suite voting system. The Florida Division of Elections certified *Democracy Suite Release 4.14.17, Version 1* voting system on August 14, 2013; *Democracy Suite Release 4.14.17, Version 1 (Revision 1)* on January 15, 2014; *Democracy Suite Release 4.14.17, Version 2* on April 9, 2014; and *Democracy Suite Release 4.14.17, Version 3* on May 26, 2015.

Testing for *Democracy Suite Release 4.14.37, Version 1* occurred in the BVSC test laboratory in Tallahassee, Florida.

System Overview

The DVS Democracy Suite voting system election management system consists of the following software applications:

- Application Server (APPS) – a server application for executing processes such as rendering ballots, generating audio files and election files, *etc*.
- Audio Studio (AS) – a client application used to record audio files.
- Data Center Manager (DCM) – a server application used in the back-end data center configuration.

- EMS Database Server – A server side repository of the election project database, which includes pre-voting and post-voting data.
- Election Data Translator (EDT) – an end-user application used to export election data from an election project and import election data into the election project.
- Election Event Designer (EED) – a client application that integrates definition functionality together with ballot styling capabilities and represents a main pre-voting phase end-user application.
- File System Service (FSS) – a Windows service application that helps read and write files on memory cards.
- Results Tally and Reporting (RTR) – a client application used for integrating election results acquisition, validation, tabulation, and reporting.

Democracy Suite uses the following scanning and tabulating devices and ADA voting device:

- ImageCast Precinct (ICP) tabulator is an optical scanner with ballot review. The ICP is attached on a ballot box (Figure 1, ICP only). When configured with audio ballots, the ICP is an accessible voting device (ICP-A).

Figure 1. ImageCast Precinct tabulator (ICP)

- ImageCast Evolution (ICE) is a precinct-level optical scanner, with ballot marking capability, audio voting using the Audio Tactile Interface (ATI), and a tabulator connected to a ballot box.

Audio accessible voting may be accomplished on the ICE via the main monitor, as shown in Figure 2, or through an external, or "dual," monitor attached to the main unit (Figure 3). The dual monitor setup (ICE-Dual) allows an accessible voting session to occur while the unit is in standard operating mode and scanning paper ballots.

Figure 2. ImageCast Evolution (ICE) with ballot box

Figure 3. ICE with external, "dual" monitor

- The central count scanners are the ImageCast Central (ICC) tabulators (Figure 4). These systems use commercial-off-the-shelf (COTS) hardware with Dominion software.

Figure 4. ImageCast Central tabulator (ICC) (model Canon DR-X10C shown)

Components under Review

The test objective was to verify that the voting system meets the requirements of the applicable Florida statutes, standards, and federal laws.

Since this release is a new release of the Democracy Suite voting system, BVSC performed a complete FVSS qualification examination. In particular, BVSC reviewed the components of the voting system that were modified or introduced since the previously-certified release.

Conduct of Tests / Findings

The FVSS qualification examination encompassed a physical and functional audit, as well as additional tests to verify compliance with standards for election cycle events and accessible voting, and to verify electronic transmission (modem communication). In addition, BVSC conducted mass ballot count tests on the ICP/ICP-A precinct count tabulator and the central count tabulators. Because the ICE/ICE-Dual had no firmware or software changes since the previous certification, a mass ballot count test was not required on that tabulator.

Systems Setup & Configuration

BVSC set up the voting system and verified that the configurations of the system, as outlined in the submitted technical data package (TDP) documentation, corresponded with the actual system setup.

Findings:
The setup of the voting system had to be re-started several times due to technical problems, lack of required software, and issues with the documentation. After all materials were received, technical issues were resolved, and the vendor clarified its documentation, BVSC found no discrepancies with the setup of the Democracy Suite voting system configurations, or with the firmware updates on the ICP precinct tabulator.

Physical Audit

BVSC conducted a physical audit to verify that the voting system matched the specifications described in the application and the TDP documentation.

