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 December 10, 2013

## CERTIFICATION TEST PLAN

Prepared for:

<b>Manufacturer Name</b>	Dominion Voting Systems, Inc.
<b>Manufacturer System</b>	Democracy Suite Version 4.14-B
<b>EAC Application No.</b>	DVS1302
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**REPORT NO.** Test Plan T71372.01-01 Rev A

**DATE** December 10, 2013

REV	DATE	PAGE OR PARAGRAPH AFFECTED	DESCRIPTION OF CHANGES
---	11-26-13	Entire Document	Original Release
A	12-10-13	Section 1.1	Updated wording to sentence describing the "Acclaimed Contest Behavior" change for clarity, and added a sentence defining "acclaimed contest."
A	12-10-13	Section 1.5.1	Added abbreviation to Election Management System component name.
A	12-10-13	Section 1.5.1	Updated wording in description of ImageCast Central Workstation for clarity.
A	12-10-13	Section 3.1	Updated wording to sentence describing software change for clarity, and added a sentence defining "acclaimed contest."
A	12-10-13	Section 4.4	Replaced "visual scan of every line of source code for an initial review and" with "manual review of" in sentence describing source code review process.
A	12-10-13	Section 6.3.1	Updated section to address Regression Testing.

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## **1.0 INTRODUCTION**

The purpose of this 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-B 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 submitted an application to the EAC for certification of the Democracy Suite 4.14-B to the requirements of the EAC 2005 VVSG.

The full system details for the previous test campaigns including system, performance, security, usability, system verification, and TDP deliverables can be reviewed in the EAC test reports “Dominion Democracy Suite 4.0,” “Dominion Democracy Suite 4.14 Modification,” and “Dominion Democracy Suite 4.14-A Modification” (listed on [www.eac.gov](http://www.eac.gov)).

### **1.1 Scope**

The purpose of this modification is to introduce the upgrade from the EAC certified Democracy Suite 4.14-A (DemSuite-4-14-A) Voting System to the Democracy Suite 4.14-B (DemSuite-4-14-B) Voting System.

\*Note: The Democracy Suite 4.14-A (DemSuite-4-14-A) Voting System is an upgrade to the Democracy Suite 4.14 (DemSuite-4-14) Voting System, which is itself an upgrade to the Democracy Suite 4.0 (DVS-40-G-10) Voting System.

The software utilized in the system will also be compared to versions that have been submitted for testing in previous EAC campaigns at Wyle Laboratories to determine the extent of the source code review required (annotated later in the test plan). All modified source code will be reviewed 100% by Wyle. Wyle Laboratories’ personnel will perform functional testing to ensure that all applicable VVSG requirements are met and changes to the software do not adversely affect operational features of the voting system.

The upgraded features included in this modification are listed below:

1. **Acclaimed Contest Behavior:** ImageCast Evolution and ImageCast Precinct application software has been updated to change the system’s behavior when handling “acclaimed contests,” during voting of an audio ballot. An Acclaimed Contest is a contest where the number of candidates is equal to or less than the “Vote For” number.
2. **Engineering Change Orders (ECOs):** ECOs that have been integrated into the latest production build of the ImageCast Evolution (ICE) precinct ballot tabulator and the ImageCast Evolution ballot box. A listing of the ECOs included in this test campaign is provided in Appendix A of this document.

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

**1.0 INTRODUCTION (Continued)**

**1.2 References (Continued)**

- Election Assistance Commission Voting System Test laboratory Program Manual, Version 1.0, effective date July 2008
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, “NVLAP Procedures and General Requirements (NIST Handbook 150),” dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, “Voting System Testing (NIST Handbook 150-22),” dated May 2008
- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Wyle Laboratories’ Quality Assurance Program Manual, Current Revision
- Wyle Laboratories Quality Assurance Manual, Current Revision
- ANSI/NCSL Z540-1, “Calibration Laboratories and Measuring and Test Equipment, General Requirements”
- ISO 10012-1, “Quality Assurance Requirements for Measuring Equipment”
- EAC Requests for Interpretation (listed on [www.eac.gov](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)
- Dominion Voting Systems’ Democracy Suite 4.14 Modification VSTL Certification Test Report Rev. A (listed on [www.eac.gov](http://www.eac.gov))
- Dominion Voting Systems Democracy Suite 4.14 Technical Data Package
- Dominion Voting Systems’ Democracy Suite 4.14-A Modification VSTL Certification Test Report Rev. B (listed on [www.eac.gov](http://www.eac.gov))
- Dominion Voting Systems Democracy Suite 4.14-A Technical Data Package

**1.3 Terms and Abbreviations**

Table 1-1 defines all terms and abbreviations applicable to the development of this Test Plan.

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1.0 INTRODUCTION (Continued)

1.3 Terms and Abbreviations (Continued)

**Table 1-1 Terms and Abbreviations**

Term	Abbreviation	Definition
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.
Audio Studio	AS	EMS application used to record audio files.
Audio Tactile Interface	ATI	Electronic voter interface that does not require visual reading of a ballot. Audio is used to convey information to the voter and sensitive tactile controls allow the voter to convey information to the system.
Configuration Management	CM	---
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software.
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
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.
System Under Test	SUT	---
Test Case Procedure Specifications	TCPS	Wyle Laboratories-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	---
Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Laboratories Operating Procedure	WoP	Wyle Laboratories' Test Method or Test Procedure.

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## 1.0 INTRODUCTION (Continued)

### 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 Laboratories to be qualified to perform the testing.

#### 1.4.1 Test Case Development

Wyle Laboratories will utilize the “Wyle Baseline Test Cases” for the Functional Test. These will be augmented with specially-designed test cases tailored to the Dominion Democracy Suite 4.14-B.

#### 1.4.2 Test Procedure Development and Validation

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

#### 1.4.3 Third-Party Testing

Wyle Laboratories will not utilize any 3rd party testing during the performance of the Dominion 4.14-B test campaign.

### 1.5 Target of Evaluation Description

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

#### 1.5.1 System Overview

The Dominion Voting Systems Democracy Suite 4.14-B System is a paper-based optical scan voting system, and a modification of the previously-certified Democracy Suite 4.14-A System.

The certified 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 EMS consists of eight components running as either a front-end/client application or as a back-end/server application. Below is an overview and brief description of each. This listing is for informational and verification purposes only and not all areas will be included in testing based on the limited modifications included in this test campaign.

- **Election Event Designer (EED) client application** - integrates election definition functionality and represents a main pre-voting phase end-user application.
- 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.

