

FREEMAN, CRAFT, MCGREGOR GROUP

Evaluation of ES&S ElectionWare,
Release 5.1.0.0 and Procedures
Proposed for Its Use by the City of
Minneapolis to Tabulate Ranked
Choice Ballots for the November 5,
2013 Municipal Election.

Prepared October 7, 2013

Post Office Box 1716 – Tallahassee, Florida 32302-1716

Introduction

On November 7, 2006, a proposed Minneapolis Charter Amendment for Instant Runoff Voting passed by a margin of 64.95% Yes to 35.05% No. The amendment provided that Minneapolis (the City) adopt Single Transferable Vote, also called Ranked Choice Voting (RCV) or Instant Runoff Voting, as the method used to conduct elections for City offices without conducting a primary election. Minnesota Election law requires that all electronic voting systems be certified by the State. In 2009, no equipment capable of tabulating an election using the RCV method had been certified so the City developed the "Minneapolis Method for Hand Counting a Ranked-Choice Voting Election." This method involved a hand sort and count of the ballots and manually entering the data into a Microsoft Excel spreadsheet. The candidate vote totals, mathematical elimination and vote transfers were then performed within Excel.

On July 18, 2013, the Minnesota Secretary of State certified the ES&S ElectionWare Voting System 5.1.0.0 (the System) for use in Minnesota. A copy of the Minnesota document of Certification is included as attachment "A" to this report. The System includes the capability to upload election night results wirelessly from polling places and the ability to produce a RCV Export Report File containing the votes cast for each three-choice combination of candidates made on each ballot cast during the election. Although the system cannot perform RCV tabulation, the RCV Export Files can be used to tabulate RCV results using Microsoft Excel to parse and tabulate the data. This eliminates the need to hand sort the ballots before beginning the tabulation process and the need to manually enter the data into Excel. The data sorting capabilities also allow the data contained in the RCV Export Report Files to be efficiently audited against the results gathered from the ballots.

Under Minnesota law, Hennepin County (the County) is required to provide certain election services to the City. These services include providing the election definition, producing the ballots, defining election specific parameters for the precinct devices, receiving telecommunicated election night results, consolidating results, reporting and producing the RCV Export Report Files. In conjunction with these services, the City conducts its election using polling place devices leased from the County, as required by the system adopted by the County. The County recently acquired the newly certified System. The first time the System is used by either jurisdiction will be the November 2013 Municipal Election.

While the Minnesota Secretary of State has certified the System, this certification is limited to those requirements defined in Minnesota State Law. Neither the production of the RCV Export Report File nor wireless telecommunication is required under State Law. As a result, the Secretary of State's certification provides no assurances regarding these functions. There are also no publically available certification reports issued by other states to provide any assurance that the System can perform these functions.

On July 18, 2013, the City of Minneapolis and Hennepin County entered into a contract with the Freeman, Craft, McGregor Group, Inc. (the Company) to provide testing and procedural review services to assist them with their preparation for the November 2013 Municipal Election.

Objectives

Under the contract with the City and County, the Company was asked to evaluate the accuracy, reliability and usability of ES&S's ElectionWare, release 5.1.0.0 Voting System, evaluate the City's proposed procedures for using this system for the November, 2013 Municipal Election and provide a reasonable assurance that any weaknesses in the system are mitigated by the proposed procedures. At a minimum, this evaluation includes answers to the following:

- Whether the RCV Export Report File utility functions with reliability, accuracy and sufficient usability to allow it to be used with a reasonably low risk of operator error.
- Whether the telecommunication capabilities of the system function as expected, particularly the ability to handle the volume of calls expected on election night, the ability to appropriately handle common telecommunication errors and the usability for operators.
- Whether the Model DS850 central scanner has an acceptable feed rate, accurately handles out-stacked ballots, has low levels of ballot rejection errors, and can handle ballots than have been folded.
- Whether the City's procedures for tabulating results using the RCV Export File are adequate to the task.

The Company also assisted the City by evaluating a draft procedures document for Ranked Choice Voting Tabulation they plan to provide to election workers for their use during the actual tabulation.

Findings and Recommendations

- The system performs accurate tabulations. The tabulated totals on each of the reports generated during the test matched expected totals. Audits of sample RCV Export Report Files showed that the contents of the files were identical to those of the marked ballots. Overall, the test deck provided 21,120 choices. Although the zero errors incurred during this tabulation are reassuring, the certification issued by the Minnesota Secretary of State still provides the most reliable evidence of the System's accuracy and reliability. During the Company's examination of the system, nothing that would be adverse to City and County reliance on the State certification was detected. A copy of the Minnesota Certification Report and Recommendation for the system is included as attachment "B" to this report
- The utility used to generate the RCV Export Report File is easy to use and requires no special setup. The System's precinct and central count devices capture a data set, called the Cast Vote Record, for each ballot processed through either a DS850 central scanner or a DS200 precinct scanner. Using the content of the Cast Vote Records, the utility creates a Microsoft Excel file. Within this file, each row contains a record of the

selections made for each ranking in each contest on an individual ballot. The greatest potential for operator error when this file is created lies in the possible failure to insure that all ballot data from all DS850s and DS200s has been uploaded. If this error occurs, it can be readily detected by comparing the number of cast vote records represented in the file to the number of ballots tabulated in a given contest. The risk of an operator error occurring while the RCV Export Report File is being generated is low. The procedures for generating these files should include steps to verify that the number of records in each file match the number of ballots tabulated for the races included in the file. After the number of records in each file has been verified, the files should be written to a non-rewritable CD in order to create an unalterable master copy of the RCV Export Files. The capability of Excel to sort data makes auditing the content of the RCV Export File to the tabulated results an easy task. In light of this, the sorted candidate votes for each ranking should be audited against the candidate totals for each ranking from Election Night results prior to undergoing RCV Tabulation.

- The ability of the system to telecommunicate results meets expectations, particularly the ability to handle the volume of calls anticipated on Election Night. This functionality was exercised in two separate tests. During a low stress telecommunication exercise involving seventeen DS200s, only one machine failed to transmit on the first try. A second try on this machine was successful. The Telecommunications Stress Test involved forty machines attempting to transfer results simultaneously on a system expected to handle only 35 connections at a time. During this test, thirty-six machines successfully transmitted on the first try. On all machines that failed on the first try, a second try was successful. Since this system uses a wireless data transfer on a cellular network, it is not subject to the telecommunication errors found in earlier systems, which relied on modems over voice connections. No identifiable telecommunications errors could be simulated. Given a stable cellular network, adequate pretesting and testing network access from each location there should be no telecommunications failures. However, when a machine does fail to transmit its data, the error message displayed on the unit does not provide clear directions to poll workers as to what corrective actions they should take. An error message saying, "A general system error has occurred. Please contact your election administrator for assistance" appears on the screen. The options provided to the poll worker are "Turn Off Voting Machine" or "Ignore and Continue". Nothing on the display suggests that a poll worker should try to resend the data and that "Ignore and Continue" is actually the correct selection in this situation. In order to reduce calls to the help center on Election Night and to reduce the number of calls regarding this issue to technicians, this error message and the proper response should be thoroughly covered in both poll worker and call center operator training as well as in written instructions provided at the polls.
- The DS 850 processed ballots quickly, smoothly and with minimal operator assistance. As part of the test, one hundred seventy ballots were folded, including many with intentionally careless folds and slight tears in the margins. The only ballot that could not be scanned was one that had been wadded up into a ball and roughly smoothed out. However, there were numerous incidents where ballots were out-stacked due to a mark that the machine could not recognize. Most of these ballots were successfully scanned on

a second attempt. There were also a few ballots that could not be scanned due to a mark that the machine could not read, but where there were no unidentifiable marks on the ballot. While it appears to be unlikely that the machines will convert an unidentifiable mark to a vote, it does appear that they will reject some ballots for unidentifiable marks when all marks appear sufficient to be identified. Although this only occurred a few times during the course of testing, on Election Night even a low percentage of these occurrences could result in a significant number of ballots and increase the demand for duplicated ballots to substitute for those the machines deemed to be unreadable. The County should contact ES&S and ask them to recalibrate the DS 850s. After the recalibration has been completed, the City and County should retest the 850s. If the issue continues, adequate resources for ballot duplication on Election Night need to be available.

- The procedures used by the City to tabulate results using the RCV Export File are adequate to the task. These procedures are preferable to hand tabulation in that Excel's ability to sort data eliminates the need to continually sort and resort the actual ballots as required by a hand count. When the process is complete, the Excel worksheet also provides an entirely transparent audit trail. However, at best, the tabulation process is complex and provides a high risk for human error. The City's approach using two independent teams consisting of two people per team and comparing the results of the two teams provides a reasonable assurance that errors will not go undetected. The audit trail created in the Excel worksheet will also make it easier to resolve any differences found in between the results of the two teams. Over time, operator fatigue will increase the risk of error. In order to mitigate this risk, teams should be closely monitored for signs of fatigue, provided with frequent breaks and supplemented with relief operators.
- At the time of our review of the procedures for tabulating results using the RCV Export Report File, City staff was developing a procedures document intended to be used during RCV Tabulation. During the course of our review these procedures were followed and a number of points were discovered where modifications to the document would make the step-by-step instructions easier to follow. Suggested changes were discussed with City Staff. The suggested edits should be adopted and the City is encouraged to continue to refine the document based on future user experiences.

Tasks and Services Performed

In order to meet the objectives of this project and arrive at the findings and recommendations presented above, the following tasks and services were performed.

