

Voting System Qualification Test Report
Dominion Voting Systems, Inc.
Democracy Suite, Release 4.14.17, Version 1 (Revision 1)

FINAL DRAFT

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Florida Department of State
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Secretary of State

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Executive Summary

Dominion Voting System's (DVS) Democracy Suite 4.14.17, Version 1 (Revision 1) voting system includes the ImageCast Precinct Count (ICP) optical scan tabulator, ImageCast Evolution tabulator (ICE), which can be used for both accessible and precinct voting, and the ImageCast Canon DR-X10C central count (ICC) tabulator.

The purpose of this test effort was to respond to a request from DVS that a "foldable" ballot box be added to the Democracy Suite 4.14.17, Version 1 voting system (Certificate #130814-DVS, August 2013). Democracy Suite 4.14.17, Version 1 currently includes a stackable ballot box, but DVS wanted to have the additional option of a foldable ballot box to offer to their customers as well. BVSC tested the foldable ballot box for use with the ImageCast Precinct (ICP) and ImageCast Evolution (ICE) optical scanners. This review included only test activities for the foldable ballot box, as used with the ICE and ICP. There were no modifications to the voting system. Testing took place in the BVSC test laboratory in Tallahassee, Florida, in September and October 2013.

Based on the results of this examination, BVSC affirms that addition of a foldable ballot box to the voting system under test, Democracy Suite Release 4.14.17, Version 1 (Revision 1), met applicable requirements of the Florida Voting Systems Standards, Florida Statutes and Rules, and the Help America Vote Act (HAVA) for usability and accessibility. Therefore, the Florida Division of Elections, Bureau of Voting Systems Certification recommends that the voting system be certified for sale and use in the state of Florida as specified further in this report.

Introduction/System Overview

The Democracy Suite voting system is a paper-based voting system with an element for compliance with HAVA provisions for Americans with Disabilities Act (ADA) accessibility. The voting system is comprised of an election management system (EMS); two types of optical scan precinct count tabulators—the ImageCast Precinct and the ImageCast Evolution, with optional accessible tactical interface (ATI) needed to meet ADA specifications; and an optical scan central count tabulator, the ImageCast Central.

The EMS hardware platform can be configured either as an Express, Standard, or Enterprise Configuration. The Express Configuration includes all EMS software components on a single physical personal computer or laptop that can handle up to 250 precincts. The Standard Configuration uses an optional Local Area Network (LAN) to interconnect the EMS server, and generally includes one or more EMS clients, along with the ImageCast Listener, and an optional Remote Access Service (RAS Server). The Standard Configuration can handle up to 1000 precincts. The Enterprise Configuration includes one or more clients which interconnect with two server environments, where one server is dedicated to processing tasks and the other server is the dedicated database host. These servers, together, can handle more than 1000 precincts. For this certification activity, DVS requested that the Express and Standard Configurations be tested and further, that the Standard Configuration use all applications on a single server, rather than the client option.

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

- Election Event Designer (EED) - client application that integrates the jurisdiction, districts, contests, and candidate database as the main pre-voting phase.
- Results Tally and Reporting (RTR) - client application used for integrating election results acquisition, validation, and reporting.
- Audio Studio (AS) - client application that facilitates production of audio files.
- Application Server (APPS) - server application for executing processes such as rendering ballots, generating audio files, and election files, etc.
- Data Center Manager (DCM) - server application used in the back-end data center configuration.
- File System Service (FSS) - a Windows service application that helps read and write files on memory cards.
- Election Data Translator (EDT) - end-user application used to export election data from election project and import election data into election project.

Background

The Florida Division of Elections certified Dominion Voting System's (DVS) Democracy Suite 4.14.17. Version 1 voting system (Certificate #130814-DVS) on August 14, 2013.

On August 2, 2013, Dominion Voting Systems, Inc. contacted the Bureau of Voting System Certification (BVSC) to request that "foldable" ballot boxes be added to the Democracy Suite 4.14.17, Version 1 voting system certification. In addition to the already certified "stackable" ballot box, DVS wanted to be able to offer to their customers the foldable ballot box for use with the ImageCast Precinct (ICP) and ImageCast Evolution (ICE) optical scanners. If approved, this addition will be (DVS) Democracy Suite 4.14.17, Version 1 (Revision 1). BVSC received the foldable ballot boxes on August 19, 2013.

In support of the request, on August 23, 2013, the vendor submitted Engineering Change Order (ECO) 100159. BVSC reviewed the ECO, found several typographical errors that made it difficult to discern which ballot box was to be paired with which optical scanner. BVSC relayed this information to the vendor and on August 30, 2013, DVS submitted a corrected ECO 100161.

Further, on August 27, 2013, in a telephone conversation between BVSC and DVS, the vendor informed Bureau staff that it was sending a DVS technician to Tallahassee to add adhesive foam strips to the foldable ballot boxes. The reason for this modification was that tests performed by a federally certified voting systems test lab, Wyle Laboratories, revealed two deficiencies.¹ One deficiency allowed for the insertion of a ballot between the rear of the ICP unit and the ballot chute attached to the ballot box lid and the other allowed for the insertion of an unfolded ballot under the rear side of the ICE unit. DVS' technician arrived and applied the strips on September 6, 2013.