**1.0 INTRODUCTION (Continued)**

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

**1.5.1 System Overview (Continued)**

**Election Management System (Continued)**

- 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.
- Data Center Manager client application - represents a system level configuration application used in EMS back-end data center configuration.
- 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.
- 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.
- 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.
- Election Data Translator (EDT) – exports and imports data in a format suitable for usage in the Election Event Designer (EED) application.

**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 ImageCast compatible ballot storage boxes. 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.

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1.0 INTRODUCTION (Continued)

1.5 Target of Evaluation Description (Continued)

1.5.1 System Overview (Continued)

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



**Photograph 1: ImageCast Evolution (ICE) on Plastic Ballot Box**

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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) on Metal Ballot Box**

1.0 INTRODUCTION (Continued)

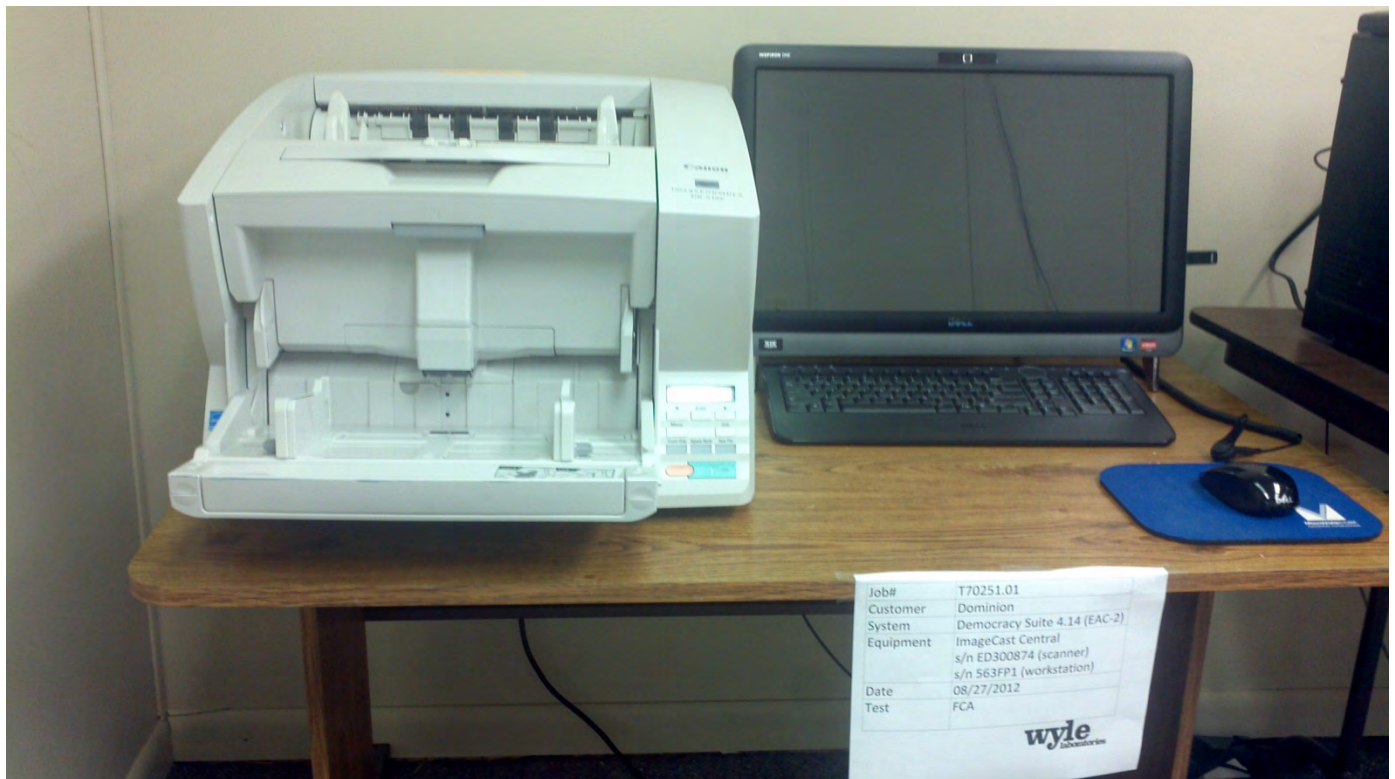
1.5 Target of Evaluation Description (Continued)

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 which hosts the ImageCast Central application used for ballot image processing, election rules processing, and results transfer to the EMS Datacenter.
- **Canon DR-X10C 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**

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## 2.0 PRE-CERTIFICATION TESTING AND ISSUES

Wyle Laboratories has conducted a pre-certification test, and findings indicate that all system changes are consistent with the change items documented in the EAC application DVS-1302.

### 2.1 Evaluation of Prior VSTL Testing

Wyle Laboratories will reutilize all testing from the previously-certified systems submitted by Dominion Voting Systems. The testing of these systems was conducted by Wyle Laboratories in accordance with the EAC 2005 VVSG, and the EAC Certification Numbers are DVS-40-G-10, DemSuite-4-14, and DemSuite-4-14-A.

#### 2.1.1 Known Field Issues

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

## 3.0 MATERIALS REQUIRED FOR TESTING

The materials required for certification testing of the Democracy Suite 4.14-B Voting System include software, hardware, test materials, and deliverable materials, to enable the test campaign to occur, were shipped directly to Wyle Laboratories by Dominion Voting Systems. The equipment used during this test is the same equipment used during the original certification campaign.

### 3.1 Software

The Democracy Suite Version 4.14 software for the Election Event Designer, Results Tally and Reporting, and ImageCast Central will be utilized during the Democracy Suite 4.14-B modification as there were no changes to these software items for this modification. The software for the ImageCast Precinct and ImageCast Evolution precinct ballot tabulators will be updated to change the system's "acclaimed contest" behavior when voting an audio ballot. An acclaimed contest is a contest where the number of candidates is equal to or less than the "Vote For" number. This software is listed in Table 3-1.

**Table 3-1 Software Utilized for Testing**

Software Required For Testing	Software Version
Democracy Suite EMS EED Client Application	4.14.23
Democracy Suite EMS RTR Client Application	4.14.23
ImageCast Precinct (ICP)	4.14.9
ImageCast Evolution (ICE)	4.14.12

### 3.2 Equipment

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

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

**3.2 Equipment (Continued)**

**Table 3-2 Test Equipment**

<b>Equipment</b>	<b>Manufacturer</b>	<b>Serial Number</b>
Laptop - Latitude E6530	Dell	2779CW1
ICP - Precinct Count Optical Scanner	Dominion Voting Systems	AANAGCP0265
ICP - Precinct Count Optical Scanner	Dominion Voting Systems	WLDAFBH0023
ICE - Precinct Count Optical Scanner	Dominion Voting Systems	AAFEBDW0117
ICE - Precinct Count Optical Scanner	Dominion Voting Systems	ICE2P200004
ICE Ballot Box	Dominion Voting Systems	AAUCBDQ0074
iButton (SHA-1) with USB Reader/Writer	Maxim	514DFD
Compact Flash cards	RiData CFC-14A	N/A
Compact Flash Card Reader	SanDisk	0171630

**3.3 Test Tools/Material**

This subsection enumerates any and all test materials needed to perform voter system testing in Table 3-3. The scope of testing determines the quantity of a specific material required.