The election definition used in the 2009 Municipal Election was reviewed. This election included one hundred seventeen precincts established by the City in 2012, each of which used one of twenty-two unique ballot styles. Twenty-two precincts were selected before the test deck was created to ensure that each ballot style was included in the deck.

A marking pattern and expected results were created for the test deck. The marking pattern consisted of thirty ballots per precinct and was designed to insure that the expected results would be close enough to require multiple rounds of ranking. The marking pattern also included a proportionally high number of over votes, under votes, write-ins and voter errors such as selecting the same candidate for more than one ranking, skipped rankings and tie votes within a ranking.

After the ballots were printed, the test deck was assembled according to the pattern and marked by hand using marks reasonably close to the marks prescribed in the voter instructions and pens provided by the City.

An initial proofing scan of the deck was run on the DS850. Results that were inconsistent with the expected results were audited back to the ballots. All of these differences were found to be ballot marking errors. These differences were resolved by either remarking ballots or adjusting the expected results to match the actual marking of the ballots.

The test deck for each of the twenty-two precincts was processed through one of twenty-two DS200 precinct scanners. During this test, one unit (Serial # 0113360184) had a ballot jam either while it was exiting the machine or entering the ballot box. The machine was removed from the test and replaced with another unit. Results tapes from each machine were audited and found consistent with the expected results.

Results were telecommunicated from seventeen precincts and directly uploaded from five precincts. During the telecommunications test, one scanner failed to transmit on the first attempt (Serial # 0113360183). The second attempt was successful.

The precinct decks were processed through the DS850. Results for each precinct were printed and successfully audited back to expected results.

Results for precinct and central scanning were consolidated. Reports were printed and successfully audited back to expected results.

County staff generated the RCV Export Report Files. The files for Council Member Ward 1 and Board of Estimate and Taxation were audited against ballots and found to match. This provided a sufficiently large sample and no additional samples were deemed necessary.

A Telecommunications Stress Test was conducted. City staff prepared forty DS200s to telecommunicate results from the test election. The machines were arranged in four rows. Included were the twenty-two machines used during the prior test voting and eighteen machines with no prior votes cast during the test. All machines were checked to insure they had a network signal. One operator was assigned to each row of machines and the County was notified when the machines were ready to telecommunicate. When the County confirmed that they were ready to receive the transmissions, all four rows of machines were quickly activated to transmit the results. Of the forty machines, thirty-six successfully transmitted on the first try. Four machines, serial numbers 0113350329, 0113350126, 0113360025 and 0113350182, reported

“SFTP Error: Failure During Upload”. All four of the machines were successful when the transmissions were sent a second time.

A Folded Ballots Test was conducted on the DS850. One hundred seventy ballots left over after the test deck was constructed were folded in a variety of patterns, including bi-fold, tri-fold, accordion fold and diagonal folds. Several ballots were torn approximately an inch from their edges. The machine handled all folds and slight tears, rejecting only one ballot that had been wadded up and roughly smoothed out. Three ballots were rejected for containing undeterminable marks. These marks were darkened, re-processed and two of them were accepted by the machine. The remaining ballot appeared to have no undeterminable marks. Later a slight mark, resulting from a pen being rested on the ballot, was detected. When the oval containing this mark was darkened, the machine accepted and read the ballot.

A limited Marginal Marks Test was conducted on the DS850. Six ballots were prepared, each with a specific type of marginal mark. These marks included Xs, dots, and check marks in both blue and black ink. All of the ballots except the one marked with blue check marks were accepted. Attempts to make the machine read the ballot included darkening the blue check marks and marking further into the oval, but the ballot remained unread by the machine.

The review of the RCV Tabulation Process included observing City staff perform the tabulation, then having Company representative repeat it with the assistance of City staff. Once there was an understanding of how the RCV tabulation process was performed, a walk through and edit of the City’s draft RCV Tabulation Procedures was conducted. As one Company representative read the instructions out loud, another followed the instructions and completed the tabulation. With the assistance of City staff, a copy of the instructions was annotated with suggested changes to clarify the procedures and provided to the City.

Methodology and Scope Limitations

The work supporting the findings and recommendations in this report began with an initial analysis and project planning on July 22, 2013 and fieldwork concluded on September 13, 2013. The precincts used in the test were selected to include every ballot style that will be used in the upcoming Municipal Election. The sample of DS200s was selected and prepared for testing by City staff. Staff members from Hennepin County prepared their part of the system for testing, produced the test ballots, operated the election management and reporting components of the system during testing and generated the RCV export files.

Our expertise is in examining computerized voting systems, analyzing systems operation, evaluating system compliance with established criteria, developing standards for systems and reviewing and developing procedures for the use of these systems. We are not attorneys and do not offer legal advice. To advise the City of Minneapolis on the requirements of the State of Minnesota’s requirements or with Hennepin County or City of Minneapolis ordinances would require an interpretation of law. Accordingly, we do not provide any opinion regarding these issues.

We provided assistance to the City of Minneapolis to conduct a set of tests on the voting system and a review of proposed procedures for use in planning and preparing for the November 5, 2013 Municipal Election. The intended audiences for this report are the election administrators of the City and County and those stakeholders in their jurisdictions responsible for enacting election law, formulating policy, funding and budgeting for the election administration programs.

The work we performed and our findings are strictly limited to the specific serial numbered hardware elements, software elements and proposed procedures we examined. The test election and our examination used a base rotation but did not include any precinct rotations in which candidate names would appear in a different order on the ballot from one precinct to the next. We understand that the City plans to test these rotations during their Logic and Accuracy Test. The results described in this report should be reliable and repeatable for those specific items as they were configured during the examination, using the same election definition and test ballots. The decision to apply those results to other items is solely at the discretion and risk of the City of Minneapolis. Use of this information by others for purposes not contemplated in the design of this project may lead the users to unfounded conclusions.

A list of the hardware included in this examination is included as attachment "C" to this report.

Responses by the City and County to the findings and recommendations in this report are included as attachment "D" to this report.

State of Minnesota

SECRETARY OF STATE

Certification of ES&S ElectionWare Voting System 5.1.0.0 (E.V.S. 5.1.0.0)

I, Mark Ritchie, Secretary of State of Minnesota, hereby certify that:

Election Systems and Software (ES&S) has requested the Office of the Minnesota Secretary of State examine and certify the ES&S ElectionWare Voting System 5.1.0.0 (E.V.S. 5.1.0.0) for use in Minnesota elections as certified to the 2005 Voluntary Voting Systems Guidelines, version 1.0 (2005 VVSG). This system includes the following components:

Software: ElectionWare v. 4.4.0.0; Election Reporting Manager v. 8.9.0.0; Event Log Service v. 1.5.3.0; Removeable Media Service v. 1.4.3.0; and VAT Previewer v. 1.8.4.0

Hardware: AutoMARK VAT (AM VAT) (1) – Firmware v. 1.8.4.0, Hardware v. A100 v. 1.0, Operating System (OS) – 5.00.20, Single Board Computer (SBC) – 1.0, Printer Engine Board (PEB) – 1.7.0; AM VAT (2) – Firmware v. 1.8.4.0, Hardware v. A200 v. 1.1, OS – 5.00.20, SBC – 2.0, PEB – 1.7.0; AM VAT (3) – Firmware v. 1.8.4.0, Hardware v. A200 v. 1.3(0), OS – 5.00.20, SBC – 2.5, PEB – 1.7.0; AM VAT (4) – Firmware v. 1.8.4.0, Hardware v. A300 v. 1.3(1), OS – 5.00.20, SBC – 2.5, and PEB – 1.7.0; DS200 Firmware v. 2.10.0.0, Hardware v. 1.2; Plastic Ballot Box – Hardware versions 1.2 and 1.3; Metal Ballot Box with diverter; and DS850 v. 2.7.0.0

COTS Software: Cerberus FTP Server v. 4.0.9.8; IPSwitch WS_FTP 12 v. 12.3

Review of the application submitted for the E.V.S. 5.1.0.0 Voting System indicates satisfaction of the requirements of Minnesota Rule 8220.0350. The demonstration and assessment of E.V.S. 5.1.0.0 Voting System conducted according to the acceptance demonstration and preparation of computer programs criteria, indicates satisfaction of the requirements of Minnesota Rules 8220.0450 and 8220.0750. ES&S has satisfied the additional criteria specified in Minnesota Rules 8220.0650, subpart 1.

Based upon the results of the certification testing of the components listed above and in reliance upon the independent test lab results for E.V.S. 5.0.0.0 and E.V.S. 5.1.0.0, the E.V.S. 5.1.0.0 Voting System (which includes the functionality of the E.V.S. 5.0.0.0 Voting System) as measured by the 2005 VVSG is certified for use in elections in Minnesota.

Certification is subject to the provisions of Minnesota Statutes and Rules. ES&S stipulates that it will employ methods and procedures to safeguard system software and firmware from access by unauthorized parties during all phases of election preparation, including preparation and delivery of election programming and related materials to county and local governments.



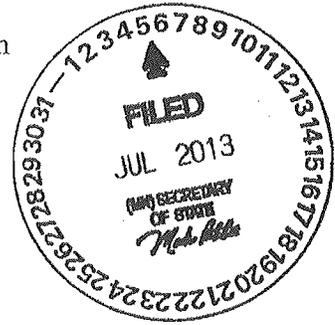
Witness my hand and the Great Seal of the
State of Minnesota on this 18th day of July 2013.