Testing occurred in the BVSC test laboratory in Tallahassee, Florida, in September and October 2013.

Components under Review

This review included only test activities for the foldable ballot box, as used with the ICE and ICP. There were no modifications to any component of the voting system as certified under Democracy Suite 4.14.17, Version 1.

Conduct of Tests / Findings

The test objective included the examination of two foldable ballot boxes, described in ECO 100161, Box 340C, to be paired with the ICP, and Box 420A, to be paired with the ICE, to verify that the foldable ballot boxes:

- Meet the size, shape, weight, and security specifications as required.
- Have the capability to be satisfactorily paired with the ImageCast Precinct (ICP) and ImageCast Evolution (ICE) optical scanners.
- Have no effect on ballot processing or other functioning of the ImageCast ICP & ICE optical scanners, when the scanners are affixed to the foldable ballot box.

ECO Review

DVS submitted ECO 100159, on August 23, 2013. BVSC reviewed the ECO and found several typographical errors that made it difficult to discern which ballot box was to be paired with which optical scanner. BVSC relayed this information to the vendor and DVS submitted a corrected ECO 100161 on August 30, 2013.

¹ Section 4.1.3, Security Testing, Wyle Laboratories Report No. T71120.01-01, "National Certification Test Report, Certification Testing of the Dominion Democracy Suite Version 4.14-A Voting System" (August 28, 2013)

Ballot Box 340C, Folding Coroplast² ICP Examination

BVSC used the following measures to evaluate box 340C.

Assembly Instructions

BVSC staff found that assembling the (340C) ballot box was not difficult. However, because the parts were not labeled and the instructions did not contain enough specificity to perform the task properly, staff made various assembly errors and had to perform some of the steps more than one time. For example, staff encountered a problem with determining the proper placement of the sleeve onto the base. Due to a combination of the unlabeled parts and the base's orientation not being specified in the instructions, BVSC attached the sleeve to the base incorrectly on the first attempt. Staff discovered the mistake by comparing the assembled unit to the pictures included in the assembly documentation³. BVSC recommends that the vendor affix labels or some other type of identification, to the parts and that the assembly instructions provide more specificity for the user. See Figures 1-3.



Figure 1 - ICP (340C) ballot box parts as delivered, before assembly

² Coroplast is a polypropylene extruded twin-wall profile sheet, based on a high impact polypropylene copolymer, in order to increase impact and low temperature performance. Chemically, the sheet is inert and most oils, solvents and water have no effect, thus, allowing it to perform under adverse weather conditions.

³ Per DVS' ballot box assembly instructions document: "Dominion Voting Systems' Coroplast Ballot Box Assembly for ImageCast Precinct and ImageCast Evolution" (August 22, 2013)



Figure 2 - ICP (340C) ballot box mid assembly



Figure 3 - Assembled ICP (340C) ballot box

Storage / Transportation of Ballots

Verify that assembled ICP (340C) foldable ballot box meets applicable requirements. Ballot boxes and/or containers which serve as secure containers for the storage and/or transportation of voted ballots shall conform to the following metrics.⁴

1. Be of the size, shape, and weight appropriate for the intended use.

Findings:

BVSC found that the box's physical dimensions are commensurate with the vendor documentation. See specific details in the table below.

SPECIFICATIONS	VENDOR DOCUMENTATION	BVSC RESULTS
Shape	Rectangular	Rectangular
<i>Dimensions (width x length of base)</i>	26 inches x 40 inches	25 ¼ inches wide x 39 ¾ inches long
Height		
<i>Floor to bottom of the tabulator</i>	30.4 inches	30 inches
<i>Floor to top of the tabulator</i>	33.6 inches (as illustrated from the floor to the top of the tabulator) ⁵	33.5 inches (measured from the floor to the top of the tabulator)
Weight	23 lbs.	Not tested ⁶

Table 1 - ICP (340C) Ballot Box Specifications/Findings

When BVSC reviewed the ballot box for its intended use, staff found that moving a filled box would possibly result in ballot box failure. First, the (340C) ballot box has no wheels and no outside handles. In addition, the base, lid, and sleeve are bound together with only eight (8) plastic security ties, four attaching the sleeve to the base and four attaching the lid to the sleeve. For box assembly, BVSC used the security ties supplied by the vendor; thus, it is assumed that the ties used are the vendor recommended ties. Once BVSC had filled the box with a large number of ballots⁷, staff was unable to confidently move the box. In BVSC's test, the weight of the ballots strained the assembled box to the point that staff reasonably assumed that continued attempts to move it would result in collapse due to its basic design. Therefore, while the ballot box appears to be suitable for storage of ballots, BVSC does not recommend its use for transporting ballots. Counties using the (340C) ballot box for the storage of ballots should strongly consider using a ballot transfer box to transport ballots. Although it is not uncommon practice for counties to have to remove ballots from the ballot or storage box to transport them back to the office, the county should have security controls and procedures in place which should

⁴ §101.24, F.S.; § 102.071, F.S.; Rule 1S-2.015(5)(j)1.c., F.A.C. - Minimum Security Procedures for Voting Systems; 4.1.4.2 – Paper-based Recording Requirements, Paragraph d., U.S. Elections Assistance Commission – 2005 Voluntary Voting System Guidelines, Volume I, Version 1

⁵ Per ECO 100161, drawing 142-000002

⁶ BVSC lacks the equipment to measure weight

⁷ BVSC cast 4,904 ballots into the ICP (340C) ballot box

also be reflected in their Minimum Security Procedures for Voting Systems should include information to this effect.