**Table 3-3 Test Tools/Material**

<b>Test Tool/Material</b>	<b>Quantity</b>
80 lb. Stock Ballot Paper	as required
Sharpie Markers	as required
Printer Thermal Paper Rolls	as required
Ballot Box Security Seals/Hasp Locks	as required

**3.4 Deliverable Materials**

At test conclusion, Wyle Laboratories shall deliver a final report to Dominion Voting Systems and the EAC that includes the following:

- A description of the functional testing results
- ECO analysis results
- TDP documentation showing changes
- A list of any anomalies discovered during testing on Wyle Laboratories form WH1066, Notice of Anomaly

All supplied equipment and software furnished to Wyle Laboratories for this modification shall be returned to the customer at the conclusion of testing unless otherwise agreed in writing.

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## 4.0 TEST SPECIFICATIONS

Modification testing of the DVS 4.14-B is the configuration submitted in the EAC application DVS1302. Wyle Laboratories' qualified personnel will ensure that all certification testing performed on the manufacturer's voting system follows Wyle Laboratories' procedures for testing, and the specific test cases developed for this campaign meet the requirements of the EAC 2005 VVSG and EAC Testing and Certification Program Manual.

All RFIs and NOCs applicable as of the date of this document shall apply to this test campaign unless otherwise noted.

### 4.1 Requirements (Strategy of Evaluation)

The strategy for evaluating the Democracy Suite 4.14-B System was to review the change log and the engineering changes submitted for the modified system. Wyle Laboratories has determined that functional tests will be required during this test campaign.

This test campaign includes the following tests:

- Technical Data Package review to ensure all modifications are documented as applicable.
- Source Code Review to ensure all modified software meets 2005 VVSG requirements.
- Functional tests targeted to validate proper behavior for "acclaimed contests" for the ICP and ICE precinct ballot tabulators
- Engineering Change Order (ECO) Review and Engineering Analysis of the ECOs applied to the ImageCast Evolution precinct ballot counter and the Image Cast Evolution ballot box

Wyle Laboratories' personnel shall maintain a test log of the procedure(s) employed. This log identifies the system and equipment by model and serial number.

In the event that the project engineer deems it necessary to deviate from Wyle Test Cases or Wyle Operating Procedures (WoPs) pertaining to the test environment, the equipment arrangement and the method of operation, the specified test procedure, or the provision of the 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 by the Project Engineer and Program Manager).

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

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

- WoP 1 – Operational Status Checks
- WoP 2 – Receipt Inspection
- WoP 3 – Technical Data Package Review
- WoP 4 – Test Plan Preparation
- WoP 5 – Source Code Review
- WoP 7 – Trusted Build
- WoP 25 – Physical Configuration Audit
- WoP 26 – Functional Requirements
- WoP 34 – Test Report

#### 4.0 TEST SPECIFICATIONS (Continued)

#### 4.2 Hardware Configuration and Design

Dominion Voting Systems submitted Engineering Change Orders (ECO's) for each of the changes submitted for the Democracy Suite 4.14-B test campaign. Wyle Laboratories will perform an engineering analysis of these documents, as well as a visual inspection of the changes, to determine if further testing is required for this test campaign due to the nature of the modifications.

The Democracy Suite 4.14-B EMS shall be configured as follows for functional testing:

EMS – A COTS laptop documented in Section 3.2 shall be loaded with version 4.14.23 build of the EMS. The CF Card Reader shall be attached as a peripheral.

ICP, ICE – Loaded with firmware built from source code reviewed by Wyle Laboratories, and mounted on an ImageCast compatible ballot box.

#### 4.3 Software System Functions

The submitted changes for this test campaign are documented in Section 1.1. 100% of all modified software will be manually reviewed to the 2005 VVSG requirements. The modifications shall be tested using targeted functional tests designed to verify specific changes made to the voting system. Operational status checks will be performed before and after each test to confirm system readiness.

#### 4.4 Source Code Review

The strategy for evaluating Dominion Democracy Suite 4.14-B will be based on the previously identified modification to the system. All changes from Democracy Suite 4.0 (DVS-40-G-10) will be reviewed to the EAC 2005 VVSG coding standards and the manufacturer supplied coding standards (Dominion Voting C C++ Coding Standard).

As the source code is received, an SHA1 hash value will be created for each source code file. **The source code team will conduct a manual review of every line of modified source code.** 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.

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

The next step in the source code review will be to create a “Trusted Build” from the approved source code.

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#### 4.0 TEST SPECIFICATIONS (Continued)

#### 4.4 Source Code Review (Continued)

##### Trusted Build Process

- 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-B 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.

#### 5.0 TEST DATA

#### 5.1 Test Data Recording

All equipment utilized for test data recording shall be identified in the test data package. Additionally, the output test data shall be recorded in an appropriate manner as to allow for data analysis. For TDP reviews, results shall be compiled in output reports and submitted to Dominion Voting Systems for resolution. All test results, including functional test data, shall be recorded on the relevant WoPs and Test Cases.

Wyle Laboratories shall evaluate all test results against the technical documentation provided by Dominion Voting Systems, as well as the requirements set forth in the 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the Dominion Voting Systems Version 4.14-B documentation.



**5.0 TEST DATA (Continued)**

**5.1 Test Data Recording (Continued)**

Per the EAC 2005 VVSG, these parameters shall encompass the test tolerances and samples to define the minimum number of combinations or alternatives of input and output conditions that can be exercised to constitute an acceptable test of the parameters involved. The parameters will also include events which criteria define the maximum number of interrupts, halts, or other system breaks that may occur due to non-test conditions (excluding events from which recovery occurs automatically or where a relevant status message is displayed).