Mark Ritchie
Secretary of State

Certification Report and Recommendation
ES&S Unity ElectionWare 5.1.0.0 Voting System

Prepared by

Elections Division
Office of the Minnesota Secretary of State
State of Minnesota



INTRODUCTION:

Election Systems and Software (ES&S) submitted an application to the Office of the Minnesota Secretary of State (OSS) May 23, 2013 to certify ElectionWare Voting System 5.1.0.0 (E.V.S. 5.1.0.0). The components of the system are as follows:

Software:

- ElectionWare v. 4.4.0.0
- Election Reporting Manager v. 8.9.0.0
- Event Log Service v. 1.5.3.0
- Removeable Media Service v. 1.4.3.0
- VAT Previewer v.1.8.4.0

Hardware:

- AutoMARK VAT (1) (AM VAT(1)) – Firmware v. 1.8.4.0; Hardware v. A100 v. 1.0; Operating System (OS) – 5.00.20; Single Board Computer (SBC) – 1.0; Printer Engine Board (PEB) – 1.70
- AutoMARK VAT (2) (AM VAT(2)) – Firmware v. 1.8.4.0; Hardware v. A200 v. 1.1; OS – 5.00.20; SBC – 2.0; PEB – 1.70
- AutoMARK VAT (3) (AM VAT(3)) – Firmware v.1.8.4.0; Hardware v. A200 v. 1.3(0); OS – 5.00.20; SBC – 2.5; PEB – 1.70
- AutoMARK VAT (4) (AM VAT(4)) – Firmware v. 1.8.4.0; Hardware v. A300 v. 1.3(1); OS – 5.00.20; SBC – 2.5; PEB – 1.70
- DS200 Firmware v. 2.10.0; Hardware v. 1.2
- Plastic Ballot Box – Hardware v. 1.2
- Plastic Ballot Box – Hardware v. 1.3
- Metal Ballot Box with Diverter
- DS850 v. 2.7.0.0

Commercial Off the Shelf (COTS) Software:

(To enable DS200 land line modeming)

- Cerberus FTP Server v. 4.0.9.8
- IPSwitch WS_FTP 12 v. 12.3

APPLICATION REVIEW:

The following items were received from ES&S and reviewed in accordance with Minnesota Rule 8220.0350:

- A. A signed agreement that the vendor will pay all costs incurred by the secretary of state, its vendor, and any designees of the secretary of state in accomplishing the examination;
- B. Complete specifications of all hardware, firmware, and software;
- C. All technical manuals and documentation related to the system;
- D. Complete instructional materials necessary for the operation of the equipment by election jurisdictions and a description of any training available to users and purchasers;
- E. A list of all state election authorities that have tested and approved the system for use;
- F. A list of all election jurisdictions where the system has been used for elections;
- G. A description of any support services offered by the vendor and of all peripheral equipment that can be used in conjunction with the system;
- H. Recommended procedures for use of the system at Minnesota elections including procedures necessary to protect the integrity of the election;
- I. Specifications for materials and supplies required to be used with the system;
- J. Specifications for stickers for write-in votes that can be used with the system;
- K. Explanation of the level of technical expertise required to program or prepare the system for use at an election; and
- L. Certification by an independent testing authority approved by the secretary of state of conformance to standards for voting equipment issued by the Federal Election Commission.

Along with the test lab certification report of ES&S E.V.S. 5.1.0.0 the test lab report of ES&S E.V.S. 5.0.0.0 was included, because E.V.S. 5.1.0.0 is a modification to 5.0.0.0 and not all of the components of 5.0.0.0 were retested by the test lab when they tested E.V.S. 5.1.0.0.

Conclusion: Review of the application materials submitted for the ES&S E.V.S. 5.1.0.0 Voting System indicates that they are complete and satisfy the requirements of Minnesota Rule 8220.0350.

SYSTEM DEMONSTRATION:

On June 19, 2013 and June 20, 2013, the OSS hosted Mr. Steve Pearson and Mr. Mark Manganaro from ES&S. Test decks printed by ES&S and marked by the OSS were used in the demonstration to test the E.V.S. 5.1.0.0 Voting System. Tests simulating both a state primary and state general election were conducted.

The testing was designed to determine compliance with requirements of Minnesota Rules 8220.0450 and 8220.0750, respectively.

Electronic Ballot Marker Evaluation

AutoMARK VAT v. 1.8.4.0

Minnesota Statutes section 206.57 requires that a “voting method used in each polling place must include a voting system that is accessible for individuals with disabilities, including nonvisual accessibility for the blind and visually impaired in a manner that provides the same opportunity for access and participation, including privacy and independence, as for other voters.” ES&S presented the AutoMARK Voter Assist Terminal (AM VAT) as the assistive voting technology used by the E.V.S. 5.1.0.0 Voting System to meet the requirements in Minnesota Statutes section 206.57. Four different hardware versions of the AM VAT firmware version 1.8.4.0 were tested on four separate machines:

- 1) Hardware Version A100 v. 1.0 – This contained:
Printer Engine Board (PEB) – 1.70
Single Board Computer (SBC) – 1.0
Operating (OS) – 5.00.20
- 2) Hardware Version A200 v. 1.1 – This contained:
PEB – 1.70
SBC – 2.0
OS – 5.00.20
- 3) Hardware Version A200 v. 1.3(0) – This contained:
PEB 1.70
SBC – 2.5
OS – 5.00.20
- 4) Hardware Version A300 v. 1.3(1) – This contained:
PEB – 1.70
SBC – 2.5
OS – 5.00.20

All four of these AM VATs were tested and, unless specifically stated otherwise, the following results refer to all four of the different versions of the AM VAT firmware version 1.8.4.0:

STATUTORY REQUIREMENTS IN ACCORDANCE WITH MINNESOTA STATUTES 2012, CHAPTER 206

A. The electronic ballot marker uses an electronic ballot display or audio ballot reader to mark a paper optical scan ballot with votes selected by a voter. (M.S. 206.56, subd. 7b)

Demonstrated. The AutoMARK properly marked an optical scan ballot with oval targets. It was observed that the size of the ovals on the test ballots ovals were smaller than on previous ballots, and the AutoMARK still used the same size mark to fill in the ovals as it did on previous ballots. This resulted in marks that extended beyond the margins of the oval. These marks were correctly read by the DS200 and the DS850.

B. The electronic ballot marker includes assistive voting technology, which means touch activated screen, buttons, keypad, sip-and-puff input device, keyboard, earphones, or any other device used with an electronic ballot marker that assists voters to use an audio or electronic ballot display in order to cast votes. (M.S. 206.56 Subd. 1a)

Demonstrated and the criteria was met. The touch screen function, key pad function and audio function were tested on ballots with oval targets for simulated state primary and state general elections. The touch screen function and the key pad function worked. The volume and tempo control functioned properly allowing the voter to adjust tempo and volume to suit their needs.

C. The electronic ballot marker uses an electronic display to present a graphic representation of a ballot on a computer monitor or screen on which a voter may make vote choices for candidates and questions for the purpose of marking a nonelectronic ballot. (M.S. 206.56, subd. 7a)

Demonstrated and criteria met. The electronic ballot display's zoom feature and contrast feature were tested. Both functioned correctly.

D. The electronic ballot marker is capable of reading ballot information to a voter who may use assistive voting technology to permit them to mark votes on a nonelectronic ballot. (M.S. 206.56, subd. 1b)

Demonstrated and criteria met. An audio function allows the voter to listen to candidate choices through headphones. A ballot was properly marked in each test precinct on each machine using only the audio portion and keypad of the assistive device. The device demonstrated that it is capable of having audio voting instructions programmed as required by M.R. 8220.2860. It was observed that the language of the instructions was not an exact match to the language in the rules. However, the device demonstrated the capability of reading the language that appeared on the ballot. It was also noted that the voice-over did not note the transition from the partisan to the non-partisan portion of the ballot. It was also observed on AM VAT (3) that the voice-over

does not read the precinct or school district number in the situation where the precinct was divided between two different school districts. However, the device did demonstrate that it is capable of having audio voting instructions programmed as required by Minnesota Rule 8220.2860.

E1. The electronic ballot marker must meet the minimum requirements for electronic voting systems in accordance with M.S. 206.80:

1. Permits every voter to vote in secret;

Demonstrated and criteria met. There is an option allowing the voter to turn the display screen black and use only the audio function to make selections. Since headphones must be used, the voter's choices remain private. The ballot may also be inserted into a privacy sleeve after the marked ballot is returned to maintain privacy.

2. Permits every voter to vote for all candidates and questions for whom or upon which the voter is legally entitled to vote;

Demonstrated and criteria met.

3. Provides for write-in voting when authorized;

Demonstrated and criteria met. The write-in function, when chosen, spells out the name of the candidate by means of the voter touching the screen and choosing a letter. The write-in function allows for the voter to back out of the function and select another candidate, if they choose. When the write-in candidate is entered the name is read back to the voter by spelling it.

4. Automatically rejects all votes for an office or question when the number of votes cast on it exceeds the number that the voter is entitled to cast.

The AutoMARK device prevents overvotes. When a voter is entitled to cast one vote in a race, the device deselects the first choice when another choice is made. When a voter may make more than one choice, the device does not allow the selection of more than the allowable number of selections and warns the voter of the overvote condition.

5. Permits a voter at a Partisan Primary to secretly select the party for which the voter wishes to vote;

Demonstrated. The AM VAT's initial screen for the partisan primary provides a choice of parties for the voter.

