Election Systems & Software
Unity 3.2.0.0 Voting System
VSTL Certification Test Report

Prepared for
Election Systems & Software
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Omaha, NE 68137
EAC Application # ESS0701

Version 1.0

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This report has been submitted to the EAC for review and is pending their acceptance. No certification number has been issued. When iBeta receives notification that the report is accepted, a revised version of the report will be issued. The Certification number will appear here, in page headers and in Appendix F. Any other revisions will be noted in the version history.

Trace to Standards	
NIST Handbook 150-22	
Section 5.5, 5.10.1 through 5.10.3, 5.10.5, 5.10.6	
VVS	
Vol. #	Section(s) #
1	1.6.1
1	2, 3, 4, 5, & 6
1	9.6.3
2	2, 3, 4, 5, & 6
2	7.4 & 7.5.
2	Appendix B

Test Results in this report apply to the voting system configuration tested. Testing of voting systems that have been modified may or may not produce the same test results. This report shall not be reproduced, except in full.

iBeta Quality Assurance is accredited for Voting System Testing:

EAC Lab Code: 0702 - Effective thru 2/28/2009 - Renewal Pending Determination of 2009 EAC Audit

NVLAP LAB CODE 200749-0

3131 South Vaughn Way, Suite 650, Aurora, Colorado, 80014

Version History				
Ver #	Description of Change	Author	Approved by	Date
v.1.0	Initial Release	Gail Audette Carolyn Coggins Jennifer Garcia Sridevi Jakileti Kelly Swift Kevin Wilson	Carolyn Coggins	6/30/09

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1 Introduction

This report is submitted to the Election Assistance Commission (EAC) by iBeta Quality Assurance summarizing the federal voting system certification testing of the Election System & Software (ES&S) Unity 3.2.0.0 voting system to the Voting System Standards 2002 (VSS 2002).

The ES&S Unity 3.2.0.0 voting system has been submitted to iBeta for testing to support ES&S' application # ESS0701 to the US Election Assistance Commission (EAC) for certification to the VSS 2002. This is an initial EAC certification.

The Unity 3.2.0.0 is a paper-based voting system that includes the:

- Election management system election (EMS) preparation software: Election Data Manager, ES&S Ballot Image Manager, Hardware Programming Manager, AutoMARK Information Management System
- EMS audit software: Audit Manager
- Pre-vote hardware: Ballot-on-Demand COTs printer
- Polling place optical scanner hardware and firmware: Model DS200
- Polling place ballot marker hardware and firmware: AutoMARK Voter Assist Terminal A100, AutoMARK Voter Assist Terminal Model A200
- Central count hardware and firmware: Model 650
- Central count EMS software: Election Reporting Manager

The purpose of this document is to provide an overview of the certification testing and findings. The complete list of the systems names, major subsystems, version numbers and any interfacing devices is contained detailed in section 3 Voting System Identification. Additional details of the design, structure, and processing capabilities are identified in the section 4 Voting System Overview.

Application #ESS0701 originally identified SysTest Labs (SysTest) as the VSTL. Due to the suspension of SysTest in the middle of various Unity certification efforts, ES&S was authorized by the EAC to transfer their application for certification of the Unity 3.2.0.0 to iBeta. Unity 3.2.0.0 is a subset of paper ballot voting systems contained in the Unity v.4.0.0.0 voting system. At the time of the suspension the Unity v.4.0.0.0 test plan was approved by the EAC and a substantial amount of relevant testing had been successfully completed. ES&S petitioned the EAC to assess the testing performed by SysTest for consideration of reuse. The EAC issued a letter to ES&S, *2-3-2009 Letter to ESS Reuse of Testing Final,* in which they outlined the conditions for the assessment of reuse process. This process is outlined in the as run test plan which is contained in the attached Appendix H Amended Test Plan.

In the letter EAC approval to reuse portions of SysTest's testing of ES&S Unity 3.2.0.0 the EAC authorized the reuse of the functional, accessibility, maintainability, accuracy, and reliability testing conducted for Unity 3.2.0.0 base upon the EAC technical reviewer's audit of all test plans, test methods, test cases, and test results related to the scope of the Unity 3.2.0.0 test campaign. This included a review of a document created by SysTest that summarized all related testing conducted for the scope of the Unity 3.2.0.0 with the test results. The EAC concluded:

- All functional, accessibility, maintainability, accuracy, and reliability testing outlined in the approved SysTest Unity 4.0 test plan is approved for reuse in the Unity 3.2.0.0 test campaign.
- As part of the remaining testing the EAC is tasking iBeta with testing and verifying that the Unity 3.2.0.0 system is in compliance with EAC RFI 2008-07 "'0' count to start the election". This testing should be reflected in the test plan being developed by iBeta for the Unity 3.2.0.0 system.
- iBeta is also tasked with testing and resolving the discrepancies listed by SysTest under the following tests: GEN 02 – Straight Party, GEN 03 – Add Languages, and PR101 – Pick-a-Party tests.

In a subsequent conversation with the EAC this last bullet was clarified to the open functional discrepancies identified in Table 5 of the as run test plan.

1.1 *Unity 3.2.0.0 Physical & Functional Configuration Audit Scope*

This certification test effort included a Physical Configuration Audit (PCA) and Functional Configuration Audit (FCA) of the Unity 3.2.0.0 voting system. Due to the petition for reuse these tasks were performed by either SysTest or iBeta Quality Assurance. Assessment of the SysTest test results was performed by either iBeta or the EAC Technical Reviewers as stipulated in 2-3-2009 Letter to ESS Reuse of Testing Final.

The Physical Configuration Audit (PCA) performed by iBeta for Unity 3.2.0.0 incorporated a:

- PCA Document Review Assessment for reuse of the SysTest's review of the Unity v.4.0.0.0 Technical Data Package (TDP);
- 3% PCA Source Code Review Assessment for reuse of the SysTest source code review of the Unity v.4.0.0.0 source code review;
- Witnessed Build performed by SysTest from the source code they reviewed;

- Trusted Build performed by iBeta from the SysTest and iBeta reviewed source code; and
- Examination of the voting system configuration submitted to iBeta.

A Functional Configuration Audit (FCA) of the Unity 3.2.0.0 included an EAC review of the Unity v.4.0.0.0 testing performed by SysTest to:

- The requirements of VSS 2002;
- The Unity v.4.0.0.0 specifications of the ES&S TDP; and
- The voting system requirements of section 301 of the Help American Vote Act (HAVA).

For the balance of the FCA iBeta identified the scope of the Unity 3.2.0.0 volume, stress, error recovery, and security requirements of the VSS 2002, in addition to a sampling of the requirements necessary to conduct a single end-to-end system level functional regression test. iBeta:

- Developed a test plan;
- Customize test cases;
- Managed the system configurations;
- Executed tests, and
- Analyzed the test results for the iBeta executed tests.

Certification testing performed by iBeta complied with the requirements of VSS 2002, Volume 2 Test Standards. The iBeta test record included test executions and reviews performed by iBeta. These test executions and reviews included the record of requirements that were satisfactorily and unsatisfactorily completed, deficiencies noted, reports to ES&S, software and manufacturing resolutions, validations of resolutions and documentation of incorporation of resolutions into the voting system. Test records for work performed by SysTest were retained by them. Materials were provided to the EAC and iBeta for the assessment of reuse.

iBeta Quality Assurance, a limited liability company, is located in Aurora, Colorado. The company is a full service software testing laboratory providing Quality Assurance and Software Testing for the business and interactive entertainment communities. iBeta Quality Assurance accreditations for the testing of voting systems to the federal standards include

- National Voluntary Lab Accreditation Program (NVLAP) Voting System Test Lab (VSTL)
- Election Assistance Commission Voting Systems Test Lab (VSTL)

Testing was conducted at iBeta Quality Assurance in Aurora, Colorado, SysTest Labs in Denver, Colorado and various SysTest subcontractor non-core hardware environmental test labs. Non-core hardware environmental testing is outside SysTest's test accreditation scope as a VSTL. SysTest's methods for validating the qualifications of the subcontractor laboratories was provided to the EAC and considered in their decision to permit reuse of the non-core environmental testing. SysTest conducted the non-core safety and hardware environmental assessments and testing with the following subcontractors:

- Compliance Technology Services 1820 Skyway Drive Unit J, Longmont, Colorado 80504
- Components Reliability & Safety 1955 West 153rd Place, Broomfield, CO 80020
- Criterion Technology 1350 Tolland Road, P.O. Box 489, Rollinsville, CO 80474
- Nebraska Center for Excellence in Electronics (NCEE) 4740 Discovery Dr., Lincoln, NE 68521
- Percept Technology Labs 4735 Walnut St. #E, Boulder, CO 80301
- Sun Advanced Product Testing (APT) 1601 Dry Creek Drive Suite 2000, Longmont, CO 80503
- Wyle Laboratories, 7800 Highway 20 West, Huntsville, AL, 35806

1.2 *Unity 3.2.0.0 Exclusions:*

The following identifies the exclusions of the Unity 3.2.0.0 voting system. As identified in the VSS2002 vol.1 section 4.1.2, software is excluded if it:

- Provides no support of voting system capabilities;
- Cannot function while voting system functionality is enabled; and
- Procedures are provided that confirm software has been removed, disconnected or switched.

1.2.1 *Unity v.4.0.0.0 Scope Excluded from Unity 3.2.0.0*

The Unity 4.0.0.0 items identified as exclusions are not contained in the Unity 3.2.0.0 system submitted for Certification under EAC Application # ESS0701.

- Hardware including related software/firmware and peripherals: Automated Bar Code Reader (ABCR), iVotronic DRE Precinct Tabulator, Model 100 Precinct Ballot Counter, the DS200 modem kit, and the M650 configured with a network card;
- EMS Software: Data Acquisition Manager and iVotronic Ballot Image Manager; and
- System functionality and maintenance: DRE, VVPAT
- Network functionality: Network data transmission for remote transmission of votes or consolidated results
- Language accessibility other than English and Spanish.

In an email dated October 15, 2008 the EAC granted permission for ES&S to reuse the Unity v.4.0.0.0 TDP if the documents bore a disclaimer outlining the uncertified functionality that was not part of the Unity 3.2.0.0 certification. As such the review of the document content related to the uncertified Unity v.4.0.0.0 functionality was excluded from this review.

In receiving the source code, documents and test artifacts from SysTest, iBeta determined if the material was in or out of the Unity 3.2.0.0 test scope. Items determined to be out of scope were stored without further examination. No out of scope hardware was received.

1.2.2 *Unity 3.2.0.0 Other Exclusions*

The following functions are excluded from Unity 3.2.0.0 voting system and are not tested in this certification effort.

- Provisional ballots: The handling of provisional ballots is procedural. There is no provisional ballot functionality.
- Transmission via Public Telecommunications: There is no transmission via public telecommunications. The DS200 modem is removed from this certification.
- Use of Wireless Communications : There is no use of wireless communications
- Shared Operating Environment: Unity 3.2.0.0 does not share an environment with other data processing functions.
- Enhanced AutoCast: This AutoMARK functionality requires both PEB v.1.70 and Auto MARK FW v.1.4. That version of AutoMARK firmware is not supported in Unity 3.2.0.0.
- The hardware environment for the election management system is limited to stand along PCs. The election preparation, central count tally and reporting functions do not communicated via a Local Area Network or other network connection in Unity 3.2.0.0.
- There is no provision for the broadcasting of results.

Any activities in these areas are limited to documentation that the functions are not applicable to this voting system.

1.3 *Internal Documentation*

The documents identified below are iBeta internal documents used in certification testing

Table 1 Internal Documents

Version #	Title	Abbreviation	Date	Author (Org.)
v.07	Voting Certification Master Services Agreement- Election Systems & Software	MSA contract	11/15/08	iBeta Quality Assurance
Rev 02	Statement of Work No. 02 Commencement Phase: Assessment for Reuse and Reporting	SOW 2-02		iBeta Quality Assurance
Rev 01	Statement of Work No. 03 Maximum Reuse Project Estimate	SOW 3-01		iBeta Quality Assurance
iBeta	VSTL Procedures			
v.2.1	Voting Deliverable Receipt Procedure		9/19/08	iBeta Quality Assurance
v.1.0	PCA Source Code Review Procedure		11/13/06	iBeta Quality Assurance
v.4.0	C and C++ Review Criteria		11/17/08	iBeta Quality Assurance
v.1.0	Z80 Assembler Review Criteria		10/19/07	iBeta Quality Assurance
v.2.0	SQL Server Review Criteria		6/19/07	iBeta Quality Assurance
v.0.1	COBOL Review Criteria		12/4/08	iBeta Quality Assurance
v.2.0	Visual Basic Review Criteria		6/19/2007	iBeta Quality Assurance
v.1.0	Witness Build Procedure		4/18/08/	iBeta Quality Assurance
v.2.0	Trusted Build Procedure		1/23/09	iBeta Quality Assurance
v.4.0	Test Case Preparation and Execution Procedure		5/23/08	iBeta Quality Assurance
v.4.0	VSTL Test Planning Procedure		5/23/08	iBeta Quality Assurance
v.4.0	VSTL Certification Report Procedure		4/24/09	iBeta Quality Assurance

Version #	Title	Abbreviation	Date	Author (Org.)
iBeta	Project Documents			
	ESS Unity 3.2 Code and Equipment Receipt		6/24/09	iBeta Quality Assurance
	E001 through E039 Equipment Photos	Equipment Images	various	iBeta Quality Assurance
	ESS Source Code Review results documents for the applications		Various dates	
	iBeta letter to EAC on ES&S Unity 3.2.0.0 source code review	3% Source Code Review Assessment	1/16/09	iBeta Quality Assurance
	iBeta recommendation on reuse of SysTest PCA Document Review in ES&S Unity 3.2.0.0 testing	PCA Document Review Assessment	1/14/09	iBeta Quality Assurance
	Election Systems & Software Unity 3.2.0.0 Voting System VSTL Certification Test Plan			
	PCA Configuration- Unity 3.2		6/26/09	iBeta Quality Assurance
	Reuse Environmental Test Case -Unity 3.2		2/15/09	iBeta Quality Assurance
	Reuse Characteristics Test Case -Unity 3.2		2/15/09	iBeta Quality Assurance
	FCA Volume 1		5/11/09	iBeta Quality Assurance
	FCA Volume 2		6/29/09	iBeta Quality Assurance
	FCA Volume 3		6/3/09	iBeta Quality Assurance
	FCA Volume 4		4/16/09	iBeta Quality Assurance
	FCA Volume 5		6/8/09	iBeta Quality Assurance
	FCA Volume 6		6/17/09	iBeta Quality Assurance
	FCA Volume 7		6/17/09	iBeta Quality Assurance
	FCA Volume 8		6/17/09	iBeta Quality Assurance
	FCA Volume 9		6/29/09	iBeta Quality Assurance
	FCA Volume 10		5/12/09	iBeta Quality Assurance
	FCA Security Review Unity 3.2		6/23/09	iBeta Quality Assurance
	FCA Security Test - Unity 3.2 Windows Configuration Test steps		6/3/09	iBeta Quality Assurance
	Regression System Level TC		6/17/09	iBeta Quality Assurance
	ES&S Unity 3.2.0.0 EAC Matrix		3/6/09	iBeta Quality Assurance
	A200 Configuration Inspection Results		4/1/09	iBeta Quality Assurance
	Trace to Test Methods		3/20/09	iBeta Quality Assurance

1.4 *External Documentation*

The documents identified below are external resources used to in certification testing.

Table 2 External Documents

Version #	Title	Abbreviation	Date	Author (Org.)
	Test Plan Approval Letter		4/7/09	EAC
	Help America Vote Act	HAVA	10/29/02	107th Congress
NIST Hdbk 150 2006 Ed.	NVLAP Voting System Testing	NIST 150	February 2006	NVLAP
NIST Hdbk 150-22	NVLAP Voting System Testing	NIST 150-22	December 2005	NVLAP

Version #	Title	Abbreviation	Date	Author (Org.)
	Federal Election Commission Voting System Standards	VSS	April 2002	Federal Election Commission
	Voting System Testing and Certification Manual		1/1/07	EAC
v.1.0	Voting System Test Laboratory Program Manual	VSTL Program Manual	July 2008	EAC
Form v.5.2	EAC Test Matrix Template			EAC
	EAC Decision on Request for Interpretation 2007-02, 2002 VSS, Vol. 1, Section 4.2.5 (single character)	Interpretation 2007-02	5/14/07	EAC
	EAC Decision on Request for Interpretation 2007-05, 2005 VVSG Vol. 1 Section 4.2.1 (Testing Focus and Applicability)	Interpretation 2007-05	11/6/07	EAC
	EAC Decision on Request for Interpretation 2008-01, 2002 VSS Vol. II, 2005 VVSG Vol. II, Section 4.7.1 & Appendix C	Interpretation 2008-01	2/6/08	EAC
	EAC Decision on Request for Interpretation 2008-02, Battery Backup for Optical Scan Voting machines	Interpretation 2008-02	2/19/08	EAC
	EAC Decision on Request for Interpretation 2008-04, 2002 VSS Vol. I, Section 2.3.1.3.1a; 2005 VVSG Vol. II, Section 2.2.1.3a Ballot Production	Interpretation 2008-04	5/19/08	EAC
	EAC Decision on Request for Interpretation 2008-05, 2002 VSS Vol. I, Section 3.4.2, 2005 VVSG Vol. I, Section 4.3.2, Durability	Interpretation 2008-05	5/19/08	EAC
	EAC Decision on Request for Interpretation 2008-06, 2002 VSS Vol. I, Sections 3.2.2.4c, 3.2.2.5 2005 VVSG Vol. I, V. 1.0, Sections 4.1.2.4c (Electrical Supply), 4.1.2.5 (Electrical Power Disturbance)	Interpretation 2008-06	8/29/2008	EAC
	EAC Decision on Request for Interpretation 2008-07; 2002 VSS Vol. I, Sections, 2.3.4, 2.3.5, 2.3.6, 2.4.1, 4.4.3, 9.4; 2002 VSS Vol. II, Sections, 3.3.1, 3.3.2; 2005 VVSG Vol. I, Sections, 2.2.4, 2.2.5, 2.2.6, 2.3.1, 5.4.3; 2005 VVSG Vol. II, Sections, 1.3, 3.3.1, 3.3.2	Interpretation 2008-07	8/27/08	EAC
	EAC Decision on Request for Interpretation 2008-08 2002 VSS Vol. I, Glossary 2005 VVSG Vol. I, Glossary	Interpretation 2008-08	8/1/2008	EAC
	EAC Decision on Request for Interpretation 2008-09 (Safety Testing) 2002 VSS Vol. I, Section, 3.4.8; 2005 VVSG Vol. I, Section 4.3.8	Interpretation 2008-09	8/25/2008	EAC
	EAC Decision on Request for Interpretation 2008-10 (Electrical Fast Transient) 2005 VVSG Vol. I, Sect. 4.1.2.6; 2005 VVSG Vol. II, Section 4.8	Interpretation 2008-10	8/28/2008	9/7/07
	Notice of Clarification NOC 07-001: Timely Submission of Certification Application	NOC 07-01	7/17/07	EAC
	Notice of Clarification NOC 07-002: VSTL Work with Manufacturers Outside of Voting System Certification Engagements	NOC 07-02	7/24/07	EAC
	Notice of Clarification 07-05: Voting System Test Laboratory (VSTL) responsibilities in the management and oversight of third party testing.	NOC 07-05	9/7/07	EAC
	Notice of Clarification NOC 08-001: Validity of Prior Non-Core Hardware Environ-mental and EMC Testing	NOC 08-01	3/26/08	EAC
	Notice of Clarification NOC 08-003: Clarification of EAC Conformance Testing Requirements for VSTLs	NOC 08-03	7/30/08	EAC
Unity	3.2.0.0 EAC Correspondence			
	2002 VSS Supported Functionality Declaration Unity 3.2.0.0		10/29/08	ES&S
	Unity 3.2.0.0 Implementation Statement		10/29/08	ES&S

Version #	Title	Abbreviation	Date	Author (Org.)
	Unity 3.2.0.0 Modules		No date	ES&S
	ES&S letter to EAC requesting permission to change VSTL Unity		10/31/08	ES&S
	EAC letter to ES&S granting their request to replace SysTest Labs		11/18/08	EAC
	SysTest iBeta Notice Ltr 11_21_08		11/21/08	ES&S
	EAC letter to iBeta QA Director on reuse of testing		2/3/09	EAC
	EAC approval to reuse portions of SysTest's testing of ES&S Unity 3.2.0.0		2/12/09	EAC
	EAC Approval letter of ES&S Unity 3.2 Test Plan version 2.0		4/7/09	EAC
	Unity 3.2 Discrepancy 135 Request for Interpretation		5/26/09	ES&S
	Formal Response Discrepancy 135		6/5/09	EAC
	Letter- EAC Decision on Request for Interpretation 2008-05 Voting Equipment Durability		9/23/08	ES&S
Unity	v.4.0.0.0 Reuse Correspondence			
	Email: Reuse of Previous Testing for Unity 3.2.0.0		11/21/08	EAC
	2-3-2009 Letter to ESS Reuse of Testing Final		2/3/09	EAC
Unity	v.4.0.0.0 Test Documents			
Rev.10.0	ES&S Unity 4.0 Certification Test Plan Document Number 07-V-ESS-035-CTP-01		12/9/08	SysTest Labs
Rev.0.2	Voting System Test Summary Report, Test Report for testing through 10/22/08 for ES&S Unity 4.0 Voting System, Report Number 01-V-ESS-035-CTP-01		12/19/08	SysTest Labs
	Unity 4.0 Disc Rpt 10-28-08		10/28/08	SysTest Labs
v.1.16	Retest Matrix v1.16		11/24/08	ES&S
	Test Report No.- 080521-1251A EMC Qualification Test Report ES&S AUTOMARK, VAT A200		6/11/08	Criterion Technology
v.1.3	AutoMARK Voter Assist Terminal Test Report		6/19/05	Percept Tech-nology Labs
	Test Report No.- 041223-857 EMC Qualification Test Report AutoMARK Technical Systems, LLC VAT		1/31/05	Criterion Technology
	Test Report No. - 04-00542 Testing Services Report AutoMARK VAT SN:002		1/14/05	APT
	Test Report No. 48489-08 Hardware Qualification Report of the ES&S M650 Central Ballot Counter Firmware Release 2.0.1.0		1/7/05	
Rev. 1	*Test Report No.- ATS-0501-R01-Rev.1* Electrical Safety Testing to UL 60950-1 (Replaces #ATS-0501-R01, dated 4/30, 2005)		4/10/06	AutoMARK Technical Systems
v.1.4	Operational Status Check Test Case (ATS VAT)		1/11/2005	SysTest Labs
	Test Report No.- 080327-1225 EMC Qualification Test Report AutoMARK, VAT A100		4/21/08	Criterion Technology
	Test Report No.- 070730-1165 EMC Qualification Test Report AutoMARK Technical Systems, LLC. Ballot Marking Device, VAT A300		8/9/07	Criterion Technology
v.1.0	AutoMARK Voter Assist Terminal 1.1 Test Report		1/4/06	Percept Tech-nology Labs
Rev. 2	VAT Accuracy Test Case Status Report			SysTest Labs
	Test Report No.- 070730-1165 DS200 Scanner EMC Test Report		7/31/07	NCEE
	Test Report No.- R071107-30-01B DS200 Scanner EMC Test Report (Amended with Original)		5/27/08	NCEE
	Test Report No.- 070314-1134A EMC Qualification Test Report ES&S DS200 Ballot Scanner with Optional 76246 Ballot Box		5/15/07	Criterion Technology
	Test Report No.- 080521-1244 EMC Qualification Test Report ES&S Precinct Count		6/18/08	Criterion Technology

Version #	Title	Abbreviation	Date	Author (Org.)
	Ballot Scanner, DS200			
	*Test Report No.- 07-00231*Testing Services Report DS200 Scanner and Ballot Box (Temp and Humidity)		4/16/07	APT
	*Test Report No.- 07-00207*Testing Services Report DS200 Scanner and Ballot Box (Vibration)		4/25/07	APT
v.1.0	DS200 Op Stat Check v1.0		11/21/08	SysTest Labs
v.1.0	ES&S Unity 3.2.0.0 DS200 and Ballot Box and Voting System Test Report		5/1/07	Percept Technology Labs
v.1.0	DS200 with Optional Ballot Box ESD Test Report		4/25/07	Percept Technology Labs
	Test Report No.- ESS-0802-R04 Summary Test Report Physical Stability Testing to UL 60950-1		2/ 12/08	Components Reliability & Safety, Inc.
	Test Report No.- 07-1001-A Product Safety Testing and Evaluation for Ballot Reader Model number DS200 with or w/o ballot box		4/27/07	Components Reliability & Safety, Inc.
	DS200 Accuracy Test Summary		4/21/08	SysTest Labs
	Test Report No.- 0806-R05 Electrical Safety Testing to UL 60950-1:2007		7/28/08	Compliance Integrity Services
	Test Report No.- R071107-30-02 EMC Test Report (M650)		7/31/07	NCEE
	Unity 4.0 Certification Test Plan Rev 6.0 Attachment E Test Case Matrix 10071228			
	Test Report No.- 08-00654 Testing Services Report (M650)		5/2/08	APT
v.1.1	M650 with Attached Printers Test Report		3/ 7/08	SysTest Labs
v.1.3	M650 with Epson Printer Test Plan		7/31/07	SysTest Labs
v.1.1	DS200 Scanner EMC Test Plan		7/30/07	SysTest Labs
Rev.01	Certification Test Plan ESS HW Test Matrix		2/1/08	SysTest Labs
Rev03	Rev03_Model650_TDP06202007			SysTest Labs
Rev05	Rev05_AuditManager_TDP07312007			SysTest Labs
Rev05	Rev05.DAM_TDP09262007_ESS			SysTest Labs
Rev09	Rev09.HPM_TDP09122007_ESS			SysTest Labs
Rev02	Rev.02_CF_Utility_TDP05072007			SysTest Labs
Rev03	Rev03.ERM_TDP08082007_ESS			SysTest Labs
Rev03	Rev03.EDM_BallotDataManager_TDP08012007_ESS			SysTest Labs
Rev03	Rev03.DS200_TDP09072007_ESS			SysTest Labs
Rev02	Rev02.ESSZIP_TDP07062007			SysTest Labs
Rev02	Rev.02_GetAuditData_TDP04022007			SysTest Labs
Rev02	Rev.02_MPRBOOT_TDP05162007			SysTest Labs
Rev02	Rev.02_SHELL_TDP05072007			SysTest Labs
Rev03	Rev.03_CB_EAGL_TDP05312007			SysTest Labs
Rev03	Rev.03_MAKEIBIN_08072007_ESS			SysTest Labs
Rev04	Rev.04_ESSEAGL_TDP07202007_ESS			SysTest Labs
Rev04	Rev.04_REGUTIL_TDP5312007			SysTest Labs
	Engineering Change Evaluation & Reviews for the DS200 ECOs 690 to 693 & 702 to 706 (multiple documents)		Various dates	SysTest Labs
	Non-conforming Work & Corrective Action Request SN008 (for VAT A100 ECO #0025)		1/18/05	Percept Technology Lab
	Engineering Change Evaluation & Review for the VAT A200 References 200-206,208, 2 10-247, 256-278, 324-346.		Various dates	SysTest Labs
A	Engineering Specification -Model PW-080A2-1Y24AP (G) -(DS200 -ferrite molded power supply)		2/3/09	Wall Industries

1.5 *Technical Data Package Documents*

The Technical Data Package Documents submitted for this certification test effort are listed in Section 3 System Identification.

1.6 *Test Report Contents*

The contents of this Test Report include:

- Section 1: The Introduction- identifies the scope of certification testing.
- Section 2 The Certification Test Background identifies the process for the Physical and Functional Configuration Audits.
- Section 3 The Voting System Identification identifies the system configuration including hardware, software and the Technical Data Package documentation.
- Section 4 The Voting System Overview identifies the overall design and functionality of voting system.
- Section 5 The Certification Review and Test Results are the methods and results of the testing effort.
- Section 6 The Opinions & Recommendations of the acceptability of the voting system.

Test Operations, Findings and Data Analysis are in the appendices.

- Appendix A: Certification Test Requirement (conformance to the applicable standard).
- Appendix B: Source Code Reviews
- Appendix C: TDP Document Reviews
- Appendix D: Test Results (Functional, Environmental, Accuracy etc.)
- Appendix E- Discrepancy Report: Discrepancy Report
- Appendix F: Warrant of Accepting Change Control Responsibility
- Appendix G: Trusted Build and Validation Tools
- Appendix H: Test Plan'
- Appendix I: State Test Reports
- Appendix J:ES&S and voting system Implementation Statement
- Appendix K: EAC Certification Number

1.6.1 *VSTL Program Manual Format Trace*

Appendix B of the Voting *System Test Laboratory Program Manual v.1.0* identifies content in a specific format. The format of this report follows the recommended outline stipulated in the VSS 2002 vol. 2 Appendix B. As these documents indentify placement of information in different locations a trace is being provided to clarify the location of the specified content in this report.

Table 3 Trace of the Test Report to the VSTL Program Manual

EAC VSTL Program Manual Appendix B		Test Report - VSS 2002 vol. 2 Appendix B	
1.	System Identification and Overview	1. 3. 4	Introduction Voting System Identification Voting System Overview
2	Certification Test Background	2.	Certification Test Background
2.1	Revision History	2	Certification Test Background
2.2	Implementation Statement	2 7.9	Certification Test Background Implementation Statement
3 3.1	Test Findings and Recommendations Summary Finding and Recommendation	5 6	Certification Review and Test Results Opinions & Recommendations
3.2	Reasons for Recommendation of Rejection	N/A	Not applicable; no recommendation of rejection
3.3	Anomalies (may also be identified as discrepancies, issues or defects)	Section 5 & Appendix E Appendices: A B D E	Provides a general description of how anomalies were encountered and reported during testing. Appendix A traces the VVSG requirements to the specific anomalies. Addendum to Appendix B contains software related source code discrepancy detail. Appendix D Tables: "Issues Opened" traces the specific anomalies to the relevant test. Appendix E, *Unity 3.2.0.0 Discrepancy Report*, provides the discrepancy number, date, tester, location, description, and VSS requirement

EAC VSTL Program Manual Appendix B		Test Report - VSS 2002 vol. 2 Appendix B	
			information about anomalies encountered during document reviews and testing.
3.4	Correction of Deficiencies	Section 5 & Appendix E Appendices: A B D E	Provides a general description of how deficiency corrections were confirmed. Appendix A traces the VVSG requirements to the specific closed anomalies. Addendum to Appendix B reflects pass criteria for all reviewed source code. Appendix D Tables: "Issues Closed" traces the specific anomaly resolutions to the test Appendix E, *Unity 3.2.0.0 Discrepancy Report,* provides the vendor responses and resolution validations for anomalies encountered during document reviews and testing.
Appendix A	Additional Findings	Appendices: A D	Appendix A: Certification Test Requirements contains "should" and "not applicable" requirements. Comments provide rationale and references to relevant EAC Interpretations or Notices of Clarification. Appendix D: Supported Voting Variations of the VSS 2002 Section 2.2.8.2 identifies "unsupported" optional functionality.
Appendix B	Warrant of Accepting Change Control Responsibility	Appendix F	Warrant of Accepting Change Control Responsibility
Appendix C	Witness Build	Appendix G	Trusted Build and Validation Tools documents the Witness of the Trusted Build
Appendix D	Test Plan	Appendix H	Test Plan
Appendix C	State Test Reports	Appendix I	State Test Reports
		Appendix J	Implementation Statement
		Appendix K	EAC Certification Number

2 Certification Test Background

Earlier versions of products in this effort completed qualification testing under the defunct NASED program. These earlier version are in use, as permitted under the laws of the various states. Under the EAC program, all systems submitted must be fully tested as a new system. As such the Unity 3.2.0.0 Certification Test effort is an initial certification to the VSS 2002.

Following the circumstances outlined in section 1, the scope of the ES&S Unity 3.2.0.0 certification test effort resulted in a unique set of pre-certification test activities. The purpose of these activities was to assist the EAC in determining what certification testing and reviews performed by SysTest could be reused. Responsibility for these activities was designated to either iBeta or the EAC. These activities are outlined in section 1. Assessment and determination of the reuse of the Functional, Usability, Accessibility, Maintainability, Accuracy and Reliability testing was provided by the EAC. Results of the activities performed by iBeta are provided below.

Following the determination of reuse and issuance of instructions by the EAC, iBeta conducted a review of the test documentation provided by ES&S and SysTest to assess the scope of testing for conformance to the 2002 VSS for the Volume, Stress, Error Recovery, Telecommunication and Security requirements.

As part of the EAC Certification application ES&S submitted an implementation statement for Unity 3.2.0.0. A copy of this statement is contained in section 7.10. Certification testing of the ES&S Unity 3.2.0.0 included a Physical Configuration Audit and a Functional Configuration Audit. Daily status reports were sent to ES&S Unity 3.2.0.0 certification management staff and iBeta project test staff. These reports included project activity status, issues, and other relevant information. Weekly status calls were held with the EAC, EAC Reviewers and ES&S. Upon request, iBeta provided the EAC with information to clarify the testing and the test process and weekly status reports.

2.1 *Terms and Definitions*

The Terms and Definitions identified below are used in this test report.

Table 4 Terms and Definitions

Term	Abbreviation	Definition
Absentee Ballot		A paper ballot cast outside of an early voting center or election day polling place
Adobe Acrobat Standard v.8 & v.9		COTS software used in ESSIM for creation of Portable Document Format (PDF) ballot files.
Audit Manager	AM	A Unity election management system audit logging software application for the Election Data Manager and Ballot Image Manager
Ballot Control - Accepts		HPM option that instructs the DS200 to accept and tabulate overvoted, blank, primary crossovers or ballots with unreadable marks without alerting the voter.
Ballot Control- Query		HPM option that instructs the DS200 to return and query the voter when encountering an overvoted, blank, primary crossovers or ballots with unreadable marks. Voter has the option to request a new ballot or instruct the system to accept the ballot as is.
Ballot Control - Reject		HPM option that instructs the DS200 to automatically reject crossover, overvoted or blank ballots. Ballots will not be accepted.
Ballot Marking Device	BMD	A device that marks a paper ballot for a voter
Ballot On Demand	BOD	An optional operating mode in ESSIM that is used to print a small quantity of election quality ES&S paper ballots on a COTS OKI 9600 HDN color laser printer.
Certified Information System Security Profession	CISSP	A certification for information system security practitioners, indicating successful completion of the CISSP examination administered by the International Information Systems Security Certification Consortium
Central counter		A type of voting system that records and reports paper ballots at the central count
Double Spit and Wipe		Functionality on the VAT to support older ES&S optical scanners outside the scope of Unity 3.2.0.0
Early voting mode -		A mode on the DS200 that permits ballots to be cast

Term	Abbreviation	Definition
		prior to election day. A flag is set in HPM to include all precincts for the election. The poll-worker can select a voter's precinct and ballot style when used in Early Voting or an Absentee configuration.
Election Data Manager	EDM	A Unity election management system software application to define and store jurisdiction election data
Election Systems and Software	ES&S	Manufacturer of the Unity Voting System
Election management system	EMS	The ballot preparation and central count portions of a voting system.
Election Reporting Manager	ERM	A Unity central count software application to compile and report election results from Unity voting devices
Enhanced AutoCast		Functionality for automatically dropping AutoMARK ballots into a ballot box. This functionality requires PEB FW v.1.70 and Auto MARK FW v.1.4. That version of AutoMARK firmware is not supported in Unity 3.2.0.0
Escrow Agency		EAC identified repository that retains the file signature of the trusted build
ES&S AutoMARK Information Management System	AIMS	A windows-based election management system software application to define election parameters for the VAT, including functionality to import election definition files produced by the Unity EMS and create VAT flash memory cards
ES&S Ballot Image Manager	ESSIM	A Unity election management system desktop publishing tool to layout and format paper ballots
Executable Lines of Code	eLOC	Lines of code that execute functionality. Comments and blank lines are excluded from counts of executable lines of code.
Flash Memory Card	FMC	Portable memory that contains the election definition to display the ballot content on a VAT.
Full or New Code Review		First time submission submitted for certification review or previously certified code with changes to the code so significant that a full review is warranted.
Graphical User Interface	GUI	A method of interaction with a computer which uses pictorial buttons (icons) and command lists controlled by a mouse
Hardware Programming Manager	HPM	A Unity election management system software application to import, format, and convert an election file and create election definitions for ballot scanning equipment
Help America Vote Act	HAVA	Legislation enacted in 2002 which includes creation of the EAC, federal voting standards and accreditation of test labs
intElect DS200	DS200	A Unity Voting System precinct count optical scanner paper ballot tabulator including a 12-inch touch screen display providing clear voter feedback and poll worker messaging.
Model 650	M650	A Unity Voting System central count high-speed optical scanner paper ballot tabulator The M650 prints results reports to an external printer and saves results to a zip disk.
National Standard Reference Library	NSRL	Part of NIST that provides software escrow.
National Voluntary Laboratory Accreditation Program	NVLAP	Part of NIST that provides third-party accreditation to testing and calibration laboratories.
Open Primary Pick a Party (Party Preference)		Ballot contains all contests that the voter is eligible to vote for in addition to any nonpartisan contests. Voter only votes the partisan contests for one party but chooses which party in the privacy of the voting booth by only voting for candidates from the desired party. Pick a Party is where a party selection contest appears before the partisan section of the ballot. If the voter chooses a party from the party selection contest, votes for candidates that represent any other party are ignored so that the voter cannot spoil the ballot.

Term	Abbreviation	Definition
Precinct counter		A type of voting system that records paper or electronic ballots at the polling place
Printer Engine Board version	PEB v.	The version of the firmware on the Printer Engine Board identifies support or non-support of Enhanced AutoCast and Double Spit & Wipe (v.1.70 supports)
Single Board Computer version	SBC v.	Version of the Single Board Computer identifying board connections and chips
Trusted Build		A compile and build of the source code reviewed by iBeta into executable code. Construction of the build platform and compile is performed by iBeta following the documented instructions of the manufacturer. A manufacturer's representative is present to witness the build.
Technical Data Package	TDP	The documentation and code relating to the voting system, submitted by the manufacturer for review.
Universal Power Supply	UPS	Uninterrupted power supply
U.S. Election Assistance Commission	EAC	U.S. agency established by the Help America Vote Act of 2002 to administer Federal elections.
Voluntary Voting System Guidelines	VVSG	Federal voting system test standards created by the EAC. Eventually these will replace the VSS.
Voting System Standards	VSS	Federal voting system test standards, predecessor of the VVSG.
Voting System Test Lab	VSTL	Lab accredited by the EAC to perform certification testing of voting systems.
Voting Variations		Significant variations among state election laws incorporating permissible ballot content, voting options and associated ballot counting logic
Voter Assist Terminal	VAT	A ballot marking device to assist multilingual voters and voters with visual, aural or dexterity disabilities to vote a paper ballots in a private manner
Unity x.x.x.x		A voting system produced by ES&S configured with various election software applications, DREs, optical scanners and ballot marking devices. The configuration varies for each version of Unity.
Witness Build for Unity 3.2.0.0		The Unity 4.0.0.0 Trusted Build performed by SysTest Labs. iBeta shall initiate testing with this build. Following iBeta's performance of the Trusted Build a regression test will be run.

2.2 *Physical Configuration Audit*

The Physical Configuration Audit (PCA) deals with the physical elements of the voting system, including the source code, documentation and system configuration reviews. Validation of COTs software and hardware, execution of a Trusted Build with the reviewed source code and installation of the executable are part of the PCA

2.2.1 *PCA TDP Source Code Review*

The PCA TDP Source Code Review of ES&S Unity 3.2.0.0 was performed by SysTest Labs. ES&S petitioned for reuse of this review. In order to assist in making a determination of reuse the EAC instructed iBeta to audit 3% of the ES&S Unity 3.2.0.0 source code for assessment and recommendation of reuse of the applicable Unity v.4.0.0.0-PCA Source Code Review conducted by SysTest. In assessing this sample iBeta reviewed the sampling to Vol. 1 Sect. 4.2 and Vol. 2 Sect. 5 of the VSS2002. iBeta focused the review by selecting source code files and functions that process vote data, audit logs, and reporting. The results were recorded on Source Code Review sheets (Excel spreadsheets). All issues were identified in the review and logged on a Discrepancy Report. Following a peer review issued were identified as follows:

- Green: Non-logic issues - recommend for reuse per EAC instruction letter;
- Yellow: Potential logic issues- attach issues to the recommendation letter to the EAC for their consideration in determination of reuse; and
- Red: Confirmed logic issues - recommend 100% review to the EAC.

Any source code updates or changes received from ES&S during the test effort were compared to the code transferred from SysTest. All identified changes were 100% reviewed by iBeta.

2.2.2 *PCA TDP Document Review*

The PCA TDP Document Review of ES&S Unity 4.0.0.0 for conformance to Vol. 2 Sect. 2 of the VSS 2002 was performed by SysTest Labs. ES&S petitioned the EAC for reuse. The EAC instructed iBeta to perform an assessment and provide a recommendation for reuse of the TDP in Unity 3.2.0.0. iBeta sampled the ES&S Unity 3.2.0.0 documents. The sample selection included the documents identified in the SysTest issued discrepancies and documents needed to complete the Unity 3.2.0.0 trusted builds, a sample 3% source code review, test planning and test execution. Criteria for the review included confirmation that the Unity 3.2.0.0 documents addressed any SysTest identified document discrepancies within the scope of the Unity 3.2.0.0 test effort and the content provided sufficient information in order to complete the test tasks list above. Issues, which were identified as all or partially relevant to the Unity 3.2.0.0 scope, were transferred to iBeta's *Unity 3.2.0.0 Discrepancy Report*. Issues or parts of issues, outside this scope were excluded. Scope assessment was recorded in a review disposition document. iBeta confirmed the issues were valid and traced to an appropriate 2002 VSS requirement. iBeta reviewed the SysTest description history from the original SysTest discrepancy report and the Unity 3.2.0.0 documents submitted by ES&S to validate resolution of the issue.

The review of documents necessary to complete Unity 3.2.0.0 trusted builds, sample code review; test planning and test execution was incorporated into these tasks and recorded in the daily status. Missing content or discrepancies were reported in iBeta's *Unity 3.2.0.0 Discrepancy Report*. The Discrepancy Report was forwarded to ES&S for correction.

2.2.3 *PCA System Configuration Review*

The PCA System Configuration Review of ES&S Unity 3.2.0.0 was performed to verify the hardware and software configuration is consistent with the technical data package (VSS Vol. 1 Sect. 8.7.1). Reviewed results were recorded on PCA System Configuration Review sheets (Excel spreadsheets).

2.2.4 *Witness Build and Installation*

The Witness Build and Installation of the executable code (“trusted build”) for the ES&S Unity 3.2.0.0 was performed using the source code reviewed by SysTest and iBeta, per VSS Vol. 1 Sect. 9.6.2. Observation of the build was documented in the Witness of the Final Build and Code Comparison Template (Word Document).

2.3 *Functional Configuration Audit*

The Functional Configuration Audit was an examination of the functional aspects of the voting system. This included review of the ES&S Unity 3.2.0.0 submitted test documentation and execution of all VSS 2002 required tests.

2.3.1 *FCA Test Documentation Review*

iBeta initiated an assessment to identify and separate Unity v.4.0.0.0 hardware and software excluded from Unity 3.2.0.0, SysTest test results petitioned for reuse by ES&S, and items in scope of additional testing required in the Unity 3.2.0.0 certification test effort. Unity 4.0.0.0 hardware and software that was excluded from Unity 3.2.0.0 was identified as out of scope. Open discrepancies from the SysTest testing related to Unity 3.2.0.0 system functionality and system changes submitted during the Unity v.4.0.0.0 test effort were identified as in scope. A comparison of the versions submitted in the SysTest report and those identified discrepancies for Unity 3.2.0.0 was conducted to confirm if the versions being submitted for Unity 3.2.0.0 matched the versions that were tested in the Unity v.4.0.0.0 certification. If the software version number of the submitted system changes was equal to or less than the version identified in the SysTest report it was excluded due to the EAC acceptance of the SysTest results. If the open functional discrepancy was equal to the version or greater than the identified in the report it was included in the iBeta testing of Unity 3.2.0.0

2.3.2 *FCA Functional, Accessibility, Maintainability, Accuracy & Reliability Tests*

Functional, Accessibility, Maintainability, Accuracy and Reliability testing was performed by SysTest Labs. ES&S petitioned the EAC for reuse. The EAC Technical Reviewers reviewed the Functional, Accessibility, Maintainability, Accuracy, and Reliability test summary reports provided by SysTest on the DS-200, M650, AutoMARK VATs, Ballot-on-Demand printer, and Unity EMS software. The EAC approved the reuse of this testing to the requirements of the requirements in Vol.1 Sect. 2, 3 and 4.4 (excluding the out of scope DRE specific requirements), in accordance with Vol. 2 Sect. 6.

iBeta conducted a single regression end-to-end mock election to demonstrate the integrated functionality and processes of the ES&S Unity 3.2.0.0 for a sampling of Vol. 1 Sect. 2, 3 and 4.4, in accordance with Vol. 2 Sect. 6. Additionally the Volume suite of tests generally incorporated end-to-end mock elections. Issues that remained open from the SysTest testing were incorporated into the regression test, volume test or separate security tests. Any

issues encountered during testing were identified in the test record and logged on a Discrepancy Report, after completion of peer review. . ES&S has resolved all discrepancies of the VSS2002. All submitted fixes were validated and recorded in the Discrepancy Report.

2.3.3 *FCA Volume, Stress and Error Recovery Tests*

iBeta reviewed the ES&S *System Limitations Unity 3.2.0.0* document to identify relevant application and system limits. Based upon the system and application limits identified in this document iBeta defined and conducted a set of ten test cases with a single or multiple scenarios. These test cases incorporated end-to-end mock elections to demonstrate the ability to the system to operate at the declared limits. Additional scenarios were incorporated into the test cases to demonstrate the systems ability to provide an appropriate response to an overloading conditions exceeding the limits and recover without losing vote data. Any issues encountered during testing were identified in the test record and logged on a Discrepancy Report, after completion of peer review. ES&S resolved discrepancies of the VSS2002 or requested interpretation from the EAC if they disagreed with iBeta's findings. All submitted fixes were validated and recorded in the Discrepancy Report, as were any interpretations from the EAC.

2.3.4 *FCA Security Tests*

iBeta performed a security review of the ES&S security documentation addressing Vol. 1 Sect. 2.2.1, 2.2.3, 2.2.5 and 6 and Vol. 2 Sect. 6.4. Based upon this review security specific tests were identified. These tests incorporated source code and document reviews. Functionality to meet the requirements incorporated secrecy, integrity, system audit, error recovery or access to the voting system. The review was either conducted or peer reviewed by an iBeta CISSP staff member. The tests or reviews to validate the security of Unity 3.2.0.0 were recorded in the *FCA Security Review*. ES&S resolved discrepancies of the VSS2002 or requested interpretation from the EAC if they disagreed with iBeta's findings. All submitted fixes were validated and recorded in the Discrepancy Report, as were any interpretations from the EAC.

2.3.5 *FCA Hardware Environmental Tests*

The SysTest's subcontractors listed in section 1 performed hardware testing of the Unity v.4.0.0.0 voting system to the requirements of Vol.1 Sect. 3 in accordance with Vol.2 Sect. 4. The review, analysis, testing and test results are contained in the test reports and engineering change assessments listed in Appendix D - FCA Reuse Environmental Testing Unity v.4.0.0.0 Test Documents. The EAC issued their approval for reuse of the results of the SysTest Environmental Hardware testing in *2-3-2009 Letter to ESS Reuse of Testing Final.* In order to ensure that iBeta had all documentation of the Environmental Hardware test assessment and results for the Unity 3.2.0.0 voting system, iBeta reviewed the reports to confirm they included documentation that the Unity 3.2.0.0 submitted hardware passed the required tests and that any failures resulting in engineering changes were documented. This work was performed as part of the Pre-Certification Test Activities.

At the time of initial issuance of this report hardware testing for ECO 829 and 830 is pending. If testing of these changes is completed prior to issuance of an Initial Decision by the EAC, this test report shall be updated to incorporate these test results.

2.3.6 *FCA Telephony and Cryptographic Review and Tests*

An examination of the Unity 3.2.0.0voting system was conducted to confirm that it does not contain wireless technology or use of the public networks. The results of this review were recorded in the FCA Telephony and Cryptographic Test Case. As a result of this review it was determined that the voting system is exempted from the Telephony and Cryptographic requirements of VSS Vol.1 Sect. 5 & 6. It should be noted that connection of the election management system PCs or laptops to a network (LAN or WAN) is outside the system configuration submitted for certification.

3 Voting System Identification

The System Identification stipulates the ES&S Unity 3.2.0.0 submitted for certification and the hardware, software and the Technical Data Package documentation used in testing

3.1 *Submitted Voting System Identification*

Table 5 Voting System Name and Version

Voting System Name	Version
Election Systems and Software Unity	3.2.0.0

This Voting System includes the following:

Table 6 Voting System Polling Place and Central Count Hardware

Hardware	OS or Firmware & Version	Description
Ballot Prep & Central Count		
PC, 2.2 GHz Pentium 4 minimum, 256 MB memory minimum, 20 GB hard drive minimum, CD-ROM, USB port, Flash memory card drive, Blank formatted compact Flash Memory Card (FMC)	Windows XP Professional	AIMS Personal computer for preparation of the election definition and writing media for installation on the VAT
PC, 1 GHz or faster processor, 512 MB RAM, 40 GB hard drive, 48x CD-ROM or DVD drive, 3.5-inch drive, Super VGA (800x600) or higher resolution video adapter and monitor, appropriate drivers	Windows XP Professional, SP 2 & SP 3	Unity Personal computer for creating the election definition, ballot layouts, writing media for installation, consolidation of election results and reporting
SanDisk Imagemate CF Models #SDDR-91 & #SDDR-92	N/A	COTS: Flash card reader/writer programming the VAT
Iomega Zip Drive	N/A	COTS: Zip Disk reader/writer for programming the M650 and reading election results
HP LaserJet 4050N Inkjet Printer	N/A	COTS: Printer for AM, EDM, ESSIM, HPM, ERM reports
Paper Ballots Length: 11", 14", 17" & 19" Ovals/Inch: 3 & 4	N/A	ES&S: Ballot types supported for VAT, DS200, & M650
Ballot Marking Device		
ES&S AutoMARK Voter Assist Terminal Model A100-00, HW Rev. 1.0	VAT FW: 1.3.2906, OS WinCE 5.0.1400, Printer Engine Board (PEB) 1.65, Single Board Computer (SBC) 1.0	Accessible paper ballot marking device with assistive technology audio output devices and voter inputs Original HW: multiple cable connector and printed circuit boards are mounted in the lower portion of the VAT
ES&S AutoMARK Voter Assist Terminal Model A200-00, HW Rev. 1.1	VAT FW: 1.3.2906, OS WinCE 5.0.1400, Printer Engine Board (PEB) 1.65, Single Board Computer (SBC) 2.0	Accessible paper ballot marking device with assistive technology audio output devices and voter inputs HW Change: Consolidate PCB, relocate PCB and cables to upper portion for easier maintenance
ES&S AutoMARK Voter Assist Terminal Model A200-00, HW Rev. 1.3.1	VAT FW: 1.3.2906 OS WinCE 5.00.19 Printer Engine Board (PEB) 1.65, Single Board Computer (SBC) 2.5	Accessible paper ballot marking device with assistive technology audio output devices and voter inputs HW Change: LCD replacement, ROHS board components, change CPU and Flash Chips on the SBC board FW, Win CE OS Bootloader for P30 flash, OS update to support DST and Hash check (Note: Hash check is not supported in this version of the VAT FW)
ES&S AutoMARK Voter Assist Terminal Model A200-00, HW Rev. 1.3.1	VAT FW: 1.3.2906 OS WinCE 5.00.19, Printer Engine Board (PEB) 1.70,	Accessible paper ballot marking device with assistive technology audio output devices and voter inputs

Hardware	OS or Firmware & Version	Description
	Single Board Computer (SBC) 2.5	HW Change: PEB FW to support Enhanced AutoCast and Double Spit & Wipe (Note: Enhanced Auto Cast is not supported in this version of the VAT FW.)
VAT Kit: (2) Compact Flash Keys (2) AutoMARK Unit Keys (1) Compact Flash card (1) Printer Cartridge User Documentation Manual CD (1) Headphones w/industry standard connector (1) AC Power Cord (1) @ Short/long privacy sleeves		A standard equipment and instruction kit provided with the VAT for security, power, audio and printer outputs
Foot Paddle	N/A	Assistive technology switch device used with the VAT for voter inputs
SanDisk Compact Flash Cards (256MB)	N/A	COTS: Storage media for the VAT
ES&S Ballot Marker Pens	N/A	ES&S specified pens to hand mark DS200 ballots
Precinct Optical Scan Equipment		
intElect DS200, HW Rev. 1.2.0	DS200 FW: 1.3.10.0 (Power Management v. 1.2.0.1 Scanner v. 2.11.0.1)	Precinct count optical scanner
intElect DS200, HW Rev. 1.2.1	DS200 FW: 1.3.10.0 (Power Management v. 1.2.0.1 Scanner v. 2.11.0.1)	Precinct count optical scanner. HW change: Mylar spacing tabs to eliminate paper jams and a changed battery pack resistor value R109 from 1 M ohms to 100 k ohms
DS200 Plastic Ballot Box without a diverter	N/A	Precinct plastic ballot box with a single chamber
DS200 Steel Ballot Box without a diverter	N/A	Precinct steel ballot box with a single chamber
DS200 Steel Ballot Box with a diverter	N/A	Precinct steel ballot box, with diverter to segregate ballots into multiple chambers as programmed in the EMS
ES&S USB Flash (thumb) drives (512MB, 2 GB, 4GB, 8GB)	N/A	Storage media with election definition and results totals for the DS200
Thermal paper rolls	Paper	COTS: Paper for the DS200 reports
Central Count Optical Scan Equipment		
Model 650 (M650 HW Rev. 1.1 Oval options: Right or Left Optical light options: Green or Red	M650 FW: 2.2.2.0	A central count optical scanner with either a red or green optical light which reads a right or left ballot oval HW v.1.1 contains a new AMP board, option for networking, additional ferrites and green sensors.
Model 650 (M650) HW Rev. 1.2 Oval options: Right or Left Optical light options: Green or Red	M650 FW: 2.2.2.0	A central count optical scanner with either a red or green optical light which reads a right or left ballot oval HW v.1.2 contains a new PMS board, printer and additional ferrites.
Okidata 520 Microline 9pin Printers	N/A	COTS: M650 report & audit log printer
Epson LQ-590 Printers	N/A	COTS: M650 report & audit log printer
Belkin Universal Power Supply	N/A	COTS: M650 back up power supply
Zip disk (100MB)	N/A	COTS: M650 election definition and results storage media
Martin Yale 400 Ballot Jogger	N/A	COTS: M650 Ballot stacking device
9 1/2 X 11 - 1 ply Computer form	N/A	COTS: M650 Report & log paper
Other Equipment		
Okidata 9600 HDN Ballot On Demand (BOD) printer (used with ESSIM)	N/A	COTS: Color laser printer for onsite printing of ballots

The following is required software for Unity 3.2.0.0. Section 3.2.2 of the ES&S System Overview, Unity v.3.2.0.0, Rev 4.0; identifies optional COTS software. Table 9 reflects the optional software that was part of the tested configuration.

Table 7 Voting System EMS Software

Software Applications	Version	EMS Function Description
Unity Ballot Prep & Central Count		
Audit Manager (AM)	7.5.2.0	Election management system audit logging software application for the Election Data Manager and Ballot Image Manager
Election Data Manager (EDM)	7.8.1.0	Election management system software application to define and store jurisdiction election data
ES&S Ballot Image Manager (ESSIM)	7.7.1.0	Election management system desktop publishing tool to layout and format paper ballots
Hardware Programming Manager (HPM)	5.7.1.0	Election management system software application to import, format, and convert an election file and create election definitions for ballot scanning equipment
Election Reporting Manager (ERM)	7.5.4.0	Central count software application to compile and report election results from Unity voting devices
Adobe Acrobat Standard	v.9	COTS creation and display of pdf files in ESSIM and BOD
Adobe Type Manager Light	None specified	COTS creation and display of pdf files in ESSIM and BOD
Adobe Type Basics	None specified	COTS creation and display of pdf files in ESSIM and BOD
RM/Cobol	v.11.01	COTS Run time system, used in HPM and ERM
Commercially available and standard virus detection software.		COTS anit-virus software Norton AntiVirus 2009 for Windows XP Pro (Recommended)
AIMS		
ES&S AutoMARK Information Management System (AIMS) 1.3.157	1.3.157	Software to program the election database required by the AutoMARK VAT.
Microsoft Excel	v.5 or greater	COTS: Used to export text that requires translations
ScanDisk Drivers	N/A	COTS: Write election database to the compact flash memory
Microsoft.NET Framework	None specified	COTS: graphical user interface for the VAT previewer
Commercially available and standard virus detection software.		COTS anit-virus software Norton AntiVirus 2009 for Windows XP Pro (Recommended)

3.2 *Voting System Test Environment*

The Voting System Test Environment identifies the specific hardware and software that was used in the test environment. The Test Methods in Appendix D identify the specific ES&S Unity 3.2.0.0 voting system software and firmware used in each test.

Table 8 Voting System Hardware

Hardware	OS or Version	Manufacturer	Description (include functional purpose and condition of the equipment)
Ballot Prep & Central Count			
(2) Dell Optiplex GX270 computer desktops with monitor, keyboard & mouse (AIMS) SN: DNC2F51, GBGCT51	Windows XP Professional Version 2002 SP 2 & SP 3	Dell	Pre-Vote: COTS PCs for AIMS Condition: Good
(1) Dell Latitude 600 Laptop, Model #PP05L Intel Pentium Processor 1400 MHz 587 MHz 1.00 GB Ram SN: CN0G512486434501261	Windows XP Professional Version 2002 SP 2 & SP 3	Dell	Pre-Vote & Post-Vote: COTS laptop for the Unity election management system Condition: Good
(1) Dell GX260 computer desktop with monitor, keyboard & mouse SN: Tower: 7D0WL21, Keyboard:CN07N242388422C82Q06 Monitor:CN09M55664180-2BC-0A4S	Windows XP Professional Version 2002 SP 2 & SP 3	Dell	Pre-Vote & Post-Vote: COTS Unity PC for the Unity election management system Condition: Good
(1) Iomega Zip Drive SN: 1GBS2250K7	Z250USBPCMBP	Iomega	Pre-Vote & Post-Vote: COTS Zip Disk reader/writer for programming the M650 and reading election results Condition: Good
SanDisk Reader/Writer (1) Model SDDR-91 (no SN) (3)Model SDDR- 92	N/A	SanDisk	Pre-Vote: COTS SanDisk reader/writer for programming the VAT media in AIMS Condition: Good

Hardware	OS or Version	Manufacturer	Description (include functional purpose and condition of the equipment)
SN: 0343331, 018543 & (1) w/o a SN			
(1) HP LaserJet Inkjet Printer SN:600004	4050N	Hewlett Packard	Pre-Vote & Post-Vote: COTS Printer for AM, EDM, ESSIM, HPM, ERM reports Condition: Good
Paper Ballots Length: 14", 19", Ovals/Inch: 3 & 4	N/A	ES&S	Vote: ES&S: Ballots for testing Test consumables
Ballot Marking Device			
(1) AutoMARK Voter Assist Terminal A100-00 HW Rev. 1.0 SN: AM0106430376	FW Rev. 1.3.2906 OS WinCE 5.0.1400, PEB 1.65, SBC 1.0	ES&S	Vote: A ballot marking device to assist multi-lingual voters and voters with visual, aural or dexterity disabilities to vote a paper ballots in a private manner Condition: Good
(1) AUTOMARK VOTER ASSIST TERMINAL A200-00 HW Rev. 1.1 SN: AM0206443384	FW Rev. 1.3.2906, OS WinCE 5.0.1400, PEB 1.65, SBC 2.0	ES&S	Vote: Accessible paper ballot marking device with assistive technology audio output devices and voter inputs HW Change: Consolidate PCB, relocate PCB & cables to upper portion for easier maintenance Condition: Good
(1) AutoMARK Voter Assist Terminal A200-00 HW Rev. 1.3.1 SN: AM0208470767	FW Rev. 1.3.2906, OS WinCE 5.00.19, PEB 1.65, SBC 2.5	ES&S	Vote: Accessible paper ballot marking device with assistive technology audio output devices and voter inputs HW Change: LCD replacement, ROHS board components, change CPU & Flash Chips on the SBC board FW, Win CE OS Bootloader for P30 flash, OS update to support DST & Hash check (Note: Hash check is not supported in this version of VAT FW) Condition: Good ECO 329, 330, 354, 759 inclusion verified by iBeta inspection
(1) AutoMARK Voter Assist Terminal A200-00, HW Rev. 1.3.1 SN: AM0208470815	FW Rev. 1.3.2906, OS WinCE 5.00.19, PEB 1.70, SBC 2.5	ES&S	Vote: Accessible paper ballot marking device with assistive technology audio output devices and voter inputs HW Change: PEB FW to support Enhanced AutoCast and Double Spit & Wipe (Note: Enhanced Auto Cast is not supported in this version of the VAT FW.) Condition: Good ECO 329, 330, 354 inclusion verified by iBeta inspection
(1) AutoMARK Voter Assist Terminal A200-00 HW Rev. 1.3.0 SN: AM0206462702	OS WinCE 5.00.17, PEB 1.70, SBC 2.0	ES&S	Note: This configuration was not submitted as part of Unity 3.2.0.0; however it was used in environmental test report #080521-1251A on 6/11/08 Condition: Good ECO's 329, 330, 759, & 761verified by iBeta inspection
(1) AutoMARK Voter Assist Terminal A300-00 HW Rev. 1.4.0 SN: AM0307420125	FW: 1.4.2970, WinCE OS 5.00.17, PEB 1.70, SBC 2.0	ATS for Premier	This unit was inspected to confirm inclusion of ECO 354 per test report 070730-1165. Condition: Good
VAT Kit: (2) Compact Flash Keys (2) AutoMARK Unit Keys (1) Compact Flash card (1) Printer Cartridge User Documentation Manual CD (1) Headphones w/industry standard	N/A	ES&S	Vote: A standard equipment and instruction kit provided with each VAT for security, power, audio and printer outputs Most items are COTS

Hardware	OS or Version	Manufacturer	Description (include functional purpose and condition of the equipment)
connector (1) AC Power Cord (1) @ Short/long privacy sleeves			
Foot Paddle (no identification)	N/A	Unidentified	Vote: Assistive technology switch device used with the VAT for voter inputs Condition: Good
Multiple Compact Flash Cards (256MB)	N/A	SanDisk	Vote: COTS Storage media for the VAT Condition: Good
ES&S Ballot Marker Pens	N/A	ES&S	Vote: ES&S specified pens to hand mark DS200 ballots, Condition: Good
Precinct Optical Scan Equipment			
(2) intElect DS200 HW Rev. 1.2.0 SN: ES0107360007, ES0107370002	FW: 1.3.10.0 Power Mgmt v. 1.2.0.1 Scanner v. 2.11.0.1	ES&S	Vote: A Unity Voting System precinct count optical scanner paper ballot tabulator including a 12-inch touch screen display providing clear voter feedback and poll worker messaging, Condition: Good iBeta observed removal of the modem cards.
(1) intElect DS200 HW Rev. 1.2.1 SN: ES0107370025	FW: 1.3.10.0 Power Mgmt v. 1.2.0.1 Scanner v. 2.11.0.1	ES&S	Vote: A Unity Voting System precinct count optical scanner paper ballot tabulator including a 12-inch touch screen display providing clear voter feedback and poll worker messaging v.1.2.1 change: Mylar spacing tabs to eliminate paper jams and a changed battery pack resistor value R109 from 1 M ohms to 100 k ohms Condition: Good iBeta observed removal of the modem cards.
(1) intElect DS200, HW Rev. 1.2.1 SN: ES0107380927	N/A	ES&S	Pending testing for ECO829 and ECO830 by Criterion. Condition: Good
(1) DS200 Plastic Ballot Box without a diverter	N/A	ES&S	Vote: Precinct plastic ballot box with a single chamber Condition: Good
(1) DS200 Steel Ballot Box without a diverter	N/A	ES&S	Vote: Precinct steel ballot box with a single chamber Condition: Good
(1) DS200 Steel Ballot Box with a diverter	N/A	ES&S	Vote: Precinct steel ballot box, with diverter to segregate ballots into multiple chambers as programmed in the EMS Condition: Good
Multiple ES&S USB Flash (thumb) drives (512MB, 2 GB, 4GB, 8GB)	N/A	Belkin & SanDisk for ES&S	Pre-Vote & Vote: Storage media with election definition and results totals for the DS200 Condition: Good
Multiple Thermal paper rolls	N/A	NCR	Vote: COTS: Paper for the DS200 reports. Condition: Good
Central Count Optical Scan Equipment			
(2) Model 650 (M650) HW Rev. 1.2 SN: 7003 (Optical Red/ Left Oval) SN:102 7011 (Optical Green/Left Oval)	v.2.2.2.0	ES&S	Post-Vote: A Unity Voting System central count high-speed optical scanner paper ballot tabulator The M650 prints results reports to an external printer and saves results to a zip disk. Condition: Good iBeta verified no network card was installed
(1) Model 650 (M650) HW Rev. 1.1 SN: 2406 8013 (Optical Green/Right Oval)	v.2.2.2.0	ES&S	Post-Vote: A Unity Voting System central count high-speed optical scanner paper ballot tabulator The M650 prints results reports to an external printer and saves results to a zip disk Condition: Good

Hardware	OS or Version	Manufacturer	Description (include functional purpose and condition of the equipment)
			iBeta verified no network card was installed
(4) Okidata 520 Microcline 9pin Printers SN: 204A2005641, 407D4011099, 407D4010960, 407D4010894	520	OkiData	Post-Vote: COTS M650 results report & audit log printer Condition: Good
(2) Epson LQ-590 Printers SN: FSQY093447, FSQY094255	LQ-590	Epson	Post-Vote: COTS M650 results report & audit log printer. Condition: Good
(3) Belkin Universal Power Supply SN: 20V06516249WE, 20V06516248WE, 20V06516228WE	N/A	Belkin	Post-Vote: COTS: M650 back up power supply. Condition: Good
Zip disk (100MB)	N/A	Iomega	Pre-Vote & Post-Vote: COTS Storage media with election definition and results totals for M650. Condition: Good
Ballot Jogger	400	Martin Yale	Post-Vote: COTS Device to shake ballots into a neat stack for placement in the M650 ballot feeding tray. Condition: Good
9 1/2 X 11 - 1 ply Computer form paper	N/A	None identified	Post-Vote: COTS Report and Audit log printing for the M650. Condition: Good
Other Equipment			
None			

Table 9 Voting System Software

Software	Version	Manufacturer	Description (Identify COTS)
Ballot Prep & Central Count			
Audit Manager (AM)	7.5.2.0	ES&S	Election management system audit logging software application for the Election Data Manager and Ballot Image Manager
Election Data Manager (EDM)	7.8.1.0	ES&S	Election management system software application to define and store jurisdiction election data
Ballot Image Manager (ESSIM) with Ballot On Demand (BOD)	7.7.1.0	ES&S	Election management system desktop publishing tool to layout and format paper ballots
Hardware Programming Manager (HPM)	5.7.1.0	ES&S	Election management system software application to import, format, and convert an election file and create election definitions for ballot scanning equipment
Election Reporting Manager (ERM)	7.5.4.0	ES&S	Central count software application to compile and report election results from Unity voting devices
AutoMARK Information Management System (AIMS)	1.3.157	ES&S	Software to program the election database required by the AutoMARK VAT.
Adobe Acrobat Standard	8 & 9	Adobe Systems	COTS supports creation and display of pdf files in ESSIM & BOD
Adobe Type Manager	4.1	Adobe Systems	COTS supports creation and display of pdf files in ESSIM & BOD
Excel (Office Professional 2003)	2003	Microsoft	COTS supports creation and display of pdf files in ESSIM & BOD
RM/Cobol v11.01 Runtime System	11.01	RM/Cobol	COTS supports ERM and HPM
Other COTS			
02Micro Smartcard Driver	2.26	02Micro Electronics	COTS driver for the Unity PC
Access 2002 Runtime	10.0.2627.01	Microsoft	COTS supports runtime environment on the AIMS PC
ATI Software Uninstall Utility	6.14.10.1014	ATI	COTS: utility application for the Unity PC
ATI Control Panel	6.14.10.5.73	ATI	COTS: utility application for the Unity PC
ATI Display Driver	8.20	ATI	COTS: utility application for the Unity PC
Broadcom Gigibit Integrated Controller	9.02.06	Broadcom	COTS driver for the Unity PC
C-Major Audio	42xx	SigmaTel	COTS driver update software utility

Software	Version	Manufacturer	Description (Identify COTS)
Conexant D480 MDC v.92 Modem	92	Unknown	COTS: modem drivers (modem was only removed from the DS200)
Digital audio drivers	No version	Soundmax	COTS: sound drivers for Unity & AIMS PC
Omnidrive USB Professional	No version	Omnidrive	COTS Unity PC USB reader driver
PCM v2.01	2.0.1	CSM GmbH Filderstadt	COTS driver for Unity PC
PRO Network Adapters & Drivers	No version	Intel	COTS: drivers for the Unity & AIMS PC
SanDisk TransferMate	No Ver.	SanDisk	COTS: drivers to write compact flash AIMS PC
SQL Server Desktop Engine (AIMS_SQLS)	8.00.761	Microsoft	COTS AIMS PC
SQLXML	3.0 service pack 3	Microsoft	COTS: XML support for Unity & AIMS PC
Windows XP	XP service pack 3	Microsoft	COTS: OS for Unity & AIMS PCs & laptop
Windows Internet Explorer	7	Microsoft	COTS: AIMS & Unity PC ES&S does not want Internet Explorer to be run on the election System PCs. However, Internet Explorer must be resident on the PC to contain the latest security updates.
Access 2002 Runtime	10.0.2627.01	Microsoft	COTS supports runtime environment on the AIMS PC
.NET Framework	1.1	Microsoft	COTS AIMS PC
Norton AntiVirus	11.0.2	Symantec Corporation	COTS: AIMS and Unity PC
Polling Place			
VAT	1.3.2906	ES&S	Firmware for the Voter Assist Terminal
DS200	1.3.10.0	ES&S	Firmware for the intlElect DS200 scanner
Central Count Optical Scan Equipment			
Model 650	v.2.2.2.0	ES&S	Firmware for the Model 650 central scanner

Table 10 Voting System Technical Data Package Documents

Title	Version	Date	Author
System Security Test Cases	5.0	06/16/09	ES&S
System Security Test Procedure	4.0	06/16/09	ES&S
Printed Wiring Assembly, AUTOMARK 2 drawing no. 620118-6000	A	None	ES&S
BOM 621118-6001A	None	No date	Applied Data Systems
BOM 621118-6002 VA1	None	No date	Applied Data Systems
Automark-2 Schematic	Rev A	None	ES&S
Election Systems & Software, Inc. Indented Bill of Material	None	05/15/08	ES&S
Adobe Installation Reference Guide	None	05/28/08	ES&S
AutoMARKTM INFORMATION MANAGEMENT SYSTEM (AIMS) TECHNICAL DATA PACKAGE	None	None	ES&S
AutoMARKTM Information Management System TECHNICAL DATA PACKAGE TABLE OF CONTENTS	None	06/16/09	ES&S
AIMS Requirements Trace Matrix	None	06/16/09	ES&S
AutoMARK Information Management System AIMS Release Notes	10.0	06/16/09	ES&S
AutoMARK Information Management System (AIMS) System Overview	5.0	06/16/09	ES&S
AutoMARK Information Management System (AIMS) System Functionality	5.0	06/16/09	ES&S
AIMS Hardware Specifications	4.0	06/16/09	ES&S
Compact Flash Memory Card Design Specifications	4.0	06/16/09	ES&S
AutoMARK Information Management System (AIMS) Programming Specifications Details	3.0	06/16/09	ES&S
AutoMARK Information Management System (AIMS) Software Design Specifications	5.0	06/16/09	ES&S
AutoMARK Information Management System Election Official's Guide	16.0	06/12/09	ES&S

Title	Version	Date	Author
AutoMARK Information Management System (AIMS) Operations Procedures	5.0	06/16/09	ES&S
AutoMARK Information Management System (AIMS) System Security Specifications	5.0	06/16/09	ES&S
AIMS Quality Assurance Policy & Procedures	5.0	06/16/09	ES&S
AIMS Quality Assurance Test Cases	6.0	06/16/09	ES&S
AIMS Quality Assurance Test Procedures	4.0	06/16/09	ES&S
AIMS Configuration Management Plan	4.0	06/16/09	ES&S
AIMS System Change Notes	25.0	06/16/09	ES&S
Audit Manager 7.5.0.0 Relational Model	None	None	ES&S
Setting the Date and Time on an AutoMARK	None	05/13/08	ES&S
AutoMARK Component Storage and Handling Procedure	4.0	06/16/09	ES&S
ATS Configuration Management Policy	4.0	06/16/09	ES&S
Corrective Action Control Log	1.0	None	ES&S
Design Review Attendance Sheet	1.0	None	ES&S
Design Review Minutes	1.0	None	ES&S
AutoMARK Design Review Policy	4.0	06/16/09	ES&S
ATS Document Change Order	1.0	None	ES&S
AutoMARK Document Change & Issue Procedure	5.0	06/16/09	ES&S
Document Change Pending Re-Release	1.0	None	ES&S
AutoMARK Document Control Policy	4.0	06/16/09	ES&S
ATS Employee Training Procedure	4.0	06/16/09	ES&S
Engineering Change Order/Change Request Form	1.0	None	ES&S
AutoMARK Engineering Change Request/Change Order Process	5.0	06/16/09	ES&S
AutoMARK Engineering Development Policy	4.0	06/16/09	ES&S
ATS Purchasing Procedure	4.0	06/16/09	ES&S
AutoMARK Quality Assurance Policy	4.0	06/16/09	ES&S
AutoMARK Quality System Audit Process	4.0	06/16/09	ES&S
AutoMARK Receiving Procedure	4.0	06/16/09	ES&S
AutoMARK Software and Hardware Release Process	9.0	06/16/09	ES&S
System Bug Report Form	1.0	None	ES&S
AutoMARK System Report (Bug Reporting) Procedure	4.0	06/16/09	ES&S
Audit Manager Checklist-Election Day Training Manual	None	08/2007	ES&S
Build Procedure Audit Manager	3.1	03/24/09	ES&S
ATS Quality System Master Audit Schedule	1.0	09/02/08	ES&S
Ballot Image Processing Specifications	5.0	06/16/09	ES&S
AutoMARK™ Ballot Scanning and Printing Specification	4.0	06/16/09	ES&S
AutoMARK Configuration Management Plan (AQS) -13-5020-000-F	5.0	06/16/09	ES&S
AutoMARK Driver API Specification	4.0	06/16/09	ES&S
Automark Environmental Test Cases	6.0	06/16/09	ES&S
AutoMARK Environmental Test Plan	6.0	06/16/09	ES&S
AutoMARK Environmental Test Procedures	6.0	06/16/09	ES&S
AutoMARK Graphical User Interface Design Specifications	4.0	06/16/09	ES&S
Initial Software Installation Procedure	5.0	06/16/09	ES&S
ES&S AutoMARK Jurisdiction Guide	9.0	05/07/09	ES&S
AutoMARK Operating Software (AMOS) Design Specifications	4.0	06/16/09	ES&S
AutoMARK Operations and Diagnostic Log Specifications	5.0	06/16/09	ES&S
Operations and Diagnostic Log Test Cases	5.0	06/16/09	ES&S
Operations & Diagnostic Log Test Procedures	5.0	06/16/09	ES&S
Personnel Deployment and Training Requirements	5.0	06/16/09	ES&S
ES&S AutoMARK Poll Worker's Guide	10.0	05/07/09	ES&S
AutoMARK Programming Specifications Details	6.0	06/16/09	ES&S
ATS Quality System Procedures (QSP) Master List	1.0	09/02/08	ES&S
AutoMARK Rapid Application Development Methodology (RAD)	5.0	06/16/09	ES&S
AutoMARK 3010 VAT Release Notes	13.0	06/16/09	ES&S
AutoMARKTM Requirements Trace Matrix	3.0	06/16/09	ES&S
AutoMARK Software Design Specifications	5.0	06/16/09	ES&S
AutoMARK Software Development Environment Specifications	5.0	06/16/09	ES&S
AutoMARK Software Diagnostics Specification	5.0	06/16/09	ES&S
Software Standards Specification	5.0	06/16/09	ES&S
AutoMARK Software Quality Assurance Test Plan	5.0	06/16/09	ES&S