2. Be of sufficient size to contain all ballots for a precinct.

Findings:

For this test, BVSC used the 2006 Miami Dade Primary Election, 17-inch ballots, which were previously used for the Democracy Suite 4.14.17, Version 1 certification event. BVSC attached an ICP optical scanner to the assembled (340C) foldable ballot box, installed the appropriate media into the ICP scanner, and “opened” the polls. Staff began the examination with the ballot counter set at zero. When the cast ballot count reached 4,904, the tabulator repeatedly jammed due to the main bin of the (340C) ballot box reaching its maximum fill capacity. See Figures 4-5.

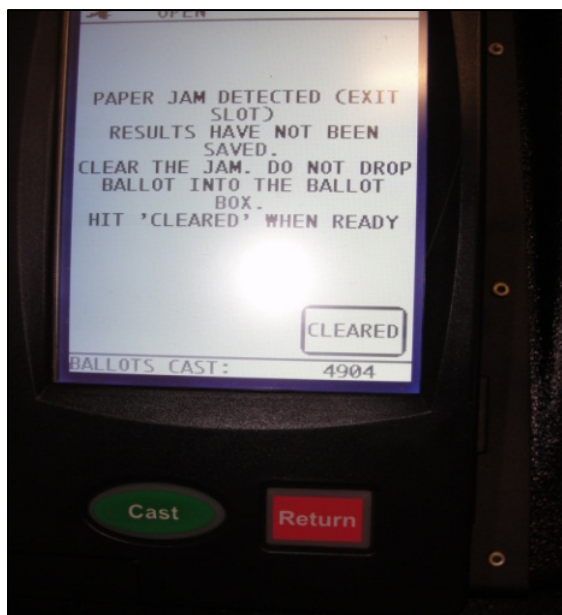


Figure 5 - ICP tabulator error msg. when ICP (340C) ballot box reached max. capacity in main bin

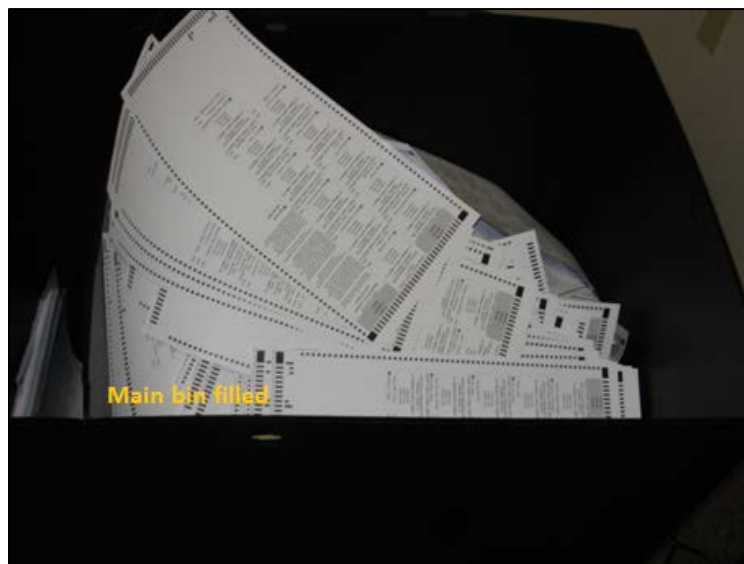


Figure 4 - ICP (340C) ballot box main bin filled to capacity

Although Section 101.24, Florida Statutes, states that “the Supervisor of Elections shall prepare one ballot box of sufficient size to contain all the ballots of the particular precinct,” it goes on to say that “an additional ballot box, if necessary, may be supplied to any precinct.” Therefore, there is no explicit measure for the definition of “sufficient size.” The statute allows each election’s office to apply its own set of criteria for determining sufficiency for their individual county. However, for the purposes of establishing at least an approximate measure, one way to determine sufficient size would be to base it upon a reasonable percentage of a scanner’s estimated throughput for the number of hours the scanner will be used in a day. For example, the ICP scans a ballot card approximately every 11 seconds, if one assumes that it would scan ballots continuously throughout the day, then after a 12 hour day, the maximum scanned ballots would be 3,928. Likewise, the ICE scans a ballot card approximately every 6 seconds, so for 12 hours, the maximum throughput would be 6,172. Obviously, the scanning is not continuous and, therefore, one could use a reasonable percentage of the maximum throughput, such as 85%, as the factor for identifying the “sufficient size.” In this case, for the ICP, the estimated sufficiency would be equivalent to approximately 3,339 ballot cards and the ICE would be 5,246 ballot cards.

For this test event, using the 17" ballot, the ICP's ballot box could be considered to be filled at around 4,900 ballot cards and the ICE's ballot box would be about 4,400 ballot cards. Ultimately, however, it is important to note that the "sufficient size" of a ballot box should be determined by the county elections office, based on the particular needs for that individual county's elections.