6. Automatically rejects all votes cast in a partisan primary when the voter selects candidates from more than one political party; and

The AutoMARK device prevents cross-party voting by warning the voter and not allowing an improper selection. The AM VAT offers the voter a choice of parties on its initial screen, and once a party is chosen only contests for that party's primary can be voted on. If a voter deselects and goes back to the party selection screen and chooses a different party an ALERT pops up stating "ALERT! Changing your party preference selection will select a new party ballot. This will result in the removal of all candidates selections in all contests associated with your previous party choice and voting will be limited to the contests that are associated with your new party choice. If you want to keep your previous party ballot and candidate selections, press RETURN TO THIS CONTEST. To accept the change press OK." If no party is chosen at the start of voting, the AM VAT provides a warning. As you continue, it goes to the first contest listed on the ballots and goes through each candidate from each party until you select a candidate. Then after making this selection you can only select candidates from that party as you proceed through the ballot.

7. Permits every voter an opportunity to verify votes and to change votes or correct any error before the voter's ballot is cast and counted, produces an individual, discrete, permanent paper ballot cast by the voter and preserves the paper ballot as an official record available for use in any recount.

Demonstrated and criteria met. A voter may select either a visual or an audio review of the selections made before their selections are printed on a ballot. (Primary and general election ballots were marked by the AM VAT)

E2. An electronic voting system may not be employed unless it:

1. Creates a marked optical scan ballot that can be tabulated in the precinct or at a counting center by automatic tabulating equipment certified for use in this state:

Demonstrated and criteria met. The ballots marked by each AM VAT were included in the test decks used to test the DS200 and DS850 tabulating equipment. Both primary and general election ballots marked by the AutoMARKs were accurately counted by the DS200, and the DS850. Voters may also use the AutoMARK to verify votes already marked on the ballot. When a pre-marked ballot is inserted into the AutoMARK, the device brings the voter to the final review screen. On this screen, the voter can select each office and hear the name of each candidate marked.

ACCEPTANCE DEMONSTRATION REQUIREMENTS

A. Storage requirements.

System has hard case, foam padded and insulated.

B. Speed of operation under conditions that simulate the scope and length of actual election ballots.

14 inch and 17 inch ballots were tested. Ballots were programmed with races consistent with a typical state primary and state general election. Ballots were processed in a reasonable amount of time.

C. Full audit capability, with an audit trail, which includes a printout of overvotes and undervotes for each office and issue, and with the undervotes recorded directly from the ballots and not determined by subtraction of totals from ballots that were not overvoted.

The marked ballot is the audit trail which provides full audit capability. Since the AutoMARK device does not count votes, a report is not available. The device prevents overvoting and warned the tester about undervotes by indicating that fewer selections than allowed had been made.

D. All features that can be programmed.

These features of the device were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.

E. All design specifications.

These features of the device were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.

F. Maximum numbers of precincts, offices and issues, and candidates per office that can be handled.

System accommodated all test precincts. Wyle Laboratories, the independent test lab, reported the following numbers and volumes as tested in the National Certification Test Report for the ES&S 5.0.0.0 Voting System (section 4.8), as referenced in the National Certification Test Report for the ES&S E.V.S. 5.1.0.0 Voting System. This report relies on those results and does not extend to items not covered in those independent test lab certification results.

Maximum number of Precincts – 9,900
Maximum number of Offices and Issues – 21,000
Maximum number of Candidates per Office – 175
Candidates in Tabulator – 65,500
Maximum Precinct Element – 500,000
Ballot Styles in Election – 9,900
Contests in a ballot style – 200

Ballot Styles in a Precinct – 40
Vote for in a Contest – 98
Number of Parties:
 General – 75
 Primary – 20

G. The production of reports that include vote totals and all statistics and other information required by the secretary of state.

The AutoMARK system does not accumulate votes and therefore does not provide reporting of vote totals and statistics.

H. Simulation of vote counting involving a configuration of the largest number of voters, precincts, offices, and candidates with which the system is expected to be used, which vote counting includes ballots showing overvotes, undervotes, and invalid votes as well as those with no overvotes or stray marks, in many different combinations, and demonstrates rotation sequences and the ability to count votes cast on the partisan, nonpartisan, and proposal sections of the ballot independently.

Test decks incorporating all required elements were fed through the four AutoMARK devices. These test ballots included overvotes, undervotes, blank voted ballots, cross party votes and stray marks. The device was capable of marking races for partisan and/or nonpartisan races accurately. As mentioned above, this device does not count ballots.

I. Accuracy of vote counting and procedures or process for testing accuracy.

The AutoMARK marked test ballots accurately, as directed by OSS staff using test deck spreadsheets. The precision of the marking was also examined by using the ballots as part of the test decks for the DS200 and DS850 accuracy tests.

J. Provisions for maintaining the security and integrity of elections.

Demonstrated key system use for access and election administration functions. Memory card can be sealed in place. The E.V.S. 5.1.0.0 Voting System also provides for system security by using a unique password for each election so that the AM VAT, DS200, DS850, and the Election Reporting Manager all need to recognize that password before performing their election functions.

K. Provisions for write-in votes.

The device allowed testers to mark the write-in target and enter a write-in candidate name which was later printed on the ballot.

CRITERIA FOR PREPARATION OF COMPUTER PROGRAMS

A. The computer program must reflect the rotation sequence of the candidates' names as they appear on the ballots in the various precincts.

Not required for this certification.

B. The computer program must reflect the offices and questions to be voted on in the order that they appear on the ballots in the various precincts.

Not required for this certification.

C. The computer program must count valid votes cast by a voter for candidates for an office.

The AutoMARK device does not accumulate votes, however, the device did accurately mark ballots according to the results chart.

D. The computer program must count valid votes cast by a voter for or against any question.

The AutoMARK device does not accumulate votes, however, the device did accurately mark ballots according to the results chart.

E. The computer program must not count the votes cast by a voter for an office or question if the number of votes cast exceeds the number which the voter is entitled to vote for on that office or question, but it must record that there is an overvote condition as referred to in part 8220.0450, item C (audit trail capability)

The AutoMARK device prevented all overvotes that were attempted. Since it prevented them, it did not record them.

F. The computer program must ignore stray marks on a ballot; these marks must have no effect on any portion of the ballot.

Test ballots included stray marks and did not prevent the device from accurately marking ballots.

G. For the purpose of programming, the partisan, nonpartisan, and proposal sections of the ballot are independent ballots; no action of a voter on one section of the ballot may affect the voter's action on another section of the ballot.

The AutoMARK correctly prevented cross party votes, therefore there was no effect on other portions of the ballot when a cross party vote was attempted.

H. In partisan primary elections, the computer program must count the votes recorded by a voter for candidates in one political party only and reject all of the partisan section of the ballot if votes

are cast for candidates of more than one political party, but count valid votes in the nonpartisan section of the ballot.

The AutoMARK correctly prevented cross party votes, therefore there was no effect on other portions of the ballot when a cross party vote was attempted.

I. In partisan primary elections the computer program must check for the situation of a voter casting votes for candidates of more than one political party prior to checking for overvote conditions.

The AutoMARK correctly prevented cross party votes, therefore there was no effect on other portions of the ballot when a cross party vote was attempted. The device also correctly prevented overvotes.

J. If the counting equipment can examine and return a ballot to the voter before counting it, the computer program must check for and reject without counting any ballot with an overvote or, at a partisan primary, with votes cast for candidates of more than one party. When the ballot is returned to a voter, an error message must indicate the type of defect and may indicate the specific office or question where the defective condition was found. The error message must print on a paper tape or display electronically.

As mentioned previously, this device does not count ballots, however, it did prevent improper voting. Since it prevented these actions, it did not record them.

K. A mark indicating a write-in is a vote for the purpose of determining if an overvote condition exists. Except where an overvote condition for the office exists, the computer program must record that a write-in has been indicated. The program must count and record valid votes on the ballot for all other offices and questions before a ballot with a write-in recorded is separated from ballots with no write-ins recorded. The program must report, by office, the total number of write-ins recorded.

The device allowed testers to mark the write-in target and enter a write-in candidate name which was later printed on the ballot for deposit into the ballot counter. The separation of the write-ins is no longer a requirement (see Minnesota Statutes section 206.57, subdivision 8).

Certification Testing Report DS200 in conjunction with certified versions of the AutoMARK

In applying Minnesota's Electronic Voting System requirements, the DS200 (with and without modem capability) used in conjunction with all of the tested versions of the AutoMARK (System) the following are the results:

These results include the following scenarios: single precinct tabulation and multi-precinct tabulation.

1. The System permits every voter to vote in secret. (as required by M.S. 206.80 (a)(1))
Comments: Demonstrated. When a ballot is inserted into the tabulator, the votes marked on the ballot are not displayed on the communication screen. When an error such as an overvote exists, the screen will display the name of the office with the error type, keeping the voter's selection private. For example, "In the contest for: State Senator District 54; You Chose 2 candidates; You are allowed 1." Also see AutoMARK results above.
2. The System permits every voter to vote for all candidates and questions for whom or upon which the voter is legally entitled to vote. (as required by M.S. 206.80 (a)(2))
Comments: Demonstrated. Test ballots were marked according to a predetermined results chart, hereafter referred to as a results chart. This prearranged set of results included votes for all candidates and questions on the ballot. The system results report matched the results chart.
3. The System provides for write-in voting when authorized. (as required by M.S. 206.80 (a)(3))
Comments: Demonstrated. On the general election ballot (where write-in voting is authorized), ovals marked by hand or by AutoMARK for "write-in" were counted as write-in votes by the DS200.
4. The System automatically rejects, except as provided in section 206.84 with respect to write-in votes, all votes for an office or question when the number of votes cast on it exceeds the number which the voter is entitled to cast. (as required by M.S. 206.80 (a)(4))
Comments: Demonstrated. The DS200 did not count the offices or questions that had more votes cast than were entitled to be cast. Prior to tabulation, the communication screen informed the voter of the overvoted office(s) on the ballot and gave them the option to correct the error: "In the contest for: State Senator District 54; You Chose 2 candidates; You are allowed 1. To correct your ballot, Press Return and ask for a new ballot. To Cast your ballot with votes that will not count, Press Cast."
5. The System permits a voter at a primary election to select secretly the party which the voter wishes to vote. (as required by M.S. 206.80 (a)(5))
Comments: Demonstrated. Voters receive ballots of the same style, and can choose which party to vote for in the privacy of the voting booth. Also see AutoMARK results above.
6. Automatically rejects all votes cast in a primary election by a voter when the voter votes for a candidate of more than one party. (as required by M.S. 206.80 (a)(6))
Comments: Demonstrated. The DS200 returned without counting, the ballots with cross party votes (votes for more than one political party). The communication screen alerted the voter to the presence of the erroneous vote, and gave an opportunity to correct the ballot or cast it as is. An example of the message received: "The following contests have cross over selections: U.S. Senator, State Senator District 54. You are allowed 1 candidate. To correct your ballot to reflect your party preferences, Press Return and ask

for a new ballot. To ignore this message and cast your ballot, Press Cast.” Also see AutoMARK results above.