Title	Version	Date	Author
Software Quality Assurance Test Cases	7.0	06/16/09	ES&S
Software Quality Assurance Test Procedures	5.0	06/16/09	ES&S
AutoMARKTM System Change Notes	91.0	06/16/09	ES&S
AutoMARK System Functionality	6.0	06/16/09	ES&S
ES&S System Installation and Maintenance Guide	10.0	06/16/09	ES&S
AutoMARK System Introduction	4.0	06/16/09	ES&S
System Level Test Cases	6.0	06/16/09	ES&S
AutoMARK System Level Test Plan	6.0	06/16/09	ES&S
AutoMARK System Level Test Procedures	5.0	06/16/09	ES&S
System Security Test Procedure	4.0	06/16/09	ES&S
AutoMARK System Overview	5.0	06/16/09	ES&S
AutoMARK™ TECHNICAL DATA PACKAGE TABLE OF CONTENTS	None	09/02/08	ES&S
ES&S AutoMARK Voter's Guide	9.0	06/16/09	ES&S
AUTOMARK™ EMBEDDED DATABASE INTERFACE SPECIFICATION	6.0	06/16/09	ES&S
AutoMARK VAT – Printer Engine Board Firmware Compilation Instructions	3.0	06/16/09	ES&S
No Title (VAT Configuration)	None	No Date	ES&S
AutoMARK System Hardware Specification	4.0	06/16/09	ES&S
AutoMARK VAT Firmware and Hardware Installation Instructions	3.0	06/04/09	ES&S
AutoMARK VAT Software and Firmware Compilation Instructions	13.0	06/16/09	ES&S
ES&S Ballot Production Handbook	None	07/17/07	ES&S
Ballot Data File Specification Unity Version 4.0.0.0	1.0	04/30/07	ES&S
ES&S Ballot On Demand Printer Setup and Printing Procedures Version Release 7.7.0.0 Okidata part number 58273508	None	08/22/08	ES&S
Ballot Set Collection File Specification Unity Version 4.0.0.0	1.0	04/30/07	ES&S
Automark Technical Systems Integration & Testing Bug Report	1.0	None	ES&S
Development Practices and Coding Standards Election Systems and Software Version Number 2.3.0.0	2.3	07/11/08	ES&S
DS 200 Part list	None	05/12/08	ES&S
DS200 Election Day Checklist Version Number 1.3.7.0	None	05/09/08	ES&S
ES&S DS200 Power Management Board Validation	None	08/01/08	ES&S
ES&S DS200 Scanner Board Dump Compare Hardware Version 1.2.1.0 Firmware Version 2.0.0.0	None	09/26/08	ES&S
DS200 Test Cases Unity 4.0 Version 1.3.7.0	None	06/13/08	ES&S
Engineering Specification -Model PW-080A2-1Y24AP (G) -(DS-200 - ferrite molded power supply)	A	02/03/09	Wall Industries
Engineering Change of Order documentation	None	None	ES&S
Election Data Manager (EDM) Checklist-Election Day Training Manual	None	08/2007	ES&S
Election Data Manager Test Case Specifications Software Version 7.8.0.0	None	10/27/08	ES&S
Election Data Manager 7.8.0.0 Election Tables Relational Model	None	None	ES&S
EDMXML File Specification	None	06/15/07	ES&S
EL80 File Specification	None	None	ES&S
Election Reporting Manager Pre-Election Day Training Manual Version Number 7.5.x	None	06/22/08	ES&S
Election Reporting Manager / ERM Product Test Cases Unity 4.0 Version 7.5.2.0	None	10/23/08	ES&S
ESS Hardware Acceptance Checklists	None	None	ES&S
ES&S License Agreements Software Development	None	06/10/05	ES&S
ESS Sample Deliverable Timeline	None	None	ES&S
ES&S Software/Firmware Acceptance	1.0	02/25/08	ES&S
ESSCRYPT Functional Specification Version 1.8.1.0	None	11/16/07	ES&S
ESSDECPT Functional Specification Version 1.8.1.0	None	11/16/07	ES&S
ESS Hardware Revision History	None	11/02/07	ES&S
ESS Image Manager (ESSIM) Checklist-Election Day Training Manual	None	08/2007	ES&S
ESS Image Manager Test Case Specification Software Version 7.7.0.0 Test Case 2.0	None	10/17/08	ES&S
ESSXML File Specification	None	04/30/07	ES&S
Hardware Revision Description	1.0	08/27/07	ES&S
Hardware Programming Manager (HPM) Checklist-Election Day Training Manual	None	08/2007	ES&S

Title	Version	Date	Author
Hardware Programming Manager Test Case 1.0 Unity Version 4.0	None	06/06/08	ES&S
Letter- EAC Decision on Request for Interpretation 2008-05 Voting Equipment Durability	None	09/23/08	ES&S
Interface (IFC) File Specification	None	None	ES&S
ISO Certification Pivot	None	None	ES&S
Ricoh Electronics Quality Manual	4.0	07/06/06	ES&S
Jurisdiction Security Procedures Version 1.0.0.1	None	05/09/08	ES&S
Language Data File Specification	None	04/30/07	ES&S
Setting the Date and Time on a Model 100 Scanner	None	05/13/08	ES&S
Setting the Date and Time on a Model 650 Scanner	None	05/13/08	ES&S
Model 650 Output File Specification	None	None	ES&S
Setting the Machine ID on a Model 650 Scanner	None	05/13/08	ES&S
Model 650 Test Case Specification Firmware Version 2.2.1.0 Hardware Version 1.1 Test Case 1.0	None	10/17/08	ES&S
OmniDrive USB/USB2 Installation Guide	1.0	05/20/08	ES&S
Open Source & 3rd Party Code Management Procedure	None	01/03/06	ES&S
Election Results Export (EXP) Election Day Checklist	None	02/29/08	ES&S
Model 650 Election Day Checklist Version Number 2.2.1.0	1.0	02/29/08	ES&S
Model 650 Pre-Election Day Checklist Version Number 2.2.1.0	1.0	02/29/08	ES&S
Model 650 Handout A: Setting the Date & Time	None	02/29/08	ES&S
Product Release Request	None	None	ES&S
Quality Assurance Manual	K	03/17/05	ES&S
QMI Management Systems Registration Certificate of Registration	None	None	ES&S
QMI Certificate of Registration	None	None	ES&S
RM/COBOL® Installation Guide	1.1	05/20/08	ES&S
ES&S Software Validation Phase I Create ES&S Preliminary Definition File	1.1	04/10/08	ES&S
ES&S Software Validation Phase II-Create ES&S Package Definition File-Using the ES&S Software Validation Utility	1.2	04/10/08	ES&S
ES&S Software Validation Phase III-ES&S Software Validation Procedure-Using the ES&S Software Validation Utility	1.1	04/10/08	ES&S
Unity 3.2.0.0 Source Code Repository & Version	None	No date	ES&S
ES&S Configuration Management Plan	4.0	05/21/09	ES&S
System Change Notes	1.0	11/25/08	ES&S
Election Systems and Software System Overview Unity 3.2.0.0	6.0	06/23/09	ES&S
2002 VSS Supported Functionality Declaration Unity 3.2.0.0	None	10/29/08	ES&S
Election Systems & Software System Limitations Unity v. 3.2.0.0	6.0	05/08/09	ES&S
ES&S TDP Organization and Abstract	Rev 1.0	No Date	ES&S
Requirements of the 2005 VVSG Trace to Vendor Testing and Technical Data Package	None	06/17/09	ES&S
Election Systems & Software ES&S Quality Assurance Program Manufacturing Unity v. 3.2.0.0	3.0	06/16/09	ES&S
Election Systems & Software ES&S Quality Assurance Program Software and Firmware Unity v. 3.2.0.0	3.0	06/16/09	ES&S
Audit Manager 7.5.0.0 Relational Model	None	None	ES&S
Election Data Manager 7.8.0.0 Election Tables Relational Model	None	None	ES&S
Election Systems & Software ES&S Software Design Specifications Audit Manager Unity v. 3.2.0.0	2.0	06/15/09	ES&S
Election Systems & Software ES&S Software Design Specifications DS200 Unity v. 3.2.0.0	2.0	06/15/09	ES&S
Election Systems & Software ES&S Software Design Specifications Election Data Manager (EDM) Unity v. 3.2.0.0	3.0	06/15/09	ES&S
Election Data Manager 7.8.0.0 County Tables Relational Model	None	None	ES&S
ES&S Software Design Specifications ERM Unity v. 3.2.0.0	3.0	06/19/09	ES&S
ES&S Software Design and Specification ES&S Ballot Image Manager (ESSIM) Unity v. 3.2.0.0	3.0	06/16/09	ES&S
ES&S Software Design and Specification Hardware Programming Manager (HPM) Unity v. 3.2.0.0	2.0	06/15/09	ES&S
ES&S Software Design Specifications Model 650 Unity v. 3.2.0.0	2.0	04/05/09	ES&S
ES&S System Functionality Description Model 650 Unity v. 3.2.0.0	2.0	04/03/09	ES&S
Election Systems & Software ES&S System Functionality Description	2.0	06/15/09	ES&S

Title	Version	Date	Author
Audit Manager Unity v. 3.2.0.0			
Election Systems & Software ES&S System Functionality Description DS200 Unity v. 3.2.0.0	2.0	06/15/09	ES&S
ES&S System Functionality Description EDM Unity v. 3.2.0.0	3.0	04/03/09	ES&S
ES&S System Functionality Description ERM Unity v.3.2.0.0	5.0	06/23/09	ES&S
ES&S System Functionality Description ES&S Ballot Image Manager (ESSIM) Unity v. 3.2.0.0	2.0	04/09/09	ES&S
ES&S System Functionality Description Hardware Programming Manager (HPM) Unity v. 3.2.0.0	2.1	04/09/09	ES&S
ES&S System Hardware Specification Model 650	1.0	11/1742008	ES&S
ES&S System Hardware Specification DS200 Unity v. 3.2.0.0	2.0	04/06/09	ES&S
Election Systems & Software ES&S System Hardware Specification Model 650 Unity v. 3.2.0.0	2.0	06/15/09	ES&S
ES&S DS200 System Maintenance Manual Hardware Version 1.2.0 Firmware Version 1.3.10.0	None	06/23/09	ES&S
ES&S Model 650 System Maintenance Manual	None	01/30/09	ES&S
ES&S Audit Manager System Operations Procedure Version Release 7.5.2.0	None	05/26/09	ES&S
ES&S DS200 System Operations Procedures Hardware Version 1.2.1 Firmware Version 1.3.10.0	None	06/19/09	ES&S
ES&S Election Data Manager System Operating Procedures Release Version 7.8.1.0	None	05/26/09	ES&S
ES&S Election Reporting Manager Release Version 7.5.4.0	None	06/24/09	ES&S
ES&S Image Manager System Operations Procedure Version Release 7.7.1.0	None	04/03/09	ES&S
ES&S Hardware Programming Manager System Operations Procedure Version Release 5.7.1.0	Unity v.3.2.0.0	05/11/09	ES&S
ES&S Model 650 System Operation Procedures Release Firmware Version 2.2.2.0 Hardware Version 1.1 and 1.2	None	05/29/2009	ES&S
ES&S System Security Specification Version Release 4.0.0.0	None	03/27/09	ES&S
Hardening Procedures for the Election Management System PC	None	06/24/09	ES&S
Election Systems & Software Unity System Test Plan Version 3.2.0.0	2.0	06/16/09	ES&S
Audit Manager Test Case Specifications Software Version 7.5.0.0 Test Case 1.0	None	02/23/09	ES&S
ES&S Personnel Deployment and Training Recommendations	1.0	11/21/08	ES&S
DS200 Election Day Checklist Version Number 1.3.7.0	None	05/09/08	ES&S
DS200 Pre-Election Day Checklist Version Number 1.3.7.0	None	11/20/08	ES&S
Election Results Export (EXP) Election Day Checklist Version Number 4.0.0.0	None	02/29/08	ES&S
Model 650 Election Day Checklist Version Number 2.2.1.0	None	02/29/08	ES&S
Model 650 Pre-Election Day Checklist Version Number 2.2.1.0	None	02/29/08	ES&S
M650 Setting Date Time	None	02/20/09	ES&S
DS200 Precinct Ballot Scanner Election Day Training Manual Version Number 1.3.10.0	None	06/22/09	ES&S
DS200 Precinct Ballot Scanner Pre-Election Day Training Manual Version Number 1.3.10.0	None	06/22/09	ES&S
Election Data Manager Training Manual	None	02/20/09	ES&S
ESSIM Training Manual Version Number 7.7.x	None	02/20/09	ES&S
Election Results Export (EXP) Election Day Checklist Version Number 4.0.0.0	None	02/29/08	ES&S
Hardware Program Manager Training Manual	None	02/20/09	ES&S
Model 650 Election Day Checklist Version Number 2.2.1.0	None	02/29/08	ES&S
Model 650 Pre-Election Day Checklist Version Number 2.2.1.0	None	02/29/08	ES&S
U3200_TRN00_M650_SettingDateTime	None	02/20/09	ES&S
Election Systems & Software ES&S Personnel Deployment and Training Recommendations Unity v. 3.2.0.0	2.0	06/16/09	ES&S
Installation Guide Windows XP On Dell Optiplex GX520	1.2	05/21/08	ES&S
Verify DS200 Operating System Using Open SSL	None	09/19/08	ES&S
EAC Application Documents			
VSTL Source Code Status Report	None	None	ES&S
AIMS Requirements Trace Matrix	Unity v.3.2.0.0	9/2/08	ES&S

Title	Version	Date	Author
AutoMARK Requirements Trace Matrix	Unity v.3.2.0.0	9/2/08	ES&S
Requirements of the 2005 VVSG Trace to Vendor Testing and Technical Data Package	Unity v.3.2.0.0	10/29/08	ES&S
2002 VSS Supported Functionality Declaration Unity 3.2.0.0	Unity v.3.2.0.0	10/29/08	ES&S
Unity 3.2.0.0 Implementation Statement	Unity v.3.2.0.0	10/29/08	ES&S
Unity 3.2.0.0	Unity v.3.2.0.0	No date	ES&S
Unity 3.2.0.0 Application	Unity v.3.2.0.0	10/29/09	ES&S
Build and Installation			
AIMSCRYPT Build Environment Compile-Install Guide	1.0	5/23/09	ES&S
AutoMARK VAT Printer Engin Board Firmware Compilation Instructions	2	06/09/09	ES&S
AutoMARK VAT Firmware and Hardware Installation Instructions version 1.3.157	3	06/01/09	ES&S
AutoMARK VAT Software and Firmware Compilation Instructions	16.0	05/20/09	ES&S
Build Procedure ESS Linux 7.2 Beyond Linux From Scratch (BLFS)	3.1	04/22/09	ES&S
Build Procedures DS200 Firmware	1.2	06/25/09	ES&S
Build Procedure Detail DS200 Firmware	3.6	06/25/09	ES&S
Pre-Build Task List DS200 Firmware Unity 3.2.0.0	1.1	06/25//09	ES&S
Build Procedure DS200 TOS	1.0	04/30/09	ES&S
Build Procedure ESS Linux 6.2 Target Operating System (TOS)	3.1	04/22/09	ES&S
Pre-Build Task List DS200 TOS Unity 3.2.0.0	1.0	05/13/09	ES&S
Build Procedure ESS Linux 6.2 Linux From Scratch (LFS)	2.1	04/20/09	ES&S
Install Procedure Cypress EZ-USB	1.0	04/13/09	ES&S
Build Procedure DS200 Ancillary Devices Unity 3.2.0.0	1.0	04/30/09	ES&S
Pre-build Task LIst DS200 Ancillary Devices Unity 3.2.0.0	1.0	05/13/09	ES&S
Install Prodecure IAR Embedded Workbench	1.0	04/13/09	ES&S
Install Procedure Keil uVision3 Development Tools	.1.0	4/13/09	ES&S
Installation Guild Microsoft Windows XP with Service Pack 3 on Dell Optiplex GX520	1.0	03/31/09	ES&S
Pre-build Task LIst Model 650 Unity 3.2.0.0	1.0	05/13/09	ES&S
Build Procedure Model 650	1.0	05/12/09	ES&S
Installation Guide QNX Software Systems, Ltd. QNX 4.25 Product Suite May 2001	1.0	05/12/09	ES&S
Installation Guild Avocet Systems Inc. ADX-Z180 Version 5.2	1.0	04/30/09	ES&S
Installation Guild Sequiter Software CodeBase 6.5 Release 3	2.2.1	04/21/09	ES&S
Installation Guide Business Objects Crystal Reprots 9 Developer, Full Product with Hot Fixes	2.2.2	04/29/09	ES&S
Installation Guild Install Shield Express, 2.12	2.21	11/30/08	ES&S
Installation Guide InstallShield Professional, 7.01	2.2	03/23/09	ES&S
Installation Guide CSM GmbH PC=Card SDK v.2.20	1.0	04/30/09	ES&S
Installation Guild Liant RM/COBOL Developer 11.01 Liant RM/COBOL WOW Extensions 11.01	3.3.2	04/29/09	ES&S
Election Systems & Software Build Procedure Unity Software Applications Unity 3.2.0.0	1.5	06/16/09	ES&S
Election Systems & Software Build Procedure Unity Software Applications Unity 3.2.0.0 (Supplimental Build A)	1.0	06/25/09	ES&S
Pre-build Task List Unity Software Applications Unity 3.2.0.0	1.0	05/13/09	ES&S
Pre-build Task List Unity Software Applications (Supplemental Build A) Unity 3.2.0.0	1.0	06/19/09	ES&S
Installation Guide Young Dynamic Software vbAdvance 3.1	1.3.1	04/30/09	ES&S
Installation Guide Microsoft Visual Studio 6.0, Enterprise Edition with Service Pack 5	2.0.1	04/30/09	ES&S
Installation Guide Microsoft Visual Studio 2005 Professional Edition	2.0	04/21/09	ES&S
Installation Guide Microsoft Windows XP On Corsair PC	1.0	04/22/09	ES&S
Engineering Change Orders			
ECO 802 wREV ID	Unity v.3.2.0.0	12/05/08	ES&S
ECR037120408	Unity	12/04/08	ES&S

Title	Version	Date	Author
	v.3.2.0.0		
ECO 803 wRev ID - cable	Unity v.3.2.0.0	12/15/08	ES&S
ECR033120108	Unity v.3.2.0.0	12/01/09	ES&S
ECO 825	Unity v.3.2.0.0	04/13/09	ES&S
AG64L64T8SHC4S	Unity v.3.2.0.0	03/25/09	ATP Electronics
ECO 826 DRAM 2nd source	Unity v.3.2.0.0	04/13/09	ES&S
TS64MLD64V4F_2430_S	Unity v.3.2.0.0	no date	ATP Eletronics
ECO 827 - UPS	Unity v.3.2.0.0	04/29/09	ES&S
ECO 829 ground (inclusion is pending environmental testing)	Unity v.3.2.0.0	05/06/09	ES&S
ECO 830 -USB circuit board (inclusion is pending environmental testing)	Unity v.3.2.0.0	5/6/09	ES&S
ECO 831 version ID	Unity v.3.2.0.0	05/06/09	ES&S
APC spec Back-UPS RS 1500VA	None	no date	APC
Belkin Spec UPS change	None	no date	Belkin

Table 11 Other Software, Hardware and Materials

Material	Material Description	Use in the Voting System
Other		
Paper ballots	COTS printed ballots: 14 inch 216 positions 14 inch 288 positions 19 inch 408 positions	Paper ballots to record votes
Ballot Pens	ES&S ballot marking Pen	Marking votes on paper ballots
DS200 Media	USB (512 MB, 2 GB, 4 GB, & 8 GB)	DS200 media storing the election data and the election results
Paper rolls	COTS Thermal paper, internal thermal printer	DS200 reports printer (open and close polls reports)
VAT Media	256 MB CompactFlash	VAT media storing election data
Ink cartridges	Black ink	VAT ink to mark ballots and print reports
Paper (9 1/2 X 11 - 1 ply Computer form)	COTS paper, Oki Microline 520 and Epson printers	M650 audit log and results printer paper
M650 Media	Iomega Zip Disk (100 MB)	M650 election data and transfer disk.
Norton AntiVirus	Viruses and malicious software protection	Unity and AIMS PC antivirus protection software
Multiple desktop and laptop PCs	A variety of PCs running Microsoft operating systems	Supplied by iBeta: Preparation, management and recording of test plans, test cases, reviews and results
Repository servers	Separate servers for storage of test documents and source code, running industry standards operating systems, security and back up utilities	Supplied by iBeta: Documents are maintained on a secure network server. Source code is maintained on a separate data disk on a restricted server
Microsoft Office 2003 & 2007	Excel and Word software and document templates	Supplied by iBeta: The software used to create and record test plans, test cases, reviews and results
SharePoint 2003	TDP and test documentation repository	Supplied by iBeta: TDP and test documentation repository and configuration management tool
Other standard business application software	Internet browsers, PDF viewers email	Supplied by iBeta: Industry standard tools to support testing, business and project implementation
Visual Studio 2003 v.7.1.3808	Build and source code review	Supplied by iBeta: View source code

Material	Material Description	Use in the Voting System
(Microsoft)	Integrated Development Environment	review
RSM v.6.92 (M Squared Technologies)	C, C++, Java & C# static analysis tool	Supplied by iBeta: identify line counts and cyclomatic complexity
Beyond Compare 2 v.2.4.3 (Scooter Software)	Comparison utility	Supplied by iBeta: used to compare file/folder differences
WinDiff 5.1 (Microsoft)	Comparison utility	Supplied by iBeta: used to compare file/folder differences
Hash.exe v.7.08.10.07.12 (Maresware)	Hash creation utility	Supplied by iBeta: used to generate hash signatures for Trusted Builds
Automation Anywhere 4.0	Automation tool	Supplied by iBeta: used to execute Volume 3.
Nessus 4.0.0.987	Security tool	Supplied by iBeta: Tenable Network Security. Used on the Unity PC for security testing
Trusted Build Software		
This is listed in Appendix G: Trusted Build & Validation Tools Unity 3.2.0.0 voting system		

4 Voting System Overview

The ES&S Unity 3.2.0.0 is a paper-based voting system that includes the election management software applications: Election Data Manager, ES&S Ballot Image Manager (ESSIM), Hardware Programming Manager (HPM), AutoMARK Information Management System (AIMS), the audit software, : Audit Manager, and the Election Reporting Manger (ERM) central counts reporting software. . Paper ballots can be printed by Ballot-on-Demand COTs printer in addition to providing ballots to commercials printers for printing. The voting system includes the DS200 precinct optical scanner hardware and firmware, the AutoMARK Voter Assist Terminal A100, AutoMARK Voter Assist Terminal Model A200 precinct ballot marker hardware and firmware and the Model 650 central count hardware and firmware.

4.1 *Election Management System- Pre Voting Capabilities*

The Unity 3.2.0.0 election management system pre-vote functions are performed by five software applications that are installed on two COTS PCs.

4.1.1 *Election Data Manager (EDM)*

The Election Data Manager functionality includes:

- Definition of election databases for the M650 and DS200 paper ballot scanners and VAT paper ballot marker;
- Creation and edit of closed, open and pick-a-party primaries and general elections with office, candidate election, and absentee preferences;
- Set up of early, Election Day and absentee voting;
- Creation and edit of new elections from existing files;
- Creation and edit of ballot sets, rotations, groupings and straight party;
- Creation and edit of parties, candidates, referendum, recall questions, and write-in targets;
- Creation, edit and assignment of precincts and polling places;
- Creation, edit and generation of ballot styles;
- Merging preferences;
- Use of the Import Wizard to import lists of parties, language, precincts, county, district typed, district names, district relations, office headings, office relations, candidates, and polling places;
- Addition and edit of language files;
- Select and generate statistical counters;
- Display, print and export of EDM reports, including: Master Precinct Report, District Names, District Relations, District Relations by Precinct, Master Office, Party, Office Headings, Precincts this Election, Offices this Election, Office Relations, Candidates this Election -in party order sorted by last name, Offices and Candidates this election Ballot Styles in Ballot Style Order, Ballot Styles in Precinct Order, Ballot Galley Report (Precinct/Office/Candidate), Candidate Rotations by Office, and Standard Rotation;
- Generates the interface file(.iff) and ballot set collection file (.bsc) to create the ballot data file (.bdf); and
- Back up of election files.

4.1.2 *ES&S Ballot Image Manager (ESSIM)*

The ES&S Image Manage (ESSIM) is a desktop publishing tool to design and publish Election Systems and Software (ES&S) paper ballots for the Unity 3.2.0.0 DS200 precinct scanner and the M650 central count scanner. ESSIM is used to:

- Import the ballot data file(.bdf) from EDM;
- Create and edit ballot formats for ES&S ballot services or a printer to print official ballots;
- Create and edit style sheets for ballot elements corresponding to EDM election data (offices, parties, candidates, etc.);
- Create and edit text frames to place instructional text on a ballot;
- Create and edit graphic frames to place images on a ballot;
- Create and edit production frames to place variable information (precinct or style identifiers) on a ballot;
- Reuse previously created ballot formats;
- Use layouts created with the program to print extra Election Day ballots with Ballot on Demand;
- Reads and convert the information contained in an EDM election database into finished ballot layouts;
- Generation of the interface file (ifc);

- Generate Ballot Validation and Ballot Style Reports to validate election data properly fits the ballot and is properly positioned; and
- Package elections for back up, transfer to other computers or send to ES&S as requested for election support.

4.1.3 *Hardware Programming Manager (HPM)*

Hardware Programming Manager (HPM) is used to convert the election file for use with Election Reporting Manager (ERM) and for create election parameters and loading them to the memory device for the DS200 or M650.

- Create and edit the election shell for importation of the interface file (.ifc);
- Create and edit access control for HPM and the DS200;
- Set and edit jurisdiction tabulator controls for selection of equipment and tape/report printing sequence and "vote for" information;
- Set and edit election specification tabulator controls for handling of blank, cross-voted, write-ins; unreadable marks, absentee ballots and report printing;
- Set and edit certification tabulator controls for text to appear on reports and tapes;
- Write elections to zip disk and USB memory storage devices for the M650 and DS200;and
- Update the election for use by AutoMARK Information Management System (AIMS) and the Election Reporting Manager (ERM).

HPM may also be used for coding an election, if necessary. HPM permits importation, formatting, and conversion of the election file, definition of districts, election contests and candidates, election definitions for ballot scanning equipment.

4.1.4 *AutoMARK Information Management System (AIMS)*

The AutoMARK Information Management System includes the AIMS application software installed on a COTS PC. It was originally developed by Automark Technical Services, LLC (ATS) and acquired by ES&S. ES&S has assumed responsibility for the product. In many instances the TDP documents referenced ATS instead of ES&S. . The AIMS application manages information required by the AutoMARK Voter Assist Terminal (VAT) for an election, including:

- Importation of HPM election files and a corresponding printed optical scan ballot;
- Optional manual entry of election data;
- Edit of stored election multilingual text information for proper pronunciation of synthesized speech messages;
- Storing of recorded multilingual voice messages in WAV format;
- Writing of the election database to a compact flash memory card (FMC) in order to provide ballot content information to the VAT;
- Review ballot set-up and preview on-screen ballot display;
- Performs no ballot counting or vote counting/reporting functions;
- Logging of changes to the election database in the AIMS audit log; and
- Backing up (archive) of the election database.

4.1.5 *Audit Manager (AM)*

EDM and Image Manager use Audit Manager to store detailed logs of the actions performed in both programs. Audit Manager:

- Prints or displays audit listings;
- Listings include date and time stamps;
- Listings can be exported;
- Displays logs in cascade, vertical and horizontal views; and
- Archives logs.

4.2 *Polling Place- Voting Capabilities*

The Unity 3.2.0.0 polling place voting functions are performed by the intlElect DS200 Precinct Scanner and the AutoMARK Voter Assist Terminal.

4.2.1 *intlElect DS200 Precinct Ballot Scanner*

The intlElect DS200 is a jurisdiction-wide election tabulation system. DS200 scanners

- Process single or dual-sided paper ballots for up to ten Election Day precincts and 1639 Early Voting precincts;
- Permit programming of separate election groups for the procedural processing and storage of provisional ballots separately from Election Day totals for inclusion, after determination of voter validity;
- Support Early Voting;
- Permit opening, closing and reopening of the polls;
- Automatically prints a Zero report when the polls open;
- Can be configured to automatically print one or more reports (Status, Race Results, Certification or Audit Log)
- Have a public counter that displays the number of ballots cast;
- Store paper ballots in attached ballot storage bins (key locked ballot boxes);
- Do not store any ballot data; all ballot data, election totals and optional ballot images are stored on an external USB flash drive which can be transported to a central count location;
- Prevents access to the USB election flash drive via a key locked compartment;
- Print reports including: Election Startup, Poll Closing, Diagnostic, Initial State, Audit Log, Zero and Certification;
- Audit logging and reporting;
- Prohibit transmitting of results by removal of the modem. (Transmission of results via the public telephone network is excluded from testing in Unity 3.2.0.0); and
- Operates on standard or two hour back-up battery power.

4.2.2 *AutoMARK Voter Assist Terminal (VAT)*

The AutoMARK VAT is an automated voter assistive paper ballot marking device. It was originally developed by Automark Technical Services, LLC (ATS) and acquired by ES&S. ES&S has assumed responsibility for the product. In many instances the TDP documents referenced ATS instead of ES&S. Four configurations of the VAT

were submit for certification in Unity 3.2.0.0. A description of the four configurations and their differences is found in Section 3.1 Submitted Voting System Identification.

The VAT device assists voters with visual, language and manual dexterity challenges. It only displays ballot for marking on paper. Temporary memory only retains votes until the printing operation is complete. VSS requirements for a DRE are applicable for ballot display and voter selection functions, only. The VAT is exempt from vote storage and reporting function requirements. The VAT:

- Incorporates a touch screen monitor, tactile input buttons, connections for assistive input devices, audio output and a ballot marking printer;
- Password protects the System Maintenance Menu for setting date/time and loading firmware;
- Permits installation of an AIMS election database on a compact flash memory card;
- Provides a test mode for performance of set-up, reporting and maintenance functions;
- Provides audio, printing, screen and button readiness tests and verification of the ballot definition;
- Draws a preprinted blank ballot from the voter input tray and scans a preprinted bar code on the ballot to determine the form of ballot inserted;
- Presents the voter with the options to make a language selection for either an audio or visual ballot;
- Presents the voter with controls to adjust the display contrast/size, volume, speed for synthesized speech and repeat audio output;
- Present the ballot as a series of menu-driven voting choices on a color screen;
- Permits vote selection inputs via a touch screen or assistive switch-based devices (foot paddles);
- Accumulates the voter's choices in an internal memory until the voter has completed the selection process;
- Provides a summary of the voter's choices for review and confirmation;
- Marks and prints the paper ballot following voter confirmation of the summary;
- Accommodates insertion of the ballot in any orientation;
- Prints single and double-sided ballots;
- Returns the ballot to the voter after printing is completed;
- Clears its internal memory so that the paper ballot is the only lasting record of voter selections;
- Prevents access to the compact flash memory card via a key locked compartment;
- Operates on standard or back-up battery power; and
- Provides a date/time stamped audit log of ballot marking operations that can be viewed or printed.

4.3 *Central Count Scanner- Post Voting Capabilities*

The central count scanner functions are performed by the Model 650 Central Ballot Scanner.

4.3.1 *Model 650 Central Ballot Scanner (M650)*

The Model 650 Central Ballot Scanner is a high-speed, computerized, paper ballot, optical mark reader. The M650 scanner:

- Options include a left and right ballot oval read and red and green light optical read;
- Loads and tests election definitions and readiness for Election Day tasks;
- Checks the pre-printed codes along the ballot edge to determine each ballot's precinct, split and type;
- Reads voter choices for candidates or issues in a fraction of a second for each ballot.
- Checks for ballot irregularities, stops and provides the operator instructions for handling the ballot;
- Tabulates votes in each race and tracks the race count and total ballots by precinct;
- Permits separate scanning for Election Day and Absentee ballots;
- Permits sorting of over-voted, blank and write-in ballots;
- Tracks absentee results by a user determined method defined in the election definition;
- Clearing of vote counts to permit rescanning for accidental user counting errors;
- Generates printed reports on-demand to provide up-to-the-minute totals by precinct, city, or by county;
- Provides report options for inclusion of over and under-votes, totals per race, ranking of candidate by votes received, certification messages and write-ins;
- Provides a time/date stamped audit log of scanner activities on a separate printer.
- Saves election results to a zip disk in order to make a permanent record of the election, transfer to ERM or to use as backup data;
- Permits adding of vote totals from a zip disk into the scanner; and
- Network card can be removed to disable networking capabilities (Networking is excluded from testing in Unity 3.2.0.0.

4.4 *Election Management System- Post Voting Capabilities*

The post vote consolidation and reporting functions are performed by the Election Reporting Manager.

4.4.1 *Election Reporting Manager*

Election Reporting Manager (ERM) is ES&S's election results reporting program. ERM is designed to display updated election totals on a monitor as election data is consolidated. ERM:

- Supports configuration of uses and user permissions to limit access to specific functions;
- Warns the user when votes are present in the election database at startup;
- Supports creation of the Results Database for an election;'
- Supports creation and definition of Groups;
- Only supports importation of election results from the M650 on zip disks and DS200 on USB memory drives in Unity 3.2.0.0;
- Supports manual entry of hand counted election results;
- Supports close out of Precincts with no ballots cast;

- Generates paper and electronic reports: including ; Precinct, Precinct Group Detail, Election Summary, election Summary with Group Detail, Canvas (Numbered Key, Statistics, Numbered Key Districts only, Numbered Key Districts Turnout only, Name heading, District Totals, Block Style, Jurisdiction, Local Office, Precincts Counted Precincts Completed Listing, Precincts Process Listing), and System Log;
- Supports temporary suppression and subsequent release of precinct results for unique circumstances that may require investigation prior to release of results to prevent counting errors or vote total altering problems;
- Supports merging of election results from multiple ERM with files transferred on 3.5 inch disk or other appropriate memory devices. It does not support transmission of results via the public telephone or a local area network in Unity 3.2.0.0 (no testing was performed for network transmission of results);
- Support creation of state specific transfer and web files;
- Was not submitted for use with the iVotronic or M100 scanner in Unity 3.2.0.0 (no testing was performed with these tabulators).

5 Certification Review and Test Results

The results and evaluations of the PCA and FCA reviews tests are identified below. Detailed data regarding the Acceptance/Rejection criteria, reviews and tests are found in the appendices.

- Appendix A identifies all certification test requirements traced to specific Test Cases
- Appendix B identified the PCA Source Code Review Acceptance/Rejection criteria
- Appendix C identifies the PCA TDP Document Review Acceptance/Rejection criteria
- Appendix D identifies all FCA Testing Acceptance/Rejection criteria
- Appendix E identifies the PCA and FCA Discrepancies reported during review and testing

5.1 *PCA Source Code Review*

The source code review was performed by SysTest in the Unity 4.0.0.0 test effort. Documentation of that review is addressed in the Summary Report of the testing performed by SysTest. iBeta performed a 3% Source Code Review and provided a recommendation to the EAC regarding reuse of the SysTest code review for Unity 3.2.0.0. Any subsequent changes to source code submitted by ES&S for Unity 3.2.0.0 were review by iBeta.

During receipt and check in of the Unity 3.2.0.0 source code delivered by ES&S, iBeta observed if the source code version control was consistent with the ES&S configuration management practices.

5.1.1 *3% Source Code Review Assessment for Reuse Results*

The 3% source code review was conducted using iBeta's standard PCA Source Code Review Procedure. The detailed process for this review is found in Appendix H Amended Test Plan section 2.1.3.1 Documentation of the 3% Source Code Review Process. This detail includes information about the language specific interpretations VSS 2002 (Vol. 1 Sect. 4.2.2 through 4.2.7, 6.2 & 6.4.2; and Vol. 2 Sect. 2.4.5.d & 5.4.2), use of analysis tools, sampling selection, management of code, and peer review.

Potential logic issues, flagged as yellow, needed an EAC decision. There were no confirmed logic issues, which otherwise would have been flagged red. These were submitted to the EAC as individual discrepancy spreadsheets provided as separate confidential compressed files delivered on CD.

A total of 330 discrepancies were identified. The majority, 307 or 93%, were categorized as non-logic issues (Green- comments, headers, formatting, and style only, recommendation of reuse). The remaining 23 discrepancies were categorized as Yellow EAC Decision. These discrepancies with ES&S responses were forwarded to the EAC with the iBeta recommendation (see Appendix B). There were no confirmed logic issues (Red- recommendation of 100% review).

ES&S provided justification for non-compliance or their disagreement with the iBeta interpretation of the VSS 2002 requirements. As iBeta had established a precedent in testing for other clients and the iBeta interpretations must be applied consistently to all manufacturers under test with iBeta. However, iBeta acknowledged that in some instances other interpretations are possible and the EAC Reviewers could determine if these alternative interpretations were acceptable.

In order to provide a recommendation, iBeta evaluated the results of the 3% source code review. Whereas the results would be recommended for acceptance if only non-significant discrepancies were found (i.e. less critical requirement or interpretations inconsistent with documented industry accepted practices), there were discrepancies written that potentially impact the source code. Thus iBeta initiated two additional analyses:

- iBeta confirmed that the results of the 3% source code review were consistent with the previous results (not identical but consistent). This confirmation was reached by reviewing the types of discrepancies generated by SysTest in the 100% review against those generated by iBeta.
- iBeta reviewed the severity of the discrepancies identified and assessed that the number of discrepancies potentially impacting the source code is considered very low versus the overall number of discrepancies consistent with a 100% review. The severity of the discrepancies and the manufacturer responses further indicate that the majority of the potential logic discrepancies would be resolved without source code modifications.

Based on the limited or perhaps non-impact on the source code as a result of these discrepancies, iBeta recommended reuse of the results of the SysTest source code review. In EAC letter to iBeta QA Director on reuse of testing the EAC approved the reuse of the source code review conducted by SysTest Labs. The data supporting this review are found in Appendix B.

5.1.2 *Unity 3.2.0.0 Source Code Review Results*

The code submitted for reuse was a baseline that remained essentially unchanged during the iBeta portion of certification testing. ES&S did submit a minor update to Audit Manager which was reviewed and incorporated into a

witnessed build prior to iBeta initiating testing. ES&S' configuration management policy does not permit them to perform a new build with the same version information. Hence the source code had to be updated to reflect a new build version for the Trusted Builds performed by iBeta. ES&S resubmitted code with the updated versions. iBeta performed a differences check and confirmed if review of the code was required. If any changes requiring code review were found, the code was reviewed. There were no discrepancies in any of the code delivered for the initial Trusted Build. Functional discrepancies 121 and 151 required delivery of software fixes in ERM and the DS200 Firmware. A limited number of header comment discrepancies were identified in ERM and forwarded to ES&S for resolution.

The data supporting this review are found in Appendix B. No instances of inconsistency in the version control of code delivered by ES&S was noted.

5.2 *PCA TDP Document Review*

The PCA Technical Data Package Document Review was performed by SysTest in the Unity 4.0.0.0 test effort. Documentation of that review is contained in the attached document Summary Report of the testing performed by SysTest. As part of ES&S' petitioned to reuse the Unity 4.0.0.0 TDP without removing the products that were out of scope of Unity 3.2.0.0. In permitting ES&S to do this, the EAC required a disclaimer be inserted into the individual documents clearly identifying the out of scope product content and that the out of scope content and products were not certified in Unity 3.2.0.0.

As instructed by the EAC iBeta performed an audit to assess and recommend if any additional review was required. The audit of the ES&S Unity 3.2.0.0 Technical Data Package (TDP) was in accordance with the EAC instructions. iBeta sampled the ES&S Unity 3.2.0.0 documents. The sample selection included the documents identified in the SysTest Labs issued discrepancies and documents needed to complete the Unity 3.2.0.0 trusted builds, a sample 3% source code review, test planning and test execution. Criteria for the review included confirmation that the Unity 3.2.0.0 documents addressed any document discrepancies within the scope of the Unity 3.2.0.0 test effort and the content provided sufficient information in order to complete the test tasks list above.

During receipt and check in of the Unity 3.2.0.0 TDP iBeta observed if document version control was consistent with the ES&S configuration management practices.

5.2.1 *Unity 3.2.0.0 TDP PCA Document Review Results*

iBeta identified the SysTest PCA Document Review of Unity 4.0.0.0 adequate for reuse. This was reported to the EAC Links to the applicable recommendation and reuse approval are contained in Appendix C. Any errors or nonconformities observed in this review and any subsequent use of the documentation was summarized in Appendix E- Discrepancy Report. Documentation of corrections and verification of corrections are contained in each summary. Any instance of inconsistency in the version control of the delivered documents was reported as an informational issue.

5.3 *FCA Functional System Level, Accessibility, Maintainability, Accuracy & Reliability Testing and Reuse of Testing*

The Functional System Level, Accessibility, Maintainability, Accuracy and Reliability test was performed by SysTest in the Unity 4.0.0.0 test effort. Documentation of that testing is contained in the attached document Summary Report of the testing performed by SysTest.

iBeta performed a single regression end-to-end mock election to demonstrate the integrated functionality and processes of the ES&S Unity 3.2.0.0. Additional functional system level test coverage was provided in the Volume suite of tests. Testing was conducted on the system configuration identified in Section 3. The application was tested for the pre-vote and post vote election management system of the Unity 3.2.0.0 voting system and the voting/counting functionality of the AutoMARK VAT, DS200 and M650 optical scanners.

5.3.1 *Evaluation for Reuse of the SysTest Labs Testing: Functional, Accessibility, Maintainability, Accuracy & Reliability Test Results*

Section 5.3.1 is provided by the EAC and is also contained in the approved test plan Appendix D EAC Reuse of Testing Review Process

Due to the suspension of accreditation of a VSTL this project was moved from that VSTL to iBeta as requested by ES&S and approved by the EAC. This very unusual circumstance required that a transition plan be developed for the orderly transition of the project. A number of factors impacted the development of this transition plan.

The overriding consideration had to be that the quality of the evaluation meets the EAC's standards for excellence and that any decision to certify the system be clearly based on rigorous and thorough testing. If other legitimate concerns could also be met then every attempt was made to do so. Among those considerations was the timely evaluation of the system, avoiding duplicative testing that provided little real value and supporting the needs of election officials for improvements and upgrades.

In developing a transition plan a number of factors were taken into consideration:

1. The quality of testing already performed was evaluated. In some cases iBeta was directed to review or audit that testing. Another factor was the probability that testing to be performed by iBeta would identify any system issues that may have been missed in prior testing. In some cases iBeta was directed to modify the testing it would do to provide additional checks and redundancy in areas of particular concern.

2. Prior versions of this system are in wide use. In addition individual states and other organizations have conducted their own, independent evaluation of either this exact system or very similar prior versions. This provides a significant body of information from both experience in actual elections and testing performed for other purposes.

All these sources of information were used in developing the transition plan. A risk assessment was made and a transition plan approved. This plan allowed for reuse of some testing, reuse of some testing after an audit and recommendation by iBeta, and requirements for further testing or correlated testing by iBeta. The results of this evaluation were communicated to ES&S and iBeta in several E-Mails and letters between November 2008 and letters dated February 3, 2009 and February 12, 2009. In those communications the following was approved:

1. All hardware testing was approved for reuse.
2. The technical data package review was approved after an audit of that review and recommendation for reuse by iBeta.
3. The source code review was approved after a 3% audit and recommendation for reuse by iBeta.
4. The EAC Technical Reviewers reviewed the Functional, Accessibility, Maintainability, Accuracy, and Reliability test summary reports provided by SysTest on the DS-200, M650, AutoMARK VATs, Ballot-on-Demand printer, and Unity EMS software. The EAC approved the reuse of this testing.
5. The Volume, Stress, Error Recovery and Security test methods and testing had not yet been completed. Accordingly iBeta was to perform this testing on the Unity 3.2.0.0 system.
6. A new test plan for the Unity 3.2.0.0 system was prepared by iBeta using applicable areas from the Unity v.4.0.0.0 test plan.

5.3.2 *Regression Functional & System Level Test Results*

iBeta validated the testing performed by SysTest Labs by confirmed that Unity 3.2.0.0 met a sampling of the VSS 2002 requirements outlined in Appendix A and the test case.. Any functionality that did not meet the requirements of the VSS 2002 was reported to ES&S. Fixes were submitted and the failed tests were rerun.

Appendix D Section 7.4.1.2 Regression System Level Test Results details specific information on the Functional and System Integration Testing. Failures, errors, nonconformities and anomalies observed during testing by iBeta are summarized in Appendix E- Discrepancy Report. Any relevant Unity 4.0.0.0 issues that remained open at the time of transfer were incorporated into Appendix E- Discrepancy Report. Documentation of corrections and verification of corrections are contained in each issue summary.

5.4 *FCA Volume, Stress, and Error Recovery Testing*

The Volume Stress and Error Recovery Tests were performed by iBeta. ES&S provided documentation of their system limitations and information regarding the largest jurisdiction for each limit. While the capacity varied for each limit, iBeta observed that for each limit, the system limit capacity ranged from 115% to 474% of ES&S' largest jurisdiction.

iBeta performed 10 test cases with maximum and overloaded volume scenarios to test the various system limit conditions identified in the *System Limitations Unity 3.2.0.0* document. In discussions with the EAC it was agreed that the Volume test scenarios would incorporate validation that the system could perform to the identified system limit. Stress and error recovery conditions would validate that appropriate responses were encountered for overloaded conditions. Appropriate responses were to handle the overload, generate an error, or if the system halts processing without generating an error, the system recovers without any loss of data.

Due to the substantial excess capacity of the limits to the ES&S' real world customer base, during the test process additional limits or limiting factors were identified. These limits or limiting factors were previously unidentified because they were substantially beyond the capacity needed by ES&S' customer base. As these were identified

test cases were modified to incorporate the newly identified conditions. While this did not change the scope of the overall Volume, Stress and Error Recovery testing it did involve reworking of several test cases and test scenarios. (Example: Testing of the 2900 precinct limit was moved from Volume 1 Test Case to Volume 9 Test Case.). These modifications were identified in the individual test cases.

Additionally error recovery was addressed in the source code review of the requirement v.1: 4.2.3.e which specifies a single exit point and SysTest Labs' power recovery test results which validated recovery from power or system failure without loss of vote data and the minimum two hour back-up power.

Testing by iBeta was conducted on the system configuration identified in Section 3. The application was tested for the system limits, overload conditions and error recovery of the Unity 3.2.0.0 voting system and the voting/counting functionality of the AutoMARK VAT, DS200 and M650 optical scanners.

5.4.1 *Volume, Stress and Error Recovery Test Results*

iBeta confirmed that Unity 3.2.0.0 could process the maximum system limits identified in the *System Limitations Unity 3.2.0.0* document and appropriate responses were encountered for overloaded and error conditions.

Appendix D FCA Volume (Volume Stress, Performance and Error Recovery) Testing details specific information on the Volume, Stress, and Error Recovery Testing. Failures, errors, nonconformities and anomalies observed during testing by iBeta are summarized in Appendix E- Discrepancy Report. Documentation of corrections and verification of corrections are contained in each issue summary. Discrepancy 144 (misread of a ballot mark) was referred to the EAC for interpretation. Their response is provided as part of the issue and validation.

5.5 *FCA Security Review and Testing*

iBeta's security specialist, a Certified Information System Security Profession, supervised execution of a security analysis of the threat model for the applicable Unity 3.2.0.0 Security TDP documents to the requirements of the VSS 2002 Vol.1 Sect. 2.2.1 a to -g, 2.2.2.1 d & e, 2.2.3 a-c, 2.2.4.1 e, f, g, i & j, 2.2.4.2, 2.2.5.3 , 4.5, and section 6. First the analysis identified VSS 2002 security requirements that were currently addressed in the standard testing, source code and document reviews. The analysis next identified any unique voting system specific tests, source code and document reviews that were needed. The tests, source code or documents reviews were traced to the VSS 2002 requirement in the FCA Security Review and Testing table. The results of the standard tests and reviews were recorded in the applicable FCA Functional and System Integration Testing, PCA Source Code Review or the PCA Document Review. The unique tests and reviews were documented in the FCA Security Review and Testing table. This documentation included the steps, acceptance and rejection criteria, and results. Appendix D contains the FCA Security Review and Testing table and the specific Test Methodology. In the initial document review gaps were noted in the content of the Security documentation. These were identified as discrepancies 55 though 84 (see Appendix E- Discrepancy Report). Responses provided to many of these discrepancies were used to complete the test criteria for the Security Review and Testing.

In order to comply with the security test requirements identified in Vol.2 Sect. 6.4 of the VSS 2002. iBeta approached security testing of the VSS 2002 by first creating test scenarios which discounted the exposure to risk and excluded physical security procedures. However, in establishing acceptance and rejection criteria, iBeta assessed the potential exposure to risk and included physical security procedures as an acceptable security control, per the requirements of Vol. 1 Sect. 7.3 of the VSS 2002. To assess if an access control was effective iBeta considered the degree to which one or more of the following security controls was present: physical security procedures, password protection, detection in an audit, technical expertise required, obfuscation of sensitive material, and encryption of sensitive material. In determining potential exposure to risk the security specialist considered access from the user and if the exposure was from a trusted user or non-trusted user. Systems were accepted as meeting the security requirements of the VSS 2002 if the security controls present were deemed effective to address the identified risk.

Testing was conducted on the system configuration identified in Section 3. The unique security tests and reviews were grouped over together by the individual products of the Unity 3.2.0.0 voting system (M650, DS200, VAT, AIMS, and the Unity applications, EDM, ESSIM, HPM, and ERM).

5.5.1 *FCA Security Review and Test Results*

Testing, source code and document reviews of the Unity 3.2.0.0 voting system found the system met the applicable VSS 2002 security requirements identified in the security analysis. Appendices A, B, C and Appendix D Security Review and Testing Method provide specific information on the FCA Security Review and Testing. Failures, errors, nonconformities and anomalies observed in review and testing are summarized in Appendix E- Discrepancy Report. Documentation of corrections and verification of corrections are contained in each summary. Discrepancies 121,

126, 132, and 151were referred to the EAC for interpretation. The EAC required resolution of 121 and 151. They accepted 126 and 132. Their responses are provided as part of the issue and validation.

5.6 *FCA Hardware Environmental Testing & Reuse*

SysTest Lab's and their subcontractors completed hardware environmental testing for the Unity 4.0.0.0 voting system. The hardware of the Unity 3.2.0.0 is a subset of the tested hardware. ES&S petitioned the EAC for reuse of this testing in the Unity 3.2.0.0 certification test effort. SysTest documented that testing is addressed in the Summary Report of the testing performed by SysTest. In the February 3, 2009 EAC letter to iBeta QA Director on reuse of testing the EAC authorized the reuse of the hardware testing conducted by SysTest's sub-contractors. In order to ensure that these test results provided sufficient documentation of the Environmental Hardware test assessment and results iBeta reviewed the reports to confirm any failures resulting in engineering changes were documented and the reports document that all hardware submitted under Unity 3.2.0.0 passed.

The hardware environmental testing was conducted on the system configuration identified in Section 3.

5.6.1 *FCA Hardware Environmental Tests*

SysTest reports the hardware tested in the Unity 4.0.0.0 passed the environmental tests. The result of the iBeta review generated requests for clarification or additional documentation from SysTest Labs. These requests were documented in issues 1, 2, 3, 6, 7, 8, and 9 of iBeta's *Unity 3.2.0.0 Discrepancy Report* (see Appendix E- Discrepancy Report). Responses to all issues were accepted. Issues 6 and 7 were accepted by iBeta but were referred to the EAC for determination of sufficient documentation for test result reuse. These issues are traced to the Test Report and Tested Configuration Matrixes in Appendix D.

5.7 *FCA Telephony and Cryptographic Review and Testing*

As noted in section 1.2 the Unity 3.2.0.0 Voting System does not use the public networks or any other network. As such it is exempt from the Telecommunications requirements of Vol. 1 Sect. 5 & 6. The Telephony and Cryptographic Review and Testing were conducted to confirm the absence of network functionality.

5.7.1 *FCA Telephony and Cryptographic Review and Tests*

iBeta confirmed that the Unity 3.2.0.0 voting system election management hardware and installation procedures reflect the prohibition of connection of the certified system to a public or any other network. Polling place equipment was inspected to confirm modem hardware was not present. The M650 was inspected to confirm that network cards were not present. Appendix D details specific information on the Telephony and Cryptographic Review and Testing. Failures, errors, nonconformities and anomalies observed in testing are summarized in Appendix E- Discrepancy Report. Documentation of corrections and verification of corrections are contained in each summary.

6 Opinions & Recommendations

In addition to the portions SysTest Labs testing of Unity 4.0.0.0 accepted for reuse by the EAC, iBeta Quality Assurance has completed the testing of ES&S Unity 3.2.0.0 voting system. Testing prescribed by the iBeta test plan or amended test plan was performed as identified. Documentation of any divergence from the test plan was included in the amended as run test plan (see Appendix H). All identified anomalies or failures were reported and resolved. Questions with regard to iBeta's interpretation of the test standards were referred to the EAC. All relevant EAC interpretations were documented in iBeta's verification of resolution. The information provided in this report is an accurate representation of the ES&S Unity 3.2.0.0 voting system Certification test effort.

Based upon the findings identified in Section 5 it is our opinion that the acceptance requirements of the Federal Election Commission Voting System Standards April 2002 have been met as demonstrated in testing and EAC interpretations of the presented test results for the hardware, software and user documentation of the system configuration submitted for certification testing.

iBeta Quality Assurance recommends that the Election Assistance Commission certifies the ES&S Unity 3.2.0.0 voting system.

See Appendix K for information regarding the EAC Certification number.

Carolyn E. Coggins
QA Director – Voting
iBeta Quality Assurance

Note: The system configuration of the Unity 3.2.0.0 voting system submitted for certification by ES&S explicitly excluded connection to any network (public or private). Modification of the hardware or operating system configuration to permit connection to a network invalidates the recommendations of this test report.

7 APPENDICES: TEST OPERATION, FINDINGS & DATA ANALYSIS

The Voting System Test Laboratory Program Manual v.1.0 Appendix B identifies content in specific appendices. In order to ensure that this content and content required by VSS 2002 Volume 2 Appendix B a trace is provided in section 1.4 to clarify the location of this specified content

7.1 *Appendix A: Certification Test Requirements*

Appendix A identifies the test results to the Certification Test Requirement of the *VSS 2002.* Requirements marked:

- Accept: met the *VSS 2002* requirement
- Reject: did not meet the *VSS 2002* requirement
- NA: the requirement is not applicable to the voting system type submitted for Certification Testing
- Pending: *VSS 2002* requirements that cannot be completed by the VSTL until after Certification
- Out of Scope: *VSS 2002* requirements which are performed by entities other than the VSTL

Requirements marked Reject, NA, Pending or Out of Scope shall include an explanatory note. (Example: If a voting system is only a Central Count Scanner, the requirement is marked “NA” and a comment indicates “Not a DRE.")

Optional requirements which apply to the voting system type but are not supported by the ES&S Unity 3.2.0.0 voting system are not marked "NA". Instead they are marked “Accept”, with an explanatory comment. The reason for this is to provide a positive identification that iBeta reviewed the voting system for all applicable requirements, including this optional functionality and confirmed non-support. (Example: If a voting system does not have a VVPAT. The requirements are marked “Accept” and a comment indicates “DRE does not have a VVPAT”.)

The test case trace corresponds to the Test Methods identified in the Appendix H- Amended Test Plan and Appendix D- FCA Testing.

- F= SysTest PCA Document Review, Source Code Review, Functional System Level, Accessibility, Maintainability, Accuracy & Reliability Reuse;
- R = Regression sampling of system functionality;
- V#= Volume 1 through 10 for testing of identified system limits;
- S = Security;
- T= Telephony & Cryptographic; and
- E= SysTest subcontractor Environmental

Many functional requirements were exercised in multiple test cases. These instances are noted in the Function Exercised column. The actually test case or test method might not contain a requirement trace in these instances.

Issues identified during testing are cross-referenced to the Appendix E- Discrepancy Report.

EAC Decisions on Requests for Interpretation which were applicable to the voting system submitted for certification testing are noted in the comments

Maufacturer Voting System & Version	Scope	Prior EAC Certification
ES&S Unity 3.2.0.0 Voting System	Full VSS 2002	Initial EAC Certification

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
2.2	**Overall System Capabilities**				
2.2.1	**Security** System security is achieved through a combination of technical capabilities and sound administrative practices. Te ensure security all systems shall:				
a.	Provide security access controls that limits limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	Accept	S	R	#61, 62, 63, 69, 76, 121, 130,131,126, 132 138, 139, 150- Closed
b.	Provide system functions that are executable only in the intended manner and order, and only under the intended conditions.	Accept	S, R		#135 - Closed
c.	Use the system's control logic to prevent a system function from executing, if any preconditions to the function have not been met.	Accept	S, R		
d.	Provide safeguards to protect against tampering	Accept	S		#126 Closed

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	during system repair, or interventions in system operations, in response to system failure.				
e.	Provide security provisions that are compatible with the procedures and administrative tasks involved in equipment preparation, testing, and operation.	Accept	S	R	#55, 83 Closed
f.	If access to a system function is to be restricted or controlled the system shall incorporate the means of implementing this capability.	Accept	S	R	#118, 119 - Closed
g.	Provide documentation of mandatory administrative procedures for effective system security.	Accept	S		#36, 56, 76 Closed
2.2.2	**Accuracy** To ensure vote accuracy, all systems shall:				
2.2.2.1	Common Standards to Ensure Vote Accuracy To ensure vote accuracy, all systems shall:				
a.	Records the election contests, candidates, and issues exactly as defined by election officials.	Accept	F, R	V1-10	
b.	Records the appropriate options for casting and recording votes.	Accept	F, R	V1-10	
c.	Records each vote precisely as indicated by the voter and have the ability to produce an accurate report of all votes cast.	Accept	F, R	V1-10	RFI 2007-06 #19, 28, 144 -Closed
d.	Control logic and data processing methods incorporation parity and check sums (or equivalent error detection and correction methods) to demonstrate the system has been designed for accuracy.	Accept	S		#57, 80, 127, 13, 132- Closed
e.	The software monitors the overall quality of data read-write and transfer quality status, checks the number and types of errors that occur in any of the relevant operations on data and how they were corrected.	Accept	S		#58, 80 - Closed
2.2.2.2	DRE System Standards In additional DRE systems shall:				
	As an additional means of ensuring accuracy in DRE systems, voting devices record and retain redundant copies of the original ballot image. A ballot image electronic record of all votes cast by the voter, including undervotes.	NA			RFI 2007-06 No DRE
2.2.3	**Error Recovery** To recover from a non-catastrophic failure of a device, or from any error or malfunction that is within the operator's ability to correct, the system shall provide the following capabilities:				
a.	Restoration of the device to the operating condition existing immediately prior to an error or failure, without loss or corruption of voting data previously stored in the device	Accept	S, V1-10, R, F		
b.	Resumption of normal operation following the correction of a failure in a memory component, or in a data processing component, including the central processing unit	Accept	S, R, F		
c.	Recovery from any other external condition that causes equipment to become inoperable, provided that catastrophic electrical or mechanical damage due to external phenomena has not occurred.	Accept	S, R, F		#140 - Closed
2.2.4	**Integrity** Integrity measures ensure the physical stability and function of the vote recording and counting processes. To ensure system integrity, all				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	systems shall:				
2.2.4.1	Common Standards To ensure system integrity, all systems shall:				
a.	Protect against a single point of failure that would prevent further voting at the polling place.	Accept	F	R	
b.	Protects against the interruption of electronic power.	Accept	F, V-	S	
c.	Protects against electromagnetic radiation.	Accept	E		
d.	Protects against the ambient temperature and humidity fluctuations.	Accept	E		
e.	Protects against failure of any data input or storage device.	Accept	S, V4	F, R	#74 - Closed
f.	Protects against any attempt at improper data entry or retrieval	Accept	S	F, R	
g.	Records and reports of any normal or abnormal events.	Accept	S		#121,150, 151-Closed
h.	Maintains a permanent record of original audit data that cannot be bypassed or turned off.	Accept	S	F, R	
i.	Detect and record every event, including the occurrence of an error condition that the system cannot overcome, and time-dependent or programmed events that occur without the intervention of the voter or a polling place operator	Accept	R	S, F	#64- Closed
j.	Include built-in measurement, self-test, and diagnostic software and hardware for detecting and reporting the system's status and degree of operability	Accept	S		#65- Closed
2.2.4.2	DRE Systems Standards In addition to the common requirements, DRE systems shall:				
a.	Maintain a record of each ballot cast using a process and storage location that differs from the main vote detection, interpretation, processing, and reporting path	NA			No DRE
b.	Provide a capability to retrieve ballot images in a form readable by humans	NA			No DRE
2.2.5	**System Audit** See the requirement for context of these requirements.				RFI 2008-12
2.2.5.2	Operational Requirements				
	Audit records shall be prepared for all phases of election operations performed using devices controlled by the jurisdiction or its contractors. These records rely upon automated audit data acquisition and machine-generated reports, with manual input of some information. These records shall address the ballot preparation and election definition phase, system readiness tests, and voting and ballot-counting operations. The software shall activate the logging and reporting of audit data as described below.	Accept	S, R, F	V1, 2, 6 - 10	
2.2.5.2.1	Time, Sequence, and Preservation of Audit Records The timing and sequence of audit record entries is as important as the data contained in the record. All voting systems shall meet the requirements for time, sequence and preservation of audit records outlined below.				
a.	Except where noted, systems shall provide the capability to create and maintain a real-time audit record. This capability records and	Accept	S, R, F	V1, 2, 6 - 10	#93, 99, 105 - Closed

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	provides the operator or precinct official with continuous updates on machine status. This information allows effective operator identification of an error condition requiring intervention, and contributes to the reconstruction of election-related events necessary for recounts or litigation.				
b.	All systems shall include a real-time clock as part of the system's hardware. The system shall maintain an absolute record of the time and date or a record relative to some event whose time and data are known and recorded.	Accept	S, R, F	V1, 2, 6 - 10	
c.	All audit record entries shall include the time-and-date stamp.	Accept	S, R, F	V1, 2, 6 - 10	
d.	The audit record shall be active whenever the system is in an operating mode. This record shall be available at all times, though it need not be continually visible.	Accept	S, R, F	V1, 2, 6 - 10	
e.	The generation of audit record entries shall not be terminated or altered by program control, or by the intervention of any person. The physical security and integrity of the record shall be maintained at all times.	Accept	S, R, F	V1, 2, 6 - 10	#126 - closed
f.	Once the system has been activated for any function, the system shall preserve the contents of the audit record during any interruption of power to the system until processing and data reporting have been completed.	Accept	S, R, F	V1, 2, 6 - 10	
g. 1) 2) 3)	The system shall be capable of printing a copy of the audit record. A separate printer is not required for the audit record, and the record may be produced on the standard system printer if all the following conditions are met: • The generation of audit trail records does not interfere with the production of output reports • The entries can be identified so as to facilitate their recognition, segregation, and retention • The audit record entries are kept physically secure	Accept	S, R, F	V1, 2, 6 - 10	
2.2.5.2.2	Error messages All voting systems shall meet the requirements for error messages below.				
a.	The voting system shall generate, store, and report to the user all error messages as they occur.	Accept	S, R, F	V1, 2, 6 - 10	#151 - Closed
b.	All error messages requiring intervention by an operator or precinct official shall be displayed or printed clearly in easily understood language text, or by means of other suitable visual indicators.	Accept	S, R, F	V1, 2, 6 - 10	92, 129 - Closed
c.	When the voting system uses numerical error codes for trained technician maintenance or repair, the text corresponding to the code shall be self-contained or affixed inside the voting machine. This is intended to reduce inappropriate reactions to error conditions, and to allow for ready and effective problem correction.	Accept	S, R, F	V1, 2, 6 - 10	
d.	All error messages for which correction impacts	Accept	S, R, F	V1, 2, 6 -	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	vote recording or vote processing shall be written in a manner that is understandable to an election official who possesses training on system use and operation, but does not possess technical training on system servicing and repair.			10	
e.	The message cue for all voting systems shall clearly state the action to be performed in the event that voter or operator response is required.	Accept	S, R, F	V1, 2, 6 - 10	#98, 111 - Closed
f.	Voting system design shall ensure that erroneous responses will not lead to irreversible error.	Accept	S, R, F	V1, 2, 6 - 10	
g.	Nested error conditions are corrected in a controlled sequence such that voting system status shall be restored to the initial state existing before the first error occurred.	Accept	S, R, F	V1, 2, 6 - 10	
2.2.5.2.3	Status Messages The Standards/Guidelines provide latitude in software design so that vendors can consider various user processing and reporting needs. The jurisdiction may require some status and information messages to be displayed and reported in real-time. Messages that do not require operator intervention may be stored in memory to be recovered after ballot processing has been completed.				
	The voting system shall display and report critical status messages using clear indicators or English language text. The voting system need not display non-critical status messages at the time of occurrence. Voting systems may display non-critical status messages (i.e., those that do not require operator intervention) by means of numerical codes for subsequent interpretation and reporting as unambiguous text.	Accept	S, R, F	V1, 2, 6 - 10	
	Voting systems shall provide a capability for the status messages to become part of the real-time audit record.	Accept	S, R, F	V1, 2, 6 - 10	
	The voting system shall provide a capability for a jurisdiction to designate critical status messages.	Accept	S, R, F	V1, 2, 6 - 10	
2.2.5.3	COTS General Purpose Computer System Requirements See the standards for the context these requirements. Three operating system protections are required on all such systems on which election software is hosted.				RFI 2008-03 RFI 2008-12
	Authentication shall be configured on the local terminal (display screen and keyboard) and on all external connection devices (“network cards” and “ports”). This ensures that only authorized and identified users affect the system while election software is running.	Accept	S		
	Operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object. This ensures the accuracy and completeness of election data stored on the system. It also ensures the existence of an audit	Accept	S		#123, 124,138, 139 - Closed

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	record of any person or process altering or deleting system data or election data.				
	The system shall be configured to execute only intended and necessary processes during the execution of election software. The system shall also be configured to halt election software processes upon the termination of any critical system process (such as system audit) during the execution of election software.	Accept	S		#66, 78, 122, 125 - Closed #146 - Open Informational only
2.2.6	**Election Management System**				
	The Election Management System (EMS) is used to prepare ballots and programs for use in casting and counting votes, and to consolidate, report, and display election results. An EMS shall generate and maintain a database, or one or more interactive databases, that enables election officials or their designees to perform the following functions:	Accept	F, R	V1, 2, 6 - 10	
a.	Define of the political subdivision boundaries and multiple election districts, as indicated in the system documentation.	Accept	F, R	V2, 6	
b.	Identify of contests, candidates, and issues.	Accept	F, R		
c.	Define of ballot formats and appropriate voting options.	Accept	F, R	V1, 2, 6 - 10	
d.	Generate ballots and election-specific programs for vote recording and vote counting equipment.	Accept	F, R	V1, 2, 6 - 10	#104 - Closed
e.	Install ballots and election-specific programs.	Accept	F, R	V1, 2, 6 - 10	
f.	Test that ballots and programs have been properly prepared and installed.	Accept	F, R	V1, 2, 6 - 10	
g.	Accumulate vote totals at multiple reporting levels as indicated in the system documentation.	Accept	F, R	V1, 2, 6 - 10	
h.	Generate of post-voting reports per Section 2.5.	Accept	F, R	V1, 2, 6 - 10	
i.	Process and produce audit reports of the data indicated in Section 4.5.	Accept	F, R	V1, 2, 6 - 10	
2.2.7	**Accessibility**				
2.2.7.1	Common Standards See the standard for diagrams. The voting system meets the following conditions:				
a.	Where clear floor space only allows forward approach to an object, the maximum high forward reach allowed shall be 48inches. The minimum low forward reach is 15 inches.	Accept	F		
b.	Where forward reach is over an obstruction with knee space below, the maximum level forward reach is 25 inches. When the obstruction is less than 20 inches deep, the maximum high forward reach is 48 inches. When the obstruction projects 20 to 25 inches, the maximum high forward reach is 44 inches.	Accept	F		
c.	The position of any operable control is determined with respect to a vertical plane that is 48 inches in length, centered on the operable control, and at the maximum protrusion of the product within the 48-inch length.	Accept	F		
d.	Where any operable control is 10 inches or less behind the reference plane, have a height that is between 15 inches and 54 inches above the floor.	Accept	F		
e.	Where any operable control is more than 10 inches and not more than 24 inches behind the	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	reference plane, have a height between 15 inches and 46 inches above the floor.				
f.	Have operable controls that are not more than 24 inches behind the reference plane.	Accept	F		
2.2.7.2	**DRE Standards for Accessibility** DRE voting systems shall provide, as part of their configuration, the capability to provide access to voters with a broad range of disabilities. This capability shall:				
a.	Not require the voter to bring their own assistive technology to a polling place.	Accept	F	R	VAT - Ballot marking only
b	Provide Audio information and stimulus that:				
b.1.	Communicates to the voter the complete content of the ballot.	Accept	F	R	VAT - Ballot marking only
b.2.	Provides instruction to the voter in operation of the voting device.	Accept	F	R	VAT - Ballot marking only
b.3.	Provides instruction so that the voter has the same vote capabilities and options as those provided by the system to individuals who are not using audio technology	Accept	F	R	VAT - Ballot marking only
b.4.	For a system that supports write-in voting, enables the voter to review the voter's write-in input, edit that input, and confirm that the edits meet the voter's intent.	Accept	F	R	VAT - Ballot marking only
b.5.	Enables the voter to request repetition of any system provided information.	Accept	F	R	VAT - Ballot marking only
b.6.	Supports the use of headphones provided by the system that may be discarded after each use	Accept	F		VAT - Ballot marking only
b.7.	Provides the audio signal through an industry standard connector for private listening using a 1/8 inch stereo headphone jack to allow individual voters to supply personal headsets	Accept	F	R	VAT - Ballot marking only
b.8.	Provides a volume control with an adjustable amplification up to a maximum of 105 dB that automatically resets to the default for each voter	Accept	F		VAT - Ballot marking only
c.	Provide, in conformance with FCC Part 68, a wireless coupling for assistive devices used by people who are hard of hearing when a system utilizes a telephone style handset to provide audio information	Accept	F		VAT - Ballot marking only
d.	Meet the requirements of ANSI C63.19-2001 Category 4 to avoid electromagnetic interference with assistive hearing devices	Accept	F		VAT - Ballot marking only
e.	For Electronic Image Displays, permit the voter to:				
e.1.	Adjust contrast settings	Accept	F	R	VAT - Ballot marking only
e.2.	Adjust color settings, when color is used	Accept	F	R	VAT - Ballot marking only
e.3.	Adjust the size of the text so that the height of capital letters varies over a range of 3 to 6.3 millimeters	Accept	F	R	VAT - Ballot marking only
f.	For a devise with touch screen or contact-sensitive controls, provide an input method using mechanically operated controls or keys that shall:				
f.1.	Be tactilely discernible without activating the controls or keys.	Accept	F		VAT - Ballot marking only
f.2.	Be operable with one hand and not require tight grasping, pinching, or twisting of the wrist.	Accept	F		VAT - Ballot marking only
f.3.	Require a force less than 5 lbs (22.2 N) to	Accept	F		VAT - Ballot marking

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	operate.				only
f.4.	Provide no key repeat function.	Accept	F		VAT - Ballot marking only
g.	For a system that requires a response by a voter in a specific period of time, alert the voter before this time period has expired and allow the voter additional time to indicate that more time is needed	Accept	F		VAT - Ballot marking only
h.	For a system that provides sound cues as a method to alert the voter about a certain condition, such as the occurrence of an error, or a confirmation, the tone shall be accompanied by a visual cue for users who cannot hear the audio prompt	Accept	F		VAT - Ballot marking only
i.	Provide a secondary means of voter identification or authentication when the primary means of doing so uses biometric measures that require a voter to possess particular biological characteristics	Accept	F		VAT has no biometric measures
2.2.8	**Vote Tabulating Program**				
2.2.8.1	Functions The vote tabulating program software resident in each voting machine, vote count server, or other devices shall include all software modules required to:				
a.	Monitor of system status and generating machine-level audit reports	Accept	F, R	V1, 2, 6 - 10	
b.	Accommodate device control functions performed by polling place officials and maintenance personnel	Accept	F, R	V1, 2, 6 - 10	
c.	Register and accumulating votes	Accept	F, R	V1, 2, 6 - 10	
d.	Accommodate variations in ballot counting logic	Accept	F, R	V1, 2, 6 - 10	
2.2.8.2	Voting Variation The Technical Data Package accompanying the system shall specifically identify which of the following items can and cannot be supported by the voting system, as well as how the voting system can implement the items support.				
a.	Documented support or non-support of closed primaries.	Accept	F	V10	
b.	Documented support or non-support of open primaries.	Accept	F	R, V9	
c.	Documented support or non-support of partisan offices.	Accept	F	R, V7 &10	
d.	Documented support or non-support of non-partisan offices.	Accept	F	R, V1-6, 8, & 9	
e.	Documented support or non-support of write-in voting.	Accept	F	R	
f.	Documented support or non-support of primary president.	Accept	F		
g.	Documented support or non-support of ballot rotation.	Accept	F		
h.	Documented support or non-support of straight party voting.	Accept	F		
i.	Documented support or non-support of cross-party endorsement	Accept	F		
j.	Documented support or non-support of split precincts.	Accept	F	R	
k.	Documented support or non-support of vote for N of M.	Accept	F	R, V1 to 10	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
l.	Documented support or non-support of recall issues, with options.	Accept	F		
m.	Documented support or non-support of cumulative voting.	Accept	F		
n.	Documented support or non-support of ranked over voting.	Accept	F		
o.	Documented support or non-support of provisional or challenged ballots.	Accept	F		#27 - Closed
2.2.9	**Ballot Counter** For all voting systems, each device that tabulates ballots shall provide a counter that:.				
a.	Can be set to zero before any ballots are submitted for tally	Accept	F, R		
b.	Records the number of ballots cast during a particular test cycle or election	Accept	F, R	V1, 2, 6-10	#137 - Closed
c.	Increases the count only by the input of a ballot	Accept	F, R	V1, 2, 6 - 10	
d.	Prevents or disables the resetting of the counter by any person other than authorized persons at authorized points	Accept	F	R	
e.	Is visible to designated election officials	Accept	F, R	V1, 2, 6 - 10	
2.2.10	**Telecommunications** For all voting systems that use telecommunications for the transmission of data during pre-voting, voting or post-voting activities shall include capabilities to ensure data are transmitted with no alternation or unauthorized disclosure during transmission for:				
	Voter Authentication: Coded information that confirms the identity of a voter for security purposes for a system that transmit votes individually over a public network	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
	Ballot Definition: Information that describes to voting equipment the content and appearance of the ballots to be used in an election	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
	Vote Transmission to Central Site: For voting systems that transmit votes individually over a public network, the transmission of a single vote to the county (or contractor) for consolidation with other county vote data	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
	Vote Count: Information representing the tabulation of votes at any one of several levels: polling place, precinct, or central count	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
	List of Voters: A listing of the individual voters who have cast ballots in a specific election	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
2.2.11	**Data Retention** See standard/guideline for context.				
	All voting systems shall provide for maintaining the integrity of voting and audit data during an election and for a period of at least 22 months thereafter.	Accept	TDP		Attestation from ESS
2.3	**Pre-voting Functions**				#50 Closed
2.3.1	**Ballot Preparation**				
2.3.1.1	General Capabilities				
	All systems shall provide the general capability for ballot preparation, ballot formatting and ballot production. All systems shall be capable of:	Accept	F, R	V1, 2, 6 - 10	
2.3.1.1.1	Common Standards All systems shall be capable of:				
a.	Enable the automatic formatting of ballots in	Accept	F, R	V1, 2, 6 -	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	accordance with the requirements for offices, candidates, and measures qualified to be placed on the ballot for each political subdivision and election district.			10	
b. 1) 2) 3)	Collecting and maintaining the following data: Offices with labels/instructions Candidate names with labels Issues or measures with their text	Accept	F, R		
c.	Supporting the maximum number of potentially active voting positions as indicated in the system documentation.	Accept	F, V8		
d.	For a primary election, generating ballots that segregate the choices in partisan races by party affiliation	Accept	F, R	V7 & 9	
e.	Generating ballots that contain identifying codes or marks uniquely associated with each format.	Accept	F, R	V1, 2, 6 - 10	
f.	Ensuring voter response fields, selection buttons, or switches properly align with the specific candidate names and/or issues printed on the ballot display, ballot card or sheet, or separate ballot pages.	Accept	F, R	V1, 2, 6 - 10	
2.3.1.1.2	Paper-Based System Standards Paper-based voting systems shall also meet the following requirements applicable to the technology used.				
a.	Enable voters to make selections by punching a hole or by making a mark in areas designated for this purpose upon each ballot card or sheet.	Accept	F, R	V1, 2, 6 - 10	
b.	For punchcard systems ensure that the vote response fields can be properly aligned with punching devices used to record votes.	NA			Not a punchcard system
c.	For marksense systems, the timing marks align properly with the vote response fields.	Accept	F, R	V1, 2, 6 - 10	
2.3.1.2	Ballot Formatting All voting systems shall provide a capability for:				
a.	Creation of newly defined elections	Accept	F, R	V1, 2, 6 - 10	
b.	Rapid and error-free definition of elections and their associated ballot layouts	Accept			#136 - Closed
c.	Uniform allocation of space and fonts used for each office, candidate, and contest such that the voter perceives no active voting position to be preferred to any other.	Accept	F, R	V1, 2, 6 - 10	
d.	Simultaneous display of the maximum number of choices for a single contest as indicated by the vendor in the system documentation	Accept	F	V8	
e.	Retention of previously defined formats for an election	Accept	F, R	V1, 2, 6 - 10	
f.	Prevention of unauthorized modification of any ballot formats	Accept	F, R		
g.	Modification by authorized persons of a previously defined ballot format for use in a subsequent election	Accept	F, V3 & 4	S	
2.3.1.3	Ballot Production The voting system shall provide a means of printing or other wise generating a ballot display that can be installed in all system voting devices for which it is intended: All Systems shall provide a capability to ensure.				
2.3.1.3.1	Common Standards The voting system shall provide a means of				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	printing or other wise generating a ballot display that can be installed in all system voting devices for which it is intended: All systems shall provide a capability to ensure.				
a.	The electronic display or printed document on which the user views the ballot is capable of rendering an image of the ballot in any of the languages required by The Voting Rights Act of 1965, as amended	Accept	F	R	RFI 2008-04
b.	The electronic display or printed document where the user views the ballot does not show any advertising or commercial logos of any kind, whether public service, commercial, or political, unless specifically provided for in State law. Electronic displays do not provide connection through hyperlink.	Accept	F	R	#49- Closed
c.	The ballot conforms to vendor specifications for type of paper stock, weight, size, shape, size and location of punch or mark field used to record votes, folding, bleed through, and ink for printing if paper ballot documents or paper displays are part of the system	Accept	F, R	V1, 2, 6 - 10	
2.3.1.3.2	Paper-based System Standards				
	Vendor documentation for marksense systems shall include specifications for ballot materials to ensure that vote selections are read from only a single ballot at a time, without detection of marks from multiple ballots concurrently (e.g., reading of bleed-through from other ballots)	Accept	F	R	
2.3.2	**Election Programming** Process by which election officials or their designees use election databases and vendor system software to logically define the voter choices associated with the contents of the ballots. All systems shall provide for:				
a.	Logical definition of the ballot, including the definition of the number of allowable choices for each office and contest	Accept	F, R	V1, 2, 6 - 10	
b.	Logical definition of political and administrative subdivisions, where the list of candidates or contests varies between polling places	Accept	F, R	V1, 2, 6 - 10	
c.	Exclusion of any contest on the ballot in which the voter is prohibited from casting a ballot because of place of residence, or other such administrative or geographical criteria	Accept	F, R	V1, 2, 7, 9	
d.	Ability to select from a range of voting options to conform to the laws of the jurisdiction in which the system will be used	Accept	F, R	V1, 2, 6 - 10	
e.	Generation of all required master and distributed copies of the voting program, in conformance with the definition of the ballots for each voting device and polling place, and for each tabulating device	Accept	F, R	V1, 2, 6 - 10	
2.3.3	**Ballot and Program Installation and Control** All systems shall include the following at the time of ballot an program installation:				
	All systems provide a means of installing ballots and programs on each piece of polling place or central count equipment according to the ballot requirements of the election and the jurisdiction.	Accept	F, R	V1, 2, 6 - 10	
a.	A detailed work plan or other documentation	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	providing a schedule and steps for the software and ballot installation, including a table outlining the key dates, events and deliverables.				
b.	A capability for automatically verifying that the software has been properly selected and installed in the equipment or in programmable memory devices and for indicating errors.	Accept	F,S	R	
c.	A capability for automatically validating that software correctly matches the ballot formats that it is intended to process, for detecting errors, and for immediately notifying an election official of detected errors.	Accept	F, S	R	
2.3.4	**Readiness Testing** Election personnel conduct voting equipment and voting system readiness tests prior to the start of an election to ensure that the voting system functions properly, to confirm that voting equipment has been properly integrated, and to obtain equipment status reports. All voting systems shall provide the capabilities to				RFI 2008-07 #147 -Closed
2.3.4.1	Common Standards All voting systems shall provide the capabilities to:				
a.	Verify the voting machines or vote recording and data processing equipment, precinct count equipment, and central count equipment are properly prepared for an election, and collect data that verifies equipment readiness	Accept	F, S	R	#32 - Closed
b.	Obtains status and data reports from each set of equipment	Accept	F, R		
c.	Verify the correct installation and interface of all system equipment	Accept	F, R		
d.	Verify that hardware and software function correctly	Accept	F, R		#33, 87- Closed
e.	Generate consolidated data reports at the polling place and higher jurisdictional levels	Accept	F, R	V6, 9	
f.	Segregate test data from actual voting data, either procedurally or by hardware/software features	Accept	F, R		
	Resident test software, external devices, and special purpose test software connected to or installed in voting devices to simulate operator and voter functions used for these tests meeting the following standards:				
a.	These elements are capable of being tested separately, and are proven to be reliable verification tools prior to their use	Accept	F		
b.	These elements are incapable of altering or introducing any residual effect on the intended operation of the voting device during any succeeding test and operational phase.	Accept	F	R	
2.3.4.2	Paper-Based Systems Paper-based systems shall:				
a.	Supports conversion testing that uses all potential ballot positions as active positions	Accept	F	V 8 & 9	
b.	Supports conversion testing of ballots with active position density for systems without pre-designated ballot positions	Accept	F		
2.3.5	**Verification at the Polling Place** All systems shall provide a formal record of the following, in any media, upon verification of the authenticity of the command source:				RFI 2008-07