Findings:
BVSC found no discrepancies between the voting system and the vendor's specifications in the certification application and TDP.

Functional System Audit

BVSC conducted a functional system audit to verify that all components of the voting system operate as described in the TDP.

Creation/Import of Election Definitions

BVSC restored an existing general election definition and an existing primary election definition. BVSC created new election definitions for a Presidential Preference Primary (PPP) election and a municipal election.

Election Management System – Administrative Reports

BVSC generated and verified many of the reports listed in the vendor's documentation as a part of the certification procedures associated with mock election testing. Reports not included in this activity were verified as a separate event using one of the mock elections.

Findings:
EMS reports contained accurate data and were consistent with the description provided in the TDP.

Voting Equipment Menus – Administrative and Diagnostic Reports

BVSC performed a functional audit by testing all available menu options and administrative reports as well as systems functions in the course of testing.

Findings:
The system performed as indicated in the vendor's TDP and in accordance with the FVSS, and applicable Florida statutes, and administrative rules.

Mock Elections Testing

BVSC conducted mock elections incorporating single- and multiple-card ballots of varying ballot lengths (11-inch to 19-inch) for four election types: a primary, a PPP, a general and a municipal. The tests included both hand marked and machine marked ballots, pre-printed and on-demand ballots, and ballots cast via accessible voting sessions on the ICE and ICP. BVSC simulated elections using the precinct tabulators and central count scanners, from initial preparations (pre-election activities) through voting (election activities), election night and precinct level reporting (post-election and reporting activities). BVSC compared election results to pre-determined results.

Findings:
The system performed as indicated in the vendor's TDP and in accordance with the FVSS, applicable Florida statutes, and administrative rules. BVSC did, however, observe an anomaly in the contest titles on the precinct tabulator tapes for both the ICE and ICP. The special character "-"(hyphen) does not display correctly on the tapes (see Figure 5). This issue appears to be isolated only to the contest titles and only on the paper tapes (zero and results tapes). Furthermore, this issue does not affect the operation of the precinct tabulators or the scanning and tabulation of votes. BVSC determined that this issue is of low impact and severity; however, BVSC will require the vendor correct this issue before any future releases of this voting system will be considered for certification.

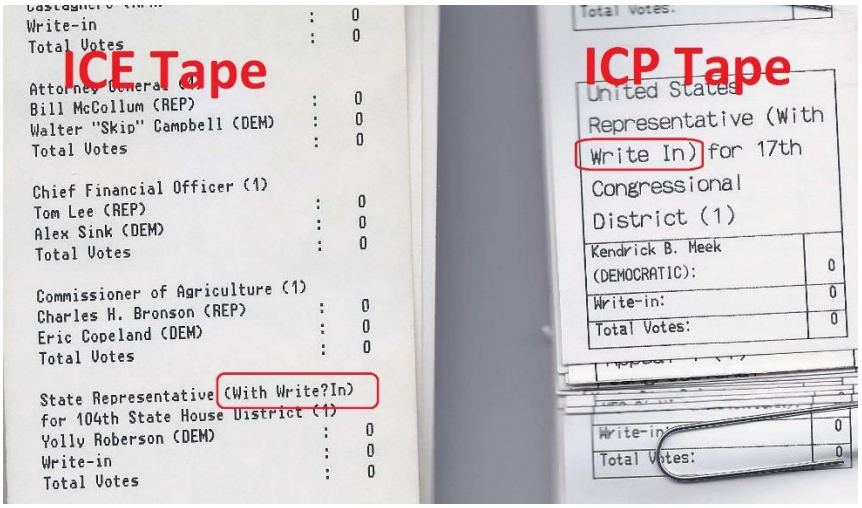

Figure 5. Special character display anomaly on precinct tapes

Pre-Election Activities

Pre-election activities included coding or verifying the coding of the election, preparing the election media, preparing the ballot test decks (unless already prepared by the vendor), preparing and validating the expected results (unless already prepared by the vendor), and preparing the voting equipment. The primary election definition included a universal primary contest (UPC).