7. Provides every voter an opportunity to verify votes recorded on the permanent paper ballot, either visually or using assistive voting technology, and to change votes or correct any error before the voters ballot is cast and counted, produced on individual, discrete, permanent, paper ballot cast by the voter, and preserves the paper ballot as an official record available for use in any recount. (as required by M.S. 206.80 (a)(7))

Comments: Demonstrated. An actual paper ballot is cast so voters can visually verify their votes. The DS200 detects and returns without counting any ballots with overvotes, or cross party votes (in the case of partisan primaries). The voter cannot proceed until they actively decide to correct the errors or cast the ballot with errors. The paper ballots are preserved for use in possible recounts.

8. Accepts and tabulates, in the polling place or at a counting center; a marked optical scan ballot; or creates a marked optical scan ballot that can be tabulated in the polling place or at a counting center by automatic tabulating equipment certified for use in this state. (as required by M.S. 206.80 (b) (1) & (2))

Comments: Demonstrated. The DS200 accepted and accurately tabulated marked optical scan ballots in both a single precinct scenario and a multiple precinct scenario. The System tabulated a variety of marking styles, completely filled ovals, ovals marked with an X and ovals marked with a check mark. Voter should ensure that marks are dark and distinct. See AutoMARK results above for creation of a marked optical scan ballot.

9. The System contains an electronic ballot marker which uses an electronic ballot display or audio ballot reader to mark a paper optical scan ballot with votes selected by a voter (M.S. 206.56, subd. 7b)

Comments: Demonstrated. The DS200 is used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.

10. The System contains an electronic ballot marker that includes assistive voting technology, which means touch activated screen, buttons, keypad, sip and puff input device, keyboard, earphones, or any other device used with an electronic ballot marker that assists voters to use an audio or electronic ballot display in order to cast votes. (as required by M.S. 206.56, subd. 1a)

Comments: Demonstrated. The DS200 is used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.

11. The System contains an electronic ballot marker that uses an electronic display to present a graphic representation of a ballot on a computer monitor or screen on which a voter may make vote choices for candidates and questions for the purpose of marking a nonelectronic ballot. (as required by M.S. 206.56, subd. 7a)

Comments: Demonstrated. The DS200 is used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.

12. The System contains an electronic ballot marker that is capable of reading ballot information to a voter who may use assistive voting technology to permit them to mark votes on a nonelectronic ballot. (M.S. 206.56, subd. 1b)
Comments: Demonstrated. The DS200 is used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.
13. The acceptance demonstration included its storage requirements. (as required by M.R. 8220.0450 (A))
Comments: Demonstrated. The DS200 has two storage options: 1. Separate hard case, which is padded and insulated. 2. The top section of the plastic ballot box, which converts into a hard transport case.
14. The acceptance demonstration included its speed of operation under conditions that simulate the scope and length of actual election ballots. (as required by M.R. 8220.0450 (B))
Comments: Demonstrated. Two ballot lengths were tested: 14 inch primary and 17 inch general election ballots. Ballots were programmed with races consistent with typical state primary and general elections. Ballots were processed in a reasonable amount of time.
15. The acceptance demonstration showed full audit capability, with an audit trail, which includes a printout of overvotes and undervotes for each office and issue, and with the undervotes recorded directly from the ballots and not determined by subtraction of totals from ballots that were not overvoted. (as required by M.R. 8220.0450 (C))
Comments: Demonstrated. The DS200 provides a printout with vote totals including overvotes and undervotes listed. These totals are determined individually, not as a result of subtraction from other totals.
16. The acceptance demonstration included its programmable features. (as required by M.R. 8220.0450 (D))
Comments: Demonstrated. These features were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.
17. The acceptance demonstration included all design specifications. (as required by M.R. 8220.0450 (E))
Comments: Demonstrated. These features were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.
18. The System demonstrated the maximum number of precincts, offices and issues, and candidates per office which can be handled. (as required by M.R. 8220.0450 (F))

Comments: Demonstrated. The system accommodated all test precincts. Wyle Laboratories, the independent test lab, reported the following numbers and volumes as tested in the National Certification Test Report for the ES&S 5.0.0.0 Voting System (section 4.8), as referenced in the National Certification Test Report for the ES&S E.V.S. 5.1.0.0 Voting System. This report relies on those results, and does not extend to items not covered in those independent test lab certification results.

Maximum number of Precincts – 9,900
Maximum number of Offices and Issues – 21,000
Maximum number of Candidates per Office - 175
Candidates in Tabulator – 65,500
Maximum Precinct Element – 500,000
Ballot Styles in Election – 9,900
Contests in a ballot style – 200
Ballot Styles in a Precinct – 40
Votes for a Contest – 98
Number of Parties:
 General – 75
 Primary – 20

19. The System demonstrated the production of reports which include vote totals and all statistics and other information required by the secretary of state. (as required by M.R. 8220.0450 (G))

Comments: Demonstrated. The DS200 provided a printout of the vote totals for all candidates – including write-ins – and for all ballot questions. The System also provided a printout of overvotes and undervotes.

20. The System demonstrated simulation of vote counting involving a configuration of the largest number of voters, precincts, offices, and candidates with which the system is expected to be used, which vote counting includes ballots showing overvotes, undervotes, and invalid votes as well as those with no overvotes or stray marks, in many different combinations, and demonstrated rotation sequences and the ability to count votes cast on the partisan, nonpartisan, and proposal sections of the ballot independently. (as required by M.R. 8220.0450 (H))

Comments: Testing involved three precincts. A test deck was prepared for each precinct based upon a results chart. The chart for each precinct included numerous vote combinations with overvotes, undervotes, cross party votes (primary election ballots), blank ballots, and stray marks. Each precinct had a different rotation sequence. The DS200 demonstrated that it could count votes cast in the nonpartisan and proposals section of the ballot while not counting votes on the partisan section when cross party votes were present.

21. The System demonstrated accuracy of vote counting and procedures or process for testing accuracy. (as required by M.R. 8220.0450 (I))

Comments: Demonstrated. DS200 results reports for all precincts were verified against each precinct's results chart.

22. The System demonstrated provisions for maintaining the security and integrity of elections. (as required by M.R. 8220.0450 (J))
Comments: Demonstrated. The DS200 uses a key system for access and election administration functions. Tamper-evident tape seals can also be attached for security. Election definitions are password protected. Both styles of ballot box – metal with diverter or plastic without diverter – use a key access system so election officials can keep the system secure on Election Day.
23. The System demonstrated that it has provisions for write-in votes. (as required by M.R. 8220.0450 (K))
Comments: Demonstrated. The DS200 accurately reported the number of write-in votes on the results printout. When using a metal ballot box with diverter, the ballots with write-in votes were diverted into a separate compartment. Use of write-in stickers is prohibited pursuant to Minnesota Rule 8230.1450. Also see AutoMARK results above.
24. The vendor identified all hardware configurations with which software is intended to operate and provided an acceptance demonstration for each hardware and software configuration for which the vendor requested certification. (as required by M.R. 8220.0450)
Comments: Demonstrated. Mark Manganaro of ES&S pointed out that the DS200 Version 2.10.0.0 was the version being tested and that was the same version in the application and same version tested by the test lab, Wyle Laboratories. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.
25. The computer programs were prepared so as to tabulate each voter's choices for all candidates, offices, and measures for which the voter is lawfully entitled to vote in conformity with chapters 8220 and 8230 and the laws of Minnesota. (as required by M.R. 8220.0750)
Comments: Demonstrated. Tests were conducting using ballots marked with predetermined results. Results included various combinations of candidates, offices, and measures.
26. The computer program required an electronically readable precinct identifier or ballot style indicator on all ballots. (as required by M.R. 8220.0750)
Comments: Demonstrated. The DS200 results printout confirmed that the ballots from each of the three test precincts had unique electronically readable precinct identifiers because when tested in a multi-precinct scenario, the totals for each precinct were accurately reported on the printout when compared against the results charts.
27. The vote tabulation portion of the computer program reflected the rotation sequence of the candidate's names as they appear on the ballots in various precincts. (as required by M.R. 8220.0750 (A))

Comments: Demonstrated the capability. The order of candidate names on the results reports matched the rotation sequence in one test precinct for each simulated election. The System results correctly reported candidate vote totals where rotation sequences were present.