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

**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.

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## 6.0 TEST PROCEDURE AND CONDITIONS

### 6.1 Facility Requirements

All testing shall be conducted at the Wyle Laboratories Huntsville, AL facility unless otherwise annotated. All instrumentation, measuring, and test equipment used in the performance of this test campaign shall 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. 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:  $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$  ( $77^{\circ}\text{F} \pm 18^{\circ}\text{F}$ )
- 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  $\pm 1.5$  dB
  - 500 to 2000 Hertz  $\pm 3.0$  dB
- Random Overall grms  $\pm 1.5$  dB
- Acoustic Overall Sound Pressure Level  $+4/-2$  dB

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

### 6.2 Test Set-Up

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

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## 6.0 TEST PROCEDURE AND CONDITIONS (Continued)

### 6.2 Test Set-Up (Continued)

Wyle Laboratories' QA personnel shall record the serial numbers and part numbers. Comparison shall be made between those numbers recorded and those listed on the shipper's manifest. Any discrepancies noted shall be brought to the attention of the Dominion Voting Systems' representative for resolution. The Technical Data Package and all source code modules received shall be inventoried and maintained by Wyle Laboratories' Project Engineer assigned to testing.

Wyle Laboratories' QA personnel shall record the serial numbers and part numbers. Comparison shall be made between those numbers recorded and those listed on the shipper's manifest. Any discrepancies noted shall be brought to the attention of the Dominion Voting Systems' representative for resolution.

For hardware test setup, the system shall be configured as it would be for normal field use. This includes connecting all supporting equipment and peripherals. Wyle Laboratories' personnel shall properly configure and initialize the system and verify it is ready to be tested by following the procedures detailed in the Dominion Voting System's technical documentation. Wyle Laboratories shall develop an operational status test to be performed prior to and immediately following each hardware test. Wyle Laboratories shall develop the system performance levels to be measured during operational tests.

### 6.3 Test Sequence

There is no specific sequencing enforced for the execution of the required tests. The following section provides a brief description of each system test to be performed for the Democracy Suite 4.14-B test campaign.

#### 6.3.1 System Testing

Technical Data Package (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.

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

## 6.0 TEST PROCEDURE AND CONDITIONS (Continued)

### 6.3 Test Sequence (Continued)

#### 6.3.1 System Testing (Continued)

- 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.
- Functional Tests – Test cases will be developed which target specific functional changes made to the Democracy Suite 4.14-B Voting System. Functional tests will then be performed which verify that the functional changes function as described by the manufacturer. Test Cases developed for the functional tests will be provided to the EAC.
- Regression Testing – Wyle analyzed the submitted changes and determined that regression testing of the system is not required due to the changes being limited to the ImageCast Precinct and ImageCast Evolution precinct ballot tabulators' handling of "acclaimed contests" when voting audio ballots and does not affect other operations.

The components of the Dominion Voting Systems' Version 4.14-B shall only undergo the tests described in Table 6-1.

**Table 6-1 Dominion Voting Systems version 4.14-B Test Sequence**

Test	Procedure/Description	Specimen
Technical Data Package (TDP) Review	Documentation review for compliance, correctness, and completeness	TDP package submitted for Democracy Suite 4.14-B
Physical Configuration Audit	Audit hardware and software models and versions	System hardware and test artifacts submitted for Democracy Suite 4.14-B
Functional Tests	Functional testing to the system documentation and EAC 2005 VVSG requirements	System hardware and test artifacts submitted for Democracy Suite 4.14-B

## 6.4 Test Operation Procedures

Wyle Laboratories shall provide the step-by-step procedures for each test case to be conducted. Each step is assigned a test step number. This step number, along with critical test data and test procedural information, shall be tabulated onto a Test Control Record for control and the recording of test results.

Any test failures shall be recorded on form WH1066, Notice of Anomaly. These anomalies shall be reported to the manufacturer and the EAC.

## 7.0 TEST OPERATIONS PROCEDURES

### 7.1 Proprietary Data

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

**APPENDIX A**  
**ENGINEERING CHANGE ORDERS (ECOs)**

## ImageCast Evolution PCOS-410A Engineering Change Orders

### Change Type Legend

Abbrev.	Description
AVL	Approved Vendors List Change
DFM	Design for Manufacturing Change
DOC	Drawing or Production Documentation Change
PART	Part Change

Item #	Description	Rev	ECO#	Primary Change Type	Comment
109-001149	BASE PLATE ASSEMBLY	2	100077	DFM	Changed 4 slots to 4 holes to improve alignment on forming fixture
110-001009	Inductance 1.4uH L10.4x10.4MM 12A 20%	2	100079	DOC	Released to production; added second vendor
109-000616	BRACKET, REAR BELT TENSIONER	2	100084	DFM	Changed profile to allow more travel for new spring
109-001087	FRAME, TRANSPORT RIGHT	13	100084	DFM	Update spring tab for new rear spring; add burr side note
109-001149	BASE PLATE ASSEMBLY	3	100084	DFM	Changed 5 holes to slots to improve manufacturability
120-000044	Roller - Idler Nip	2	100084	DOC	Update Material
120-001060	Keymat, CAST & RETURN, PCOS-400A	2	100084	DFM	Changed actuation force and snap force as suggested by vendor. Corrected finish as per DFM feedback.
120-001064	Mount, Paperpath Left-side	4	100084	DFM	Changed 2 holes from 8mm DIA to 8.18mm DIA based on DFM feedback
120-001067	Baffle, Upper Print path	4	100084	DFM	Increased depth of cut on boss from 2mm to 4mm per DFM feedback
120-001068	Baffle, CIS mount	4	100084	DFM	Increased depth of cut on boss from 2mm to 4mm per DFM feedback
128-000017	HANDLE: PCOS 410A	3	100084	DFM	Added DRAFT per vendor's suggestion for texture
128-000036	COVER PRIVACY FLAP RIGHT	3	100084	DFM	Removed material on a bend and moved parting line per DFM feedback
128-000037	COVER PRIVACY FLAP LEFT	3	100084	DFM	Removed material on a bend and moved parting line per DFM feedback
128-000044	COVER FRONT	3	100084	DFM	Increased draft for texture
128-000048	HANDLE LEFT	3	100084	DFM	Changed height of side handle from 28.8mm to 24.8mm to improve manufacturability