Election Activities

Election activities included opening polls, casting ballots using test decks (including hand marked ballots and ballots marked using the ICE), and closing polls.

Election Reporting

Testing included uploading and verifying election results in the EMS by election group (absentee, early voting, Election Day, and provisional voting). BVSC uploaded results directly for the primary election, and used modem communications for the general election. Results were compared against expected results.

Post-Election Activities

Post-election activities included generating reports.

Mass Ballot Counts

DVS upgraded the software on the central count tabulator software (ImageCast Central), which therefore required a mass ballot count for central count scanners. In addition, DVS upgraded the firmware on the ICP/ICP-A, requiring a mass ballot count on that precinct tabulator.

Precinct Scanner (ICP)

BVSC conducted a mass ballot count on one ICP precinct scanner. To reach the 9,900 minimum ballot requirement, BVSC used a test deck of pre-marked ballots supplied by the vendor. The pre-audited ballots, in varying lengths, were printed on 100-lb. conventional stock. The test decks included easily verifiable vote patterns as well as overvotes and blank ballots. A set of predetermined results was also supplied and compared to the election results that were accumulated in the reporting application (RTR).

Specific details follow:

Table 1. Mass Ballot Count Details for ICP Precinct Scanner

Election definition used:	Miami-Dade County 2014 General Election
Ballot length:	Varies
Number of scanner units used:	1
Number of test decks:	14
Number of runs per test deck:	10
Number of ballots per deck:	Varies
Number of cards per ballot:	Varies
Total number of ballots cast:	10,120
Total number of vote targets:	465,440

Findings:

BVSC re-started the ICP Mass Ballot Count when the ICP experienced unexpected shutdowns which the vendor attributed to a faulty ballot box lid power supply. Using a different ICP unit which bypassed the ballot box lid power supply, the second Mass Ballot Count also experienced an unexpected shutdown. BVSC asked DVS to investigate the cause.

The vendor asserted that the ICP is designed to perform a graceful shutdown[3] under certain circumstances. DVS iterated that when the ICP fails to find sufficient contiguous space in the ICP random access memory (RAM) to allocate for the creation of an audit mark (before appending it to the ballot image), it performs a graceful shutdown operation. Audit marks require large chunks of RAM, which is affected by conditions such as ballot lengths of 19 inches or greater, vote targets exceeding 50, and the number of ballots scanned exceeding 1,200 (since the last shutdown). Powering down the ICP, whether initiated by a human or otherwise, allows it to consolidate the available memory space. When the ICP is re-booted, the audit marks of subsequent scanned ballots can then be created and saved. BVSC determined that the shutdown operation was unacceptable for Florida elections.

DVS asked to remedy the issue with an updated device configuration file (DCF)[4] for the ICP, which disabled the audit mark functionality. At the vendor's request, BVSC conducted a new ICP mass ballot count using the same ICP unit with the new DCF file, which allowed the ICP to save the ballot images without audit

[3] DVS indicated that in this instance "graceful shutdown" is defined such that routines in progress are completed and no data is lost.

[4] Device Configuration File. This file is a collection of machine-setting options, some configurable by election officials, and some by only the vendor.

marks. With the new DCF file and the audit mark disabled, the ICP unit completed the Mass Ballot Count without incident, and all election results matched expected results.