28. The computer program reflected the offices and questions to be voted on in the order that they appear on the ballots in the various precincts. (as required by M.R. 8220.0750 (B))
Comments: Demonstrated. The order of offices and candidates in System results mirrored the order of offices and candidates on the ballots of the three test precincts.
29. The computer program counted valid votes cast by a voter for candidates for an office. (as required by M.R. 8220.0750 (D))
Comments: Demonstrated. This was confirmed using the results chart prepared by OSS staff.
30. The computer program counted valid votes cast by a voter for or against any question. (as required by M.R. 8220.0750 (D))
Comments: Demonstrated. This was confirmed using the results chart prepared by OSS staff.
31. The computer program did not count the votes cast by a voter for an office or question if the number of votes cast exceeds the number which the voter is entitled to vote for on that office or question, but it does record that there is an overvote condition. (as required by M.R. 8220.0750 (E))
Comments: Demonstrated. The DS200 correctly detected when more votes were cast than were allowed for an office or for a question, rejected the ballot and returned it to the voter. An alarm beeped alerting the voter and the communication screen explained that there was an overvote. The screen displayed the office(s) that had errors. This gave the voter a chance to correct the error(s). The voter was given the choice to either "Correct Your Ballot – press the button below to return your ballot. See a poll worker for a new ballot" or "Cast your ballot with errors – Warning! If you press the button below your ballot will be cast and the contests with too many votes will not be counted." When the "Cast your Ballot with Errors" option was chosen the results printout did not record any votes for the contest(s) that was overvoted but it did record that there was an overvote.
32. The computer program ignores stray marks on a ballot. (as required by M.R. 8220.0750 (F))
Comments: Demonstrated. Test ballots were sequentially numbered with ink pens prior to testing. These stray marks were ignored and did not affect the tabulation.
33. For the purposes of the computer programming, the partisan, nonpartisan, and proposal sections of the ballot were independent ballots. No action of a voter on one section of the ballot affected the voters action on another section of the ballot (as required by M.R. 8220.0750 (G))
Comments: Demonstrated. The results chart and the test ballots contained scenarios where there were overvotes on different sections of the ballot while other parts were

correctly voted. The portions of the ballot that were voted correctly were not affected by overvotes on other parts of the ballot.

34. The computer programming in partisan primary elections counted the votes recorded by a voter for candidates in one political party only and rejected all of the partisan section of the ballot if votes are cast for candidates of more than one political party, but counted valid votes in the nonpartisan section of the ballot. (as required by M.R. 8220.0750 (H))
Comments: Demonstrated. Primary election ballots were marked to create the following scenarios: votes for only one political party; votes for more than one party (cross party voting). In the first scenario, the partisan votes were counted. In the second scenario, the votes in the partisan portion of the ballot were not counted. The nonpartisan section of the ballot was counted in both scenario one and scenario two. The presence of cross party votes did not affect the tabulation of the nonpartisan section of the ballot.
35. The computer programming in partisan primary elections checked for the situation of a voter casting votes for candidates of more than one political party prior to checking for overvote conditions. (as required by M.R. 8220.0750 (I))
Comments: Demonstrated. The primary election test deck contained a scenario where a ballot contained a cross party vote in the partisan section and an overvote in the nonpartisan section. The DS200 detected the cross party vote first. The communication screen provided the following message: "Possible Errors on ballot. Some of these may result in votes not counting. Error Type: Cross Over. Number of Contests: 9. Error Type Over Voted. Number of Contests: 2." In order to cast the ballot, the voter must review all possible errors, and confirm their desire to have the ballot counted as is.
36. The computer programming checked for and rejected without counting any ballot with an overvote. When the ballot was returned to a voter, an error message indicates the type of defect and the message displayed electronically and the message printed on a paper tape. (as required by M.R. 8220.0750 (J))
Comments: Demonstrated. An overvote scenario was included in the results chart and test ballots. The DS200 detected the overvotes and returned the ballot to the voter with a message on the communication screen explaining the overvote: "In the contest for: State Representative District 54; You Chose 2 candidates; You are allowed 1. To correct your ballot, Press Return and ask for a new ballot. To ignore this message and cast your ballot, Press Cast."
37. The computer programming checked for and rejected without counting any ballot at a partisan primary, with votes cast for candidates of more than one party. When the ballot was returned an error message displayed electronically and the message printed on a tape. (as required by M.R. 8220.0750 (J))
Comments: Demonstrated. The DS200 rejected ballots that had cross party votes in the partisan primary portion of the ballot. When the ballots were returned there was a message on the screen indicating the cross party vote and provided the voter with an opportunity to correct their error. An example message is as follows: "The following contests have cross over selections: State Representative District 54. You are allowed 1

candidate. To correct your ballot to reflect your party preferences, Press Return and ask for a new ballot. To ignore this message and cast your ballot, Press Cast.”

38. The computer program records that a write-in has been indicated and it records the total number of write-ins recorded by office. (as required by M.R. 8220.0750 (K))

Comments: Demonstrated. The results printout shows the total number of write-ins recorded by office.

39. The computer programming counted and recorded valid votes on the ballot for all offices and questions before a ballot with a write-in recorded is separated from ballots with no write-ins recorded. (M.R. 8220.0750 (K))

Comments: Demonstrated. The test deck results indicate this criterion was met. The test script included the following scenarios (1) One ballot had two write-in votes in a multiple seat race. (2) One ballot had a write-in and another vote in the same race where there was only one seat available. In each case, review of the results found the race was correctly counted: the first counted as a vote for each selected candidate, the second counted as an overvote.

40. The computer programming recognizes that a mark indicating a write-in vote is a vote for the purposes of determining if an overvote condition exists. (as required by M.R. 8220.0750 (K))

Comments: Demonstrated. A test ballot contained the following scenario: in a vote-for-one race, a candidate oval and the write-in oval were marked. The DS200 tabulated this as an overvote.

41. The central count voting system or the precinct count voting system demonstrated it could be set up so that the vote-tallying procedures function in isolation on election day with no physical connection existing between the system and any other computer during hours that voting is occurring or while the central count voting system or precinct count voting system is tabulating results for a precinct. (as required by M.R. 8220.2050)

Comments: Demonstrated. The DS200, utilized as either a central or precinct counter, demonstrated that it could stand alone and tabulate results correctly without being connected to another computer system.

42. The metal ballot box has two separate compartments in which the ballot counting equipment can feed ballots. One compartment received ballots on which all votes had been counted and recorded. The other compartment received ballots on which all votes had been counted except those for office for which the write-in target had been completed.

Comments: Demonstrated. Note, there has been recent law change. Minnesota Laws 2013, Chapter 131, Article 2 changed Minnesota Statutes section, 206.57, subdivision 8 to state, “notwithstanding Minnesota Rules 8230.4355, ballot boxes used with precinct count voting systems are not required to contain two separate compartments to receive ballots.” OSS staff tested the DS200 together with a metal ballot box with two

compartments and diverter as well as with a plastic ballot box with a single compartment and no diverter. The metal ballot box has the ability to hold ballots without write-ins in one compartment while separating all ballots with one or more write-in ovals marked to be diverted into a separate compartment.

Certification Testing Report
DS850 in conjunction with certified versions of the AutoMARK

In applying Minnesota's Electronic Voting System requirements, the DS850 used in conjunction with all of the tested versions of the AutoMARK (System) the following are the results:

These results include the following scenario: multi-precinct tabulation.

1. The System permits every voter to vote in secret. (as required by M.S. 206.80 (a)(1))
Comments: Demonstrated. When a ballot is inserted into the tabulator, the votes marked on the ballot are not displayed on the communication screen. Also see AutoMARK results above.
2. The System permits every voter to vote for all candidates and questions for whom or upon which the voter is legally entitled to vote. (as required by M.S. 206.80 (a)(2))
Comments: Demonstrated. The test deck included ballots that had votes for all candidates and questions on the ballot, and the results report matched the predetermined results chart, hereafter referred to as the results chart.
3. The System provides for write-in voting when authorized. (as required by M.S. 206.80 (a)(3))
Comments: Demonstrated. The DS850 separated general election test ballots (where write-in voting is authorized) with ovals marked by hand or by AutoMARK for "write-in" into a separate tray after tabulation.
4. The System automatically rejects, except as provided in section 206.84 with respect to write-in votes, all votes for an office or question when the number of votes cast on it exceeds the number which the voter is entitled to cast. (as required by M.S. 206.80 (a)(4))
Comments: Demonstrated. The DS850 does not count the offices where the number of votes cast exceeds the number the voter is entitled to cast. As the DS850 is a central count tabulator and is not used in the polling place, an opportunity to correct the error is not necessary.
5. The System permits a voter at a primary election to select secretly the party which the voter wishes to vote. (as required by M.S. 206.80 (a)(5))
Comments: Demonstrated. As a central count device, the DS850 is most often used to process absentee ballots. All voters, whether absentee or polling place, receive the ballots of the same style. Voters can choose which party to vote for in the privacy of their own home, in the case of absentee voters, or the voting booth, in the case of those who vote in the polling place. Also see AutoMARK results above.