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
a.	The election's identification data;	Accept	F, R	V1, 2, 6 - 10	
b.	The identification of all equipment units;	Accept	F, R	V1, 2, 6 - 10	
c.	The identification of the polling place;	Accept	F, R	V1, 2, 6 - 10	
d.	The identification of all ballot formats;	Accept	F, R	V1, 2, 6 - 10	
e.	The contents of each active candidate register by office and of each active measure register at all storage locations (showing that they contain only zeros);	Accept	F, R, S	V1, 2, 6 - 10	
f.	A list of all ballot fields that can be used to invoke special voting options	Accept	F		
g.	Other information needed to confirm the readiness of the equipment, and to accommodate administrative reporting requirements	Accept	F, R	V1, 2, 6 - 10	
	To prepare voting devices to accept voted ballots, all voting systems shall provide the capability to test each device prior to opening to verify that each is operating correctly. At a minimum the tests shall include.	Accept	F, R	V1, 2, 6 - 10	
a.	Confirmation that there are no hardware or software failures.	Accept	F, R	V1, 2, 6 - 10	
b.	Confirmation that the device is ready to be activated for accepting votes.	Accept	F, R	V1, 2, 6 - 10	
	If a precinct count system includes equipment for the consolidation of polling place data at one or more central counting locations, it shall have means to verify the correct extraction of voting data from transportable memory devices, or to verify the transmission of secure data over secure communication links.	Accept	F, R	S, V1, 2, 6 -10	Telecommunications is disabled in Unity 3.2.0.0
2.3.6	**Verification at Central Location** Election officials perform verification at the central location to ensure that vote counting and vote consolidation equipment and software function properly before and after an election. Upon verification of the authenticity of the command source, any system used in a central count environment shall provide a printed record of the following:				RFI 2008-07
a.	The election's identification data	Accept	F, R	V1, 2, 6 - 10	
b.	The contents of each active candidate register by office and of each active measure register at all storage locations (showing that they contain only zeros);	Accept	F, R S	V1, 2, 6 - 10	S - per v.2: 3.3.1
c.	Other information needed to confirm the readiness of the equipment, and to accommodate administrative reporting requirements.	Accept	F, R	V1, 2, 6 - 10	
2.4	**Voting Functions**				
2.4.1.	**Opening the Polls** At a minimum , the systems shall provide the functional capabilities indicated below.				RFI 2008-07
2.4.1.1	Opening the polling Place (Precinct Count Systems) To allow voting devices to be activated for voting, the system shall provide:				
a.	An internal test or diagnostic capability to verify	Accept	F, R,S	V1, 2, 6 -	S - per v.2: 3.3.1

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	that all of the polling place tests specified in 2.3.5 have been successfully completed.			10	
b.	Automatic disabling any device that has not been tested until it has been tested.	Accept	F, R,S	V1, 2, 6 - 10	S - per v.2: 3.3.1
2.4.1.2	Paper-Based System Standards				
2.4.1.2.1	All Paper-Based systems To facilitate opening the polls, all paper-based systems shall include:				
a.	A means of verifying ballot punching or marking devices are prepared and ready to used;	Accept	F, R	V1, 2, 6 - 10	No ballot punching
b.	A voting booth or similar facility, in which the voter may punch or mark the ballot in privacy	Accept	F		No ballot punching
c.	Secure receptacles for holding voted ballots. Ballot boxes.	Accept	F, R, S		DS200
2.4.1.2.2	Precinct Count Paper-Based Systems In addition to the above requirements, all paper-based precinct count equipment shall include a means of:				
a.	Activating the ballot counting device.	Accept	F, R	V1, 2, 6 - 10	
b.	Verifying that the device has been correctly activated and is functioning properly	Accept	F, R	V1, 2, 6 - 10	
c.	Identifying device failure and corrective action needed.	Accept	F, R	V1, 2, 6 - 10	
2.4.1.3	DRE System Standards To facilitate opening the polls, all DRE systems shall include:				
a.	A security seal, a password, or a data code recognition capability to prevent the inadvertent or unauthorized actuation of the poll-opening function	Accept	F, R, S		VAT doesn't open polls; switched to election marking mode
b.	A means of enforcing the execution of steps in the proper sequence if more than one step is required	Accept	F		
c.	A means of verifying the system has been activated correctly	Accept	F, R		
d.	A means of identifying system failure and any corrective action needed	Accept	F		
2.4.2	**Activating the Ballot (DRE Systems)** To activate the ballot, all DRE systems shall:				
a.	Enable election officials to control the content of the ballot presented to the voter, whether presented in printed form or electronic display, such that each voter is permitted to record votes only in contests in which that voter is authorized to vote	Accept	F, R	V1, 2, 6, 10	VAT ballot marking functionality
b.	Allow each eligible voter to cast a ballot	Accept	F, R		
c.	Prevent a voter from voting on a ballot to which he or she is not entitled	Accept	F, R		
d.	Prevent a voter from casting more than one ballot in the same election	Accept	F, R		Blank paper ballot required
e.	Activate the casting of a ballot in a general election	Accept	F	V1,2, 6, 10	
f.	Enable the selection of the ballot that is appropriate to the party affiliation declared by the voter in a primary election	Accept	F, R		Appropriate blank paper ballot required
g.	Activate all parts of the ballot upon which the voter is entitled to vote	Accept	F,R		Some controls in addition to the paper ballot
h.	Disable of all parts of the ballot upon which the voter is not entitled to vote	Accept	F,R		Some controls in addition to the paper ballot

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
2.4.3	**Casting a Ballot**				
2.4.3.1	Common Standards To facilitate casting a ballot, all systems shall:				
a.	Provide test that is at least 3 millimeters high and provide the capability to adjust or magnify the text to an apparent size of 6.3 millimeters	Accept	F		
b.	Protect the secrecy of the vote such that the system cannot reveal any information about how a particular voter voted, except as otherwise required by individual State law	Accept	F, R		
c.	Record the selection and non-selection (undervote) of individual vote choices for each contest and ballot measure	Accept	F, R	V1, 2, 6, 10	
d.	Record the voter's selection of candidates whose names do not appear on the ballot, if permitted under State law, and record as many write-in votes as the number of candidates the voter is allowed to select	Accept	F, R		
e.	In the event of a failure of the main power supply external to the voting system, provide the capability for any voter who is voting at the time to complete casting a ballot, allow for the successful shutdown of the voting system without loss or degradation of the voting and audit data, and allow voters to resume voting once the voting system has reverted to back-up power	Accept	F, V5	S	
f.	Provide the capability for voters to continue cast ballots in the event of a failure of a telecommunications connection within the polling place or between the polling place and any other location	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
2.4.3.2	paper-based System Standards				
2.4.3.2.1	All Paper-Based Systems All paper-based systems shall:				
a.	Allow the voter to easily identify the voting field that is associated with each candidate or ballot measure response	Accept	F, R	V1, 2, 6 - 10	
b.	Allow the voter to mark the ballot to register a vote	Accept	F, R	V1, 2, 6 - 10	
c.	Allow either the voter or the appropriate election official is able to place the voted ballot into the ballot counting device (precinct count systems) or a secure receptacle (central count systems)	Accept	F, R	V1, 2, 6 - 10	
d.	Protect the secrecy of the vote throughout the process	Accept	F, R	V1, 2, 6 - 10	
2.4.3.2.2	Precinct Count Paper-Based Systems In addition to the above requirements, all paper-based precinct count equipment shall include a means of:				
a.	Provide feedback to the voter identifies specific contests or ballot issues for which an overvote or undervote is detected	Accept	F, R		
b.	Allow the voter, at the voter's choice, to vote a new ballot or submit the ballot 'as is' without correction	Accept	F, R		
c.	Allow an authorized election official to turn off the capabilities defined in the two prior provisions.	Accept	F		
2.4.3.3	DRE Systems Standards				
a.	Prohibit the voter from accessing or viewing any information on the display screen that has not	Accept	F,S		VAT ballot marking

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	been authorized by election officials and preprogrammed into the voting system (i.e., no potential for display of external information or linking to other information sources)				
b.	Enable the voter to easily identify the selection button or switch, or the active area of the ballot display that is associated with each candidate or ballot measure response	Accept	F, R		VAT ballot marking
c.	Allow the voter to select his or her preferences on the ballot in any legal number and combination	Accept	F, R	V1, 2, 6, 10	VAT ballot marking
d.	Indicate that a selection has been made or canceled	Accept	F, R	V1, 2, 6, 10	VAT ballot marking
e.	Indicate to the voter when no selection, or an insufficient number of selections, has been made in a contest (e.g. undervotes)	Accept	F, R		VAT ballot marking
f.	Prevent the voter from overvoting	Accept	F, R		VAT ballot marking
g.	Notify the voter when the selection of candidates and measures is completed	Accept	F, R	V1, 2, 6, 10	VAT ballot marking
h.	Allowing the voter, before the ballot is cast, to review his or her choices and, if the voter desires, to delete or change his or her choices before the ballot is cast	Accept	F, R	V1, 2, 6, 10	VAT ballot marking
i.	For electronic image displays, prompt the voter to confirm the voter's choices before casting his or her ballot, signifying to the voter that casting the ballot is irrevocable and directing the voter to confirm the voter's intention to cast the ballot	Accept	F, R	V1, 2, 6, 10	VAT ballot marking: printing is irrevocable but not casting of the ballot
j.	Notify the voter after the vote has been stored successfully that the ballot has been cast	NA			No DRE
k	Notify the voter that the ballot has not been cast successfully if it is not stored successfully, including storage of the ballot image, and provide clear instruction as to the steps the voter should take to cast his or her ballot should this event occur	NA			No DRE
l.	Provides sufficient computational performance to provide responses back to each voter entry in no more than three seconds	Accept	F		VAT ballot marking; printing exceeds 3 seconds
m.	The votes stored accurately represent the actual votes cast	Accept	F, R	V1, 2, 6, 10	Storage is ballot printing
n.	Preventing modification of the voter's vote after the ballot is cast	Accept	S		Paper ballot handling documentation
o.	Provides a capability to retrieve ballot images in a form readable by humans (in accordance with the requirements of Section 2.2.2.2 and 2.2.4.2)	NA			No DRE
p.	Incrementing the proper ballot position registers or counters	Accept	F, R		Counts successful prints, not votes cast
q.	Protecting the secrecy of the vote throughout the voting process	Accept	F, R		
r.	Prohibiting access to voted ballots until after the close of polls	NA			No DRE
s.	Provides the ability for election officials to submit test ballots for use in verifying the end-to-end integrity of the system	Accept	F, R		
t.	Isolating test ballots such that they are accounted for accurately in vote counts and are not reflect in official vote counts for specific candidates or measures	Accept	F, R		VAT has a separate test mode; isolating ballot is procedural
2.5	**Post-Voting Functions**				
2.5.1	**Closing the Polling Place (Precinct Count)** These standards for closing the polls are				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	specific to precinct count systems. The system shall provide the means for:				
a.	Preventing the further casting of ballots once the polls has closed	Accept	F, R		VAT doesn't close, switched to Off
b.	Provides an internal test that verifies that the prescribed closing procedure has been followed, and that the device status is normal	Accept	F, R		
c.	Incorporating a visible indication of system status	Accept	F, R		
d.	Producing a diagnostic test record that verifies the sequence of events, and indicates that the extraction of voting data has been activated	Accept	F, R		
e.	Precluding the unauthorized reopening of the polls once the poll closing has been completed for that election	Accept	F, R		DS200 reopened with authorization
2.5.2	**Consolidating Vote Data**				
	All systems provide a means to consolidate and report vote data from all polling places, and optionally from other sources such as absentee ballots, provisional ballots, and voted ballots requiring human review (e.g., write-in votes).	Accept	F, R	V1,2,6 -10	#27- Closed
2.5.3	**Producing Reports**				
	All systems shall be able to create reports summarizing the data on multiple levels.	Accept	F, R	V1,2,6 -10	#48 - Closed
2.5.3.1	Common Standards All systems shall provide capabilities to:				
a.	Support of geographic reporting, which requires the reporting of all results for each contest at the precinct level and additional jurisdictional levels	Accept	F, R	V1,2,6 -10	
b.	Produce a printed report of the number of ballots counted by each tabulator	Accept	F, R	V1,2,6 -10	#101 - Closed
c.	Produce a printed report for each tabulator of the results of each contest that includes the votes cast for each selection, the count of undervotes, and the count of overvotes	Accept	F, R	V1,2,6 -10	RFI 2007-06
d.	Produce a consolidated printed report of the results for each contest of all votes cast (including the count of ballots from other sources supported by the system as specified by the vendor) that includes the votes cast for each selection, the count of undervotes, and the count of overvotes	Accept	F, R	V1,2,6 -10	RFI 2007-06
e.	Be capable of producing a consolidated printed report of the combination of overvotes for any contest that is selected by an authorized official (e.g.; the number of overvotes in a given contest combining candidate A and candidate B, combining candidate A and candidate C, etc.)	Accept	F, R	V1,2,6 -10	
f.	Produce all system audit information required in Section 4.4 in the form of printed reports, or in electronic memory for printing centrally	Accept	F, R	V1,2,6 -10	
g.	Prevent data from being altered or destroyed by report generation, or by the transmission of results over telecommunications lines	Accept	F, R	V1,2,6 -10	Telecommunications is disabled in Unity 3.2.0.0
2.5.3.2	Precinct Count Systems In addition, all precinct count voting systems shall:				
a.	Prevent the printing of reports and the unauthorized extraction of data prior to the official close of the polling place	Accept	F, R	V1,2,6 -10	
b.	Provide a means to extract information from a transportable programmable memory device or	Accept	F, R	V1,2,6 -10	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	data storage medium for vote consolidation				
c.	Consolidate the data contained in each unit into a single report for the polling place when more than one voting machine or precinct tabulator is used	Accept	F, R	V1,2,6 -10	
d.	Prevent data in transportable memory from being altered or destroyed by report generation, or by the transmission of results over telecommunications lines	Accept	F, R	V1,2,6 -10	Telecommunications is disabled in Unity 3.2.0.0
2.5.4	**Broadcasting Results**				
a.	Provide only aggregated results, and not data from individual ballots	Accept	F		
b.	Provide no access path from unofficial electronic reports or files to the storage devices for official data	Accept	F		
c.	Clearly indicate on each report or file that the results it contains are unofficial	Accept	F		
2.6	**Maintenance, Transpiration and Storage** All systems shall be designed and manufactured to facilitate preventive and corrective maintenance, conforming to the hardware standards described in Section 3. All vote casting and tally equipment designated for storage between elections shall: a. Function without degradation in capabilities after transit to and from the place of use, as demonstrated by meeting the performance standards described in Section 3 b. Function without degradation in capabilities after storage between elections, as demonstrated by meeting the performance standards described in Section 3. (See Section 3.2)				
	The vendor shall conduct summative usability tests on the voting system using individuals representative of the general population. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.	Accept	F		RFI 2007-03
3	***Hardware Standards***				
3.2	**Performance Requirements** Performance requirements address a broad range of parameters (see below)				
3.2.1	**Accuracy Requirements** Voting system accuracy addresses the accuracy of data for each of the individual ballot positions that could be selected by a voter, including the positions that are not selected. For a voting system, accuracy is defined as the ability of the system to capture, record, store, consolidate and report the specific selections and absence of selections, made by the voter for each ballot position without error. Required accuracy is defined in terms of an error rate that for testing purposes represents the maximum number of errors allowed while processing a specified volume of data.				RFI 2007-06
a. 1) 2)	For all paper-based voting systems: Scanning ballot positions on paper ballots to detect selections for individual candidates and	Accept	F, R	V1, 2, 6-10	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	contests Conversion of selections detected on paper ballots into digital data				
b. 1) 2)	For all DRE voting systems: Recording the voter selections of candidates and contests into voting data storage Recording voter selections of candidates and contests into ballot image storage independently from voting data storage	NA			No DRE
c. 1)	For precinct-count voting systems (paper-based and DRE): Consolidation of vote selection data from multiple precinct-based voting machines to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	F, R	V1, 7, 9	
d. 1)	For central-count voting systems (paper-based and DRE): Consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	F, R	V1,2,4,6-10	
	For testing purposes, the acceptable error rate is defined using two parameters: the desired error rate to be achieved, and the maximum error rate that should be accepted by the test process. For each processing function indicated above, the voting system shall achieve a target error rate of no more than one in 10,000,000 ballot positions, with a maximum acceptable error rate in the test process of one in 500,000 ballot positions.	Accept	F, V9		#144 Closed
3.2.2	**Environmental Requirements** All voting systems shall be designed to withstand the environmental conditions contained in the appropriate test procedures of the Standards/Guidelines. These procedures will be applied to all devices for casting, scanning and counting ballots, except those that constitute COTS devices that have not been modified in any manner to support their use as part of a voting system and that have a documented record of performance under conditions defined in the Standards/Guidelines.				
	The Technical Data Package supplied by the vendor shall include a statement of all requirements and restrictions regarding environmental protection, electrical service, recommended auxiliary power, telecommunications service, and any other facility or resource required for the proper installation and operation of the system.	Accept	E		
3.2.2.1	Shelter Requirements				
	Precinct count systems are designed for storage and operation in any enclosed facility ordinarily used as a warehouse or polling place, with prominent instructions as to any special storage requirements	Accept	F		
3.2.2.2	Space Requirements				
	The arrangement of the voting system does not impede performance of their duties by polling place officials, the orderly flow of voters through the polling place, or the ability for the voter to	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	vote in private				
3.2.2.3	Furnishings and Fixtures				
	Any furnishings or fixtures provided as a part of voting systems, and any components provided by the vendor that are not a part of the system but that are used to support its storage, transportation, or operation, comply with the design and safety requirements of Subsection 3.4.8.	Accept	F, E		
3.2.2.4	Electrical Supply Components of voting systems that require an electrical supply shall meet the following standards:				
a.	Precinct count systems operate with the electrical supply ordinarily found in polling places (Nominal 120 Vac/60Hz/1 phase)	Accept	E		
b.	For components of voting systems that require an electrical supply, central count systems operate with the electrical supply ordinarily found in central tabulation facilities or computer room facilities (120vac/60hz/1, 208vac/60hz/3, or 240vac/60hz/2);	Accept	E		
c.	All voting machines shall also be capable of operating for a period of at least 2 hours on backup power, such that no voting data is lost or corrupted nor normal operations interrupted. When backup power is exhausted the voting machine shall retain the contents of all memories intact. The backup power capability is not required to provide lighting of the voting area.	Accept	E		RFI 2008-02 RFI 2008-06
3.2.2.5	Electrical Power Disturbance Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data:				RFI 2008-02 RFI 2008-06
a.	Surges of 30% dip @10 ms;	Accept	E		
b.	Surges of 60% dip @100 ms & 1 sec	Accept	E		
c.	Surges of >95% interrupt @5Sec;	Accept	E		
d.	Surges of + or - 15% line variations of nominal line voltage	Accept	E		
e.	Electric power increases of 7.5% and reductions of 12.5% of nominal specified power supply for a period of up to four hours at each power level.	Accept	E		
3.2.2.6	Electrical Fast Transient Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, electrical fast transients of:				RFI 2008-10
a.	2 kV AC & DC External Power lines	Accept	E		
b.	+ or - 1 kV all external wires > 3 m no control	Accept	E		
c.	+ or - 2 kV all external wires control.	Accept	E		
3.2.2.7	Lighting Surge Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, surges of:				
a.	+ or - 2 kV AC line to line	Accept	E		
b.	+ or - 2 kV AC line to earth	Accept	E		
c.	+ or – 0.5 kV DC line to line >10m	Accept	E		
d.	+ or – 0.5 kV DC line to earth >10m	Accept	E		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
e.	+ or - 1 kV I/O sig/control >30m	Accept	E		
3.2.2.8	Electrostatic Disruption				
	The vote scanning and counting equipment for paper-based systems, and all DRE equipment, is able to withstand ±15 kV air discharge and ±8 kV contact discharge without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter.	Accept	E		
3.2.2.9	Electromagnetic Radiation				
	Vote scanning and counting equipment for paper-based systems, and all DRE equipment, complies with the Rules and Regulations of the Federal Communications Commission, Part 15, Class B requirements for both radiated and conducted emissions	Accept	E		
3.2.2.10	Electromagnetic Susceptibility				
	Vote scanning and counting equipment for paper-based systems, and all DRE equipment, is able to withstand an electromagnetic field of 10 V/m modulated by a 1 kHz 80% AM modulation over the frequency range of 80 MHz to 1000 MHz, without disruption of normal operation or loss of data	Accept	E		
3.2.2.11	Conducted RF Immunity Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, conducted RF energy of:				
a.	10V AC & DC power	Accept	E		
b.	10V, 20 sig/control >3m.	Accept	E		
3.2.2.12	Magnetic Fields Immunity				
	Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, AC magnetic fields of 30 A/m at 60 Hz	Accept	E		
3.2.2.13	Environmental Control – Operating Environment				
	Equipment used for election management activities or vote counting (including both precinct and central count systems) shall be capable of operation in temperatures ranging from 50 to 95 degrees Fahrenheit.	Accept	E		
3.2.2.14	Environmental Control – Transit and Storage Equipment used for vote casting or for counting votes in a precinct count system, shall meet these specific minimum performance standards that simulate exposure to physical shock and vibration associated with handling and transportation by surface and air common carriers, and to temperature conditions associated with delivery and storage in an uncontrolled warehouse environment:				
a.	High and low storage temperatures ranging from -4 to +140 degrees Fahrenheit, equivalent to MIL-STD-810D, Methods 501.2 and 502.2, Procedure I-Storage;	Accept	E		
b.	Bench handling equivalent to the procedure of	Accept	E		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	MIL-STD-810D, Method 516.3, Procedure VI;				
c.	Vibration equivalent to the procedure of MIL-STD-810D, Method 514.3, Category 1- Basic Transportation, Common Carrier	Accept	E		
d.	Uncontrolled humidity equivalent to the procedure of MIL-STD-810D, Method 507.2, Procedure I-Natural Hot-Humid.	Accept	E		
3.2.2.15	Data Network Requirements				
	Voting systems may use a local or remote data network. If such a network is used, then all components of the network shall comply with the telecommunications requirements described in Section 5 and the Security requirements described in Section 6.	Accept	S, T		Network functionality is disabled in the submitted voting system
3.2.3	**Election Management System (EMS) Requirements** The Election Management System (EMS) requirements address electronic hardware and software used to conduct the pre-voting functions defined in Section 2 with regard to ballot preparation, election programming, ballot and program installation, readiness testing, verification at the polling place, and verification at the central location.				
3.2.3.1	Recording Requirements Voting systems shall accurately record all election management data entered by the user, including election officials or their designees.				
a.	Record every entry made by the user;	Accept	F, R	V1-10	
b.	Add permissible voter selections correctly to the memory components of the device;	Accept	F, R	V1-10	
c.	Verify the correctness of detection of the user selections and the addition of the selections correctly to memory	Accept	F, R	V1-10	
d.	Add various forms of data entered directly by the election official or designee, such as text, line art, logos, and images	Accept	F	R, V1-10	
e.	Verify the correctness of detection of data entered directly by the user and the addition of the selections correctly to memory	Accept	F, R	V1-10	
f.	Preserve the integrity of election management data stored in memory against corruption by stray electromagnetic emissions, and internally generated spurious electrical signals	Accept	E		
g.	Log corrected data errors by the system.	Accept	F, R	V1, 2, 6-10	
3.2.3.2	Memory Stability Memory devices used to retain election management data shall have demonstrated error-free data retention for a period of 22 months.	Accept	TDP		Attestation from ESS
3.2.4	**Vote Recording Requirements**				
3.2.4.1	Common Standards All voting systems shall provide voting booths or enclosures for poll site use. Such booths or enclosures may be integral to the voting system or supplied as components of the voting system, and shall:				
a.	Be integral to, or make provisions for installation of the voting device;	Accept	F		
b.	Ensure by its structure stability against movement or overturning during entry,	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	occupancy, and exit by the voter				
c.	Provide privacy for the voter, and be designed in such a way as to prevent observation of the ballot by any person other than the voter	Accept	F		
d.	Be capable of meeting the accessibility requirements of Subsection 3.2	Accept	F		
3.2.4.2	Paper-based Recording Standards The paper-based recording requirements govern: • Ballot cards or sheets, and pages or assemblies of pages containing ballot field identification data • Punching devices • Marking devices • Frames or fixtures to hold the ballot while it is being punched • Compartments or booths where voters record selections • Secure containers for the collection of voted ballots				
3.2.4.2.1	Paper Ballot Standards Paper ballots used by paper-based voting systems shall meet the following standards:				
a.	Paper ballots used by paper-based voting systems shall meet the following standards: Punches or marks that identify the unique ballot format, in accordance with Section 2.3.1.1.1.c., shall be outside the area in which votes are recorded, so as to minimize the likelihood that these punches or marks will be mistaken for vote responses and the likelihood that recorded votes will obliterate these punches or marks	Accept	F, R	V1, 2, 6-10	No ballot punches
b.	If printed or punched alignment marks are used to locate the vote response fields on the ballot, these marks shall be outside the area in which votes are recorded, so as to minimize the likelihood that these marks will be mistaken for vote responses and the likelihood that recorded votes will obliterate these marks	Accept	F, R	V1, 2, 6-10	No ballot punches
c.	The TDP shall specify the required paper stock, size, shape, opacity, color, watermarks, field layout, orientation, size and style of printing, size and location of punch or mark fields used for vote response fields and to identify unique ballot formats, placement of alignment marks, ink for printing, and folding and bleed-through limitations for preparation of ballots that are compatible with the system.	Accept	F	R, V1, 2, 4, 6-10	
3.2.4.2.2	Punching Devices Punching devices used by voting systems shall:				
a.	Be suitable for the type of ballot card specified;	NA			Not a punch card system
b.	Facilitate the clear and accurate recording of each vote intended by the voter;	NA			Not a punch card system
c.	Be designed to avoid excessive damage to vote recorder components	NA			Not a punch card system
d.	Incorporate features to ensure that chad (debris) is removed, without damage to other parts of the ballot card.	NA			Not a punch card system
3.2.4.2.3	Marking Devices The Technical Data Package shall specify marking devices (such as pens or pencils) that,				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	if used to make the prescribed form of mark, produce readable marked ballots such that the system meets the performance requirements for accuracy specified previously. These specifications shall identify:				
a.	Specific characteristics of marking devices that affect readability of marked ballots	Accept	F		
b.	Performance capabilities with regard to each characteristic	Accept	F		
c.	For marking devices manufactured by multiple external sources, a listing of sources and model numbers that are compatible with the system.	Accept	F		
3.2.4.1.4	Frames or Fixtures for Punchcard Ballots A frame or fixture for punchcard ballot shall:				
a.	Hold the ballot card securely in the proper location and orientation for voting:	NA			Not a punch card system
b.	When contests not directly printed on the ballot card or sheet, incorporate an assembly of ballot label pages that identify offices and issues corresponding to the proper ballot format for the polling place where it is used and are aligned with the voting fields assigned to them	NA			Not a punch card system
c.	Incorporate a template to preclude perforation of the card except in the specified voting fields; a mask to allow punches only in fields designated by the format of the ballot; and a backing plate for the capture and removal of chad. The requirement may be satisfied by equipment of a different design as long it achieves the same result as the Standard with regard to:	NA			Not a punch card system
1)	Positioning the card;	NA			Not a punch card system
2)	Association of ballot label information with corresponding punch fields;	NA			Not a punch card system
3)	Enable only those voting fields that correspond to the format of the ballot; and	NA			Not a punch card system
4)	Punching the fields and the positive removal of chad.	NA			Not a punch card system
3.2.4.2.5	Frames or Fixtures for Printed Ballots A frame or fixture for printed ballot cards is optional. If such a device is provided, it shall:				
a.	A frame or fixture for printed ballot cards is optional. If such a device is provided, it shall:	Accept	F		
a.	Be of any size and shape consistent with its intended use;	Accept	F		
b.	Position the card properly;	Accept	F		
c.	Hold the ballot card securely in its proper location and orientation for voting	Accept	F		
d.	Comply with the design and construction requirements in Subsection 4.3.	Accept	F		
3.2.4.2.6	Ballot Boxes and Ballot Transfer Boxes Ballot boxes and ballot transfer boxes which serve as secure containers for the storage and transportation of voted ballots, shall:				
	Ballot boxes and ballot transfer boxes which serve as secure containers for the storage and transportation of voted ballots, shall:	Accept	F		
a.	Be of any size, shape, and weight commensurate with their intended use	Accept	F	R	
b.	Incorporate locks or seals, and specifications in the system documentation	Accept	F, S		DS200 v.1:2.2.1
c.	Provide specific points where ballots are	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	inserted, with all other points on the box constructed in a manner that prevents ballot insertion				
d.	For precinct count systems, contain separate compartments for segregating unread ballots, ballots with write-in votes, or irregularities that may require special handling or processing. In lieu of compartments, conversion processing may mark such ballots with an identifying spot or stripe to facilitate manual segregation	Accept	F		
3.2.4.3	DRE Systems Recording Requirements				
3.2.4.3.1	Activity Indicator DRE systems shall include an audible or visible activity indicator providing the status of each voting device. This indicator shall:				
a.	Indicate whether the device has been activated for voting	Accept	F, R		VAT prompts to insert a ballot
b.	Indicate whether the device is in use.	Accept	F, R		
3.2.4.3.2	DRE System Vote Recording To ensure vote recording accuracy and integrity while protecting the anonymity of the voter, all DRE systems shall:				
a.	Contain all mechanical, electromechanical, and electronic components; software; and controls required to detect and record the activation of selections made by the voter in the process of voting and casting a ballot	Accept	F, R	V1, 2, 6, 10	
b.	Incorporate redundant memories to detect and allow correction of errors caused by the failure of any of the individual memories	NA			No DRE
c. 1) 2)	Provide at least two processes that record the voter's selections that: • To the extent possible, are isolated from each other • Designate one process and associated storage location as the main vote detection, interpretation, processing and reporting path	NA			No DRE
	Use a different process to store ballot images, for which the method of recording may include any appropriate encoding or data compression procedure consistent with the regeneration of an unequivocal record of the ballot as cast by the voter.	NA			No DRE
d.	Provide a capability to retrieve ballot images in a form readable by humans.	NA			No DRE
e.	Ensure that all processing and storage protects the anonymity of the voter.	Accept	F	S	
3.2.4.3.3	Recording Accuracy DRE systems meet the following requirements for recording accurately each vote and ballot cast:'				
a.	Detect every selection made by the voter	Accept	F, R	V1, 2, 6, 10	
b.	Correctly add permissible selections to the memory components of the device	Accept	F, R	V1, 2, 6, 10	Temporary memory prior to VAT printing
c.	Verify the correctness of the detection of the voter selections and the addition of the selections to memory	Accept	F, R	V1, 2, 6, 10	
d.	Achieve an error rate not to exceed the requirement indicated in Section 3.2.1	Accept	F		VAT paper ballot marking
e.	Preserve the integrity of voting data and ballot images (for DRE machines) stored in memory	NA			No DRE

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	for the official vote count and audit trail purposes against corruption by stray electromagnetic emissions, and internally generated spurious electrical signals				
f.	Maintain a log of corrected data	Accept	F, R	V1, 2, 6, 10	
3.2.4.3.4	Recording Reliability				
	Recording reliability refers to the ability of the DRE system to record votes accurately at its maximum rated processing volume for a specified period of time. The DRE system shall record votes reliably in accordance with the requirements of Subsection 3.4.3.	Accept	F		VAT paper ballot marking
3.2.5	**Paper-based Conversion Requirements**				
3.2.5.1	Ballot Handling				
	Ballot handling consists of a ballot card's acceptance, movement through the read station and transfer into a collection station or receptacle.	Accept	F, R	V1, 2, 6, 7, 9, 10	
3.2.5.1.1	Capacity (Central Count)				
	The capacity to convert the marks on individual ballots into signals is uniquely important to central count systems. The capacity for a central count system shall be documented by the vendor. This documentation shall include capacity for individual components that impact the overall capacity.	Accept	F, R	V1, 2, 4, 8, 10	
3.2.5.1.2	Exception Handling (Central Count) This requirement refers to the handling of ballots when they are unreadable or some condition is detected requiring that the cards be segregated from normally processed ballots for human review. In response to an unreadable ballot or a write-in vote all central count paper-based systems shall central count paper-based systems shall:				
a. b. c.	Outstack the ballot, or Stop the ballot reader and display a message prompting the election official or designee to remove the ballot, or Mark the ballot with an identifying mark to facilitate its later identification.	Accept	F, R	V1, 2, 6-10	
	Additionally, the system shall a capability that can be activated by an authorized election official to identify ballots containing overvotes, blank ballots, and ballots containing undervotes in a designated race. If enabled, these capabilities shall perform one of the above actions in response to the indicated condition	Accept	F, R	V1, 2, 6-10	
3.2.5.1.3	Exception Handling (Precinct Count) This requirement refers to the handling of ballots for precinct count system when they are unreadable or when some condition is detected requiring that the cards be segregated from normally processed ballots for human review. All paper based precinct count systems shall:				
a.	In response to an unreadable or blank ballot, return the ballot and provide a message prompting the voter to examine the ballot	Accept	F, R	V1, 2, 6-10	
b.	In response to a ballot with a write-in vote,	Accept	F, R		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	segregate the ballot or mark the ballot with an identifying mark to facilitate its later identification				
c. 1) 2) 3) 4) 5)	In response to a ballot with an overvote the system shall: • Provide a capability to identify an overvoted ballot • Return the ballot • Provide an indication prompting the voter to examine the ballot • Allow the voter to correct the ballot • Provide a means for an authorized election official to deactivate this capability entirely and by contest	Accept	F, R		
d. 1) 2) 3) 4) 5)	In response to a ballot with an undervote, the system shall: • Provide a capability to identify an undervoted ballot • Return the ballot • Provide an indication prompting the voter to examine the ballot • Allow the voter to submit the ballot with the undervote • Provide a means for an authorized election official to deactivate this capability	Accept	F, R	V1, 2, 6-10	
3.2.5.1.4	Multiple Feed Prevention Multiple feed refers to the situation arising when a ballot reader attempts to read more than one ballot at a time. The requirements govern the ability of a ballot reader to prevent multiple feed or to detect and provide an alarm indicating multiple feed.				
a.	If multiple feed is detected, the card reader shall halt in a manner that permits the operator to remove the unread cards causing the error, and reinsert them in the card input hopper	Accept	F	R	
b.	The frequency of multiple feeds with ballots intended for use with the system shall not exceed 1 in 10,000	Accept	F		
3.2.5.2	Ballot Reading Accuracy This paper-based system requirement governs the conversion of the physical ballot into electronic data. Reading accuracy for ballot conversion refers to the ability to: ♦ Recognize vote punches or marks, or the absence thereof, for each possible selection on the ballot ♦ Discriminate between valid punches or marks and extraneous perforations, smudges, and folds ♦ Convert the vote punches or marks, or the absence thereof, for each possible selection on the ballot into digital signals To ensure accuracy, paper-based systems shall:				
a.	Detect punches or marks that conform to vendor specifications with an error rate not exceeding the requirement indicated in Section 3.2.1	Accept	F, R V1,2,4, 6-10		#144 Closed
b.	Ignore, and not record, extraneous perforations, smudges, and folds;	Accept	F, R		
c.	Reject ballots that meet all vendor specifications at a rate not to exceed 2 percent.	Accept	F, R, V1,2,4,6-10		1 incidence @ DS200 & M650 prompted for maintenance at iBeta
3.2.6	**Tabulation Processing Requirements**				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
3.2.6.1	Paper-based Processing Requirements				
3.2.6.1.1	Processing Accuracy Processing accuracy refers to the ability of the system to receive electronic signals produced by punches for punchcard systems and vote marks and timing information for marksense systems; perform logical and numerical operations upon these data; and reproduce the contents of memory when required, without error. Specific requirements are detailed below:				
a.	Processing accuracy shall be measured by vote selection error rate, the ratio of uncorrected vote selection errors to the total number of ballot positions that could be recorded across all ballots when the system is operated at its nominal or design rate of processing	Accept	See 3.2.6.1.1 d		There is no pass/fail criteria in this requirement It is a definition of processing accuracy
b.	The vote selection error rate shall include data that denotes ballot style or precinct as well as data denoting a vote in a specific contest or ballot proposition	Accept	F, R	V1,2,4,6-10	
c	The vote selection error rate shall include all errors from any source	Accept	F, R	V1,2,4,6-10	
d.	The vote selection error rate shall not exceed the requirement indicated in Subsection 4.1.1	Accept	F, R V1,2,4, 6-10		#144 - Closed V1,2,6,7,9,10 -DS200
3.2.6.2	DRE System Processing Requirements The DRE voting systems processing requirements address all mechanical devices, electromechanical devices, electronic devices, and software required to process voting data after the polls are closed.				
3.2.6.2.1	Processing Speed DRE voting systems shall meet the following requirements for processing speed:				
a.	Operate at a speed sufficient to respond to any operator and voter input without perceptible delay (no more than three seconds)	Accept	F		VAT ballot marking; printing exceeds 3 seconds
b.	if the consolidation of polling place data is done locally, perform this consolidation in a time not to exceed five minutes for each device in the polling place	NA			No DRE
3.2.6.2.2	Processing Accuracy Processing accuracy is defined as the ability of the system to process voting data stored in DRE voting devices or in removable memory modules installed in such devices. Processing includes all operations to consolidate voting data after the polls have been closed. DRE voting systems shall:				
a.	Produce reports that are completely consistent, with no discrepancy among reports of voting device data produced at any level	Accept	F, R	V1,2,4,6-10	
b.	Produce consolidated reports containing absentee, provisional or other voting data that are similarly error-free. Any discrepancy, regardless of source, is resolvable to a procedural error, to the failure of a non-memory device or to an external cause	Accept	F, R	V1,2,4,6-10	
3.2.6.2.3	Memory Stability				
	DRE system memory devices used to retain control programs and data shall have	NA			No DRE

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	demonstrated error-free data retention for a period of 22 months. Error-free retention may be achieved by the use of redundant memory elements, provided that the capability for conflict resolution or correction among elements is included.				
3.2.7	**Reporting Requirements**				
3.2.7.1	Removable Storage Memory				
	All storage media that can be removed from the voting system and transported to another location for readout and report generation, these media shall use devices with demonstrated error-free retention for a period of 22 months under the environmental conditions for operation and non-operation contained in Section 3.2.2. Examples of removable storage media include: programmable read-only memory (PROM), random access memory (RAM) with battery backup, magnetic media or optical media.	Accept	TDP Review		Attestation from ESS
3.2.7.2	Printers All printers used to produce reports of the vote count shall be capable of producing:				
a.	Alphanumeric headers	Accept	F, R	V1,2,4,6-10	
b.	Election, office and issue labels	Accept	F, R	V1,2,4,6-10	
c.	Alphanumeric entries generated as part of the audit record.	Accept	F, R	V1,2,4,6-10	
3.2.8	**Vote Data Management Requirements** The vote data management requirements for all systems address capabilities that manage, process, and report voting data after the data has been consolidated at the polling place or other jurisdictional levels. These capabilities allow the system to:				
a.	Consolidate voting data from polling place data memory or transfer devices	Accept	F, R	V1,2,4,6-10	
b.	Report polling place summaries; and	Accept	F, R	V1,2,4,6-10	
c.	Process absentee ballots, data entered manually, and administrative ballot definition data.	Accept	F, R	V1,2,4,6-10	
	The requirements address all hardware and software required to generate output reports in the various formats required by the using jurisdiction.	Accept	F, R	V1,2,4,6-10	
3.2.8.1	Data File Management All voting systems shall provide the capability to:				
a.	Integrate voting data files with ballot definition files	Accept	F, R	V1,2,4,6-10	
b.	Verify file compatibility.	Accept	F, R	V1,2,4,6-10	
c.	Edit and update files as required.	Accept	F, R	V1,2,4,6-10	
3.3	**Physical Characteristics**				
3.3.1	**Size**				
	There is no numerical limitation on the size of any voting equipment, but the size of each voting machine should be compatible with its intended use and the location at which the equipment is to be used.	Accept	F		RFI 2007-05
3.3.2	**Weight**				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	There is no numerical limitation on the weight of any voting equipment, but the weight of each voting machine should be compatible with its intended use and the location at which the equipment is to be used.	Accept	F		
3.3.3	**Transport and Storage of Precinct Systems** All precinct voting systems shall:				
a.	Provide a means to safely and easily handle, transport, and install voting equipment, such as wheels or a handle or handles	Accept	F		No handling issues noted by iBeta
b. 1) 2)	Be capable of using, or be provided with, a protective enclosure rendering the equipment capable of withstanding: Impact, shock and vibration loads associated with surface and air transportation Stacking loads associated with storage	Accept	F		
3.3.4	**Control Constructs**		Source Code Review		RFI 2007-02
3.3.5	**Naming Conventions**		Source Code Review		
3.4	**Design, Construction, and Maintenance Characteristics**				
3.4.1	**Materials Process and Parts** The approach to system design is unrestricted, and may incorporate any form or variant of technology capable of meeting the voting systems requirements and standards. Precinct count systems shall be designed in accordance with best commercial practice for microcomputers, process controllers, and their peripheral components. Central count voting systems and equipment used in a central tabulating environment shall be designed in accordance with best commercial and industrial practice. All voting systems shall:				
a.	Be designed and constructed so that the frequency of equipment malfunctions and maintenance requirements are reduced to the lowest level consistent with cost constraints.	Accept	F	R	
b.	Include, as part of the accompanying TDP, an approved parts list	Accept	F		
c.	Exclude parts or components not included in the approved parts list.	Accept	F		
3.4.2	**Durability**				
	All voting systems shall be designed to withstand normal use without deterioration and without excessive maintenance cost for a period of ten years.	Accept	F, TDP Review		RFI 2008-05 Attestation from ES&S
3.4.3	**Reliability**				
	The reliability of voting system devices shall be measured as Mean Time Between Failure (MTBF) for the system submitted for testing. MBTF is defined as the value of the ratio of operating time to the number of failures which have occurred in the specified time interval. A typical system operations scenario consists of approximately 45 hours of equipment operation, consisting of 30 hours of equipment set-up and readiness testing and 15 hours of elections operations. For the purpose of demonstrating	Accept	E		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	compliance with this requirement, a failure is defined as any event which results in either the: a. Loss of one or more functions b. Degradation of performance such that the device is unable to perform its intended function for longer than 10 seconds The MTBF demonstrated during certification testing shall be at least 163 hours.				
3.4.4	**Maintainability** See the requirement for detail about Maintainability	Accept	F		
3.4.4.1	Physical Attributes The following physical attributes will be examined to assess reliability:				
a.	Presence of labels and the identification of test points	Accept	F	R	
b.	Provision of built-in test and diagnostic circuitry or physical indicators of condition	Accept	F		
c.	Presence of labels and alarms related to failures	Accept	F		
d.	Presence of features that allow non-technicians to perform routine maintenance tasks (such as update of the system database)	Accept	F		
3.4.4.2	Additional Attributes The following additional attributes will be examined to assess maintainability:				
a.	Ease of detecting that equipment has failed by a non-technician	Accept	F	R	
b.	Ease of diagnosing problems by a trained technician	Accept	F		
c.	Low false alarm rates (i.e., indications of problems that do not exist)	Accept	F		
d.	Ease of access to components for replacement	Accept	F		
e.	Ease with which adjustment and alignment can be performed	Accept	F		
f.	Ease with which database updates can be performed by a non-technician	Accept	F		
g.	Adjust, align, tune or service components	Accept	F		
3.4.5	**Availability**- The availability of a voting system is defined as the probability that the equipment (and supporting software) needed to perform designated voting functions will respond to operational commands and accomplish the function. The voting system shall meet the availability standard for each of the following voting functions:				
a.	For all paper-based voting systems:	Accept	F, E		
1	Recording voter selections (such as by ballot marking or punch)	Accept	F, E		
2	Scanning the punches or marks on paper ballots and converting them into digital data	Accept	F, E		
b.	For all DRE systems, recording and storing voter ballot selections	Accept	F, E		
c.	For precinct count systems (paper-based and DRE), consolidation of vote selection data from multiple precinct based systems to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	F, E		
d.	For central-count systems (paper-based and DRE), consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage	Accept	F, E		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	and reporting of the consolidated vote data				
	System availability is measured as the ratio of the time during which the system is operational (up time) to the total time period of operation (up time plus down time). Inherent availability (Ai) is the fraction of time a system is functional, based upon Mean Time Between Failure (MTBF) and Mean Time To Repair (MTTR), that is: Ai = (MTBF)/(MTBF + MTTR) MTTR is the average time required to perform a corrective maintenance task during periods of system operation. Corrective maintenance task time is active repair time, plus the time attributable to other factors that could lead to logistic or administrative delays, such as travel notification of qualified maintenance personnel and travel time for such personnel to arrive at the appropriate site. Corrective maintenance may consist of substitution of the complete device or one of its components, as in the case of precinct count and some central count systems, or it may consist of on-site repair. The voting system shall achieve at least 99 percent availability during normal operation for the functions indicated above. This standard encompasses for each function the combination of all devices and components that support the function, including their MTTR and MTBF attributes.	Accept	F, E		
	Vendors shall specify the typical system configuration that is to be used to assess availability, and any assumptions made with regard to any parameters that impact the MTTR. These factors shall include at a minimum:	Accept	F		
a.	Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation	Accept	F		
b.	Recommended number and locations of qualified maintenance personnel who need to be available to support repair calls during system operation. Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel	Accept	F		
c.	Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel	Accept	F		
3.4.6	**Product Marking** All voting systems shall:				
a.	Identify all devices with a permanently affixed nameplate or label containing the name of the manufacturer or vendor, the name of the device, its part or model number, its revision letter, its serial number, and if applicable, its power requirements	Accept	F		
b.	Display on each device a separate data plate containing a schedule for and list of operations required to service or to perform preventive maintenance	Accept	F		
c.	Display advisory caution and warning instructions to ensure safe operation of the equipment and to avoid exposure to hazardous electrical voltages and moving parts at all	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	locations where operation or exposure may occur				
3.4.7	**Workmanship** To help ensure proper workmanship, all manufacturers of voting systems shall:				
a.	Adopt and adhere to practices and procedures to ensure their products are free from damage or defect that could make them unsatisfactory for their intended purpose	Accept	F		
b.	Ensure components provided by external suppliers are free from damage or defect that could make them unsatisfactory for their intended purpose.	Accept	F		
3.4.8	**Safety** All voting systems shall meet the following requirements for safety:				RFI 2008-09
a.	All voting system and their components shall be designed to eliminate hazards to personnel or the equipment itself.	Accept	E		
b.	Defects in design and construction that can result in personal injury or equipment damage must be detected and corrected before voting systems and components are placed into service.	Accept	E		
c.	Equipment design for personnel safety is equal to or better than the appropriate requirements of the Occupational Safety and Health Act, Code of Federal Regulations, as identified in Title 29, part 1910	Accept	E		
3.4.9	**Human Engineering- Controls and Displays** All voting systems and components shall be designed and constructed so as to simplify and facilitate the functions required , and to eliminate the likelihood of erroneous stimuli and responses on the part of the voter or operator. All voting systems shall meet the following requirements for controls and displays:				
a.	In all systems, controls used by the voter or equipment operator shall be conveniently located, shall use designs consistent with their functions, and shall be clearly labeled. Instruction plates are provided, if necessary to avoid ambiguity or incorrect actuation.	Accept	F	R	
b.	Information or data displays are large enough to be readable by voters and operators with no disabilities and by voters with disabilities consistent with the requirements defined is Section 2.2.7 of the Standards.	Accept	F		
c.	Status displays meet the same requirements as data displays, and they shall also follow conventional industrial practice with respect to color:	Accept	F		
1	Green, blue, or white displays shall be used for indications of normal status;	Accept	F		
2	Amber indicators shall be used to indicate warnings or marginal status; and	Accept	F		
3	Red indicators shall be used to indicate error conditions or equipment states that may result in damage or hazard to personnel; and unless the equipment is designed to halt under conditions of incipient damage or hazard, an audible alarm is also be provided.	Accept	F		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
d.	Color coding shall be selected so as to assure correct perception by voters and operators with color blindness; and shall not bet used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element (see Appendix C for suggested references).	Accept	F		
e.	The system's display does not use flashing or blinking text objects, or other elements having a flash or blink frequency, greater than 2 Hz and lower than 55 Hz	Accept	F		
4	**Software Standards**				
4.1.1	**Software Sources**				RFI 2008-03
4.3	**Data and Document Retention** All systems shall:				
a.	Maintain the integrity of voting and audit data during an election, and for at least 22 months thereafter, a time sufficient to resolve most contested elections and support other activities related to the reconstruction and investigation of a contested election	Accept	TDP Review		Attestation from ESS
b.	Protect against the failure of any data input or storage device at a location controlled by the jurisdiction or its contractors, and against any attempt at improper data entry or retrieval	Accept	S, V4		#132 Closed
4.4	**Audit Record Data**				
	Audit trails are essential to ensure the integrity of a voting system. Operational requirements for audit trails are described in Subsection 2.2.5.2 of the Standards. Audit record data are generated by these procedures. The audit record data in the following subsections are essential to the complete recording of election operations and reporting of the vote tally. This list of audit records may not reflect the design constructs of some systems. Therefore, vendors shall supplement it with information relevant to the operation of their specific systems.	Accept	F, S		Document review
4.4.1	**Pre-election Audit Records**				
	During election definition and ballot preparation, the system shall audit the preparation of the baseline ballot formats and modifications to them, a description of these modifications, and corresponding dates. The log shall include:	Accept	F,R	V1,2,4,6-10	
a.	The allowable number of selections for an office or issue;	Accept	F, R		
b.	The combinations of voting patterns permitted or required by the jurisdiction	Accept	F, R		
c.	The inclusion or exclusion of offices or issues as the result of multiple districting within the polling place	Accept	F, R		
d.	Any other characteristics that may be peculiar to the jurisdiction, the election, or the polling place's location	Accept	F, R		
e.	Manual data maintained by election personnel	Accept	F, R		
f.	Samples of all final ballot formats	Accept	F, R		
g.	Ballot preparation edits listings.	Accept	F, R		
4.4.2	**System Readiness Audit Records** The following minimum requirements apply to system readiness audit records:				
a.	Prior to the start of ballot counting, a system process shall verify hardware and software	Accept	F, R	V1,2,4,6-10	

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	status and generate a readiness audit record. This record shall include the identification of the software release, the identification of the election to be processed, and the results of software and hardware diagnostic tests				
b.	In the case of systems used at the polling place, the record shall include polling place identification	Accept	F, R	V9	
c.	The ballot interpretation logic shall test and record the correct installation of ballot formats on voting devices	Accept	F, R	V2, 7, 9	
d.	The software shall check and record the status of all data paths and memory locations to be used in vote recording to protect against contamination of voting data	Accept	F, R		
e.	Upon the conclusion of the tests, the software shall provide evidence in the audit record that the test data have been expunged	Accept	F, R		
f.	If required and provided, the ballot reader and arithmetic-logic unit shall be evaluated for accuracy, and the system shall record the results. It shall allow the processing or simulated processing of sufficient test ballots to provide a statistical estimate of processing accuracy	Accept	F		
g. 1) 2) 3) 4)	For systems that use a public network, provide a report of test ballots that includes: Number of ballots sent When each ballot was sent Machine from which each ballot was sent specific votes or selections contained in the ballot	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
4.4.3	**In-Process Audit Records** In-process audit records document system operations during diagnostic routines and the casting and tallying of ballots. At a minimum, the in-process audit records shall contain:				RFI 2008-07
a.	Machine generated error and exception messages to demonstrate successful recovery. Examples include, but are not necessarily limited to:	Accept	V1-10 Code review v.1:4.2.3 e	F, R	
1)	The source and disposition of system interrupts resulting in entry into exception handling routines	Accept	V1-10. F, R		
2)	All messages generated by exception handlers	Accept	V1-10, F, R		
3)	The identification code and number of occurrences for each hardware and software error or failure	Accept	F, R		
4)	Notification of system login or access errors, file access errors, and physical violations of security as they occur, and a summary record of these events after processing	Accept	S	F, R	#138, 139
5)	Other exception events such as power failures, failure of critical hardware components, data transmission errors or other types of operating anomalies	Accept	S		
b.	Critical system status messages other than informational messages displayed by the system during the course of normal operations. These items include, but are not limited to:	Accept	F, R, S		v.2: 3.3.1
1)	Diagnostic and status messages upon startup	Accept	F, R		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
2)	The “zero totals” check conducted before opening the polling place or counting a precinct centrally	Accept	F, R, S		v.2: 3.3.1
3)	For paper-based systems, the initiation or termination of card reader and communications equipment operation	Accept	F, R		
4)	For DRE machines at controlled voting locations, the event (and time, if available) of activating and casting each ballot (i.e., each voter's transaction as an event). This data can be compared with the public counter for reconciliation purposes	Accept	F	R	VAT ballot printing
c.	Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors	Accept	F		
d.	System generated log of all normal process activity and system events that require operator intervention, so that each operator access can be monitored and access sequence can be constructed	Accept	F, R, S		v.2: 3.3.1
4.4.4	**Vote Tally Data** In addition to the audit requirements described above, other election-related data is essential for reporting results to interested parties, the press, and the voting public, and is vital to verifying an accurate count. Voting systems shall meet these reporting requirements by providing software capable of obtaining data concerning various aspects of vote counting and producing printed reports. At a minimum, vote tally data shall include:				
a.	Number of ballots cast, using each ballot configuration, by tabulator, by precinct, and by political subdivision	Accept	F, R	V1,2,4,6-10	#34, 35- Closed
b.	Candidate and measure vote totals for each contest, by tabulator	Accept	F, R	V1,2,4,6-10	#35 - Closed
c.	The number of ballots read within each precinct and for additional jurisdictional levels, by configuration, including separate totals for each party in primary elections	Accept	F, R	V1,2,4,6-10	
d.	Separate accumulation of overvotes and undervotes for each contest, by tabulator, precinct and for additional jurisdictional levels (no overvotes would be indicated for DRE voting devices)	Accept	F, R		
e.	For paper-based systems only, the total number of ballots both able to be processed and unable to be processed; and if there are multiple card ballots, the total number of cards read	Accept	F, R		
	For systems that produce an electronic file containing vote tally data, the contents of the file shall include the same minimum data cited above for printed vote tally reports.	Accept	F, R	V1,2,4,6-10	
4.5	**Voter Secrecy on DRE Systems** All DRE systems shall ensure vote secrecy by:				
a.	Immediately after the voter chooses to cast his or her ballot, record the voter’s selections in the memory to be used for vote counting and audit data (including ballot images), and erase the selections from the display, memory, and all other storage, including all forms of temporary storage	Accept	S		Post printing on the VAT

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
b.	Immediately after the voter chooses to cancel his or her ballot, erase the selections from the display and all other storage, including buffers and other temporary storage	Accept	S		Pre-printing on the VAT
5	**Telecommunications**				
5.2	**Design, Construction, and Maintenance Requirement**				
	Design, construction, and maintenance requirements for telecommunications represent the operational capability of both system hardware and software. These capabilities shall be considered basic to all data transmissions.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.1	**Accuracy**				
	The telecommunications components of all voting systems shall meet the accuracy requirements of 3.4.1.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.2	**Durability**				
	The telecommunications components of all voting systems shall meet the Durability requirements of 3.4.2.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.3	**Reliability**				
	The telecommunications components of all voting systems shall meet the Reliability requirements of 3.4.3.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.4	**Maintainability**				
	The telecommunications components of all voting systems shall meet the maintainability requirements of 3.4.4.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.5	**Availability**				
	The telecommunications components of all voting systems shall meet the availability requirements of 3.4.5.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.6	**Integrity** For WANs using public telecommunications, boundary definition and implementation shall meet the requirements below.				
a.	Outside service providers and subscribers of such providers shall not be given direct access or control of any resource inside the boundary.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Voting system administrators shall not require any type of control of resources outside this boundary. Typically, an end point of a telecommunications circuit will be a subscriber termination on a Digital Service Unit/Customer Service Unit although the specific technology configuration may vary. Regardless of the technology used, the boundary point must ensure that everything on the voting system side is locally configured and controlled by the election jurisdiction while everything on the public network side is controlled by an outside service provider.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
c.	The system shall be designed and configured such that it is not vulnerable to a single point of failure in the connection to the public network which could cause total loss of voting capabilities at any polling place.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
5.2.7	**Confirmation** Confirmation occurs when the system notifies the user of the successful or unsuccessful completion of the data transmission, where successful completion is defined as accurate				

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	receipt of the transmitted data. To provide confirmation, the telecommunications components of a voting system shall				
d.	Notify the user of the successful or unsuccessful completion of the data transmission; and	Accept	S, T		No network trans-mission; see 2.2.2.1 d & e
e.	In the event of unsuccessful transmission, notify the user of the action to be taken.	Accept	S, T		No network trans-mission; see 2.2.2.1 d & e
6	**Security Standards**				
6.2	**Access Controls**				
6.2.1	**Access Control Policy**				
6.2.1.1	General Access Control Policy				RFI 2008-03
	Although the jurisdiction in which the voting system is operated is responsible for determining the access policies for each election, the vendor shall provide a description of recommended policies for:	Accept	S- Doc Review	Tested w/ 2.2.1	#67 -Closed
a.	Software access controls;	Accept	S- Doc Review	Tested w/ 2.2.1	
b.	Hardware access controls;	Accept	S- Doc Review	Tested w/ 2.2.1	
c.	Communications;	Accept	S- Doc Review	Tested w/ 2.2.1	Networking is disabled
d.	Effective password management;	Accept	S- Doc Review	Tested w/ 2.2.1	#59 - Closed
e.	Protection abilities of a particular operating system;	Accept	S- Doc Review	Tested w/ 2.2.1	
f.	General characteristics of supervisory access privileges;	Accept	S- Doc Review	Tested w/ 2.2.1	
g.	Segregation of duties; and	Accept	S- Doc Review	Tested w/ 2.2.1	
h.	Any additional relevant characteristics.	Accept	S- Doc Review	Tested w/ 2.2.1	
6.2.1.2	Individual Access Privileges Voting system vendors shall:				
a.	Identify each person to whom access is granted, and the specific functions and data to which each person holds authorized access	Accept	S- Doc Review	Tested w/ 2.2.1	#60, 68 - Closed
b.	Specify whether an individual's authorization is limited to a specific time, time interval or phase of the voting or counting operations	Accept	S- Doc Review	Tested w/ 2.2.1	#60, 75 - Closed
c.	Permit the voter to cast a ballot expeditiously, but preclude voter access to all aspects of the vote counting processes	Accept	S- Doc Review	Tested w/ 2.2.1	
6.2.2	**Access Control Measures** Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access, such as:				
a.	Use of data and user authorization	Accept	S- Doc & Review	Tested w/ 2.2.1	#70 - Closed
b.	Program unit ownership and other regional boundaries	Accept	S- Doc Review		
c.	One-end or two-end port protection devices	Accept	S- Doc Review		
d.	Security kernels	Accept	S- Doc Review		
e.	Computer-generated password keys	Accept	S- Doc & Code Review		#148 - Closed
f.	Special protocols	Accept	S- Doc		#79 - Closed

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
			Review		
g.	Message encryption and	Accept	S- Doc & Code Review		#71, 72, 81, 82, 149 Closed
h.	Controlled access security.	Accept	S- Doc Review	Tested w/ 2.2.1	
	Vendors also shall define and provide a detailed description of the methods used to prevent unauthorized access to the access control capabilities of the system itself.	Accept	S- Doc Review		#84 - Closed
6.3	**Physical Security Measures**				
	A voting system's sensitivity to disruption or corruption of data depends, in part, on the physical location of equipment and data media, and on the establishment of secure telecommunications among various locations. Most often, the disruption of voting and vote counting results from a physical violation of one or more areas of the system thought to be protected. Therefore, security procedures shall address physical threats and the corresponding means to defeat them.	Accept	S- Doc Review		
6.3.1	**Polling Place Security** For polling place operations, vendors shall develop and provide detailed documentation of measures anticipate and counteract vandalism, civil disobedience, and similar occurrences. The measures shall.				
a.	Allow the immediate detection of tampering with vote casting devices and precinct ballot counters.	Accept	S- Doc Review		
b.	Control physical access to a telecommunications link if such a link is used	Accept	S- Doc Review		
6.3.2	**Central Count Location Security**				
a. b. c. d.	Vendors shall develop and document in detailed measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the Handling of ballot boxes Preparing of ballots for counting Counting operations and Reporting data	Accept	S- Doc Review		
6.4	**Software Security**				
6.4.1	**Software and Firmware Installation** The system shall meet the following requirements for installation of software, including hardware with embedded firmware.				
a.	If software is resident in the system as firmware, the vendor shall require and state in the system documentation that every device is to be retested to validate each ROM prior to the start of elections operations.	Accept	S- Doc Review		
b.	To prevent alteration of executable code, no software shall be permanently installed or resident in the voting system unless the system documentation states that the jurisdiction must provide a secure physical and procedural environment for the storage, handling, preparation, and transportation of the system hardware.	Accept	S		
c.	The voting system bootstrap, monitor, and device-controller software may be resident	Accept	S		

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	permanently as firmware, provided that this firmware has been shown to be inaccessible to activation or control by any means other than by the authorized initiation and execution of the vote counting program, and its associated exception handlers.				
d.	The election-specific programming may be installed and resident as firmware, provided that such firmware is installed on a component (such as a computer chip) other than the component on which the operating system resides.	Accept	S		
e.	**After initiation of election day testing, no source code or compilers or assemblers shall be resident or accessible.**	Accept	S		#77 - Closed
6.4.2	**Protection Against Malicious Software** Voting systems shall deploy protection against the many forms of threats to which they may be exposed such as file and macro viruses, worms, Trojan horses, and logic bombs				
	Vendors shall develop and document the procedures to be followed to ensure that such protection is maintained in a current status.	Accept	S		
6.5	**Telecommunications and Data Transmission**				
6.5.1	**Access Controls**				
	Voting systems that use telecommunications to communicate between system components and locations are subject to the same security requirements governing access to any other system hardware, software, and data function.	Accept	S, T		#135 - Closed Telecommunications is disabled in Unity 3.2.0.0
6.5.2	**Data Integrity**				
	Voting systems that use electrical or optical transmission of data shall ensure the receipt of valid vote records is verified at the receiving station. This should include standard transmission error detection and correction methods such as checksums or message digest hashes. Verification of correct transmission shall occur at the voting system application level and ensure that the correct data is recorded on all relevant components consolidated within the polling place prior to the voter completing casting of his or her ballot.	Accept	S, T		No transmission within the polls prior to voter casting their ballot
6.5.3	**Data Interception Prevention** Voting systems that use telecommunications to communicate between system components and locations before the polling place is officially closed shall:				
a.	Implement an encryption standard currently documented and validated for use by an agency of the U.S. Federal Government and	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Provide a means to detect the presence of an intrusive process, such as an Intrusion Detection System.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.5.4	**Protection Against External Threats**				
	Voting systems that use public telecommunications networks shall implement protections against external threats to which commercial products used in the system may be susceptible.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.5.4.1	Identification of COTS Products				
	Voting systems that use public telecommunications networks shall provide	Accept	S, T		Telecommunications is disabled in Unity

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
a. b. c. d.	system documentation that clearly identifies all COTS hardware and software products and communications services used in the development and/or operation of the voting system, including operating systems, communications routers, modem drivers and dial-up networking software.				3.2.0.0
	Such documentation shall identify the name, vendor, and version used for each such component.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.5.4.2	Use of Protective Software				
	Voting systems that use public telecommunications networks shall use protective software at the receiving-end of all communications paths to:	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
a.	Detect the presence of a threat in a transmission	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Remove the threat from infected files/data	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
c.	Prevent against storage of the threat anywhere on the receiving device	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
d.	Provide the capability to confirm that no threats are stored in system memory and in connected storage media	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
e.	Provide data to the system audit log indicating the detection of a threat and the processing performed	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
	Vendors shall use multiple forms of protective software as needed to provide capabilities for the full range of products used by the voting system.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.5.4.3	Monitoring and Responding to External Threats				
	Voting system that use public telecommunications networks may become vulnerable, by virtue of their system components, to external threats to the accuracy and integrity of vote recording, vote counting, and vote consolidation and reporting processes. Therefore, vendors of such systems shall document how they plan to monitor and respond to known threats to which their voting systems are vulnerable. This documentation shall provide a detailed description, including scheduling information, of the procedures the vendor will use to:	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
a.	Monitor threats, such as through the review of assessments, advisories, and alerts for COTS components issued by the Computer Emergency Response Team (CERT), for which a current listing can be found at http://www.cert.org, the National Infrastructure Protection Center (NIPC), and the Federal Computer Incident Response Capability (FedCIRC), for which additional information can be found at www.uscert.gov	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Evaluate the threats and, if any, proposed responses	Accept	S, T		Telecommunications is disabled in Unity

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
					3.2.0.0
c.	Develop responsive updates to the system and/or corrective procedures	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
d.	Submit the proposed response to the test labs and appropriate states for approval, identifying the exact changes and whether or not they are temporary or permanent	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
e.	After implementation of the proposed response is approved by the state, assist clients, either directly or through detailed written procedures, how to update their systems and/or to implement the corrective procedures within the timeframe established by the state	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
f.	Address threats emerging too late to correct the system by:	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
1	Providing prompt, emergency notification to the accredited test labs and the affected states and user jurisdictions	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
2	Assisting client jurisdictions directly or advising them through detailed written procedures to disable the public telecommunications mode of the system	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
3	Modifying the system after the election to address the threat, submitting the modified system to an accredited test lab and the EAC or state certification authority for approval, and assisting client jurisdictions directly or advising them through detailed written procedures, to update their systems and/or to implement the corrective procedures after approval	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.5.5	**Shared Operating Environment** Ballot recording and vote counting can be performed in either a dedicated or non-dedicated environment. If ballot recording and vote counting operations are performed in an environment that is shared with other data processing functions, both hardware and software features shall be present to protect the integrity of vote counting and of vote data. Systems that use a shared operating environment shall:				
a.	Use security procedures and logging records to control access to system functions	Accept	S		Network disabled in Unity 3.2.0.0
b.	Partition or compartmentalize voting system functions from other concurrent functions at least logically, and preferably physically as well	Accept	S		Network disabled in Unity 3.2.0.0
c.	Control system access by means of passwords, and restrict account access to necessary functions only	Accept	S		Network disabled in Unity 3.2.0.0
d.	Have capabilities in place to control the flow of information, precluding data leakage through shared system resources	Accept	S		Network disabled in Unity 3.2.0.0
6.5.6	**Access to Incomplete Election Returns and Interactive Queries** If the voting system provides access to incomplete election returns and interactive inquiries before the completion of the official count, the system shall:				
a.	Be designed to provide external access to incomplete election returns (for equipment that	Accept	S		No access to incomplete returns

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	operates in a central counting environment), only if that access for these purposes is authorized by the statutes and regulations of the using agency. This requirement applies as well to polling place equipment that contains a removable memory module or that may be removed in its entirety to a central place for the consolidation of polling place returns				
b.	Design voting system software and its security environment such that data accessible to interactive queries resides in an external file or database created and maintained by the elections software under the restrictions applying to any other output report:	Accept	S		No external access
1	The output file or database has no provision for write-access back to the system.	Accept	S		No write back provision
2	Persons whose only authorized access is to the file or database are denied write-access, both to the file or database, and to the system.	Accept	S		No external access
6.6	**Security for Transmission of Official Data Over Public Communications Networks**				
6.6.1	**General Security Requirements for Systems Transmitting Data Over Public Networks** All systems that transmit data over public telecommunications networks shall:				
a.	Preserve the secrecy of voter ballot selections and prevent anyone from violating ballot privacy	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Employ digital signatures for all communications between the vote server and other devices that communicate with the server over the network	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
c.	Require that at least two authorized election officials activate any critical operation regarding the processing of ballots transmitted over a public communications network, i.e. the passwords or cryptographic keys of at least two employees are required to perform processing of vote	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.6.2	**Voting Process Security for Casting Individual Ballots over a Public Telecommunications Network**				
	Systems designed for transmission of telecommunications over public networks shall meet security standards that address the security risks attendant with the casting of ballots from polling places controlled by election officials using voting devices configured and installed by election officials and/or their vendor or contractor, and using in-person authentication of individual voters.	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
6.6.2.1	Documentation of Mandatory Security Activities Vendors of voting systems that cast individual ballots over a public telecommunications network shall provide detailed descriptions of:				
a.	All activities mandatory to ensuring effective voting system security to be performed in setting up the system for operation, including testing of security before an election	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	All activities that should be prohibited during voting equipment setup and during the time-frame for voting operations, including both the hours when polls are open and when polls are	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0

VSS	Certification Test Requirements: VSS 2002	Test Result	Test Case	Function Exercised	Comments
	closed				
6.6.2.2	Capabilities to Operate During Interruption of Telecommunications Capabilities These systems shall provide the following capabilities to provide resistance to interruptions of telecommunications service that prevent voting devices at the polling place from communicating with external components via telecommunications:				
a.	Detect the occurrence of a telecommunications interruption at the polling place and switch to an alternative mode of operation that is not dependent on the connection between polling place voting devices and external system components	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
b.	Provide an alternate mode of operation that includes the functionality of a conventional electronic voting system without losing any single vote	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
c.	Create and preserve an audit trail of every vote cast during the period of interrupted communication and system operation in conventional electronic voting system mode	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
d.	Upon reestablishment of communications, transmit and process votes accumulated while operating in conventional electronic voting system mode with all security safeguards in effect	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0
e.	Ensure that all safeguards related to voter identification and authentication are not affected by the procedures employed by the system to counteract potential interruptions of telecommunications capabilities	Accept	S, T		Telecommunications is disabled in Unity 3.2.0.0

7.2 *Appendix B: PCA Source Code Review*

PCA Source Code Review was performed by SysTest. ES&S petitioned the EAC for reuse. The terms of the reuse are identified in the EAC February 3, 2009 letter: EAC letter to iBeta QA Director on reuse of testing.

7.2.1 *SysTest Source Code Review Results*

The results of the SysTest source code review are addressed in the Summary Report of the testing performed by SysTest.

7.2.2 *3% Source Code Review Results*

The iBeta recommendation on reuse of SysTest PCA Document Review in ES&S Unity 3.2.0.0 testing is listed in the Voting System Certification Correspondence on the EAC web site.

The applications and the source code reviewed by iBeta in the 3% sample and the potential logic issues provided to the EAC for consideration in their determination of reuse are found in Appendix H - Amended Test Plan section 2.1.3 PCA Source Code Review

7.2.3 *Unity 3.2.0.0 Source Code Review Results*

Listed below is the version of code received from SysTest Labs and the final code version that was used in the Trusted Builds performed by iBeta. (See Appendix G: Trusted Build & Validation Tools Unity 3.2.0.0 voting system). The only discrepancy identified in any updated code was in ERM. Ten routines had the description comments but did not contain the other required infomation for routines over 10 lines of code. ES&S provided code with the required information.

Product	Source Code	Language	3% Source CodeReview	Trusted Build	Discrepancies
AutoMark Information Management System	AIMS	VB	1.003.057	1.003.157	None
	AIMSCrypt	C / C++	1.0.0.1	1.0.0.2a	None
	AIMSESS DLL	C	1.0.1.0	1.0.1.0	None
	AutoMarkEncoder	C/C++	1.0.105	1.0.105	None
	SQL Server	SQL	1.3.054	1.3.054	None
AutoMark Voter Assist Terminal	VAT	C++	1.3.2816	1.3.2906	None
	VAT	VB.NET	1.3.2816	1.3.2906	None
	AMCode	C++		1.0.0.1	None
	Makebin	C		1.1.0.0	None
	Automark Service	C++	1.0.4	1.0.4	None
	Automark Startup	C++	1.0.7	1.0.7	None
	DiagnosticLogger	C++	1.0.105	1.0.105	None
	NonVolatileLibrary	C++	1.0.116	1.0.116	None
	OperationLogger	C++	1.0.135	1.0.135	None
	PrinterEngineBoard	C	1.65.1.3	65.1.3	None
	PrinterEngineBoard 1.70	C	1.70.0.1	1.70.0.1	None
	Scanner	Assembly	1.48	1.48	None
	SecurityLibrary	C/C++	1.2.4.	1.2.4	None
	SwitchinterfaceBoard	C	1.43.2	1.8.37	None
	UltrasonicSheetDetector	C	8.0.1	8.01	None
	Getmarks	C++	1.4.9	1.4.9	None
	AutomarkDataHelperLibrary	C++	1.0.119	1.0.121	None
	ScannerPrinterLibrary	C++	1.8.37	1.8.37	None
	Automark	VB Net	1.3.2816	1.3.2906	None
	Automark32	File	1.3.2816	1.3.2906	None
	AutomarkData	C#	1.3.2816	1.3.2906	None
Unity	Audit Manager	VB	7.5.0.0g	7.5.2.0a	None
	EDM	C++	7.8.0.0j	7.8.1.0a	None
	ESSXML.DLL	C++	2.1.0.0b	2.1.1.0a	None
	MFC Shared Source	C++	1.1.0.0a	1.1.1.0a	None
	ESSIM	C++	7.7.0.0f	7.7.1.0a	None
	HPM	COBOL	5.7.0.0f	5.7.1.0b	None
	HPMDLL	C++	1.0.0.0a	1.1.0.0a	None
	ERM	COBOL	7.5.2.0c	7.5.4.0b	10 Header Comments v.1: 4.2.3.b

Product	Source Code	Language	3% Source CodeReview	Trusted Build	Discrepancies
					4.2.7 (a, a.1-a.6)
	ERMDLL	C++	1.0.0.0a	1.1.0.0a	None
Shared Utilities	MAKEIBIN.EXE	C++	9.2.0.0t	9.2.1.0a	None
	UNDRVOTE.EXE	C++	9.2.1.0b	9.2.2.0a	None
	VIOWIN.EXE	C/C++	9.2.0.0b	9.2.1.0a	None
	EVENTS.EXE	C/C++	9.2.0.0h	9.2.1.0a	None
	VIODIALOG.EXE	C/C++	9.2.1.0c	9.2.2.0a	None
	IMAGES.EXE	C/C++	9.2.0.0f	9.2.1.0a	None
	CF_Utility.EXE	VB	9.2.0.0i	9.2.1.0a	None
	GetAuditData.EXE	VB	9.2.0.0b	9.2.1.0a	None
	ESSPEB.DLL	C++	1.0.1.0.c	1.0.2.0a	None
	CB_PEB.DLL	C++	1.0.1.0b	1.0.2.0a	None
	CRCDLL.DLL	C++	1.4.1.0b	1.4.2.0a	None
	ESSM100.DLL	C/C++	1.7.1.0c	1.7.2.0b	None
	ESSPCMIO.DLL	C++	1.1.0.0a	1.1.1.0a	None
	CB_M100.DLL	C++	1.4.0.0a	1.4.1.0a	None
	ESSEAGL.DLL	C++	1.3.1.0e	1.3.2.0a	None
	CB_EAGL.DLL	C++	1.3.1.0c	1.3.2.0a	None
	CB_RAND.DLL	C++	1.1.0.0a	1.1.1.0a	None
	MYDLL.DLL	C	1.1.0.0a	1.1.0.1a	None
	MPRBOOT.HEX	Assembler	2.6.1.0b	2.6.2.0a	None
	ESSCRYPT.DLL	C/C++	1.9.0.0a	1.9.3.0a	None
	ESSDECPT.EXE	C++	1.9.0.0a	1.9.3.0b	None
	ESSCRYPT1.DLL	C++	1.1.0.0b	1.1.1.0a	None
	ElectionPackager	C++	1.0.0.0e	1.1.0.0a	None
	ESSZIP	C++	2.0.0.0f	2.1.0.0a	None
	PCCARD30.EXE	C++	3.5.0.0h	3.5.1.0a	None
	PBMtoBMP	C++	1.1.0.0c	1.1.0.1a	None
M650	WIN650	C	2.2.1.0.4	2.2.2.0.1	None
	INIT650.EXE	C/C++	2.2.1.0.4	2.2.1.0.4	None
	SERVE650.EXE (Newserve650)	C++	2.2.1.0.4	2.2.1.0.4	None
	CB_650.DLL	C	1.2.0.0a	1.2.1.0a	None
	REGUTIL.DLL	C++	1.1.0.0d	1.1.0.1a	None
	SHELLSETUP.EXE	C++	1.1.0.0a	1.1.0.1a	None
	SHELL.EXE	C++	1.1.0.0b	1.1.0.1a	None
	EXITWIN.EXE	VB	1.1.0.0a	1.1.1.0a	None
DS200	DS200	C/C++	1.3.7.0g	1.3.10.0a	None
	Power_Management_MSP430	C	1.2.0.0a	1.2.01a	None
	Scanner_C8051	C	2.11.0.0a	2.11.0.1a	None

7.3 *Appendix C: PCA TDP Documentation Review*

PCA TDP Document review was performed by SysTest. ES&S petitioned the EAC for reuse. The terms of the reuse are identified in the EAC February 3, 2009 letter: EAC letter to iBeta QA Director on reuse of testing.