The ICP precinct scanner met the acceptance criteria for the precinct scanner mass ballot count as shown below:

Table 2. Acceptance Criteria for ICP Precinct Scanner

ICP Precinct Scanner Mass Ballot Count – Acceptance Criteria	Expected	Accepted
Did the memory registers overflow?	No	✓
Did the public counters increment appropriately?	Yes	✓
Did the tabulated results agree with predetermined vote totals?	Yes	✓
Number of errors (must not exceed 1 in 1,000,000 vote targets). An error is defined as a target scan that produces a result other than the expected result.	≤ 1/1M vote targets	✓
Number of multiple feeds (must not exceed 1 in 5,000 ballots). A multiple feed occurs when the machine pulls multiple ballots and does not "catch" the error.	≤ 1/5K ballots	✓
Number of incorrect rejections of ballots (must not exceed 3%)	≤ 3% total ballots	✓

Central Count Scanner (ICC) – Canon brand

BVSC conducted a mass ballot count on the Canon brand of scanners. To reach the 192,000 minimum ballot requirement, BVSC used a test deck of pre-marked ballots supplied by the vendor. The pre-audited ballots, in varying lengths, were printed on 100-lb. conventional stock. The test decks included easily verifiable vote patterns as well as overvotes and blank ballots. A set of predetermined results was also supplied and compared to the election results that were accumulated in the reporting application (RTR).

BVSC used a Canon DR-X10C scanner and a Canon DR-G1130 scanner for the mass ballot count.

Specific details follow:

Table 3. Mass Ballot Count Details for Canon Central Count Scanners

Election definition used:	Miami-Dade County 2014 Primary Election
Ballot length:	Varies
Number of scanner units used:	2
Number of test decks:	61
Number of runs per test deck:	10
Number of ballots per deck:	Varies
Number of cards per ballot:	Varies
Total number of ballots cast:	192,040
Total number of vote targets:	10,008,820

Findings:

The Mass Ballot Count was delayed due to malfunctions of the scanners provided by the vendor for testing. BVSC found that the scanners needed proper maintenance, required replacements for defective parts, and had not been configured by the vendor for the test deck. Testing was halted until the vendor resolved the issues by performing maintenance and repairs, replacing machines, or diagnosing and revising configuration settings. Once testing resumed, the Canon brand scanners met the acceptance criteria for the central count scanner mass ballot count as shown below:

Table 4. Acceptance Criteria for Canon Brand Scanners

Canon Brand Scanners Mass Ballot Count – Acceptance Criteria	Expected	Accepted
Did the memory registers overflow?	No	✓
Did the public counters increment appropriately?	Yes	✓
Did the tabulated results agree with predetermined vote totals?	Yes	✓
Number of errors (must not exceed 1 in 1,000,000 vote targets). An error is defined as a target scan that produces a result other than the expected result.	≤ 1/1M vote targets	✓
Number of multiple feeds (must not exceed 1 in 5,000 ballots). A multiple feed occurs when the machine pulls multiple ballots and does not "catch" the error.	≤ 1/5K ballots	✓
Number of incorrect rejections of ballots (must not exceed 3%)	≤ 3% total ballots	✓

Additional Testing

In addition to mock elections and mass ballot counts, BVSC conducted other tests to verify compliance with FVSS, applicable Florida statutes and administrative rules, and HAVA, as well as to observe specific features and functions of the voting system.

Accessibility – Sound Pressure Level

BVSC conducts a sound pressure level test to verify conformance to section 101.56062(1)(g-i), Florida Statutes (F.S.), which describes the sound pressure level standards for a voting system's audio voting features. Because the vendor upgraded the firmware since the previously certified version, BVSC conducted a sound pressure level test on the ICP-A.

BVSC used an ITU-T P.50[5] test signal, which it incorporated into an election definition. The test signal replaced the initial sound file normally heard by a voter at the beginning of an accessible voting session. The election definition was configured to play the test signal as a loop. BVSC took all sound pressure level measurements after the elapse of a complete loop to capture instrument readings across the entire loop.

[5] ITU-T P.50 - "ITU-T" is the telecommunication standardization sector of the International Telecommunication Union (ITU). ITU is a United Nations specialized agency for information and communication technologies. The "P.50" represents one of their "P Series" objective transmission standards/measures used for testing the transmission quality of artificial voices.