6. Automatically rejects all votes cast in a primary election by a voter when the voter votes for a candidate of more than one party. (as required by M.S. 206.80 (a)(6))
Comments: Demonstrated. The DS850 does not count the votes cast on a primary ballot when there are votes for a candidate of more than one party (cross party voting). As the DS850 is a central count tabulator and is not used in the polling place, an opportunity to correct the error is not provided.
7. Provides every voter an opportunity to verify votes recorded on the permanent paper ballot, either visually or using assistive voting technology, and to change votes or correct any error before the voters ballot is cast and counted, produced on individual, discrete, permanent, paper ballot cast by the voter, and preserves the paper ballot as an official record available for use in any recount. (as required by M.S. 206.80 (a)(7))
Comments: Demonstrated. An actual paper ballot is cast so voters can visually verify their votes. The paper ballots are preserved for use in possible recounts. Also see AutoMARK results above.
8. Accepts and tabulates, in the polling place or at a counting center; a marked optical scan ballot; or creates a marked optical scan ballot that can be tabulated in the polling place or at a counting center by automatic tabulating equipment certified for use in this state. (as required by M.S. 206.80 (b) (1) & (2))
Comments: Demonstrated. The DS850 accepted and accurately tabulated marked optical scan ballots in a multi-precinct scenario. The System tabulated a variety of marking styles, completely filled ovals, ovals marked with an X and ovals marked with a check mark. Voter should ensure that marks are dark and distinct. See AutoMARK results above for creation of a marked optical scan ballot.
9. The System contains an electronic ballot marker which uses an electronic ballot display or audio ballot reader to mark a paper optical scan ballot with votes selected by a voter (M.S. 206.56, subd. 7b)
Comments: Demonstrated. The DS850 can be used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.
10. The System contains an electronic ballot marker that includes assistive voting technology, which means touch activated screen, buttons, keypad, sip and puff input device, keyboard, earphones, or any other device used with an electronic ballot marker that assists voters to use an audio or electronic ballot display in order to cast votes. (as required by M.S. 206.56, subd. 1a)
Comments: Demonstrated. The DS850 can be used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.
11. The System contains an electronic ballot marker that uses an electronic display to present a graphic representation of a ballot on a computer monitor or screen on which a voter may make vote choices for candidates and questions for the purpose of marking a nonelectronic ballot. (as required by M.S. 206.56, subd. 7a)

Comments: Demonstrated. The DS850 can be used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.

12. The System contains an electronic ballot marker that is capable of reading ballot information to a voter who may use assistive voting technology to permit them to mark votes on a nonelectronic ballot. (M.S. 206.56, subd. 1b)
Comments: Demonstrated. The DS850 can be used in conjunction with the AutoMARK electronic ballot marker. See AutoMARK results above.
13. The acceptance demonstration included its storage requirements. (as required by M.R. 8220.0450 (A))
Comments: Demonstrated. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.
14. The acceptance demonstration included its speed of operation under conditions that simulate the scope and length of actual election ballots. (as required by M.R. 8220.0450 (B))
Comments: Demonstrated. Two ballot lengths were tested: 14 inch primary and 17 inch general election ballots. Ballots were programmed with races consistent with typical state primary and general elections. Ballots were processed in a reasonable amount of time. The DS850 has a throughput rate of 300 ballots per minute.
15. The acceptance demonstration showed full audit capability, with a an audit trail, which includes a printout of overvotes and undervotes for each office and issue, and with the undervotes recorded directly from the ballots and not determined by subtraction of totals from ballots that were not overvoted. (as required by M.R. 8220.0450 (C))
Comments: Demonstrated. The DS850 provides a printout with vote totals including overvotes and undervotes listed. These totals are determined individually, not as a result of subtraction from other totals.
16. The acceptance demonstration included its programmable features. (as required by M.R. 8220.0450 (D))
Comments: Demonstrated. These features were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.
17. The acceptance demonstration included all design specifications. (as required by M.R. 8220.0450 (E))
Comments: Demonstrated. These features were examined in the context of certification. This report relies on the certification finding of Wyle Laboratories in its testing of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This

report does not extend to items not covered in those independent test lab certification results.

18. The System demonstrated the maximum number of precincts, offices and issues, and candidates per office which can be handled. (as required by M.R. 8220.0450 (F))
Comments: Demonstrated. The system accommodated all test precincts. Wyle Laboratories, the independent test lab, reported the following numbers and volumes as tested in the National Certification Test Report for the ES&S 5.0.0.0 Voting System (section 4.8), as referenced in the National Certification Test Report for the ES&S E.V.S. 5.1.0.0 Voting System. This report relies on those results, and does not extend to items not covered in those independent test lab certification results.

Maximum number of Precincts – 9,900
Maximum number of Offices and Issues – 21,000
Maximum number of Candidates per Office - 175
Candidates in Tabulator – 65,500
Maximum Precinct Element – 500,000
Ballot Styles in Election – 9,900
Contests in a ballot style – 200
Ballot Styles in a Precinct – 40
Votes for a Contest – 98
Number of Parties:
 General – 75
 Primary – 20

19. The System demonstrated the production of reports which include vote totals and all statistics and other information required by the secretary of state. (as required by M.R. 8220.0450 (G))
Comments: Demonstrated. The DS850 provided a printout of the vote totals for all candidates – including write-ins – and for all ballot questions. The system also provided a printout of overvotes and undervotes.
20. The System demonstrated simulation of vote counting involving a configuration of the largest number of voters, precincts, offices, and candidates with which the system is expected to be used, which vote counting includes ballots showing overvotes, undervotes, and invalid votes as well as those with no overvotes or stray marks, in many different combinations, and demonstrated rotation sequences and the ability to count votes cast on the partisan, nonpartisan, and proposal sections of the ballot independently. (as required by M.R. 8220.0450 (H))
Comments: Testing involved three precincts. A test deck was prepared for each precinct based upon a predetermined set of results. The results chart for each precinct included numerous vote combinations with overvotes, undervotes, cross party votes, blank ballots, and stray marks. Each precinct had a different rotation sequence. The DS850 demonstrated that it could count votes cast in the nonpartisan and proposals section of the ballot while not counting votes on the partisan section when cross party votes were present. This report relies on the certification finding of Wyle Laboratories in its testing

of ES&S E.V.S. 5.1.0.0 and E.V.S. 5.0.0.0 as referenced in the E.V.S. 5.1.0.0 test results. This report does not extend to items not covered in those independent test lab certification results.

21. The System demonstrated accuracy of vote counting and procedures or process for testing accuracy. (as required by M.R. 8220.0450 (I))
Comments: Demonstrated. DS850 results reports for all precincts were verified against each precinct's results chart.
22. The System demonstrated provisions for maintaining the security and integrity of elections. (as required by M.R. 8220.0450 (J))
Comments: Demonstrated. On the rear of the DS850 scanner there are two door locks, and it is also designed so that a tamper-evident tape seal can be used for security. The data ports on the left and right sides of the DS850 are all behind clear access doors that can be protected by locks and seals. The ES&S EQC Media Device thumb drive is used to clear all data from the DS850 and load the encryption keys that are needed to load the election definition and run the election. The Media Device thumb drives are also used to create an archive, and export data that has been saved to the DS850's internal memory.
23. The System demonstrated that it has provisions for write-in votes. (as required by M.R. 8220.0450 (K))
Comments: Demonstrated. The DS850 accurately reported the number of write-in votes on the results printout. It also demonstrated the ability to separate ballots with write-in vote targets marked into a separate shelf. Use of write-in stickers is prohibited pursuant to Minnesota Rule 8230.1450. Also see AutoMARK results above.
24. The vendor identified all hardware configurations with which software is intended to operate and provided an acceptance demonstration for each hardware and software configuration for which the vendor requested certification. (as required by M.R. 8220.0450)
Comments: Demonstrated. Mark Manganaro of ES&S pointed out that the DS850 Version 2.7.0.0 was the version being tested and that was the same version in the application and same version tested by the test lab, Wyle Laboratories.
25. The computer programs were prepared so as to tabulate each voter's choices for all candidates, offices, and measures for which the voter is lawfully entitled to vote in conformity with chapters 8220 and 8230 and the laws of Minnesota. (as required by M.R. 8220.0750)
Comments: Demonstrated. Tests were conducting using ballots marked with predetermined results. Results included numerous combinations of candidates, offices, and measures.
26. The computer program required an electronically readable precinct identifier or ballot style indicator on all ballots. (as required by M.R. 8220.0750)
Comments: Demonstrated. The DS850 results printout confirmed that the ballots from each of the three test precincts had unique electronically readable precinct identifiers

because when tested in a multi-precinct scenario, the totals for each precinct were accurately reported on the printout when compared against the results charts.

27. The vote tabulation portion of the computer program reflected the rotation sequence of the candidate's names as they appear on the ballots in various precincts. (as required by M.R. 8220.0750 (A))
Comments: Demonstrated the capability. The order of candidate names on the results reports matched the rotation sequence in one test precinct for each simulated election. The System results correctly reported candidate vote totals where rotation sequences were present.
28. The computer program reflected the offices and questions to be voted on in the order that they appear on the ballots in the various precincts. (as required by M.R. 8220.0750 (B))
Comments: Demonstrated. The order of offices and candidates in System results mirrored the order of offices and candidates on the ballots of the three test precincts.
29. The computer program counted valid votes cast by a voter for candidates for an office. (as required by M.R. 8220.0750 (D))
Comments: Demonstrated. This was confirmed using the results chart prepared by OSS staff.
30. The computer program counted valid votes cast by a voter for or against any question. (as required by M.R. 8220.0750 (D))
Comments: Demonstrated. This was confirmed using the chart prepared by OSS Staff.
31. The computer program did not count the votes cast by a voter for an office or question if the number of votes cast exceeds the number which the voter is entitled to vote for on that office or question, but it does record that there is an overvote condition. (as required by M.R. 8220.0750 (E))
Comments: Demonstrated. When compared to the results chart, the DS850 results printout confirmed that it detected when more votes were cast for an office or question than was allowed. It did not count any votes for contests that were overvoted, but instead recorded that there were overvotes for those offices.
32. The computer program ignores stray marks on a ballot. (as required by M.R. 8220.0750 (F))
Comments: Demonstrated. Test ballots were sequentially numbered with ink pens prior to testing. These stray marks were ignored and did not affect the tabulation.
33. For the purposes of the computer programming, the partisan, nonpartisan, and proposal sections of the ballot were independent ballots. No action of a voter on one section of the ballot affected the voters action on another section of the ballot (as required by M.R. 8220.0750 (G))
Comments: Demonstrated. The results chart and the test ballots contained scenarios where there were overvotes on different sections of the ballot while other parts were correctly voted. The portions of the ballot that were voted correctly were not affected by

overvotes on other parts of the ballot.