3. Incorporate locks or seals capable of securely sealing openings.

Findings:

Upon BVSC's review of Dominion's documentation as compared to the items needed to complete the ballot box assembly, staff found that neither security seals nor security ties had been included among the items delivered for the test activity. BVSC requested that DVS submit their recommended seals and ties. Staff received these and applied them to the ICP (340C) ballot box. There were no specifications in the documentation for the type of security seals or ties to be used when constructing the ballot box.

Wyle Laboratories performed the required security tests and identified a deficiency which allowed for the insertion of a ballot, when folded two ways, between the rear of the ICP unit and the ballot chute attached to the ballot box lid. When inserted, the ballot dropped into the main bin of the ballot box.⁸ Consequently, Dominion included two 2.5" tamper-evident security seals for BVSC to apply to each side of the ballot chute. See Figures 6-9.

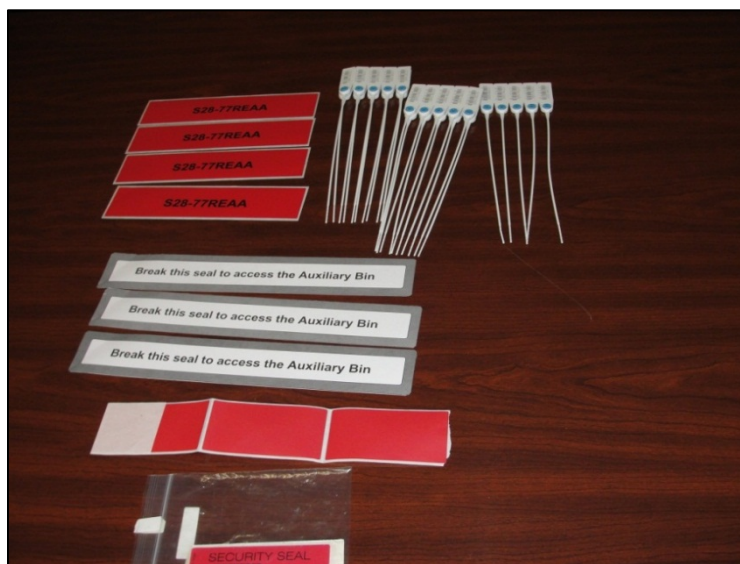


Figure 6 - Security seals and ties provided by Dominion

⁸ Section 4.1.3, Security Testing, Wyle Laboratories Report No. T71120.01-01, "National Certification Test Report, Certification Testing of the Dominion Democracy Suite Version 4.14-A Voting System" (August 28, 2013)



Figure 7 - Security seal as applied over chute of ICP (340C) ballot box



Figure 8 - Security seal as applied over auxiliary bin slot of ICP (340C) ballot box



Figure 9 - Security seals applied to the top and sides of ICP (340C) ballot box chute

Provide specific entry point(s) where ballots are to be inserted and ensure that the ballot box is constructed in a manner that prevents ballot insertion at any location other than the designated ballot insertion entry point(s).

Findings:

The ballot box had only one opening designated for ballot insertion. This opening was through the ICP tabulator ballot insertion slot. Staff noted, though, that the ICP (340C) ballot box is also equipped with an auxiliary bin slot. The vendor provided a seal to cover this slot so that when it was not in use, it would be adequately covered, as needed for security purposes. BVSC staff found that the 1 cm-wide corrugated plastic edge of the auxiliary bin slot sharp on the hand when inserting a ballot. Therefore, BVSC recommends that this issue be addressed in future (340C) and (420A) ballot box design modifications.

Per the ballot box assembly documentation, the security seal is to be used in order to assist the election official with the detection of possible tampering, as the seal leaves a residue on the security seal application surface of the ballot box when it is removed. Once BVSC applied the security seal over the auxiliary bin slot, ballots could not be inserted into the auxiliary bin opening. When staff removed a security seal, there was a residue left behind, as reported in the documentation. Per the User/Assembly Manual, ethyl alcohol (>70%) will remove any remaining residue when a security seal is peeled away. See Figures 10-12.



Figure 10 - Auxiliary security seal residue on ICP (340C) ballot box



Figure 11 - Security seal residue on ICP tabulator



Figure 12 - ICP tabulator showing evidence of tampering

4. Contains separate compartments for the segregation of unread ballots, ballots containing write-in votes or any irregularities that may require special handling or processing. In lieu of compartments, the conversion processing may mark such ballots with an identifying spot or stripe to facilitate manual segregation.

Findings:

The ICP (340C) ballot box contains three bins, an auxiliary bin, a write-in bin, and a main bin. The auxiliary bin is used to store unread ballots. Ballots with marked write-in votes are diverted to the write-in bin by way of a mechanism on the ICP and ICE optical scan tabulators which “redirects” ballots with write-in votes into the segregated write-in bin. Cast ballots that do not contain marked write-in votes are dropped into the main bin.