7.3.1 *PCA TDP Document Review*

The results of the SysTest PCA TDP Document review are addressed in the Summary Report of the testing performed by SysTest.

The iBeta recommendation on reuse of SysTest PCA Document Review in ES&S Unity 3.2.0.0 testing is listed in the Voting System Certification Correspondence on the EAC web site. Any document issues that were applicable to the Unity 3.2.0.0 voting system were transferred to the iBeta certification test effort. These are identified in noted in the *Unity 3.2.0.0 Discrepancy Report* (see Appendix E- Discrepancy Report) and include the original SysTest discrepancy reference.

7.3.2 *Technical Data Package Configuration & Quality Assurance Practices*

During the certification testing iBeta tracked all materials provided by ES&S. Any instances where the delivered materials did not conform to ES&S' identified Configuration and Quality Assurance practices were noted in the *Unity 3.2.0.0 Discrepancy Report* (see Appendix E- Discrepancy Report) as Informational issues.

7.4 *Appendix D: FCA Testing*

The system configuration identified in section 3 identifies the final configuration of the Unity 3.2.0.0 voting system. The initial baseline configuration is identified in the Appendix H Amended Test Plan. Testing was conducted using the Trusted Builds provided by SysTest. ES&S submitted any code changes for issues encountered during testing. At that time iBeta completed a Trusted Build and conducted final regression testing. All changes to the system configuration were identified and recorded in the PCA Configuration document. A cross reference to the applicable configuration in the PCA Configuration document was inserted in the test record each time a test case was executed.

7.4.1 *FCA Functional and System Level Accessibility, Maintainability, Accuracy & Reliability Testing*

Testing was performed by SysTest and petitioned for reuse by ES&S. The terms for this reuse were identified by the EAC in their February 12, 2009 letter, EAC approval to reuse portions of SysTest's testing of ES&S Unity 3.2.0.0.

7.4.1.1 *Reuse Functional System Level, Accessibility, Maintainability, Accuracy & Reliability Test Results*

The test results and test configuration of the testing by SysTest are contained in the Summary Report of testing performed by SysTest. See Appendix H Amended Test Plan Tables 17, 25, & 26for the VSS 200 requirements associated with this testing.

7.4.1.2 *Regression System Level Test Results*

Testing was conducted on the system configuration cross referenced in the test method. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
4/15/09	Reject	#129		
5/11/09	Accept		#129	1 of the 4 VATs encountered a maintenance required alert during test execution. . The test was continued without this unit. After completion of the test ES&S personnel performed on-site maintenance under observation of iBeta staff. This unit is included in the post Trusted Build test execution.
6/11/09 to 6/15/09	Accept	#160 Informational	#143	Test with the Trusted Build for all Unity 3.2.0.0 hardware and software

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Regression Test Method
Test Case Name	Regression System Level Test Case
Scope - identifies the type of test	A regression system level test incorporating validations of a substantial portion of the VSS 2002 required and vendor identified functionality for the Unity 3.2.0.0 voting system. Pre-vote: Create a Pick-a-Party Primary election; prepare election media and paper ballots in EDM, ESSIM and HPM; import into AIMS . Vote: Vote Election Day hand & machine marked paper ballots (VAT:A100 & A200); precinct scanning (DS200) Post Vote: Write election results (DS200); scan absentee hand marked and VAT marked ballots (M650 central scanner); consolidate absentee & Election Day votes into ERM for tallying and reporting. Testing includes validation of measurable performance including accuracy, processing rate, and ballot format handling capability, incorporating: testing - ENH14322 (zero totals in ERM- RFI-2008-07) - Discrepancy #35 (SysTest 475 ERM Number-Key District report BUG13966,) - Discrepancy 30 (SysTest 429 Election description, Vote for phrase when only 1, Vote for phrase) Out of scope of Unity 3.2.0.0 because it only contains 2 groups. Issue requires a minimum of 3 groups to test. It is being moved to Unity 4.0.0.0 discrepancy #2. - Discrepancy #48 (SysTest 556 AM archive functionality) Functional aspects include error recovery, security, and usability of the hardware, software procedures in the pre-vote, voting, and post-voting operations with voter accessibility and multilingual ballots included.
Test Objective	Validation of the ability to: - Accurately and securely create paper English and Spanish visual and audio ballots for a

Method Detail	Regression Test Method
	pick-a-party primary election; - Create and install election specific media for the VAT and DS200 and M650; - Independently and securely vote audio and visual ballots with mobility and non-mobility restrictions; - Count and report the results; and Validate identified enhancements and discrepancies.
Test Variables: Voting Variations (as supported by the voting system)	In Scope for Unity 3.2.0.0: Open Pick-a-Party Primary comprising: 14 inch ballot (3 ovals per inch, 36 oval positions per column, 216 total positions) - An 14 inch combined paper ballot containing Dem, Rep & Non-Partisan selections, with ovals on the right side - 1 Polling Place - 2 Ballot Styles comprising: - 3 Precincts (1000, 2000, 3000) splits (3000-01, 3000-02) - 2 Partisan, 1 Non-Partisan, 1 Referendum Contests & a Party Selection Election Day voting (VAT & DS200) Absentee Voting (M650) Write-in votes Vote for N of M Overvotes Undervotes Blank Ballots Assistive Devices (AT paddles, tactilely discernible keypad, Audio\Visual ballots) Multi-lingual Audio & Visual Ballots (English & Spanish) - Two audio preparation methods: conversion of election text file from Unity to synthesized speech in AIMS (Eloquence COTS SW) & WAV audio files recorded in AIMS - AIMS Overvote and Undervote alerts selected for VAT. (Overvotes prevented) - DS200 Ballot Control Options (HPM): Query: Overvotes, Crossover, and Blank ballots; Reject: Unreadable marks; Accept: undervote. - Diverter Installed to divert Blank and Write-in ballots in ballot box
A description of the voting system type and the operational environment	The Unity 3.2.0.0 voting system includes: EMS Ballot Preparation SW: Audit Manager (AM), Election Data Manager (EDM), ES&S Image Manager (ESSIM), Hardware Programming Manager (HPM), AutoMARK Information Management System (AIMS) Ballot Marking Device: Voter Assist Terminal (VAT), Models A100 & A200 Precinct Count scanner/tabulator: intElect DS200 (DS200) Central Count scanner/tabulator: Model 650 (M650) Central Count Tally system: Election Reporting Manager (ERM)
VSS 2002 vol. 1	2.2.1 thru 2.2.9, 2.3.1.1 thru 2.5.3.2 , (DRE requirements applicable to VAT excluding vote storage) 3.2.4.2.5, 3.2.4.2.6, 3.2.5.1.3 a thru d.4, 3.2.6.1.1, 3.2.8 thru 3.2.8.2 HAVA a thru c2 RFI: 2007-04, 2007-06, 2008-04, 2008-07, 2008-12
VSS 2002 vol. 2	6.2, 6.2.1, 6.2.2, 6.3, 6.4, 6.4.1 , 6.5, 6.6, 6.7 RFI: 2007-06, 2008-07, 2008-12
Hardware, Software voting system configuration and test location	EMS Software: AM v. 7.5.2.0 EDM v. 7.8.1.0 ESSIM v. 7.7.1.0 AIMS v. 1.3.157 HPM v. 5.7.1.0 ERM v. 7.5.3.0 Hardware/Firmware specific to this test case: VAT Model s including A100 & A200's Precinct count: DS200: HW: 1.2.0; FW: 1.3.7.0, SN: ES0107360007 Central count: M650: Green (Right) HW Rev. 1.1, FW: 2.2.1.0 SN: 2406 8013 Test Location: iBeta, 3131 S. Vaughn Way, Aurora, CO 80014
Pre-requisites and preparation for execution of the test case.	Prior to execution of testing, the following prerequisites must be completed: - Record the testers & date - Perform and install witness/trusted build of software/firmware components utilizing ES&S documentation - System has been installed and set up as identified in the user manuals - Gather any necessary materials or manuals (A microphone, PC soundcard and speakers are available/installed to record audio, white and blue blank ballot stock paper) - Ensure customization of the test case template is complete
Getting Started Checks	Check the voting system to:

Method Detail	Regression Test Method
	- Verify the test environment and system configuration is documented in the PCA Configuration matches the configuration of the system used in the 48 hr. temp & power variation test and vendor described configuration. - Validate installation of the witnessed build - Testers understand that no change shall occur to the test environment without documentation in the test record and the authorization of the project manager. -During testing an operational readiness test will be performed.
Documentation of Test Data & Test Results	Test Data: - Record all programmed & observed election, ballot & vote data fields and field contents on the corresponding tabs to provide a method to repeat the test - Preserve all tabs for each instance the test is run. Test Results: - Enter Accept/Reject on the Test Steps - In Comments enter any deviations, discrepancies, or notable observations - Log discrepancies on the Discrepancy Report and insert the number in the Comments
Pre-vote: Ballot Preparation procedures verifications	**Ballot Prep:** Verify - Spanish/English, visual/audio ballots (contests, candidates , propositions and associated offices/labels) can be accurately/securely defined with multiple ballot styles, precincts and splits. - Ballots contain partisan races segregated by party and non-partisan races (Dem, Rep, Non-Partisan) - Ballots contain identifying marks (ballot style, precincts/splits) - Volume test elections and ballot styles are retained and can be accessed - Ballot & VAT: ovals properly align with candidate names/issues so voters can clearly mark selections; spacing and font size is consistent so there is no preferential voting position - VAT: maximum choices for a single contest are displayed on one page - The election can be accurately/securely imported from Unity 3.2.0.0 into AIMS. (Prerequisite: define and print ballot in Unity 3.2.0.0, before importing into AIMS.) - The AIMS database can be modified, as required, to support the election definition required for VAT operation; and using AIMS Preview function confirm data was imported correctly and ballots are set up correctly. - Election media can be accurately/securely programmed in HPM and AIMS for installation in all voting & tabulating devices. (VAT, DS200, M650) - AM, EDM, ESSIM, HPM, ERM, VAT, M650 & DS200 Application & hardware readiness tests performed according to VSS requirements. Validate Discrepancy 30 (Election description, Vote for phrase when only 1, Vote for phrase) Installation of Election VAT: Setup & install election; perform maintenance checks: 1. ink cartridge. 2. battery charge 3. Install Flash Memory Card. 4. Test VAT operations (Jurisdiction Guide Ch. 5) 5. Set Admin password 6. Calibrate 7. Set 'Maint' password (Jurisdiction Guide Ch. 6) to confirm there are no hardware/software failures DS200: Setup & install election; perform readiness tests M650: Setup & install election; set Date & Time; and perform readiness tests
Pre-vote: Ballot Preparation Security	**Ballot Prep**: -Security access controls limit or detect access to critical systems and the loss of system integrity, availability, confidentiality & accountability, including AM: A user ID/password control access to EDM & ESSIM; confirm access is permitted and denied without proper credentials HPM: An administrator password; access the DS200 Admin menu on the DS200 Scanner Options screen; and a password to reopen polls ERM: An administrator password; prevent access to "Suspension Menu"; and confirm access is denied. DS200: A password is required to access Admin menu; a separate password is required to reopen polls M650: Back door is locked AIMS: Password required to start AIMS VAT: Admin password controls the functions on the System Maint menu (password set on each VAT) -Functions are only executable in the intended manner, order & under intended conditions -Prevents execution of functions if preconditions weren't met -Implemented restrictions on controlled functions - Documentation of mandatory administrative procedures. COTS -Authentication is configured on the local terminal & external connection devices, -Operating systems are enabled for all session & connection openings, & closings, all process executions & terminations & for the alteration or detection of any memory or file object -Configure the system to only execute intended & needed processes during the execution election software. Processes are halted until termination of critical system processes (such as audit).

Method Detail	Regression Test Method
Readiness Testing and Poll Verification	**Readiness Testing: Verification that:** **VAT:** Proper election has been installed: all buttons, printers and screen function correctly; matching version is displayed ; and a ballot can be marked in test mode . - Review audit logs to confirm readiness for VAT **DS200:** Readiness testing automatically incorporated into Opening the Polls; Election name, equipment identification, polling place & ballot format and matching version is displayed or printed on initial state report and/or zero count report; confirmation that there are no hardware/software failures ; and device is ready to be activated to accept votes. Perform readiness testing according to VSS requirements - Obtain status, data reports, audit logs and other artifacts to confirm readiness for DS200 - Attempt to open polls with test totals. Verify a visual screen warning is provided if memory locations (including data on media) contains votes, and the reports/audit log contain a time-stamp record of the status of the votes/results memory and disk storage locations. If a unit or system contains a non-zero counter, a warning message is provided, along with corrective actions to resolve the votes. The unit is disabled until type of resolution is selected. - Verify test data has been cleared
Pre- vote: Opening the Polls Verification	Precinct Count: **Internal testing:** - DS200 select 'Open Polls". Zero report will automatically print, an internal test will be performed and results will display. If test is unsuccessful, DS200 will automatically shut down; If successful will display "Please Insert Your Ballot" message - Insert election FMC. VAT will boot up when key switch is turned to 'On' flashing displays of the boot procedure will appear on the screen. If the self-test fails the VAT will shutdown. If successful the VAT will give the "Please Insert Your Ballot" message. (Insert a blank CF card to ensure VAT will NOT boot up) **Paper based: Verify VAT & DS200 are ready for use:** - VAT & DS200 display "Please Insert Your Ballot" message. - Any failures provide a message for resolution - VAT holds the ballot securely - DS200 does not contain a frame or fixture for ballot marking - DS200 is attached to a custom DS200 ballot box; with locks and separate compartments; slots prevent unauthorized ballot insertion. Write-ins will be marked with a red circle to indicate review is necessary - VAT security seals are checked: compact flash compartment, top cover & ink compartment
Voting: Ballot Activation and Casting Verifications	**VAT & DS200** Protects secrecy of ballot/vote - Voter can make selections based on ballot programming & indicate selection, cancellation, & non-selection (undervotes) - Gives feedback & an opportunity to correct or accept, before the ballot is counted **VAT BMD** - Control of ballot (single ballot cast per vote session) and content of ballot is restricted to the eligible voter - Correct ballot is presented (language, audio/visual, precinct/split) - Party affiliation content is controlled/activated via the "Party Preference" - Touching an area outside the identified selection box does not mark the ballot or display external information - Provides all displays, instructions, messages, alerts and status in multilingual audio & visual displays - Voters are able to edit and review write-ins. # of write-ins match Vote For. - Audio voting provides repeat functionality & volume control - Voter is allowed to mark the ballot, in any combination, or return it without marking (blank) - Overvote and Undervote provides alerts, with overvotes prevented - Summary screen is provided to signify end of candidate/measures and provides instructions to review/change selections prior to ballot marking - Verify alert of selection's complete, ballot is being marked, and to take completed ballot to tabulator **DS200** - Alert successful/unsuccessful storage of cast ballot; provide review & instruction to resolve unsuccessful casting (Query: Overvotes, Crossover, and Blank ballots; Reject: Unreadable marks; Accept: undervote. - Diverter Installed to divert Blank and Write-in ballots in ballot box - Increments the ballot counter for successfully cast ballots - Print Precinct and Status reports to compare to vote data to verify actual votes cast is correct & undervotes/overvotes are counted separately - Access to voted ballot is prevented until after polls close (locked ballot box)
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provides a time stamped, always available, report of normal/abnormal events that can't be turned off when the system is in operating mode. - Maintain accurate and complete audit records; verify at various points (After poll open; vote

Method Detail	Regression Test Method
	query, reject & accept: any abnormal event encountered in testing; poll close) - Self-tests and diagnostic messages for the hardware will be verified at polll open/close points in the test case Status messages are part of the real time audit record. - Critical status messages requiring operator intervention shall use clear indicators or text Error messages are: - Generated, stored & reported as they occur - Errors requiring intervention by the voter or poll worker clearly display issues & action instructions in easily understood text language or with indicators - The text for any numeric codes is contained in the error or affixed to the inside of the voting system - Incorrect responses will not lead to irreversible errors. - Nested conditions are corrected in the sequence to restore the system to the state before the error occurred
Post-vote: Closing the Polls	**VAT:** - Turn VAT to 'Off' position & remove FMC to prevent further marking of ballots; verify a voting session cannot be activated. - Review the audit logs (only available report) to verify entries are in the proper sequence for operational tests, switching from test to vote modes, ballot printing, audit report access during voting , including complete & accurate error and status messages **DS200:** - Attempt to print reports while polls are open; verify this is prohibited. - Press 'Close Poll' button, a results report will print preventing further casting of ballots (attempt to scan a ballot without reopening the polls) - Visibly displays the status "Polls Closed" - Internally tests and verifies that the closing procedures have been followed and the device status is normal by preventing report printing or processing vote totals unless polls were properly closed. - Confirm polls cannot be reopened without password - Review the audit log to verify test records exists that verify entries for the proper sequence for operational tests, poll open; vote query, reject & accept: any abnormal event encountered in testing; poll close, including complete & accurate error and status messages - Print Status report, Race Results report, Certification report, Precinct Report Summary, Poll Report Summary and Audit Log report once polls are closed. Ensure undervote & overvote is counted. - Validate data from USB is extractable by transmitting results into ERM Reopen the polls testing: - Reopen of polls, enter an incorrect and then a correct password - Alert to resume voting or clear votes: select 'resume voting', do not clear votes - Status message "Please insert your ballot" is displayed -Cast a vote and close the polls. - Check audit for proper sequence for operational tests, poll open, vote accept, poll close, reopen, password entry - Verify correct vote totals.
Post-vote: Central Count	Readiness Test: - Obtain status, data reports, audit logs and other artifacts to confirm readiness - Verify test data has been cleared **M650:** Readiness: Proper election is installed; all buttons, printers and screen function correctly; verify election name, equipment identification, polling place, ballot format and matching versions is printed on Machine Readiness and/or Zero count reports; confirmation that there are no hardware/software failures; and device is ready to be activated to accept votes. Perform readiness testing according to VSS requirements - Attempt to start the M650 with test totals. Verify a visual screen warning is provided if memory locations (including data on media) contains votes, and the reports/audit log contain a time-stamp record of the status of the votes/results memory and disk storage locations. If a unit or system contains a non-zero counter, a warning message is provided, along with corrective actions to resolve the votes. The unit is disabled until type of resolution is selected. **ERM:** Readiness: confirm proper election is installed - Attempt to read in vote totals with test totals present. Verify a visual screen warning is provided if memory locations contain votes, and the reports/audit log contain a time-stamped record of the status of the votes/results in the memory locations. If this is not provided, a corrective action message is provided along with a message indicating the attempt to read in vote totals, while there are totals present. **Vote Consolidation for M650:** - Votes match predicted votes (absentee) - Geographic reports of votes; each contest by precinct & other jurisdictional levels. Reports include: Zero, Grand Totals (long format), Precincts Processed, Totals by Precinct (long format) Machine Readiness, Audit log. Ensure audit logs are accurate & complete and contain error

Method Detail	Regression Test Method
	and status messages. **Vote Consolidation for ERM:** Consolidated reported votes match predicted votes from polling places, & optionally other sources (absentee) - Geographic reports of votes; each contest by precinct & other jurisdictional levels. Reports include: - Zero - Validate ERM Enhancement: RFI2008-07/ ENH14322 to ensure ERM is zeroed out before processing election results. - EL30A - Prec Report–Group Detail individual precincts & contest results. - EL45- Election Summary - total number of votes for each candidate/question & % of total vote for y each candidate/question - EL111 - Name Heading Canvass - statistics of total number of precincts counted, total number of votes cast for each candidate and % of total vote received by each candidate - EL50D - DS200 Precincts Processed Listing - DS200 machine IDs imported from the USB flash drive into ERM - Audit log. - Retrieve ballot images from the DS200 - Verify data from M650, DS200 is prevented from being altered or destroyed by report generation, or extraction from media - Verify DS200 SN is displayed in ERM, once the USB flash drive is read into ERM
Post-vote: Security	The central count: (See Security Test for detail) During execution confirm: - Security access controls limit or detect access to critical systems& the loss of system integrity, availability, confidentiality and accountability - Functions are only executable in the intended manner, order & under the intended conditions - Prevented execution of functions if preconditions were not met - Implemented restrictions on controlled functions - Provided documentation of mandatory administrative procedures. COTS systems -Authentication is configured on the local terminal and external connection devices, -Operating systems are enabled for all session and connection openings, and closings, all process executions and terminations and for the alteration or detection of any memory or file object - Configure the system to only execute the intended and necessary processes during the execution of the election software. Election software process are halted until the termination of any critical system process, such as system audit.
Post-vote: System Audit	The system audit provides a central count time stamped always available, report of normal and abnormal events that cannot be turned off when the system is in operating mode. Status message are part of the real time audit record. **Audit Messages to be validated:** AM: Archive functionality EDM: Precinct set up ESSIM: 2 ballot styles created HPM: media is created for M650 & DS200 VAT: date/time set DS200 & M650: Election id ERM: DS200 SN is recorded AIMS: IUImport - Performed full Unity election import DS200, M650 & ERM: Message of vote totals present, Corrective action messages to resolve residual vote totals **Status/Error messages to be validated:** **AM:** 1. Cannot delete 'Admin' user! **EDM:** 1. Minimum password length is 6 characters. 2. District Type Name can not be blank **ESSIM:** 1. Please Enter a Style Sheet Name **HPM:** 1. Admin password is required V**AT**: 1. System Maintenance (requires password), 2. The Flash Card has been removed. Turn OFF the machine and insert a valid Flash Card. **AIMS:** Missing Translations **DS200:** 1. Blank Ballot Rejected, 2. More than one party has votes. Votes In Party Contests Will Be Ignored, 3. Ballot Jammed, 4. 119 – MULTIPLE BALLOTS DETECTED/Please Re-insert One Ballot After Beeps **M650:** 1. Back Door Open, 2. Ballot BACKWARDS or UPSIDE-DOWN! **ERM:** 1. ####-Not a valid precinct, 2. Canvass Left Edge Heading exceeds the maximum length of 20 for 1UP format report. **DS200, M650 & ERM:** Warning message of vote totals present, Corrective action messages to resolve residual vote totals Validate AM archive functionality as identified in discrepancy #48. (Data from the day selected does not archive.)

Method Detail	Regression Test Method
Expected Results are observed	Review the test result against the expected result: • Accept: the expected result is observed • Reject: the expected result of the test case is not observed • Not Testable (NT): rejection of a previous test step prevents execution of this step, or tested in another TC. • Not Applicable (NA): not applicable to test scope
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. - Any failure against the requirements of the EAC guidelines will mean the failure of the system and shall be reported as such. - Failures will be reported to the vendor as Defect Issues in the Discrepancy Report. - The vendor shall have the opportunity to cure all discrepancies prior to issuance of the Certification Report. - If cures are submitted the applicable test will be rerun. Complete information about the rerun test will be preserved in the test case. The cure and results of the retest will be noted in the - Discrepancy Report and submitted as an appendix of the Certification Report. - Operations which do not fail the requirements but could be deemed defects or inconsistent with standard software practices or election practices will be logged as Informational Issues on the Discrepancy Report. It is the vendor's option to address these issues. Open items will be identified in the report.

7.4.2 *FCA Volume (Volume Stress, Performance and Error Recovery) Testing*

During test case development, test setup or preparation of test data, iBeta encountered limits that were either not identified or only identified at the application level in the System Limitation Unity 3.2.0.0 document. This resulted in iBeta revising the test method identified in the approved test plan. Document discrepancies were written against the limits document. Volume Test Cases were appropriately modified to address testing to the applicable system limit. In some instances this resulted in halting a test because the original test parameters were no longer valid. In these instances we recorded the halted test execution and updated the test case. Due to the unusual configurations required to generate testing of the systems limits, the optimal test parameters were occasionally miscalculated by the tester. If during test setup or preparation of test data iBeta discovered a tester miscalculation in the election parameters which required reconfiguration of the test parameters, test execution was halted and the miscalculation was clarified in the test case. In these instances we recorded the halted test execution and updated the calculations. All halted test executions were recorded and preserved. Test execution number was incremented and the changes to the test parameters were recorded on the incremented test execution tab. As the original test was not valid it is documented in the Test Results as "Execution halted, parameters modified". See Volume 1 Test Results for an example of this process.

7.4.2.1 *Volume 1 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/13/09	Halted - modified test parameters	#85 -System Limits document		In set-up we identified that 1639 is the limit on ballot styles for paper. Reduced test to 1639 ballot styles and precincts. Testing of 2900 precinct on the DS200 is covered in volume 9.
3/18/09	Halted - modified test parameters			Miscalculation of optimal District Types, Names, Relations, Master Office, Office Relations and Candidates parameters.
4/7/09	Accept			

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 1 Test Method
Test Case Name	Volume 1 - Maximum Precincts and Ballot Styles for paper
Scope - identifies the type of test	The scope of this test 1639 precincts,1639 ballot styles: **Scenario 1)** The maximum allowed number of precincts with the maximum number ballot styles allowed for paper based systems. To verify that errors are generated in scenarios 2: **Scenario 2)** Exceeding the maximum number of Precincts and the maximum number of ballot

Method Detail	Volume 1 Test Method
	styles. In set-up we identified that 1639 is the limit on ballot styles for paper. Reduced test to 1639 ballot styles and precincts. Testing of 2900 precinct on the DS200 is covered in volume 9
Test Objective	The objective is to validate the ability to process, store and report data using the allowed maximum number of precincts and ballot styles within an election. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding the maximum numbers of precincts and ballot styles. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	General election Local offices Vote for 1 4 Ovals per Inch ballot - (14 inch ballot, 48 ovals positions per Column, 6 columns per ballot, 288 total oval positions) 4 candidates per contest Election Day (DS200 and VAT) Voting (M650) one tabulator **Scenario 1)** 1639 precincts with 1639 ballot styles (Maximum precincts/Maximum ballot styles) - Contests 1 - 290 in Polling Places 1 -29 (10 precincts to a polling place, 3 contest to a precinct) total of 290 ballot styles - No contest/Precincts assigned to Polling Places 30 -290 - Contests 291 - 1639 in Polling Places 291- 1639 (1 precinct to a polling Place, 3 contest to a polling place) 1348 ballot styles - Contest 1639 in Polling Place 1639 with Precincts 1639 (3 contest in the precinct, and all polling places) 1 ballot style TOTALS 1639 Ballot Styles 1639 Precincts 1378 Polling Places **Scenario 2**) 1640 Precincts w/ 1640 ballot styles(over the Maximum precincts/Maximum ballot styles) Add a new contest 1640 to a new Precinct1640 TOTALS 1640 Ballot Styles 1640 Precincts 1640 contest 1640 Polling Places
A description of the voting system type and the operational environment	The Unity 3.2.0.0 EMS Ballot Preparation includes:
VSS 2002 vol. 1	The Unity 3.2.0.0 EMS Ballot Preparation includes: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), hardware Program Manger (HPM), AutoMARK Information (AIMS) 2 @ Unity 3.2.0.0 marking device: Voter Terminal(VAT) 2 @ Unity 3.2.0.0 precinct count includes: DS200 Unity 3.2.0.0 central count tabulator: Model 650 (M650) Unity 3.2.0.0 central count tally: Election Reporting Manager (ERM)
VSS 2002 vol. 2	6.2.3 Volume (maximum number of ballot styles) A4.3.5 Volume (maximum and exceeding more than the maximum number of precincts) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of precincts and ballot styles) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates-graceful shut down and recovery without loss of data)
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consist of the following: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), Hardware Program Manger (HPM), DS200, Model 650 (M650), Election Reporting Manager (ERM), AutoMARK Information (AIMS), Voter Terminal(VAT) All testing was perform by iBeta LLC located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 3/4/09 for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. - Condition of approval - iBeta validated the successful use of the Import Wizard to import large amounts of data into EDM. As configuration of the imported file can impact the success of the data importation, the import file structure must be validated as a prerequisite of all applicable test cases. Import Wizard method tested and validated: 3/18/09

Method Detail	Volume 1 Test Method
	- Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) - Record the testers & date - System has been set up as identified in the user manual - Gather any necessary materials or manuals. - Ensure customization of the test case template is complete - Order ballots - Set Election Date: 11/03/2009 - 8 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information was imported into EDM using the Import Wizard option. Spreadsheet 1 - Precinct 1639 Spreadsheet 2 - District Types 4 Spreadsheet 3 - Districts Names 47 Spreadsheet 4 - District Relations 4920 Spreadsheet 5 - Master Office 46 Spreadsheet 6 - Office Relations 46 Spreadsheet 7 - Candidates 184 Spreadsheet 8 - Polls1639 (actual number of Polls is 1378) Spreadsheet 9 - Poll Relations1639
Getting Started Checks	Check the voting system to: - Verify the test environment and system configuration is documented in the PCA Configuration and matches the system used in the 48 hr. temp & power variation test and vendor described configuration. - Validate installation of the witnessed build - Testers understand that no change shall occur to the test environment without documentation in the test record and the authorization of the project manager. -During testing an operational readiness test was performed.
Documentation of Test Data & Test Results	Test Data: - Record all programmed & observed election, ballot & vote data fields and field contents on the corresponding tabs to provide a method to repeat the test - Preserve all tabs for each instance the test is run. Test Results: - Enter Accept/Reject on the Test Steps - In Comments enter any deviations, discrepancies, or notable observations - Log discrepancies on the Discrepancy Report and insert the discrepancy number in the Comments field of Test Step.
Volume: Paper-based voting systems Processing	Ballot Prep: **Scenario 1)** - 4 candidates per contest - 1639 Ballot Styles - 1639 Precincts - 1639 contest - 1639 Polling Places -An election database was accurately/securely defined & formatted using the Import Wizard. - Set up election by Style -Ballots (candidates & propositions) were accurately defined & generated. - Check EDM reports for election set up - Election media was installed - There were no system errors that caused the EMS ballot preparation applications to crash. **Scenario 2)** - 4 candidates per contest - 1640 Ballot Styles - 1640Precincts - 1640 contest - 1640 Polling Places Test execution of Scenario 2 stop at this point with errors generated prior to the creation of election media in ballot preparation) - Check audit logs for critical status messages. Test stops unless system does not error and creates media) - If EDM does not error during the "Ballot Sets Merge" then the EDM reports must be reviewed to verify 1640 precincts and 1640 ballot styles have been created and assigned to Early Voting Polling Places. Continue to ESSIM and HPM. The system should display a critical status message prior to exiting the HPM. - 1640 Precincts in an election -1640 ballot styles in an election - There were no system errors that caused the EMS ballot preparation applications to crash.
Volume:	System response to processing more than the expected number of precincts and maximum number of ballot styles. Maximum capacity is successfully processed without errors. System's capacity to process, store, and report data.

Method Detail	Volume 1 Test Method
	- When importing the allowed precincts and/or ballot styles into the EDM using the Import Wizard no errors were generated
Stress	System responses to overloading conditions. Exceeding the maximum allow number precincts and ballot styles by sequence.
Performance	No system degradation (Ballot format handling capability and Processing rates): -When importing large amount of data into the EDM using the Import Wizard. -When installing an election with 1639 precincts and 1639 ballot styles onto each device (DS200, M650, and VAT) -When installing an election over the maximum number of precincts and ballot styles onto each device - The system will not slow down as more and more data is added
Error Recovery	Voting system gracefully shuts down (no crash) and recovers from errors caused by overloading the number of precincts and ballots styles. - Ballot format handling capabilities and processing capabilities-graceful shut down and recover without loss of data - Critical Status Messages
Readiness Testing and Poll Verification	Voting system was ready for the election: - The election was correctly installed (Election ID, polling place name, precincts) - Test data (run 10 different precincts to validate the system was ready) was segregated from voting data, with no residual effect' Test confirmation that there are: - No hardware/software failures - The device was ready to be activated to accept votes (No Identification of any failures & corrective action)
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: - Zero count report
Voting: Ballot Activation and Casting Verifications	**Scenario 1)** Protects secrecy of ballot/vote - Mark ballots using the VAT - The DS200 Election Day - Vote an 8% sample of the 1639 precincts - Vote 21 precincts each with a different ballot style - Each precinct will contain 3 contest with 4 candidates **Scenario 2)** Errors should prevent the tests from reaching this point. If the test does get to this point: - Load election - No system failures that cause the DS200 and VAT to crash - There were no errors that cause the DS200 and VAT to crash
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provides a time stamped, always available, report of normal/abnormal events found within the 10% sampling tested. Error messages: - Are generated, stored & reported as they occur - Errors requiring intervention by the voter or poll worker clearly display issues & action instructions in easily understood text language or with indicators - Incorrect responses will not lead to irreversible errors.
Post-vote: Closing the Polls	Once the polls were closed the voting system - Printed reports of ballots counted by tabulator - Reported that votes match predicted votes from the tabulator with votes and undervotes.
Post-vote: Central Count	Paper Based: When loading results mix the input of results such that media was read out of precinct order and where possible mix the reading of DS200 and M650 results. Record the order at test execution. **Scenario 1)** The central count voting system includes: - Election identification - M650 was used for absentee ballots - Zero count report (to verify no votes were on the M650 prior to starting absentee voting) - There were no system errors that cause the M650 to shut down or crash. -M650s scan the ballots generated by the VAT with different precincts/ballots styles within the deck. Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printer Summary Report (containing all precincts) - View (save to disk) Precinct by Precinct Reports but do not print **Scenario 2**) Errors should prevent the test from reaching this point. If the test does get to this point: - Load election - No system failures that cause the M650 or in the EMS ERM application to crash - There were no system errors that cause the M650 or in the EMS ERM application to crash

Method Detail	Volume 1 Test Method
Expected Results are observed	Review the test result against the expected result: • Accept: the expected result is observed • Reject: the expected result of the test case is not observed • Not Testable (NT): rejection of a previous test step prevents execution of this step, or tested in another TC. • Not Applicable (NA): not applicable to test scope
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. - Any failure against the requirements of the EAC guidelines will mean the failure of the system. and shall be reported as such. - Failures will be reported to the vendor as Defect Issues in the Discrepancy Report. - The vendor shall have the opportunity to cure all discrepancies prior to issuance of the Certification Report. - If cures are submitted the applicable test will be rerun. Complete information about the rerun test will be preserved in the test case. The cure and results of the retest will be noted in the - Discrepancy Report and submitted as an appendix of the Certification Report. - Operations which do not fail the requirements but could be deemed defects or inconsistent with standard software practices or election practices will be logged as Informational Issues on the Discrepancy Report. It is the vendor's option to address these issues. Open items will be identified in the report.

7.4.2.2 *Volume 2 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/19/09	Halted - modified test parameters			Tester miscalculation of districting parameters for the test data
4/8/09	Halted - modified test parameters			Tester miscalculation of districting parameters for the test data
4/17/09	Accept			Scenarios 1 through 3
4/17/09	Reject	#116		Scenario 4
6/6/09	Accept		#116	Discrepancy response

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 2 Test Method
Test Case Name	Volume 2 - Maximum Ballot Styles in a Single Precinct
Scope - identifies the type of test	The scope is to test: **Scenario 1)** The maximum allowed number of 40 ballot styles on the DS200 within a single precinct. To verify that errors are generated in scenario 2: **Scenario 2)** Exceeding the maximum allowed number of 40 ballot styles on the DS200 within a single precinct. **Scenario 3)** The maximum allowed number of 100 ballot styles on the M650 within a single precinct To verify that errors are generated in scenario 4: **Scenario 4)** Exceeding the maximum allowed: number of ballot styles within a single precinct
Test Objective	The objective is to validate the ability to process, store and report data using the allowed maximum number of ballot styles within a single precinct. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding the maximum numbers of ballot styles within a single precinct. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	General election for each scenario -An election database can be accurately/securely defined & formatted using the Import Wizard, containing: 1 Precinct with 40 splits Vote for 1 & Vote for N of M Oval Positions Left Certified Write-Ins 5 contest for each ballot style 4 candidates for each contest Check EDM reports for election set up

Method Detail	Volume 2 Test Method
	Election day (DS200) 40 Ballot Styles on the DS200 Maximum ballot styles Election set up for the DS200 & VAT devices Non-partisan offices one page ballot 4 Ovals per Inch ballot - (19 inch ballot, 68 ovals positions per Column, 6 columns per ballot, 408 total oval positions) Election Day Voting (DS200 and VAT) Absentee Voting (M650) 4 candidates for each contest 4 Ovals per Inch ballot - (19 inch ballot, 68 ovals positions per Column, 6 columns per ballot, 408 total oval positions) **Scenario 1**) 1 precinct with 40 Ballot Styles on the DS200 & the VAT (DS200 Maximum ballot styles) **Scenario 2)** 1 precinct with 41 Ballot Styles on the DS200 & the VAT (Over the DS200 Maximum ballot styles) **Scenario 3)** 1 Precinct with 100 ballot styles on the M650 & the VAT (M650 Maximum ballot styles per precinct) **Scenario 4)** 1 Precinct with 101 ballot styles on the M650 & the VAT (M650 Maximum ballot styles per precinct) (Over the maximum ballot styles)
A description of the voting system type and the operational environment	• Same as Volume 1 - Maximum Precincts and Ballot Styles except: - 1 platform of each
VSS 2002 vol. 1	• Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 2	6.2.3 Volume (maximum number of ballot styles/precincts) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of ballot styles/precincts) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down (no crash) and recovery without loss of data) if the number of ballot styles/precincts is exceeded A4.3.5 Performance/Recovery (Processing rates-graceful shut down and recovery without loss of data)
Hardware, Software voting system configuration and test location	• Same as Volume 1 - Maximum Precincts and Ballot Styles
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 1/26/09 For validation of test method as defined in ISO/IEC 17025 clause 5.4.5 Condition of approval - iBeta validated the successful use of the Import Wizard to import large amounts of data into EDM. As configuration of the imported file can impact the success of the data importation, the import file structure must be validated as a prerequisite of all applicable test cases. Import Wizard method tested and validated: 1/23/09. - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) - 7 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information will be imported into EDM using the Import Wizard option for Scenario 1 Election Day Voting (DS200 and VAT) 1 precinct with 40 Ballot Styles on the DS200 & the VAT (DS200 Maximum ballot styles) - Spreadsheet 1 - Precinct 1 Splits 40 - Spreadsheet 2 - District Type 3 - Spreadsheet 3 - Districts Names 23 - Spreadsheet 4 - District Relations 80 - Spreadsheet 5 - Master Office 82 - Spreadsheet 6 - Office Relations 82 - Spreadsheet 7 - Candidates 328 **Scenario 2**. - Spreadsheet 1 - Precinct 1 Splits 41 - Spreadsheet 2 - District Types 3 - Spreadsheet 3 - Districts Names 24 - Spreadsheet 4 - District Relations 81 - Spreadsheet 5 - Master Office 83 - Spreadsheet 6 - Office Relations 83 - Spreadsheet 7 - Candidates 332 - 7 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information will be imported into EDM using the Import Wizard option for Scenario 3 - Spreadsheet 1 - 3 precincts, Precinct 1 40 splits, Precinct 2 & 3 30 splits (100 total) - Spreadsheet 2 - District Types 4 - Spreadsheet 3 - Districts Names 29

Method Detail	Volume 2 Test Method
	- Spreadsheet 4 - District Relations300 - Spreadsheet 5 - Master Office 116 - Spreadsheet 6 - Office Relations 116 - Spreadsheet 7 - Candidates 464 **Scenario 4** - Spreadsheet 1 - 3 precincts, Precinct 1 40 splits, Precinct 2 & 3 31 splits (101 total) - Spreadsheet 2 - District Types 4 - Spreadsheet 3 - Districts Names 30 - Spreadsheet 4 - District Relations302 - Spreadsheet 5 - Master Office 117 - Spreadsheet 6 - Office Relations 117 - Spreadsheet 7 - Candidates 468
Getting Started Checks	Check the voting system to: - Same as Volume 1 - Maximum Precincts and Ballot Styles
Documentation of Test Data & Test Results	Test Data: - Same as Volume 1 - Maximum Precincts and Ballot Styles
Volume: Paper-based voting systems Processing	Ballot Prep: **Scenario 1 & 3** maximum limits: -An election database can be accurately/securely defined & formatted using the Import Wizard. and containing 1 Precinct Vote for 1 (contest 1 & 2) & Vote for N of M (contest 3,4, & 5) 19 inch ballot 5 contest for each ballot style 4 candidates for each contest - Check EDM reports for election set up **Scenario 1)** -Election day (DS200) -40 Ballot Styles on the (DS200 Maximum ballot styles) -Election set up for the DS200 & VAT devices **Senario3)** -Absentee voting (M650) -100 Ballot Styles on the (M650 Maximum ballot styles) -Election set up for the M650 & VAT devices - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenario 2 & 4** Exceeding limits: Test execution of Scenario 2 & 4 stop at this point with errors generated prior to the creation of election media in ballot preparation - Check audit logs for critical status messages. Test stops unless system does not error and creates media - If EDM does not error during the "Ballot Sets Merge" then the EDM reports must be reviewed to verify the DS200 has 41 ballot styles and the M650 has 101 ballot styles have been created and assigned to Election Day Polling Places. Continue to ESSIM and HPM. The system should display a critical status message prior to exiting the HPM. **Scenario2)** -Election day (DS200) Same as Scenario 1 except: -41 Ballot Styles on the DS200 **Scenario 4)** -Absentee voting (M650) Same as Scenario 3 except: -101 Ballot Styles on the -Election set up for the M650 & VAT devices - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data.
Volume:	Same as Volume 1 - Maximum Precincts and Ballot Styles; except - the system responds to processing more than the expected number of ballot styles in a single precinct
Stress	System provides a response to an overloading condition: Exceeding the maximum allow number of ballot styles in a single precinct.
Performance	There is no system degradation (ballot format handling capability and processing rates): -When importing large amount of data into the EDM using the Import Wizard. -When installing an election with 1 precinct and over the maximum number of ballot styles for a give device - The system will not slow down as more and more data is added
Error Recovery	Same as Volume 1 - Maximum Precincts and Ballot Styles; except - the errors are caused by overloading the number ballots styles per precinct.
Readiness Testing and Poll Verification	Same as Volume 1 - Maximum Precincts and Ballot Styles; except - The device is ready to be activated to accept votes with the maximum ballot styles per a single

Method Detail	Volume 2 Test Method
	precinct (No Identification of any failures & corrective action)
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: - Zero count report (verify no votes are on the DS200 prior to starting Election Day voting)
Voting: Ballot Activation and Casting Verifications	Protects secrecy of ballot/vote **Scenario 1)** - 20 ballots will be test (a 50% sample of 40 ballot styles) - VAT -Generate the ballots for 20 different ballot styles within the deck. - DS200- scans the ballots generated by the VAT with different ballot styles within the deck. - Ballot styles 1 through 10, 20 and 40 will be voted - The DS200 In Election Day mode with a single precinct and 40 ballot styles will not error. If there are any system errors that cause the DS200 to shut down then the DS200 shall recover without any loss of data. - The VAT with a single precinct and 40 ballot styles will not error. If there are any system errors that cause the VAT to shut down then the VAT shall recover without any loss of data. **Scenario 2)** Errors should prevent the test from reaching this point. If the test does get to this point: **DS200 and VAT** - Load election - No system failures that cause the DS200 and VAT to crash - If there are any system errors that cause the DS200 and VAT to crash then the DS200 and VAT shall recover without any loss of data.
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Same as Volume 1 - Maximum Precincts and Ballot Styles; except -report of normal/abnormal events is found within the 50% sample.
Post-vote: Closing the Polls	Once the polls are closed the voting system - Printed reports of ballots counted on the DS200 - Reported votes match predicted votes from tabulator with votes and undervotes - DS200 Prints a single precinct totals report totaling all ballot styles within the precinct (Election Day voting ends)
Post-vote: Central Count	Paper Based: **Scenario 2)** - Election identification - Zero count report (to verify no votes are on the M650 prior to starting absentee voting) - 20 ballots will be test (a 20% sample of 100 ballot styles) - VAT -Generate the ballots for 20 different ballot styles within the deck. - M650- scans the ballots generated by the VAT with different ballot styles within the deck. - Ballot styles 1 through 10, 20 and 40 will be voted - The M650 is used for Absentee ballots with a single precinct and 100 ballot styles will not error will not error. If there are any system errors that cause the M650 to shut down then the M650 shall recover without any loss of data. **Scenario 1 & 3)** Vote Consolidation: ERM consolidated reports match the predicted votes from the polling places Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Print Summary Report (containing all a single precinct) - View and Print Precinct by Precinct Reports **Scenario 4)** Errors should prevent the test from reaching this point. If the test does get to this point: **M650** - Load election - No system failures that cause the M650 to crash - If there are any system errors that cause the M650 to crash then the M650 shall recover without any loss of data. **Scenario 2& 4)** Errors should prevent the test from reaching this point. If the test does get to this point: **ERM** - Load election - No system failures that cause the ERM application to crash - If there are any system errors that cause the ERM to crash then the ERM application shall recover without any loss of data.
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts and Ballot Styles
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts and Ballot Styles

7.4.2.3 *Volume 3 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
5/22/09	Accept			Test executed without issues or halting

Method Detail	Volume 3 Test Method
Test Case Name	Volume 3 - Audit Manager database test
Scope - identifies the type of test	The scope of the test was to confirm that 2GB JET database can record and store audit inputs generated in the Election Data Manger for a period of 72 consecutive hours (150% of the ES&S predicted maximum).
Test Objective	The objective was to validate that the Audit Manager capacity can record and retain data inputs (150%) of the ES&S predicted maximum time of use in an election. (48 hours estimated maximum run for 72 consecutive hours). Throughout the 72 hours of testing the application should not have any system crashes, loss of data and/or loss of degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	General election - • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper except: - only using Scenario 1
A description of the voting system type and the operational environment	The Unity 3.2.0.0 EMS Ballot Preparation includes: Audit Manger (AM) and Election Data Manger (EDM)
VSS 2002 vol. 1	2.1.5.1b Audit/Error message 2.2.5.2.3 Status message 5.4.1 Audit/description of modifications with time stamp 2.2.3 Error Recovery
VSS 2002 vol. 2	A4.3.5 Volume (Processing, storing and reporting data when overloading the systems capacity) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates-system does not slow down as more data was being added, no loss of data, and no system crashes) Stress - overloading conditions over a consecutive period of 72 hours.
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consists of the following: Audit Manger (AM) and Election Data Manger (EDM) All testing was performed by iBeta LLC located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisite • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper Test Method Validation: Technical review conducted by C. Coggins; Approved 2-*15-09* for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper except - only using Scenario 1
Getting Started Checks	Check the voting system to : • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Documentation of Test Data & Test Results	Test Data: • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Volume: Paper-based voting systems Processing	Ballot Prep: Using an automation tool the EDM and AM application ran for 90.5 hours consecutively importing election data. (189% of ES&S predicted time of use in an election) - Automation Anywhere - EDM Import Wizard options - Same spreadsheets as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Volume:	System responses when attempting to overload the systems capacity: - Successfully processed without errors. - Processed, stored, and reported data.
Stress	System responded when attempting to overload conditions within 90.5 hours.
Performance	No noticeable system degradation (Processing rates): -during the 90.5 consecutive hours of operation and accessing the Audit Manager logs.
Error Recovery	The Audit Manager application should not error or crash within the 90.5 consecutive hours. - If the application does error the system shall provide a clear description of the problem. - If there are any system errors that cause the Audit Manager application to crash then the application shall recover without any loss of data.
Readiness Testing and Poll Verification	Not Applicable (Audit Manager is not located at the polls)
Pre- vote: Opening the Polls Verification	Not Applicable (Audit Manager is not located at the polls)
Voting: Ballot Activation and Casting Verifications	Not Applicable (Audit Manager is not located at the polls)
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Not Applicable (Audit Manager is not located at the polls)

Method Detail	Volume 3 Test Method
Post-vote: Closing the Polls	Not Applicable (Audit Manager is not located at the polls)
Post-vote: Central Count	Not Applicable (Audit Manager is not located at the Central Count)
Expected Results are observed	Review the test result against the expected result: • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

7.4.2.4 *Volume 4 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
4/13/09	Accept	None	None	Confirmed appropriate errors generated

Method Detail	Volume 4 Test Method
Test Case Name	Volume 4 - Storage Error Generation
Scope - identifies the type of test	The Test Scope is to test: The M650 and DS200 component media generate an error messages when capacity was reached
Test Objective	The objective is to validate error messages are generated when media capacity has been reached.
Test Variables:	Same as Volume 10 - Maximum ballot limitations except: 512MB USB (491 free space) for the DS200 with over 488MB of storage used; 100MB for the M650 with over 85MB of storage used.
A description of the voting system type and the operational environment	The Unity 3.2.0.0 precinct count includes: DS200 The Unity 3.2.0.0 central count tabulator: Model 650 (M650)
VSS 2002 vol. 1	2.2.5.2.2 System Audit Error Messages 2.2.5.2.3 System Audit Status Messages
VSS 2002 vol. 2	A4.3.5 Performance/Recovery (Processing rates-graceful shut down "no system crash" and recovery without loss of data) A4.3.5 Stress (system response to overloading data on hardware media)
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consist of the following: DS200, Model 650 (M650) Testing perform by iBeta LLC located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites; Test Method Validation: Technical review conducted by C. Coggins; Approved 2/23/09. for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. - Condition of approval - iBeta validates component media was populated to near capacity prior to test execution.
Getting Started Checks	Check the voting system to : • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Documentation of Test Data & Test Results	Test Data: - Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Volume: Paper-based voting systems Processing	Same as Volume 10 - Maximum ballot limitations
Volume:	Not Applicable (only testing for error generation of full media on hardware)
Stress	Not Applicable (only testing for error generation of full media on hardware)
Performance	No system degradation (Ballot Processing rate): - On the M650 and DS200 with a large amount of data filling up the media storage the system will not be observed to slow down during testing
Error Recovery	The systems should not error or crash. - If the application does error the system shall provide a clear description of the problem.
Readiness Testing and Poll Verification	Not Applicable (only testing for error generation of full media on hardware)
Pre- vote: Opening the Polls Verification	Pre-Vote:-Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Voting: Ballot Activation and Casting Verifications	DS200 Only- Election Day Voting - in Polling Place 1 Precincts/Ballot Style 1. - Using media that was near capacity scan the marked ballots from Volume 10 ballots until the error "Full memory" is generated. - error message must advise the official how to handle the error. - There were no system errors that cause the DS200 to crash.
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provides a time stamped, report of normal/abnormal events found within the tested. Error messages are: - Are generated, stored & reported as they occur - Errors requiring intervention by the poll worker clearly display issues & action instructions in easily understood text language or with indicators - Incorrect responses will not lead to irreversible errors.
Post-vote: Closing the Polls	Not Applicable (only testing for error recovery of full media on hardware)

Method Detail	Volume 4 Test Method
Post-vote: Central Count	M650 Paper Based: - Zero count report (Absentee) - using media that was near capacity scan the marked ballots from Volume 10 ballots until an error "Full memory" generated. - If there are any system errors that cause the M650 to crash then the M650 shall recover without any loss of data.
Expected Results are observed	Review the test result against the expected result: • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. • Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

7.4.2.5 *Volume 5 Test Results*

Testing was conducted on the system configuration identified in the PCA Configurations and Volume Test Cases 1 though 4 and 6 though 10.

Date	Test Result	Issues Opened	Issues Closed	Notes
6/8/09	Accept			

Method Detail	Volume 5 Test Method
Test Case Name	Volume 5 - Electrical Supply Recovery
Scope - identifies the type of test	Recovery tests verify the ability of the system to recover from hardware and data errors. Power recovery was tested by SysTest in the Electrical Supply Test Case. ES&S has petitioned the EAC for reuse of the applicable components in scope for Unity 3.2.0.0 from the SysTest Labs testing of the Unity v.4.0.0.0 certification test effort. Determination of reuse is based upon the EAC review of SysTest Labs Electrical Supply test results. iBeta incorporates verification of audit logging of error recovery in the Volume test cases.
Test Objective	The objective of the test case is to verify the ability of the system to recover from electrical supply and audit logging of errors.
Test Variables:	The test variables for the SysTest Labs' Electric Supply test case is contained in Rev. 10 of the EAC approved Unity v.4.0.0.0 Test Plan and the associated test case. The test variables for the iBeta Volume Test Methods are identified in Volume Tests through 4 and 6 through 10
A description of the voting system type and the operational environment	The voting system type and operational environment for SysTest Labs' usability, accessibility and maintainability testing is identified in Rev. 10 of the EAC approved Unity v.4.0.0.0 Test Plan
VSS 2002 vol. 1	2.2.5.2.2 Audit/Error messages 2.2.3.2.3 Audit/Status messages 2.2.3 Error Recovery
VSS 2002 vol. 2	A4.3.5 Stress (high volume with interrupts and overloading the systems) A4.3.5 Recovery (system recovers from software and hardware errors without loss of data)
Hardware, Software voting system configuration and test location	The hardware, software voting system configuration and location of testing for SysTest Labs' Electrical Supply testing is identified in Rev. 10 of the EAC approved Unity v.4.0.0.0 Test Plan iBeta - Identified in Volume Tests 1 through 4 and 6 through 10
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) Test Method Validation: Technical review conducted by C. Coggins; Approved 2/4/09 for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. Determination by the EAC allowing the reuse of SysTest Labs Electrical Supply test. iBeta Volume Tests 1 through 4 and 6 through 10 test cases have been executed and passed
Getting Started Checks	Identified in Volume Tests 1 through 4 and 6 through 10
Documentation of Test Data & Test Results	Identified in Volume Tests 1 through 4 and 6 through 10
Volume: Paper-based voting systems Processing	Not applicable to Electrical Supply Recovery
Volume:	Not applicable to Electrical Supply Recovery
Stress	EAC to review the SysTest Labs test results and verifies: Software responds to power interrupts iBeta to review the Volume test results and verifies the system responds to interrupts.
Performance	EAC to review the SysTest Labs Cases and verifies: Voting system is able to recover gracefully from errors or crashes caused by power failures without loss of data

Method Detail	Volume 5 Test Method
	iBeta to review the Volume test results and verifies the system recovers from errors or crashes without loss of data
Error Recovery	EAC to review the SysTest Labs Cases and verifies: Voting system is able to recover from errors or crashes caused by power failures. iBeta to review the Volume test results and verifies the system recovers from errors or crashes
Readiness Testing and Poll Verification	Not applicable to Electrical Supply Recovery
Pre- vote: Opening the Polls Verification	Not applicable to Electrical Supply Recovery
Voting: Ballot Activation and Casting Verifications	Not applicable to Electrical Supply Recovery
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Not applicable to Electrical Supply Recovery
Post-vote: Closing the Polls	Not applicable to Electrical Supply Recovery
Post-vote: Central Count	Not applicable to Electrical Supply Recovery
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts and Ballot Styles
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts and Ballot Styles

7.4.2.6 *Volume 6 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/23/09	Accept			Test parameters were adjusted prior to test execution. These changes are identified in the as run Test Plan

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 6 Test Method
Test Case Name	Volume 6 - Maximum number precincts and Maximum number of candidates per polling place.
Scope - identifies the type of test	The scope is to: **Scenario** 1) Test the maximum allowed: number of precincts and maximum number of candidates per polling place. To verify that errors are generated when: **Scenario** 2) Exceeding the HPM maximum allowed: number of precincts in a single polling place
Test Objective	The objective is to validate the ability to process, store and report data to the maximum and exceeding the maximum allowed number of precincts in a single polling place. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding maximum the allowed number of precincts in a single polling place. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors then the system shall recover without any loss of data.
Test Variables:	General election **Scenario 1)** - DS200 set up for Early Voting - 19 inch ballot (4 Ovals per inch) - 1900 precincts (early voting) - 8 ballot styles - 8 Non Partisan contest - Precincts 1 - 6 with each will a single contest containing 175 candidates per contest (ballot style 1-6) - Precincts 7-800 with 75 candidates in a single contest (ballot style 7) - Precincts 801 - 1900 with 75 candidates in a single contest (ballot style 8) - Vote for 1 - 1 Statistical Counters (Precincts Counted) - 1 Polling Place **Scenario 2)** Same as scenario 1 except: - 9 ballot styles - 9 Non-Partisan contest - Precincts 1901 with 2 candidates in a single new contest (1 new ballot style, 1 new precincts , 1 new contest, same polling place as in Scenario 1)
A description of the voting system type and the operational environment	• Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

Method Detail	Volume 6 Test Method
VSS 2002 vol. 1	• Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
VSS 2002 vol. 2	A4.3.5 Volume (maximum and exceeding more than the maximum number of precincts in a Polling Place) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of precincts in a Polling Place) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates-graceful shut down and recovery without loss of data)
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consist of the following: Audit Manger (AM), Election Data Manger (EDM), ES&S Image Manager (ESSIM), hardware Program Manger (HPM), DS200, Election Reporting Manager (ERM), AutoMARK Information (AIMS), Voter Terminal(VAT) All testing will be perform by iBeta located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 1/27/09 for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. Condition of approval - iBeta validated the successful use of the Import Wizard to import large amounts of data into EDM. As configuration of the imported file can impact the success of the data importation, the import file structure must be validated as a prerequisite of all applicable test cases. - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) Import Wizard method tested and validated: - 7 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information will be imported into EDM using the Import Wizard option. - Spreadsheet 1 - Precinct 1900 - Spreadsheet 2 - District Types 8 - Spreadsheet 3 - Districts Names 8 - Spreadsheet 4 - District Relations 8 - Spreadsheet 5 - Master Office 8 - Spreadsheet 6 - Office Relations 8 - Spreadsheet 7 - candidates 1200
Getting Started Checks	Check the voting system to : Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Documentation of Test Data & Test Results	Test Data: Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Volume: Paper-based voting systems Processing	Ballot Prep: -An election database can be accurately/securely defined & formatted using the Import Wizard. -Ballots (candidates) can be accurately defined & generated. **Scenario 1)** Election can be created and installed with 1900 Precincts in a single Polling Place. No error occurs - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. - Review the EDM reports to verify election set up. **Scenario 2)** Same as scenario 1 except over the maximum allowed number of Precincts in a single Polling Place (1901) Test execution of Scenario 2 is expected to stop at this point with errors generated in the ballot preparation prior to the creation of election media - Check audit logs for critical status messages. Test stops unless system does not error and creates media) - If EDM does not error during the "Ballot Sets Merge" then the EDM reports must be reviewed to verify 1901 precincts have been created and assigned to a single early voting Polling Place. Continue to ESSIM and HPM. The system should display a critical status message prior to exiting the HPM. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data.
Volume:	Systems capacity to process, store, and report data. - When importing over the allowed amount of data into the EDM using the Import Wizard
Stress	System responses to overloading conditions. Exceeding the maximum allowed number of Early Voting precincts in a single Polling Place.
Performance	There is no system degradation (Ballot format handling capability and Processing rates): - When importing large amount of data into the EDM using the Import Wizard. - The system does not slow down throughout the testing
Error Recovery	Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

Method Detail	Volume 6 Test Method
Readiness Testing and Poll Verification	Voting system is ready for the election: Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper except: - Run 1 precincts to validate the system is ready; confirm the test data is segregated from voting data, with no residual effect. Verify totals and audit logs.
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Voting: Ballot Activation and Casting Verifications	**Scenario 1)** Election Day Voting - The VAT & DS200 are in Polling Place 1 with Precincts 1-1900. - Voting using 95 different precincts (5% of 1900 precincts), 2 ballots per precinct for a total of 190 ballots (10% sample voted). - Mark ballot using the VAT - Scan using the DS200 - No errors are expected. - If there are any system errors that cause the DS200 & the VAT to crash then verify the DS200 and the VAT recover without any loss of data. - Verify the counter (number of voters) on the DS200 and the VAT match the expect results. **Scenario 2)** Errors should prevent the test from reaching this point. If the test does get to this point: - Load election - No system failures that cause the DS200 and/or the VAT to crash - If there are any system errors that cause the DS200 and the VAT to crash then the DS200 and the VAT shall recover without any loss of data.
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Post-vote: Closing the Polls	Once the polls are closed the voting system - Printed reports of ballots counted by tabulator - Reported votes match predicted votes from tabulator with votes and undervotes. - In Polling Place 1 the DS200 prints precincts 1 - 1900 totals (early voting ends)
Post-vote: Central Count	Paper Based: When loading results mix the input of results such that media is read out of precinct order and where possible mix the reading of DS200 results. Record the order at test execution. **Scenario 1)** The central count voting system M650 Not Applicable in this test case Vote Consolidation: - ERM consolidated reports match the predicted votes. - Verify no data was lost within the audit logs or results Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printer Summary Report - View and Print Precinct by Precinct Reports **Scenario 2)** Errors should prevent the test from reaching this point. If the test does get to this point: - Load election - If there are any system errors that cause the EMS ERM application to crash then the ERM application shall recover without any loss of data.
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

7.4.2.7 *Volume 7 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/16/09	Halted modified test parameters			Test data provide by ES&S was for a General Election and not a Primary as stated in the Test Case
3/20/09	Halted modified test parameters			ES&S' internal testing found a lower contest limit for Primary Election. No issue was logged as new documentation was immediately provided. The test case was modified to now test the limits for both a General and an Open Primary
5/2/09	Accept		#30, 32, 33	

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 7 Test Method
Test Case Name	Volume 7 - Maximum ballot limitations
Scope - identifies the type of test	The scope is to test: **Scenario 1)** For all election types except an Open Primary the maximum allowed : number of contests in a ballot style; number of candidates in a contest; number of parties; number of " VOTE FOR" in a contest; and number of candidate counters in a precinct **Scenario 3)** For an Open Primary the maximum allowed: number of contests in a ballot style; number of candidates in a contest; number of parties; number of "VOTE FOR" in a contest; and number of candidate counters in a precinct To verify that errors are generated or that the system continues without system failure when exceeding the maximum limits in scenarios 2 and 4: **Scenario 2 & 4)** The maximum allowed number of candidates in a contest, number of parties, number of " VOTE FOR" in a contest, while **exceeding** the maximum: number of contests in a single ballot style. The maximum allowed number of contests in a ballot style and candidate counters in a precinct while **exceeding** the maximum: candidates in a contest; "VOTE FOR" in a contest. The maximum allowed number of contests in a ballot style, candidates in a contest, number of "VOTE FOR" in a contest, and number of candidate counters in a precinct while **exceeding** the maximum: number of parties. The maximum allowed number of contests in a ballot style, candidates in a contest, number of parties, number of "VOTE FOR" in a contest, while **exceeding** the maximum: number of candidate counters in a precinct. - Discrepancy 30 (SysTest 429 Election description, Ballot Name/Full path to ballot definition file) - Discrepancy 32(SysTest 453 orientation ballot errors) - Discrepancy 33(SysTest 454 internal rollers)
Test Objective	The objective is to validate the ability to process, store and report data to the maximum and exceed the maximum allowed number of contest in a ballot style, maximum number of candidates in a contest, maximum number of parties, maximum number of "VOTE FOR" in a contest, and the maximum number of candidate counters in a precinct. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding maximum allowed limits. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	**Scenario 1)** General Election 2 Precincts (Precinct 1/ballot style 1& Precinct 2/ballot style 2) - 2 Statistical Counter (Precincts counted, Ballots counted) 1 Polling Place 19 inch ballot (4 ovals per inch, 68 oval positions per column, 408 total positions) **Precinct 1/ballot style 1** - 1 Partisan contest: - 18 parties (max allowed in an election) - Vote for 1 - 3 candidates per party - 1 Non-Partisan contest: - vote for 90 (max allowed in a contest) - 175 candidates (max allowed in a contest) **Precinct 2/ballot style 2** - 200 Non-Partisan contest (max number of contest allowed with a 19 inch ballot) - vote for 1 - 200 candidates (1 candidate per contest) **Counters:** 200 candidates 200 undervotes 200 overvotes 400 Statistical Counter 1000 total counters in a precinct **Scenario 2)** Same as scenario 1 except : - Precinct 2/ballot style 2: 201 contest and 201 candidates (exceeding contest in a single ballot style) - Precinct 1/ballot style 1Non-Partisan contest: 176 candidates, Vote For 91(exceeding candidates and VOTE FOR in a contest) - Precinct 1/ballot style 1 Partisan contest: 19 parties - Precinct 2/ballot style 2: 3 Statistical Counters (exceeding candidate counters in a precinct) **Counters:** 201 candidates 201 undervotes 201 overvotes 401 Statistical Counter 1004 total counters in a precinct **Scenario 3)**

Method Detail	Volume 7 Test Method
	Same as scenario 1 except: -Open Primary Election - **Precinct 2/ballot style 2** - 70 Non-Partisan contest (max number of contest allowed with a 19 inch ballot for an Open Primary Election) **Scenario 4)** Same as scenario 1 except: -Open Primary Election - **Precinct 2/ballot style 2** - 71 Non-Partisan contest (max number of contest allowed with a 19 inch ballot for an Open Primary Election)
A description of the voting system type and the operational environment	Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 1	Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 2	6.2.3 Volume (maximum number Parties, Vote for, Statistical Counters, candidates in a single contest, and contests) A4.3.5 Volume (maximum and exceeding more than the maximum number of Parties, Vote for, Statistical Counters, candidates in a single contest, and contests) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of Parties, Vote for, Statistical Counters, candidates in a single contest, and contests) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down (no crash) and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates- shut down (no crash)and a graceful recovery without loss of data)
Hardware, Software voting system configuration and test location	Same as Volume 1 - Maximum Precincts and Ballot Styles
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 1/27/09 for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. - - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) - 7 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information will be imported into EDM using the Import Wizard option. **Scenario 1**) - Spreadsheet 1 - Parties 18 - Spreadsheet 2 - Precinct 2 - Spreadsheet 3 - Districts Names 3 - Spreadsheet 4 - District Relations 3 - Spreadsheet 5 - Master Office 202 - Spreadsheet 6 - Office Relations 202 - Spreadsheet 7 - Candidates 429 **Scenario 3**) - Spreadsheet 1 - Parties 18 - Spreadsheet 2 - Precinct 2 - Spreadsheet 3 - Districts Names 3 - Spreadsheet 4 - District Relations 3 - Spreadsheet 5 - Master Office 89 - Spreadsheet 6 - Office Relations 89 - Spreadsheet 7 - Candidates 299
Getting Started Checks	Check the voting system to : Same as Volume 1 - Maximum Precincts and Ballot Styles
Documentation of Test Data & Test Results	Test Data: Same as Volume 1 - Maximum Precincts and Ballot Styles
Volume: Paper-based voting systems Processing	Ballot Prep: -An election database can be accurately/securely defined & formatted using the Import Wizard. - Discrepancy 30 (SysTest 429 Election description, Ballot Name/Full path to ballot definition file) using the default file name. -Ballots (candidates & propositions) can be accurately defined & generated. **Scenario 1 General Election and Scenario 3 Open Primary Election)** Election media can be installed with the maximum allowed number of contests in a ballot style, maximum number of candidates in a contest, maximum number of parties, maximum number of " VOTE FOR" in a contest, and the maximum number of candidate counters in a precinct without error. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenarios 2 and 4)** Test execution of Scenario's expected to stop at this point with errors generated prior to the creation of election media in ballot preparation) - Check audit logs for critical status messages. Test stops unless system does not error and creates media) - If EDM does not error during the "Ballot Sets Merge" then the EDM reports must be reviewed to verify each of Scenarios listed below have been created exceeding the ballot limits. Continue to ESSIM and HPM. The system should display a critical status message prior to exiting the HPM.

Method Detail	Volume 7 Test Method
	-If HPM does not error continue to voting the election and tally at the central count. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenario 2**) - Precinct 2/ballot style 2 has 201 contest and 201 candidates - Precinct 1/ballot style 1 has 176 candidates, Vote For 91 - Precinct 1/ballot style 1 has 19 parties - Precinct 2/ballot style 2 has 3 Statistical Counters **Scenario 4**) Same as Scenario 2 except: - Precinct 2/ballot style 2 has 71 contest and 71 candidates
Volume:	Maximum capacity is successfully processed without errors, as identified in the Test Variables Systems capacity to process, store, and report data. - When importing over the allowed amount of data into the EDM using the Import Wizard
Stress	System provides a response to overloading conditions. Exceeding/overloading the maximum allow number of ballot limits identified in the scope.
Performance	There is no system degradation (Ballot format handling capability and Processing rates): - When importing large amount of data into the EDM using the Import Wizard. - The system does not slow down throughout the testing
Error Recovery	Same as Volume 1 - Maximum Precincts and Ballot Styles
Readiness Testing and Poll Verification	Voting system is ready for the election: Same as Volume 1 - Maximum Precincts and Ballot Styles except: - Run 1 precinct to validate the system is ready; confirm the test data is segregated from voting data, with no residual effect. Verify totals and audit logs.
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: Same as Volume 1 - Maximum Precincts and Ballot Styles
Voting: Ballot Activation and Casting Verifications	- Discrepancy 32(SysTest 453 orientation ballot errors) no orientation ballot errors while scanning the ballots - Discrepancy 33(SysTest 454 internal rollers) internal rollers do not stop while scanning ballots **Scenario1)** Election Day Voting - The VAT & DS200 are in Polling Place 1 Precincts 1 - 2. - Mark 10% of 20 ballots per ballot style using the VAT and scan all of the ballots on the DS200) - scanning in each of the 4 orientation. - No errors are expected. - If there are any system errors that cause the DS200 & the VAT to crash then verify the DS200 and the VAT recover without any loss of data. - Verify the counter on the DS200 and the VAT match the expect results. **Scenario 3)** Same as Scenario 1 except: - Scan 12 ballots for ballot style 2. **Scenario 2 and 4)** Errors should prevent the test from reaching this point. If the test does get to this point: - Load election(s) - No system failures that cause the DS200 and/or the VAT to crash - If there are any system errors that cause the DS200 and the VAT to crash then the DS200 and the VAT shall recover without any loss of data.
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provides a time stamped, always available, report of normal/abnormal events found within the test. - Same as Volume 2 - Maximum Ballot Styles in a Single Precinct except:
Post-vote: Closing the Polls	Once the polls are closed the voting system: Same as Volume 2 - Maximum Ballot Styles in a Single Precinct except: - In Polling Place 1 the DS200 prints precincts 1 & 2 totals
Post-vote: Central Count	Paper Based: When loading results mix the input of results such that media is read out of precinct order and where possible mix the reading of DS200 and M650 results. Record the order at test execution. **Scenario 1)** The central count voting system includes: - Election identification - Zero count report (to verify no votes are on the M650 prior to starting voting) - 20 ballots per ballot style - No errors are expected. - If there are any system errors that cause the M650 to crash then the M650 shall recover without any loss of data. - Verify the counter on the DS200 and the VAT match the expect results. Vote Consolidation: - ERM consolidated reports match the predicted votes. - Verify no data was lost within the audit logs or results Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printer Summary Report - View and Print Precinct by Precinct Reports **Scenario 2 and 4)**

Method Detail	Volume 7 Test Method
	Errors should prevent the test from reaching this point. If the test does get to this point: - Load election - No system failures that cause the M650 or in the EMS ERM application to crash - If there are any system errors that cause the M650 or in the EMS ERM application to crash then the M650 or in the EMS ERM application shall recover without any loss of data.
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts and Ballot Styles
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts and Ballot Styles

7.4.2.8 *Volume 8 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/20/09	Fail - v8s1	#104		Scenario 1
3/23/09	Accept v8s2			Scenario 2
5/14/09	Accepted v8s1		#104	Scenario 1Acceptance is based upon acceptance that this discrepancy is out of scope of Unity 3.2.0.0. Issue 104 will be transferred to Unity 4.0 as discrepancy #1.

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 8 Test Method
Test Case Name	Volume 8 - M650 maximum number of candidates/counter in an election.
Scope - identifies the type of test	The scope is to test: **Scenario 1)** The M650 maximum allowed: number of candidates/counter within an election. To verify that errors are generated scenario 2: **Scenario 2)** Exceeding the M650 maximum: allowed number of candidates/counter within an election.
Test Objective	The objective is to validate the ability to process, store and report data using the maximum and exceeding the maximum allowed number of candidates/counter. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding the M650 maximum allowed number of candidates/counter. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	General election M650 set to Absentee 10 Precincts on 1 M650 Each Precinct contains 75 contest 19 inch ballot (4 ovals per inch, 68 oval positions per column, 408 total positions) General election Absentee **Scenario 1)** - 750 contest - 3 candidates per contest - 0 Statistical Counters **Counters:** 2250 candidates (750 contest, 3 candidates no Write-ins) 750 undervotes 750 overvotes Total counters = 3750 **Scenario 2)** Same as scenario 1 except: - 751 contests **Counters:** 2253 candidates (751 contest, 3 candidates no Write-ins) 751 undervotes 751 overvotes Total counters = 3755
A description of the voting system type and the operational environment	The Unity 3.2.0.0 EMS Ballot Preparation includes: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), hardware Program Manger (HPM)

Method Detail	Volume 8 Test Method
	The Unity 3.2.0.0 central count tabulator: Model 650 (M650) The Unity 3.2.0.0 central count tally Election Reporting Manager (ERM)
VSS 2002 vol. 1	• Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 2	6.2.3 Volume (maximum number of M650 Candidate Counters) A4.3.5 Volume (maximum and exceeding more than the maximum number of M650 Candidate Counters) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of M650 Candidate Counters) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down (no crash) and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates- shut down (no crash) and a graceful recovery without loss of data)
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consists of the following: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), hardware Program Manger (HPM), Model 650 (M650), Election Reporting Manager (ERM), All testing will be performing by iBeta LLC located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved with the incorporation of review comments on 1/22/09 (validation of test method as defined in ISO/IEC 17025 clause 5.4.5) - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) Condition of approval - iBeta validates the successful use of the Import Wizard to import large amounts of data into EDM. As configuration of the imported file can impact the success of the data importation, the import file structure must be validated as a prerequisite of all applicable test cases. Import Wizard method tested and validated on 1/21/2009 by Stephanie Eaton. - 7 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information will be imported into EDM using the Import Wizard option. - Spreadsheet 1 - Precinct 10 - Spreadsheet 2 - District Type 10 - Spreadsheet 3 - Districts Names10 - Spreadsheet 4 - District Relations 10 - Spreadsheet 5 - Master Office 750 - Spreadsheet 6 - Office Relations 750 - Spreadsheet 7 - Candidates 2250
Getting Started Checks	Check the voting system to : Same as Volume 1 - Maximum Precincts and Ballot Styles
Documentation of Test Data & Test Results	Check the voting system to : Same as Volume 1 - Maximum Precincts and Ballot Styles
Volume: Paper-based voting systems Processing	Ballot Prep: General election **Scenario 1)** 10 Precincts , each Precinct contains 75 contest -An election database can be accurately being defined & formatted using the Import Wizard. -Ballots (candidates & propositions) can be accurately defined & generated. -19 inch ballot -0 Statistical Counters - Create media for the M650 only - all precincts assigned to 1 M650 The election can be created with 3800 candidate counters with in an election. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenario 2)** Test execution of Scenario 2 stops at this point with errors generated prior to the creation of election media in ballot preparation) - Check audit logs for critical status messages. Test stops unless system does not error and creates media) - If EDM does not error during the "Ballot Sets Merge" then the EDM reports must be reviewed to verify the election is set up. Continue to ESSIM and HPM. The system should display a critical status message prior to exiting the HPM. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenario 2)** Same as Scenario 1 except: - 751 contests and 2253 candidates
Volume:	Maximum capacity is successfully processed without errors.