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Item #	Description	Rev	ECO#	Primary Change Type	Comment
128-000049	DOOR, JAM CLEARANCE	3	100084	DFM	Change screw boss for new delta PT screws for pilot
109-001113	BRACKET, CIS MOUNT	6	100116	DFM	Increased slot length to improve manufacturability
109-001127	BAFFLE ASSY, DIVERTER REAR	5	100116	DFM	Increased width of roller cutout from 9.51mm to 10.11mm to improve manufacturability
109-001128	Baffle Assy, Upper Front	5	100116	DFM	Increased width of roller cutout from 9.51mm to 10.11mm to improve manufacturability
101-001010	Precision Resistor, thick film 12K R0402 1/16W 1% TF	2	100121	AVL	Added a second (equivalent) part number from the same vendor (Panasonic)
101-001097	High Precision Thin Film 0603 11,5 kOhm +-0.25% Paper 330mm (13") 25 ppm/K	2	100121	AVL	Added a second (equivalent) part number from the same vendor (Yageo) plus added three vendors
101-001098	High Precision Thin Film 0603 147 kOhm +-0.25% Paper 330mm (13") 25 ppm/K	2	100121	AVL	Added a second (equivalent) part number from the same vendor (Yageo) plus added three vendors
103-001005	Ceramic Chip Capacitor 0.12uF C0603 10V 10% X5R	2	100121	AVL	Kept original Panasonic part, added a vendor
103-001013	Ceramic Chip Capacitor 10pF C0402 50V 5% CGO	2	100121	AVL	Kept original Panasonic part, added three vendors
103-001014	Standard Multilayer Ceramic Capacitor- Class 2 10nF C0201 6.3V 10% X5R	2	100121	AVL	Added three additional capacitor vendors
103-001015	Standard Multilayer Ceramic Capacitor- Class 2 0.1uF C0201 6.3V 10% X5R	2	100121	AVL	Kept original Panasonic part, added four vendors
103-001017	Ceramic Chip Capacitor 2.2nF C0402 10V 10% X7R	2	100121	AVL	Kept original Kemet part, added another Kemet part number plus three vendors
103-001021	Ceramic Chip Capacitor 100pF C0402 50V 5% C0G	2	100121	AVL	Kept original Panasonic part, added four vendors
103-001022	Ceramic Chip Capacitor 18pF C0402 50V 5% C0G	2	100121	AVL	Added four additional capacitor vendors
103-001029	Ceramic Chip Capacitor 9pF C0402 50V 0.5% CGO	2	100121	AVL	Kept original Panasonic part, added two vendors
103-001034	Multilayer Ceramic Chip Capacitor 8.2nF C0402 16V 10% X7R	2	100121	AVL	Kept original Panasonic part, added four vendors
103-001037	Capacitor 0402 820pF 50V 5% X7R	2	100121	AVL	Kept original Panasonic part, added three vendors
103-001039	Capacitor 0603 100nF 50V 5% X7R	2	100121	AVL	Added four additional capacitor vendors

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
103-001048	Capacitor 0603 10uF 6.3V 20% X5R	2	100121	AVL	Kept original Panasonic part, added five vendors
103-001053	CAP 0603 10uF 10V 20% X5R	2	100121	AVL	Kept original Panasonic part, added three vendors
103-001059	Capacitor, 27pF, Ceramic Chip ,0402, 50V, 5%, COG	2	100121	AVL	Kept original Panasonic part, added four vendors
109-000522	EMI SHIELD MONITOR ASM	4	100121	AVL	Vendor change
109-001087	FRAME, TRANSPORT RIGHT	15	100121	AVL	Vendor change
109-001088	FRAME, TRANSPORT LEFT	11	100121	AVL	Vendor change
109-001099	Baffle assy, lower rear	7	100121	AVL	Vendor change
109-001108	EMI shield, front transport	5	100121	AVL	Vendor change
109-001114	BRACKET, DSD	6	100121	AVL	Vendor change
109-001122	Baffle Assy, Lower Front	10	100121	AVL	Vendor change
109-001127	BAFFLE ASSY, DIVERTER REAR	4	100121	AVL	Vendor change
109-001128	Baffle Assy, Upper Front	4	100121	AVL	Vendor change
109-001129	Baffle Assy, Upper Rear	5	100121	AVL	Vendor change
109-001131	EMI SHIELD ,MCB RIGHT	6	100121	AVL	Vendor change
109-001132	EMI SHIELD, MCB LEFT	8	100121	AVL	Vendor change
109-001139	BRACKET, CF CARD READER	5	100121	AVL	Vendor change
109-001143	BRIDGE, MONITOR	8	100121	AVL	Vendor change
109-001148	BAFFLE ASSY, DIVERTER FRONT	5	100121	AVL	Vendor change
136-000015	MYLAR, FRONT LOWER	4	100121	AVL	Vendor change
136-000016	MYLAR, REAR UPPER	2	100121	AVL	Vendor change
136-001016	Mylar, CIS	4	100121	AVL	Vendor change
136-001022	MYLAR, PRINTER LOOP ENTRANCE	6	100121	AVL	Vendor change



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Item #	Description	Rev	ECO#	Primary Change Type	Comment
108-000006	PAPER SENSOR	1	100125	DOC	General item change, no change to part
109-001087	FRAME, TRANSPORT RIGHT	B	100125	DFM	Moved wire saddle hole needed for cable management to improve manufacturability
109-001134	DOOR, MCB BOTTOM ACCESS	C	100125	DFM	Added witness line for locating Mylar placement
131-001004	HARNESS, CAB-210, MCB TO SERVICE ON/OFF POWER SWITCH	9	100125	DFM	Adding heat-shrink to protect harness from sharp edges
136-001020	Mylar, MCB access	B	100125	DOC	Profile and adhesive change
103-001026	Ceramic Chip Capacitor 0.01uF C0402 6.3V 10% X5R	2	100127	AVL	Removed original Kemet part number, replaced with two new vendors
123-001001	Memory module Mem Module DDR2 PC2-4200 1GB ECC 240pin	2	100129	AVL	Kingston part obsolete, moved to Micron
120-001064	Mount, Paperpath Left-side	16	100131	DFM	Removed tab and increased chamfer in slot
120-001065	Mount, Paperpath Right-side	17	100131	DFM	Removed tab and increased chamfer in slot
128-000039	SUPPORT ARM, MONITOR	4	100131	DFM	Increased overall width to match current parts; increased diameter of boss by 0.05mm
117-001009	BATTERY, PCOS-410A, LITHIUM ION, 14.8V, 8.8AH WITH LED DISPLAY AND PLASTIC CASE	3	100139	AVL	Procedure changes to battery's monitoring program (internal to battery)
135-001010	Shaft assy, main drive	7	100146	DFM	Changed mfg note to allow either overmolding or press fit of roller to shaft, was only overmolding allowed
135-001016	Shaft ASSY, drive nip1	6	100146	DFM	Changed note for roller from overmolded to press fit
135-001020	SHAFT ASSY, EXIT	9	100146	DFM	Changed mfg note to allow either overmolding or press fit of roller to shaft, was only overmolding allowed
109-000514	BRACKET MONITOR RIGHT ASM	5	100151	DFM	Change true position tolerance from 0.2 to 0.5, change tolerance of form dimension, change material thickness tolerance, corrected material note
109-000520	BRACKET MONITOR LEFT ASM	5	100151	DFM	Change true position tolerance from 0.2 to 0.5, change tolerance of form dimension, change material thickness tolerance
109-000521	BRACKET MONITOR PCB ASM	5	100151	DFM	Relaxed tolerance for material thickness per McAlpin request