The test equipment included a Type I IEC 318[6] Brüel & Kjaer Artificial Ear, a Brüel & Kjaer free-field ½-inch microphone (Type 4189), and Brüel & Kjaer model 2250-A analyzer[7]. BVSC conducted the test using the COTS headphones provided by the vendor.[8]

Findings:

BVSC found that the ICP-A complies with the applicable statute. The results of the sound pressure level tests for the ICP-A are in the table below:

Table 5. Sound pressure level test results – ICP-A

Sound Pressure Level Test Results – ICP-A				
	Average Maximum Volume (dBA)[9]	**Average Minimum Volume (dBA)**	**Gain (dBA)[10]**	**Intermediate Level (dBA)[11]**
Right Headphone	100.82	57.58	43.24	70.30
Left Headphone	105.20	56.24	48.96	72.80

Accessibility – Force

BVSC conducted the Force Test on the "cast" and "return" buttons of the ICP. BVSC also tested the accessible voting input peripherals such as the Audio Tactile Interface (ATI) and the Paddle buttons. BVSC conducted this test to determine compliance with section 101.56062(1)(l) F.S., which requires that "the force required to operate or activate the controls must be no greater than 5 pounds of force."

BVSC conducted the test during an accessible-voting session using a Dillon model GL digital force gauge. BVSC recorded three measurements for each button.

Findings:

No measurement exceeded the statutory maximum of 5 pounds of force. BVSC found the tested devices complied with the applicable statute.

Contest Recounts

BVSC conducted recounts in two elections to verify compliance with section 102.141(7), F.S., and the FVSS. BVSC selected one countywide race and one district-wide race in both the general and municipal elections.

[6] IEC - International Electrotechnical Commission. IEC 318 is a measure used for ear simulators as defined in ITU-T P-Series standards.

[7] Brüel & Kjaer 2250 Analyzer - A hand-held analyzer and sound level meter that performs high-precision measurement tasks in environmental, occupational and industrial application areas. The manufacturer calibrated all equipment used in this test within the recommended calibration timeframes.

[8] The vendor's TDP specifies the following COTS headphones: Sony MDR G45LP-01 headphones, Cyber Acoustics ACM-70 headphones, or AVID FV060 headphones (Democracy Suite Florida Overview Manual). The vendor supplied Cyber Acoustics ACM-70 headphones for testing.

[9] Must be greater than 97 dBA (decibels weighted).

[10] Maximum volume minus minimum volume. Must be greater than 20 dB.

[11] Must be between (Minimum volume + 12 dB) and 97 dB.

The recounts were conducted on both brands of central count scanners. Per the TDP instructions, BVSC suppressed non-recount races in the EMS results software.

Findings:
BVSC found that the voting system complied with applicable statutes and standards. Democracy Suite allows the user to report results from only the affected races. Furthermore, the system permits a recount on more than one race at a time, as demonstrated by processing both the countywide race and district-wide race in one recount.

Modem

DVS has changed the list of modems that can be used with the precinct tabulators, removing a cellular modem due to obsolescence and adding new modems. BVSC tested all modems submitted by the vendor.

Findings:
The modems and the voting system functioned as expected.

Folded Ballot

Although Florida law and FVSS do not require this test, BVSC conducted a folded-ballot test to simulate absentee ballot processing. The objective was to observe the behavior of the ICP precinct count tabulator and the ICC central count scanners when they scan folded ballots.

BVSC used a test deck comprised of elections with several ballot lengths (11-inch, 14-inch, 17-inch, 18-inch, 19-inch, 20-inch, and 22-inch ballots). Each test deck included different fold types: Z-fold, C-fold, a fold through a vote target[12], and a fold through a write-in, up to the maximum number of folds allowed per ballot length[13].

BVSC cast ballots into the ICP and ICC scanners (Canon) and compared the results to expected results.

Findings:
The scanners accepted all ballots presented, and tabulated results matched expected results.