Method Detail	Volume 8 Test Method
	Systems capacity to process, store, and report data. - When installing an election on the M650 containing over the allowed candidate counters, errors are generated.
Stress	System provides a response to overloading conditions. Exceeding/overloading the maximum allow number of Candidate Counters in the M650.
Performance	No system degradation (Ballot format handling capability and Processing rates) is observed: - When importing large amount of data into the EDM using the Import Wizard. -When importing 3750 candidate counters -When importing 3755 candidate counters - The system will not slow down throughout the testing
Error Recovery	Precinct Count/ Paper based: Same as Volume 1 - Maximum Precincts and Ballot Styles
Readiness Testing and Poll Verification	See below - Post Vote: Central Count
Pre- vote: Opening the Polls Verification	Not Applicable (M650 is not located at the polls)
Voting: Ballot Activation and Casting Verifications	Not Applicable (M650 is not located at the polls)
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Not Applicable (M650 is not located at the polls)
Post-vote: Closing the Polls	Not Applicable (M650 is not located at the polls)
Post-vote: Central Count	Paper Based: **Scenario 1)** - Load election with 3750 Candidate Counters - Hand mark and scan ballots through the M650 - Verify the counter on the M650 match the expect results. - If there are any system errors that cause the M650 to shut down (crash) then the M650 shall recover without any loss of data. Vote Consolidation: - ERM consolidated reports match the predicted votes. - Verify no data was lost within the audit logs or results Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printer Summary Report - View and Print Precinct by Precinct Reports for Precincts 1 - 10 : **Scenario 2)** Errors should prevent the test from reaching this point. If the test does get to this point: - Load election - No system failures that cause the M650 or in the EMS ERM application to crash - If there are any system errors that cause the M650 or in the EMS ERM application to crash then the M650 or in the EMS ERM application shall recover without any loss of data.
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts and Ballot Styles
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts and Ballot Styles

7.4.2.9 *Volume 9 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
4/24/09	Reject v9s1	144, 145		Scenario 1Handled volume without issues; Misread in a vote in a single contest
5/12/09	Accept v9s2			Scenario 2
6/19/09	Accept		#144	Acceptance of Data Accuracy & state testing
6/26/09	Accept		#121, 145, 151	Regression for 145 absence of image, 121 -DS200 audit log, 151 ERM log an error for loading a corrupted file

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 9 Test Method
Test Case Name	Volume 9 - ERM maximum number of candidates/counter in an election.
Scope - identifies the type of test	The scope is to test: **Scenario 1**) The ERM maximum allowed: number of ERM candidates/counter within an election,

Method Detail	Volume 9 Test Method
	maximum allowed number of Precincts and the maximum number of Precincts in a single Polling Place in Election Day mode. To verify that errors are generated in scenario 2: **Scenario 2)** Exceeding the maximum number of ERM candidates/counter within an election, maximum allowed number of Precincts and the maximum number of Precincts in a single Polling Place in Election Day mode.
Test Objective	The objective is to validate the ability to process, store and report data using the maximum and exceeding the maximum allowed number of Precincts, ERM candidates/counter and Election Day Precincts within a single Polling Place. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding the Precincts, ERM maximum allowed number of candidates/counter and Election Day Precincts within a single Polling Place. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	General election - Election Day 10 precincts to a polling place (max limit on polling places for election day) 19 inch ballot (4 ovals per inch, 68 oval positions per column, 408 total positions) 290 polling places **Scenario 1**) - 16 Districts Types - 129 District Names - 2900 Precincts (Volume 1"Precincts" spreadsheet) - **3670 contest (added 170 contest)** - 3 candidates (removed W/Is) -1 Statistical Counters (added 1 counter) Scenario 1 **counters:** -9990 candidates (new limit identified; removed 3500 W/Is, then removed 510 candidates) -3670 (undervote counters) (added 170) -3670 (overvote counters) (added 170) Spreadsheet 1 - Precincts 2900 Spreadsheet 2 - District Types 16 (including countywide) Spreadsheet 3 - District Names 129 Spreadsheet 4 - District Relations 5930 Spreadsheet 5 - Master Office 3670 Spreadsheet 6 - Office Relations 3670 Spreadsheet 7 - Candidates 9990 Spreadsheet 8 - Master Polling Place 290 Spreadsheet 9 - Poll Relations 290 **Scenario 2**) Same as scenario 1 except: - 3671 contests -9993 candidates -3671 (undervote counters) -3671 (overvote counters) Polling Place 290 has 11 Precincts (instead of 10)
A description of the voting system type and the operational environment	The Unity 3.2.0.0 EMS Ballot Preparation includes: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), Hardware Program Manger (HPM), AutoMARK Information (AIMS) The Unity 3.2.0.0 marking device: 1 @ Voter Terminal(VAT) The Unity 3.2.0.0 precinct count includes: 2 @ DS200 The Unity 3.2.0.0 central count tally: Election Reporting Manager (ERM)
VSS 2002 vol. 1	Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 2	6.2.3 Volume (maximum number of ERM Candidate Counters) A4.3.5 Volume (maximum and exceeding more than the maximum number of ERM Candidate Counters) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of ERM Candidate Counters) A4.3.5 Recovery (EMS capabilities to gracefully shut down (no crash) and recovery without loss of data) A4.3.5 Performance/Recovery (Processing rates- ballot formatting handling capabilities (no crash)and a graceful recovery without loss of data)
Hardware, Software voting system configuration and test location	The Unity 3.2 Voting System consist of the following: Audit Manger (AM), Election Data Manger (EDM), (ESSIM), hardware Program Manger (HPM), DS200, Election Reporting Manager (ERM), AutoMARK Information (AIMS), Voter Terminal(VAT) All testing was perform by iBeta located at 3131 S. Vaughn Way, Aurora, CO 80014.
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 2/4/09 (validation of test method as defined in ISO/IEC 17025 clause 5.4.5) Reconfiguration of data import

Method Detail	Volume 9 Test Method
	reviewed by J Garcia 4/28/09 - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) - 9 Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information was imported into EDM using the Import Wizard option. Spreadsheet 1 - Precincts 2900 Spreadsheet 2 - District Types 16 (including countywide) Spreadsheet 3 - District Names 129 Spreadsheet 4 - District Relations 5930 Spreadsheet 5 - Master Office 3670 Spreadsheet 6 - Office Relations 3670 Spreadsheet 7 - Candidates 9990 Spreadsheet 8 - Master Polling Place 290 Spreadsheet 9 - Poll Relations 290
Getting Started Checks	Check the voting system to : Same as Volume 1 - Maximum Precincts and Ballot Styles
Documentation of Test Data & Test Results	Test Data: Same as Volume 1 - Maximum Precincts and Ballot Styles
Volume: Paper-based voting systems Processing	Ballot Prep: **Scenario 1)** - General election -An election database was accurately defined & formatted using the Import Wizard. -Ballots (candidates & propositions) were accurately defined & generated. -19 inch ballot -290 Polling Places -10 precincts to a Polling Place - 1 Statistical Counters - A total of 129 District Names within 16 District Types creating 1639 ballot styles. District Type / District Name: P1 / P1, P2 / P2, P3 / P3, P4 / P4, P5 / P5, P6 / P6, P7 / P7, P8 / P8, P9 / P9, P10 / P10, BA / BA 1-20, BB / BB 1 - 22, BC / BC 1 - 4, CA / CA 1 - 35, CB / CB 1 - 37, County wide / countywide. - Each unique ballot style was configured by incorporating 3670 different contests. Each ballot contains a minimum of 38 contests to a maximum of 78 contests. The election will contain 9990 unique candidates with either 2 or 3 candidates to a single contest. - The election was created with 21000 candidate counters, 2900 precincts, and 10 precincts to a single polling place. - Check EDM reports for election set up. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data **Scenario 2)** Test execution of Scenario 2 did not stop at this point with errors generated prior to the creation of election media in ballot preparation. Test continued because system did not error. Media was created. - EDM did not error during the "Ballot Sets Merge"; the EDM reports were reviewed to verify Scenario 2 had 3671 contest, 2901 precincts and 11 Precincts assigned to a single early voting Polling Place. Continued to ESSIM and HPM. The system did not display a critical status message prior to exiting the HPM. - There were no system errors that caused the EMS ballot preparation applications to crash. **Scenario 2)** Same as Scenario 1 except: - 3671 contests - 9993 candidates - 2901 Precincts - 11 Precincts in Polling Place 290
Volume:	Maximum capacity was successfully processed without errors. Systems capacity to process, store, and report data. - When importing over the allowed candidate counters into the ERM errors are generated.
Stress	System provides a response to overloading conditions. Exceeding the maximum allow number of Candidate Counters in the ERM.
Performance	No system degradation (Ballot format handling capability and Processing rates) was observed: - When importing a large amount of data into the EDM using the Import Wizard. - When importing 21000 candidate counters (9990 candidates, 3670 contests) - When importing 21006 candidate counters (9993 candidates, 3671 contests) - The system did not slow down throughout the testing
Error Recovery	Same as Volume 1 - Maximum Precincts and Ballot Styles
Readiness Testing and Poll Verification	Voting system was ready for the election: Same as Volume 1 - Maximum Precincts and Ballot Styles
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: Same as Volume 1 - Maximum Precincts and Ballot Styles
Voting: Ballot Activation and Casting Verifications	**Scenario 1**) The DS200 was programmed for Election Day Voting. -Of the 16 District Types vote District Types./District Names: P1, BA / BA 1-20, BB / BB 1 - 22, BC / BC 1 - 4, CA / CA 1 - 35,

Method Detail	Volume 9 Test Method
	CB / CB 1 - 37, County wide / countywide. A total of 290 ballots were tested in 29 Polling Places, Polling Places 1 (Precincts 1 - 10), 38 thru 50 (Precincts 371 - 500), 145 thru 158 (Precincts 1441 - 1580), 290 (Precincts 2891 - 2900), 10 ballots per Polling Place- one ballot per Precinct. - Polling Place 290 with Precincts2891 - 2900 were marked by the VAT and then scanned into the DS200. - If there are any system errors that cause the DS200 or the VAT to shut down (crash) then the DS200and the VAT shall recover without any loss of data. **Scenario 2**) No errors prevented the test from reaching this point: - The election(s) loaded - No system failures that caused the DS200 and/or the VAT to crash
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provides a time stamped, always available, report of normal/abnormal events found within the test. - Same as Volume 2 - Maximum Ballot Styles in a Single Precinct
Post-vote: Closing the Polls	Once the polls are closed the voting system - Prints reports of ballots counted by tabulator - Reported votes match the predicted votes from tabulator with votes and undervotes. - Polling Places will print the precincts totals (Election Day voting ends)
Post-vote: Central Count	Vote Consolidation: **Scenario 1**) - M650 Not Applicable (M650 limit was 3800 and was tested in Volume 8) - ERM does not crash with 21000 candidate counters and 10 precincts within an Election. - ERM consolidated reports match the predicted votes. Vote Consolidation: ERM consolidated reports match the predicted votes from the polling places Reports include: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printer Summary Report If there are any system errors that cause the ERM application to crash then the ERM application shall recover without any loss of data. **Scenario 2)** No errors prevented the test from reaching this point: - The election loaded into ERM - No system failures caused the EMS ERM application to crash
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts and Ballot Styles
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts and Ballot Styles

7.4.2.10 *Volume 10 Test Results*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case. Specific software and firmware builds for each test execution are recorded in the PCA Configuration as identified in the individual test case document.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/18/09	Reject	99		Requesting to print > 5000 precincts generates an error, shut down ERM and does not write to the audit log
5/13/09	Accept		99	Accepted because operation is consistent with Vol.1: 4.2.3.e "*the design must explicitly protect all recorded votes and audit log information and must implement formal exception handlers provided by the language*". RMCobol Error is using the handler provided by the language and it protected vote and audit log data.

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. No issues are documented in Appendix E- Discrepancy Report.

Method Detail	Volume 10 Test Method
Test Case Name	Volume 10 - maximum number of Ballot Styles in an election.
Scope - identifies the type of test	The scope is to test: **Scenario 1)** The HPM maximum allowed number of Ballot Styles within an election. To verify that errors are generated when: **Scenario 2)** Exceeding the HPM maximum allowed number of Ballot Style within an election.

Method Detail	Volume 10 Test Method
Test Objective	The objective is to validate the ability to process, store and report data using the maximum and exceeding the maximum number of Ballot Styles allowed in an Election. To validate that the system generates errors during EMS ballot preparation (ballot preparation including: EDM, ESSIM & HPM) when exceeding the maximum allowed number of Ballot Styles within an election. Validating the processing, storing and reporting shall occur without system degradation. If there are system errors that cause the system to crash the system shall recover without any loss of data.
Test Variables:	Primary Election - Closed by Precinct Style Election Day 100 Polling Places 10 Precincts to a polling Place 19 inch ballot (4 ovals per inch, 68 oval positions per column, 408 total positions) 5 Parties **Scenario 1)** - 1000 Precincts - 10 contest - 2 contest per precinct - 2 district types each with 5 district names per 200 precincts - 100 candidates (10 contest *5 party*2) - 2 district types each with 5 district names per 200 precincts - 5005 ballot styles (5 Parties each with a separate style*1000 precincts) **Scenario 2)** Exceed the HPM maximum number of ballot styles - 1001 Precincts - 11 contest - 1 contest to a precinct - 5 candidates (1 per contest by party) - 5005 ballot styles (5 Parties each with a separate style) Wizard option Spreadsheet 1 - Precinct 1001 Spreadsheet 2 - Districts Names Spreadsheet 3 - District Relations Spreadsheet 4 - Master Office primary 11 Spreadsheet 5 - Office Relations primary 11 Spreadsheet 6 - Candidates w/party
A description of the voting system type and the operational environment	Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 1	Same as Volume 1 - Maximum Precincts and Ballot Styles
VSS 2002 vol. 2	6.2.3 Volume (maximum number of ballot styles in an election) A4.3.5 Volume/Stress (Processing, storing and reporting data when overloading the number of ballot styles in an election) A4.3.5 Performance/Recovery (Ballot format handling capability-graceful shut down and recovery without loss of data) if the number of ballot styles/precincts was exceeded A4.3.5 Performance/Recovery (Processing rates-graceful shut down and recovery without loss of data)
Hardware, Software voting system configuration and test location	Same as Volume 1 - Maximum Precincts and Ballot Styles
Pre-requisites and preparation for execution of the test case.	Complete the prerequisites: Test Method Validation: Technical review conducted by C. Coggins; Approved 2/4/09 (validation of test method as defined in ISO/IEC 17025 clause 5.4.5) Condition of approval - iBeta validated the successful use of the Import Wizard to import large amounts of data into EDM. As configuration of the imported file can impact the success of the data importation, the import file structure must be validated as a prerequisite of all applicable test cases. Import Wizard method tested and validated: 2/2/09. - Document in the test case the percentage that the system limit exceeds the customer maximum. (System Limit * 100) /Customer Maximum =% System Limit) - Excel spreadsheets saved as "Tab Delimited". Tab Delimited documents containing election creating information were imported into EDM using the Import Wizard option. Manually input District Type as District Type A and B Wizard option Spreadsheet 1 - Precinct 1000 Spreadsheet 2 - District Types 2 plus countywide Spreadsheet 3 - Districts Names 10 Spreadsheet 4 - District Relations Spreadsheet 5 - Party Spreadsheet 6 - Master Office primary 10 Spreadsheet 7 - Office Relations primary Spreadsheet 8 - Candidates w/party 100

Method Detail	Volume 10 Test Method
	Spreadsheet 9 - Polling Places 100 Spreadsheet 10 - Poll Relations
Getting Started Checks	Check the voting system to : Same as Volume 1 - Maximum Precincts and Ballot Styles
Documentation of Test Data & Test Results	Test Data: Same as Volume 1 - Maximum Precincts and Ballot Styles
Volume: Paper-based voting systems Processing	Ballot Prep: Primary Election - Closed by Precinct Style Election Day 100 Polling Places 10 Precincts to a polling Place 5 Parties **Scenario 1)** - 1000 Precincts - 10 contest - 2 contest per precinct - 2 district types each with 5 district names per 200 precincts - 100 candidates (10 contest *5 party*2) - 2 district types each with 5 district names per 200 precincts - 5005 ballot styles (5 Parties each with a separate style*1000 precincts) -An election database was accurately defined & formatted using the Import Wizard. -Ballots (candidates & propositions) were accurately defined & generated. -19 inch ballot - Check EDM reports for election set up. - If there are any system errors that cause the EMS ballot preparation applications to crash then verify the applications recover without any loss of data. **Scenario 2)** Test execution of Scenario 2 did not stop at this point. No errors were generated prior to the creation of election media in ballot preparation. - Test continued because EDM did not error during the "Ballot Sets Merge". EDM reports were reviewed to verify Scenario 2 has been set up correctly. Continued to ESSIM and HPM. - The system did not error and cause the EMS ballot preparation applications to crash **Scenario 2)** Same as scenario 1 except for: - 1001 Precincts - 11 contest - 1 contest to a precinct - 5 candidates (1 per contest by party) - 5005 ballot styles (5 Parties each with a separate style) Wizard option Spreadsheet 1 - Precinct 1001 Spreadsheet 2 - Districts Names Spreadsheet 3 - District Relations Spreadsheet 4 - Master Office primary 11 Spreadsheet 5 - Office Relations primary 11 Spreadsheet 6 - Candidates w/party
Volume:	Maximum capacity was successfully processed without errors. HPMs maximum number of ballot styles. Systems capacity to process, store, and report data: - HPM successfully processed maximum plus one. No errors were generated.
Stress	System successfully processed the overloading conditions of exceeding the maximum allow number of 5000 ballot styles by one.
Performance	No system degradation (Ballot format handling capability and Processing rates) was observed: - When importing large amount of data into the EDM using the Import Wizard. - When installing an election with over the maximum number of ballot styles for an election. - The system did not slow down as more and more data was added
Error Recovery	Same as Volume 1 - Maximum Precincts and Ballot Styles
Readiness Testing and Poll Verification	Voting system was ready for the election: Same as Volume 1 - Maximum Precincts and Ballot Styles
Pre- vote: Opening the Polls Verification	Precinct Count/ Paper based: Same as Volume 1 - Maximum Precincts and Ballot Styles
Voting: Ballot Activation and Casting Verifications	**Scenario 1)** The DS200 was programmed for Election Day Voting. - All Polling Places were activated, with Polling Place 1, 21, 41, 61, 81 voted. - The VAT and DS200 were in Polling Place 1: Precincts 1 - 200. - Each ballot was marked by the VAT and then scanned into the DS200. - Each precinct contained 2 contests with 2 candidates. - A total of 100 ballots were tested in Precincts 1-1000. Precincts Voted: 1-5, 201 - 205, 401 - 405, 601 - 605, 801- 805. Voting Contests 1 - 10.

Method Detail	Volume 10 Test Method
	- S1: 20 ballots per polling place for a total of 5 Polling Places - There were no system errors that cause the DS200 or the VAT to shut down (crash) **Scenario 2) No e**rrors prevented the test from reaching this point - The election(s) loaded - Scenario 2: A total of 110 ballots were tested in Precincts 1-1001. Precincts Voted: 1-5, 201 - 205, 401 - 405, 601 - 605, 801- 805, 1001-1005. Voting Contests 1 - 11. - 20 ballots per polling place for a total of 5 Polling Places, 10 ballots for Poll Place 6 - No system failures caused the DS200 and/or the VAT to crash.
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	The system audit provided a time stamped, always available, report of normal/abnormal events found within the test. - Same as Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Post-vote: Closing the Polls	Once the polls were closed the voting system - Printed reports of ballots counted by tabulator - Reported votes match the predicted votes from the tabulator with votes and undervotes. - In Polling Place 1 the DS200 Prints precincts 1 - 10 totals (Election Day voting ends) - In Polling Place 2 - precincts 11 -100 no reports were run (all voting was executed using Precincts 1 - 10)
Post-vote: Central Count	Paper Based: When loading results the input of results were mixed such that media was read out of precinct order and the reading of DS200 and M650 results were mixed. (Testing of the reordering of media was based upon an EAC report) **Scenario 1)** - Election identification - Zero count report (to verify no votes are on the M650 prior to starting voting) - 100 ballots were tested - VAT -Generated the ballots for 10 different ballot styles within the deck. - Precincts Voted on VAT: 1-5, 201 - 205, 401 - 405, 601 - 605, 801- 805. (S2 - also included 1001 - 1005) - The M650 with a 1000 precinct and 5000 ballot styles did not error. Vote Consolidation: ERM consolidated reports matched the votes from the polling places and the predicted results from the test case Reports included: - Printed reports of ballots counted by tabulator, with votes and undervotes - Printing of a Summary Report (containing all precincts) - Viewed and printed Precinct by Precinct Reports - There were no errors that cause the M650 or the ERM application to crash. No errors prevented the test from reaching this point. - The election loaded without error.
Expected Results are observed	Review the test result against the expected result: Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the test case. Same as Volume 1 - Maximum Precincts Limitations and ballot styles for paper

7.4.3 *FCA Security Review and Testing*

During the initial Security Document Review conducted 1/28/09 through 2/3/09 test criteria was identified. Security testing or reviews (source code or document) were broken down into unique security tests/reviews or test/reviews already addressed in standard testing and document or source code reviews. Unique security tests, source code, or document reviews are identified in 7.4.3. Test results for the standard tests, source code, or document reviews are identified in those sections. Security Testing was performed conducted on the system configuration identified in the PCA Configuration and section 3.

Date	Test Result	Issues Opened	Issues Closed	Notes
1/28/09 - 2/3/09	Reject	55 through 84		**Unity 3.2.0.0 Security Document Review to the requirements of v.1: 2.2.1 a to -g, 2.2.2.1 d & e, 2.2.3 a-c, 2.2.4.1 e, f, g, i & j, 2.2.4.2, 2.2.5.3** , 4.5, and **section 6**
3/11/09 - 3/13/09	Accept		55, 56, 57, 58, 59	**VAT Security Document Review verified** • Security provisions compatible with the procedure and administrative tasks involved in equipment preparation testing and operation; • Mandatory administrative procedures for security; • Documentation for restoring VAT in case of error or failure; • Documentation for read/write and data transfer quality validation; • Documentation for effective password management;
3/12/09 -	Accept		61, 62, 63,	**EDM Security Document Review verified:**

Date	Test Result	Issues Opened	Issues Closed	Notes
4/16/09			64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 79, 83, 84	• Documentation of access controls and prevention of unauthorized access • Removal of detail that is not applicable to the current configuration • Addresses detection/recording of events, self test and diagnostic software • Detail for jurisdiction security planning, procedures and administrative tasks is provided • Login security and physical protection of ballots is mandatory • A description of encryption is provided • Non-use of telephony, network and LAN is documented • Security protocols are documented • Incorporation of Window access controls is documented
3/13/09	Accept		60, 81,	**DS200 Security Document Review verified** • Documentation of individual access to the specific tabulator functions • System submitted for certification does not transmit results via network
3/13/09	Accept		70	**ESSIM** Security Document Review verified: • Login security is mandatory
3/13/09 - 4//14/09	Accept		70, 74, 77	**HPM Security Document Review verified:** • Audit log activity is documented • Access control policies are documented • Login security is mandatory • No compilers are present after Election Day testing
3/13/09 - 5/15/09	Accept		76, 77, 80	**ERM Security Document Review verified:** • Mandatory administrative procedures are documented • No compilers are present after Election Day testing • Error detection and correction methods are performed by RMCOBOL
4/2/09	Reject	122, 123, 124		**Unity & AIMS – Windows Configuration Test Steps** • No audit logging of successful or unsuccessful logins • No audit logging in Audit Manager or Windows of copying to an external file • Non-administrative user cannot install executable software
4/14/09 – 4/29/09	Accept		29, 61, 73, 78, 82,	**M650 Security Testing verified:** • Election definition cannot be changed or overwritten after installation; • Locks cannot be by passed without breaking • Zero totals clears M650 but not totals saved to disk; audit log records zeroing of totals; • Can reload zeroed totals with totals saved to disk; • Results cannot be saved to a FAT32 zip disk; • Error is generated and logged if disk is removed during vote processing; • A restart after a system interrupt generates the readiness report with an log notation and no vote data is lost; • Invalid ballots are rejected (different election) • Copies of ballots are rejected • Installed firmware matches readiness report; • Audit logging cannot be stopped or changed; and • Installed virus was ignored; · All events are detected and recorded in the log; • When prior votes exist at the start of an election a message prompts the user to keep the exiting election definition or load the new election from the zip disk. Pressing stop keeps the existing election definition and displays "Totals present in database, Zero totals or press start to continue". Pressing start wipes the database: loads the new election definition and logs clearing the database counter; **M650 Unique Source Coder Review verified:** • Audit log is written to zip disk • No computer generated password key used to encrypt the database or work space file; • Memory is zeroed out prior to election counting. If the memory is not zeroed a warning displays and it is recorded in the audit log. **M650 Security Document Review, verified documentation of:** • Security kernels; • Unauthorized access to access control capabilities; • Security procedures shall address physical threats and the corresponding means to defeat them; • Measures for physical and procedural control; • Every device is to be retested to validate the ROM. • No software shall be permanently installed or resident in the system unless the system documentation states that the jurisdiction must provide physical security at all times; device-controller software is resident permanently as firmware, it has been shown to be inaccessible to activation or control by means other than the authorized initiation and execution of the vote-counting program, and its associated exception handlers; • Election-specific programming (if resident as firmware) resides on a component

Date	Test Result	Issues Opened	Issues Closed	Notes
				other than the operating system; • The zero report is part of the official audit record
4/28/09-4/29/09	Reject	131, 132		**M650 Security Testing:** • Loaded an externally modified election definition on the M650 - Modified the election definition by replacing 0007 to 0999 in .PRF file and replacing 0010>9999 (ballot counter -Totals) in RPT file, The M650 accepted the election definition • The zip disk with election results was externally modified. The modifications did not generate errors and modified results load into ERM: o CRC or checksum errors were not generated-On the zip media the .EC file PRECINCT was replaced with "pppppppp", modifying results loaded to ERM without generating CRC or checksum validation errors; o In the .log file some bytes were replaced with zeros, this modified results loaded to ERM, No validation errors occurred. o In the .pr file replaced 0001 with 999999, this modified results loaded to ERM, No validation error occurred. **M650 Unique Source Code Review** • There's no CRC validation for loading election definition (.RPT, .PRE, .OFC)
4/21/09 - 4/24/09	Accept			**DS200 Security Testing verified;** • There is no access to administration menu when polls open; • There are 3 locks to prevent unauthorized access. Bypassing these locks without breaking is not possible; • Update firmware option is located under admin menu. To access admin menu requires a password; • Administrator password can be changed in HPM, password is not hardcoded in DS200; • Passwords (admin and reopen polls passwords) are retrieved from the election definition; • The polls open option is not available in the administrative menu when the election definition is not installed; • When polls are open for voting the Zero Totals report confirms the vote count is zero; • An invalid ballot (from different election) is rejected with an error "ballot too long". There is a entry in the audit log; • Attempting to remove the USB flash drive during ballot scanning the DS200 halts operating and resumes normal operation after reinsertion. An entry in the audit log reports the system halt; • DS200 does not respond to insertion of a ballot before the polls are open; • Scanned ballots are retained after a power discharge; • Invalid and corrupted election definitions are not loaded on the DS200; • Audit records can't be deleted nor recording stopped • Audit log entries include the date and time; • Results cannot be accessed or printed when the polls are open • Removing the report paper halts operation (critical operation) • A virus inserted on the DS200 was ignored; • Voter's have no access to vote counting/reporting; • If votes are on the system when attempting to open polls, a warning "Election test counts exists on media, clear test counts to continue" is generated • Poles cannot open until the counter is cleared; • Clearing the counter is written to the audit log; **DS200 Security Testing verified in Regression TC;** • System performs diagnostic readiness test; • A password is required to access the Admin menu **DS200 Security Document Review verified:** • Documentation of proper and mandatory administrative procedures security in the polls & central count; • Access control measures; • Permanent bootstrap is inaccessible to unauthorized activation; • Physical protections of firmware **DS200 Unique Security Source Code Review verified:** • Election definition on the USB drive validates the CRC of the election media header, election definition, counter block, system log and audit log sections • No computer generated passwords; • Previously loaded election definition and counter blocks are cleared from memory; • If counts exist displays "Election test counts exists on media clear test counts to continue". • Logs "Counters Cleared" when counters cleared; • Zero totals report type appears in the source code; • Counter & CRC update with each cast vote;
4/23/09	Reject	121		**DS200 Security Testing**

Date	Test Result	Issues Opened	Issues Closed	Notes
				• The audit log does not record a successful or failed administrative login
4/23/09 to 5/3/09	Accept			**EDM Security Testing verified** • Windows configuration was BIOS protected • Recovery from unexpected interruption and resume normal operation without loss of data' • Detect and record events, including error conditions • Audit logging of normal and abnormal events • EDM will not operate if a critical system is (audit logging) is not available • No public telephony or networking is being used
4/23/09 to 5/3/09	Reject	123, 124, 130		**EDM Security Testing** • No audit logging in Audit Manager or Windows of copying to an external file • No audit logging of successful or unsuccessful logins
4/23/09 to 5/3/09	Accept	146 (in-formationa l)		**ESSIM Security Testing verified** • A valid user password is required • Attempts to modify ballot layout files (.ais) are detected • If a critical process is lost (system audit) error message are generated that prevent processing (#146) **ESSIM Security Document Review verified** • Software, hardware access controls , segregation of duties and roles, supervisory privileges and password management are documented • No public telephony or use of a network
4/30/09 to 5/1/09	Accept			**AIMS – Security Testing verified:** • No connection to a network; • Password protection of the database and system administration; • Entry of a blank password is not accepted; • Failed & successful logins are recorded in the audit log; • An election audit log cannot be deleted; • An election can be backed up with data; deleted and restored from the backup; • Recovery from an abnormal shut down without loss of data; VAT Security Testing verified • Failed & successful logins are recorded in the audit log; • Audit log records: Abnormal shut down &recovery; export & data validation; • Ballots in various orientations can be marked; generation is recorded in the audit log; • Inserted a torn (top of the ballot) ballot, VAT machine accepted that ballot, marked correctly There is an entry in the log. • Externally modified or internally adding a subdirectory in election data folder generates the error “Files are tampered with or wrong access code”; • Insertion of a non-valid election ballot generates “Ballot has not been recognized” error and audit log entry; • Access to the compact flash card is prevented by a lock on the VAT machine; • Inserting a pre-marked in the VAT displays the summary view of the marked selections; • Ballot selections can be printed after a voting session interrupted by an abnormal shut down (shut down occurs post selection and prior to printing); • After printing votes on a ballot the record is erased; • Test mode displays the VAT software version; VAT Security Testing verified in Regression TC: • Pre-vote, vote and post vote access controls; • Monitoring and audit logging of VAT errors; AIMS & VAT Unique Security Source Code Review verified: • Securing the data with a hash code resented to the AutoMark on the compact flash card; • VAT is validating the hash code upon insertion. • After voting, viewing the summary, exit of the voting session and ejection of the ballot (without printing) the record is erased from the memory; • After printing votes on a ballot the record is erased; • No computer generated passwords effecting AIMS or the election process; • AIMS & VAT Security Document Review verified: • Supervisory access privileges & segregation of duties;
4/23/09-5/6/09	Accept			**HPM Security Testing verified:** • System recovers from an abnormal shut down without loss of data; • Error warning if media is not available during writing; recovers to prior state before error; • Operation is halted when audit is inoperable; • Invalid logins are recorded in the Windows Security Event Log; • No telecommunication functionality;
4/23/09-	Reject	#126		**HPM Security Testing:**

Date	Test Result	Issues Opened	Issues Closed	Notes
5/6/09				• Successful and unsuccessful logins are not recorded in the audit log • Audit log can be modified
5/1/09 to 5/8/09	Reject	#154, 158		**Unity– Windows Configuration Test Steps:** • Procedures detail user rights • Procedures detail all required materials
5/6/09	Accept			**ERM Security Testing verified:** • System recovers from an abnormal shut down without loss of data; • Audit log identifies users importing election results No networking is available; turned off in BIOS
4/28/09	Reject	138,139, 140, 148, 149, 150, 151		**ERM Security Testing:** • Successful and unsuccessful logins are not recorded in the audit log • Administrator modifications of access privileges is not logged • Modification of the election results file was not logged • Unsuccessful DS200 imports are not recorded in the audit log • Encryption key generation did not reflect industry best practice (NIST) • Algorithm code, which is not being called in the application, is present without self-test verification.
5/26/09	Accept		#131	**M650 Security Document Review & Testing verified:** • The readiness report included check election options (election definition files are included with time stamp). With this it is possible to detect the modification
5/19/09 to 5/30/09	Accept			**Trusted Builds for all Unity 3.2.0.0 applications (Appendix G)** **No source code, compilers or assemblers are resident or accessible**
6/2/09 to 6/6/09	Accept		#123, 124, 130	**Unity– Windows Configuration Test Steps:** • Windows events log successful and unsuccessful login to Unity applications • Windows events log file access
6/11/09	Reject	#159		**AIMS– Windows Configuration:** • Procedures detail all needed steps
6/16/09	Accept		#154, 158, 159	**Unity & AIMS– Windows Configuration Discrepancies:** • Procedures detail user rights • Procedures detail all needed materials • Procedures detail all needed steps
6/17/09	Accept		#122, 150	**Unity– Windows Configuration Discrepancies:** • Non-administrative users cannot install executable software • Administrator modifications of access privileges is not logged
6/18/09	Accept		#138, 139	**Unity– Windows Configuration Discrepancies:** • Modification of the election results file was logged
6/18/09	Accept		#149	**Unity– 3.2.0.0 Scope Discrepancies:** • Code is in place for the iVotronic which is not supported in Unity 3.2.0.0; moved to Unity 4.0.0.0 Discrepancy Report
6/19/09	Accept		#148	**ERM Security Testing:** • Windows performance of password management; meets industry best practices (NIST)
6/22/09	Accept		#132, 140	**ERM Security Testing:** • Successfully recover from an external error not generated by electrical or mechanical conditional • Physical security measures are documented
6/22/09	Accept		#126	**Unity– Windows Configuration Test Steps:** • Windows events log file access
6/23/09				Incorporate Discrepancies #121 and 151 into Volume 9 testing

All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Security Test Method
Test Case Name	Security
Scope - identifies the type of test	Security testing crosses into several areas of voting system testing and thus must be tested at the integrated system level. The Regression System Level test is customized for the specific voting system to test the security elements incorporated into the pre-vote, voting and post voting functions. Further examination is performed in Telephony and Cryptographic Tests. A review of the security documentation addresses Access Controls, Physical Security and Software Security.
Test Objective	The objective of security testing is to minimize the risk of accidents, inadvertent mistakes and errors; protect from intentional manipulation, fraud or malicious mischief;
Test Variables:	In the Regression elections validate the security of the pre-vote, voting, and post voting functions of the voting system by test incorporating overflow conditions, boundaries, password configurations, negative testing, and inputs to exercise errors and status messages, protection of the secrecy in the voting process and identification of fraudulent or erroneous changes. Including:

Method Detail	Security Test Method
	Unauthorized changes to system capabilities for: - Defining ballot formats, - Casting and recording votes, - Calculating vote totals consistent with defined ballot formats, - Reporting vote totals, - Alteration of voting system audit trails, - Changing or preventing the recording of a vote, - Introducing data not cast by an authorized voter, - Changing calculated vote totals, - Preventing access to vote data, including individual votes and vote totals, to unauthorized individuals, and - Preventing access to voter identification data and data for votes cast by the voter such that an individual can determine the content of specific votes cast by the voter.
A description of the voting system type and the operational environment	The voting system types and operational environments Election Data Manager (EDM) to create the election data used for all ballot layout and tabulation for all equipment used in the election. -Super VGA (800x600) or higher -Keyboard and Mouse -512 MB RAM -48x CD-ROM or DVD drive -40-GB hard drive -PC with 1-GHz or faster processor ESSIM to format the ballots by using election database --partner printer -24x CD-ROM -Windows XP Professional with Service Pack 2(SP2) -40-GB hard drive -Laser Printer(recommends Okidata C9600HDN) -512 MB RAM -PC with 1-GHz or faster processor HPM import IFC to import the ballot interface (.ifc) file ,containing all contest, candidate, precinct, rotation, polling place, and ballot style information, from the Election Data Manager(EDM) and Image Manager ballot (ESSIM) -SanDisk Compact Flash Card Reader/Writer -CD-ROM or DVD drive -Keyboard and Mouse -3.5-inch disk drive - 40-GB hard drive -PCL capable Laser Printer -PC Card Manager(optional) -Windows XP Professional -PC with 1-GHz or faster processor Audit Manager(AM) functions are Administer username and login for Unity modules and Administer audit log information -Pentium 266MHz -32 Meg RAM -3.5 Inch Floppy Disk Drive -24X CD Drive -printer(optional) Hardware Programming Manager (HPM) creates election definition for DS200 -DS200 scan paper ballot precinct tabulator -12-inch touch screen -thermal printer(internal) -USB flash drive(compact flash card) -external DC power -120-volt AC outlet, -internal memory(DRAM) HPM creates election definition for M650(central count tabulator) -External Zip drive(FAT16 ZIP disk) -External Printer -internal memory -three-prong electrical outlet -128 MB solid-state hard drive -133 MHZ CPU VAT(Voter Assist Terminal (Ballot marking device) is used to mark the ballot selections of voters who are visually impaired, have a disability, or who are more comfortable using an alternative language) and AIMS(Database) -Printed Circuit Boards -Single Board Computer -Compact Flash Memory Cartridge -Liquid Crystal Display -Touch Panel

Method Detail	Security Test Method
	-Audio Subsystem -Switch Interface Board -Keypad For Visually Impaired -Audible Feedback -AT Dual-Switch Access Port -Printer Engine Board -Operating System – Microsoft Windows XP, SP1 -MS Access, version XP -SQL Server (MSDE), version 2000, SP3
VSS 2002 vol. 1	2.2.1, 2.2.4 thru 2.2.5.2.3, 6.2 thru 6.4
VSS 2002 vol. 2	6.4 thru 6.4.2
Hardware, Software voting system configuration and test location	Same as Regression System Level test case
Pre-requisites and preparation for execution of the test case.	Test Method Validation: Technical review conducted by K Wilson; Approved 2/20/09 for validation of test method as defined in ISO/IEC 17025 clause 5.4.5. - Same as Regression System Level test case
Getting Started Checks	Same as Regression System Level test case Prior to testing Verify the following through Document Review: -DS200 and M650 Indentify procedural requirements for the usage of locks to prevent unauthorized access -DS200 provide adequate procedural requirements for polling place security. -DS200 procedures relating to the preparation and configuration of the tabulation. -DS200 and M650 procedures to identifying electronic media type. -DS200 and M650 maintenance of a secured location for storing the electronic media and voting machines -Manual identifies all required access control security measures. -M650 procedures for ballot security -Procedures for administration security (database security) -Operations manual indentifies specific instructions during a failure to input or storage devices. -During witness and trusted build procedures verify source code, compilers or assemblers are not resident.
Documentation of Test Data & Test Results	Same as Regression System Level test case Record the results of the security testing, document & source code reviews in the applicable Security Review tab Enter Accept/Reject against each review requirement. Log discrepancies on the appropriate Discrepancy Report
Pre-vote: Ballot Preparation procedures verifications	Same as Regression System Level test case
Pre-vote: Ballot Preparation Security	Same as Regression System Level test case -Attempt to modify the ballot layout files. --Power can be interrupted & restored without loss of election data. -- Attempt to halt the Audit Mgr before starting ESSIM. If it is not running, rename the file. Verify that ESSIM will not start. Restart Audit Mgr or if Audit Mgr (AuditManager.exe) was renamed, rename it back to the original name. Reboot and verify that ESSIM will run. --Attempt to modify the audit log. --Audit logs contain entries for failed attempts, normal & abnormal events. --Verify Computer-generated password keys are unpredictable and random (v1:6.2.2.e) --Verify that removing one of the RAID drives on the EDM system does not result in catastrophic data loss. System is operational without drive or system recovers when an empty drive is restored. --Unplug the system (EDM) during a save operation. Verify that the system is capable of resuming operation when power is restored or a backup copy restored. --Ghost the system prior to this test. For each of EDM, ESSIM, HPM and ERM, connect an iBeta computer to the network connected to the Audit Manager computer. Turn on Remote Access in the DUT computer. Access the audit manager database file as administrator and rename the file. Verify that the program halts further processing of election preparation, tabulation or reporting as necessary. (As an alternative, turn off the Audit Manager service and/or monitoring service or use task manager to kill the Audit Manager process and/or monitoring service/process). --Attempt to access the database (EDM) and modify ballot information --Default passwords are changeable after initial login --Verified detailed information of encryption messages. --Attempt to load the software with unauthorized user on AIMS --Attempt to access AIMS database with invalid or blank password. --Verify AIMS not networked or does not telecommunicate with any other system
Readiness Testing and Poll Verification	Same as Regression System Level test case Before installing the election definition in tabulators, perform the following test --Attempt to bypass the locks --Attempt to access Administration mode with invalid password and blank password -Attempt to access administration Menu screen, when election definition is not installed.

Method Detail	Security Test Method
	--Attempt to install the firmware or software with unauthorized user. --Attempt to load wrong election definition. --Attempt to modify the election definition. --Verify the firmware versions --Verify there is no public network to install election definition. --Attempt to install virus or malicious software via compact flash card or zip disk --Audit logs contain entries for failed attempts, normal & abnormal events. --Minimal password strength constraints are imposed by the vendor or settable by the jurisdiction --Verify physically there is no modem or Ethernet card. After installing the election definition in tabulators, perform the following steps --Verify polls can not be opened after election data is installed into the system, validate this by attempting to open polls before election definition installed --Attempt to modify the audit log with admin password. --Attempt to change the election definition and overwrite the election definition after election definition is installed --Attempt to insert the ballot prior to opening the polls. No votes can be recorded prior to opening the polls --Attempt to insert invalid zip disk (FAT 32) or invalid compact flash card to verify only valid memory packs are accepted by tabulators. --Verify the zero totals report, to check vote count is "0" when the scanner is turned on. --Audit logs contain entries for failed attempts, normal & abnormal events.
Pre- vote: Opening the Polls Verification	Same as Regression System Level test case Opening the polls, perform the following --System access controls are implemented for opening the polls; for the identified entity confirm access and use to only the permitted functions and data --Attempt to access administration menu when the polls are open to verify voter does not have the ability to count votes --Verify the locks --Verify the zero total report when opening the polls for voting zero report lists the date and time that the polls open followed by the vote count for all of your contests that is "0" and blank signature lines for poll worker certification --Verify the right version of firmware is installed on ballot marking device. --Verify VAT does not telecommunicate with any other system. --Opening the polls communication errors are reported to the user & require corrective action to continue operation
Voting: Ballot Activation and Casting Verifications	Ballot casting, perform the test --Attempt to insert a blank, invalid ballot, torn ballots and multiple ballots --Attempt to stop the system or event log to verify election process halts --Attempt to remove the zip disk or USB flash drive in the middle of the process, verify that normal operation can be resumed --Power can be interrupted and restored without loss of election data, validate this by pulling the power during ballot installation, verify that when power is restored; and recovery is possible. Audit log record (time/date) of power interruption and restore. -- Attempt to Zero the totals on a scanner in middle of the processing, verify there is a possibility to reload the scanner with totals saved to disk. --Attempt to remove the USB flash drive during ballot scan to verify normal process resumes after reinserting it. --Attempt to remove the zip disk prior to saving election count data to check no loss of votes. --View audit log to verify all attempts are recorded(success and fail) --Attempt to remove the compact flash card from VAT to check normal process resumes after reinserting it. --Vote errors & communication errors are displayed with action to resolve
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	--Attempt to access the vote counts when the polls are open --Attempt to open admin menu with invalid password. --Attempt to feed in ballots that are torn, ripped, not of standard, incorrect data, incorrect precinct. Verify that only valid ballots of the correct election and precinct are accepted, all others are rejected. --Voting continues after a power interruption and restore, verify this by attempting to interrupt power and then restore. --Attempt to print results, when polls are open. Verify that the polls must be closed prior to viewing a results report. --Attempt to save results on FAT32 format zip disk in M650. --view audit log to verify all error messages are recorded.
Post-vote: Closing the Polls	Same as Regression System Level testing Central count Post vote -- Verify Zero totals report having vote count as "0" --Attempt to modify the results on zip disk.

Method Detail	Security Test Method
	--Verify there is no public network or LAN to transfer election results. --Errors are displayed with action to resolve --Audit logs contain entries for failed attempts, normal & abnormal events.
Post-vote: Central Count	Close polls, perform following test --Verify authorized reopening of poll, once the poll closing has been completed for that election. --Attempt to modify the election results on memory pack, verify the election results cannot modify due to CRC written by DS200 --Verify there is no modem to transfer results to ERM. --Precinct counts cannot be printed or viewed prior to the close of the polls --Audit logs contain entries for failed attempts, normal & abnormal events. Document Review -- Verify there is no access to public network, no external access to incomplete returns, and no communication between locations and components before the polls close. --Verify environment do not share with non-election data processing functions.
Post-vote: Security	Attempt to change the vote totals on memory packs before loading into ERM --Audit logs contain entries for failed attempts, normal & abnormal events. --verification of Authentication is required to access the ERM ----Errors are displayed with action to resolve ---Power can be interrupted & restored without loss of election data. -A technical administrator, attempt to modify vote total counts for a race in an election. -Attempt to modify vote counts after all vote counts are in. --Attempt to modify the audit log
Post-vote: System Audit	During system audit, verify the following validation --Review of Audit logs to verify all login success and failed attempts are recorded --Verify the Zero total reports --Compare vote totals on memory pack with printed vote totals are the same.
Additional Security	Source code review - Verify by source code review that user-generated passwords are not used directly as keys to an encryption algorithm. -- Verify by source code review that encryption algorithms utilized in documentation match the actual encryption utilized and that any known vulnerabilities are mitigated (in so far as encryption is utilized in the system). --Verify AIMS database is password protected. --Verify through the source code review, hash code is generated by AIMS for the data on the flash card and upon insertion of flash card VAT check the hash code against the database to ensure that data has not been modified. -- Verify the temporary memory is wiped out after a vote prints on the VAT
Expected Results are observed	See System Level and Telephony and Cryptographic Test Cases. Security Review Criteria: - Accept meets the guideline - Reject does not meet the guideline - NA the guideline does not apply
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the System Level Security Test Case. A separate statement will be prepared addressing the results of from the security perspective. It will provide the results of the testing and review required in vol. 1 section 6.

7.4.4 *Telephony and Cryptographic Review and Testing*

Testing was conducted on the system configuration identified in the PCA Configuration and Test Case.

Date	Test Result	Issues Opened	Issues Closed	Notes
3/20/09	Accept			Removal of modem and network card observed.
5/8/09 to 6/3/09	See Security			Test results were recorded in Security

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E- Discrepancy Report.

Method Detail	Telephony & CryptographicTest Method
Test Case Name	Telephony and Cryptographic
Scope - identifies the type of test	Unity 3.2.0.0 was not loading or transmitting election data via telecommunications or network
Test Objective	The objective of the telephony and cryptographic testing is to confirm that Unity 3.2.0.0 is not loading or transmitting election data via telecommunications or network
Test Variables:	Configured as the Regression System Level testing the DS200 does not contain a modem and M650 does not contain a network card for loading or transmitting election data via

Method Detail	Telephony & CryptographicTest Method
	telecommunications or network
A description of the voting system type and the operational environment	In the Regression System Level and Security testing vote results from the DS200's and M650's was handled externally (via USB and zip disk) by the Unity Election Reporting Manager (ERM). - No election definition (from HPM) was loaded. - No results transmission via network or telecommunications.
VSS 2002 vol. 1	5.1 thru 5.2.7, 6.5.3, 6.6.1
VSS 2002 vol. 2	6.4.2
Hardware, Software voting system configuration and test location	see Security
Pre-requisites and preparation for execution of the test case.	see Security
Getting Started Checks	see Security
Documentation of Test Data & Test Results	see Security
Pre-vote: Ballot Preparation procedures verifications	see Security
Pre-vote: Ballot Preparation Security	see Security
Readiness Testing and Poll Verification	Security testing verifies that there was no network to install the election definition.
Pre- vote: Opening the Polls Verification	In Security testing verify the Unity 3.2.0.0 was not loading or transmitting election data via telecommunications or a LAN network.
Voting: Ballot Activation and Casting Verifications	In Security testing verify the Unity 3.2.0.0 was not loading or transmitting election data via telecommunications or a network consolidated within the polling place prior to the voter casting a ballot
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	N/A
Post-vote: Closing the Polls	In Security testing verify that the DS200 has no modem to transmit data
Post-vote: Central Count	In Security testing verify that central count has no public network to transmit data.
Post-vote: Security	N/A
Post-vote: System Audit	N/A
Additional Security	
Expected Results are observed	see Security
Record observations and all input/outputs for each election;	see Security

7.4.5 *FCA Reuse Environmental Testing*

Testing was performed by SysTest and their subcontractors. ES&S petitioned the EAC for reuse. The terms of the reuse are identified in the EAC February 3, 2009 letter: EAC letter to iBeta QA Director on reuse of testing .

The results of the hardware environmental testing by SysTest and their subcontractors are contained in the Summary Report of the testing performed by SysTest. iBeta reviewed the submitted reports. The following sections trace the test requirement to the applicable test report(s) (number) and the specific hardware (alpha) for each of the Unity 3.2.0.0 voting devices. In the review iBeta noted several identified information that required greater detail or clarification. These are listed in Appendix E-Discrepancy Report with a trace (#X) referenced next to the individual report name.

7.4.5.1 *DS200 Environmental Hardware Test Reports &Tested Configuration Matrix*

1) DS200 EMS Test Report 070214-134A 5/15/07 (Criterion - #3)
2) DS200 ENV Temp Humid Report 5/15/07 (APT)
3) DS200 ENV VIB Report 07-00207 5/15/07 (APT)
4) Percept Hardware Test Report 1.0 (#2 & 3)
5) ESS DS200 Product Safety Test Report Rev E-2 (Components)
6) DS200with Optional Ballot Box ESD Test Report 1.0 (Percept - #1)
7) DS200EMC Report R071107-30-01 (NCEE #3)
8) DS200EMC Report R071107-30-01B (NCEE #3)

DS200 Hardware	MIL STD 810D						EMC								OSHA
Tested Configuration	516.3 Bench Handling	514.3 Cat 1 Vibration	502 Low Temp	501 High Temp	507-2 Humidity	501 & 502 Temp & Power Var & 163 hr Reliability	Electromag Rad Part 15 Class B	Power Disturb 61000-4-11	ESD 61000-4-2	Electromag Susct 61000-4-3	Elec Fast Trans 61000-4-4	Lightening Surge 61000-4-5	RF Immunity 61000-4-6	Magnetic Fields Immunity 61000-4-8	Safety Title 29, Part 1910
Configurations tested w/ ballot box: • A: DS200 SN0002, AC Adapter SN72573415, Ballot box SN2007 • B: DS200 SN0004, AC Adapter SN72573407, Ballot box SN3016 • C: DS200 SN0003, AC Adapter SN72573407, Ballot box SN3016 • D: DS200 SN0010, AC Adapter SN72632719, Ballot box SN3016 • E: DS200 SN0011, AC Adapter SN72573413, Ballot box SN2804 • H: DS200 SN0001, AC Adapter SN72573407 or not specifically identified, Ballot box SN2804 Configurations tested w/o ballot box: • F: DS200 SN0003, AC Adapter SN72632720 • G: DS200 SN0004, AC Adapter SN72573407	4 C	3 & 4 C	4 C	4 C	4 C	2 & 4 D, E, F, & G	8 I 1 & 4 H	7 I 1 & 4 H	8 I 6 & 4 H	7 I 1 & 4 H	7 I 1 & 4 H	1 & 4 H	7 I 1 & 4 H	7 I 1 & 4 H	4 & 5 A

DS200 Hardware	MIL STD 810D						EMC								OSHA
Tested Configuration	516.3 Bench Handling	514.3 Cat 1 Vibration	502 Low Temp	501 High Temp	507-2 Humidity	501 & 502 Temp & Power Var & 163 hr Reliability	Electromag Rad Part 15 Class B	Power Disturb 61000-4-11	ESD 61000-4-2	Electromag Susct 61000-4-3	Elec Fast Trans 61000-4-4	Lightening Surge 61000-4-5	RF Immunity 61000-4-6	Magnetic Fields Immunity 61000-4-8	Safety Title 29, Part 1910
• I: DS200 SN S/N11027011 AC Adapter not identified															

7.4.5.2 *M-650 Environmental Hardware Test Reports & Tested Configuration Matrix*

Central count scanner is exempt from non-operating environmental tests
1) NCEE EMC Test Report No. R071107-30-02A
2) Certificate of Compliance UL 60950-1 (2nd Ed.) No. ESS-0806-R05-COC
3) Testing Services Report M650 Job No. 08-00654 (APT #6)
4) Voting System Test Summary Report, Test Report for testing through 10/22/08 for ES&S Unity 4.0 Voting System, Report Number 01-V-ESS-035-CTP-01 rev.0.2

M-650 Hardware	MIL STD 810D						EMC								OSHA
Tested Configuration	516.3 Bench Handling	514.3 Cat 1 Vibration	502 Low Temp	501 High Temp	507-2 Humidity	501 & 502 Temp & Power Var & 163 hr Reliability	Electromag Rad Part 15 Class B	Power Disturb 61000-4-11	ESD 61000-4-2	Electromag Susct 61000-4-3	Elec Fast Trans 61000-4-4	Lightening Surge 61000-4-5	RF Immunity 61000-4-6	Magnetic Fields Immunity 61000-4-8	Safety Title 29, Part 1910
Configurations: • A: M-650 1102 7011 Accessories: 2 @ Epson LQ-590 Dot Matrix Printers S/N: FSQY094255, FSQY093497, 1 @ Belkin F6C1500-TW-RK, Battery Backup S/N: 20V06516248WE • B: M-650 S/N 11027011 & 7003 • C: M-650 S/N 2406 8013	Ex-empt	Ex-empt	Ex-empt	Ex-empt	Ex-empt	3 & 4 B	1 A	1 A	1 A	1 A	1 A	1 A	1 A	1 A	2 C

7.4.5.3 *VAT A-100 Environmental Hardware Test Reports & Tested Configuration Matrix*

1) AutoMARK EMC Test Report1/31/05 (Criterion)
2) Electrical Safety Testing to UL 60950-1 (Report No. ATS-0501-R01-Rev.1 4/10/06; replaces R01 4/30/05)
3) VAT A100 EMC report 080327-1225 Criterion – Report issued for Premier
4) ES&S AutoMARK VAT A200 (Report No. 080521-1251A 6/11/08) (#8)
5) AutoMARK Voter Assist Terminal Test Report rev.1.3 (Percept - #7)

6) Testing Services Report AutoMARK Voter Assist Terminal S/N: 002 Job No. 04-00542 (APT 1/12/05 Vibration & Bench)

VAT A-100	MIL STD 810D						EMC								OSHA
Tested Configuration	516.3 Bench Handling	514.3 Cat 1 Vibration	502 Low Temp	501 High Temp	507-2 Humidity	501 & 502 Temp & Power Var & 163 hr Reliability	Electromag Rad Part 15 Class B	Power Disturb 61000-4-11	ESD 61000-4-2	Electromag Susct 61000-4-3	Elec Fast Trans 61000-4-4	Lightening Surge 61000-4-5	RF Immunity 61000-4-6	Magnetic Fields Immunity 61000-4-8	Safety Title 29, Part 1910
Configurations: • A: A100 – S/N 005 • B: A100 – S/N AM0205420004 • C: A100 – S/N AM0105521108 (HW submitted by Premier) • D: A100 – S/N 002 • E: A200 – S/N AM0206462702 • F: A100 – S/N 008 • G: A100 – S/N 005, 007, 008, DV3.5-2, & DV3.5-3	6 D	6 D	5 G	5 G	5 F	5 G	1 A 4 E	1 A	1 A 3 C 4 E	1 A	1 A 4 E	1 A	1 A	1 A	2 B

7.4.5.4 *VAT A-200 Environmental Hardware Test Reports & Tested Configuration Matrix*

1) AutoMARK EMC Test Report1/31/05 (Criterion)
2) Electrical Safety Testing to UL 60950-1 (Report No. ATS-0501-R01-Rev.1 4/10/06; replaces R01 4/30/05)
3) VAT A300 EMC report 070730-1165 (Criterion - #9)
4) VAT Accuracy Test Case Rev.02 (no date or organization identified)
5) AutoMARK Voter Assist Terminal Test Report rev.1.3 (Percept 5/19/05)
6) Testing Services Report AutoMARK Voter Assist Terminal S/N: 002 Job No. 04-00542 (APT 1/12/05 Vibration & Bench)

VAT A-200	MIL STD 810D						EMC								OSHA
Tested Configuration	516.3 Bench Handling	514.3 Cat 1 Vibration	502 Low Temp	501 High Temp	507-2 Humidity	501 & 502 Temp & Power Var & 163 hr Reliability	Electromag Rad Part 15 Class B	Power Disturb 61000-4-11	ESD 61000-4-2	Electromag Susct 61000-4-3	Elec Fast Trans 61000-4-4	Lightening Surge 61000-4-5	RF Immunity 61000-4-6	Magnetic Fields Immunity 61000-4-8	Safety Title 29, Part 1910
VAT A100 Configurations: •A: A100 – S/N 005 •B: A100 – S/N AM0205420004 •D: A100 – S/N 002 •F: A100 – S/N 008 •G: A100 – S/N 005, 007, 008, DV3.5-2, or DV3.5-3 VAT A300 Configurations: •C: A300 – S/N AM0307420125	6 D	6 D	5 G	5 G	5 F	5 G	3 C	1 A	3 C	3 C	1 A	1 A	1 A	1 A	2 B

7.5 *Appendix E- Discrepancy Report*

This report incorporates open discrepancies in the scope of Unity 3.2.0.0 that were transferred from SysTest Labs at the time of their suspension. The SysTest discrepancy number is reflected in the description. Issues encountered by iBeta during testing are contained in the report. The handling of discrepancies closed by SysTest should be identified in the Summary Report of the testing performed by SysTest.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
1	*12/5/08*	*C Coggins*	*Document Defect*	*Closed*	*Unity 4.0 Discrepancy Report 10/28/08 (SysTest)* *DS-200 with Optional Ballot Box ESD Test Report 1.0 (Percept)*	*Potentially reusable Unity 4.0 hardware test results do not document validation of the ES&S' resolution of an ESD failure* *On page 2 of the ESD report a failure and mitigation is identified, however the failure and validation resolution is not documented in the Discrepancy Report or the sub-contractor report. There is no documentation that an ES&S associated engineering change was issued to address the "Modifications Required: The poll close button failed at +15kV in stand alone mode. Copper tape on backside of switch cover was applied to pass at +15kV. The previous VSTL did not provide detail that evidences their validation that an engineering change was initiated by ES&S as a result of the mitigation performed by the subcontractor lab in ESD testing.*	*v.1: 9.6.2.6.e The ITA shall evaluate data resulting from examinations and tests employing the following practices: Any and all failures that occurred as a result of a deficiency shall be classified as purged, and test results shall be evaluated ...if the 1) vendor submits a design, manufacturing ... change notice... 2) examiner of the equipment agrees that the proposed change will correct the deficiency; and 3) vendor certifies that the change will be incorporated...* *EAC NOC 07-005 it is the lead VSTL's responsibility to properly test the voting system and accurately report those tests to the EAC.*	*ES&S referred this issue to SysTest; SysTest responded 1/8/09:* *The failure and validation resolution is documented on page 4 and 19 of the sub-contractor report. ES&S submitted ECO 693 to address the "Modifications Required" and Systest' hardware subcontractor Percept completed the Engineering Change Evaluation & Review form. Systest will provide both documents to iBeta.*	*Accepted, 1/13/09 KS* *Verified doc Optional Ballot Box ESD, v. 1.0, 4/25/07; pg. 4 shows the failure, and resolution retested and passing. Pg. 19 is a photo showing the part with the copper tape. ECO693 reflected the identified changes.*
2	*12/5/08*	*C Coggins*	*Document Defect*	*Closed*	*Unity 4.0 Discrepancy Report 10/28/08 (SysTest)* *Percept Hardware Test Report 1.0 (DS-200 5/1/07)*	*Potentially reusable Unity 4.0 hardware test results contain no description of two test failures and the validation of their resolution by the VSTL.* *On page 29 of the sub-contractor (Percept) report two failures (CAR-001_DS200-Radiated Emissions, CAR-002_DS200-Radiated Immunity) and mitigation with 4 ECOs 690 to 693 are identified. Neither the sub-contractor report nor the Discrepancy Report provide a description of how, what, when and where the failures occurred or who, how, when and where the mitigations were performed that resulted in the ECO. There is no identification of the validation of the resolution.* *1/14/09 KS*	*v.1: 9.6.2.6 The ITA shall evaluate data resulting from examinations and tests employing the following practices:* *a: If any malfunction ... is detected that would be classified as a relevant failure using the criteria in Vol.2, its occurrence ... shall be recorded for inclusion in the analysis of data obtained from the test...* *e: Any and all failures that occurred as a result of a deficiency shall be classified as purged, and test results shall be evaluated ...if the 2) examiner of the equipment agrees that the proposed change will correct the deficiency* *EAC NOC 07-005 it is the lead VSTL's responsibility to properly test the voting system and accurately report those tests to the EAC.*	*ES&S referred this issue to SysTest; SysTest responded 1/8/09:* *EMC test report "DS200 EMC Test Report 070314-1134A.pdf" Appendix A page 80 of 84 issued by Criterion and Percept CAR-001_DS200-Radiated Emissions, and CAR-002_DS200-Radiated Immunity provide a description of modifications. Systest will provide these documents to iBeta.*	*Reject 1/14/09 KS* *ECOs are not provided* *Accepted 2/6/09 CEC* *ECO 692 and COTS power supply specification were provided documenting the mitigation changes.*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						- Accepted: Verified that "DS200 EMC Test Report 070314-1134A.pdf" Section 6.5 Appx. A, pg. 80 describes 4 modifications made to the DS200 and these modifications match CAR-001 & CAR-002 - Rejected: The ECOs 690 to 693 were not provided. (Note: ECO693 was provided for discrepancy #1. It does not match the description in these submitted CARs.)			
3	12/5/08	C Coggins	Document Defect	Closed	ES&S Retest Matrix v.1.16 - DS-200 testing (SysTest) DS-200 EMC Report R071107-30-01 (NCEE original) DS-200 EMC Report R071107-30-01B (NCEE amended) DS200 EMS Test Report 070214-134A 5/15/07 (Criterion) Percept Hardware Test Report 1.0 (DS-200 5/1/07)	Potentially reusable Unity 4.0 hardware test results do not contain an assessment of the scope of testing. The HW test matrix lists three EMC reports from two labs for the DS-200. Testing performed at Criterion in March 2007 included a ballot box. Testing a few months later at NCEE excluded the ballot box, Power Disturbance and Lightening Surge. An original and amended report was issued by NCEE. The HW test matrix indicates that the ESD & FCC Part 15B applicable test results are in the amended NCEE report. Four additional tests run by NCEE are traced to the original NCEE report. All reports identify the DS-200 as passing. No report or test plan provides an assessment addressing the NCEE testing or why: 1) The EMC testing needed to be repeated by NCEE for six tests when the Percept and Criterion report indicate the system passed. 2) Power Disturbance and Lightening Surge weren't repeated. 3) Only ESD and FCC Part 15B results use the amended NCEE report when updates were made to all tests. 4) The NCEE testing excluded the ballot box.	v.1: 9.6.1.1 As described in 9.5.2, the nature and scope of testing for system changes or new versions shall be determined by the ITA based upon the nature and scope of the modifications to the system and on the quality of system documentation and configuration management records submitted by the vendor.	ES&S referred this issue to SysTest; SysTest responded 1/8/09: ES&S changed components on PMB, USB, PEB, ASB, and PSB to be RoHS compliant as detailed in ECOs 702-706. These changes have no impact on the power supply, therefore Power Disturbance, and Lightening Surge tests weren't repeated. Note both original and amended NCEE reports are identical except the amended report now reference the correct FEC document (see sec. 1.3 Reason for Amendments pg 3 of 43 for details in the amended report). Also the changes have no impact on ballot box, therefore the NCEE testing excluded the ballot box. Systest will provide these documents to iBeta.	Accept 1/14/09 KS Verified that ES&S ECO's 702-706 addressing the changes to DS200 for Restriction of Hazardous Substances (Lead) were provide. In addition the corresponding SysTest ECO assessment and the comments submitted with these documents address the SysTest rationale for testing.
4	12/9/08	J Garcia	Document Defect	Closed	Unity 4.0 Test Plan rev. 9.1 Attachments	The appendix identified in the rev.9.1 of the Test Plan were not provided in the package from SysTest. The EAC has instructed that testing of Unity 3.2 shall incorporate system limitation testing per the approved Unity 4.0 Test Plan. The appendices	v.1: 8.7.2.b.1 The FCA s conducted by the ITA to verify that the system performs all the functions described in the system documentation. The vendor shall: provide the following information to support his audit: copies of all procedures used for … integration testing and system		Accept 1/14/09 KS The EAC provided a chain of evidence copy - Unity 4.0 T.P.v.6 Attachments A -H