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Item #	Description	Rev	ECO#	Primary Change Type	Comment
109-001084	Bracket, Print path	8	100151	DFM	Changed true position tolerance from 0.1 to 0.38. changed note about burr size
109-001086	BRACKET, PRESSURE PLATE SPRING SUPPORT	9	100151	DFM	Added tooling hole as requested by manufacturer
109-001091	BRACKET, FLAG SENSOR	7	100151	DFM	Changed corner radii note, changed material thickness tolerance, removed deburr note
109-001098	EMI Shield: Transport ASM	10	100151	DFM	Added semi perfs to item 5 and locating holes to EMI shield as requested by vendor
109-001108	EMI shield, front transport	7	100151	DFM	Changed width of cutouts, changed burr note as requested by vendor
109-001118	TAB, BAFFLE MOUNTING	24	100151	DFM	As requested by McAlpin: changed true position tolerance from 0.10 to 0.38 changed note 6 to include corner radii of 0.5mm
109-001121	Bracket, motor mount	6	100151	DFM	Increased width of bend relief as requested by manufacturer
135-001011	DIVERTER FINGERS AND SHAFT (FRONT) BUY ASSY	5	100151	DFM	Changed tolerance on sheet 2 from 0/-0.08 to 0/-0.05
135-001012	SHAFT ASSY DIVERTER REAR	5	100151	DFM	Changed tolerance on sheet 2 from 0/-0.08 to 0/-0.05
180-001002	PCOS-410A UNIT LEVEL ASEMBLY	33	100160	DFM	PN 180-001002 is the top level fully assembled unit, so any change to a lower level item will rev this part number; replaced obsolete Screw, M1.91 x 12mm T6 drive thread forming for plastic
109-001098	EMI Shield: Transport ASM	11	100162	DOC	Opened up tolerance
109-001136	BRACKET, THERMAL PRINTER	6	100162	DOC	Opened up tolerance
117-001009	BATTERY, PCOS-410A, LITHIUM ION, 14.8V, 8.8AH WITH LED DISPLAY AND PLASTIC CASE	4	100162	DFM	Opened up tolerance on plastic tabs on battery cover
120-000080	COVER MONITOR CABLE BOTTOM	4	100162	DFM	Opened up tolerance
120-000081	MOUNT INTRUSION SWITCH	4	100162	DFM	Opened up tolerance
120-000139	SPACER HINGE LEFT	4	100162	DFM	Opened up tolerance
120-000141	PRESSURE PLATE	3	100162	DOC	Opened up tolerance
120-001010	LEVER, GATE SHAFT	7	100162	DFM	Opened up tolerance
120-001026	LEVER, NIP RELEASE SHAFT	5	100162	DFM	Opened up tolerance

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
120-001028	EXTENDER 2 - SOLENOID	6	100162	DOC	Opened up tolerance
120-001064	Mount, Paperpath Left-side	17	100162	DOC	Opened up tolerance
120-001065	Mount, Paperpath Right-side	18	100162	DOC	Opened up tolerance
120-001066	Baffle, Jam clearance Print path	7	100162	DFM	Opened up tolerance
120-001067	Baffle, Upper Print path	16	100162	DFM	Opened up tolerance
120-001068	Baffle, CIS mount	17	100162	DOC	Opened up tolerance
120-001069	Baffle, Lower Print path	5	100162	DOC	Opened up tolerance
120-001078	SPACER, HINGE PCOS 410A	13	100162	DFM	Opened up tolerance
120-001085	BASE: THERMAL PRINTER ROLL GUIDE	8	100162	AVL	PEM AVL was added
120-001094	COVER, GUIDE	4	100162	DFM	Opened up tolerance
128-000017	Handle: PCOS 410A	4	100162	DFM	Opened up tolerance
128-000019	Adapter: Keymat	4	100162	DOC	Opened up tolerance
128-000034	COVER MONITOR BEZEL FRONT	4	100162	DOC	Added slot in plastic eliminate cable pinching
128-000035	COVER MONITOR REAR	4	100162	DOC	Opened up tolerance
128-000036	COVER PRIVACY FLAP RIGHT	4	100162	DOC	Opened up tolerance
128-000037	COVER PRIVACY FLAP LEFT	4	100162	DOC	Opened up tolerance
128-000038	COVER PRIVACY FLAP TOP	4	100162	DOC	Opened up tolerance
128-000039	SUPPORT ARM, MONITOR	5	100162	DOC	Opened up tolerance
128-000042	COVER MAIN	4	100162	DOC	Opened up tolerance
128-000043	COVER RIGHT	5	100162	DOC	Opened up tolerance
128-000044	COVER FRONT	4	100162	DOC	Opened up tolerance
128-000045	DOOR THERMAL PRINTER	5	100162	DOC	Opened up tolerance

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
128-000047	DOOR RIGHT LONG	4	100162	DOC	Opened up tolerance
128-000048	HANDLE LEFT	4	100162	DOC	Opened up tolerance
128-000049	DOOR, JAM CLEARANCE	4	100162	DOC	Opened up tolerance
180-001002	PCOS-410A UNIT LEVEL ASEMBLY	36	100170	DFM	Updated CF0 card programming procedure; added Loctite to mounting foot screws
180-001002	PCOS-410A UNIT LEVEL ASEMBLY	37	100171	PART	Added tie wrap and wire saddle to prevent cables from rubbing on edge of side frame; added second label for base BoM revision number and IR firmware version
180-001002	PCOS-410A UNIT LEVEL ASEMBLY	39	100172	PART	Added pad printing to ballot input slot area to improve usability for voters; trimmed length of EMI gasket part by 2mm

## ImageCast Evolution BOX-410A Engineering Change Orders

### Change Type Legend

Abbrev.	Description
AVL	Approved Vendors List Change
DFM	Design for Manufacturing Change
PART	Part Change