Battery Life – ICP

BVSC performed a battery life test on the ICP to see how long the unit would remain functional on battery power. The battery was fully charged before beginning the test, and no ballots were scanned during the test.

[12] Folds through a vote target are outside the ballot printing specification as outlined in the vendor's documentation. See Dominion Voting Systems ImageCast Printing Specification, Version 4.14.DS-FL::29 (July 7, 2015), p. 11.

[13] Dominion Voting Systems ImageCast Printing Specification, Version 4.14.DS-FL::29 (July 7, 2015), p. 11.

Findings:
The ICP battery remained operational for 2 hours 16 minutes, exceeding the vendor's specification of at least two hours of operating time.[14]

Simulated System Failure / Recovery – ICP

BVSC performed a catastrophic failure test on the ICP to observe how long the scanner could operate before shutting down due to power loss, and whether it would retain the counts and votes after a shutdown. The battery was fully charged before beginning the test, and ballots were scanned during the test at an average rate of 100 ballots per hour (using 14-inch ballots).

Findings:
BVSC found that the ICP was operational for 3 hours and 6 minutes before shutting down, exceeding the vendor's specifications of at least two hours of operating time.[15] The scanner retained the public count and protective count, and ballots cast tallied correctly.

System Time & Date Changes

BVSC examined the ICP's ability to automatically accommodate time and date changes such as the Daylight Saving Time observance and leap year calendar changes.

Daylight Saving Time

BVSC examined the ICP clock's ability to automatically advance or turn back one hour with the Daylight Saving Time change. DVS advised in a previous certification that the ICP's clock is designed to be manually adjusted by the election official; it does not automatically adjust for Daylight Saving Time changes.

Findings:
BVSC found the ICP operated as expected.

Leap Year

BVSC examined whether the ICP correctly handled February 29 during leap years and non-leap years.

Findings:
BVSC found the ICP operated as expected.

[14] 2.08 – ImageCast Precinct System Operation Procedures, Version 4.14.DS-FL::205 (November 17, 2014), pg.19.
[15] Ibid.

IR Security Sensor

The infrared (IR) paper sensor is a security feature which, when enabled for an election, allows only ballots printed on special IR-reactive ballot stock to be cast. The infrared (IR) paper sensor contained in the precinct scanners detects paper infused with IR-reactive elements; when paper without the IR-reactive elements is inserted (as in the case of a fraudulent ballot), the tabulator rejects it. Counties have the option to enable this feature and print their ballots on the IR-reactive paper (IR security ballot stock), or use conventional ballot stock with the feature disabled. BVSC regression-tested the IR Security Sensor feature on the ICP to ensure that it functioned properly.

Findings:
BVSC found that the IR Security Sensor on the ICP operated as expected.

User Security

BVSC observed the voting system's behavior regarding user management and access control. BVSC observed no security-based anomalies during the course of any of the certification test activities.

Environmental Tests

NTS Huntsville (AL), a voting system test laboratory (VSTL), performed the required environmental tests. BVSC accepts NTS's recommendation that the voting system satisfies the requirements for these tests. The reports referenced for this activity are: *Environmental and EMI Hardware Test Report*[16] and the *Florida Rain Exposure, Sand, and Dust Testing* (Florida specific environmental hardware qualification compliance per the FVSS).[17]

Source Code Review

NTS Huntsville (AL) performed the required source code review pursuant to U.S. Elections Assistance Commission (EAC) certification. The report referenced for this activity is: *Test Report of EAC 2005 VVSG Certification Testing Performed on Dominion Voting Systems 4.14-D*.[18] BVSC accepts the findings of NTS that the source code meets the requirements of the EAC 2005 VVSG.

[16] Wyle Laboratories, Inc. *National Certification Test Report. Certification Testing of the Dominion Democracy Suite Version 4.0 Voting System. EAC Certification Number - DVS-40-G-10*, Report No. T57381.01-01 (Huntsville, Alabama: Wyle, 2012), Appendix A.2.