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						referenced in the Section 1.1 were not provided with the Test Plan.	*testing*		
5	12/9/08	J Garcia	Document Defect	Closed	*Unity 4.0 Test Plan rev. 9.1 spreadsheet of system limitations*	*A spreadsheet containing information regarding the testing of system limitations for the approved EAC Unity 4.0 Test Plan was not provided.* *The EAC has instructed that testing of Unity 3.2 shall incorporate system limitation testing per the approved Unity 4.0 Test Plan. "The attached spreadsheet" that provides a matrix of limitation is identified in section 4.3.10.2 but was not provided with the Test Plan.*	*v.1: 8.7.2.b.3 The FCA s conducted by the ITA to verify that the system performs all the functions described in the system documentation. The vendor shall: provide the following information to support his audit: records of all tests performed … including error corrections and retests*	*ES&S referred this issue to SysTest; SysTest responded 1/8/09:* *Systest will provide a spreadsheet containing information regarding the testing of system limitations to iBeta.*	*Accepted: 1/14/09 KS* *Verified the limitations spreadsheet was received*
6	12/9/08	C Coggins	Document Defect	Closed	*ES&S Retest Matrix v.1.16 - DS-200 testing (SysTest)* *APT Labs Testing Services Report M650 Job no.08-00654 (5/2/08)*	*The Temperature, Power Variation and Reliability report does not identify whether the M650 passed or failed.* *The matrix indicates the APT report contains the results of M650 Testing for Temperature, Power Variations and Reliability. Section 5.1 indicates that the operational tests are performed by SysTest and they will determine the pass/fail of the test. No SysTest report identifying the pass/fail report has been provided.*	*v.2: B.5 The test report shall be organized so as to facilitate the presentation of conclusions …a summary of test results …*	*ES&S referred this issue to SysTest; SysTest responded 1/8/09:* *The APT policy is not to state the results of testing in their test report as they do not perform operational status check. Systest performed the operational status check prior to and after each test so they left it up to Systest to state whether a product passed or failed. Systest stated that the product passed in their Environmental Test Case Summary. A copy of Environmental Test Case Summary will be provided to iBeta.*	*Accepted: 1/15/09 KS -* *Verified the SysTest Test Summary Report references SUN APT lab as performing environmental testing and "All tested equipment successfully passed each of the environmental tests to which the equipment was subjected." Defer to EAC for determination of reuse.*
7	12/11/08	C Coggins	Document Defect	Closed	*AutoMARK Voter Assisted Terminal Test Report rev.1.3 (Percept 5/19/05)*	*Potentially reusable Unity 4.0 hardware test results (A100) contain no description of the engineering changes initiated during testing.* *Section 2.1 of the sub-contractor report identifies S/N-008 returned for a calibration error; it does not identify if it was associated with the test failure identified in section 3.4.1 & 3.4.1.1.1. The VAT failure identifies mechanical changes but does not identify the engineering change. As neither the original ITA report nor supporting documentation of the failure was submitted it could not be validated if the discrepancy and resolution was*	*v.1: 9.6.2.6 The ITA shall evaluate data resulting from examinations and tests employing the following practices:* *a: If any malfunction ... is detected that would be classified as a relevant failure using the criteria in Vol.2, its occurrence ... shall be recorded for inclusion in the analysis of data obtained from the test...* *e: Any and all failures that occurred as a result of a deficiency shall be classified as purged, and test results shall be evaluated ...if the 2) examiner of the equipment agrees that the proposed change will correct the deficiency*	*ES&S referred this issue to SysTest; SysTest responded 1/8/09:* *Per Humidity Test Nonconforming Work and Corrective Action Request S/N-008 returned for a calibration error was not associated with the test failure identified in section 3.4.1 & 3.4.1.1.1. S/N:-008 was associated with 120 hrs humidity test Sec. 3.3.5 of the test report. Auto mark submitted ECO 0025 to address mechanical change. Systest will provide these documents to iBeta.*	*Accepted: 1/14/09 KS* *Verified that ECN025 matches the failure identified in sections 3.4.1 & 3.4.1.1.1.* *CAR SN-008 identifies "humidity test was restarted after installing a new touch screen panel with adequate clearance for the wires". The CAR identifies how the system was restored*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						documented in the test record.	EAC NOC 07-005 it is the lead VSTL's responsibility to properly test the voting system and accurately report those tests to the EAC.		but does not clearly identify the reason for the failure. It is unclear if "clearance for the wires" was an Engineering Change or replacement of a failed part. iBeta accepts the response but refers these findings to the EAC for determination of reuse.
8	12/19/08	C Cog gins	Docu-ment Defect	Closed	ES&S AutoMARK VAT A200 (Report No. 080521-1215R 6/11/08)	Potentially reusable Unity 4.0 hardware test results for the AutoMARK VAT A100 do not contain an assessment of the changes in the VAT models that permit the use of A100 and A200 reports. An EMC report for the A200 was submitted with the A100 reports. Reuse of prior hardware environmental testing is permitted by the EAC if an ESD test is performed. A 2008 ESD for the A200 was submitted to support reuse of the 2005 A100 testing. There is no assessment of the hardware that identifies the impact on testing of the changes between the A100 and A200 so that the A200 ESD testing is sufficient to support reuse of the A100 2005 reports. The A200 report indicates that Electric Fast Transit was repeated but there is no assessment identifying why this test was required but the other tests were not required. 1/15/09 KS Accept: Verified that Phase 2 Change Summary.pdf and submitted SysTest ECO 200-206, 208, 210-247, 256-278 assessments identify changes between A100 & A200 . Confirmed that all required testing identified in these assessments was performed in AutoMARK VAT1.1 EMC Test Report 051214-995R.pdf; Document 5K50-30 vs. 5K50-20 Differential items_G.pdf reviewed for changes between A200 &	v.1: 9.5.2.1 The ITA will determine the test necessary for to qualify the modified system based on a review of the nature and scope of changes… EAC Voting System Test and Certification Program Manual v.1.0 2.10.5.2 Use of valid prior testing is authorized only when: 2.10.5.2.1. The discrete software or hardware component previously tested is demonstrably identical to that presently offered for testing. VSTLs must examine the components to ensure no change has taken place consistent with all documentation. When valid prior testing is used, the system presented must be subject to regression testing, functional testing and system integration testing; 2.10.5.2.2. The voting system standards applicable to the prior and current testing are identical; 2.10.5.2.3. The test methods used are substantially identical to current test methods approved by the EAC; and 2.10.5.2.4. The adoption and use of valid prior testing is noted in the test plan and test report.	ES&S referred this issue to SysTest; SysTest responded 1/8/09: Phase 2 Change Summary.pdf document describes the differences between the model A100 and A200. 5K50-30 vs. 5K50-20 Differential items_G.pdf document describes the differences between the model A200 and A300. Please note there are no hardware differences between the model A200 and A300. AutoMARK Voter Assist Terminal Test Report rev 1.3.pdf is the test report for model A200. Systest will provide these documents to iBeta.	Reject: 1/15/09 KS Phase 2 Change Summary.pdf references ECO324-346 which were not provided. Accept: 1/15/09 KS Verified that Phase 2 Change Summary.pdf and submitted SysTest ECO 200-206, 208, 210-247, 256-278 assessments identify changes between A100 & A200 . Confirmed that all required testing identified in these assessments was performed in AutoMARK VAT1.1 EMC Test Report 051214-995R.pdf; Document 5K50-30 vs. 5K50-20 Differential items_G.pdf reviewed for changes between A200 & A300. Accept: 2/6/09 CEC Verified receipt of the ESO324 - 346.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						A300. Reject: The Phase 2 Change Summary.pdf identifies ECO324-346. SysTest did not provide these assessments			
9	12/19/08	C Coggins	Document Defect	Closed	VAT A300 EMC report 070730-1165 Criterion	Potentially reusable Unity 4.0 hardware test results for the AutoMARK VAT A200 do not contain an assessment of the changes that permits use of the A300 reports. An EMC report for the A300 was submitted for the A200 report. There is no assessment of scope that identifies the differences between the A200 and A300.	v.1: 9.5.2.1 The ITA will determine the test necessary for to qualify the modified system based on a review of the nature and scope of changes…	ES&S referred this issue to SysTest; SysTest responded 1/8/09: Premier Election Systems is listed as the client in the test report but the model number that was tested is VAT A100 which is common to both companies. Both Al Backlund and Darrick Forester believe that there was discussion of joint testing between ES&S and Premier but Systest was not involved in it.	Accept 1/14/09 KS Accepted based upon the response in discrepancy #8 that there are no differences between the A200 and A300.
10	12/19/08	S jakileti	Document Defect	Closed	Win650 Build Environment-Compile-Install Guide v.1.0	Procedures and validations are incomplete (TBD). Section 2: CREATE BUILD ENVIRONMENT is missing the procedure and validation list. Section 4: BUILD SOURCE CODE is missing "validation" to validate the compile is successful This information is listed as "TBD"	v.1: 8.5.a :The vendor shall establish such procedures and related conventions, providing a complete description of those procedures used to: a. Develop and maintain internally developed items; EAC Voting System Testing and Certification Program Manual, v.1.0 Sec 5.5.1. Demonstrate that the software was built as described in the Technical Data Package.	**20090512 - MDN --** Completed build documentation to be staged to the FTP server on May 13.	Accepted SJ 6/4/09 Procedure was verified in the M650 trusted build.
11	12/23/08	S eaton	Document Defect	Closed	NCEE Labs EMC Test Report (R071107-30-02) (page 4) 2.1.5 Serial Number	The report does not correctly identify the equipment tested. The report identifies the serial number for the M650 Central Ballot Counter as ES0107360007. This number does not match the format of the M650 serial number. It appears to be a serial number of an intElect DS200.	v.2: 4.6.1.1 Equipment identification… shall be recorded.		Accepted C Coggins 1/21/09 Verified revised NCEE Labs EMC Test Report (R071107-30-02A) identifies M650 S/N11027011
12	12/30/08	K Swift	Document Defect	Closed	M650 Sys Maint Man, v. 2.2.0.0, No rev., May 17, 2007 DS200 Sys Maint Man,	**From SysTest Unity 4.0 Testing - Disc: 6** In the cited documents, no concept of operation is presented.	V.2: 2.9.1 a, b, e, f, g, h The vendor shall describe the structure and function of the equipment (and related software) for election preparation, programming, vote recording, tabulation, and reporting in sufficient detail to provide an overview of the system	**10.17.08 - RDG** **M650 SMM v.2.2.1.0_10.17.2008** Added information about data output to the end of the Concept of Operation section in Chapter 1: Introduction. **10.17.08 - RDG**	Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					HW v. 1.0.0.0, No Rev. Jun 8, 2007		*for maintenance, and for identification of faulty hardware or software. The description shall include a concept of operations that fully describes such items as: a. The electrical and mechanical functions of the equipment; b. How the processes of ballot handling and reading are performed (paper-based systems); e. How data are handled in the processor and memory units; f. How data output is initiated and controlled; g. How power is converted or conditioned; h. How test and diagnostic information is acquired and used."*	***DS200 SMM v.1.3.7.0_10.17.2008*** *Added additional information at the end of the DS200 Concept of Operations and Electrical Information sections in Chapter 1: Introduction.*	*validated by SysTest as applicable to Unity 3.2.0.0. Verified that the DS200 SMM, dated 10/17/08, Ch. 1, addresses 2.9.1.b - how ballot handling and reading is performed; and 2.9.1.f - how data output is controlled. Verified M650 SMM, dated 10/17/08, Ch. 1, addresses 2.9.1.f - how data output is initiated and controlled; and 2.9.1.g - how data output is controlled.*
13	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*Unity System Test Plan, v. 3.2.0.0, 11/21/08*	***From SysTest Unity 4.0 Testing - Disc: 23*** *Cited documents do not provide test and verification specifications for: Development test specifications.*	*V.2: 2.7.1 a, b, c, d, e The vendor shall describe the plans, procedures, and data used during software development and system integration to verify system logic correctness, data quality, and security. a. Test identification and design, including: 1) Test structure; 2) Test sequence or progression; and 3) Test conditions; a. Standard test procedures, including any assumptions or constraints; b. Special purpose test procedures including any assumptions or constraints; c. Test data; including the data source, whether it is real or simulated, and how test data is controlled; d. Expected test results; and e. Criteria for evaluating test results.*	*5.15.2008 CHE - Added a statement addressing Development Test specifications to Unity Test Plan Test Strategy Overview, Section 2.1.1.*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified Unity System Test Plan, version 3.2.0.0, dated 11/21/08 meets all the applicable requirements.*
14	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*Unity System Test Plan, v. 3.2.0.0, 11/21/08*	***From SysTest Unity 4.0 Testing - Disc: 24*** *Cited documents do not provide test*	*V.2: 2.7.2 a, b, c, d, e, f, g, h The vendor shall provide specifications for verification and validation of overall software*	***10/17/08 T.Omel*** *Added a significant amount of detail to Section 2.1.1. If the VSTL feels this does not address this*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						and verification specifications for: National Certification test specifications.	*performance. a. Control and data input/output; b. Acceptance criteria; c. Processing accuracy; d. Data quality assessment and maintenance; e. Ballot interpretation logic; f. Exception handling; g. Security; and h. Production of audit trails and statistical data.*	*discrepancy, more specific information regarding the nature of the deficiency is required.*	*history and verified Unity System Test Plan, version 3.2.0.0, dated 11/21/08 meets all the applicable requirements of the VSS*
15	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*ESSIM Sys Oper Proc, v. 7.7.0.0, 06/08/07 M650 Sys Oper Proc, 05/19/08 HPM Sys Oper Proc, 05/19/08*	***From SysTest Unity 4.0 Testing - Disc: 26*** *Documentation of operating procedures are incomplete.*	*V.2: 2.8.5 a, b, c, f, g, h The vendor shall provide documentation of system operating procedures that meets the following requirements: a. Provides procedures required to initiate, control, and verify proper system operation; b. Procedures that clearly enable the operator to assess the correct flow of system functions (as evidenced by system-generated status and information messages); c. Procedures that clearly enable the operator to intervene in system operations to recover from an abnormal system state; f. Procedures and off-line operator duties (if any) if they relate to the initiation or termination of system operations, to the assessment of system status, or to the development of an audit trail; g. Supports successful ballot and program installation and control by election officials, provides a detailed work plan or other form of documentation providing a schedule and steps for the software and ballot installation, which includes a table outlining the key dates, events and deliverables; and h. Supports diagnostic testing, specifies diagnostic tests that may be employed to identify problems in the system, verifies the correction of maintenance problems; and isolates and diagnoses faults from various systems states.*	***TMT - 10.17.2008 - ESSIM SOP** - Refer to Chapter 1: Overview - "General Timeline for Election Preparation" heading for requirement G. **10.17.2008 - TMT - HPM SOP** - Refer to Chapter 1: Overview, section General Timeline for Election Preparation for the timeline. **10.17.2008 - SS - M650 SOP** - Sample timeline added to Chapter 1 of all files.*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0. Verified in HPM SOP, dated 10/17/08; M650 SOP, dated 10/17/08 the addition of the General Timeline in Ch. 1 to satisfy 2.8.5.g.*
16	*12/30/08*	*K*	*Docu-*	*Closed*	*AM Sys Oper*	***From SysTest Unity 4.0 Testing -***	*v.2: 2.8.6 a, b*	*TMT - 10.17.2008 - Audit Manager*	*Accepted: K Swift,*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		Swift	ment Defect		Proc, V 7.5.0.0, 06/08/07 DS200 Sys Oper Proc, Hardware V 1.1.0.0, 06/15/07 EDM Sys Oper Proc, V 7.8.0.0, 05/18/07 ERM Sys Oper Proc, V 7.4.0.0, 06/14/07 ESSIM Sys Oper Proc, V 7.7.0.0, 06/08/07 HPM Sys Oper Proc, V 5.6.0.0 M650 Sys Oper Proc, V 2.2.0.0, 05/11/07	**Disc: 27** System operating procedures are incomplete. The cited documentation does not define the procedures required to support system acquisition and readiness testing and does not provide information on system maintenance, correction of defects, and incorporating hardware and new software releases. (EDM, ERM, ESSIM, HPM, M650) The cited documentation does not define the procedures required to support system acquisition and readiness testing, or hardware upgrades. (DS200) The cited documentation does not provide procedures for providing technical support, correction of defects, and for incorporating hardware upgrades and new software releases. (AM)	The vendor shall provide documentation of system operating procedures: a. Defines the procedures required to support system acquisition, installation, and readiness testing. These procedures may be provided by reference, if they are contained either in the system hardware specifications, or in other vendor documentation; b. Describes procedures for providing technical support, system maintenance and correction of defects, and for incorporating hardware upgrades and new software releases.	SOP - Chapter 1: Introduction, Added a new heading, Operations Support Frequently Asked Questions, providing information about the following. • how the system is purchased • how the system is installed • setup of the system • how a user can verify the system • the training needed • the checklist to be followed TMT - 10.17.2008 - EDM SOP - Chapter 1: Introduction, section Operations Support Frequently Asked Questions. Added a new heading, Operations Support Frequently Asked Questions, providing information about the following: how the system is purchased, how the system is installed, setup of the system, how a user can verify the system, the training needed, the checklist to be followed. 10.17.2008 SF -- Election Reporting Manager System Ops Procedures Chapter 1: Overview Added a new heading, Operations Support Frequently Asked Questions, providing information about the following. how the system is purchased how the system is installed setup of the system how a user can verify the system the training needed the checklist to be followed TMT - 10.17.2008 - ESSIM SOP - Chapter 1: Overview, Added a new heading, Operations Support Frequently Asked Questions, providing information about the following: how the system is purchased, how the system is installed, setup of the system, how a user can verify the system the training needed, the checklist to be followed.	12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0. Verified the addition of "Operations Support Frequently Asked Questions in Ch. 1 for: M650 SOP, dated 10/17/08; AM SOP, dated 10/17/08;DS200 SOP, dated 10/17/08; EDM SOP, dated 10/17/08; ERM SOP, dated 10/17/08; ESSIM SOP, dated 10/17/08; HPM SOP, dated 10/17/08 to meet 2.8.6.a ESSIM SOP and HPM SOP, dated 10/17/08 have been addressed to meet requirement 2.8.6.b (correction of defects) by listing the Error Messages chapters; New software releases has been addressed with the addition of the Operations Support Frequently Asked Questions section. System Maintenance is Not Applicable as these are software applications.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								TMT - 10.17.2008 - M650 SOP - Chapter 1: Introduction. Added a new heading, Operations Support Frequently Asked Questions, providing information about the following. *• how the system is purchased* *• how the system is installed* *• setup of the system* *• how a user can verify the system* *• the training needed* *• the checklist to be followed*	
17	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*QA Program SW & FW Verification, v. 1.2.0.0, May 10, 2007* *QA Program Manufacturing, v. 1.1.0.0, June 15, 2007*	***From SysTest Unity 4.0 Testing - Disc: 43*** *Cited documents do not address quality conformance inspections or specify that the test date must be part of the test record.*	*V.2: 2.12.3 b* *The vendor shall provide a description of its practices for quality conformance inspections that meet the requirements of Volume 1, Subsection 8.6. For each test performed, the record of tests provided shall include:* *b. Test date*	***9/17/08 T.Omel QAP SW/FW*** *Item #1 - Included a passage in Sect.12 of the QAP SW/FW document, referencing that the practices for QC inspections can be found in detail in the individual product test cases, as well as the Unity Test Plan document.* ***10/17/08 MDN QAP MANUFACTURING*** *A description of quality conformance procedures appears in Section 7 for the QAP for manufacturing and Section 12 of the QAP for system software and firmware. Updated both of these sections for clarity. Flowcharts reflect the procedure for incoming parts and device QC. Physical conformance testing for HW items is executed by a contracted Nationally Recognized Test Laboratories who sends test results directly to the Voting System Test Laboratory (VSTL). Functional test results are executed according to procedures outlined in the Unity test plan and system test cases. Reference to both documents added to indicate this. These items are provided with the TDP.*	*Accepted: K Swift, 12/30/08* *Reviewed the SysTest description history and verified QAP Manufacturing Unity v. 3.2.0.0, dated 12/1/08, Section 7 has been updated to address test date. Flowchart 2 addresses inspecting parts. Flowchart 14 addresses the QA tests performed.* *Verified QAP SW/FW Unity v. 3.2.0.0, dated 12/1/08, Section 12 updated to reflect QC inspections are detailed in test cases and/or Test Plan. Test cases submitted provide the detailed steps that comprise quality conformance inspections.*
18	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*Creating a Shortcut for Ballot on Demand (BOD)*	***From SysTest Unity 4.0 Testing - Disc: 284*** *Installation procedures have not all been submitted in TDP.*	*v.2: 1.3 e* *Overall, qualification testing focuses on:* *e. The documentation developed and maintained by the vendor to*	***SS 10/17/08 --*** *Drivers for the listed SOP's are derived from the Operating System. ES&S does not develop drivers for USB devices.*	*K Swift, 12/30/08* *Reviewed the SysTest description history and verified all other*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					8/29/07 *Installing HPM (HPM) 8/28/07* *Installing Election Reporting Manager (ERM) 8/28/07* *Installing EDM (EDM) 8/28/07* *Installing ESS Image Manger (ESSIM) 8/28/07* *Windows XP on a Dell Optiplex GX520 PC* *Windows XP On Dell Optiplex GX520 Document v. 1.2, dated 5/21/08*	*The listed documents 1) need to be included in the TDP, and 2) need to state what drivers and/or COTS software that must be installed on the system.*	*support system development, testing, installation, maintenance and operation, as addressed by the TDP described in Volume II, Section 2.*	***MDN 10/20/2008 WINXP Optiplex INSTALL GUIDES --*** *The Optiplex install guides were authored for two separate purposes. The file stored under \13_Other VSTL Reports \06_Build Environment\Install Guide, titled "WinXP-DellOptiplexGX520_INST" is a build install guide that assumes no network connectivity is allowed. Renamed the document file stored under 13_Other VSTL Reports \15_Install Instructions\U4000_COTS Install Instructions from "IG, WinXP - Dell Optiplex GX520 PC" to "UIG, WinXP - Dell Optiplex GX520 PC." To explicitly designate this guide as an end user install guide.*	*requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0.* *Verified the Install procedures are included in the SOP documents. Confirmed receipt in the Unity 3.2.0.0 TDP of the renamed document "UIG, WinXP - Dell Optiplex GX520 PC", and document WinXP-DellOptiplexGX520_INST*
19	*12/30/08*	*K Swift*	*Func-tional Defect*	*Closed*	*ERM 7.4.0.0*	***From SysTest Unity 4.0 Testing - Disc: 297*** *The District Canvass report has two different pages of totals.* *The first page of totals lists "Voting Precinct Totals through Sheriff Totals" down the left had column, but Governor/Lt. Gov totals, as the only contest on the top of the page; however, none of the totals match the tapes. The next page of totals that lists the 7 precincts, show accurate totals. We are unable to determine why the totals are different or what this page is*	*V1: 2.2.2.1.c* *To ensure vote accuracy, all systems shall:* *c. Record each vote precisely as indicated by the voter and be able to produce an accurate report of all votes cast.*	***12/12 TJO:*** *This report is designed for use in only one state. State-specific functionality is not being tested by the VSTL.* ***Note:*** *VSTL created an accurate .DST file, which is detailed in the ERM Operator's Guide. This corrected any issues. ES&S will update the System Limitations document and Operator's Guide.* ***07.07.2008 - MDN -*** *Limitations Document Item 15 under Election Reporting Manager documents referenced limitation. Included in*	*Accepted: K Swift, 12/30/08 - Reviewed the SysTest description history and verified a .DST file was created correctly and validated.* *Verified Config Mgmt Plan Unity v. 3.2.0.0, dated 11/21/08, has been updated to include System Limitations as a document the end*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						reporting. *12/13/07, D. Valdez - As the VSTL was not aware the District Canvass report was state specific (applicable to CA only) the DST file was created and report was re-generated and all totals were verified to be accurate. Then the VSTL was notified the report was not supported. The discrepancy will remain open until vendor documentation can be updated, submitted, and verified.*		*July 08 documentation submission.* ***Sue - 09.29.08** - ES&S supplies the System Limitations Document to it's customers as part of the end user documents. Added System limitations documentation to the list of documents supplied to end users in the Configuration Management Plan (Section 7.1.5).* ***10.17.2008 SF** -- Election Reporting Manager System Operations Procedures Chapter 34: Canvass* *Added a warning under the Names and District Totals heading that failure to create a .dst file before attempting to generate the report may result in inaccurate results and inconsistent formatting.*	*user will receive. Verified ERM SOP, dated 10/17/08, Ch. 28: Canvass, the addition of the Warning message.*
20	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*Configuration Management Plan, V. 1.1.0.0, 6/15/07*	***From SysTest Unity 4.0 Testing - Disc: 317*** *A review of the TDP does not indicate that copies of the procedures used for module or unit testing have been submitted.*	*v.2: 2.11.6 b* *The vendor shall provide a description of the procedures and related conventions for the two audits required by Volume I, Section 8.7.2.b.3 of the Standards. These requirements pertain to:* *b. Functional configuration audit that verifies the system performs all the functions described in the system documentation.*	***Sue - 09.29.08** - ES&S submitted elections and data for SysTest to review on 9/12/08. ES&S awaiting SysTest review.* ***MDN - 10.24.2008-** 1) Procedures for system testing are included in the Unity test plan and test cases for individual products. Added a cross reference to these documents to CM Plan Section 7.2.1. 2)After demotion by QA, construction for re-work is re-initialized and follows the same process as initial construction. The developer peer review described in CM Plan section 7.2.1 occurs for both bugs and enhancements after the "Construction Complete" phase of both workflows. This occurs for both initial work and re-work (after demotion by QA). See Sections 9.3.1 and 9.3.2.*	*Accepted: K Swift, 12/30/08* *Reviewed the SysTest description history and verified* *1) Config Mgmt Plan Unity v. 3.2.0.0, dated 11/21/08, Section 7.2.1 has been updated with information regarding Unit/Module Testing, Test Procedures, Test Cases, and Test Records. The procedures for integration and system testing have been submitted in the TDP.* *2) Verified flowcharts in section 9.3.1 and 9.3.2 contain construction reviews.*
21	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*Configuration Management Plan, V. 1.1.0.0, 6/15/07*	***From SysTest Unity 4.0 Testing - Disc: 318*** *In the test cases submitted, the following have failed and do not show*	*v.2: 2.11.6 b* *The vendor shall provide a description of the procedures and related conventions for the two audits required by Volume I, Section*	***10.24.2008 TJO--** Regarding iVIM, Audit Manager and ESSIM; incomplete information for each of these test cases was an accidental omission from the original*	*Accepted: K Swift, 12/30/08* *Reviewed the SysTest description history and verified*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						them to be retested: *AM - 1.0* *EDM - 2.6.5* *ERM and HPM - None of the test cases have been executed* *ESSIM - 1) Edit menu, 2) Load template, 3) Configuring Advanced Ballot Option*	*8.7.2.b.1 of the Standards. These requirements pertain to:* *b. Functional configuration audit that verifies the system performs all the functions described in the system documentation.*	*documents. The missing information has been added to each test case. The cases in question have not been re-run and the listed dates are still accurate.* *Regarding EDM; the functionality described in test case 2.6.5 is not supported by EDM in Unity 4.0.0.0 (automated candidate name formatting through the merge preferences window). Removed the test case from the document and documented this issue as a system limitation.*	*all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0.* *iBeta has verified that the Config Mgmt Plan Unity v. 3.2.0.0, dated 11/21/08, contains adequate content to prove out regression testing is performed by the vendor. Reviewed AM TC Spec, dated 8/26/08, ESSIM TC Spec, dated 10/17/08, the test cases identified in the description have passed.* *Verified Unity 3.2.0.0 System Limits, dated 12/9/08 has been updated with automated candidate name formatting through the merge preferences window is not supported.*
22	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*QA Program, SW & FW Verification, v. 1.2.0.0, Aug 21, 2007* *QA Program, Manufacturing, Ver. 1.1.0.0, Aug 21, 2007*	***From SysTest Unity 4.0 Testing - Disc: 339*** *The requirement is not being met for software/firmware/hardware in general, as detailed by item #1, and a specific case is cited in item #2.* *1) The documents do not contain a procedure for maintaining data and records to verify the quality inspections and tests.* *2) In the QA Manufacturing document, Flow chart 3, Auditing Process, details an audit of the ECO Process, however at the bottom of the page, it is stated that it is "Currently not practiced".*	*v.2: 2.12.3 a, b, c, d* *The vendor shall provide a description of its practices for quality conformance inspections that meet the requirements of Volume I, Section 7.6 of the Standards. For each test performed, the record of tests provided shall include:* *a. Test location;* *b. Test date;* *c. individual who conducted the test; and* *d. Test outcomes.*	***10.17.2008 MDN --** Updated QAP for SW/FW submitted with current revision. Procedures for document archiving and records retention appear under Section 2.5 and 2.2.2.*	*Accepted: K Swift, 12/30/08* *Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0.* *Verified QAP SW/FW dated 12/1/08, Sections 2.2.2 and 2.5 have been updated to address archiving and records retentions.*
23	*12/30/08*	*K Swift*	*Document*	*Closed*	*DS200 Test Case Spec,*	*From SysTest Unity 4.0 Testing - Disc: 348*	*v.2: 2.12.3 a, b, c, d* *The vendor shall provide a*	***10/16/08 T.Omel*** ***2. M650 --***	*Accepted: K Swift, 12/30/08*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
			Defect		*FW v. 1.2.0.0, HW v. 1.2, Test v. 1.0, Aug 20, 2007* *EDM Test Case Specs, SW v. 7.8.0.0j, Test Case 1.0, Aug 20, 2007* *QA Program Test Cases, Unity 4.0, v. 7.4.0.0, June 6, 2007 (file name: ERM TC v. 7.4.0.0_6.06. 2007.pdf)* *ESS Image Manager Test Case Spec SW v. 7.7.0.0f, Test Case 1.0, Aug 20, 2007* *HPM Unity v. 4.0, Product v. 5.6.0.0, Test Case v. 1.0, June 15, 2007* *M650, Test Case Spec, FW v. 2.2.1.0, HW v. 1.1, Test Case 1.0, Aug 20, 2007*	*The test cases are not complete as follows:* *DS200 TC v.1.2_8.20.2007* *- TC 7.1 states "Test applies: N", and there is no date filled out, however the test case was executed, as the Pass/Fail criteria has been completed.* *EDM TC v.7.8.0.0j_8.20.2007* *- TC 3.1 does not have all the outcomes for each step filled out. There is a test step that is "N/A", with no explanation why it is not applicable. (This is present in other test cases as well.)* *- TC 3.8 contains a test step that contains no Expected Result or Pass/Fail criteria. There are test steps that are "N/A", with no explanation why it is not applicable.* *- TC 4.1 states "Test applies: N", there is no date or tester filled out, however the test case was executed, as the Pass/Fail criteria has been completed.* *- TC 4.8 states "Test applies: N", however name, date, location and Pass/Fail criteria has been completed.* *- Some of the test cases do not list the build tested or are against a previous version of the most recent version (j).* *- There are highlighted and question mark items that don't appear to have been resolved.* *- There are test cases that have the Expected Results and Actual Results listed as "SAME". It is unclear what that specifies.* *- TC 6.1 does not have all the outcomes for each step filled out.* *ERM TC v. 7.4.0.0_6.06.2007 - This document does not meet any of the requirement.* *ESSIM TC v.7.7.0.0f_8.20.07* *- TC 'Edit Menu' states "Test applies: N", however name, date and location has been completed. Pass/Fail indicates a bug.* *- TC 'Candidates Style Sheets' does not have all the outcomes for each step filled out.* *HPM TC v.5.6.0.0_6.15.2007* *- The Introduction contains the wrong*	*description of its practices for quality conformance inspections that meet the requirements of Volume I, Section 7.6 of the Standards. For each test performed, the record of tests provided shall include:* *a. Test location;* *b. Test date;* *c. individual who conducted the test; and* *d. Test outcomes.*	*- Many test cases (e.g. 4.11) have sections that do not include the "Actual Results" and "Pass/Fail" categories. These sections are simply helpful addenda that aide the tester in setting up the test in other areas of the system.* *- Corrected an empty field on Page 169.* *- Several test cases in Section 10 of the document do not have complete information. This is because Section 10 covers Specific Customer Special Handling Scenarios. These scenarios usually address situations for individual customers or states. ES&S does not intend to include these tests in our federal certification effort.* ***3. ESSIM --*** *- Completed missing information on Pages 7, 8, 30, and 84.*	*Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0.* *Verified M650 TC, dated 10/17/08, test cases 4.6, 4.11, page 169, and Section 10 test cases have been updated as applicable.* *Verified ESSIM TC, dated 10/17/08; all test cases have passed and information is complete.*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						HPM version. - This document does not meet any of the requirement. - TC 'Question Style Sheets' does not have all the outcomes for each step filled out. - TC 'Creating Precinct Headers' does not have all the outcomes for each step filled out. Model 650, Test Case Specification, Firmware Version 2.2.1.0, HW v. 1.1, Test Case 1.0, August 20, 2007 4.6 & 4.11: Not all Steps contain Pass/Fail criteria			
24	12/30/08	K Swift	Inform-ational	Closed	Unity 4.0.0.0 Test Plan Aug 20, 2007	**From SysTest Unity 4.0 Testing - Disc: 355** 1) It is unclear from the documentation how to interpret the column heading "No Test" in section 2.2.2.1. 2) Section 2.2.2.2, indicates that testing was run against the firmware version 1.1.0.0 for the DS200. This certification is for firmware version 1.2.0.0. 3) The functionality section of the document, 2.3, does not address AM or ESSIM or testing the full suite of hardware components for this certification.		**10/14/08 T.Omel** In Section 2.4.3 of the Unity Test Plan, replaced all references to OPTIM with ESSIM.	Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0. Unity TP v. 3.2.0.0, 11/21/08; verified all references to OPTIM have been corrected.
25	12/30/08	K Swift	Docu-ment Defect	Closed	Unity 4.0.0.0 Test Plan Aug 20, 2007	**From SysTest Unity 4.0 Testing - Disc: 359** 1) Section 2.5.5 does not include the DS200 in the test cases, so it is not possible to assess the verification and validation of overall performance. 2) Requirements to determine Processing Accuracy has not been addressed.	V.2:2.7.2 c The vendor shall provide specifications for verification and validation of overall software performance. c. Processing accuracy;	**9/11/2008 -- T. Omel** -Please provide clarification on the inability to "assess the verification and validation of overall performance." The discrepancy cites that the DS200 is not in Section 2.5.5 -- is the test lab requesting further information on how to assess overall performance of the DS200 with relation to the C1LONE test election? or information to assess the overall performance of the entire Unity system?	Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0. Verified in Unity TP v. 3.2.0.0, 11/21/08, Section 2.3.1 and 2.3.3 contain a note that processing accuracy is validated by scanning ballots and vote consolidation.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
26	12/30/08	K Swift	Document Defect	Closed	Unity 4.0.0.0 Test Plan Aug 20, 2007	***From SysTest Unity 4.0 Testing - Disc: 361*** Production of audit trails and statistical data has not been addressed.	V.2:2.7.2 h The vendor shall provide specifications for verification and validation of overall software performance. h. Production of audit trails and statistical data.	***9/11/2008 --T.Omel*** Added the following to 1.2.2: To ensure that correct audit and statistical records are kept as actions are performed during the election process. Testers are to regularly keep external logs of their activities and compare these to the various audit logs that are maintained by the Unity software and tabulators.	Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0. Verified in Unity TP v. 3.2.0.0, 11/21/08, Section 2 has been updated per vendor comment.
27	12/30/08	K Swift	Document Defect	Closed	ERM System Functionality Description v. 7.4.0.0 Nov 15, 2007 HPM System Functionality Description v. 5.6.0.0 M650 System Ops Procedures FW v. 2.2.1.0, HW v. 1.1 Nov 16, 2007 ERM System Ops Procedures v. 7.4.0.0 Nov 15, 2007 DS200 System Ops Procedures HW v. 1.2.0.0, FW v. 1.2.0.0 Nov 8, 2007	***From SysTest Unity 4.0 Testing - Disc: 372*** 1) The ERM and HPM SFD documents states that "provisional ballots are handled by each individual tabulator", however, the SFD documents for the DS200 and M650, state that it is handled procedurally outside the scope of each tabulator. This is inconsistent. 2) The various tabulator SOP documents do not indicate how the scanners track or report on paper provisional ballots. 3) The ERM SOP document, does not detail the reporting/totals of provisional ballot totals regardless of whether they are paper or DRE. 4) The VSTL can not locate in the TDP how paper provisional ballots are handled in the election definition or for reporting.	V1: 2.2.8.2 o The TDP accompanying the system shall specifically identify which of the following items can and cannot be supported by the system, as well as how the system can implement the items supported: o. Provisional or challenged ballots. V1: 2.5.2 All systems shall provide a means to consolidate vote data from all polling places, and optionally from other sources such as provisional ballots	10.17.2008 SF -- Election Reporting Manager SOP Chapter 1: Overview Added information under the Provisional Voting heading to clarify that provisional votes are tabulated according to jurisdiction regulations. TMT - 10.17.2008 - DS200 SOP Chapter 1: Introduction. Added information under the Provisional Voting heading to clarify that provisional votes are tabulated according to jurisdiction regulations. TMT - 10.17.2008 - M650 SOP - Chapter 1: Introduction. Added information under the Provisional Voting heading to clarify that provisional votes are tabulated according to jurisdiction regulations. 10.20.2008 - MDN ERM SFD--Updated ERM SFD Section 2.1.7.2 to indicate support for provisional and added an expanded description of the provisional voting process. No special functionality is included in ERM for handling provisional votes. Segregating and handling provisional votes is an entirely	Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified all other requirements have been previously validated by SysTest as applicable to Unity 3.2.0.0, or iBeta has determined they have been met. ERM SOP, DS200 SOP, M650 SOP, dated 10/17/08, verified provisional ballot handling is clarified in Ch. 1. ERM SFD, dated 11/20/08, Section 1.1.7.2 has been updated to clarify the handling of provisional ballots. M650 and DS200 SFD, dated 11/20/08, still state that provisional ballots are handled outside the scope of the tabulator, but

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								administrative process and there is no difference in how provisional votes are processed in ERM compared to election day votes. Provisional ballots are identified during voting and segregated from approved ballots prior to being counted on an ES&S vote tabulator. All provisional ballots are then considered for approval/rejection by a resolution or review board according to the jurisdiction's election rules. Approved ballots are then counted normally on an ES&S ballot tabulator and read as standard election day results by ERM in exactly the same manner as all other votes. Rejected ballots are never tabulated. The ERM system includes no special functionality for handling provisional voting and does not recognize provisional balloting vs. early voting or election day ballots. See the ERM SOP for a description of how paper ballot results are passed to ERM.	*because of the clarification in ERM, this is a non-issue.*
28	*12/30/08*	*K Swift*	*Functional Defect*	*Closed*	*M650 v. 2.2.1.0*	*From SysTest Unity 4.0 Testing - Disc: 411* *Some valid ballots were rejected due to a simple manipulation of the election definition data in one file.* *We obtained the M650 zip disk with a set of valid election definition files, than manipulated the data in the *.PRF file using a Hex editor. We changed the last value within the file from "0007" to a value of "0999", and then resaved the data back to the zip disk. We then inserted the zip disk with the changed file of the set of election definition files into the M650, powered up the M650 and loaded the election definitions to the M650.* *During 3 test runs, the number of valid ballots which registered as good ballots when read by the M650 after loading the manipulated data set election*	*V1: 2.2.2.1.c* *To ensure vote accuracy, all systems shall:* *c. Record each vote precisely as indicated by the voter and be able to produce an accurate report of all votes cast.*	*Sue - 10.02.08 - Awaiting SysTest to rerun security test based on earlier vendor comments.* *Sue - 04.03.09 - Stress, Volume and Regression ballots are printed with a security mark. These elections could be used to test the referenced functions.*	*Accept 5/5/2009 SJ: We can not reproduce this test by modifying the .PRF file. The test results are not related to modification of this .PRF file. With or without modification in the election definition loaded on the M650 ,while scanning ballots ,if the ballot is folded or torn ,M650 is not able to count it and displays the error "Invalid Ballot Style or Type Code Mismatch."* *Scanned 7 ballots with manipulation in*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						definition files was different. *Known: Total ballots were 28; Registered as Good ballots, when read through M650 were 25; Registered as Bad ballots with errors, when read through M650 were 3.* *1st test run:* *Total ballots: 28 ballots; Ballots registered as Good ballots, when read through M650 were: 23; Registered as Bad ballots with errors, when read through M650 were: 5* *Errors that came up for the bad ballots were either: 1) "Could not Read Code Channel!" or 2) "Invalid Ballot Style", "Type Code Mismatch"* *2nd test run:* *Total ballots: 28 ballots; Ballots registered as Good ballots, when read through M650 were: 24; Registered as Bad ballots with errors, when read through M650 were: 4* *Errors that came up for the bad ballots were: "Could not Read Code Channel!" (this error only for all bad ballots)* *3rd test run:* *Total ballots: 28 ballots; Ballots registered as Good ballots, when read through M650 were: 22; Registered as Bad ballots with errors, when read through M650 were: 6* *Errors that came up for bad ballots were either: 1) 'Invalid Ballot Style", "Type Code Mismatch" or 2) "Could not Read Code Channel"* *The errors that were generated when the ballots were rejected were not consistent. The outcome is that the tabulation of valid ballots was affected, affecting the accuracy of the voting.*			*election definition(.PRF file 0007 to 0999) , performed 3 runs, 21 ballots are counted with out error.*
29	*12/30/08*	*K Swift*	*Functional Defect*	*Closed*	*M650 v. 2.2.1.0*	*From SysTest Unity 4.0 Testing - Disc: 427* *Fake ballots copied from un-voted original ballots on a laser color copier printer (XEROX WORKCENTRE 7665) were accepted by the M650.*	*V1: 6.1* *This section describes essential security capabilities for a voting system, encompassing the system's hardware, software, communications, and*	***Sue -** 10.02.08 - ES&S supplied SysTest with 25 blank ballots with the security mark for review on 09.23.08.* ***Sue - 04.03.09 -** Stress, Volume*	*Accepted: 5/8/2009* *SJ: Tried photo copy of the ballot in black and white from cannon model Imagescanner 5070*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						We obtained three un-voted original ballots from PRI02 election and copied several variations of the original un-voted ballots. This was due, to not being able to copy the entire original ballots as they were, the copy of the original ballots had the very top sections of the markings or the very bottom sections of the markings chopped off by the laser copier machine due to not being able to copy the whole original ballot. There was one copy made from an original un-voted ballot that we did successfully capture the whole ballot on the copier but this was only a copy of the front and not the back side. We also printed some in color and some in black and white only. *Variations copied (with some portions of the ballot chopped off.) and scanned on the M650 are:* *Variation 1: This was printed in black and white. We copied the front only, the back side of the copy was blank, top section markings were fine but the bottom section markings were chopped. M650 rejected this ballot.* *Variation 2: This was printed in black and white. We copied the front only, the back side of the copy was blank, top section markings were chopped but the bottom section markings were fully copied. M650 rejected this ballot.* *Variation 3: This was printed in black and white. We copied the front and the back to create a double sided copy of the original ballots. The top section had been chopped off a little in the front and the back side, but the bottom section was fully copied on the front, as well as the back side of the copy. M650 accepted this ballot.* *Variation 4: This was printed in black and white. We copied the front and the*	*documentation. The Standards recognize that no predefined set of security standards will address and defeat all conceivable or theoretical threats. However, the Standards articulate requirements to achieve acceptable levels of integrity, reliability, and inviolability. Ultimately, the objectives of the security standards for voting systems are:* *¨ To protect the system from intentional manipulation and fraud, and from malicious mischief;* *¨ To identify fraudulent or erroneous changes to the system;*	*and Regression ballots are printed with a security mark. These elections could be used to test the referenced functions.*	*to reproduce gray scale.* *1. One side copied ballot, rejected by M650 with an error invalid ballot style.* *2. Copied two sides ,Rejected by M650 with an error "Invalid row count, Row 28"*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						back to create a double sided copy of the original ballots. The top section was fully copied on the front, as well as the back side of the copy, but the bottom section on the front and the back side of the copy was chopped off a little. M650 accepted this ballot. *Variation 5: This was printed in color. We copied the front and the back to create a double sided copy of original ballots. The top section had been chopped off a little in the front and the back side, but the bottom section was fully copied on the front, as well as the back side of the copy. M650 accepted this ballot.* *Variation 6: This was printed in color. We copied the front and the back to create a double sided copy of original ballots. The top section was fully copied on the front, as well as the back side of the copy, but the bottom section on the front and the back side of the copy was chopped off a little. M650 accepted this ballot.* *After we copied them, we filled in the fake ballots using a BIC pen with blank ink (BIC Pen was a round stic, medium point, 1.0 mm, ballpoint, white barrel, black ink). These BIC pens are abundant and are easily found in most stores.* *We loaded the election definition files to the M650 from a zip disk, zeroed out the totals and ran the fake ballots through. Out of 14 fake ballots, we registered 7 ballots as good. Those that passed were the double sided ones that were copies of the original ballots of the front and the back. One copy that was copied only of the front passed also. Fake ballots that are intentional and accepted by the M650 is fraud and can cause issues in the accuracy of the votes.*			
30	*12/30/08*	*K Swift*	*Document*	*Closed*	*Software Design &*	***From SysTest Unity 4.0 Testing - Disc: 429***	*v.2: 2.5.9.2.b* *For each interface identified in the*	***Sue - 10.02.08** - ES&S provided SysTest with 25 blank ballots with*	*Accept - K Swift - 3/12/09*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
			Defect		Spec, EDM, v. 7.8.0.0, Mar 4, 2008	Quite a few of the field limitations provided in the SDS are inaccurate (Example: Election description, Full path to ballot definition file, Vote for phrase when only 1, Vote for phrase). The limitation states 80; however, when tested the fields allowed fewer than 80 or greater than 80. Pg. 71 shows a "Merge with" field; however, the "Merge with" field does not exist. The "Add to type and Add to sequence" field allowed alpha and numeric; however the "Type" states numeric only. Reject 12/30 08 K Swift Response does not clearly address the issue	system overview, the vendor shall provide information that describes: b. Characteristics of individual data elements that the interfacing entity(ies) will provide, store, send, access, receive, etc., such as: 1) Names/identifiers; 2) Data type (alphanumeric, integer, etc.); 3) Size and format (such as length and punctuation of a character string); 7) Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply;	security marks for review on 09.23.08. **CJ - 02.16.09 -** 1) Regarding the field limitations: These are not issues as the application's table entries reflect the length of the container (variable) within the application. The following text was added to the Notes section of Section 9.2.: "Type and Size/Format entries in the tables below reflect the internal programming element types, lengths, with internal validation. These may not necessarily reflect initial user input. When dialogs are re-displayed, all data is re-displayed with appropriate length validation applied." **CJ - 02.16.09 -** 2) The "Merge Width" field reference was removed in an earlier release of this document. Note: This document version contains a new Page 1 graphic and introduction, causing your earlier page references to become inaccurate. To locate your referenced section, search for "Merge Preferences Dialog". **CJ - 02.16.09 -** 3) Add To Type and Add to Sequence (and Add to Split) data entry fields - These fields are validated after exiting (as are other fields). When exiting a validated field or ultimately, a dialog, a pop-up dialog will be displayed if validation fails. In the case for these fields after entering alphanumeric data, the pop-up dialog will display "Please enter an integer".	Verified in EDM SDS dated 2/23/09, the removal of the 'Merge Width' field. The Election description, Vote for phrase when only 1, Vote for phrase, and Add to type and Add to sequence fields will be tested in the Regression Test Case. Full path to ballot definition file and The Election description will be tested in Volume 7 Test Case. K Swift, 12/30/08 - Reject -
31	12/30/08	K Swift	Document Defect	Closed	System Security Spec, v. 4.0.0.0, Feb 29, 2008	From SysTest Unity 4.0 Testing - Disc: 435 The System Security Specification does not provide sufficient guidance for the steps necessary to implement the security settings specified in Chapter 12 Baseline for Windows XP SP2, which are required to secure the Windows installation in a network	v.2: 2.6.4 The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This	10.27.2008 PMZ -- This item was discussed in a weekly phone conference during August. The ITA was to review the discussion and respond. To date no response has been given. ES&S maintains its belief that it already provides the necessary information for the secure	kgw 2/18/2009 Rejected 4/12009 Accepted K Wilson Closed per delivery of Hardening Procedures for the Election Management System

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						environment. *The Ch. 12 security settings appear to be following a recommended practice by the operating system provider, Microsoft, which recommend industry best practices. Either similar documentation should be provided for the steps necessary to implement the security settings of Ch 12, or reference should be made to industry standard documents to ensure secure configuration of Windows XP SP2.* *2/18/09 Rejected Reviewer concurs w/ SysTest. These settings appear to span Local Security Policy, Log File Properties, Registry settings, System Properties. While many of these settings can be found online, the lifetime of this product may long exceed the supported lifetime of the OS and Microsoft has been known to remove support information from its website leaving even the experienced system administrator unable to recall or find the appropriate setting. Furthermore, smaller jurisdictions may not have the available expertise to make these settings, leaving systems under their care open to security vulnerabilities. We will be unable to commence Security Testing on systems that cannot be hardened according to the vendor documentation. Furthermore in regards to the specific settings noted: In the case of Data Execution Prevention, the term "enabled" is ambiguous since it is always enabled, it is just a matter of degree (unless your path and my path differ).*	*information shall address software installation for all system components.*	*configuration by a client's trained system administration staff; we specifically require that trained system administration staff must perform the configuration.*	*PC dated 3/27/2009.*
32	*12/30/08*	*K Swift*	*Func-tional Defect*	*Closed*	*DS200 – Election Day Checklist Rev.1.3.7.0 , 05/09/2008* *Model DS200*	***From SysTest Unity 4.0 Testing - Disc: 453*** *Operational Checklist Test:* *While performing the DS200 Acceptance Testing Criteria on the DS200, when the step listed below was performed;*	*V1: 2.3.4.1.a* *All systems shall provide the capabilities to:* *a. Verify that voting machines or vote recording and data processing equipment, precinct count*	***Sue - 10.02.08 -** The DS200 had a cracked image sensor (CIS). An ES&S technician replaced the sensor and the DS200 functioned correctly. SysTest logged the steps the ES&S technician took.*	*Accept JG 05/21/09 Did not encounter these error during execution of testing*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					– SN: ES0107370002, FW Ver. 1.2.0.0	"Ensure the test ballots scan in all four orientations." When the test ballot was scanned in the third orientation, one of the three ballot errors occurred. The ballot errors that appeared are listed below; Ballot Error: Invalid CC Sequence (107) Please see Election Official Ballot Error: Invalid CC Spilt (109) Please see Election Official Ballot Error: Mis-Matched Marks (100) Missed orientation marks, turn over & try again After referring to the SOP document for the DS200, the vendor was notified, per the documentation.	equipment, and central count equipment are properly prepared for election, and collect data that verifies equipment readiness.		
33	12/30/08	K Swift	Functional Defect	Closed	Model DS200 – SN: ES0107370002, FW Ver. 1.2.0.0	**From SysTest Unity 4.0 Testing - Disc: 454** 4.0 Heavy Test 1 While performing the 4.0 Heavy Test 1 on the DS200 and during the scanning of ballots, after 30 ballots had been scanned, the internal rollers of the DS200 stopped functioning and the DS200 stopped scanning. T. Fuller 06/5/08 – After a technician from the vendor company performed repairs on the DS200, a Readiness Test was performed, and the DS200 passed. However, once testing started again, the internal rollers of the DS200 stopped functioning and the DS200 stopped scanning after 18 ballots had been scanned.	V1: 2.3.4.1.d All systems shall provide the capabilities to: d. Verify that hardware and software function correctly.	**Sue - 10.02.08 -** When the ES&S technician replaced the CIS, he accidentally pinched a cable when putting the DS200 cover back on. He reopened the machine and removed the pinched cable. SysTest logged the steps the ES&S technician took.	Accept JG 05/21/09 Did not encounter these error during execution of testing
34	12/30/08	K Swift	Functional Defect	Closed	ERM V. 7.5.0.0	**From SysTest Unity 4.0 Testing - Disc: 473** It was discovered that the ifc file was not copied to \ELECDATA directory and not uploaded to the HPM. (This was for an IVO only election). The HPM SOP dated 5/19/08 states "After you copy the ballot interface file (.IFC) to the \ELECDATA directory on the hard disk, you are ready to create an empty election shell. When you	V1: 4.4.4.a, b Voting systems shall meet these reporting requirements by providing software capable of obtaining data concerning various aspects of vote counting and producing reports of them on a printer. At a minimum, vote tally data shall include: a. Number of ballots cast, using each ballot configuration, by tabulator, by precinct, and by political subdivision;	10.17.2008 SF -- This issue is addressed in the HPM SOP as the resolution for the problem is an upstream change in HPM procedures rather than a change to HPM. HPM SOP Chapter 7: Create New Added information to a note on page 37 clarifying that if your election is iVotronic only, you should copy the .IFC file to the	Accepted: K Swift, 12/30/08 Reviewed the SysTest description. Verified HPM SOP, dated 10/17/08; Ch. 7: Create New, note has been updated to include that the .IFC file must be copied to the \Elecdata directory for an IVO

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						import the .IFC file, the empty shell will then be filled with the election information from the .IFC file. 1. From the Election menu, click Create New. 2. Type the name (up to eight characters) of the new election." The EDM SOP dated 5/19/08 does not reference the copying of the ifc file to the \ELECDATA directory.	*b. Candidate and measure vote totals for each contest, by tabulator;*	*ELECDATA directory for import in HPM.*	*only election, not imported.*
35	*12/30/08*	*K Swift*	*Functional Defect*	*Closed*	*ERM v. 7.5.0.0 40HTEST1 TC*	***From SysTest Unity 4.0 Testing - Disc: 475*** *Numbered Key - Districts report is showing two M650 groups and the iVo PEB group does not appear; however, the PEB totals match the totals appearing alongside the second M650 group totals (it appears that the 'label' is incorrect and should read 'IVO PEB"). I then went into add/change groups and switched the location of the M650 group and the M100 group, regenerated the report and we now show two M100 groups and again the iVo totals appeared under the second M100 group. It seems the report is mimicking the name in group three into group four, but applying the correct totals. Copies of the report and screen shot of the add/change groups faxed to vendor.*	*V1: 4.4.4.a, b Voting systems shall meet these reporting requirements by providing software capable of obtaining data concerning various aspects of vote counting and producing reports of them on a printer. At a minimum, vote tally data shall include: a. Number of ballots cast, using each ballot configuration, by tabulator, by precinct, and by political subdivision; b. Candidate and measure vote totals for each contest, by tabulator;*	***Sue - 10.02.08 -*** *This issue will be resolved in the latest software drop of ERM 7.5.2.0.* ***Sue - 04.03.09 -*** *Please review using updated software.* ***Sue - 05.19.09 -*** *The scope of Unity 3.2.0.0 does not contain the number (3) of groups to test this.*	*Accepted C Coggins 5/19/09 Out of scope of Unity 3.2.0.0 because it only contains 2 groups. Issue is being moved to Unity 4.0.0.0 discrepancy #2.*
36	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*ES&S QA Program Manufacturing v. 1.1.0.0 Jul 14, 2008* *ES&S QA Program SW & FW v. 1.3.0.0 Jul 14, 2008*	***From SysTest Unity 4.0 Testing - Disc: 479*** *Both document contain a Documentation section that details what TDP documents will be sent to a purchaser of the system. However, the System Security Specification document shows that it is not submitted to a purchaser, and this is a requirement.*	*V1: 2.2.1.g System security is achieved through a combination of technical capabilities and sound administrative practices. To ensure security, all systems shall: g. Provide documentation of mandatory administrative procedures for effective system security.*	***10.20.2008 MDN*** *-- Updated QAP for SW/FW submitted with current release. Section 13 updated as specified above.*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description history and verified other requirements have been previously validated by SysTest. Verified QAP SW/FW, dated 12/1/08; Section 13 has been updated to include the SSS is part of the documentation package submitted to the end user.*
37	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*ES&S QA Program SW & FW v. 1.3.0.0 Jul 14,*	***From SysTest Unity 4.0 Testing - Disc: 480*** *Section 5.3 of the document lists "ES&S Ballot Image Manager (BIM)".*	*v.2: 2.12.4 The vendor shall provide a description of its practices for documentation of the system and*	***10.20.2008 MDN*** *-- Updated QAP for SW/FW submitted with current release. Document updated as specified on 8/25.*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					2008	*The System Overview documentation lists the acronym to be 'ESSIM' for this product.*	*system development process that meet the requirements of Volume I, Section 7.7.a of the Standards.*		*history and verified QAP SW/FW, dated 12/1/08; Section 5.3 has been updated with correct acronym.*
38	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*ERM System Ops Procedures v. 7.5.0.0 Jul 8, 2008*	***From SysTest Unity 4.0 Testing - Disc: 492*** *There is no information in the document that explains how to validate the reports created in ERM. This is especially applicable to the District Canvass Report, EL116.*	*VVSG Vol. 2: 2.8.5.a The vendor shall provide documentation of system operating features that meets the following requirements: A detailed description of all input, output, control, and display features accessible to the operator or voter*	***RDG- ERM SOP v. 7.5.0.0_9.19.2008 -*** *Added note to Chapter 3: Election Day Tasks under the Produce Election Reports heading stating that you can verify reports by comparing the ERM reports with the reports printed from the voting machines. Also added the note in Chapter 32: Precinct, Chapter 33: Election and Chapter 34: Canvass.*	*Accepted: K Swift, 12/30/08 Reviewed the SysTest description and verified ERM SOP, dated 10/17/08; the addition of 'Notes' stating to compare ERM reports to tabulator reports.*
39	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*ES&S CM Plan Unity v. 4.0.0.0 Jul 13, 2008*	***From SysTest Unity 4.0 Testing - Disc: 493*** *The CM Plan addresses the file name structure, however it does not adequately address the versioning practices used in the title pages of the documents submitted in a TDP. Some documents will contain the 'Unity 4.0.0.0' versioning, while others will inconsistently list the hardware and/or software versions. The QA documents submitted in the TDP, contain versioning that is not explained.*	*v.2: 2.11.2.a, b The vendor shall provide a description of the procedures and naming conventions used to address the specific requirements of Volume I, Section 8.4. These requirements pertain to: a. Classifying configuration items into categories and subcategories; b. Uniquely numbering or otherwise identifying configuration items;*	***MDN- CMPlan_10.24.2008 -*** *Updated Section 3.2.2.2 to include descriptions of versioning and naming conventions for all TDP documents.*	*Accepted: K Swift, 12/30/08 Verified in Unity 3.2.0.0 CMP, dated 11/21/08; Section 3.2.2.2 has been updated to list the various versions that could be contained on documents submitted in the TDP.*
40	*12/30/08*	*K Swift*	*Document Defect*	*Closed*	*HPM System Functionality Description v. 5.6.0.0 Nov 15, 2007*	***From SysTest Unity 4.0 Testing - Disc: 495*** *The document states in the table in section 2.1.7.2, "Primary presidential delegation nominations", "This is supported by each individual tabulator". However, the DS200, M100 and M650 SFD documents all state "This requirement exceeds the scope of the DS200/M100/M650.", and the IVO SFD document states "The iVotronic supports these nominations through a "local" contest type."* *It appears the documents are contradictory to the statement made in the HPM SFD. The IVO SFD appears to support it as a "Local contest", however a) 'Local Contest' is not defined, and b) it is not clear why the IVO would support it, but not the DS200, M100 and M650.*	*v.2: 2.3.b The vendor shall provide a listing of the system's functional processing capabilities, encompassing capabilities required by the Standards and any additional capabilities provided by the system. This listing shall provide a simple description of each capability... b. Additional capabilities shall be clearly indicated. They may be presented using the same structure as that used for required capabilities (i.e., overall system capabilities, pre-voting functions, voting functions, post-voting functions), or may be presented in another format of the vendor's choosing*	***10.20.08 - MDN*** *Primary Presidential Delegation Nominations are not supported by the Unity 4000 system. Updated all SFDs to indicate that this voting variation is not supported.*	*Accepted: K Swift, 12/30/08 Verified in all SFD documents submitted for Unity 3.2.0.0; that the Primary Presidential Delegation Nominations are not supported.*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						It is the VSTL's understanding that the tabulator media is created in HPM, therefore, that would be where the tabulation rules/parameters would be burned for each tabulator.			
41	12/30/08	K Swift	Document Defect	Closed	ES&S M650 System Maint Manual FW v. 2.2.1.0 HW v. 1.1 & 1.2 Aug 22, 2008	***From SysTest Unity 4.0 Testing - Disc: 496*** *In Chapter 1 pg 2 under "Electrical Information" of the referenced document states the M100 and not the M650.*	*v.2: 2.9.1.a* *The description shall include a concept of operations that fully describes such items as:* *a. The electrical and mechanical functions of the equipment*	***10.17.08 - RDG*** *M650 SMM v.2.2.1.0_10.17.2008 Changed references from M100 to M650.*	*Accepted: K Swift, 12/30/08* *Verified in M650 SMM, dated 10/17/08, the correct component referenced.*
42	12/30/08	K Swift	Document Defect	Closed	ES&S CM Plan Unity v. 4.0.0.0 Aug 22, 2008	***From SysTest Unity 4.0 Testing - Disc: 497*** *The cited document does not contain the System Maintenance Manuals as part of the submitted documents that must be provided to purchasers.*	*v.2: 2.9* *The system maintenance procedures shall provide information in sufficient detail to support election workers, information systems personnel, or maintenance personnel in the adjustment or removal and replacement of components or modules in the field. Technical documentation needed solely to support the repair of defective components or modules ordinarily done by the manufacturer or software developer is not required.*	*MDN - 10.02.2008 - Added system maintenance manuals and system limitations documentation to section 7.1.5. (see discrepancy #297 for limitations requirement).*	*Accepted, K Swift, 12/30/08* *Verified the Unity 3.2.0.0 CMP, dated 11/21/08 contains the SMM, and System Limitations documents in the list of documents to be given to a purchaser/end user*
43	12/31/08	K Swift	Document Defect	Closed	System Overview ES&S v. 4.0.0.0 Aug 22, 2008	***From SysTest Unity 4.0 Testing - Disc: 549*** *On Page 18 of the document, a reference is made to the Electronic Pollbook in the 'Note' section. However the Electronic Pollbook is not part of this certification.*	*v.2: 2.1.1* *The content of the Technical Data Package (TDP) is intended to provide clear, complete descriptions of the following information about the system:* *Overall system design, including subsystems, modules and the interfaces among them*	***MDN - 10.02.2008 -*** *System Overview - removed reference to the ES&S Electronic PollBook from Section 1.2.4.*	*Accepted: K Swift, 12/31/08* *Verified Unity 3.2.0.0 Sys Overview, dated 11/20/08; does not contain any reference to Pollbook.*
44	12/31/08	K Swift	Document Defect	Closed	System Overview ES&S v. 4.0.0.0 Aug 22,2008	***From SysTest Unity 4.0 Testing - Disc: 550*** *Section 2.2.4 Usability states "Please see the usability test reports included with the TDP for ES&S system usability statistics." However, we can not locate these reports in the TDP.*	*v.2: 2.2.2.b* *The vendor shall provide system performance information including: Quality attributes such as reliability, maintainability, availability, usability, and portability*	***MDN - 10.02.2008 -*** *Section 2.2.4. Revised section to provide an overview of ES&S' approach to promoting usability in design. Usability testing has not been performed. While ES&S has requested a review of documentation to 2005 standards, the submitted system is to be tested to the 2002 standard, which does not require usability testing.*	*Accepted: K Swift, 12/31/08* *Confirmed Unity 3.2.0.0 has been submitted to the EAC as a certification against the 2002 VSS standards*
45	12/31/08	K Swift	Document Defect	Closed	Software Design & Spec ES&S	***From SysTest Unity 4.0 Testing - Disc: 553*** *The "Election Data Manager Data" flow*	*v.2: 2.5.3.d4* *The vendor shall provide an overview of the software that*	***CJ - 02/16/09*** *I believe this graphic attempted to show where the generated files were destined for.*	*Accepted - KSwift - 3/12/09* *Verified ESSIM SDS,*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					Ballot Image Manager (ESSIM) v. 7.7.0.0 Apr 16, 2008 Software Design & Specs ERM v. 7.5.0.0 May 15, 2008	chart on page 5 of the referenced document shows the IFC File coming from EDM to HPM. However, "Overview of Unity and Context Boundary Definitions" flow chart in the referenced ERM SDS document shows no IFC file coming out of EDM, but ESSIM. The documents are conflicting as to where the IFC file originates.	includes the following items: d4 Identification of interfaces with other items that provide data to, or receive data from, the item	In the case of the IFC file it is ultimately destined for the HPM but does pass through ESSIM first. This graphic was updated to show the file relationship (for ESSIM as well as other ES&S applications) and standardized on graphic element usage. **MDN - 02/16/09** The diagram included with the ERM SDS is correct and requires no change.	2/23/09; Section 3.1, explains the origination and migration through the Unity suite of the IFC file. EDM SDS, 2/23/09; flowchart on in Section 3.1, also supports this.
46	12/31/08	K Swift	Document Defect	Closed	ES&S EDM System Ops Procedures v. 7.8.0.0 Aug 22, 2008	**From SysTest Unity 4.0 Testing - Disc: 554** Chapter 15 of the referenced document contains a table called "Language Candidate Table" This table has "???" under the comments section for the Language Party Field. It is unclear what is "???". Rejected - Kswift - 3/21/09 Reviewed EDM SOP, dated 1/30/09; document has not been updated per ES&S response.	v.2: 2.8.4.a The vendor shall provide documentation of system operating features that meets the following requirements: a. Provides a detailed description of all input, output, control, and display features accessible to the operator or voter;	**1.30.2009 TMT-** Chapter 15, Updated the Language Candidates Table to include the Language Party description. **4.3.2009 TMT-** Submitted documentation now reflects the change detailed above.	Rejected - Kswift - 3/21/09 Doc has not been updated. Accepted C Coggins 4/1659 Verified EDM SOP v.7.8.1.0 4/3/09 "Language Candidates Table" comments reflect a "Language Party" description
47	12/31/08	K Swift	Document Defect	Closed	ES&S EDM System Ops Procedures v. 7.8.0.0 8/22/08	**From SysTest Unity 4.0 Testing - Disc: 555** Chapter 15 of the referenced document contains a table called "Poll Relations Table". Under the IFC column, it shows N/A for the Poll Location ID field. However, throughout the other tables in the document, it states that the IFC has a maximum of 4 characters for the Poll Location ID field. It is unclear if the .IFC file gathers the Poll Location ID from the same point or if the information is gathered based on menu selection. Rejected - Kswift - 3/21/09 Reviewed EDM SOP, dated 1/30/09; document has not been updated per ES&S response.	v.2: 2.8.4.a The vendor shall provide documentation of system operating features that meets the following requirements: a. Provides a detailed description of all input, output, control, and display features accessible to the operator or voter;	**1.30.2009 TMT-** Chapter 15, Updated the Poll Relations Table to edit the maximum characters from N/A to 4 in the Poll Location ID box. **4.3.2009 TMT-** Submitted documentation now reflects the change detailed above.	Rejected - Kswift - 3/21/09 Doc has not been updated. Accepted C Coggins 4/15/09 Verified EDM SOP v.7.8.1.0 4/3/09 "Poll Relations Table" reflects 4 in the "Poll Location ID"
48	12/31/08	K Swift	Functional Defect	Closed	AM v. 7.5.0.0 Test Case: Readiness TC IA Rev00 TE01	**From SysTest Unity 4.0 Testing - Disc: 556** The archive function in AM doesn't appear to work correctly. Steps Taken while executing the "Audit Manager 7.5.0.0 Audit Manager	V1: 2.5.3 All systems shall be able to create reports summarizing the vote data on multiple levels.	**2.16.2009 MDN --** Item will be addressed with updated Audit Manager software. **04.06.2009 SUE --** Trusted build has been performed and updated	Accept K Swift 4/28/09 Verified in AM 7.5.2.0, the AM Archive functionality

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						Checklist Election Day Training Manual Unity Version 4.0 Release Date: August 2007: *From the Audit Manager application 'Audit' menu* *Select 'Archive Log' button; Input range of dates to archive From 10/10/08 To 10/10/08; Select 'Archive' button* *In Save As window input file name '10.10.08.archive' Select 'Save' button* *Audit manager window states '0 records archived' Select 'OK' button* *Reproduced the steps, and found a text file called '10.10.08.archive.txt' was created empty.* *Reviewed AM SOP v. 7.5.0.0, August 22, 2008, chapter 3, page 13, section 'Archive the Audit Log' , item # 3, there was a 'Note' which stated that "Archiving selected records will permanently remove them from the Audit Manager interface and place them in the text file you create". Re-viewed the Audit log by selecting 'View Log' from the Audit menu, and files were not removed.* *Executed above steps using Input range of dates From 10/8/08 To 10/10/08. This time it did archive the 10/10/08 records and removed them from the log, but it did not archive or remove the 10/8/08 records.* *10/14/2008 - Troubleshooting Re-executed the above steps to archive a longer range of dates: From 10/02/08 To 10/14/08.* *(5 different log entry dates exist in the audit log during this range of dates). The 10/02/08 entries were not archived or removed from the audit log. Audit log entries after 10/02/08 through 10/14/08 were successfully archived to the designated file '10.2.08.archive' and removed from the audit log.*		*software delivered.*	*works as documented.*
49	*12/31/08*	*K Swift*	*Docu-ment Defect*	*Closed*	*ES&S Image Manager System Ops Procedures, Ver. 7.7.0.0, Jul 8, 2008*	***From SysTest Unity 4.0 Testing - Disc: 557*** *Ch. 35 does not specify that the placing of a graphic on a ballot in ESSIM is a state specific functionality. The current verbiage leads the user to believe a graphic can be placed on any*	*V1: 2.3.1.3.1.b* *The voting system shall provide a means of printing or otherwise generating a ballot display that can be installed in all voting equipment for which it is intended. All voting systems shall provide the*		*Accepted, K Swift, 12/31/08* *Excessive interpretation; function is consistent with the requirement*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						ballot which is not in compliance with the VVSG requirement.	capabilities below: b. The electronic display or printed document on which the user views the ballot does not show any advertising or commercial logos of any kind, whether public service, commercial, or political, unless specifically provided for in State law. Electronic displays shall not provide connection to such material through hyperlink.		
50	1/6/09	K Swift	Document Defect	Closed	Unity 3.2.0.0 System Overview, 11/20/08 Unity 3.2.0.0 System Limitation, Dec 1, 2008	Unity 3.2 language scope is not identified. The System Overview and System Limitations do not state that the Unity 3.2 certification is limited to English and Spanish only.	v.2: 2.3 The vendor shall provide a listing of the system's functional processing capabilities, encompassing capabilities required by the Standards and any additional capabilities provided by the system.	**2.16.2009 MDN --** Updated system limitations document to specify that only Spanish and English are supported in the U3200 system. System Limitations and the Supported Functionality Declaration are packaged as appendices to the System Overview.	Accepted - KSwift - 3/12/09 Verified Unity 3.2.0.0 System Limits, dated 2/11/2009; the addition of support for English and Spanish only.
51	1/8/09	K Swift	Document Defect	Closed	CM Plan Unity v. 3.2.0.0Nov 21, 2008 Section 7.1.5 QA Program Manufacturing Unity v. 3.2.0.0 Dec 1, 2008 Sect. 8 QA Program SW & FW Unity v. 3.2.0.0 Dec 1, 2008 Sect 13	Lists of documents provided to end users are inconsistent. Page 56, of the Unity 3.2.0.0 CMP, identifies the following documents delivery to a purchaser/end user: Install Procedures, SOP's, SMM's, Training Procedures, SSS, and System Limitations; This does not match the list in the QAP Manufacturing document (page 25 - 27), or the QAP SW/FW document (page 41 - 43): SOP's, Training Procedures, SSS, and System Change Notes.	V1: 7.7.a Vendors are required to produce documentation … a. Be sufficient to serve the needs of the VSTL, voters, election officials, and maintenance technicians;	**2.16.2009 MDN --** The lists included in the Quality Assurance Plans affirm that ES&S generated documentation meets the requirements for each document category defined under VVSG 2005 V.1, S.8.7. These categories may encompass multiple document types. For example, installation instructions relate to requirements for System Operations Procedures. The list in the CM plan responds to VVSG 2005 V.1, S. 9.7.1.e by providing a list of specific , end-user deliverables. **RESOLUTION:** Copied the user documentation deliverables section from the CM Plan to the QA documents and updated the QA lists to indicate that Maintenance guides are provided to the end user, which was not indicated in the previous revision. Added system change notes (when applicable) to the CM Plan doc deliverables list.	Accepted - KSwift - 3/12/09 Verified resubmitted documents as identified, dated 2/23/09; are consistent with each other in specifying the documents provided to end users.
52	1/9/09	C Coggins	Document Defect	Closed	Unity 3.2.0.0 System Overview, 11/20/08	Typographical error in the DS-200 HW version number The System Overview identifies the	v.1: 8.7.1.d For the PCA, a vendor shall provide configuration baseline data for all hardware that is unique to the system	**2.16.2009 MDN --** Updated the DS200 hardware revision number to 1.2.1.	Reject - KSwift - 3/12/09 Accept C. Coggins

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						DS-200 hardware version as 1.3. The submitted hardware versions are 1.2 and 1.2.1. 3/12/09 Kswift - Reject DS200 hardware version 1.2 has not been included. Accept - KSwift Verified System Overview 2/23/09; updated to include v. 1.2.1 hardware		**4.3.2009 MDN --** Updated the file to include both versions of DS200 hardware submitted for testing.	4/15/09 Verified Unity 3.2.0.0 System Overview 4/3/09 section 3.1.2 reflected both DS200 HW versions
53	1/9/09	C Coggins	Document Defect	Closed	Unity 3.2.0.0 System Limitation, Dec 1, 2008	VAT and AIMS are not identified in the system limitations. The System Limitations document does not explicitly identify all Unity 3.2. entities. The VAT and AIMS are neither included nor identified as excluded.	v.2: 2.2.2.a The vendor shall provide system performance information that includes descriptions of: the performance characteristics of each operating modes and function in terms of … maximum volume (maximum number of voting positions and maximum number of ballot styles supported)	**2.16.2009 MDN --** Added AIMS and AutoMARK system limitations to the referenced document.	Accept - KSwift - 3/12/09 Verified System Limits, 2/11/09; has been updated to include an AIMS limitation.
54	1/26/09	C Coggins	Document Defect	Closed	AutoMARK System Hardware Spec Rev 3 AQS-13-5000-001-F	The VAT schematics for the SBC was not delivered On page 59, it identifies the SBC schematic is delivered as an external document. This document was not delivered. (Test purpose is to review the engineering change in SBC v.2.0 and v.2.5)	v.2: 2. 4.2 a Paragraphs and diagrams shall be provided that describe: … parts used in the system, their assembly, and the configuration control measures to ensure compliance with the system specification	**2.17.2009 MDN --** Scanner board schematics appear under the following path: ...14_AMVAT-AIMS_1.3\VAT TDP\SECTION03\Schematics as an attachment to the AMVAT Hardware specification . The file named 'SBC_640117-4000C-2AGP.pdf' is the referenced schematic.	Accept C Coggins 3/3/09 The SBC schematic documentation was delivered
55	2/3/09	Sjakileti	Document Defect	Closed	Security review-VAT AutoMARK System Functionality rev.4.0	VAT: There is a reference to the "AutoMARK System Security Specifications rev.4.0 Section 5". But there is no section 5.	v.1: 2.2.1e: Provide security provisions that are compatible with the procedure and administrative tasks involved in equipment preparation, testing, and operation.	**2.17.2009 MDN --** Updated the flagged cross-reference in the System Functionality Description to map to access control guidelines located under Section 2.B of the System Security Specification.	Accepted SJ:3/11/09.Updated documentation refers to the correct section. Updated document is 'AutoMARK System Functionality v5.0"
56	2/3/09	Sjakileti	Document Defect	Closed	Security review-VAT AutoMARK System Functionality rev.4.0	VAT: No documentation for mandatory administrative procedures.	v.1: 2.2.1g: Provide documentation of mandatory administrative procedures for effective system security.	**2.17.2009 MDN --** Updated content under Section 3.B.1 to specify that election administrators are required to develop and implement an effective voting system security program. Updated the AutoMARK System Security Specification (multiple locations within document) to emphasize that the system features and procedure recommendations included in that document were developed to be incorporated into a mandatory voting system security program.	Accepted SJ:3/11/09. verified there are now administrative procedures in "AutoMARK System Functionality v5.0" and "AutoMARK System Security Specifications v5.0"

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57	2/3/09	Sjakileti	Document Defect	Closed	Security review-VAT AutoMARK System Functionality rev.4.0	VAT: Documentation for restoring the device in case error or failure is incomplete	v.1: 2.2.2.1d: Include control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy, and	**2.17.2009 MDN --** Updated the cross-reference under Section 3.B.3 to map to Section 3 of the AutoMARK 3010 Poll Workers Guide AQS-13-5061-002-R, which contains AMVAT error detection and correction methods including a list of system error messages and corresponding procedures for error recovery.	Accepted SJ 3/11/09: Updated the documentation by cross referencing to the error detection and correction methods including a list of system error messages and corresponding procedures for error recovery in "'AutoMARK System Functionality v5.0"
58	2/3/09	Sjakileti	Document Defect	Closed	Security review-VAT AutoMARK System Functionality rev.4.0	VAT: Documentation for data read-write and transfer quality status is incomplete	v.1: 2.2.2.1e: Provide software that monitors the overall quality of data read-write and transfer quality status, checking the number and types of errors that occur in any of the relevant operations on data and how they were corrected.	**2.17.2009 MDN --** Added cross-references under Section 3.B.2 that map to sections 2.C and Section 3 of the AutoMARK 3010 Ballot Image Processing Specification AQS-13-5002-003-S. These sections include a description of the ES&S AutoMARK's procedure for accurately converting paper ballot contents to audio and display formats, Cross-referenced Section 3 of the AutoMARK 3010 Poll Workers Guide AQS-13-5061-002-R for a description of data read-write error conditions and procedures for correcting those errors and Section 3 of AutoMARK 3010 Programming Specifications Details AQS-13-5001-011-R for detailed descriptions of the system software that performs data quality assessment	Accepted SJ 3/11/09: Updated the documentation by cross referencing the section of data read-write and transfer quality status in "'AutoMARK System Functionality v5.0"
59	2/3/09	Sjakileti	Document Defect	Closed	Security review-VAT AIMS System Security Spec v.3.0	VAT and AIMS: No documentation is provided for effective password management	v.1: 6.2.1.1d: Effective password management;	**2.17.2009 MDN --** Updated Section 2.D.1 with ES&S recommended Windows OS password settings for any mandatory election system security program.	Accepted SJ 3/11/2009: Updated the documentation for effective password management in "AutoMARK Information Management System (AIMS) System Security

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
									Specifications v4.0"
60	2/3/09	Sjakileti	Document Defect	Closed	Security review-DS200 ES&S System Security Spec Ver. Rel. 4.0.0.0 dated 7/8/08	The access control information provided in the security specification is too general. It does not identify user roles, functions and data or any time limits associated with specific election operations.	v.1: 6.2.1.2a: Identify each person to whom access is granted, and the specific functions and data to which each person holds authorized access v.1: 6.2.1.2b: Specify whether an individual's authorization is limited to a specific time, time interval or phase of the voting or counting operations	**2.13.2009 PMZ --** Revised pg 11 item "a" and pg 12 "Software Access Controls"	Accepted 3/13/2009 SJ: Updated the documentation for Individual's authorization , access to the specific functions on tabulators in "ES&S System Security Specification Ver. Rel. 4.0.0.0 2/20/2009"
61	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Spec Ver. Rel 4.0.0.0 dated 7/8/08	Pg 78 describes using the Windows XP audit log but does not describe how. References to documentation on the Internet may not survive the product lifetime. As the specific enablements are left to the jurisdiction's interpretation of the Microsoft documentation this is insufficient to meet the requirement	v.1: 2.2.1a: Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	**2.13.2009 PMZ --** Section does not apply to current system and was deleted.	Accepted 3/12/2009 SJ: Updated the documentation by deleting NTFS logging and NOS Security sections in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09".This section does not apply to the current system
62	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Spec V. Rel 4.0.0.0 dated 7/8/08	On pg 79 and earlier mentions IIS and Web Server logs. The security specification does not identify how IIS is used in Unity v.3.2.0.0	v.1: 2.2.1a: Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	**2.13.2009 PMZ --** Section does not apply to current system and was deleted.	Accepted SJ 3/12/2009: Updated the documentation by deleting the IIS logging features in the "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09".This section does not apply to the current system.
63	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08	Pg 81 references the database folders. The security specification does not identify which specific database folder(s) need to be secured.	v.1: 2.2.1a: Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	**2.13.2009 PMZ --** Section does not apply to current system and was deleted.	Accepted SJ 3/12/2009: Updated the documentation by deleting Windows database lockdown procedures in ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09". This section does not apply to 3.2.0.0.

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64	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Functionality Description EDM v.1.0	The functional description states that the requirement "all systems shall detect and record every event including ..." is not applicable, without providing justification.	v.1: 2.2.4.1i Detect and record every event, including the occurrence of an error condition that the system cannot overcome, and time-dependent or programmed events that occur without the intervention of the voter or a polling place operator; and	**02.16.09 CJ -** Updated row "I" to read "Included in System" and reference audit events referenced in Section 1.1.5.	Accepted 3/12/2009 SJ: Updated the documentation by referencing the appropriate sections of detection and recording all events , including error condition sin "Election Systems & Software ES&S System Functionality Description EDM Unity v. 3.2.0.0" Rev 2.0
65	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Functionality Description EDM v.1.0	The functional description states that the requirement "all systems shall include built in measurement, self test and diagnostic software" is not applicable, without providing justification.	v.1: 2.2.4.1j Include built-in measurement, self-test, and diagnostic software and hardware for detecting and reporting the system's status and degree of operability.	**02.16.09 CJ --** Row "j" of this table is related to "I" and also updated.	Accepted 3/12/2009 SJ: Updated the documentation by describing the Audit Manager application and EDM Error and Warning events in "Election Systems & Software ES&S System Functionality Description EDM Unity 3.2.0.0" Revv2.0"
66	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Functionality Description EDM v.1.0	The functional description states that the VSS v.1: 2.2.5.3 is not applicable. As EDM, ESSIM, HPM, and ERM operate on COTS operating systems capable of executing multiple application programs simultaneously, this requirement is applicable. 3/12/09 Reject SJ the response does not completely address the discrepancy, system functionality descriptions of ESSIM,HPM and ERM tare missing	v.1: 2.2.5.3 COTS General Purpose Computer System Requirements ...the system shall be configured to execute only intended and necessary processes during the execution of election software.	**02.16.09 CJ-** Updated referenced section with a table as incorporated in other EDM SFD TDP releases. **04.09.09 MDN -** Added more detailed responses to this requirement to Section 1.1.5.3 of the ESSIM, HPM and ERM SFD documents.	Accepted SJ 4/14/2009: Updated documentation to configure the system to execute only in the intended manner during the execution of election software in Unity 3.2.0.0 System Functionality Description for ESSIM, HPM & ERM (dtd 4/9/09) Rejected - SJ - 3/12/09
67	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08	The boundaries of the system submitted for EAC certification are not clearly defined. The security specification does not if the Unity v.3.2.0.0 system includes such security vulnerabilities as LAN, WAN, telecommunications (modems etc.) and	v.1: 6.2.1: General Access Control Policy Although the jurisdiction in which the voting system is operated is responsible for determining the access policies for each election, the vendor shall provide a description of	**2.13.2009 PMZ --** The boundary of the system submitted includes a private, election specific LAN to which the EMS PCs are connected. No other networking is used in the system. Changes have been made to the	Accepted 3/12/2009 SJ: Updated the documentation by identifying that the boundaries of the system include a private election

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						the impact of physical security to mitigate these vulnerabilities. Modems appear as optional equipment in System Overview. While other sections of the TDP state which devices and programs are included in the Unity 3.2.0.0 certification, they do not specifically provide detailed descriptions sufficient to assess potential vulnerabilities. Example: It is not clearly identified if the EDM/ESSIM/HPM and ERM computers are networked or not networked. The appearance of network nomenclature throughout the document suggest that these computers are networked.	*recommended policies for:*	*manual pg 13 "Firewall, Networking, and IDS"*	*specific LAN to which only EMS PCS is connected, and no other networking is available, in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"*
68	*2/3/09*	*Kwilson*	*Document Defect*	*Closed*	*Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08*	*The information provided in security specification does not provide sufficient detail for the jurisdiction to create a security plan and policy. Specific information about the capabilities and vulnerabilities of the Unity v.3.2.0.0 is required to complete these plans and policies. Example EDM has 2 roles, administrator and user. Under Segregation of Duties the security specification suggests at least 3 roles: System Administrator, Election Administrator, Election Definition Workers. It is unclear if there is a role assigned for Election Reporting. It is unclear how a system with 3 or more roles fits into the EDM example of 2 roles? Information appears to be missing for software access controls and segregation of duties.* *3/13/09 Reject SJ The information added in the documentation does not address the whole discrepancy. The information provided in the security specification does not provide sufficient detail for the jurisdiction to create a security plan and policy, including:* *- Audit Manager permitting the jurisdiction to establish separate credentials for EDM and ESSIM not for ERM and HPM* *-How to limit access to HPM and ERM.*	*v.1: 6.2.1.2: Identify each person to whom access is granted, and the specific functions and data to which each person holds authorized access*	***2.13.2009 PMZ --** see item 60, above* ***20090324 PMZ --** Additions to the System Security Specification and the inclusion of the System Hardening document clarify ES&S recommended procedures for assigning role based access. System Hardening Procedures provides protocols for setting access controls using Windows functionality.*	*Accepted 4/16/2009 SJ: Updated the documentation hardening procedures for setting access controls using windows functionality in ES&S System Security Specification and Hardening Procedures for the Election Management System PC v3.2.0.0 (dtd 3/27/09)* *Rejected 3/13/2009 SJ*
69	*2/3/09*	*Kwil*	*Docu-*	*Closed*	*Security*	*Lesson 2 Recommending NOT to*	*v.1: 2.2.1a: Provide security access*	***RJS - 2/20/09 EDM -** version 8.2.x*	*Accepted SJ 3/12/09:*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		son	ment Defect		review-EDM EDM Training Manual Version Number 4.0.0.0 v.1.	change hard-coded initial passwords does not meet the requirement for access control. Furthermore the NOTE in Lesson 2 is in direct contradiction to the Lesson 3 recommendation.	controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	Changed password recommendations p. 8, 9 and 89 to comply with requirement	Updated documentation AM password changes should be carefully safeguarded and keep tracked ."Election Data Manager Training Manual Version Number 8.2.x"
70	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM EDM Training Manual V. # 4.0.0.0 v.1. ES&S System Functionality Description HPM v.1.0 ESSIM System Ops Procedures Ver Rel 7.7.0.0 10/17/08	Lesson 2.3 indicates that login security is optional. As mandatory procedures cannot be optional, iBeta must execute security tests in the least secure mode of acceptable operation of the system. Similar optional login security appears in the HPM functional description (1.1.1.a., f, and g) and the ESSIM operations procedure.	v.1: 6.2.2a: Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Use of data and user authorization	***RJS - 2/20/09 EDM - version 8.2.x*** Changed password recommendations p. 8, 9 and 89 to comply with requirement HPM version 5.6. x Changed password recommendations p. 36 to comply with requirement ESSIM version 7.7.x Changed password recommendations p.8 to comply with requirement ***2.18.2009 -- Beth Binger-Dunaway*** Added the following statement to 1.1.1.a, f and g, HPM SFD: "Federal guidelines require Election Administrators to implement a mandatory election security program." ***1.30.2009 TMT -*** Chapter 6 ESSIM SOP: Start ESSIM. Edited the text under the main heading to state that security access controls are mandatory. Added verbiage to the Warning (Election Security Caution) also stating and clarifying as such.	Accepted 3/13/2009 SJ: Updated in EDM_TM and HPM_SFD and ESSIM_SOP documentation with login security is mandatory. "Election Data Manager Training Manual Version Number 8.2.x". "Election Systems & Software ES&S System Functionality Description Hardware Programming Manager (HPM) Unity v. 3.2.0.0 v2.0" "ES&S Image Manager System Operations Procedures Ver. Rel. 7.7.0.0 date 01/30/2009"
71	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08	The security specification does not provide a detailed description of encryption. Section 6.2.2.e describes a computer-generated key but does not identify the purpose. Types of encryption being used as well as the specific instances of "data in transit" that are encrypted are not detailed.	v.1: 6.2.2g: Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Message encryption	***2.13.2009 PMZ --*** Changes were made to the document to clarify that transmission is not used in the system and how information moved between the precinct devices and the EMS PC (via removable memory) is protected.	Accepted 3/12/2009 SJ: Updated documentation reflecting that M650 and DS200 exchanges information only with the EMS PC and uses removable media, no electronic transmission of

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
									results in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"
72	*2/3/09*	*Kwilson*	*Document Defect*	*Closed*	*Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08*	*Pg 77 describes NTFS/EFS encryption but does not describe how to implement it. Nor does it make any statements recommending, mandating, not recommending or not mandating its use.*	*v.1: 6.2.2g: Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Message encryption*	***2.13.2009 PMZ --** section does not apply to current system and was deleted.*	*Accepted 3/13/2009 SJ: Updated documentation by deleting NTFS/EFS encryption section(this section does not apply to current system in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"*
73	*2/3/09*	*Kwilson*	*Document Defect*	*Closed*	*Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08* *Jurisdiction Security Procedures v. 1.0.0.1*	*Pg 13 Firewall states that "ES&S recommends that a jurisdiction use a firewall." Additionally the security procedure (6.7.4) references the possibility of a VPN within the boundary of the EAC certified system. A Unity v.3.2.0.0 disclaimer indicates that the system does not contain network data transmission, indicating that the system is not subject to the telecommunication requirements of the VSS. If it is the case that the Unity v.3.2.0.0 can be exposed to an external network which is potentially exposed to the public telecommunications system then it is subject to the telecommunications requirements and malicious attack requirements of the VSS regardless of the disclaimer. The documentation is insufficient to assess the vulnerability of the recommended network environment.*	*v.1: 7.7.a This documentation shall : be sufficient to serve the needs of the ITA , voters, election officials and maintenance technicians.*	***2.13.2009 PMZ --**Updated the file to indicate that the system uses only a local, private LAN. It does not use any data transmission nor does it allow any external connections.*	*Accepted 3/13/2009 SJ: Updated documentation referring system uses only a local private LAN, not using any data transmission and not allowing any external connections in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"*
74	*2/3/09*	*Kwilson*	*Document Defect*	*Closed*	*Security review- HPM ES&S System Functionality Description HPM v.1.0*	*The functional description states this requirement is not applicable. HPM utilizes an audit log, the existence of and read/write capabilities which are required to continue processing.*	*v.1: 2.2.4.1e: Include built-in measurement, self-test, and diagnostic software and hardware for detecting and reporting the system's status and degree of operability.*	***02.18.2009 -- Beth Binger-Dunaway*** *Added the following statement to 1.1.4.j.* *"Federal guidelines require Election Administrators to implement a mandatory election security program."*	*Accepted 3/13/2009 SJ: Updated the documentation stating that HPM System Audit Log contains a log of all activity within the application in "Election Systems & Software ES&S System Functionality*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
									Description Hardware Programming Manager (HPM) Unity v. 3.2.0.0 v2.0"
75	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM System Security Spec v4.0.0.0 7/8/2008	Pre-election security considerations (pg 14) use the word "Ideally" and "should" which is not mandatory in reference to physical protection of paper or electronic ballots.	v.1: 6.2.1.2.b Specify whether an individual's authorization is limited to a specific time, time interval or phase of the voting or counting operations	**2.13.2009 PMZ --** Added verbiage to indicate to the jurisdiction that any lessening of security recommendations is a weakening of the jurisdiction's mandatory security program. Strengthened language throughout the document to indicate that jurisdiction adaption security procedures are mandatory.	Accepted 3/13/209 SJ: Updated the documentation for pre-election security considerations mandatory in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"
76	2/4/09	Kwilson	Document Defect	Closed	Security review-ERM ES&S System Functionality Description ERM v.1 ES&S ERM System Ops Procedures Ver Rel 7.5.2.0 10/17/08	The ERM functional description states that security "can be achieved through the standard use of Windows network security to limit access." This statement contains no mandatory verbs. Combined with non-mandatory programmatic access control (ERM operations procedure) as well as non-mandatory OS access control, Unity v.3.2.0.0 does not meet VSS requirements for system integrity, confidentiality or accountability	v.1: 2.2.1a & g: To ensure security all systems shall: a) Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability. g) Provide documentation of mandatory administrative procedures for effective system security.	**02.18.2009 -- Beth Binger-Dunaway** Updated 1.1.1.a to include the following statement: "Further security of the installed programs as well as external access to the files is achieved through the standard use of Windows network security to limit access. Federal guidelines require Election Administrators to implement a mandatory election security program."	Accepted 3/13/2009 SJ: Updated the documentation with mandatory administrative procedures in "ES&S System Security Specification Ver. Rel. 4.0.0.0 date 02/20/09"
77	2/4/09	Sjakileti	Document Defect	Closed	Security review-EDM ES&S System Security Spec Ver Rel 4.0.0.0 dated 7/8/08 ES&S HPM System Ops Procedures Ver Rel 5.7.0.0 10/17/08 ES&S ERM System Ops Procedures Ver Rel 7.5.2.0 10/17/08	Pg 29 of the security specification states that no compilers are present after election day testing. The HPM and ERM operations procedures describe installation of "RM/Cobol 11.01" which appears to be a compiler. Rejected 3/5/09 SJ The response from ES&S clarifies the issue but does not address the lack of clarity in the documents.	v.1: 6.4.1e: After initiation of election day testing, no source code or compilers or assemblers shall be resident or accessible.	**2.13.2009 PMZ --** The RM/COBOL run-time install installs the run-time executable library. It does not install a compiler. **3-31-09 DJZ -** Added note clarifying RM/COBOL does not install a compiler. **04.01.2009 BB --** Added note clarifying that the install if RM/Cobol is not installing a compiler.	Accepted SJ: 4/14/2009: Updated documentation with RM/COBOL install process, clarified installs only the run-time library not the compiler in "ES&S ERM System Operations Procedures Version Release 7.5.3.0" 4/3/09 and "ES&S HPM System Operations Procedures Ver. Rel. 5.7.0.0" 4/3/09 Reject 3/5//09 SJ
78	2/3/09	Sjaki	Docu-	Closed	Security	The functional description does not	v.1: 2.2.5.3 To counter these	**4.3.2009 MDN --** Updated Section	Accepted SJ