Figure 13 - View of the three compartments within the ICP (340C) ballot box

During maximum capacity testing, BVSC observed that when 641 ballots had been diverted into the write-in bin, the bin had to be emptied because additional cast ballots routed to the write-in bin caused the ICP to report/display a paper jam error.⁹ BVSC removed the 641 ballots from the write-in bin and testing continued.

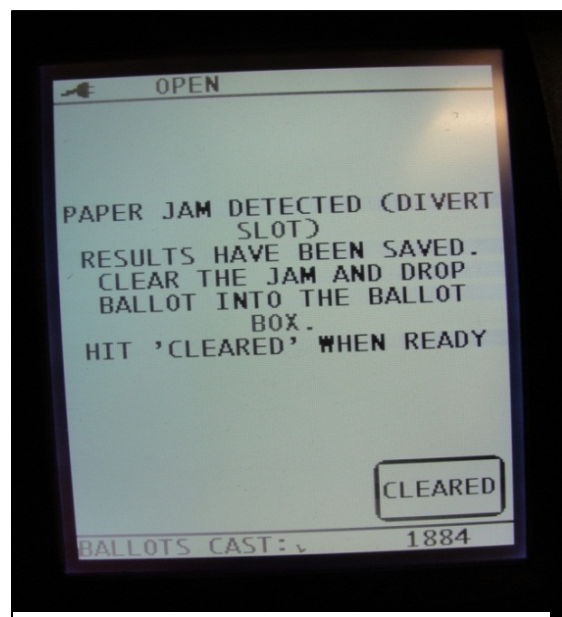


Figure 14 - ICP error message when ICP (340C)

⁹ The number of ballots cast before the tester receives a paper jam error may vary.

ICP (340C) Ballot Box is Serviceable with the ICP Optical Scanner

Verify that the ICP (340C) foldable ballot box can be used as intended when it is paired with the ICP optical scanner.

Findings:

BVSC staff did not encounter issues or anomalies with the serviceability of the ICP tabulator when used with the ICP (340C) foldable ballot box. See Figure 15.



Figure 15 - ICP tabulator paired with ICP (340C) ballot box

ICP Optical Scanner Functioning (when paired with ICP (340C) Ballot Box

Verify that the ICP optical scanner's functioning is not affected by the use of the ICP (340C) foldable ballot box under test.

Findings:

BVSC was able to install and secure the media in the ICP tabulator, open the polls, cast ballots, and close the polls. BVSC staff did not encounter issues or anomalies with the functioning of the ICP tabulator, when paired with the ICP (340C) foldable ballot box.

Accessibility Voting-ICP (340C) Ballot Box as paired with the ICP Optical Scanner

Verify that the use of this ICP (340C) foldable ballot box does not affect the voting process for a voter who uses mobility aids, including wheelchairs.

Findings:

BVSC found that the ICP (340C) foldable ballot box has a forward approach with an unobstructed forward reach. In addition, the ballot box met the maximum “high reach” of 48 inches.¹⁰ Staff observed no issues with the use of this ballot box when paired with the ICP tabulator.

Ballot Box 420A, Folding Coroplast ICE Examination

BVSC used the following measures to evaluate box 420A.

Assembly Instructions

BVSC staff found that assembling the (420A) ballot box was not difficult. However, because the parts were not labeled and the instructions did not contain enough specificity to perform the task properly, staff made various assembly errors and had to perform some of the steps more than one time. For example, staff encountered a problem with determining the proper placement of the sleeve onto the base. Due to a combination of the unlabeled parts and the base’s orientation not being specified in the instructions, BVSC attached the sleeve to the base incorrectly on the first attempt. Staff discovered the mistake by comparing the assembled unit to the pictures included in the assembly documentation¹¹. BVSC recommends that the vendor affix labels or some other type of identification, to the parts and that the assembly instructions provide more specificity for the user. See Figures 16-18.



Figure 16 - ICE (420A) ballot box before assembly

¹⁰ Section 3.2.4, Mobility, United States Election Assistance Commission, “2005 Voluntary Voting System Guidelines”, Volume 1, Version 1.0

¹¹ Per DVS’ ballot box assembly instructions document: “Dominion Voting Systems’ Coroplast Ballot Box Assembly for ImageCast Precinct and ImageCast Evolution” (August 22, 2013)



Figure 17 - ICE (420A) ballot box sleeve sitting on base



Figure 18 - Assembled ICE (420A) ballot box

Storage / Transportation of Ballots

Verify that assembled ICE (420A) foldable ballot box meets applicable requirements. Ballot boxes and/or containers which serve as secure containers for the storage and/or transportation of voted ballots shall conform to the following metrics.¹²

1. Be of the size, shape, and weight appropriate for the intended use.

Findings:

BVSC found that the box's physical dimensions are commensurate with the vendor documentation. See specific details in the table below.