[17] Wyle Laboratories, Inc. *Test Report for Florida Rain Exposure Sand & Dust Testing of the Dominion Democracy Suite Version 4.14 Voting System*, Report No. T70828.01 (Huntsville, Alabama: Wyle, 2013).

[18] National Technical Systems Hunstville. *Test Report of EAC 2005 VVSG Certification Testing Performed on Dominion Voting Systems 4.14-D. EAC Certification Number: DVS-DemSuite4.14-D*, Test Report No. PR031072-01 Rev. C (Huntsville, Alabama: NTS, 2014).

Continuous Improvement / Recommendations

BVSC makes the following recommendation for purposes of continuous improvement.

1. The precinct tabulator tape anomaly observed during testing should be addressed in the next release of the Democracy Suite voting system. This issue where the zero tapes and results tapes of the precinct scanners do not correctly display the special character "-" (hyphen) affects only the paper tapes and not the operability or tabulating ability of the scanners; therefore, the anomaly does not preclude this version of the Democracy Suite voting system from recommendation for certification. However, any future certification for the Democracy Suite voting system, if granted, will be conditioned upon the vendor correcting this display issue.

2. The vendor's remedy of the ICP's unexpected shutdown issue was to disable the audit mark feature on the ICP. The audit mark feature is not required by the Florida Statutes, rules, or FVSS. If any future release of the Democracy Suite voting system continues to incorporate the audit mark, DVS will be required to leave the audit mark disabled or, if enabled, the certification of such a system will be conditioned upon DVS correcting the shutdown issue.

Conclusion

Qualification test results affirm that *Democracy Suite Release 4.14.37, Version 1* met applicable requirements of the Florida Voting Systems Standards, the Florida Statutes and rules, and the Help America Vote Act (HAVA) for usability and accessibility. The Florida Division of Elections, Bureau of Voting Systems Certification, therefore, recommends certification of the referenced voting system. However, BVSC does not recommend the approval of any future release of this voting system unless the issues in the Continuous Improvements/Recommendations section of this report are addressed or are no longer an issue.

Appendices

Acronyms

ADA	Americans with Disabilities
AS	Audio Studio
ATI	Audio Tactile Interface
BVSC	Bureau of Voting Systems Certification
COTS	Commercial, off-the-shelf
DVS	Dominion Voting Systems, Inc.
EAC	U.S. Elections Assistance Commission
EED	Election Event Designer
EMS	Election Management System
FVSS	Florida Voting Systems Standards
HAVA	Help America Vote Act
ICC	ImageCast Central Count Tabulator
ICE	ImageCast Evolution Precinct Count / ADA Tabulator
ICP	ImageCast Precinct Count Tabulator
LAN	Local Area Network
PPP	Presidential Preference Primary
RTR	Results Tally and Reporting
TDP	Technical Data Package
UPC	Universal Primary Contest
VVSG	Voluntary Voting System Guidelines

Figures Index

Tables Index

Component Version List

The component version list describes in detail the components of the voting system.

Democracy Suite EMS

[Redacted pursuant to section 282.318, Florida Statutes, and to the U.S. Department of Homeland Security's designation of elections as a critical infrastructure.]

[Redacted, continued]

Precinct Scanners

[Redacted pursuant to section 282.318, Florida Statutes, and to the U.S. Department of Homeland Security's designation of elections as a critical infrastructure.]

ImageCast Precinct with Audio (ICP-A)

[Redacted pursuant to section 282.318, Florida Statutes, and to the U.S. Department of Homeland Security's designation of elections as a critical infrastructure.]

[Redacted, continued]

[Redacted, continued]

[Redacted, continued]

Central Count Scanners

[Redacted pursuant to section 282.318, Florida Statutes, and to the U.S. Department of Homeland Security's designation of elections as a critical infrastructure.]

Florida Department of State
KEN DETZNER
Secretary of State