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		leti	ment Defect		review-M650 ES&S System Functionality Description Model 650 v.1.0	provide the documentation of the correct configuration of the COTS Operating System .	vulnerabilities three operating system protections are required …Third, the system shall be configured to execute only intended and necessary processes during the execution of election software.	1.1.5.2 to indicate that the system executes only intended and necessary procedures during an election.	4/14/2009: Updated M650 configuration documentation in ES&S System Functionality Description Model 650 Unity v. 3.2.0.0"v2.0
79	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Specification Ver Rel 4.0.0.0	The EDM documentation does not provide a detailed description of special protocols.	v.1: 6.2.2f: Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Special protocols	**4.3.2009 MDN --** Added a security protocol section to Part 2, Chapter 5 of the Election Data Manager System Operations Procedures manual listing critical procedures that must be implemented to limit access controls to authorized users.	Accepted SJ 4/14/2009: Verified documentation for security protocols for EDM setup preventing the unauthorized access is in ES&S EDM System Operations Procedures Version Release 7.8.1.0 4/3/09
80	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Functionality Description EDM v1.0 Correction: ES&S System Functionality Description ERM Unity v. 3.2.0.0 v1.0	There are no references to Cobol documentation to support the claim that EDC is performed by Cobol. 4/14/09 SJ Rejected: This discrepancy cited the wrong application. It should have identified ERM	v.1: 2.2.2.1d: Include control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy, and v.1: 2.2.2.1e: Provide software that monitors the overall quality of data read-write and transfer quality status, checking the number and types of errors that occur in any of the relevant operations on data and how they were corrected.	**04.03.09 CJ -** Cobol is not used in the development of the EDM application. It is not referenced in either the related SFD or SDS documents. For further information please refer to the System Overview Unity v.3.2.0.0 and the ES&S Software Design Specifications Election Data Manager (EDM) Unity v. 3.2.0.0 documents. **05.05.2009 - Beth Binger-Dunaway** Updated d and e on page 7 to include the following information: Handled by PC operating system and Cobol. All data I/O is handled thru the Cobol runtime and reports back any unsuccessful data I/O. Please see the following sections of this document for additional information regarding RMCOBOL errors: Data Reference Errors (page 67) Input/Output Errors (page 76) File Manager Detected Error Codes (page 97) System Initialization Messages (page101)	5/15/09 KS - Accept Verified ERM SFD, dated 5/11/09, Rev3 contains updated information for d & e on pg. 7, and additional sections for RMCobol Errors starting on pg 68-106. Peer review KW 5/19/2009 -- OK Rejected SJ 4/14/2009
81	2/4/09	Sjaki	Docu-	Closed	Security	There is no detailed documentation for	v.1: 6.2.2g: Vendors shall provide a	**04.03.09 MDN -** Access controls	Accepted SJ

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		leti	ment Defect		review-DS200 ES&S System Security Specification Ver Rel 4.0.0.0	the DS200 Encryption process in the security specification.	detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Message encryption	are described in System Operations Procedures, the ES&S System Security Specification and System Hardening Documentation.	4/14/2009 : Updated the documentation stating that unity 3.2.0.0 does not use transmission. As such encryption does not apply in ES&S System Security Specification Ver. Rel. 4.0.0.0 3/27/09
82	2/4/09	Sjakileti	Document Defect	Closed	Security review-M650 ES&S System Security Specification Ver. Rel. 4.0.0.0	There is no detailed documentation for the M650 Encryption process in the security specification.	v.1: 6.2.2g: Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access. Examples of such measures include: Message encryption	**04.03.09 MDN -** Access controls are described in System Operations Procedures, the ES&S System Security Specification and System Hardening Documentation.	Accepted SJ 4/14/2009 : Updated the documentation stating that unity 3.2.0.0 does not use transmission. As such encryption does not apply in ES&S System Security Specification Ver Rel. 4.0.0.0 3/27/09
83	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Functionality Description EDM v.1.0	The EDM functional description states that this requirement is not applicable . No justification is provided for this statement.	v.1: 2.2.1e: Provide security provisions that are compatible with the procedure and administrative tasks involved in equipment preparation, testing, and operation.	**04.03.09 CJ -** The N/A entry to this item was originally construed as only relating to 'equipment' but VVSG V1. 2.1 states "System Wide" in nature, pertaining to all hardware or software. This will affect the following change to Section 1.1.1. for this item. "EDM internal security requires log-in passwords to be defined by election administrators to limit access to the application and data. Externally, EDM physical security protocols are incorporated by election administrators at the system and central office procedure(s) level."	Accepted SJ 4/14/2009: Updated documentation with the procedures and administrative tasks involved in equipment preparation,, testing and operation in ES&S System Functionality Description EDM Unity v. 3.2.0.0 4/3/09
84	2/3/09	Kwilson	Document Defect	Closed	Security review-EDM ES&S System Security Specification Version Release 4.0.0.0	The reviewer could not locate a detailed description of the methods used to prevent unauthorized access to the EDM access control capabilities of the system.	v.1: 6.2.2: Vendors also shall define and provide a detailed description of the methods used to prevent unauthorized access to the access control capabilities of the system itself.	**20090324 PMZ --** It is now explicitly stated in the System Security manual that all login Access Control is done through the Windows user credentials and that the older features in the individual modules of Unity are not to be relied on to provide any level of access control. See Chapter 3, "Access Control Recommendations," Item a.	Accepted SJ 4/14/2009: Updated documentation providing the procedures for preventing unauthorized access to the system in ES&S System Security Specification Version Release

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
									4.0.0.0 3/27/09
85	2/18/09	J Garcia	Document Defect	Closed	System Limitations Unity v.3.2.0.0 2/11/09	The table in Section 1 Unity System Limits does not correctly reflect all applicable application limits. The table does not reflect the following application limits that limit the entire system.: - HPM limit of 2200 precincts per polling place - HPM limit of 1200 candidates per polling place - ERM limit of 1900 for all precincts included in a poll - M650 limit of 3750 maximum candidate/counters allowed per election - HPM limit of 1639 ballot styles allowed for an election coded by style	V1: 7.7.a Vendors are required to produce documentation … a. Be sufficient to serve the needs of the VSTL, voters, election officials, and maintenance technicians;		Accepted,3/20/09 JG Verified doc System Limitations Unity v.3.2.0.0 Feb. 23, 2009 Section 1 Unity System Limits correctly reflect the HPM limit of 2200 precincts per polling place, HPM limit of 1200 candidates per polling place, ERM limit of 1900 for all precincts included in a poll, and the M650 limit of 3750 maximum candidate/counters allowed per election
86	2/27/09	K. Swift	Informational	Closed	AutoMARK VAT Version labels , VAT hardware and ESS AutoMARK Models and Hardware Revisions document	VAT configuration OS label, HW revision labels, installed configuration and configuration document are inconsistent. OS label and installed software version match but the document version does not match. OS Label & Display Software Version show OS WinCE 5.0.1400; ESS AutoMARK Models and Hardware Revisions document says it should be WinCE 5.00.14 SN: AM0106430376 & AM0206443384 OS label and document match but the installed software version does not match: OS Label & doc : 5.00.19, Display SW Version screen displays Wince 5.0.0 SN: AM0208470815 & SN: AM0208470767 Document and installed HW Revision do not match the HW Rev label (on back): HW Rev label displays 1.3.1.0, Display SW Version screen displays HW Rev 1.3.1 SN: AM0208470767 5/21/09 KS Partial Reject Item 1 above; SN: 376 & 384; Display		***200900408 SUE --*** *This item will be resolved with VAT version 1.3.2905.* *5.26.09 slm - ES&S will provide the label for the VAT that was incorrectly marked. ES&S also provided the VAT hardware sheet listing all of the four different hardware configurations.*	Accepted 5/27/09 KS -Verified a new document has been submitted with the correct OS for SN: 376 & 384. A new label with the correct hardware rev has been applied to SN: 767 5/21/09 KS - Verified itsm 2 for SN: 815 & 767, the correct OS WinCE version (5.00.19) is displayed in Software versions

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						Software Versions still displays the Platform as "WinCE 5.0.1400". The ESS AutoMARK Models and Hardware Revisions document states the version should display as "WinCE 5.00.14". Item 3 above; SN: 767; the hardware label on the back of the VAT still reads as "1.3.1.0", it should read as 1.3.1. Verified itsm 2 for SN: 815 & 767, the correct OS WinCE version (5.00.19) is displayed in Software versions			
87	*3/4/09*	*C Coggins*	*Functional Defect*	*Closed*	*DS-200 System Launch*	*The 3 DS-200's received from SysTest Labs failed to boot up.* *12/18/08 When attempting to boot up the DS-200 the following error was displayed: "Symlink/lib/modules/2.6.16.27/source(inode #40637) is invalid. Failure File system errors were encountered that could not be fixed automatically. This system cannot continue to boot and will therefore be halted until those errors are fixed manually by the system administrator. After you press enter the system will be halted and power off. "*	*v.1: 2.3.4.1d All systems shall provide the capabilities to: verify the software and hardware function correctly*		*Accepted C Coggins 3/4/09 A file system error that performed a check was incorrectly set to 6 months. ES&S provided a script file to change the setting of Max amount to equal 1 and remove W-TEMP. iBeta reviewed the script and restored the corrupted compact flash using the build provided by SysTest Labs and ran the script. System launch was verified.*
88	*3/16/09*	*Sjakileti*	*Document Defect*	*Closed*	*ESSIM System Operations Procedures Ver. Rel. 7.7.0.0 8/22/08*	*Chapter 4: Install ES&S Image Manager showing the system requirements ESSIM requires "Adobe Type Manager Light" and " Adobe Type Basics".* *The requirements for ESSIM COTS software has been updated to Adobe Acrobat Standard V.9 and to remove the requirement for the other Adobe software. This is not reflected in the document.* *4/15/09 update: ES&S PM verbally informed the iBeta PM that the requirement for the other Adobe software was being retained at the request of the ES&S election support staff.*	*v.1: 8.5.a :The vendor shall establish such procedures and related conventions, providing a complete description of those procedures used to:* *a. Develop and maintain internally developed items;*	***TMT - 4.3.09 -** Chapter 4: Install ES&S Image Manager, System Requirements. Deleted the bullet points regarding Adobe Manager Light and Adobe Type Basics. Edited the "Adobe Acrobat Standard v. 8" to now reflect "Adobe Acrobat Standard v. 9". Also removed the 3.5 inch disk from this requirement.*	*Accept C. Coggins 4/15/09* *Verified in ESSIM SOP Ver. Rel. 7.7.0.0 4/3/09 reflects the update to Acrobat Standard v.9 with the additional Adobe software.*
89	*3/16/09*	*K. Swift*	*Document*	*Closed*	*AIMS Election Official's*	*The guide does not indicate that the "Setup Ballot Bar Codes" needs to be*	*v.2: 2.8* *This documentation shall provide all*	***4.3.2009 MDN -** Updated Section 5.2 and Section 12.3.3 with*	*5/4/2009: Accept SJ: Updated*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
			Defect		Guide, Rev 12, 3/21/08	modified for ballot style 840 and multiples of 840. For ballot style 840 (and multiples of 840) the code channel needs to manually be corrected by clicking off positions 40, 41, 42, 43 and 55 and clicking on positions 46, 47, 48 and 54. The only position that is not changed is position 49. This is the corrected Code Channel: 11, 21, 46, 47, 48, 49, 54, which indicate Sequence 840.	information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3 above.	instructions for manually editing the ballot code channel for ES&S ballot style 840 and multiples of 840. **4.23.2009 MDN -** Delivered 4/23. See response above for a description of revisions.	documentation with manually editing the ballot code channel for ES&S ballot style 840 and multiples of 840 in "AutoMARK Information Management System Election Officials Guide Rev14" Reject 4/15/09 - No AIMS documents were delivered
90	3/20/09	J Garcia	Document Defect	Closed	System Limitations Unity v.3.2.0.0 Feb. 23, 2009	The table in Section 1 Unity System Limits does not correctly reflect all applicable application limits. The table does not reflect the following application limits that limit the entire system.: -ERM Database Create allows for 1168 Contests and 1600 Precincts per Ballot Style.	v.1: 7.7.a Vendors are required to produce documentation … a. Be sufficient to serve the needs of the VSTL, voters, election officials, and maintenance technicians;	**4.3.2009 MDN -** The limiting application for both of these issues is now listed as HPM. Maximum contests per ballot style limitation has been updated to 1100. Maximum precincts allowed per ballot style has been updated to 1700 (ERM was upgraded in version 7.2.0.0 to handle up to 1800 precincts per ballot style, making the HPM limit the determining factor for the system). The system table has been updated and the referenced limitation statement has been removed from the ERM section as ERM limitations for these items are never approached because of the upstream limits imposed by HPM.	Accept C. Coggins 4/15/09 Verified in System Limitations rev 5.0 dated 4/6/09 that Section 1 and 3.5 (ERM) have been updated with the newly defined limits.
91	3/20/09	Sjakileti	Document Defect	Closed	AutoMARK Information Management System Election Official's Guide v12.0	AIMS PC requires to install SanDisk drivers, this is missing from the guide.	v.1: 8.5.a :The vendor shall establish such procedures and related conventions, providing a complete description of those procedures used to: a. Develop and maintain internally developed items;	**4.3.2009 MDN -** Added SanDisk Drivers as a software requirement to Section 3.2.1. **4.23.2009 MDN -** Delivered 4/23. See response above for a description of revisions.	4/15/09 - No AIMS documents were delivered 5/4/2009: Accept SJ: Updated documentation with additional drivers and software needed for AIMS PC in "AutoMARK Information Management System Election Officials Guide Rev14"
92	3/23/09	K Swift	Functional Defect	Closed	HPM v. 5.7.0.0 Create Final Database	An error was encountered in HPM which terminated the application, without providing direction for resolution.	v.1: 2.2.5.2.2.b All voting systems shall meet the following requirements for error messages:	**20090408 GLW --** The HPM and ERM versions in Unity 4.0 (now being used in Unity 3.2) were enhanced and compiled to take	5/14/09 KS - Accepted Verified HPM SOP, dated 5/1/109 has

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						At the point where the user was creating the Final Election Database (Create Tabulator Data>Create Final Database>OK) Vol 7 Scenario 1 (IBVOL07P, an Open Primary), the following error was encountered: "Program "him" terminated with return code 253. COBOL error code:109." The application was terminated without providing instructions. The user looked at the HPM SOP Chapter 36 Error Messages. Neither code 253 or COBOL error code 109 were listed, however, there was no loss of data.	*b. All error messages requiring intervention by an operator or precinct official shall be displayed or printed unambiguously in easily understood language text, or by means of other suitable visual indicators;* *v.2: 2.8.5.c* *The vendor shall provide documentation of system operating procedures that meets the following requirements:* *c. Provides procedures that clearly enable the operator to intervene the system operations to recover from an abnormal system state*	*advantage of a new Cobol Runtime feature that became available in version 11 of the Cobol development and Runtime environment. This feature, set on during the compilation of the source code, instructs the Cobol Runtime to validate, at the time of program execution, that the composite subscript for a data reference does not exceed the maximum values possible for the specific data item referenced. This is commonly referred to in the VVSG as bounds checking.* *Should the Cobol Runtime determine that the current value of a data reference item subscript exceeds the stated data boundary, the Runtime immediately terminates the executing program and reports Program Exit Code 253 and error 109 in the Return Code Message Box. The program termination occurs before our application has the ability to report this error in the HPM and/or ERM System Log.* *ES&S will add all Program Exit Codes (generated by the Cobol Runtime) and associated Data Reference Error numbers to the HPM and ERM SOP's along with the steps the user should take should one of these errors be reported by the Cobol Runtime. In most cases, the suggested action will be to call ES&S Technical Support as the occurrence of Runtime errors is generally indicative of either system integration issues and election data that far exceeds the documented System Limitations.* ***DJZ 5-11-09 HPM SOP**- Added COBOL error tables to the Appendix.*	*been updated to include Cobol error tables in Ch. 36: Error Messages.*
93	*3/23/09*	*K*	*Func-*	*Closed*	*HPM v.*	*The HPM audit log did not report an*	*v.1: 2.2.5.2.1.a: All voting systems*	***20090408 GLW --** The HPM and*	*/18/09 C Coggins*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		Swift	*tional Defect*		*5.7.0.0 Audit Log*	*error that resulted in the termination of HPM.* *Error Message: "Program "him" terminated with return code 253. COBOL error code:109." was not captured in the HPM audit log, nor any other information related to this error, however, there was no loss of data.*	*shall meet the following requirements ...of audit records: Except where noted, systems shall provide the capability to create and maintain a real-time audit record. This capability records and provides the operator of precinct official with continuous updates on machine status. This information allows effective operator identification of an error condition requiring intervention ...*	*ERM versions in Unity 4.0 (now being used in Unity 3.2) were enhanced and compiled to take advantage of a new Cobol Runtime feature that became available in version 11 of the Cobol development and Runtime environment. This feature, set on during the compilation of the source code, instructs the Cobol Runtime to validate, at the time of program execution, that the composite subscript for a data reference does not exceed the maximum values possible for the specific data item referenced. This is commonly referred to in the VVSG as bounds checking.* *Should the Cobol Runtime determine that the current value of a data reference item subscript exceeds the stated data boundary, the Runtime immediately terminates the executing program and reports Program Exit Code 253 and error 109 in the Return Code Message Box. The program termination occurs before our application has the ability to report this error in the HPM and/or ERM System Log.* *ES&S will add all Program Exit Codes (generated by the Cobol Runtime) and associated Data Reference Error numbers to the HPM and ERM SOP's along with the steps the user should take should one of these errors be reported by the Cobol Runtime. In most cases, the suggested action will be to call ES&S Technical Support as the occurrence of Runtime errors is generally indicative of either system integration issues and election data that far exceeds the documented System Limitations.* ***DJZ 5-11-09 HPM SOP**- Added*	*Accept Explanation is accepted as error handling for COBOL is consistent with v.1: 4.2.3*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								COBOL error tables to the Appendix.	
94	*3/24/09*	*C Coggins*	*Inform-ational*	*Closed*	*ESS System Limitations v.3.0 (version control)*	*ES&S is submitting 2 separate document files for a document title and version "System Limitations v.3.0". These documents are inconsistent.* *The files named U3200_OVR02_SystemLimitations_20090223 and U3200_LMT_20090211 have the same document title with the Table of Changes reflecting the same version and date. U3200_OVR02_SystemLimitations_20090223 does not appear to be following the configuration management policy as the date on the title page is not reflected in the Table of Changes. This document contains additional system limits in Section 1 and a new section, Section 2.3 addressing the VAT. Due to these inconsistencies and the differences in file names it is unclear if U3200_OVR02_SystemLimitations_20090223 is a replacement for U3200_LMT_20090211 . If so, the configuration policy does not provide guidance on how ES&S staff should initiate changes to a baseline name.*		***4.3.2009 MDN -*** *Configuration Items for this file were not properly updated for submission. See the Limitations document included with the current submission. ES&S altered document file naming conventions and CM policy to leverage Microsoft SharePoint as a document configuration management tool. The ES&S Configuration Management Plan has been updated to describe revised revision procedures and file naming requirements. The date and revision number included with the Table of Changes traces changes to document contents. The cover date is an automated field that reflects the document print date/VSTL submission date. See the revised CM Plan for additional details.* ***5.26.2009 MDN -*** *Updated the ES&S Configuration Management Plan to reference a new file titled "U3200_PRE04_TDPOrgandAbstracts." This newly added file includes a description of TDP organization and file naming conventions as well as an abstract that includes a description of included files for each TDP section. This file is included under the 00_PREFACE section.*	*6/1/09 CEC Accept U3200_PRE04_TDPOrgandAbstracts clarifies the changes to the document naming*
95	*4/1/09*	*K. Wilson*	*Document Defect*	*Closed*	*Hardening Procedures for the Election Management System PC 3/27/2009*	*An unavailable tool is identified in the procedures.* *The tool referred to in Ch 5 step 2: ng_scoring_tool-gui-1.0-win32.exe. is no longer available: see http://members.cisecurity.org/kb/article.php?id=029*	*v.2: 2.6.4 The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.*	***4.7.2009 MDN --****The procedure for hardening validation and reference to the cited tool have been removed.*	*Accepted 4/16/2009 SJ: Updated documentation by removing the unavailable tool in Hardening Procedures for the Election Management System PC v3.2.0.0 3/27/09*
96	*4/1/09*	*K. Wils*	*Docu-ment*	*Closed*	*Hardening Procedures*	*The following items referenced in the document need to be delivered for*	*v.2: 6.6. b The test agency shall examine the vendor's source code*	***4.7.2009 MDN --*** *Added a step to Chapter 4 (current page 15)*	*Accept 4/16/2009 K. Wilson following the*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		on	Defect		for the Election Management System PC dated 3/27/2009	review (as installation code). Either SecuritySetupSelfExtractor.exe or the individual files that it may contain such as 1) 080407a.inf, 2) secure.reg, 3) Registry.pol, 4) secure.cmd, & 5) local.cmd. Following the implementation of the procedure in Chapter 4, if any executable or scripts resulting from non-COTS source code is left on the computer, the source code needs to meet EAC code review standards.	against the submitted documentation during the Physical Configuration Audit to verify that the software conforms to the vendor's specifications	requiring users to delete the contents of the c:\temp folder; removing all system hardening tools after use. Delivery of the tools to the VSTL is forthcoming.	procedure to harden the E018 laptop, the following files appear in the c:\temp folder: 080407a.inf, Registry.pol, secsetup.sdb, secure.cmd, and selfextractorReadMe.txt (the deletion of the temp folder in Ch. 4 was done before the folder was used in Ch 5)
97	4/3/09	K. Swift	Document Defect	Closed	HPM SOP, Ver. Rel. 5.7.0.0 1/30/09	The HPM SOP provides conflicting instructions for the M650. Ch. 2 M650, pg. 22, Step 2; instructs user to 'Create Tabulators Parameters", and select '650' in the Tabulator box. There is no 650 option. The SOP references Chapter 23 which advises the user that the parameters are automatically created when the final database is created.	v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...	**4-7-09 DJZ -** Took out incorrect text in Chapter 2, referring to using the Create Tabulators for the 650. Put in NOTE : stating (If you are using Model 650, the parameter file was created when you created the final database, so you do not need to create tabulator parameters.	Accept C Coggins 4/15/09 Verified HPM SOP, Ver. Rel. 5.7.0.0 4/3/09 instruction to "Create Tabulators Parameters" has been deleted.
98	4/6/09	K. Swift	Functional Defect	Closed	ERM Printing the Precinct Summary Report & ERM SOP, Ver. Rel. 7.5.2.0 1/30/09	When attempting to print the Precinct summary report, an error was generated which did not provide direction for correction. A summary report exceeding 5000 pages was requested. The following error was generated. "Pgm Aero terminated with return code 253; Cobol error code 109". The application closed without identifying the action to be performed. The user looked at the ERM SOP Error Messages. Neither code 253 or COBOL error code 109 were listed, however, there was no loss of data.	v.1: 2.2.5.2.2.e The voting system shall meet the following requirements for error messages: The message cue for all systems shall clearly state the action to be performed in the event that voter or operator response is required.	**20090408 GLW --** The HPM and ERM versions in Unity 4.0 (now being used in Unity 3.2) were enhanced and compiled to take advantage of a new Cobol Runtime feature that became available in version 11 of the Cobol development and Runtime environment. This feature, set on during the compilation of the source code, instructs the Cobol Runtime to validate, at the time of program execution, that the composite subscript for a data reference does not exceed the maximum values possible for the specific data item referenced. This is commonly referred to in the VVSG as bounds checking. Should the Cobol Runtime determine that the current value of a data reference item subscript exceeds the stated data boundary, the Runtime immediately terminates the executing program	5/14/09 KS - Accepted Verified ERM SOP, dated 5/1/109, has been updated to include Cobol error tables in Ch. 60: Error Messages.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								and reports Program Exit Code 253 and error 109 in the Return Code Message Box. The program termination occurs before our application has the ability to report this error in the HPM and/or ERM System Log. *ES&S will add all Program Exit Codes (generated by the Cobol Runtime) and associated Data Reference Error numbers to the HPM and ERM SOP's along with the steps the user should take should one of these errors be reported by the Cobol Runtime. In most cases, the suggested action will be to call ES&S Technical Support as the occurrence of Runtime errors is generally indicative of either system integration issues and election data that far exceeds the documented System Limitations.* ***DJZ 5-11-09 ERM SOP-** Added COBOL error tables to the Appendix.*	
99	*4/6/09*	*K. Swift*	*Functional Defect*	*Closed*	*ERM 7.5.2.0 Audit Logging of Errors (V10 S1)*	*The ERM audit log did not report an error that resulted in the termination of ERM.* *Error Message: "Pgm Aero terminated with return code 253; Cobol error code 109" was not captured in the ERM audit log, nor any other information related to this error, however, there was no loss of data in ERM.*	*v.1: 2.2.5.2.1.a: All voting systems shall meet the following requirements ...of audit records: Except where noted, systems shall provide the capability to create and maintain a real-time audit record. This capability records and provides the operator of precinct official with continuous updates on machine status. This information allows effective operator identification of an error condition requiring intervention ...*	***20090408 GLW --** The HPM and ERM versions in Unity 4.0 (now being used in Unity 3.2) were enhanced and compiled to take advantage of a new Cobol Runtime feature that became available in version 11 of the Cobol development and Runtime environment. This feature, set on during the compilation of the source code, instructs the Cobol Runtime to validate, at the time of program execution, that the composite subscript for a data reference does not exceed the maximum values possible for the specific data item referenced. This is commonly referred to in the VVSG as bounds checking.* *Should the Cobol Runtime determine that the current value of a data reference item subscript*	*5/18/09 C Coggins Accept Explanation is accepted as error handling for COBOL is consistent with v.1: 4.2.3*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								exceeds the stated data boundary, the Runtime immediately terminates the executing program and reports Program Exit Code 253 and error 109 in the Return Code Message Box. The program termination occurs before our application has the ability to report this error in the HPM and/or ERM System Log. *ES&S will add all Program Exit Codes (generated by the Cobol Runtime) and associated Data Reference Error numbers to the HPM and ERM SOP's along with the steps the user should take should one of these errors be reported by the Cobol Runtime. In most cases, the suggested action will be to call ES&S Technical Support as the occurrence of Runtime errors is generally indicative of either system integration issues and election data that far exceeds the documented System Limitations.* ***20090511 DJZ -- ERM SOP*** *Added COBO Runtime errors to the Appendix.*	
100	*4/6/09*	*J. Garcia*	*Document Defect*	*Closed*	*EDM SOP, Ver. Rel. 7.8.0.0 1/30/09*	*Election Description maximum field length is missing from the documentation.* *There is a maximum limit of 41 characters in the Election Description field. The Documentation details the allowed number of characters for Election Name and Election ID however, it does not list the allowed number of characters for Election Description.*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...*	***4-7-09 TMT -*** *Updated the document to specify a 41 character limit for the Election Description field.*	*Accept C. Coggins 4/15/09 Verified on pg 63 #3 of EDM SOP, Ver. Rel. 7.8.1.0 4/3/09 the field limit of 41 characters is identified*
101	*4/6/09*	*J. Garcia*	*Functional Defect*	*Closed*	*DS200 FW version 1.3.7.0 ES0107370002 & ES017370025*	*The Printer boards repeatedly burned out on the DS200 scanners with the metal ballot boxes.* *This was repeated a total of five times on two DS200 scanners. The printer boards were replaced and firmware was loaded. In some instances the*	*v.1: 2.5.3.1.b All systems shall provide capability to: Produce a printed report …*	***4.3.2009 MDN -*** *The DS200 meets all requirements for withstanding ESD and has passed required tests. ES&S believes that the printer board failures can be traced to high static conditions within the lag that exceed the system's tested limits. The likelihood of*	*Accept C Coggins 4/15/09 Verified the "DS200 System Maintenance Manual" identifies the pad and straps. These items were not observed in use by*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						printers would print. At some point the report would start to exhibit abnormal printing such h as streaks or erratic characters. Then a print alarm would sound (beeping) and it would not print. A printer error instructed the user to abort printing. Examination by ES&S confirmed that the boards were burned out.		*damaging the system during use or repair is remote when reasonable precautions are implemented.* *Reasonable precautions include; raising the humidity level in the lab, using anti-static sprays in the lab, wearing an anti-static wrist strap when handling system components, properly handling replacement parts, etc. ES&S recommendations for using anti-static pads and wrist straps when executing maintenance tasks appear in the DS200 System Maintenance Manual "Chapter 1, Maintenance Materials," and "Chapter 2: Mechanical Checks."*	*ESS staff when performing maintenance, modem removal or repairs on 2/27/09, 3/17/09 or 3/30/09. Repairs performed on 4/9/09 by ESS staff included the pad & strap.* *Raising humidity levels and anti-static sprays are not identified in the TDP as required for standard maintenance or operations.*
102	*4/6/09*	*J. Garcia*	*Informational*	*Closed*	*EDM and ESSIM field limits (Full Path to Ballot Definition)*	*When functionally testing the documentation changes in discrepancy #30 EDM permitted the user to enter a Ballot Set name that exceeds the ESSIM System limit of 52 characters for the file path. This caused an error to be generated when opening the election in ESSIM.* *The tester entered 61 characters into the EDM Full Path to Ballot Definition field, opened ESSIM, and attempted to open the election. An error displayed only 52 characters out of the 61 entered, this provided the information necessary to modify the path to ESSIM limit. It should be noted that the EDM system defaults to a file path with a limited number of characters that is below the ESSIM 52 character limits. It is unlikely that a user would encounter this error, but even if they do, the user is able to resolve the differences in the application field limits. iBeta does not consider this inconsistent with the requirements of the VSS.* *Reject:* *4/15/09 C Coggins - While an informational issue does not require a response, the response provided is rejected because the references*		***DJZ 4-8-09 - ~~ERM~~ ESSIM Chapter 7: New** - Added Note to state: The limit for characters for the Full Path to Ballot Definition File created in EDM, is 52 total characters in path. More then 52 characters in the path may cause an error. Also in Chapter 46: System Messages - Added System message for error received if more then 52 characters are used in the Full Path to Ballot Definition File created in EDM when creating a new file.* ***TMT - 5.11.09 -** ESSIM- The comment above should map to "ESSIM" rather than "ERM". This should cover the ESSIM portion. Also EDM Chapter 13: Ballot Sets, under Create a Ballot Set, step #7, added the sentence that a maximum of 52 characters can be added to this File.*	*5/14/09, KS - Accept Verified ESSIM SOP, dated 4/3/09 contains the note/error message referenced in vendor comments. Verified EDM SOP, dated 5/11/09, the sentence in Ch. 13, Step 7 suggesting the file name not exceed 52 characters; and the removal of the statement regarding the Ballot Set Name limit.* *Reject 4/15/09 C Coggins*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						contained in the response were not found. Additionally a reference to a field limit of 52 characters was found for the Ballot Set name field on page 75 #4 of the EDM SOP v.7.8.1.0 4/3/09. As noted in the ESS response the 52 character limit applies to the Full Path to Ballot Definition File and not the Ballot Set Name field.			
103	4/9/09	K. Swift	Document Defect	Closed	HPM SOP, Ver. Rel. 5.7.0.0 1/30/09	The HPM SOP contains erroneous instructions in the Election Specification section for the Types Description/Include in Total Voting " field Ch. 14, Step 19, pg. 65-66; For the "Types Description/Include in Total Voting?"; the document states when election is defined in the Jurisdiction Master System Type, as Central Count; the Types Description... field will not be active. In testing we discovered that the field is active and if this field is left blank, then a message is displayed during Create Final Database that states "Election requires at least one included Type Description. ..."	v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...	***MDN 2009.04.16- SOP00_HPM Chapter 14*** - Addressed with TDP revision 3 submitted 04.09.2009 based on internal review. Step 19 now includes the verbiage "At least one Type description must be defined and activated on this screen."	5/14/09 KS, Accept Verified HPM SOP, dated 5/11/09; has been updated to include verbiage as stated in vendor response.
104	4/9/09	K. Swift	Functional Defect	Closed	ERM v. 7.5.2.0 Creating results database v8s1	In HPM when the System Type is set to the "Central Count" option in an election that is only using an M650 Central Scanner, an error is generated in ERM when creating results database. If the System Type is set to "Central Count" in HPM on an election with only an M650 (using the M650 limit of 3750 counters) , opening the election in ERM will generate the error "Pgm Aero terminated with return code 253; Cobol error code 109" and shutdown ERM. On attempting to relaunch ERM the following messages display: "Convert Precinct Results File: The precincts results file is from older software and is being converted." and "Error: File: Vol8S1.CTR, Error: #35 - File does not exist." The election cannot proceed. If the System Type is	v.1: 2.2.6.d An EMS shall generate and maintain a database…that enables election officials …to perform the following functions: generate ballots and election-specific programs for vote recording and vote counting equipment; and h. generate the post voting reports required by section 2.5	***MDN 2009.06.16- SOP00_HPM Chapter 13 -*** Updated with TDP revision 3 submitted 04.09.2009 based on internal review. Step 6 includes the instruction, "From the System Type list, select Both. This is the only equipment type being supported by ES&S. NOTE: The Central Count, Precinct Count and Mixed system types are not supported." ***4/23/09 extract from email:*** The 109 error during the ERM Database create process is the result of the implementation of the new bounds checker first implemented in Unity 4.0 / 3.2. When election type is set to 'Central' instructions intended for legacy tabulation equipment not being certified with this release are executed. When the election type	5/14/09 C Coggins Accept that this issue is out of scope of Unity 3.2.0.0. Issue 104 will be transferred to Unity 4.0 as discrepancy #1.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						reset to "Both" (i.e. a precinct and a central scanner) the election processes correctly. However the user is then required to complete the definition of a non-existence precinct scanner. *4/20/09 C Coggins iBeta requested further clarification of the not supported statement. Where is it supported? Is there a plan to fix the issue?*		*is set to 'Both' in HPM, the ERM Database success-fully executes intended instructions and stores the certification message lines entered in HPM into the ERM Database. Using election type 'Both' in HPM vs. 'Central' doesn't affect processing in HPM for tabulation equipment certified in this release. The election type setting is only used to disable certain menu and screen options for precinct based equipment and does not affect any tabulator parameter files created in HPM or data used by ERM to create the database. This issue will be fixed in Unity 4.0.*	
105	*4/10/09*	*K. Swift*	*Func-tional Defect*	*Closed*	*ERM 7.5.2.0 Audit Logging of Errors (V8 S1)*	*The ERM audit log did not report errors that resulted in the termination of ERM, and the startup of ERM.* *Error Message upon termination: "Pgm Aero terminated with return code 253; Cobol error code 109"* *Error Messages upon launch of ERM: "Convert Precinct Results File: The precincts results file is from older software and is being converted." and "Error: File: Vol8S1.CTR, Error: #35 - File does not exist."* *These messages were not captured in the ERM audit log, however, there was no loss of data in ERM, as the testers did not reach the point of reading results into ERM.*	*v.1: 2.2.5.2.1.a: All voting systems shall meet the following requirements ...of audit records: Except where noted, systems shall provide the capability to create and maintain a real-time audit record. This capability records and provides the operator of precinct official with continuous updates on machine status. This information allows effective operator identification of an error condition requiring intervention ...*	***20090408 GLW --** The HPM and ERM versions in Unity 4.0 (now being used in Unity 3.2) were enhanced and compiled to take advantage of a new Cobol Runtime feature that became available in version 11 of the Cobol development and Runtime environment. This feature, set on during the compilation of the source code, instructs the Cobol Runtime to validate, at the time of program execution, that the composite subscript for a data reference does not exceed the maximum values possible for the specific data item referenced. This is commonly referred to in the VVSG as bounds checking. Should the Cobol Runtime determine that the current value of a data reference item subscript exceeds the stated data boundary, the Runtime immediately terminates the executing program and reports Program Exit Code 253 and error 109 in the Return Code Message Box. The program termination occurs before our application has the ability to report this error in the HPM and/or ERM System Log.* *ES&S will add all Program Exit*	*5/18/09 C Coggins Accept Explanation is accepted as error handling for COBOL is consistent with v.1: 4.2.3*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								Codes (generated by the Cobol Runtime) and associated Data Reference Error numbers to the HPM and ERM SOP's along with the steps the user should take should one of these errors be reported by the Cobol Runtime. In most cases, the suggested action will be to call ES&S Technical Support as the occurrence of Runtime errors is generally indicative of either system integration issues and election data that far exceeds the documented System Limitations. ***DJZ 5-11-09 ERM SOP**- Added COBOL error tables to the Appendix.*	
106	*4/10/09*	*Seaton*	*Document Defect*	*Closed*	*ES&S EDM SOP Ver. Rel. 7.8.0.0 1/30/09*	*The EDM Operations Procedures documented an incorrect limitation for ballot styles within a Absentee precinct.* *In Chapter 14 of the documentation it states that the EDM Absentee Precinct limit for ballot styles per precinct is 40. However, the M650 limit is 100 ballot styles per absentee precinct. The M650 limited of 100 is entered in the EDM ballot style per precinct field without error.*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...*	***TMT - 5.11.09 - EDM -** Chapter 14: Merge Preferences, changed the Absentee Preferences table reference to the Maximum Ballot Styles Per Precinct column to 100 characters from 40.*	*5/14/09 KS - Accept Verified EDM SOP, dated 5/11/09; absentee precinct limit states 100 in Ch. 14.*
107	*4/10/09*	*Seaton*	*Document Defect*	*Closed*	*ES&S EDM SOP Ver. Rel. 7.8.0.0 1/30/09*	*The EDM documentation does not state the use of the Assign Sequence option.* *In Chapter 14 the documentation does not mention Assign Sequence and there is a screen shot of the Election Preferences tab and it does not display an option "Assign Sequence" that is in the application. the Assign Sequence is located under the Start Numbering heading, on the Election Preferences tab in the Merge Preferences option.*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...*	***TMT - 5.11.09 - EDM - Chapter 14: Merge Preferences, see Election Preferences for ES&S Image Manager screen.** The screen shot is titled "Election Preferences for ES&S Image Manager" and has been changed to now include the Assign Sequence checkbox. This option is documented in the table called "Election Preferences" in the Sequence field in paragraph 2 of the Field Definition.*	*5/14/09 KS - Accept Verified EDM SOP, dated 5/11/09; the addition of the screen shot containing the 'Assign Sequence' checkbox, and the accompanying description of use.*
108	*4/10/09*	*Seaton*	*Document Defect*	*Closed*	*ES&S HPM SOP Ver. Rel. 5.7.0.0 1/30/09*	*The HPM documentation does not state the use of the option None in the Absentee Type.* *In Chapter 16 the documentation states, "From the Absentee list, choose the applicable absentee type if this*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system*	***DJZ 5-11-09 - SOP00_HPM - Chapter 16 -** Updated page 85, and explained None for Precincts. None - Will not be flagged as an absentee precinct.*	*5/14/09 KS - Accept Verified HPM SOP, dated 5/11/09; contains a description for "None" under Absentee type.*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						precinct is to be designated as an absentee precinct." One of the options is "None" however it is unclear what none means.	functions and operations identified in Section 2.3...		
109	4/14/09	K. Swift	Document Defect	Closed	DS200 SOP, HW v. 1.2.1 FW v. 1.3.7.0 10/17/08	The DS200 documentation does not list the following error message. Ch. 11, System Messages does not contain the error; "Ballot has been counted but not saved to bin. See Poll Worker." The problem ended up being a ballot was caught up in wires in the ballot box. The audit log recorded the error as "Ballot jam : ballot counted but not saved to bin."	v.2: 2.8.4.d -The vendor shall provide documentation of system operating features that meets the following requirements: d. Illustrate and describe all status indicators and information messages.	**BB5-11-09 - SOP00_DS200 - Chapter 11 -** Modified the existing message to reflect the updated verbiage.	5/19/09 Ccoggins Accept Verified message is contained in DS200 May 5, 2009.
110	4/14/09	S. Sivixay	Document Defect	Closed	ERM SOP, Ver. Rel. 7.5.2.0 1/30/09	The ERM SOP document contains obsolete steps. Ch. 19 - Close out Precincts with no ballots cast, page 110; The window in step 1 does not appear when validating in ERM.	v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...	**DJZ 5-11-09** -Removed screen shots the did not refer to the text in Chapter 19, page 110. Also replaced old screen shots with newer ones for the Close out Precinct section	5/14/09 KS - Accept Verified ERM SOP, dated 5/5/09; Ch. 19 has been updated with newer screen shot and obsolete step/screen shot has been removed.
111	4/16/09	J. Garcia	Functional Defect	Closed	VAT A100-00 WinCE 5.0.1400 PEB: 1.65, SBC: 1.0, FW: 1.3.2905	The VAT displays an incorrect error message when entering an incorrect date format. Testers entered an incorrect date format (110309) and a correct date format (07:00 AM) however, the error that displayed was "Error! Format HH:MM AM". 5/14/09 KS - Reject The vendor response does not address the discrepancy. The VAT is displaying an incorrect error message. When the date is entered incorrectly and time is entered correctly; the VAT is displaying an error against the time. When the date is entered correctly and the time is entered incorrectly; the VAT is displaying an error against the date.	V 1: 2.2.5.2.2.e All voting systems shall meet the following requirements for error messages: e. The message cue for all systems shall clearly state the action to be performed in the event that voter or operator response is required;	**MDN 2009.05.07- AMVAT Poll Worker and Jurisdiction Guides-** Clarified the procedure for updating the system time and date included under section 6.5.4 of AutoMARK 3010 Jurisdiction Guide AQS-13-5061-003-R.pdf and section 2.1 of AutoMARK 3010 Poll Workers Guide AQS-13-5061-002-R.pdf. Instructions now explicitly require users to select CLEAR prior to entering a new time or date setting and select APPLY after changing each setting. Also added descriptions for the correct time and date format. **5.26.09 slm -** ES&S strongly believes that the System Operating Procedures and the Readiness Checklist provides the end user enough information to perform this task correctly. Another note is that the system does not let you continue or save	6/1/09 CEC Accept in Unity 3.2.0.0 as the incorrect date cannot be saved; transferred to Unity 4.0.0.0 to verify correction. 5/14/09 KS - Reject

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								an incorrect date. ES&S will correct this item in the upcoming Unity 4.0 release.	
112	4/16/09	J. Garcia	Document Defect	Closed	ES&S AutoMARK Pollworker's Guide AQS-13-5061-002-R.doc Rev 8.0 3/20/08	*The documentation does not describe the +/- functionality in the printing the operation log section.* *When attempting to print the audit log on the VAT the user selects the text box under the Go To Page and a key pad is displayed. On the key pad a functional option +/- is displayed however, there is no information on this feature in the documentation.*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...*	***MDN 2009.05.07- AMVAT Jurisdiction Guide-*** *The AutoMARK uses a canned keypad format that includes an unsupported +/- button. This button cycles between positive (no symbol visible) and negative (minus sign visible)numeric entry. The AutoMARK does not support negative entry. Attempting to navigate to a page number formatted as a negative value spawns an error message informing the user that the entered page number is invalid. Updated section 6.5.1 of AutoMARK 3010 Jurisdiction Guide AQS-13-5061-003-R.pdf to detail this condition.*	*5/14/09 KS - Accept Verified AM Jurisdiction Guide, dated 5/7/09, Rev 8; has been updated with the verbiage described in vendor response and that this is unsupported functionality.*
113				Closed		*No issue; the #113 was skipped in error*			
114	4/16/09	K. Swift	Functional Defect	Closed	EDM v. 7.8.0.0, Entering new id & password (Regress TC)	*No password error message was generated in Audit Manager when creating or in EDM when logging in with a password less than 6 or greater than 8 characters (see EDM SOP, Ch. 55: System Messages)* *Passwords for EDM & ESSIM are created in Audit Manager. In order to validate an error would be generated if user IDs were created with passwords that did not meet the required configuration, passwords less than 6 (4 or 5) and greater than 8 (9) characters were entered. No errors were generated in either Audit Manager or EDM when an ID was created or used a non-compliant passwords. The only error occurred when attempting to create an ID was without a password.*	*v.2: 6.4.1.a Specific activities to be conducted by the ITA shall include: A review of the vendor's access control policies, procedures and system capabilities to confirm that all requirements of V.1 Sect. 6.2 have been addressed completely;* *v.1: 6.2.2 a. Use of data and user authorization; & h. Controlled access security.*	***TMT - 5.11.09 - EDM - Chapter 55: System Messages****. Deleted these 2 messages from the Error Messages table: "Minimum Password Length is 6 characters" and "Maximum Password Length is 8 characters".*	*5/14/09 KS - Accept Verified EDM SOP, dated 5/11/09; that these messages now state that they are applicable to the "iVotronic only". From this statement, the VSTL assumes that 1) there are no required password configuration limitations for ids to log onto EDM or ESSIM; and 2) the 6/8 character configuration applies to setting function screen passwords (ex: service menu, etc.) for the iVotronic.*
115	4/16/09	Steph & Kelly	Document Defect	Closed	EDM SOP, Ver. Rel. 7.8.1.0, April 3, 2009 Ch. 39: Text/Referendum	*EDM application Referendum /Question fields do not match the EDM SOP* *The following appears in EDM, but not in the SOP:* *- Text/Referendum menu >*	*v.2: 2.8.4.a The vendor shall provide documentation of system operating features that meets the following requirements:* *a. Provides a detailed description of all input, output, control, and display features accessible to the operator*	***TMT - 5.11.09 - EDM - Chapter 39: Text/Referendum.*** *In the* ***Create Ballot Text*** *section, edited the Question/Text screen to add the check boxes and non-grayed out options.*	*6/12/09 CEC Accept Verified step #6 addressed Explanation File Name field activation and #8 addressed Rotate Ref/ Question*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						Referendum/Question section, *- Referendum/Question (checkbox)* *- Recall/Retain (grayed out)* *- Rotate Ref/Question (grayed out)* *- Explanation (grayed out)* *The Query Overvote option's in the SOP but not in EDM.* *5/14/09 KS - Reject - EDM SOP dated, 5/11/09; Ch. 39 does not explain why/how to use the checkboxes: Rotate Referendum/Question and Explanation. Query Overvote is listed in the document, but does not display in the application.* *6/1/09 Reject CEC -The EDM SOP May 26, 2009 does not reflect the step 2 or step 8 changes identified in the 5/26/09 response.*	*or voter*	***TMT - 5.26.09 - EDM*** *- Chapter 39: Text/Referendum. Added note on step #2 of Create Ballot Text stating that the Explanation check box must be checked to use the functionality for the Explanation File Name field. Also added the Rotate Ref/Questions checkbox information to step #8. Also removed the Query Overvote option which is not compatible with this version of EDM.* ***TMT - 6.5.09 - EM SOP -*** *Chapter 39: Text/Referendum. Added note on step #2 of Create Ballot Text stating that the Explanation check box must be checked to use the functionality for the Explanation File Name field. Also added the Rotate Ref/Questions information as the first bullet in step #8. The 2nd bullet in step 8 refers to the Query Undervote; the Query Overvote functionality was removed.*	*6/1/09 CEC Reject* *5/14/09 KS - Partial Accept & Reject Verified EDM SOP, dated 5/11/09; the following checkboxes and their use is documented in Ch. 39: Referendum/ Question and Recall/ Retain.*
116	*4/20/09*	*J. Garcia*	*Functional Defect*	*Closed*	*Hardware Programming Manager, 5.6.2.0 Audit Log (vol2S4)*	*An error message that was displayed when processing more than the allowed number of ballot styles was not logged into the audit log.* *We attempting to process 101 ballot styles in an Absentee Precinct an error occurred "Precinct 0004 has more than 100 ballot styles, only 100 used!". However, the error was not logged in the system log.* *5/14/09 KS - Partial Accept* *Verified EDM SOP, dated 5/11/09; the following checkboxes and their use is documented in Ch. 39: Referendum/Question and Recall/Retain.* *5/14/09 KS - Reject* *Vendor response does not address that the error message was not written to the system log. Note, HPM application did not terminate after receiving the message and clicking OK.*	*v.1: 2.2.5.2.2a All voting systems shall meet the following requirements for error messages: a. The system shall generate, store ... all error messages as they occur.*	***GW 2009.05.07 -*** *In this particular case, even though HPM determines that precinct 0004 exceeds the maximum of 100 ballot styles in a single precinct, the program execution continues after the user clicks the 'OK'. The intent here is to continue on with the program execution to see if any additional system maximums are exceeded in any other precincts so that all precincts exceeding the maximum can be identified and then corrected at one time by the HPM user versus just telling them about the first maximum then terminating the program.* ***slm 05.26.09 -*** *The message that was received during the Vol2, S4 testing is covered under V1: 2.2.5.2.3 - Status Message. This appears as an informational message to the user that the*	*6/6/09 Accept JG & CEC* *As the users has a choice to continue or not, we agree that classification as a warning is appropriate. Warnings need not be written to the audit log.* *5/14/09 KS - Reject*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								system was only able to use 100 ballot styles.	
117	4/20/09	Steph & Kelly	Document Defect	Closed	EDM SOP, Ver. Rel. 7.8.1.0, 4/3/09 Ch. 50: Generate Ballot Styles	*A field listed in the documentation does not display in the application.* *In the Merge Ballot Sets option, the field "Create Ballot Style Information" checkbox is not displayed, however it is detailed in the document.* *5/14/09 KS - Reject* *ESSIM was the selected equipment type and the field did not display. The Note added in Step 3 of Ch. 50 is inconsistent with this behavior.*	*v.2: 2.8.4.a The vendor shall provide documentation of system operating features that meets the following requirements:* *a. Provides a detailed description of all input, output, control, and display features accessible to the operator or voter*	***TMT - 5.11.09 - EDM - Chapter 50: Generate Ballot Styles.*** *Added a note in Step 3 stating: The Create Ballot Style Information check box will appear only if you are using the following equipment types: DSIM, ESSIM, iVotronic bitmap, iVotronic LS, Votronic Text.* ***TMT - 5.26.09 - EDM - Chapter 50:*** *Generate Ballot Styles. In Step #3, changed the note to exclude ESSIM as an equipment type.*	*Accept 6/1/09 CEC verified step 3 information about of checkbox excludes ESSIM* *5/14/09 KS - Reject*
118	4/20/09	K. Wilson	Document Defect	Closed	Hardening Procedures for the EMS PC 4/20/09	*Hardening procedures do not specify the folder(s) to lock down on the AIMS PC.* *Page 4 identifies that all PC's in the EMS environment are hardened according to the procedures. Jurisdictions may choose to run one or all Unity EMS applications on a single or multiple stand alone PCs. AIMS must run on a separate PC, The definition of the folders to lock down the AIMS PC are not defined. Access control to the AIMS computer is not addressed on page 6 item c.*	*v.1:2.2.1.f If access to a system function is to be restricted or controlled, the system shall incorporate a means of implementing this capability.*	***MM 2009.05.6-*** *Added section detailing the requested information to the document titled "Hardening and Verification of the AutoMARK Information Management (AIMS) PC."*	*5/15/09 KS - Accept Verified Hardening Procedures for the Election Management System PC, dated 5/5/09; Pg 9 has been updated referring the user to Ch.2 to harden the AIMS PC, explaining that only the ElectAdmin & ElectDefine roles should be activated, and because the two share the same privileges, directory lock down is not necessary.*
119	4/20/09	K. Wilson	Document Defect	Closed	Hardening Procedures for the EMS PC 4/20/09	*The Role to execute HPM functionality is ambiguous* *Document states on pg 6 item c that HPM is accessed through the ElectDefine group, but on page 7, item 6.c the HPM folder is assigned access rights to groups ElectAdmin and ElectResults. Based on these statements it is unclear what actual role is used to execute the HPM functionality.*	*v.1:2.2.1.f If access to a system function is to be restricted or controlled, the system shall incorporate a means of implementing this capability.*	***MM 2009.05.6-*** *Updated the relevant step on Page 6 of the document to read:* *Folder C:\apps\ess\HPM—assign all rights, except "full" for ElectAdmin and ElectDefine.*	*5/15/09 KS - Accept Verified Hardening Procedures for the Election Management System PC, dated 5/5/09; Step 6c on pg. 7 has been updated per vendor response.*
120	4/20/09	K. Swift	Informational	Closed	EDM SOP, Ver Rel	*The document is missing relevant information in the Text/Referendum*		***MM 2009.05.6-*** *The EDM SOP is correct. These language tabs are*	*5/14/09 KS - Accept Verified in EDM*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					7.8.1.0 4/3/09	*section.* *Ch. 39 Text/Referendum, does not indicate that the language tabs on the Question Text window are only used if you are using iVotronic equipment.*		*used for both the iVotronic and Op Scan systems.* ***TMT - 5.11.09 - EDM -** Chapter 39: Text/Referendum. In the Format Text in Additional Ballot Languages section, added the following sentence right below the heading: "Language tabs are supported by the following equipment types: ESSIM, Optech, iVotronic bitmap, LS iVotronic, DSIM."*	*SOP, dated 5/11/09, Ch. 39, pg. 301; has been updated as stated in vendor response.*
121	*4/21/09*	*sjakileti*	*Functional Defect*	*Close*	*DS200 Audit Logging*	*The DS200 audit log does not reflect administrator access.* *On DS200 Machine ID: 0000es010737002 4/21/2009: The administrative mode is password protected. After the Election Definition was loaded the tester attempted to access the administration mode with an invalid, blank and a valid password. Neither the failed or successful attempts were recorded in the audit log.* *5/28/09 Reject SJakileti - As v1:.2.5.2 is applicable to COTS it is an incorrect reference to apply to the DS200. As the recording of the access attempts(successful and unsuccessful) are normal or abnormal events, V1: 2.2.4.1g is a more appropriate requirement.* *6/12/09 - CEC The VSTL interprets successful and unsuccessful login attempts as security events. We understand ES&S' position that this is a "non-event" and recommend referral to the EAC for determination of whether logging in as an administrator on the DS200 is or is not an "event".* *6/19/09 CEC -Reject - EAC Response: ES&S will make a change in the code to ensure that the log-in and log-out events of the administrator are captured. iBeta will review the code change and regression test the change*	*v.1: 2.2.1.a Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.* *v.1: 2.1.5.2 …operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations and for the alteration or deletion of any memory or file object.* *v.1: 2.2.4.1.g To ensure system integrity, all systems shall: record and report the date and time of normal and abnormal events.*	***SM 2009.05.7 -** The DS200 does limit or detect access by providing messages to the user and prohibiting the user to continue on in the process. The standard quoted does require the event to be logged.* *ES&S questions if standard v.1: 2.1.5.2 applies to this instance.* ***slm 05.26.09 - V1: 2.2.5.3** is a COTS requirement. The DS200 precinct tabulator is not COTS and therefore, this requirement does not apply.* ***SMP 2009.6.9 -** The VSS uses the word 'event' in a broad and non-definitive manner throughout. Because of the standard's vagueness in defining what constitutes a 'normal' and an 'abnormal' event, it is left up to the interpretation of the standard by the manufacturers, the reviewing labs, and the governing entity, formerly NASED and now the EAC, to determine its meaning. ES&S makes every attempt to record all normal and abnormal events in an effort to be 100% compliant with the applicable standard. In fact, Unity 3.2 alone logs over 2300 system event messages in its current configuration.*	*6/29/09 Accept CEC Per 6/28/09 EAC response accepting v.1.3.10.0: "the EAC has decided that iBeta can close the discrepancy based on the EAC's reading of the standard. The EAC believes that the notification of an incorrect password in this case is a user advisory and not an error message and therefore v.1:2.2.5.2.2.a has not been violated in this case. The EAC appreciates iBeta bringing this discrepancy to their attention and ES&S fixing the previous problem with discrepancy #121."* *6/26/09 Reject CEC* *6/24/09 CEC Pending functional testing* *6/19/09 Reject CEC per EAC Response* *6/12/09*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						to the extent necessary to ensure the system functions properly. *6/26/09 CEC Reject v.1.3.10.0* *The "Incorrect Password Entered" error is not generating the entry in the audit log. It is being generated by selection of the "Cancel" button.* *Scenario 1: User enters an incorrect password* *• Error: "Incorrect Password Entered" is reported to the user* *•User selects the "Try Again" button* *• Audit log entry: None* *• User can continue to repeat attempts without any error being logged.* *Scenario 2: User enters an incorrect password* *•Error: "Incorrect Password Entered" is reported to the user* *•Audit log entry: Date and time of the "Cancel" button selection: "User Event: Admin Password Entry Failure"* *VSS: v.1: 2.2.5.2.2.a All voting systems shall meet the following requirements for error messages: The system shall generate, store, and report to the user all error messages as they occur.* *Neither scenario 1 nor 2 is storing the error because the audit entry is being generated at the time the user selects the "Cancel" and not at the time the error is generated.*		*For the DS200, only an authorized pollworker has access to the Admin function by unlocking the power/open poll access door followed by entry of the HPM generated election specific admin access code. Because the recording or non-recording of access attempts to the DS200 admin menu is not considered to be essential to ensure the physical stability and function of the vote recording and counting process (the fundamental intent of V1:2.2.4) ES&S considered this to be non-critical and therefore classified as a non-event in its design. We therefore disagree with iBeta's interpretation of the constitution of what is a 'normal' event.* ***SMP 2009.6.16 -** Additional supporting information - The DS200 operates in three modes; Administrative Mode for pre-election day warehouse preparation, election day Polls Open mode, and post election Polls Closed mode. The Administrative functions are all performed prior to election day for system setup and diagnostic evaluations including setting the system date and time, calibrating the scanner, auto-reading ballots, and processing test decks. On election day, once the polls are opened on the DS200, the Administration Menu is not accessible.* ***MDN 2009.06.24** - Updated product versioning within the Unity 3.2.0.0 system overview (U3200_OVR00) and System Operations Procedure (U3200_SOP00_DS200).* ***SLM 2009.06.24.09** - This is addressed in the new trusted build*	*Undetermined CEC* *5/28/2009 Rejected SJ*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								of 1.3.10.0.	
122	4/21/09	K. Wilson	Functional Defect	Closed	EDM - (EMS Windows Configuration Test step E018)	A non-administrator user (ElectResult) was able to access and install an executable on the EMS PC Using the CD and the USB an executable file was loaded on the EMS PC. The executable did not automatically run when inserted in the applicable drive. However the non-administrative user was able to double click and run the executable. This installed on the System 32, System Root and C:Windows drives. The executable contained a worm that was then launched. (Note: As the ESS procedures recommend but do not require the installation of anti-virus software the test was run without this protection.)	v.1: 2.2.5.3 Third, the system shall be configured to execute only intended and necessary processes during the execution of election software.	**MM 2009.05.7 -** This discrepancy is addressed in U3200_SSS08_System Hardening, Chapter 8, "Anti-virus/Malware Protection." Section reads, "The election PC configuration must include commercially available and standard virus detection software. Virus detection software must be installed and enabled on all election system PCs at all times. Removable media must always be scanned by the PC to prevent virus entry and propagation." Strengthened the language from "should include commercially available," to, "must include.." in the current revision.	Accept 6/17/09 J/g The test was to verify that the ResultUser could not load any application or viruses. The executable did run however the program did not get loaded onto the PC.
123	4/21/09	K. Wilson	Functional Defect	Closed	EDM - (EMS Windows Configuration Test step E018)	The successful launch of EDM is not recorded in the audit log. When a non-administrative user ResultsUser (ElectResult group) launches EDM it is not recorded in either the Audit Manager or windows security event log.	v.1: 2.2.5.3 Second, operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object. v.1: 2.1.5.2 …operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations and for the alteration or deletion of any memory or file object.	**MM 2009.05.7 --** Launch of EDM by an authorized user should be recorded in the Window Event security log if, security logging is turned on for that directory as outlined in the Windows Hardening procedure. Note as per hardening instructions the ElectResult group should have access to the EDM executable denied. (this is covered in Chapter 2) **MM 2009.05.20** -- Launch of EDM by an authorized user is recorded in the Window Event security log and Audit Manager, if security logging is turned on for that directory as outlined in the Windows Hardening procedure. Note as per hardening instructions the ElectResult group should not have access to the EDM executable denied. (this is covered in Chapter 2)	6/5/2009 JG Accept ResultsUser is locked down and can not launch the EDM application.
124	4/21/09	K. Wilson	Functional Defect	Closed	AM & Windows Logging (EMS Windows	Copying the election data file on and off the EMS PC is not logged in Audit Manager or windows audit log. ResultUser (ElectResult group), a non-	v.1: 2.2.5.3 Second, operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions	**MM 2009.05.8 --** Revised verbiage under the Chapter 10 of the System Hardening Procedures document from the previous statement "Follow these steps to	6/5/2009 JG Accept ElectData and Unity folders are set to event viewer. ResultUser action

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					Con-figuration Test step E018)	administrator role, copied the elecdata\M650.pr file to a USB, modified the file name on an external PC, and replaced the file. Neither the copy or upload was recorded in either audit log.	and terminations, and for the alteration or deletion of any memory or file object. v.1: 2.1.5.2 …operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations and for the alteration or deletion of any memory or file object.	lock down your directories" to instead read, "Follow these steps to lock down both the Unity and Elecdata directories." The Audit Manager audit log will not record this type of event. However, the Unity 3.2. systems utilizes the Window Event Viewer to record access to system directories and election files by a system defined user. The Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) specifies the process for which folders and events should be selected for Window Event Log to record the events as intended.	logged path.
125	4/21/09	K. Wilson	Functional Defect	Closed	EDM - (EMS Windows Con-figuration Test step E018)	Processes that have not been identified as necessary can be run during execution of the election software. The tester logged into EDM as a non-administrator was able to perform tasks using Calculator, Notepad and the browser. None of these applications are not identified as necessary tools for operation of EDM.	v.1:2.2.5.3 Third, the system shall be configured to execute only intended and necessary processes during the execution of election software.	**20090505 - MDN --** Non-essential programs should be removed during system hardening. See U3200_SSS08_Hardening Procedures Chapter 2: Hardening and Verification, "Hardening the Windows XP Operating System." Documentation directs the user to "Remove, or disable, all non-election applications from the device (WordPad, Notepad, games, etc.)." Currently listed under step 5.a.	5/15/09 KS - Accept Verified Hardening Procedures for the Election Management System PC, dated 5/5/09; contains ES&S recommendation in Ch. 2, Step 5a to remove all non-essential applications.
126	4/23/09	K. Wilson	Functional Defect	Closed	HPM	Modified the HPM log file.. logged on as DefineUser. KW.ELG file (the audit log for the KW election) accessed and records removed. Log file was somewhat difficult to find but once found easy to modify. When the election log was displayed in HPM the modification was not detected. There was no Windows event log record of access nor other audit of access found. 6/6/2009 JG Reject The Hardening Procedures for the Election Management System PC (Chapter 2, steps6) states to "assign all access rights, except full for ElectAdmin,	v.1: 2.2.1.d Provide safeguards to protect against tampering during system repair, or interventions in system operations, in response to system failure. v.1:2.2.1.a Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability. 6/19/09 - v.1: 2.2.5.2 & 2.2.5.2.1.e are the appropriate requirements. v.1: 2.2.5.2 Audit records shall be prepared for all phases of election operation performed using devices controlled by jurisdiction...The	**MM 2009.05.7-** HPM will not log this event, Windows event viewer will record this event, again the Windows event viewer will only log access to the folder and read/write actions. It will not specifically record file names, sizes, etc. The HPM audit log does not record this type of event. The Unity 3.2. systems utilizes the Window Event Viewer to record access to system directories and election files by a system defined user. The Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) specifies the process for which folders and	6/22/09 CEC Accept Accepted based upon the EAC interpretation "#126 - The EAC reviewed the discrepancy decision made by iBeta as well as ES&S's explanation regarding the discrepancy. The EAC applauds the VSTL for its diligence in citing this discrepancy and encourages

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						ElectDefine, and ElectResult". When assigning ElectDefine and ElectResult to all access except full the users have permission to modify, read & execute, and a list folder contents. This allows the modification of the audit files. (v.1: 2.2.4.1 f & h) *6/18/09 JG Reject. At issue, is the ability to modify or destroy an audit log. While detection is acceptable to other areas of security. The standard explicitly prohibits altering or destroying audit records. The tester was able to copy the ELG file; delete part of the file; save the file back into the Elecdata folder; and reopened the audit log. Prior to modification the HPM log had 2 pages and after the modification the HPM log only had 1 page. Modification of the log can be done on the same PC that Unity resides on using Note Pad and Word Pad.* *6/19/09 - CEC Response to EAC Query: iBeta agrees that v.1: 2.2.4 limits these Integrity requirements to vote recording and counting processes. v.1: 2.2.5.2 & 2.2.5.2.1.e are the appropriate requirements.*	*software shall activate the logging and reporting of audit data as described in the following sections. ...v.1: 2.2.5.2.1.e The generation of audit record entries shall not be terminated or altered by program control or intervention of any person...*	*events should be selected for Window Event Log to record the events as intended.* ***GLW 2009.06.10*** *As stated in Chapter 2 of the Hardening Procedures, all PC's loaded with ES&S application software and used for the conduct of elections should be 'secured in an appropriate manner to assure controlled access and maintain chain of custody'. A properly Windows credentialed user, as defined in the Hardening Procedures, accessed the election_name.ELG file from outside of ES&S application software. Uncontrolled physical access (see ES&S System Security Specification) to this PC had to be obtained and knowledge of a Windows Administrator defined User ID and Password with Administrator assigned access rights to the \elecdata folder had to be known and used to obtain access to this file. If the ES&S Hardening Procedures have been properly and completely performed, all accesses to the \elecdata folder and to the election_name.ELG file are recorded in the PC's Windows Event Log and may be viewed using the Windows Event Viewer.* *Access to the \elecdata folder by the three ES&S recommended Windows User ID's as specified in the ES&S Hardening Procedures is required because both the ElectDefine and ElectResult User must be able to create and modify files in the \elecdata. ElectAdmin is granted access to all folders. The \elecdata folder (and its sub-folders) is the principle folder path used by both Hardware Programming Manager (HPM) and Election Reporting Manager*	*continued rigor in the testing of the system. However, the requirements cited are not sufficiently clear to sustain the discrepancy. The EAC found little merit in much of ES&S's argument regarding procedural safeguards as a means to meet the standard cited. However, after discussion with its technical reviewers the EAC believes that the system as currently designed meets the standard as it is currently written. Therefore, this discrepancy can be resolved. "* *6/18/2009 JG Reject* *6/6/2009 JG Reject*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								(ERM). The election_name.EFC output file created from the initial election definition and ballot layout done in EDM and ESSIM is written to the \elecdata folder and is then read by HPM to build its initial election_name.DAT file. This requires ElectDefine to have access to the \elecdata folder. Additionally, during the processing steps performed in HPM, additional files are created and updated in the \elecdata folder and its sub-folders. This too requires access to these folders by ElectDefine. The ElectResult User must have access to the \elecdata folder and it's sub-folders for access to the final election_name.DAT file from which the ERM results database is created (multiple output files) in the \elecdata folder. Further processing in ERM to accumulate and report election results creates many additional files in \elecdata and its sub-folders.	
127	*4/28/09*	*sjakileti*	*Document Defect*	*Closed*	*ES&S Software Design Specifications Model 650 v1.0*	*An import file is not identified in the SW design spec.* *Sec 7.1.2. identifies the M650 imported files are .OFC,.RPT, and .PRE. During security testing we are seeing 4 files on the zip disk .OFC,.RPT,.PRE and .PRF*	*v.1: 2.2.2.1d include control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy*	***20090505 - MDN --** Updated section 7.1.2 of the Model 650 SDS to include the .PRF file, which is a "Precinct Finder File." Confirmed that this file is also properly documented in Section 10.5, "System Processes."*	*5/15/09 KS - Accept Verified M650 SDS, dated 5/12/09; Sections 7.1.2 & 10.5 has been updated to include .PRF file*
128	*4/29/09*	*J. Garcia*	*Document Defect*	*Closed*	*ES&S ERM System Ops Procedures Ver. Rel. 7.5.3.0 4/2/09*	*The documentation has an incorrect path for the target field within the Security Procedures.* *In Part 2 Section 7 number 5 of the documentation states "In the Target field change erm.cob to uermmngr.cob. The entire Target is C:\Program Files\rmcobol\runcobol.exe uermmngr.cob" However the path displayed when executing the security procedures is "C:\Program Files\Liant\RMCOBOLv11\runcobol.exe" Aero.cob.*	*v.2: 2.8 This documentation shall provide all information necessary for system use by all personnel who support pre-election and election preparation, polling place activities and central counting activities, as applicable, with regard to all system functions and operations identified in Section 2.3...*	***DJZ 5-11-09** - Changed the text in Part 2, Section 7, number 5. In the Target field the path change Aero.cob to uermmngr.cob. The entire path should read to "C\Program Files\LIANT\RMCOBOLv11\runcobol.exe" uermmngr.cob.*	*5/14/09 KS - Accept Verified in EDM SOP, dated 5/11/09, Ch. 7, Step 5 states the correct path as stated in vendor response.*
129	*4/29/09*	*J. Garc*	*Functional*	*Closed*	*M650 v.2.2.1.0*	*The M650 displays an incorrect error message when a non precinct level*	*V1: 2.2.5.2.2.b All voting systems shall meet the*	***SLM 2009.05.12** - ES&S is waiting to respond until the regression test*	*Accept 05/21/09 JG Corrected party*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		ia	Defect			contest is linked to a district type that is specific to precinct level races. When scanning a ballot incorrectly linked to a district type that is specific to precinct level races the M650 displays an error "ERROR: Low Contrast, Channel D!".	following requirements for error messages: b. All error messages requiring intervention by an operator or precinct official shall be displayed or printed unambiguously in easily understood language text, or by means of other suitable visual indicators;	is recoding using the correct steps.	preference and adjusted ballot layout to reflect correction,. Following these modifications the errors could not be recreated.
130	5/1/09	K. Wilson	Functional Defect	Closed	EDM Security (election folder)	External copy and replace access to critical election folders is not being controlled or detected. Accessing folder Unity\EDM\VOL8S2 as a non-admin (DefineUser) the tester copied the entire folder to a USB for external analysis and modification. Files in the folder have extensions dbf, mdx. Using a demo version of DBFManager the Candidate.dbf file was opened and the names of CANDIDATE 1 and CANDIDATE 2 were swapped. Verified that neither the Windows or Audit Manager logged activity to copy these files to a USB or restore modified files . (Note: The purpose of the test was to identify if the file manipulation is controlled or detected at the point of manipulation and by whom. This type of change would ultimately be expected to be detected in pre-election logic and accuracy testing.)	v1:2.2.1.a To ensure security , all systems shall: provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability	***MM 2009.05.12*** - Windows Event Viewer will log individual system user access and specified user events to the C:Unity directory and sub directories. To configure Windows Event Viewer refer to: Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) for steps to enable intended logging.	6/6/2009 JG Accept Verified the logging of activities in the Windows event log. See Discrepancies 138 - 140 for greater system hardening depth
131	5/1/09	sjakileti	Security testing	Closed	M650 - Security (installing an election)	A modified election can be installed on the M650 without detection. Before loading the election definition on the M650 the tester modified the election definition by: - replacing 0007 to 0999 in .PRF(Precinct finder file) file; and - replacing 0010-->9999(ballot counter -Totals) in RPT file. The modified election definition was accepted by the M650 . It was confirmed by source code review that there is no CRC validation for the election definition (.RPT,.PRE,.OFC)	v1: 2.2.1a To ensure system security, all systems shall provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability. V1: 2.2.2.1.d To ensure vote accuracy, all systems shall included control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy.	SLM 2009.05.12 - The PRF file IS NOT used by the M650. It is only put on the zip disk to have it available when results are uploaded into ERM. ERM is the only application that uses it. Therefore, any edits would be totally ignored. In the System Security Specification, Chapter 5 referencing Optical Scan Security, it covers in great detail the tasks and procedures that a local jurisdiction must go through to secure their central count location. In conjunction with this, the user will also conduct the Final Readiness Checks of the Model 650 before Election Day. These steps are covered in the Model	Accept 5/26/2009 SJ : Verified when powered on the M650 readiness report included check election options(election definition files are included with time stamp). With this it is possible to detect the modification

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								650 Systems Operations Procedure, Chapter 5. In the Machine Readiness Report generated after power up on the Model 650, it logs under the check election, options the files and the date and times they are created or modified. It is part of the steps listed in the SOP for the jurisdiction to verify that these dates and times match when the election definition was created.	
132	5/1/09	Sjakileti	Functional Defect	Closed	M650 Security v. 2.2.1.0 (reporting election results)	Modified M650 election results can be loaded into ERM without detection. After scanning 5 ballots saved results to the zip disk. Made some modification on some of the files using HEX editor. 1. In the .EC file replaced PRECINCT by ppppppp, this modified results loaded to ERM. No CRC or checksum validation errors occurred. 2. In the .log file replaced some bytes with zeros ,this modified results loaded to ERM. No validation errors occurred. 3. In the .pr file replaced 0001.. by 999999,this modified results loaded to ERM. No validation error occurred. ERM loads the modified results. 1. 06042009 SJ Accepted 2.06042009 SJ Accepted 3. Rejected 06042009 SJ: Tabulated totals are presented in the .pr file. By using Hex editor modified totals in one precinct by replacing 01 with 02 ,uploaded modified totals into ERM. There is no error detection. Procedures to secure the central count location do not ensure the ultimate accuracy of the vote totals. 6/12/09 CEC Rejected The system does not incorporate the error detection functionality required in the VSS. 6/19/09 EAC Response: The discrepancy needs to be resolved. In	v1: 2.2.1a To ensure system security, all systems shall provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability. V1: 2.2.2.1.d To ensure vote accuracy, all systems shall included control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy.	**SLM 2009.05.12** - The .ec file does not contain any results. It is an initialization file created by the M650 from the EL80 (election definition) files that is used by the application for tabulation and reporting. The edits which were made have no affect on results processing. If they did, it would result in an ERM error. Although the log file must be present, ERM does not use the log file entries as part of results processing. Edits to it do not affect uploading of results. If the edit was made to the PR file in the field that ERM uses, it would have triggered a data validation error since a data consistency issue would have been detected. In the System Security Specification, Chapter 5 referencing Optical Scan Security, it covers in great detail the tasks and procedures that a local jurisdiction must go through to secure their central count location. **SMP 2009.6.9 -** ES&S takes security very seriously and our systems are designed to operate in a secure and reliable manner. ERM has numerous measures built in to the application to verify counts and detect when data may have been altered. Some examples are:	6/22/09 CEC Accept Accepted based upon the EAC's response "#132 - The EAC reviewed the discrepancy decision made by iBeta as well as ES&S's explanation regarding the discrepancy. The EAC applauds the VSTL for its diligence in citing this discrepancy and encourages continued rigor in the testing of the system. However, the requirements cited are not sufficiently clear to sustain the discrepancy. The EAC again found little merit in many of ES&S's arguments regarding procedural safeguards as a means to meet the standard cited. However, after discussion with its technical reviewers the EAC believes that the system as currently designed

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						reviewing this discrepancy it was noted that this discrepancy also appears to be non-compliant with VSS V1:2.2.2.1e.		• *ERM and M650 counter mismatch* • *Contest votes exceed ballots cast* • *Maximum value of the counters allowed in ERM have been exceeded* • *Precinct not on UERM file – aborting* • *Too many local candidates – aborting* • *.PR file not as expected – aborting (precinct being updated not expected current precinct)* • *.PR file has not 'OFC' – aborting* • *Open / Read error messages* *The M650 is a central count scanner designed to be located in a physically-controlled secure area accessible only by authorized personnel. ES&S recommends all ZIP disks also be locked in a secure and separate area and monitored for check-in and check-out. In addition, the entire area should be monitored to ensure it is not compromised. When used in conjunction with the procedures outlined in the ES&S System Security Specification, the risk level for an unauthorized person with unauthorized access to modify precise portions of the .PR data on a ZIP disk, that would go unnoticed by an election administrator and undetected by ERM is in the lowest category when determining total exposure. Most critical data is stored in binary formats making it extremely difficult for an unauthorized user to alter the file in such a way that would affect the vote totals. There is also significant portions of the .PR file that is not read by ERM and would have no affect if it were to be altered.*	*meets the standard as it is currently written. Therefore, this discrepancy can be resolved. "* *Rejected 6/12/09 CEC* *Rejected 06042009 SJ*
133	*5/5/09*	*K. Swift*	*Document Defect*	*Closed*	*EDM SOP, Ver. Rel. 7.8.1.0*	*The document does not clearly identify steps to set up a party selection contest for Pick A Party open primary.*	*v.2: 2.8.5.a The vendor shall provide documentation of system operating procedures that meets the following*	***MDN 2009.5.12** - Updated EDM SOP Chapter 50, page 339, "Pick a Party" step 1 to specify that a*	*6/1/09 CEC Accept Verified EDM SOP dated 5/26/09 Ch 35*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					4/3/09 Ch. 35: Straight Party Ch. 25, 30, 32 (Master Office file)	The document does not explain that a Party Preference contest needs to be set up as a straight party contest in a Pick a Party open primary. Nor does it explain the difference in function. The chapters regarding the Master Office File, are unclear as to how or where to define the Party Preference race. 5/15/09 KS - Reject Ch. 35 has not been updated to clarify that a selection in the Party Preference contest does not always mean that linked contests will automatically get a vote for candidates from the selected party in all of the following contests on the ballot.	requirements: a. Provides a detailed description of procedures required to initiate, control, and verify proper system operation;	straight party contest must be included in a pick-a-party primary election. **TMT 5.26.09 -** Chapter 14, Offices Preference Tab, under the last bullet regarding straight party, AND Chapter 35 in the introduction added this note: "On an open party ballot, the Party Preference race is formatted as a Straight Party contest. Selections in this contest only declare your party; they do not automatically select the corresponding candidates. You will still need to select ballot options on your ballot."	address formatting of Party Preference as a Straight Party Contest. 5/15/09 KS Accept Verified EDM SOP, dated 5/11/09 contains the added sentence in Ch. 50, pg. 339 that explains to use the Straight Party option to set the Party Preference contest, KS, 5/13/09 Reject
134	5/3/09	K. Swift	Document Defect	Closed	EDM SOP, Ver. Rel. 7.8.1.0 4/3/09 Ch. 39 Text/Referendum	Ch. 39 states that 2 text files can be created (one for English & one for Spanish), however, ESSIM does not accept 2 text files. ESSIM only accepts a single file containing English and Spanish text.	v.2: 2.8.5.a The vendor shall provide documentation of system operating procedures that meets the following requirements: a. Provides a detailed description of procedures required to initiate, control, and verify proper system operation;	**MM 2009.5.12** - This is incorrect statement, ESSIM only uses the test file that is created or imported on the default question/text tab. If you are coding a multi lingual election you would create a txt file with both an English and Spanish translation, so both languages appear on the ballot. An English only text files should be created from the English tab, and a Spanish only translation created from the Spanish tab. ESSIM doesn't need the English only or Spanish only .txt file, but the VAT (&iVo)will import them to display the voter selected language.	Accept 5/22/09 J. Garcia The issue was incorrectly reported due to misinterpretation of the application and documentation by the test staff.
135	5/7/09	C Coggins	Functional Defect	Closed	DS200 - Modem Results functions	Simply removing the modem from the DS200 does not provide complete access control to prevent modem usage in Unity 3.2.0.0 ES&S excluded modeming of results from Unity 3.2.0.0 supported functionality by removing the modem. The active modem results button on the DS200 permits a user to access the code to modem results functions. It is understood that if a system does not have a modem the function will error and not be completed. However there is nothing within the Unity 3.2.0.0 system that would prevent a	v.1: 6.5.1 Voting system that use telecommunications to communicate between system components and locations are subject to the same security requirements governing access to any other system hardware, software and data function. V.1: 2.2.1.b Te ensure security, all systems shall: provide system functions that are executable only in the intended manner and order , and only under the intended conditions.	**SMP 2009.5.12** - ES&S believes we are in full compliance with V.1: 6.5.1 and V.1: 2.2.1.b. ES&S challenges iBeta's opinion that the absence of an internal modem does not provide adequate control to prevent the usage of a modem. The absence of the modem entirely prevents any possibility of external telecommunications from the DS200 precinct scanner and is the ultimate depth of defense against misuse of the system. The intended manner in which Unity 3.2.0.0 and its associated components is to be certified and	Accept 6/5/09 CEC EAC Response: 1. The EAC will note the specifics of this issue in our Scope of Certification Document issued and posted on our web site once 3.2 has been certified. The notation will make it clear that ANY use of a modem with the Unity 3.2 configuration as tested and certified