SPECIFICATIONS	VENDOR DOCUMENTATION	BVSC RESULTS
Shape	Rectangular	Rectangular
<i>Dimensions (width x length of base)</i>	26 inches x 40 inches	25 ½ inches wide x 39 ¾ inches long
Height		
<i>Floor to bottom of the tabulator</i>	31.3 inches	31.125 inches
<i>Floor to top of the tabulator</i>	49.9 inches (as illustrated from the floor to the top of the display screen) ¹³	48.5 inches (measured from the floor to the top of the display screen at its maximum angle setting, which is 90° vertical)
Weight	19 lbs.	Not tested ¹⁴

Table 2 - ICE (420A) Ballot Box Specifications/Findings

The height from the floor to the bottom of the tabulator is less than ½ inch difference from the vendor documentation. BVSC attributes the difference in height measurement to the angle of the ICE display screen which was set in a vertical (90-degree) position at the time of measuring, whereas the documentation illustration shows the ICE display screen tilted at an unknown angle. BVSC found the specification differences to be insignificant.

When BVSC reviewed the ballot box for its intended use, staff found that moving a filled box would possibly result in ballot box failure. First, the (420A) ballot box has no wheels and no outside handles. Furthermore, the base, lid, and sleeve are bound together with eight (8) plastic security ties, four attaching the sleeve to the base and four attaching the lid to the sleeve. For box assembly, BVSC used the security ties supplied by the vendor; thus, it is assumed that the ties used are the vendor recommended ties. Once BVSC had filled the box with a large number of ballots¹⁵, staff was unable to confidently move the box. In BVSC's test, the weight of the ballots strained the assembled box to the

¹² §101.24, F.S.; § 102.071, F.S.; Rule 1S-2.015(5)(j)1.c., F.A.C. - Minimum Security Procedures for Voting Systems; 4.1.4.2 – Paper-based Recording Requirements, Paragraph d., U.S. Elections Assistance Commission – 2005 Voluntary Voting System Guidelines, Volume I, Version 1

¹³ Per ECO 100161, drawing 142-000003

¹⁴ BVSC lacks the equipment to measure weight

¹⁵ BVSC cast 4,381 ballots into the ICE (420A) ballot box

point that staff reasonably assumed that continued attempts to move it would result in collapse due to its basic design. Therefore, while the ballot box appears to be suitable for storage of ballots, BVSC does not recommend its use for transporting ballots. Counties using the (420A) ballot box for the storage of ballots should strongly consider using a ballot transfer box to transport ballots.

2. Be of sufficient size to contain all ballots for a precinct.

Findings:

For this test, BVSC used the 2006 Miami Dade Primary Election, 17-inch ballots, which were previously used for the Democracy Suite 4.14.17, Version 1 certification event. BVSC attached the ICE optical scanner to the assembled (420A) foldable ballot box, installed the appropriate media into the ICE scanner, and “opened” the polls. Staff began the examination with the ballot counter set at zero. When the cast ballot count reached 4,381, the tabulator repeatedly jammed due to the main bin of the (420A) ballot box reaching its maximum fill capacity. See Figure 19.



Figure 19 - Inside view of the ICE (420A) ballot box main bin, when full to capacity

Although Section 101.24, Florida Statutes, states that “the Supervisor of Elections shall prepare one ballot box of sufficient size to contain all the ballots of the particular precinct,” it goes on to say that “an additional ballot box, if necessary, may be supplied to any precinct.” Therefore, there is no explicit measure for the definition of “sufficient size.” The ambiguousness of the statute allows each election’s office to apply its own set of criteria for determining sufficiency for their individual county. However, for the purposes of establishing at least an approximate measure, one way to determine sufficient size would be to base it upon a reasonable percentage of a scanner’s estimated throughput for the number of hours the scanner will be used in a day. For example, the ICP scans a ballot card approximately every 11 seconds, if one assumes that it would scan ballots continuously throughout the day, then after a 12 hour day, the maximum scanned ballots would be 3,928. Likewise, the ICE scans a ballot card approximately every 6 seconds, so for 12 hours, the maximum throughput would be 6,172. Obviously, the scanning is not continuous and, therefore, one could use a reasonable percentage of the maximum throughput, such as 85%, as the factor for identifying the “sufficient size.” In this case, for the ICP, the estimated sufficiency would be equivalent to approximately 3,339 ballot cards and the ICE would be 5,246 ballot cards.

For this test event, using the 17" ballot, the ICP's ballot box could be considered to be filled at around 4,900 ballot cards and the ICE's ballot box would be about 4,400 ballot cards. Ultimately, however, it is important to note that the "sufficient size" of a ballot box should be determined by the county elections office, based on the particular needs for that individual county's elections.

3. Incorporate locks or seals capable of securely sealing openings.

Findings:

Upon BVSC's review of Dominion's documentation as compared to the items needed to complete the ballot box assembly, staff found that neither security seals nor security ties had been included among the items delivered for the test activity. BVSC requested that DVS submit their recommended seals and ties. Staff received these and applied them to the ICE (420A) ballot box. No specifications were included in the documentation for the type of security seals or ties to be used when constructing the ballot box.

As mentioned earlier, DVS had devised these security seals and security ties to address a deficiency identified in previous security tests performed by Wyle Laboratories, which allowed for the insertion of an unfolded ballot under the rear side of the ICE unit that dropped into the main bin of the ballot box.¹⁶ Consequently, after BVSC assembled the box per the provided documentation, Dominion's technician applied the aforementioned adhesive foam strip on the rear of the main bin slot of the ICE (420A) ballot box. See Figure 20-23.