Item #	Description	Rev	ECO#	Primary Change Type	Comment
112-000750	HOOK BOLT	1	n/a	PART	Replaced 134-000009, CABLE ROUTING WIRE BRACKET with 112-000750 HOOK BOLT
165-000007	BALLOT BOX TUB ASSY, ICE	n/a	n/a	PART	Removed 3 tie wraps (112-000680); determined they were not needed in design
165-000030	BALLOT BOX ICE LID ASSY	n/a	n/a	PART	Removed light mast assy and created separate kit 172-000019
136-000031	MYLAR, AUX BIN	1	n/a	PART	Add part to AUX bin for improved paper stacking
112-000720	Velcro Loop, 3 in	1	n/a	PART	Add part to AUX bin for improved paper stacking
112-000715	Velcro Hook, 3 in	1	n/a	PART	Add part to AUX bin for improved paper stacking
136-000030	MYLAR, LID, AUX COMPARTMENT	3	n/a	PART	Add part to AUX compartment for improved paper stacking
112-000720	Velcro Loop, 8.5 in	1	n/a	PART	Add part to AUX compartment for improved paper stacking
112-000715	Velcro Hook, 8.5 in	1	n/a	PART	Add part to AUX compartment for improved paper stacking
112-000720	Velcro Loop, 4 in	1	n/a	PART	Add Velcro pair to aid in holding Diverter Bin in tub
112-000715	Velcro Hook, 3 in	1	n/a	PART	Add Velcro pair to aid in holding Diverter Bin in tub
112-000720	Velcro Loop, 4 in	1	n/a	PART	Add Velcro pair to aid in holding AUX Bin in tub
112-000715	Velcro Hook, 3 in	1	n/a	PART	Add Velcro pair to aid in holding AUX Bin in tub
109-000629	ICE LOCKING BRACKET	3	n/a	PART	Changed tab angle for usability
109-000629	ICE LOCKING BRACKET	4	n/a	PART	Changed profile to increase strength

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Item #	Description	Rev	ECO#	Primary Change Type	Comment
109-000708	BRACKET: STRAIN RELIEF	2	n/a	PART	Changed profile for better fit with strain relief
109-000607	DOOR LOCK CAM	4	n/a	PART	Removed return spring hole; changed profile
134-000010	SPRING TORSION, DOOR LATCH, PLASTIC BALLOT BOX	1	n/a	PART	Removed part
109-000610	DOOR LOCK ANTI ROTATION RING	6	n/a	PART	Removed return spring hole
109-000568	SUPPORT BRACKET-LID LOCK	3	100150	PART	Prior to pilot: Remove center tab, not required
109-000717	EXTENSION, LIGHT POST	3	100150	PART	Prior to pilot: Remove slots, not required
109-000729	CAM COVER LOCK	4	100150	PART	Changed profile
165-000050	BALLOT BOX COVER ASSY	6	100168	PART	Changed tab (was 109-000778) to powder coated (109-000785)
120-000117	BALLOT BOX TUB	2	100168	PART	Add production drawing; changed material
165-000030	BALLOT BOX ICE LID ASSY	7	100169	PART	Replaced screw 112-000732 with screw 112-001027 (4 per)
120-000112	HANDLE, FRAME, BB	4	100180	PART	Color changed to 431C
120-000114	CASTER STAND-OFF	4	100180	PART	Color changed to 431C
120-000116	SWITCH BRACKET-MAIN BB DOOR INTRUSION	4	100180	PART	Color changed to 431C
120-000118	TUB LIP	5	100180	PART	Color changed to 431C
120-000111	DOOR FRAME-BB-INNER	5	100180	PART	Color changed to 431C
120-000125	FOOT, BALLOT BOX, LID	4	100180	PART	Color changed to 431C
120-000108	SIDING DOOR-AUX SLOT	4	100180	PART	Color changed to 431C
120-000107	AUX DOOR-PLASTIC	4	100180	PART	Color changed to 431C
120-000105	COVER-POWER CORD	4	100180	PART	Color changed to 431C
120-000104	BARBED TUBING HOOK V2	4	100180	PART	Color changed to 431C
120-000100	LOCKING SPRING LEVER	4	100180	PART	Color changed to 431C

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
120-000098	LID HANDLE-MAIN	4	100180	PART	Color changed to 431C
120-000099	SIDE HANDLE-LID	4	100180	PART	Color changed to 431C
120-000097	HANDLE, COVER, PLASTIC BB	4	100180	PART	Color changed to 431C
120-000121	FIXED RAMP, WRITE-IN CHAMBER, ICE	4	100180	PART	Color changed to Natural
120-000122	DOOR-WRITE-IN BIN	4	100180	PART	Color changed to Natural
120-000113	DOOR, BALLOT BOX ACCESS	5	100180	PART	Color changed to 431C
120-000101	ICE WRITE-IN PP RIBS	4	100180	PART	Color changed to Natural
131-001072	HARNESS, CAB-218B, MENICS LIGHT POLE CABLE ASSEMBLY	3	100126	AVL	Vendor p/n update
112-000692	RUBBER BUMPER, 1/2" DIA, 1/4" HT, 70A DUR	2	100128	AVL	Add vendor info
136-000023	FOAM STRIP-3/8"X1/2", ANTI-STUFFING	2	100128	AVL	Add vendor info
112-000681	RUBBER TUBING-LONG	3	100138	AVL	Add vendor info
123-000180	2" CASTER RIGID, - PLASTIC BB LID	2	100138	AVL	Add vendor info
112-000687	DRAW LATCH ASSY	2	100150	AVL	Add drawing and changed vendor info
123-000181	VELCRO STRAP 5/8" X 24" CINCH STRAP	2	100168	AVL	Changed vendor part#
165-000007	BALLOT BOX TUB ASSY, ICE	n/a	n/a	DEV	Stand-offs where changed to multipart design to correct vendor error
120-000113	DOOR, BALLOT BOX ACCESS	11	n/a	DFM	Increased thickness of door for moldability
120-000097	HANDLE, COVER, PLASTIC BB	5	n/a	DFM	Made handle shorter to improve in assembly
109-000778	SECURITY TAB, COVER PLASTIC BALLOT BOX	1	n/a	DFM	Add part to 165-000050, COVER ASSY, to aid in moldability of cover 128-000054
109-000568	SUPPORT BRACKET-LID LOCK	3	n/a	DFM	Changed material thickness as per vendor request
109-000586	PLATE: CAM LOCK-AUX DOOR	3	n/a	DFM	Changed material thickness and tolerance as per vendor request
109-000720	CHANNEL-CASTER BRACKET	3	n/a	DFM	Removed insert and M6 Tapped hole