34. The computer programming in partisan primary elections counted the votes recorded by a voter for candidates in one political party only and rejected all of the partisan section of the ballot if votes are cast for candidates of more than one political party, but counted valid votes in the nonpartisan section of the ballot. (as required by M.R. 8220.0750 (H))
Comments: Demonstrated. Primary election ballots were marked to create the following scenarios: votes for only one political party; votes for more than one party (cross party voting). In the first scenario, the partisan votes were counted. In the second scenario, the votes in the partisan portion of the ballot were not counted. The nonpartisan section of the ballot was counted in both scenario one and scenario two. The presence of cross party votes does not affect the tabulation of the nonpartisan section of the ballot.
35. The computer programming in partisan primary elections checked for the situation of a voter casting votes for candidates of more than one political party prior to checking for overvote conditions. (as required by M.R. 8220.0750 (I))
Comments: Demonstrated. The primary election test deck contained a scenario where a ballot contained a cross party vote in the partisan section and an overvote in the nonpartisan section. The results printout of the DS850 indicated that this criterion was met.
36. The computer programming checked for and rejected without counting any ballot with an overvote. When the ballot was returned to a voter an error message indicates the type of defect and the message displayed electronically and the message printed on a paper tape. (as required by M.R. 8220.0750 (J))
Comments: The DS850 is a central count tabulator and will not be used as a precinct count tabulator. Therefore, the requirement for returning the ballot to the voter is not applicable. However, the results printout indicates that the computer programming detected and recorded overvotes, but did not count them.
37. The computer programming checked for and rejected without counting any ballot at a partisan primary, with votes cast for candidates of more than one party. When the ballot was returned an error message displayed electronically and the message printed on a tape. (as required by M.R. 8220.0750 (J))
Comments: The DS850 is a central count tabulator and will not be used as a precinct count tabulator. Therefore, the requirement for returning the ballot to the voter is not applicable. However, the results report indicates that the computer programming detected cross party voting and did not count any votes in the partisan section of those primary ballots.
38. The computer program records that a write-in has been indicated and it records the total number of write-ins recorded by office. (as required by M.R. 8220.0750 (K))
Comments: Demonstrated. The results printout shows the total number of write-ins recorded by office.

39. The computer programming counted and recorded valid votes on the ballot for all offices and questions before a ballot with a write-in recorded is separated from ballots with no write-ins recorded. (M.R. 8220.0750 (K))
Comments: Demonstrated. The DS850 demonstrated the capability to separate ballots with write-in votes into a separate tray. The test script included the following scenarios (1) One ballot had two write-in votes in a multiple seat race. (2) One ballot had a write-in and another vote in the same race where there was only one seat available. In each case, review of the results found the race was correctly counted: the first counted as a vote for each selected candidate, the second counted as an overvote.
40. The computer programming recognizes that a mark indicating a write-in vote is a vote for the purposes of determining if an overvote condition exists. (as required by M.R. 8220.0750 (K))
Comments: Demonstrated. A test ballot contained the following scenario: in a vote-for-one race, a candidate oval and the write-in oval were marked. The DS850 tabulated this as an overvote.
41. The central count voting system or the precinct count voting system demonstrated it could be set up so that the vote-tallying procedures function in isolation on election day with no physical connection existing between the system and any other computer during hours that voting is occurring or while the central count voting system or precinct count voting system is tabulating results for a precinct. (as required by M.R. 8220.2050)
Comments: Demonstrated. The DS850, a central count voting system, demonstrated that it could stand alone and tabulate results correctly for multiple precincts without being connected to another computer system.
42. The metal ballot box has two separate compartments in which the ballot counting equipment can feed ballots. One compartment received ballots on which all votes had been counted and recorded. The other compartment received ballots on which all votes had been counted except those for office for which the write-in target had been completed.
43. Comments: This requirement applies to precinct count voting systems. The DS850 is a central count tabulator therefore the precinct count system requirements are not applicable. Note, there has also been recent law change. Minnesota Laws 2013, Chapter 131, Article 2 changed Minnesota Statutes section 206.57, subdivision 8 to state, "notwithstanding Minnesota Rules 8230.4355, ballot boxes used with precinct count voting systems are not required to contain two separate compartments to receive ballots." The DS850 did, however, demonstrate the capability to separate the ballots containing write-in votes and place them in a separate tray.

Certification Conclusion

The undersigned Brad Anderson and Lisa Klinger, along with election staff members Adam Aanerud and Stella Hegg of the OSS Elections Division, examined the ES&S ElectionWare Voting System version 5.1.0.0 Voting System (E.V.S. 5.1.0.0) on June 19, 2013

and June 20, 2013. The E.V.S. 5.1.0.0 Voting System as tested included the following components:

Software:

- ElectionWare v. 4.4.0.0
- Election Reporting Manager v. 8.9.0.0
- Event Log Service v. 1.5.3.0
- Removeable Media Service v. 1.4.3.0
- VAT Previewer v. 1.8.4.0

Hardware:

- AutoMARK VAT (1) (AM VAT(1)) – Firmware v. 1.8.4.0; Hardware v. A100 v. 1.0; Operating System (OS) – 5.00.20; Single Board Computer (SBC) – 1.0; Printer Engine Board (PEB) – 1.70
- AutoMARK VAT (2) (AM VAT(2)) – Firmware v. 1.8.4.0; Hardware v. A200 v. 1.1; OS – 5.00.20; SBC – 2.0; PEB – 1.70
- AutoMARK VAT (3) (AM VAT(3)) – Firmware v.1.8.4.0; Hardware v. A200 v. 1.3(0); OS – 5.00.20; SBC – 2.5; PEB – 1.70
- AutoMARK VAT (4) (AM VAT(4)) – Firmware v. 1.8.4.0; Hardware v. A300 v. 1.3(1); OS – 5.00.20; SBC – 2.5; PEB – 1.70
- DS200 Firmware v. 2.10.0; Hardware v. 1.2
- Plastic Ballot Box – Hardware v. 1.2
- Plastic Ballot Box – Hardware v. 1.3
- Metal Ballot Box with Diverter
- DS850 v. 2.7.0.0

Commercial Off the Shelf (COTS) Software:

(To enable DS200 land line modeming)

- Cerberus FTP Server v. 4.0.9.8
- IPSwitch WS_FTP 12 v. 12.3

The ES&S E.V.S. 5.1.0.0 Voting System is a modification to the E.V.S. 5.0.0.0 Voting System. In the testing of E.V.S. 5.1.0.0, Wyle Laboratories, the independent test lab for both versions, only tested the inclusion of the wireless and land line modeming to the DS200 and its interface with EMS. The test lab report for E.V.S. 5.1.0.0 makes reference to the results of the certification of E.V.S. 5.0.0.0 which Wyle had previously certified. Therefore, the OSS in this certification report relies on both the certification results of E.V.S. 5.1.0.0 and the certification results of E.V.S. 5.0.0.0 in reaching its certification conclusion. The independent test lab found that both the E.V.S. 5.0.0.0 Election System and the E.V.S. 5.1.0.0 Election System met all applicable requirements for certification as set forth in the Election Assistance Commission (EAC) 2005 Voluntary Voting Systems Guidelines, Version 1.0 (VVSG), and recommended that the EAC grant certification to the 2005 VVSG. Therefore, based upon the results of the OSS

certification testing as reported above, which included the use of the DS200 both with and without a modem, and in reliance upon the independent test lab certification results of Wyle regarding the E.V.S. 5.0.0.0 Voting system dated May 16, 2013 and the E.V.S. 5.1.0.0. Voting System dated May 31, 2013, we conclude that the E.V.S. 5.1.0.0 Voting System of ES&S as measured to the 2005 VVSG complies with the requirements of Minnesota Statutes sections 206.55 to 206.90.

Brad Anderson

Brad Anderson – Election Administrator

7-5-2013

Date

Lisa Klinger

Lisa Klinger – Election Administrator

7/5/2013

Date

Attachment C

DS200 Precinct Scanners included in the review:

The following serial numbered machines were used in both the initial tabulation and in the telecommunications stress test.

| | | | | | |
|------------|------------|------------|------------|------------|------------|
| 0113350106 | 0113350126 | 0113350329 | 0113350335 | 0113350364 | 0113350406 |
| 0113360001 | 0113360028 | 0113360047 | 0113360090 | 0113360106 | 0113360128 |
| 0113360148 | 0113360161 | 0113360166 | 0113360183 | 0113360219 | 0113360243 |
| 0113360267 | 0113360279 | 0113360286 | 0113360349 | | |

The following serial numbered machine jammed during tabulation and was removed from testing.

0113360184

The following serial numbered machines were used only in the telecommunications stress test.

| | | | | | |
|------------|------------|------------|------------|------------|------------|
| 0113350016 | 0113350182 | 0113350202 | 0113350367 | 0113360025 | 0113360063 |
| 0113360151 | 0113360167 | 0113360180 | 0113360198 | 0113360236 | 0113360265 |
| 0113360266 | 0113360271 | 0113360272 | 0113360317 | 0113360328 | 0113360347 |

The DS850 Central Scanner included in the review was serial number DS8510090023.