Figure 20 - Security seal applied over auxiliary bin slot of ICE (420A) ballot box

¹⁶ Section 4.1.3, Security Testing, Wyle Laboratories Report No. T71120.01-01, "National Certification Test Report, Certification Testing of the Dominion Democracy Suite Version 4.14-A Voting System" (August 28, 2013)



Figure 21 - Security seal attaching ICE (420A) ballot box to the front of the ICE tabulator



Figure 22 - Security seal attaching ICE (420A) ballot box to the left side of the ICE tabulator



Figure 23 - Security seal attaching ICE (420A) box to the right side of the ICE tabulator

4. Provide specific entry point(s) where ballots are to be inserted and ensure that the ballot box is constructed in a manner that prevents ballot insertion at any location other than the designated ballot insertion entry point(s).

Findings:

The ballot box had only one opening designated for ballot insertion. This opening was through the ICE tabulator ballot insertion slot. Staff noted, though, that the ICE (420A) ballot box provides an auxiliary bin slot. The vendor provided a seal to cover this slot as needed for security purposes.

Per the ballot box assembly documentation, the security seal is to be used in order to assist the election official with the detection of possible tampering as soon as possible, as the seal leaves a residue on the security seal application surface when it is removed. Once BVSC applied the security seal over the auxiliary bin slot, ballots could not be inserted into the auxiliary bin opening. When staff removed a security seal, there was a residue left behind, as reported in the documentation. The User/Assembly Manual states that ethyl alcohol (>70%) will remove remaining residue when a security seal is peeled away. See Figures 24-25.



Figure 24 - Auxiliary security seal residue on ICE (420A) ballot box



Figure 25 - Security seal residue on ICE tabulator

5. Contains separate compartments for the segregation of unread ballots, ballots containing write-in votes or any irregularities that may require special handling or processing. In lieu of compartments, the conversion processing may mark such ballots with an identifying spot or stripe to facilitate manual segregation.

Findings:

The ICE (420A) ballot box contains three bins, an auxiliary bin, a write-in bin, and a main bin. The auxiliary bin is used to store unread ballots. Ballots with marked write-in votes are diverted to the write-in bin by way of a mechanism on the ICP and ICE optical scan tabulators which “redirects” ballots with write-in votes into the segregated write-in bin. Cast ballots that do not contain marked write-in votes are dropped into the main bin. See Figure 26.

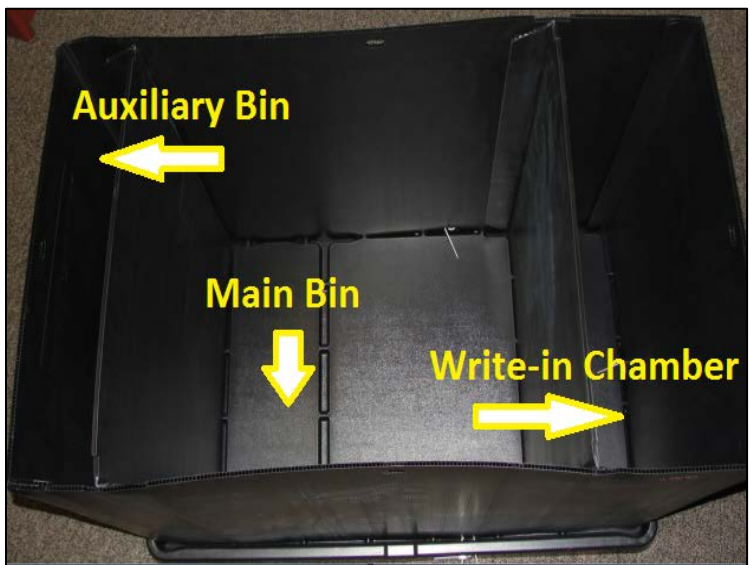


Figure 26 - View of the three compartments within the ICE (420A) ballot box

During maximum capacity testing, BVSC had to empty the write-in bin twice, once after 280 ballots, with write-in votes, had been cast and again when the cast ballots with write-in votes count was 482. The bin had to be emptied at these intervals because additional cast ballots with write-in votes that were routed to this bin caused the ICE to report/display a paper jam error¹⁷. See Figure 27.

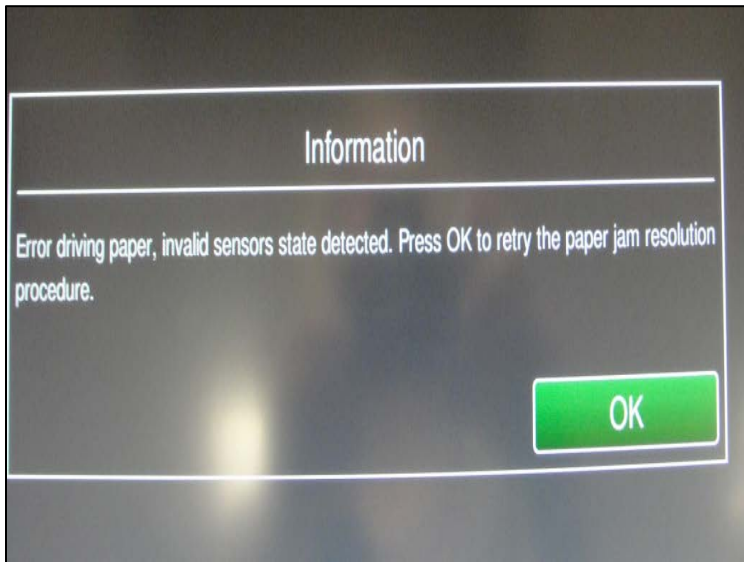


Figure 27 – ICE tabulator error message received with a paper jam in the ICE (420A) write-in bin

¹⁷ The number of ballots cast before the tester receives a paper jam error may vary.