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
112-000680	CABLE TIE	1	n/a	DFM	Removed insert and M6 Tapped hole
109-000528	PLATE: SUPPORT PART FRONT	3	n/a	DFM	ENLARGED HOLE DIA; CHANGED MATERIAL THICKNESS
109-000528	PLATE: SUPPORT PART FRONT	4	n/a	DFM	Add dimensions
109-000548	PLATE: SUPPORT PART BACK	4	n/a	DFM	ADDED LOCATING HOLE; ENLARGED HOLE DIA;CHANGED MATERIAL THICKNESS
109-000548	PLATE: SUPPORT PART BACK	5	n/a	DFM	Add dimensions
109-000597	DOOR ANTI-STUFFING BRACKET	5	n/a	DFM	Add dimensions
109-000714	HOOK BRACKET-FRONT LOCK AND BIN	3	n/a	DFM	Add slot
109-000715	CABLE GUARD-INTRUSION SWITCH	3	n/a	DFM	Add dimensions
120-000111	DOOR FRAME-BB-INNER	6	n/a	DFM	Increase door clearance
131-000550	HARNESS, CAB-236, PLASTIC BALLOT BOX DOCKING CONNECTOR TO DC POWER JACK AND ID EXTENSION	4	100126	DFM	Length adjustment to accommodate increased tolerances
131-000551	HARNESS, CAB-236E, PLASTIC BALLOT BOX ID SWITCH EXTENSION CABLE	4	100126	DFM	Length adjusted to accommodate increased tolerances. HST3 length and position corrected
131-001058	HARNESS, CAB-235, MCB TO ATI	4	100126	DFM	Length adjustment to accommodate increased tolerances
131-001071	HARNESS, CAB-218A, LIGHT POLE EXTENSION CABLE	5	100126	DFM	Length adjustment to accommodate increased tolerances. Referencing location of labels is corrected.
109-000528	PLATE, SUPPORT PART FRONT	2	100128	DFM	Changed material / tolerances as per vendor request
109-000548	PLATE, SUPPORT PART BACK	2	100128	DFM	Changed material / tolerances as per vendor request
109-000597	DOOR ANTI-STUFFING BRACKET	2	100128	DFM	Changed material / tolerances as per vendor request
109-000607	DOOR LOCK CAM	2	100128	DFM	Changed material / tolerances as per vendor request
109-000610	DOOR LOCK ANTI ROTATION RING	2	100128	DFM	Changed material / tolerances as per vendor request
109-000715	CABLE GUARD-INTRUSION SWITCH	2	100128	DFM	Changed material / tolerances as per vendor request
109-000586	PLATE, CAM LOCK-AUX DOOR	3	100138	DFM	Revised tolerances as per vendor request



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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
109-000607	DOOR LOCK CAM	3	100138	DFM	Revised tolerances as per vendor request
109-000729	CAM COVER LOCK	3	100138	DFM	Revised tolerances as per vendor request
128-000054	COVER, BALLOT BOX	3	100138	DFM	Changed Material for pilot
136-000030	MYLAR, LID, AUX COMPARTMENT	2	100138	DFM	Changed material as per vendor request
120-000113	DOOR, BALLOT BOX ACCESS	3	100147	DFM	PRIOR TO PILOT REMOVED FOUR RIBS; CHANGED PART THICKNESS TO IMPROVE MOLD FILLING AND TO PREVENT LOGO FROM CATCHING ON TUB FRAME; REMOVED 1.5 mm FROM TOP
120-000119	AUX BIN	3	100147	DFM	Add molding features (2 holes) as per vendor request
120-000118	TUB LIP	3	100147	DFM	Prior to pilot: CHANGED 4 HOLES TO SLOTS, ADDED 8 CHAMFERS TO IMPROVE FIT WITH TUB
109-000597	DOOR ANTI-STUFFING BRACKET	3	100147	DFM	Increased hole diameter for better fit with inner frame
128-000054	COVER, BALLOT BOX	4	100147	DFM	Increased clearances
120-000111	DOOR FRAME-BB-INNER	3	100147	DFM	Prior to pilot: Add location features
109-000720	CHANNEL-CASTER BRACKET	3	100150	DFM	Opened hole as per pilot build
109-000714	HOOK BRACKET-FRONT LOCK AND BIN	3	100150	DFM	Prior to pilot: Modified part as per vendor request
109-000713	BRACKET-LID CLAMP-INJ MOLDED TUB VERSION	3	100150	DFM	Prior to pilot: Modified part as per vendor request
109-000591	PLATE, LATCH ATTACHMENT	3	100150	DFM	Prior to pilot: Modified part as per vendor request
135-000013	SHAFT-AUX DOOR	3	100150	DFM	Prior to pilot: Modified part as per vendor request
109-000569	PRIVACY SCREEN BRACKET	3	100168	DFM	Add production drawing; add clearance, changed material
109-000629	ICE LOCKING BRACKET	3	100168	DFM	Add production drawing; add clearance, changed material
120-000111	DOOR FRAME-BB-INNER	4	100168	DFM	Add production drawing; changed material & color
120-000112	HANDLE, FRAME, BB	3	100168	DFM	Add production drawing; changed material & color
120-000114	CASTER STAND-OFF	3	100168	DFM	Add production drawing; changed material & color

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<b>Item #</b>	<b>Description</b>	<b>Rev</b>	<b>ECO#</b>	<b>Primary Change Type</b>	<b>Comment</b>
120-000116	SWITCH BRACKET-MAIN BB DOOR INTRUSION	3	100168	DFM	Add production drawing; changed material & color
120-000118	TUB LIP	4	100168	DFM	Add production drawing; changed material & color
120-000098	LID HANDLE-MAIN	3	100168	DFM	Add production drawing; changed material & color
120-000099	SIDE HANDLE-LID	3	100168	DFM	Add production drawing; changed material & color
120-000100	LOCKING SPRING LEVER	3	100168	DFM	Add production drawing; changed material & color
120-000101	ICE WRITE-IN PP RIBS	3	100168	DFM	Add production drawing; changed material & color
120-000104	BARBED TUBING HOOK V2	3	100168	DFM	Add production drawing; changed material & color
120-000105	COVER-POWER CORD	3	100168	DFM	Add production drawing; changed material & color
120-000107	AUX DOOR-PLASTIC	3	100168	DFM	Add production drawing; changed material & color
120-000108	SIDING DOOR-AUX SLOT	3	100168	DFM	Add production drawing; changed material & color
120-000121	FIXED RAMP, WRITE-IN CHAMBER, ICE	3	100168	DFM	Add production drawing; changed material & color
120-000122	DOOR-WRITE-IN BIN	3	100168	DFM	Add production drawing; changed material & color
120-000113	DOOR, BALLOT BOX ACCESS	4	100168	DFM	Add production drawing; changed material & color
120-000097	HANDLE, COVER, PLASTIC BB	3	100168	DFM	Add production drawing; changed material & color
120-000125	FOOT, BALLOT BOX, LID	3	100168	DFM	Add production drawing; changed material & color