Figure 28 - Inside view of the ICE (420A) ballot box write-in bin full to capacity

In addition, when BVSC removed the security seal from the auxiliary slot and attempted to insert ballots into the auxiliary bin, BVSC found inserting ballots to be difficult. The insertion process required one hand to force the slot open, another hand to push the ballot through, and an excessive amount of manipulation to prevent tearing the ballot in the process. Further, BVSC staff found that the 1 cm-wide corrugated plastic edge of the auxiliary bin slot was quite sharp on the hand when inserting a ballot. Staff took great care to avoid getting cut while performing this test. A possible hazard exists for voters, or other individuals, who would likely be unaware of this detail.

BVSC found that the auxiliary bin on the ICE (420A) ballot box that was used in this test activity appeared to be poorly designed, as the bin opening was not a feasible alternative for the ballot storage. See Figure 28-29



Figure 29 - View of auxiliary slot of ICE (420A) ballot box

ICE (420A) Ballot Box is Serviceable with the ICE Optical Scanner

Verify that the ICE (420A) foldable ballot box can be used as intended when it is paired with the ICE optical scanner.

Findings:

BVSC staff did not encounter issues or anomalies with the serviceability of the ICE tabulator when used with the ICE (420A) foldable ballot box. See Figure 30.



Figure 30 - ICE tabulator paired with ICE (420A) ballot box

ICE Optical Scanner Functioning (when paired with ICE (420A) Ballot Box

Verify that the ICE optical scanner's functioning is not affected by the use of the ICE (420A) foldable ballot box under test.

Findings:

BVSC was able to install and secure the media in the ICE tabulator, open the polls, cast ballots, and close the polls. BVSC staff did not encounter issues or anomalies with the functioning of the ICE tabulator, when paired with the ICE (420A) foldable ballot box.

Accessibility Voting-ICE (420A) Ballot Box as paired with the ICP Optical Scanner

Verify that the use of this ICP (420A) foldable ballot box does not affect the voting process for a voter who uses mobility aids, including wheelchairs.

Findings:

BVSC found that the ICE (420A) foldable ballot box has a forward approach with an unobstructed forward reach. In addition, the ballot box met the maximum “high reach” of 48 inches.¹⁸ Staff observed no issues with the use of this ballot box when paired with the ICE tabulator.

Continuous Improvement / Recommendations

While BVSC staff encountered no issues during testing that preclude approval of the request for certification of the (340C) and (420A) foldable ballot boxes for use with the Democracy Suite Release 4.14.17, Version 1 (Revision 1) voting system, BVS highly recommends the following ongoing modifications and enhancements. It is important to note that while the items below enhance ease of usability, and possibly, efficiency, they have no bearing on the effectiveness of the voting system, its tabulation, or the accumulation of election results.

1. The 1 cm-wide corrugated hard plastic edge of (340C) and (420A) auxiliary bin Coroplast edges were quite sharp and created a possible hazard. DVS should address this issue in future (340C) and (420A) ballot box design modifications.
2. The ICP (340C) and the ICE (420A) ballot boxes do not appear to be suitable for the transport of ballots. The ballot boxes do not have wheels or handles, and they are bound together with security ties. Because the weight of a large number of ballots interferes with the county’s ability to confidently move the boxes, DVS needs to add to the User/Assembly Manual or other pertinent vendor documentation advising counties that the use of these optional (340C) and/or (420A) ballot boxes necessitate using a ballot transfer box to transport ballots.

¹⁸ Section 3.2.4, Mobility, United States Election Assistance Commission, “2005 Voluntary Voting System Guidelines”, Volume 1, Version 1.0

Conclusion

Based on this examination, BVSC affirms that the ICP (340C) and ICE (420A) ballot boxes under test, for use with Democracy Suite Release 4.14.17, Version 1 (Revision 1) voting system, met applicable requirements of the Florida Voting Systems Standards, Florida Statutes and Rules, and the Help America Vote Act (HAVA) for usability and accessibility. However, BVSC does not recommend that these boxes be used both as storage and transport for ballots as the boxes did not exhibit suitable strength or ease for transporting the ballots. Otherwise, the Florida Division of Elections, Bureau of Voting Systems Certification, recommends that the requested modification to the referenced voting system be granted and that the ICP (340C) and the ICE (420A) be added as an “optional” ballot box for use with the referenced voting system.

Appendices

Acronyms

ADA	Americans with Disabilities
AS	Audio Studio
BVSC	Bureau of Voting Systems Certification
DVS	Dominion Voting Systems, Inc.
DVS-DS	Dominion Voting Systems' Democracy Suite voting system
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
RTR	Results Tally and Reporting

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