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						jurisdiction from installing a modem and modifying the settings of Unity to activate network connections for functionality that was purposely excluded from certification. While it is understood that such an action invalidates the EAC certification permitting access to the functionality to remain active provides insufficient depth of defense. *5/15/09 - In view of the fact that it is the EAC's certification that is being defended, iBeta is not the appropriate judge of the depth to which access to this functionality need be protected. We therefore recommend that under the circumstances outlined in ES&S' response this issue be submitted to the EAC for "guidance on how to properly evaluate conformance" to v.1: 6.5.1 and 2.2.1.b (EAC Voting System Testing and Certification Program Manual v.1 section 9.1) .*		*used once deployed is to NOT support telecommunications in any manner. These are the intended conditions in which the system is to be used and the absence of the necessary components guarantees the system cannot be used in a manner other than the certified configuration. Telecommunications is clearly identified as a non-supported function of this certification as is evidence by the absence of the most essential components to support telecommunication from a polling site location, the ES&S Data Acquisition Manager ("DAM") and internal modems from all DS200 precinct scanners. Without these components, we ensure the system is only used in its intended manner and under these intended conditions.* *The active Modem Results button displayed during poll closing is accompanied with layered edit protection informing the user that external modem communications is not available.* *Telecommunications from the polling site will be a supported function in the immediate subsequent EAC certification of Unity 4.0.0.0.*	*by the EAC will immediately invalidate the certification.* *2. ES&S will issue this same notification in a special memo to be distributed to every jurisdiction retrofitted, or sold as new, the Unity 3.2 system.* *3. ES&S will provide the EAC, on a continuing basis, an updated list of all jurisdictions using the EAC certified Unity 3.2 voting system.* *4. The EAC will perform random spot checks of jurisdictions using this system to verify that these requirements are being followed.*
136	*5/7/09*	*Steph & Kelly*	*Functional Defect*	*Closed*	*EDM v. 7.8.0.0, Election/Statistical Counters (Regress TC)*	*An error was displayed when attempting to deselect Party by District Total statistical counters.* *Selected counters in the Party by District Totals tabs then Generated the Counters. Attempted to remove the selected Party by District totals counters and a Microsoft error appeared, "EDM has encountered a problem and needs to close. We are sorry for the inconvenience", and application closed. The application will not permit the user to edit this selection.*	*v.1: 2.3.1.2 b* *Ballot formatting is the process by which election officials or their designees use election databases…. All systems shall provide a capability for: rapid and error-free definition of elections and their associated ballot layouts.*	***MAM 2009.5.26** EDM encountered an error and closed because the parties by district totals counters were not set up correctly (missing .DST file). Instruction for setting up a .DST file have been added to the ES&S Election Data Manager SOP Manual, refer to Part 10: Appendix, Chapter 56 Setting up a .DST file.* ***SLM 2009.06.15 -** This is not supported in Unity 3.2.0.0. This will be tested during Unity 4.0.0.0.*	*Accept 06/19/2009 JG* *Out of scope of Unity 3.2.0.0 Issue is being moved to Unity 4.0.0.0 discrepancy #5.*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
137	5/7/09	J. Garcia	Functional Defect	Closed	M650 2.2.1.0	The M650 displays an incorrect total number of ballots saved prior to selecting the Save button. After scanning a batch of 42 ballots the M650 displayed 33 ballots saved. Once the Save button was selected the number changed to 34. The test was zeroed out and the same batch was scanned again. The display showed 21 ballots saved until the Save button was selected. Once the Save button saw selected the number changed to 34. The number of ballots expected to be counted was 34 as all blank ballots were to be detected and pulled out.	V1: 2.2.9b For all voting systems, each device that tabulates ballots shall provide a counter that: records the number of ballots cast during a particular test cycle or election.	***SLM 2009.05.12*** - ES&S is waiting to respond until the regression test is recoding using the correct steps.	Accept 05/21/09 JG Corrected party preference and adjusted ballot layout to reflect correction,. Following these modifications the errors could not be recreated.
138	5/8/09	K. Wilson	Security testing	Closed	ERM - 2.2.1.a RSN database file	Modification of the election results file was not logged. Using test database VOL10S1. Logged in as ResultUser (member of ElectResult), results were imported from DS200 with ballots from precinct 203 candidates 21-24 were voted 8, 7, 10 & 5 respectively . The results RSN database file was copied. The file was moved to another PC, modified swapping the votes for candidates 21 & 22 and 23 & 24. (Only the 4 fields had to be modified). The changed file was loaded into ERM. As sysadmin, the Security Windows events results were reviewed. ResultUser was not prohibited from accessing the file and there was no log record of access to the file by ResultUser . (File: 20090508-erm-files.rtf and associated files) 6/6/2009 JG Reject The Hardening Procedures for the Election Management System PC (Chapter 2, steps6) states to "assign all access rights, except full for ElectAdmin, ElectDefine, and ElectResult. When assigning ElectDefine and ElectResult to all access except full the users have permission to modify, Read & Execute, and a list folder contents. This allows the modification of the files.	v.1: 2.2.1.a Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability. v.1:2.2.5.3 ... operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object.	***MM 2009.05.26 -*** All users system users (ElectAdmin, ElectDefine, & ElectResults) are required to have access to C:electdata folder and all files in the root of c:elecdata. Windows Event Viewer will log individual system user access and specified user events (object access) to the C:elecdata directory and sub directories. To configure Windows Event Viewer refer to: Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) for steps to enable intended logging ***GLW 2009.06.09*** As stated in Chapter 2 of the Hardening Procedures, all PC's loaded with ES&S application software and used for the conduct of elections should be 'secured in an appropriate manner to assure controlled access and maintain chain of custody'. The actions taken by the user in this discrepancy required the use of a 'rogue' PC with the ES&S ERM software application installed and access to an exact and complete copy of the ERM results database for this specific election. A properly Windows credentialed user, as defined in the Hardening Procedures, copied the	6/18/2009 JG Accept Note: Testing utilized a binary text editor and not a secondary version of ERM. Although the specific modification of the file is not prevented or recorded the Window Event Log does detect access to the Electdata folder. Based upon the system architecture this is the extent to which detection is available. 6/6/2009 JG Reject

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								election_name.RSN file from the primary ERM PC to the 'rogue' PC using native Windows functions. Uncontrolled physical access (see ES&S System Security Specification) to this ERM PC had to be obtained and knowledge of a Windows Administrator defined User ID and Password with Administrator assigned access rights to the \elecdata folder had to be known. Using the rogue version of ERM on the 'rogue' PC, candidate totals were adjusted using the Manual Entry Update procedure. The election_name.RSN file was then copied from the 'rogue' PC to the primary ERM PC. Since the changes made to election_name.RSN file were performed on a 'rogue' PC with an installed rogue version of ERM, the audit log records documenting these changes were created in the ERM System Log on the 'rogue' PC. However, all accesses to the \elecdata folder and to the election_name.RSN file are recorded on the primary ERM PC's Windows Event Viewer if the ES&S Hardening Procedures have been properly completed. A review of the ERM System Log on the primary ERM PC would not reflect any activity for the corresponding timeframe as the activity logged in the Windows Event Log thus substantiating that the accesses to the \elecdata folder and to the election_name.RSN file were performed outside of the system and would identify the Windows User ID. *Access to the \elecdata folder by the three ES&S recommended Windows User ID's is required because both the ElectDefine and ElectResult User must be able to*	

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								create and modify files in this folder. ElectAdmin is granted access to all folders. The \elecdata folder (and it's sub-folders) is the principle folder path used by both Hardware Programming Manager (HPM) and Election Reporting Manager (ERM). The election_name.EFC output file created from the initial election definition and ballot layout done in EDM and ESSIM is written to the \elecdata folder and is then read by HPM to build it's initial election_name.DAT file. This requires ElectDefine to have access to the \elecdata folder. Additionally, during the processing steps performed in HPM, additional files are created and updated in the \elecdata folder and its sub-folders. This too requires access to these folders by ElectDefine. The ElectResult User must have access to the \elecdata folder and it's sub-folders for access to the final election_name.DAT file from which the ERM results database is created (multiple output files) in the \elecdata folder. Further processing in ERM to accumulate and report election results creates many additional files in \elecdata and its sub-folders.	
139	*5/8/09*	*K. Wilson*	*Security testing*	*Closed*	*HPM-2.2.1.a CNTLFILE user identifiers*	*Access to the CNTLFILE is not logged.* *The CNTLFILE contains the obfuscated userids of persons allowed to access HPM. Any HPM user can access the file and change the user 3 letter names. None of the tested users (DefineUser, ResultUser, AdminUser or Administrator) were logged in any ESS program or in the Windows Event log. The test was to confirm if the file could be changed and if so, are changes were logged.* *6/6/2009 JG Reject The Hardening Procedures for the Election*	*v.1: 2.2.1.a Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.* *v.1:2.2.5.3 ... operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object.*	***MM 2009.05.26** - Windows Event Viewer will log individual system user access and specified user events (object access) to the C:elecdata directory and sub directories. To configure Windows Event Viewer refer to: Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) for steps to enable intended logging.* ***GLW 2009.06.09*** *As defined and documented in the ES&S Hardening Procedures, user*	*6/18/2009 JG Accept* *Although the specific modification of the file is not prevented or recorded the Window Event Log does detect access to the Electdata folder. Based upon the system architecture this is the extent to which detection is available.* *6/6/2009 JG Reject*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						Management System PC (Chapter 2, steps6) states to "assign all access rights, except full for ElectAdmin, ElectDefine, and ElectResult. When assigning ElectDefine and ElectResult to all access except full the users have permission to modify, Read & Execute, and a list folder contents. This allows the modification of the files.		*authentication and access control to all ES&S application software is done using the native Windows Administrative functions. A properly configured and hardened PC, as defined in the ES&S Hardening Procedures, provides user authentication and limits access for each define user to only the required and specified folders. A second level of identification (not authentication) optionally available in HPM allows the HPM System Administrator to invoke the requirement for each HPM user to enter a 3 character identifier each time HPM is executed. The purpose of this identifier is to record on the HPM System Log the changes made by each defined HPM user, not Windows User. The HPM System Log is only different in this case by the inclusion of the 3 character identifier tagged onto each log entry. The use of this additional identification of HPM users is not mandatory and does not change in any way the functions performed in HPM, other than the inclusion of each 3 character identification on the HPM System Log.* *The actions taken that yielded this discrepancy included Windows level access and manual manipulation to a Control File used by HPM to store the HPM System Administrator created 3 character HPM identifiers. Access to this specific file and to the \elecdata folder would have been recorded in the Windows Event Log and indicate the Windows User ID and respective timestamp. As explained in detail in the response to Discrepancy #138, all three ES&S recommended Windows User roles must have access to the \elecdata folder where this HPM Control File resides.*	

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
140	5/8/09	K. Wilson	Security testing	Closed	HPM - EFC import	An EFC file modified outside of ESSIM was successfully imported into HPM. The EFC file (the encrypted version of the IFC file) was randomly modified at location 00E3 replacing 0x89 with 0x81. The modified file was successfully imported into HPM. 6/6/2009 JG Reject The Hardening Procedures for the Election Management System PC (Chapter 2, steps6) states to "assign all access rights, except full for ElectAdmin, ElectDefine, and ElectResult. When assigning ElectDefine and ElectResult to all access except full the users have permission to modify, Read & Execute, and a list folder contents. This allows the modification of the files. 6/18/2009 JG Reject The test is to validate that the system can identify a change has occurred via a check-sum or some equivalent. In this case the system does not detect a change to the EFC (encrypted) file. Although it is understood access is required to write to the files and that the event log has knowledge that something has occurred in the folder where the EFC file lives, the system is not providing a check or equivalent error detection. 6/22/09 CEC & JG v.1: 2.2.2.1.d is only applicable to voting recording or counting equipment. iBeta went back to the original test to confirm if it was a valid test. The original test had the.efc file being randomly modified in order to ensure error recovery from an external condition that was not electrical or mechanical. The purpose of the .efc file is to decrypt the .ifc file. It was unclear if the random change was relevant to the operation of the file. Instead of a random modification the test was re-executed by first importing the file with no changes. The import was successful. We then changed the	v.1:2.2.3.c Recovery from any other external condition that causes equipment to become inoperable, provided that catastrophic electrical or mechanical damage due to external phenomena has not occurred. 6/18/09 The incorrect requirement was listed in this discrepancy . The correct requirement is v.1: 2.2.2.1.d To ensure vote accuracy, all systems shall included control logic and data processing methods incorporating parity and check-sums (or equivalent error detection and correction methods) to demonstrate that the system has been designed for accuracy.	***MM 2009.05.26***- Windows Event Viewer will log individual system user access and specified user events (obect access) to the C:elecdata directory and sub directories. To configure Windows Event Viewer refer to: Hardening Procedures for the Election Management System PC (Chapter 10, steps 1 to 7) for steps to enable intended logging. ***GLW 2009.06.09*** V1:2.2.3.c appears to deal with devices, equipment and data processing components that may experience non-catastrophic failure. It is presumed that manually manipulating the election_name.EFC file would simulate an equipment or device non-catastrophic failure and then attempting to import that file into HPM would result in some sort of data integrity issue. Given that the data stored in the election_name.EFC is mostly textual data, it is not unreasonable that the manipulation of one byte of data would go undetected during the import. The purpose of the election_name.EFC file is to provide to HPM all of the election definition data collected and entered in EDM and ESSIM. This data is used to build the HPM election_name.DAT file which is the main database of election definition in HPM. HPM provides a variety of election definition and ballot style reports and displays that allow the HPM user to validate and verify the results of the HPM import process. This verification step is required to ensure integrity of the election definition. Additionally, pre-election L&A testing of all end-to-end processes, from election definition to tabulation to results publication	6/22/09 CEC & JG Accept Reexamination of the test identified a flaw in the generation of corrupted test data. The test was rerun with appropriately corrupted test data and the expected error and recovery was observed. (6/18/2009 JG Reject 6/6/2009 JG Reject

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						file name leaving the extension .efc unchanged and importing the .ifc into HPM. The import was successful. We then restored the original .efc file name and deleted a couple of lines internal to the file. An error was generated and the .ifc import was unsuccessful.		*is performed to ensure the accuracy of the election.* *As explained in detail in the response to Discrepancy #138, all three ES&S recommended Windows User roles must have access to the \elecdata folder where the election_name.EFC file resides. If the ES&S application PC has been properly and completely hardened as documented in the ES&S Hardening Procedures, all accesses to this folder and files within this folder are tracked by the Windows Event Log, whether done within or outside of our applications.* *Uncontrolled physical access (see ES&S System Security Specification) to this PC had to be obtained and knowledge of a Windows Administrator defined User ID and Password with Administrator assigned access rights to the \elecdata folder had to be known.*	
141	*5/21/09*	*J. Garcia*	*Document Defect*	*Closed*	*EDM SOP, ver. rel. 7.8.1.0 5/11/09 Part 5 Ch. 37*	*The documentation does not state that District Total statistical counters are not supported by the DS200.* *The documentation does not state that Assign District Totals statistical counters are only supported for the M650 and not supported for the DS200.*	*v.2: 2.8.5.a The vendor shall provide documentation of system operating procedures that meets the following requirements: a. Provides a detailed description of procedures required to initiate, control, and verify proper system operation;*	***TMT - 5.26.09 - EDM SOP Chapter 37: Statistical counters, header Assign District totals.*** *Added the following Note: "Assign District Totals statistical counters are only supported for the M650 and not supported for the DS200."*	*6/8/09 Accept CEC 5/26/09 EDM SOP identifies non-support of Assign District Totals on the DS200*
142	*5/21/09*	*S. Eaton & K. Swift*	*Informational*	*Closed*	*M650 SOP Procedures Firm-ware v.2.2.1.0 Hardware v.1.1 & 1.2 1/17/08*	*Message expected did not display when ballot was read into M650 upside down.* *SOP indicates the M650 message "Ballot BACKWARDS or UPSIDE-DOWN!" will appear if the ballot is incorrectly inserted. The message received was "Check Timing Track Sensor"*		***20090602 BMJ -- U3200_SOP00_M650*** *Updated "Check Timing Track Sensor" error message in Chapter 8, Troubleshooting (current page 60) to indicate that this error message may also indicate an improperly inserted ballot.*	*6/8/09 Accept CEC Verified rev history 5/29/09 M650 SOP also identifies incorrect insertion (Note: The data on the title page indicates 1/30/09, does not match the revision history date)*
143	*5/22/09*	*K. Swift & J.*	*Informational*	*Closed*	*AIMS - VAT preview version*	*ES&S Configuration Management: Preview mode is displaying the incorrect version of AIMS.*		***slm 06.01.09 -*** *The Preview Mode is a stand alone program outside of AIMS. The Previewer will*	*6/12/09 Accept J Garcia Verified the correct*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
		Garcia			number in v.1.3.57	When entering Preview Mode, the GUI application is displaying a hardcoded AIMS version 1.3.2824. (Automark32.exe)		display the same version number as the VAT firmware. iBeta can review this with the Trusted Build version 1.3.2906.	version number is displayed in the preview mode.
144	5/27/09	J Garcia	Functional Defect	Closed	DS200 Ballot Scanning	A vote was not correctly recorded. On Precinct 1580 contest 19 BB19 candidates 5525 was hand marked using the ES&S specified ballot pen. The candidate was mark approximately 50 % of the oval target (squiggled with 50% ink and 50% white space). The mark read as an undervote and not a vote for candidate 5525. All other votes in the test case were correctly recorded. The DS200 report and report in ERM reflected the undervote. A second scan of the ballots was performed with ES&S observers present. A vote was read for candidate 5525. 6/12/09 CEC v.2:4.7.1.1 is an instruction to the labs for a test methodology that addresses v.1:3.2.1 . The VSS is unclear on what action is required when a system encounters a misread after reaching 1,577, 644 ballot positions. The standard does permit one misread in 3,126,404 ballot positions. However it is unclear if a system that has exceeded 1,577,644 ballot positions that does not have more than one misread must reach 3,126,404 ballot positions. With the EAC authorization for reuse we agree that inclusion of any testing by SysTest and iBeta is appropriate. Use of any other entities test results and in a form other than ballot positions is not addressed in the standard. We recommend referral to the EAC.	v.1: 2.2.2.1c To insure vote accuracy, all system shells: record each vote precisely as indicated by the voter and be able to produce an accurate report of all votes cast. v.1: 3.2.1 … the system shall achieve a target error rate of no more than one in 10, 000,000 ballot positions and a maximum acceptable error rate in the test process of one in 500,000 ballot positions.	***SMP 2009.6.10 -*** *ES&S has been unable to determine the cause for this vote not being detected in its original scan on the DS200. The DS200 was able to detect and count the vote in all subsequent scans in all ballot orientations. We were unable to obtain two key pieces of information that would have lead to an absolute conclusion: 1) a Digital Readings Report from the original scan, and 2) the image of the ballot scanned that contained the undetected mark. The DS200 firmware looks at an area slightly larger than the oval size for a pixel count to determine if a mark is present or not. It identifies the oval, then ignores the pixels that makes up the actual oval to determine if it "recognizes" a mark. The DS200 requires a minimum of 30 pixels (out of ~1200 max) in the voter response area to trigger the Intelligent Mark Recognition ("IMR") routine that positively determines whether a mark is valid or marginal. In all subsequent scans of the ballot, the DS200 consistently had readings in the 400-500 pixel count range triggering IMR and resulting in the vote being detected and counted. As a result of these subsequent tests and the absence of the Digital Readings Report and image, it is our conclusion the only possible cause for the IMR to not be called is that the pixel count was less than the minimum for that scan, which is 30. When the pixel count is less than 30, the DS200 sees it as an undervote or no vote, which was the result of the original test. When IMR is invoked, the*	6/19/09 CEC Accept EAC Response: The EAC believes that with the submission of field data from the systems use in Florida the discrepancy is resolved as supported by the total number of ballots run during the data accuracy testing and actual field experience. 6/12/09 CEC Undetermined

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								only results are either a vote counted or a marginal mark that is returned to the voter with notification. In this case, the system was set to reject ballots containing marginal marks. The oval was not fully and properly filled in. It was poorly marked, squiggled with approximately 50% white space space and 50% ink in most generally the upper half of the oval. This marking, undetected on this single pass of the ballot, potentially may have been undetected due to presence of foreign material (e.g., paper dust, paper fuzz, other) atop the mark during the scan. Such a foreign material may have obscured all or a sufficient portion of the mark. In such a rare case, the scanner could have concluded the oval as not sufficiently filled in to register a vote. The fact that it was an incomplete mark, squiggles in only the upper portion of the oval, IMR not being invoked, and all subsequent scans consistently reading in the 400-500 pixel count range well above the minimum pixel count necessary to invoke IMR, leads to this one conclusion. *VSS V2: 4.7.1.1 Data Accuracy, states "If the system reads at least 1,549,703 consecutive ballot positions correctly, it will be accepted." The DS200 system exceeded this requirement in this certification by successfully recognizing 1,577,644 ballot positions with 100% accuracy, fully satisfying the requirements for Accuracy as defined by the standard. 100% vote detection accuracy levels were met during the formal accuracy tests, and through all other functional, volume, and stress testing. The above described issue occurred*	

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								only in a single specific ballot for a single specific test conducted for volume testing designed to investigate the scanner's response to overload (not an defined accuracy test per se). In addition, the DS200 recorded 100% accuracy all votes cast in approximately 35 functional test elections performed by SysTest Labs and subsequent tests performed by iBeta. Since late 2007 and as recent as April 2009, the DS200 system has successfully passed four (4) Mass Ballot Tests performed by the Florida Division of Elections with 100% accuracy. Those tests consisted of accurate scanning of 39,778 ballots and 627,131 votes without a single accuracy error. Those test results are available on the Florida Division of Elections website at http://election.dos.state.fl.us/voting-systems/certified-voting-system.shtml *It is ES&S' belief there is sufficient evidence regarding the accuracy of the DS200 as evidenced by the successful completion of the Accuracy Testing, the accuracy of the Functional tests performed by both SysTest and iBeta, as well as the test results from four State of Florida certifications to constitute certification approval. ES&S' diagnostic research into this anomaly concludes there is sufficient evidence to determine the scanner's ability to detect a mark in this case was obscured by the presence of a foreign material coupled with an incomplete mark not in accordance with instructions that resulted in the scanner's pixel count being below the minimum necessary for it to qualify as either a valid mark or a marginal mark. We believe this lone incident is an example of one of the key issues*	

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								not addressed in the VSS and described in the Overview section entitled Issues Not Addressed by the Revised Standards, Human Error Rate vs. System Error Rate, stating "the term "error rate" applies to errors introduced by the system and not by a voter's actions, such as a failure to mark a ballot according to instructions" and "further research on human interface and usability issues is needed to enable the development of Standards for error rates that account for human error".	
145	*5/28/09*	*C Coggins*	*Functional Defect*	*Close*	*DS200 Ballot Images*	*DS200 ballot image files were corrupted* *While ballot images on a scanner are not required by the VSS, the ES&S TDP indicates that this is supported functionality. During execution of the Volume 9 Test Case the ballot image files were incomplete or corrupted for some of the polling places. A total of 10 ballots were run in each polling place. Incomplete files only included the ballot image of the first ballot scanned. Corrupted files included the 1st one or two ballot images and a corrupted file. Ten ballot image files were correctly generated for the majority of polling places.*	*v.1: 9.4.1.4 The FCA is an exhaustive verification of every system function and combination of functions cited in the vendor's documentation. Through use, the FCA verifies the accuracy and completeness of the system's TDP.*	***SMP 2009.6.4 -** ES&S has determined a faulty internal re-partition and reformat procedure performed only on SanDisk brand 2GB USB "thumb" drives to be the cause for the inconsistent storage of ballot image records and occasional file corruption. SanDisk USB devices may arrive from the factory with SanDisk's U3 (smart drive) software. In our effort to provide our customers with consistently partitioned and formatted drives, recently ES&S took steps to remove the U3 software when present, re-partition and reformat all drives in a consistent (but faulty) manner. The consequence of this faulty procedure has resulted in inconsistent and unreliable behavior of the 2GB drives when storing large amounts of data such as the ballot images. iBeta and ES&S have confirmed that no vote totals were impacted in testing performed and was isolated to the storing of the ballot images at poll close.* *ES&S has revised our procedure for preparing SanDisk drives and updated the appropriate HPM and DS200Systems Operations Procedures documentation.*	6/29/09 Accept CEC Verified using out-of-the-box 2GB USB's provided by ESS the sample of 10 polling places with 100 precincts stored the generated ballot images 6/24/09 CEC Pending completion of review and functional testing 6/16/09 - CEC iBeta cannot review this response as we are awaiting delivery of supporting documentation of the changes to the manufacturing procedures and the testing identified. Following the document review of the procedures and ESS testing , iBeta will execute a test with a sampling of the 2GB drives which follow the new manufacturing procedures.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								In addition, ES&S requests iBeta to consider the results of ES&S' internal quality assurance tests prior to determining the final status of this discrepancy. ES&S has provided the Test Case and results to validate our conclusion and remedy for resolving the issue. ***20090617 MDN** -- Updated the DS200 SOP -- Ch3 (current page 16) and Ch5 (current page 54) and the HPM SOP -- Ch2 (pg20), Ch26 (pg226) with the following verbiage:Warning: Ensure that DS200 USB memory devices are correctly partitioned and properly formatted to the FAT32 file system prior to loading devices with election configuration files*	
146	5/29/09	K. Wilson	Informational	Open	ESSIM	ESSIM continues to warn that audit is disabled but does not shut down. When the Audit Manager database is write locked (to simulate a failure of a critical process) ESSIM reports the error message "Unable to insert into database". ESSIM does not shut down but the user gets errors as they attempt different actions.	v.1:2.2.5.3 …The system shall also be configured to halt election software processes upon the termination of any critical system process *such as system audit) during the execution of election software.	**20090608 MDN --** ES&S recognizes this informational discrepancy and has flagged this condition for further examination and development in a future voting system.	06/24/09 CEC Informational issue remains open because ES&S' response does not provide a version release commitment. If a commitment was provided the issue would be closed and transferred to the new test effort.
147	*5/29/09*	*K. Wilson*	*Document Defect*	*Closed*	*ES&S System Functionality Description ERM Unity v. 3.2.0.0 11/20/08 v.1*	*Functionality dealing with the specific requirements of RFI 2008-07 are not completely documented* *Verified RFI 2008-07 is met but the documentation does not reflect how the system is handling the RFI requirements dealing with:* *a) memory is zeroed out prior to election counting* *b) if memory is not zeroed out then election official is warned* *c) production of a zero memory report to the audit log is associated with the above memory zeroization*	*2008-07 EAC Decision on Request for Interpretation (zero report): The certification testing of the components and system readiness by the VSTL shall include attempts to initiate an election with non-zero totals on counters or residual ballots, validating that the 'zero' report procedure will correctly identify and warn the election officials of the presence of any previously stored results which are in a form that may be deliberately or accidentally processed.*	***20090605 BBD -- U3200_SFD00_ERM:** Updated Section 1.2.6 (Verification at the Central Location) to contain information relevant to EAC VSS RFI 2008-07*	*6/8/09 Accept CEC Verified ERM SFD v.4 addresses functionality outlined in RFI 2008-07 a through c.*
148	*5/29/09*	*K. Wilson*	*Functional Defect*	*Closed*	*ERM - Password encryption algorithm*	*The key generation is not using industry best-practice random number generation.*	*v.1:6.2.2.e Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the*	***20090608 PMZ --** The ES&S EMS system relies on the Windows user system to provide user access authentication/control. All EMS*	*6/19/2009 Accept JG (Peer KW) Verified Windows authorized users*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						In order to assess the computer generated password keys iBeta reviewed the source code to verify that the key was generated using industry best-practice random number generation and that the key strength is equivalent to or greater than the strength of any encryption algorithm that utilizes it. Key generation did not reflect industry best practice (NIST). (Detail of the method is withheld for security purposes.) *6/18/09 CEC Reject The response does not clearly address how this is applicable to the computer generated password.*	*system and prevent unauthorized access, such as ... Computer-generated password keys* *v.2:6.4 The ITA shall design and perform test procedures that test the security capabilities of the voting system against the requirements defined in v. 1 sect.6. These procedures shall focus on the ability of the system to detect, prevent, log and recover from a broad range of security risks as identified in Section 6 and system capabilities and safeguards claimed by the vendor in its TDP that go beyond the risks and threats identified in section 6.*	*PCs must be configured as detailed in the system hardening procedures manual with access restricted both physically and through the Windows user controls so that only authorized users are defined to the system as valid users and so that each valid user has a unique user identifier and so that each has only the access required for his/her role. The ES&S EMS has additional user functional IDs that are used to provide a supplemental value to the log records; these IDs are never used for authentication.* ***SLM 2009.06.18** - User Passwords are managed through Windows, which does meet industry standards. While the ES&S EMS has additional user functional IDs, there is no requirement for them to be encrypted as they are not used for authentication.*	*access the system.* *6/18/09 CEC Reject*
149	*5/29/09*	*K. Wilson*	*Functional Defect*	*Closed*	*ERM - Blowfish algorithm*	*Algorithm code, which is not being called in the application, is present without self-test verification.* *In order to assess the access control for message encryption iBeta reviewed the source code for use of the blowfish algorithm to confirm it is self-tested and affirmed for usage at least once per program instantiation utilizing the test vectors in http://www.schneier.com/code/vectors.txt and that it prints the results of this self affirmation test to the audit log. iBeta found that although algorithm is never called from ERM the code is present and no self-test verification is performed prior to its usage if it is called from another module.*	*v.1:6.2.2.g Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access, such as ... Message Encryption.* *v.2:6.4 The ITA shall design and perform test procedures that test the security capabilities of the voting system against the requirements defined in v. 1 sect.6. These procedures shall focus on the ability of the system to detect, prevent, log and recover from a broad range of security risks as identified in Section 6 and system capabilities and safeguards claimed by the vendor in its TDP that go beyond the risks and threats identified in section 6.*	***GLW 2009.06.09:*** *The ES&S Hardening Procedures contains the recommended steps to harden and protect the PC's used to install and conduct elections using the ES&S application software within Unity 3.2. Proper execution and completion of these steps, in addition to physical security measures as specified in the ES&S System Security Specification, provide a secure computing environment, including system access control measures and authentication of all users as defined by the Windows System Administrator. No message encryption is used to enhance system access controls or prevent unauthorized access. No transmission of election results is included as part of this certification event and therefore no encryption*	*6/18/09 CEC Accept Further examination confirms that the code is applicable to the iVotronic. The iVotronic is out of scope of Unity 3.2.0.0. This discrepancy is moved to the Unity 4.0.0.0 test effort. (#4)*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								is required. *The ERM modules that use Blowfish encryption are invoked only if the iVotronic tabulator is being supported in the defined election. This Unity 3.2 EAC certification does not include qualification of the iVotronic voting system. The modules that contain Blowfish logic are: ESSCRPT1, ESSPEB.DLL, EVENTS.EXE, IMAGES.EXE, UNDRVOTE.EXE and VioDialog.EXE. These modules are included in this version of ERM to facilitate the addition of the iVotronic voting system at a later date. This encryption is used to encrypt all data written to the iVotronic tabulator media: PEB's & CF cards*	
150	*5/29/09*	*K. Wilson*	*Functional Defect*	*Closed*	*ERM - Audit log*	*Administrator modifications to the user ID and access privileges are not recorded in the audit log.* *User identification in ERM appears in the first column of the log file when it is enabled as per Ch 7 of "ERM System Operations Procedures Ver. Rel. 7.5.3.0 4/3/09" However there is no indication in the log that an administrator modified (enabled or disabled) the user ID system or modified the access privileges of the specific user ID. By enabling the user ID system a jurisdiction may limit user privileges within ERM and windows login provides the ability to detect the authenticated user ID accessing ERM. However there is no detection that user privileges were changed or a corresponding time in the ERM log file to trace the Windows authenticated user that made modifications to the ERM User ID system.*	*v.1:2.2.1.a Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.* *v.1:2.2.4.1.g Record and report the date and time of normal and abnormal events;*	***20090608 PMZ --** The ES&S EMS system relies on the Windows user system to provide user access authentication/control. All EMS PCs must be configured as detailed in the system hardening procedures manual with access restricted both physically and through the Windows user controls so that only authorized users are defined to the system as valid users and so that each valid user has a unique user identifier and so that each has only the access required for his/her role. The ES&S EMS has additional user functional IDs that are used to provide a supplemental value to the log records; these IDs are never used for authentication.*	*Accept 6/17/09 JG Logged in as an administrator and added a new USER ID . The event log displayed "Special privileges assigned to new logon", Modified the user privileges and the event log indicates an event had occur.*
151	*5/29/09*	*K. Wilson*	*Functional Defect*	*Closed*	*ERM Audit Log*	*The ERM audit log does not identify an import as failed.* *The tester replaced the DS200 import file with random data and attempted to import it into ERM. The file was refused. The entry in the audit log*	*v.1:2.2.4.1.g Record and report the date and time of normal and abnormal events;* *v.1: 2.2.5.2 The software shall activate the logging and reporting of audit data as described in the*	***GLW 2009.06.09*** *The steps taken to yield this discrepancy include the intentional introduction of a corrupt file into the ERM vote accumulation process used for the DS200. In this case, the results file that is*	*6/26/09 Accept CEC verified in ERM v. 7.5.4.0 correct reporting to audit log.* *6/24/09 CEC pending functional testing*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						indicated the start and stop of import with no precincts but did not identify that an error had occurred. *6/16/09 CEC Reject* *We agree that the system will not permit a corrupt file to be imported; the error is reported to the user; and that the audit log indicates file importation started and stopped without importing any precincts. However the error is not stored, nor is it logged and reported in the audit log as indicated in the requirement.* *6/19/09 EAC Response: The discrepancy needs to be resolved and the error message needs to be written into the audit log.*	*following sections. ...v.1: 2.2.5.2.2.aThey shall generate, store and report to the user all error messages as they occur*	*updated on the USB memory device resident in the DS200 as each ballot is processed on the DS200 was manually replaced, outside of the ES&S application software, with a file containing random data before it was attempted to be read and updated into ERM. The corrupt file was immediately identified, before any updates were attempted, by the low level DLL used by ERM to access and retrieve the contents from the DS200 USB memory device. In this case, the ESSM100.DLL performed its standard CRC check on the results data portion of the DS200 results file resident on the USB memory device and determined that the CRC value stored in the results block did not match the computed CRC from the respective data storage area. When this occurs, a 'Pack error: CRC error' is immediately displayed back to the ERM user screen with only an 'OK' button for response. When the ERM user selects the 'OK' button, processing on the currently inserted USB memory device immediately terminates and must be removed and replaced with the next successive DS200 USB memory device to be processed.* *This event is tracked by ERM using the Precincts Counted / Not Counted reports that are available within ERM. All precincts defined in the polling place for the DS200 USB memory device would reflect a 'not counted' status. Examination of the ERM System Log would also show the absence of any updates from this USB memory device as does the ERM user screen displayed during the DS200 results update process. It is also standard practice to manually audit ballots cast by*	*6/16/09 CEC Reject*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
								precinct, as determined from the election day poll books, back to Precinct Reports printed from ERM after the conclusion of election night processing to validate that all precincts report the correct total number of ballots cast. ***MDN 2009.06.24*** *- U3200_SFD00_ERM -- Added new system messages to Section 1.1.5.1 (current page 13). U3200_SDS00_ERM -- Added new system messages to Section 10.7, Appendix G, "ERM LOG File .ALG Layout" (beginning on current page 557). U3200_SOP00_ERM -- Added new system messages to Chapter 60, "Error Messages" (beginning on current page 578)* ***SLM 2009.06.24*** *- This issue will be addressed in the trusted build of ERM 7.5.4.0.*	
152	*5/29/09*	*K. Swift*	*Document Defect*	*Closed*	*M650 SOP, v. 2.2.1.0, 10/17/08 Ch. 10 Install Procedures*	*M650 installation procedures are incomplete.* *The installation procedure does not address:* *1) Install Model 650 Firmware with Green Light Sensors, pg. 109; between steps 6 & 7, removal of the zip disk.* *2) Install Model 650 Firmware with Red Light Sensors, pg. 109; how to verify the installation.*	*v.2: 2.6.4* *The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.*	***20090602 BMJ --*** *Pg. 109: 1) Install Model 650 Firmware with Green Light Sensors, pg. 109; between steps 6 & 7, removal of the zip disk. BMJ - Added step to process where the user is prompted to remove the disk.* *2) Install Model 650 Firmware with Red Light Sensors, pg. 109; how to verify the installation. BMJ - Added step to process prompting the user to power down and restart the unit. After restart, they are then to check the log printer to verify that the firmware version has been updated.*	*6/8/09 Accept CEC Verified M650 SOP 5/29/09 addresses removal of the zip disk and installation validation*
153	*5/29/09*	*K. Swift*	*Document Defect*	*Closed*	*AutoMARK VAT Firmware and Hardware Installation Instructions, v.1.3.157, Rev. History v. 2, 05/28/09*	*AutoMARK VAT installation procedures are incomplete.* *The installation procedure does not address:* *1) Section 5.4, step 3, turning the key to the 'Test' position.* *2) Section 5.4 Step 14 referencing Appendix B, regardless of errors, as the base printer calibrations need to be*	*v.2: 2.6.4* *The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software*	***20090602 MDN --*** *Updated the following:* *1) Section 5.4, step 3-Updated to instruct the user to turn the key to the TEST position.* *2) 5.4, Step 14 -- added verbiage to instruct the user to calibrate the printer per VSTL item 2* *3) Section 7.3, Added images for the A200 version of the ES&S*	*6/8/09 Accept CEC Verified v.VAT FW & HW Installation Instructions v.3 6/1/09 addresses items: 1, 2, 3, 4, 5, 6*

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						set and the 'Test Ballot' performed to fine tune the printer calibration settings. 3) Section 7.3 Programming the PEB steps and photos for the A100.; only the A200 is addressed. 4) Section 9.3 Programming Ultrasonic Detector Board (USD), pg. 36; Steps 8 & 22 are unnecessary as the board is not connected to the VAT 5) A typo in Section 9.3 Step 9 it does not read "...USB MON08 MULTILINK". 6) Section 9.3 Step 12, the user checking of "Ignore..." checkbox and not the 'User' checkbox. In this case Step 13 is unnecessary	installation for all system components.	AutoMARK 4) Section 9.3 Removed steps 8 and 22 5) Corrected identified typo in section 9.3. (now step 8) 6) Section 9.3 (now step 11) changed the instruction to direct the user to check the IGNORE box. Removed step 13.	
154	6/10/09	J Garcia	Document Defect	Closed	Hardening Procedures for the EMS PC May 5, 2009	The lock-down directory procedures are missing user rights. The ElectDefine user is not to have ERM application rights however in step 6 it does not state to deny ElectDefine ERM rights. The ElectResult user is not to have HPM application rights however in step 6 it does not state to deny ElectResult HPM rights.	V2: 2.6.4 The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.	**MM 2009.06.11** Added the following bullets to Chapter 2, step 6 (current page 7): h. HPM executable- Deny execution rights to ElectResults i. ERM executable- Deny execution rights to ElectDefine.	Accept 6/16/09 JG Chapter 2, page 7 step 6 indicates further lock down procedures of ERM and HPM.
155	6/10/09	sjakileti	Document Defect	Closed	Unity_BECI_3.2.0.0_2009.05.20	The Unity build procedures list incorrect COTS download information. The build procedures incorrect list the download locations. Corrected locations were provided by the ES&S development staff: 1) HPM COTS installs lists the location for msvcrt.dll as Microsoft Visual Studio 6.0 Service Pack 3 and not Microsoft Visual Studio 6.0 Service Pack 5 2.) HPM COTS installs lists the download location for Quartz.dll as Windows XP Service Pack1 and not Windows XP Security Patch 3) ERM install COTS lists the downloaded location for unzip.exe as http://sourceforge.net/project/showfiles.php?group_id=118012&package_id=128992&release_id=316209 and not ftp://tug.ctan. org/tex-archive/tools/zip/info-zip/WIN32/)	v.1: 8.5.a :The vendor shall establish such procedures and related conventions, providing a complete description of those procedures used to: a. Develop and maintain internally developed items; EAC Voting System Testing and Certification Program Manual, v.1.0 Sec 5.5.1. Demonstrate that the software was built as described in the Technical Data Package.	**20090617 ETS** -- Corrected the following entries in the table "HPM - Install" 1. For msvcrt.dll, corrected the entry under "URL for Download or source" from Microsoft Visual Studio 6.0 Service Pack 3 to Microsoft Visual Studio 6.0 Service Pack 5. 2. For Quartz.dll, corrected the entry under "URL for Download or source" from Microsoft Windows XP Service Pack 1 to Microsoft Windows XP Security Patch. Corrected the following entries in the table "ERM - Install" 1. For unzip.exe, corrected link under "File Location (Source)" from	Accept 6/19/2009 JG Verified the following: 1-Microsoft Visual Studio 6.0 Service Pack 5 (dated: 3/7/2000 - same size and version, not able to find one dated 3/23/1999) 2-Microsoft Windows XP Security Patch 3-ftp://tug.ctan.org/tex-archive/tools/zip/infozip/WIN32/ 4-ERM MSVRTD.DLL software v.5.0.0.7022.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
						ERM installs lists the version of MSVCRTD.DLL as 6.0.8447.0 and not 5.0.0.7.022		http://sourceforge.net/project/showfiles.php?group_id=118012&package_id=128992&release_id=316209 to ftp://tug.ctan.org/tex-archive/tools/zip/info-zip/WIN32/. 2. For MSVCRTD.DLL, corrected the entry under "Software Version" from 6.0.8447.0 to 5.0.0.7022	
156	6/10/09	K. Swift	Document Defect	Closed	DS200 Operating System Installing/Replacing Compact Flash Procedures, V. 1.0	The DS200 Installation procedures are inaccurate or incomplete. 1) Section 2.2, steps 5 states to remove rear cover however the cover need not be removed to access the OS with Firmware CF card. 2) Steps 8, & 26 states to remove the switch door however the door is not removable. 3) Section 2.3, step 3 does not detail the procedures to verify proper operation of the CF card. 4) There is no reference to a document or instructions to calibrate the DS200 touch screen. It is not clear if a USB must be inserted for the calibration. 5) There is no reference to a document or instructions to load the new firmware.	V2: 2.6.4 The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.	**MDN 2009.06.11** Ported instructions for firmware and OS upgrades to the DS200 System Maintenance Manual (U3200_SMM00_DS200) Chapters 7-9. Removed DS200 07 OS Instl-Repl CF PROC and DS200 08 Touch Screen CAL from the TDP submission. Procedures are duplicated in the System Maintenance Manual. (1) and (2) Section 2.2, now included as Chapter 7 of U3200_SMM00_DS200, updated to reflect current procedures for installing the system OS. Opening the case is not required. (3) Added a warning box instructing the user to execute an election test (instructions detailed in Chapter 5 of U3200_SOP00_DS200) to verify the system OS and firmware are functioning properly. (4) Instructions for calibrating the touch screen included under U3200_SMM00_DS200 Chapter 8. Misleading power button image that included an inserted USB stick within this procedure has been replaced with an image that does not include the inserted USB device. (5) Instructions for updating system firmware included as Chapter 9 of U3200_SMM00_DS200.	Accept 6/17/09 CEC Verified DS200 System Maintenance Manual 6/12/09 chapters 7, 8, & 9 contain identified content.
157	6/10/09	J Garcia	Document Defect	Closed	AIMS 3010 Election Officials Guide AQS-13-5001-208-R	The installation procedures identify an inaccurate step. The document states to locate the AIMS folder in C:/Program Files/AIMS and delete the folder. The folder is	V2: 2.6.4 The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware)	**MDN 2009.06.11** AIMS Election Officials Guide -- Updated Section 3.3, beginning on current page 32. Removed erroneous instruction for deleting AIMS files and folders from the	Accept 6/16/09 CEC Rev 16 page 32 identifies the AIMS folder is removed by the uninstall.

#	Date	Tester	Type	Status	Location	Description	Requirement	ESS Response	Validation
					Rev 14 4/06/09	*already removed when the executing the Add or Remove Programs step (application "AIMS for ES&S 1.3")*	*installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.*	*uninstall procedure.*	
158	*6/10/09*	*J Garcia*	*Document Defect*	*Closed*		*The Hardening document does not address restoring to a clean environment.* *Removing AIMS ESS DLL is required and in order to remove this item the user needs a MS windows installer clean up tool. Neither the AIMS ESS DLL nor not tool is documented.*	*V2: 2.6.4* *The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Volume I, Section 6.4 of the Standards. This information shall address software installation for all system components.*	***MDN 2009.06.12*** *Updated the AIMS Election Officials Guide Section 3.3, beginning on current page 32, with instructions for procuring and installing the Windows Installer Cleanup Utility and procedures for using this utility to uninstall AIMS ESS.DLL. Added a note to Section 3.2 of the ES&S System Hardening Procedures (current page 9) referencing this procedure as a required step when upgrading to a new version of AIMS.*	*Accept 6/16/09 JG Rev 16 Page 32 identifies the Windows Installer Clean up tool and how to use the tool.*
159	*6/12/09*	*J Garcia*	*Functional Defect*	*Closed*	*AIMS 1.3.157 Ballot Viewer/ Preview*	*Registry message displayed when attempting to Preview ballots.* *When attempting to preview ballots a message displays "No AutoMARK Application Path Key found in registry. Action cancelled." The ballots could not be previewed.*	*V1: 2.3.4.1.d* *All systems shall provide the capabilities to:* *d. Verify that all … software function correctly.*	***MDN 2009.06.12*** *Installing VAT Preview remedies the described condition. Updated the AIMS Election Officials Guide Section 3.2.1, beginning on current page 19 with instructions for installing VAT Preview.*	*Accept 6/16/09 JG Section 3.2.1 of the AIMS Election Officials Guide states to install the VAT Preview prior to the AIMS install and how to install VAT Preview.*
160	6/12/09	J Garcia	Informational	Open	AIMS build date displays incorrectly	Configuration Management: The build date is incorrectly displayed in AIMS and on the VAT , AIMS v.1.3.157 was built on 5/26/09. The build date in the AIMS Help Menu and the VAT "Display Software Version" appears as 3/30/09 instead of 5/26/09. The version number is correctly displayed.		**SMP 2009.6.15 -** The "build date" listed in the AIMS Help>About listing is a carry over from the previous certification days as a method of offering additional information for confirming the version of software/firmware running on they system. The "build date" was populated on the day the witness build of the release was performed. This field is no longer relevant under the EAC Program and not used in either the Trusted Build process nor the System Identification procedures. ES&S will agree to remove this reference in a future release of AIMS.	6/24/09 CEC Configuration management issues are identified as Informational because the VSS only requires identification of inconsistencies.

7.6 *Appendix F: Warrant of Accepting Change Control Responsibility*

A copy of the ES& S Unity 3.2.0.0 warrant accepting change control responsibility is attached as a separate document.

7.7 *Appendix G: Trusted Build & Validation Tools Unity 3.2.0.0 voting system*

The ES&S Unity 3.2.0.0 voting system is composed of the hardware, software, and documents identified in section 3 Voting System Identification.

IBeta uses a COTS hash program (Maresware) to obtain File Size, MD5 and SHA1 hashes during all witnessed and trusted builds. Both algorithms have been validated using the test data from the NIST NSRL website (http://www.nsrl.nist.gov/testdata/). This program is widely used in forensic analysis of systems and also used by some states to verify their voting software. The MD5 and SHA1 hashes are taken to be consistent with the currently distributed NSRL data files which contain the hash resulting from each of those two algorithms.

Listed below are the Source Code Applications reviewed by iBeta for the Final Trusted Builds and Witness of the ES&S Unity 3.2.0.0 voting system firmware and software. (NIST Handbook 150-22 4.2.3, 4.13.2, 4.13.4, 5.10.4 VSS vol. 1: 9.6.2.4)

7.7.1 *Witness of the Trusted Build of AIMSCRYPT v. 1.0.0.2*

Application/ Component	Version	Language	File Signature
AIMSCRYPT	1.0.0.2a	C/C++	AIMSCRYPTInputTB_05262009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Rhoda Fox
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	1. WinXPwithSP3-DellOptiplexGX520_INST_2009.03.31.pdf 2. AIMSCRYPT Build Environment Compile-Install Guide version 1.0 3. Visual vtudio_6.0_EntEdwithSP5_INST_2009.04.30.pdf
Equipment Used	DellOptipllexGX520
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Rhoda Fox
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Windows XP Professional v.2002 Service Pack 3
Build tool(s) and version(s)	Microsoft Visual C++ 6.0
3rd Party Libraries and Version	None
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	None
Additional file(s) loaded and version(s)	None
Record the disk image software version being used	Norton GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	ESS_AIMSCRYPT_PostCots_05262009.hash.txt
Record the filename of the build environment disk image –	ESS_AIMSCRYPT_PostCots_05262009.GHO
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	See above source code table
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti

Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	ESS_AIMSCRYPT_PreBuild_05262009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	ESS_AIMSCRYPT_PreBuild_05262009.GHO
Record the Final Build Version – Unique Identifier	AIMSCrypt1.0.0.2
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	5/26/2009 10.00am
Compiler and Version	See Build tools and versions
Application Name	AIMSCRYPT
Application Version Order	AIMSCrypt1.0.0.2
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Rhoda Fox
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	ESS_AIMSCRYPT_PostCots_05262009.hash.txt
Record file signature of the final build (5.6.3.1)	ESS_AIMSCRYPT_PostCots_05262009.GHO
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	CD: AutomarkESSCrypt TB05/26(ESSCrypt.dll is input to Automark Build)
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_AIMSCrypt_TBInstall05262009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard drive & backup on T8 final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard drive & backup on T8 final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
iBeta: Sridevi Jakileti 5/27/2009
ES&S Rhoda Fox 5/27/2009

7.7.2 *Witness of the Trusted Build AutoMARK PrinterEngineBoard1.7 (PEB)*

Application/ Component	Version	Language	File Signature
PrinterEngineBoard	1.70.0.1	C	ESS_AutoMarkPEB_Source_06092009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Rhoda Fox
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	AutoMARK PEB Firmware Compilation Instructions(rev 2 6/9/2009)
Equipment Used	DellOptipllexGX520
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	This build was started by restoring from the AutoMark_05222009 PostCots Image ESS_AutoMark_PostCots_05222009.GHO
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakilet
Witness attests to verifying that the source	Rhonda Fox

code being built is the source code provided by iBeta	
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Windows XP Professional Version 2002 Service Pack 2
Build tool(s) and version(s)	VAIO System Recovery DVD PCG-K23/PCG-K25/PCG-K27 Series Microsoft Embedded Visual C++ 4.0 Service Pack 4. Microsoft Visual Studio .NET 2003 Service Pack 2 Keil Software µVision2, C compiler Version 2.40 Texas Instruments Code Composer Studio. Version 2.0 Cosmic Compiler V 4.1H Borland C 4.02 Prog08sz Programmer for v 2.05 Atmel Flip v2.4.6 Atmel MCU ISP Software V1.0 Microsoft Access XP/2002 InstallShield 10.5 Microsoft Windows CE With Platform Builder Version 5.0 AutoIT 3.3.0.0
3rd Party Libraries and Version	ACCESSRT.MSI v2002,MSOHELP.exe 10.0.2609.0,Office1.cab v2002, OSP.MSI v2002,OSP1.cab v2002,FILES\SYSTEM\EXTRACT.exe v2002, FILES\SYSTEM\MLANG.DAT v2002,FILES\SYSTEM\MLANG.DLL 5.0.2919.6304,FILES\SYSTEM\MSXML.DLL 5.0.2919.6303, FILES\SYSTEM\T2EMBED.DLL,0.2.0.69,FILES\WINDOWS\HELP\OSP.HLP v2002,IE5\EN\ACTSETUP.cab v2002,IE5\EN\ADVAUTH.cab v2002, IE5\EN\AOLSUPP.cab v2002,IE5\EN\AXA.cab v2002,IE5\EN\AXA2.cab v2002,IE5\EN\AXA3.cab v2002,IE5\EN\BRANDING.cab v2002, IE5\EN\DCOM95.exe 4.71.1015.0,IE5\EN\DXDDEX.cab v2002, IE5\EN\DXMINI.cab v2002,IE5\EN\FONTCORE.cab v2002, IE5\EN\FONTSUP.cab v2002,IE5\EN\FPESETUP.cab v2002, IE5\EN\GSETUP95.cab v2002,IE5\EN\GSETUPNT.cab v2002, IE5\EN\HELPCONT.cab v2002,IE5\EN\HHUPD.cab v2002, IE5\EN\ICW.cab v2002,IE5\EN\ICWCON.cab v2002, IE5\EN\IE4MFC40.cab v2002,IE5\EN\IE4SHL95.cab v2002, IE5\EN\IE4SHLNT.cab v2002,IE5\EN\IE5COMP.exe 5.0.2919.6307 IE5\EN\IE5SETUP.exe 5.0.2919.6307,IE5\EN\IECIF.cab v2002, IE5\EN\IEDATA.cab v2002,IE5\EN\IEDATAJA.cab v2002, IE5\EN\IELPKAD.cab v2002,IE5\EN\IELPKAR.cab v2002, IE5\EN\IELPKIW.cab v2002,IE5\EN\IELPKJA.cab v2002, IE5\EN\IELPKKO.cab. v2002,IE5\EN\IELPKPE.cab v2002, IE5\EN\IELPKTH.cab v2002,IE5\EN\IELPKVI.cab v2002, IE5\EN\IELPKZHC.cab v2002,IE5\EN\IELPKZHT.cab v2002, IE5\EN\IENT_S1.cab v2002,IE5\EN\IENT_S2.cab v2002, IE5\EN\IENT_S3.cab v2002,IE5\EN\IENT_S4.cab v2002, IE5\EN\IENT_S5.cab v2002,IE5\EN\IESETUP.INI v2002, IE5\EN\IE_EXTRA.cab v2002,IE5\EN\IE_S1.cab v2002, IE5\EN\IE_S2.cab v2002,IE5\EN\IE_S3.cab v2002, IE5\EN\IE_S4.cab v2002,IE5\EN\JAAIME.cab v2002, IE5\EN\KOAIME.cab v2002,IE5\EN\MAILNEWS.cab v2002, IE5\EN\MDAC_IE5.cab v2002,IE5\EN\MOBILE95.cab v2002, IE5\EN\MOBILENT.cab v2002,IE5\EN\MPCDCS.cab v2002, IE5\EN\MPLAYER2.cab v2002,IE5\EN\MSN_AUTH.cab v2002, IE5\EN\NM30.cab v2002,IE5\EN\OAINST.exe 4.71.1015.0 IE5\EN\SCAIME.cab v2002,IE5\EN\SETUPNT.cab v2002, IE5\EN\SETUPW95.cab v2002,IE5\EN\SWDIR.cab v2002, IE5\EN\SWFLASH.cab v2002,IE5\EN\TCAIME.cab v2002, IE5\EN\TS95.cab v2002,IE5\EN\TSNT.cab v2002, IE5\EN\USP10.cab v2002,IE5\EN\VBSCRIPT.cab v2002, IE5\EN\VGX.cab v2002,IE5\EN\VMX86_01.cab v2002, IE5\EN\VMX86_02.cab v2002,IE5\EN\VRML2C.exe 4.71.1015.0 IE5\EN\WAB.cab v2002,IE5\EN\WEBFLDRS.cab v2002, IE5\EN\WPIE5X86.cab v2002,chs.syn 6.1.0.0 chsrom.DLL 6.1.0.0,eci.DLL 6.1.0.0,enu.syn 6.1.0.0 esm.syn 6.1.0.0,jpn.syn 6.1.0.0,jpnrom.DLL 6.1.0.0

	kor.syn 6.1.0.0,korrom.DLL 6.1.0.0,ARIALUNI.TTF,BATANG.TTF MSMINCHO.TTF,PMINGLIU.TTF,sqlxml.MSI c3.0 xblkld3.DLL 3.30.3457.0,Helper.exe,SqlRun.cab,,SqlRun01.MSI 1033dotnetfx.exe 1.1.4322.573 1033,dotnetfxSp1.exe 1.0.0.0,dotnetfxSp1.exe 1.0.871.2738 chs.syn v6.1.0.0,chsrom.DLL v6.1.0.0,eci.DLL v6.1.0.0, enu.syn v6.1.0.0,esm.syn v6.1.0.0,jpn.syn v6.1.0.0,jpnrom.DLL v6.1.0.0, kor.syn v6.1.0.0,korrom.DLL v6.1.0.0,chs.syn v6.1.0.0,chsrom.DLL v6.1.0.0, eci.DLL v6.1.0.0,enu.syn v6.1.0.0,esm.syn v6.1.0.0,FTD2XX.DLL v6.1.0.0, ftd2xx.inf v6.1.0.0,ftdi_d2xx.DLL v6.1.0.0,jpn.syn v6.1.0.0,jpnrom.DLL v6.1.0.0,kor.syn v6.1.0.0,korrom.DLL v6.1.0.0,Microsoft.WindowsCE.Forms.DLL v1.0.2268.0, MSCORLIB.DLL v1.0.2268.0,regflush.exe System.DATa.Common.DLL 1.0.2268.0,ICSharpCode.SharpZipLib.DLL 0.85.1.271,New Text Document.txt 0.85.1.271,SharpZipLib_0855_Bin[1].zip 0.85.1.271,cabwiz.ddf,Cabwiz.exe 3.1.0.9386,CFResGen.exe 1.0.4128.0, Makecab.exe
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	None
Additional file(s) loaded and version(s)	None
Record the disk image software version being used	Norton GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	Used the AutoMark PostCots image as Build environment ESS_AutoMark_PostCots_05222009.GHO
Record the filename of the build environment disk image –	Used the AutoMark PostCots image as Build environment ESS_AutoMark_PostCots_05222009.hash.txt
Verify (by signature) the build environment file signature (5.6.1.3)	OK
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	OK
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	ESS_AutoMarkPEB_PreBuild_06092009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	ESS_AutoMarkPEB_PreBuild_06092009.GHO
Record the Final Build Version – Unique Identifier	PrinterEngineBoard1.7(PEB)
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	05/21/2009 1.35pm
Compiler and Version	See build tools and versions
Application Name	AutoMark PrinterEngineBoard
Application Version Order	PrinterEngineBoard1.7(PEB)
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Rhonda Fox
Issue(s) and Resolution(s)	No issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	ES&S AutoMarkPEB TB 06092009 Hardware CD
Record file signature of the final build (5.6.3.1)	ESS_AutoMarkPEB_TBInstall06092009.hash.txt
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD

Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	DS200Ancillary install files are (pmb.hex, fw.iic) input to DS200 firmware build
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_DS200Ancillary_TBInstall05282009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
iBeta: Sridevi Jakileti 6/9/09
ES&S: Rhonda Fox 6/9/09

7.7.3 *Witness of the Trusted Build AutoMARK VAT1.3.2906 &AIMS1.3.157*

Application/ Component	Version	Language	File Signature
AM Code	1.0.0.1	VB.net	AutoMarkInputTB_05192009.hash.txt
Automark	1.3.2906	VB.net	AutoMarkInputTB_05192009.hash.txt
Automark32	1.3.2906	File	AutoMarkInputTB_05192009.hash.txt
AutomarkData	1.3.2906	C#	AutoMarkInputTB_05192009.hash.txt
AutomarkDataHelperLibrary	1.0.121	C++	AutoMarkInputTB_05192009.hash.txt
AutomarkService	1.0.4	C++	AutoMarkInputTB_05192009.hash.txt
AutomarkStartup	1.0.7	C++	AutoMarkInputTB_05192009.hash.txt
DiagnosticLogger	1.0.105	C++	AutoMarkInputTB_05192009.hash.txt
GetMarks	1.4.9	C++	AutoMarkInputTB_05192009.hash.txt
Makebin	1.1.0.0	C	AutoMarkInputTB_05192009.hash.txt
NonVolatileLibrary	1.0.116	C/C++	AutoMarkInputTB_05192009.hash.txt
OperationLogger	1.0.135	C++	AutoMarkInputTB_05192009.hash.txt
PrinterEngineBoard	65.1.3	C	AutoMarkInputTB_05192009.hash.txt
ScanDriver	1.542	C++	AutoMarkInputTB_05192009.hash.txt
Scanner	1.48	C, Assembly	AutoMarkInputTB_05192009.hash.txt
ScannerPrinterLibrary	1.8.37	C++	AutoMarkInputTB_05192009.hash.txt
SecurityLibrary	1.2.4	C/C++	AutoMarkInputTB_05192009.hash.txt
SwitchInterfaceBoard	1.8.37	C	AutoMarkInputTB_05192009.hash.txt
UltrasonicSheetDetector	8.0.1	C, Assembly	AutoMarkInputTB_05192009.hash.txt
AIMS			
AIMSESS DLL	1.0.1.0	C#	AutoMarkInputTB_05192009.hash.txt
AutomarkEncoder	1.0.105	C/C++	AutoMarkInputTB_05192009.hash.txt
MDB	1.3.157	VB	AutoMarkInputTB_05192009.hash.txt
SQL Server	1.3.054	SQL	AutoMarkInputTB_05192009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Rhoda Fox
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	AutoMARK VAT Software and Firmware Compilation Instructions.pdf Rev 16
Equipment Used	DellOptipllexGX520
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is	Sridevi Jakileti

isolated and controlled by iBeta	
Witness attests to verifying that the source code being built is the source code provided by iBeta	Rhoda Fox
Build Environment Operating System	Windows XP Professional Version 2002 Service Pack 2
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build tool(s) and version(s)	VAIO System Recovery DVD PCG-K23/PCG-K25/PCG-K27 Series Microsoft Embedded Visual C++ 4.0 Service Pack 4. Microsoft Visual Studio .NET 2003 Service Pack 2 Keil Software µVision2, C compiler Version 2.40 Texas Instruments Code Composer Studio. Version 2.0 Cosmic Compiler V 4.1H Borland C 4.02 Prog08sz Programmer for v 2.05 Atmel Flip v2.4.6 Atmel MCU ISP Software V1.0 Microsoft Access XP/2002 InstallShield 10.5 Microsoft Windows CE With Platform Builder Version 5.0
3rd Party Libraries and Version	ACCESSRT.MSI v2002,MSOHELP.exe 10.0.2609.0,Office1.cab v2002, OSP.MSI v2002,OSP1.cab v2002,FILES\SYSTEM\EXTRACT.exe v2002, FILES\SYSTEM\MLANG.DAT v2002,FILES\SYSTEM\MLANG.DLL 5.0.2919.6304,FILES\SYSTEM\MSXML.DLL 5.0.2919.6303, FILES\SYSTEM\T2EMBED.DLL,0.2.0.69,FILES\WINDOWS\HELP\OSP.HLP v2002,IE5\EN\ACTSETUP.cab v2002,IE5\EN\ADVAUTH.cab v2002, IE5\EN\AOLSUPP.cab v2002,IE5\EN\AXA.cab v2002,IE5\EN\AXA2.cab v2002,IE5\EN\AXA3.cab v2002,IE5\EN\BRANDING.cab v2002, IE5\EN\DCOM95.exe 4.71.1015.0,IE5\EN\DXDDEX.cab v2002, IE5\EN\DXMINI.cab v2002,IE5\EN\FONTCORE.cab v2002, IE5\EN\FONTSUP.cab v2002,IE5\EN\FPESETUP.cab v2002, IE5\EN\GSETUP95.cab v2002,IE5\EN\GSETUPNT.cab v2002, IE5\EN\HELPCONT.cab v2002,IE5\EN\HHUPD.cab v2002, IE5\EN\ICW.cab v2002,IE5\EN\ICWCON.cab v2002, IE5\EN\IE4MFC40.cab v2002,IE5\EN\IE4SHL95.cab v2002, IE5\EN\IE4SHLNT.cab v2002,IE5\EN\IE5COMP.exe 5.0.2919.6307 IE5\EN\IE5SETUP.exe 5.0.2919.6307,IE5\EN\IECIF.cab v2002, IE5\EN\IEDATA.cab v2002,IE5\EN\IEDATAJA.cab v2002, IE5\EN\IELPKAD.cab v2002,IE5\EN\IELPKAR.cab v2002, IE5\EN\IELPKIW.cab v2002,IE5\EN\IELPKJA.cab v2002, IE5\EN\IELPKKO.cab. v2002,IE5\EN\IELPKPE.cab v2002, IE5\EN\IELPKTH.cab v2002,IE5\EN\IELPKVI.cab v2002, IE5\EN\IELPKZHC.cab v2002,IE5\EN\IELPKZHT.cab v2002, IE5\EN\IENT_S1.cab v2002,IE5\EN\IENT_S2.cab v2002, IE5\EN\IENT_S3.cab v2002,IE5\EN\IENT_S4.cab v2002, IE5\EN\IENT_S5.cab v2002,IE5\EN\IESETUP.INI v2002, IE5\EN\IE_EXTRA.cab v2002,IE5\EN\IE_S1.cab v2002, IE5\EN\IE_S2.cab v2002,IE5\EN\IE_S3.cab v2002, IE5\EN\IE_S4.cab v2002,IE5\EN\JAAIME.cab v2002, IE5\EN\KOAIME.cab v2002,IE5\EN\MAILNEWS.cab v2002, IE5\EN\MDAC_IE5.cab v2002,IE5\EN\MOBILE95.cab v2002, IE5\EN\MOBILENT.cab v2002,IE5\EN\MPCDCS.cab v2002, IE5\EN\MPLAYER2.cab v2002,IE5\EN\MSN_AUTH.cab v2002, IE5\EN\NM30.cab v2002,IE5\EN\OAINST.exe 4.71.1015.0 IE5\EN\SCAIME.cab v2002,IE5\EN\SETUPNT.cab v2002, IE5\EN\SETUPW95.cab v2002,IE5\EN\SWDIR.cab v2002, IE5\EN\SWFLASH.cab v2002,IE5\EN\TCAIME.cab v2002,

	IE5\EN\TS95.cab v2002,IE5\EN\TSNT.cab v2002, IE5\EN\USP10.cab v2002,IE5\EN\VBSCRIPT.cab v2002, IE5\EN\VGX.cab v2002,IE5\EN\VMX86_01.cab v2002, IE5\EN\VMX86_02.cab v2002,IE5\EN\VRML2C.exe 4.71.1015.0 IE5\EN\WAB.cab v2002,IE5\EN\WEBFLDRS.cab v2002, IE5\EN\WPIE5X86.cab v2002,chs.syn 6.1.0.0 chsrom.DLL 6.1.0.0,eci.DLL 6.1.0.0,enu.syn 6.1.0.0 esm.syn 6.1.0.0,jpn.syn 6.1.0.0,jpnrom.DLL 6.1.0.0 kor.syn 6.1.0.0,korrom.DLL 6.1.0.0,ARIALUNI.TTF,BATANG.TTF MSMINCHO.TTF,PMINGLIU.TTF,sqlxml.MSI c3.0 xblkld3.DLL 3.30.3457.0,Helper.exe,SqlRun.cab,,SqlRun01.MSI 1033dotnetfx.exe 1.1.4322.573 1033,dotnetfxSp1.exe 1.0.0.0,dotnetfxSp1.exe 1.0.871.2738 chs.syn v6.1.0.0,chsrom.DLL v6.1.0.0,eci.DLL v6.1.0.0, enu.syn v6.1.0.0,esm.syn v6.1.0.0,jpn.syn v6.1.0.0,jpnrom.DLL v6.1.0.0, kor.syn v6.1.0.0,korrom.DLL v6.1.0.0,chs.syn v6.1.0.0,chsrom.DLL v6.1.0.0, eci.DLL v6.1.0.0,enu.syn v6.1.0.0,esm.syn v6.1.0.0,FTD2XX.DLL v6.1.0.0, ftd2xx.inf v6.1.0.0,ftdi_d2xx.DLL v6.1.0.0,jpn.syn v6.1.0.0,jpnrom.DLL v6.1.0.0,kor.syn v6.1.0.0,korrom.DLL v6.1.0.0,Microsoft.WindowsCE.Forms.DLL v1.0.2268.0, MSCORLIB.DLL v1.0.2268.0,regflush.exe System.DATa.Common.DLL 1.0.2268.0,ICSharpCode.SharpZipLib.DLL 0.85.1.271,New Text Document.txt 0.85.1.271,SharpZipLib_0855_Bin[1].zip 0.85.1.271,cabwiz.ddf,Cabwiz.exe 3.1.0.9386,CFResGen.exe 1.0.4128.0, Makecab.exe, unzip.exe 5.52, WinCEPB50-060430-2006M04-Armv4I.msi V5.0,WinCEPB50- 060831-2006M08-Armv4I.msi V5.0,WinCEPB50-060228- 2006M02-Armv4I.msi V5.0,WinCEPB50-060131-2006M01- Armv4I.msi V5.0,WinCEPB50-060731-2006M07-Armv4I.msi V5.0,WinCEPB50-060630-2006M06-Armv4I.msi V5.0,WinCEPB50-060331-2006M03-Armv4I.msi V5.0, WinCEPB50-060531-2006M05-Armv4I.msi V5.0,WinCEPB50- 041231-Product-Update-Rollup-Armv4I.msi V5.0,WinCEPB50- 051231-Product-Update-Rollup-Armv4I.msi V5.0,autoit-v3- setup.exe 3.3.0.0, ADS_XSCALE_4_2_SDK.msi, DATA.TAG v2.4.6,data1.cab v2.4.6, lang.dat v2.4.6,layout.bin v2.4.6, os.dat v2.4.6,setup.bmp v2.4.6, SETUP.EXE v2.4.6,SETUP.INI v2.4.6, setup.ins v2.4.6,setup.lid v2.4.6, _INST32I.EX_ v2.4.6,_ISDEL.EXE v2.4.6, _setup.dll v2.4.6,_sys1.cab v2.4.6, _user1.cab v2.4.6,evc4sp4.exe v4 PL2303.CAT,SER2PL.INF,SER2PL.SYS DISK.INI v7.09,c51util.dll v7.09,TX51TNY.LIB v7.09,CONF_TNY.A51 v7.09,DBG_TINY.DSW v7.09, GENRTX.BAT v7.09,READ.ME2 v7.09, RIGHT.A51 v7.09,RTX51TNY.A51 v7.09, VERS.A51 v7.09
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	None
Additional file(s) loaded and version(s)	None
Record the disk image software version being used	Norton GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	ESS_AutoMark_PostCots_05222009.hash.txt
Record the filename of the build environment disk image –	ESS_AutoMark_PostCots_05222009.GHO

Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	ESS_AutoMark_PreBuild_05272009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	ESS_AutoMark_PreBuild_05272009.hash.txt
Record the Final Build Version – Unique Identifier	AIMS1.3.157 VAT1.3.2906
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	05/21/2009 1.35pm
Compiler and Version	See build tools and versions
Application Name	AIMS VAT
Application Version Order	AIMS1.3.157 VAT1.3.2906
Obtain Names and Signatures of all persons present during build (record below)	OK
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	ESS_AutoMark_PostBuild_05272009.GHO
Record file signature of the final build (5.6.3.1)	ESS_AutoMark_PostBuild_05272009.hash.txt
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD and CF cards on VAT
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	VAT full 1.3.2906(CF card for VAT machine)05/27/2009 VAT upgrade 1.3.2906(CF card for VAT machine) 05/27/2009 CD:ESS VAT Hardware 1.3.2906 TB05/27/2009 CD:ES&S AIMS & AIMS preview1.3.157 and 1.3.2906 TB 05/27/2009 AIMS_TBINSTALLS05212009.hash.txt
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_AutoMark_PostBuild_05272009.GHO
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build and post-build archive disks (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	According to the documentation stating CD labeled with ADA Applications and Files(Need to change the documentation), but we used in the Build was Trusted COTS 1 CD From Trusted COTS1 CD copied the unzip.exe to C:\. This is not documented in a right place.

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
iBeta: Sridevi Jakileti 5/27/2009
ES&S: Rhoda Fox 5/27/2009

7.7.4 *Witness of the Trusted Build DS200 Ancillary Devices (PowermanagementMsp430 1.2.0.1 &Scanner C8051 2.11.0.1)*

Application/ Component	Version	Language	File Signature
Power Management_MSP430	1.2.0.1a	C	DS200AncillaryInputTB_05282009.hash.txt
Scanner_C8051	2.11.0.1a	C	DS200AncillaryInputTB_05282009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	WinXPwithSP3-DellOptiplexGX520_INST_2009.03.31.pdf IAREmbeddedWorkbench3.40_INST_2009.04.20.pdf KeiluVision3DevelopmentTools4.2007_INST_2009.04.20.pdf CypressEZ USBReferenceDesignKit2.31_INST_2009.04.20.pdf DS200AncillaryDevices_BECI_3.2.0.0_2009.05.05.pdf
Equipment Used	DellOptipllexGX520
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakilet
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Windows XP Professional Version 2002 Service Pack 3
Build tool(s) and version(s)	Keil µVision3 Development Tools Cypress CY4611 EZ-USB FX2 Reference Design Kit IAR Embedded Workbench EW430
3rd Party Libraries and Version	None
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	None
Additional file(s) loaded and version(s)	Build scripts(unzip.exe, TB-3_CreateExecutables.bat, TB-2_LoadSourceCode.bat, TB-0_CheckInputMedium.bat, ESSSourceFileList.txt, ESSScriptsFileList.txt, BuildScripts.ini, TB-2_LSC-2_ScannerBoard.bat, TB-2_LSC-1_PowerManagementBoard.bat, TB-2_LSC-0.2_MakeDirectories.bat, TB-2_LSC-0.1_SetEnvironmentVariables.bat, TB-3_CE-0.01_SetEnvironmentVariables.bat, TB-3_CE-1.01_PowerManagementMsp430.bat, TB-3_CE-1.02_ScannerC8051.bat, TB-0_CIM-0_SetEnvironmentVariables.bat)
Record the disk image software version being used	Notron GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	DS200Ancillary_PostCots_05282009.hash.txt
Record the filename of the build environment disk image –	DS200Ancillary_PostCots_05282009.GHO
Verify (by signature) the build environment file signature (5.6.1.3)	Ok
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Ok
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	DS200Ancillary_PreBuild_05282009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	DS200Ancillary_PreBuild_05282009.GHO
Record the Final Build Version – Unique Identifier	PowermanagementMsp430 1.2.0.1 Scanner C8051 2.11.0.1
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	5/28/2009 10.00am

Compiler and Version	See Build tools and versions
Application Name	DS200ancillary Devices (Power management and Scanner)
Application Version Order	PowermanagementMsp430 1.2.0.1 Scanner C8051 2.11.0.1
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	DS200Ancillary_PostBuild_05282009.hash.txt
Record file signature of the final build (5.6.3.1)	DS200Ancillary_PostBuild_05282009.GHO
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	DS200Ancillary install files are (pmb.hex, fw.iic) input to DS200 firmware build
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_DS200Ancillary_TBInstall05282009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
Sridevi Jakileti 5/29/2009
ES&S Dave Herrera 5/29/2009

7.7.5 *Witness of the Trusted Build DS200 v.1.3.10.0*

Application/ Component	Version	Language	File Signature
DS200	1.3.10.0a	C/C++	DS200FirmwareInputTB_05302009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	DS200Firmware_BECI_v1.3.10.0_2009.06.25.pdf DS200Firmware_PreBuildTaskList_3.2.0.0_2009.06.25.pdf DS200Firmware_BECI_3.2.0.0_2009.06.25.pdf
Equipment Used	Dell Precision 670
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Restored from the DS200 TOS PostBuild(DS200TOS_PostBuild_05302009.GHO) as a Build environment for DS200 Firmware
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build tool(s) and version(s)	Linux From Scratch 6.25
Build Environment Operating System	Linux operating system 6.25
3rd Party Libraries and Version	See DS200TOS Trusted Build Doc 3rd Party Libraries and versions
3rd Party Source Code (COTS) and Version	None

3rd Party DLLs, Drivers, etc. and Version(s)	See in DS200TOS 3rd party Drivers, etc. and versions
Additional file(s) loaded and version(s)	BuildScripts(BuildFirmware1.sh, BuildFirmware2.sh, BuildFirmware3.sh, VersionNumbers.txt), PMB.hex and fw.iic these are coming from DS200AncillaryDevices trusted Build
Record the disk image software version being used	Notron GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	DS200TOS_PostBuild_05302009.hashl
Record the filename of the build environment disk image –	Restored from the DS200 TOS PostBuild(DS200TOS_PostBuild_05302009.GHO) as a Build environment for DS200 Firmware
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	TrustedBuild
Record the combined source code and pre-build environment file signature (5.6.2.2)	DS200Firmware_PreBuild_06252009.hashl
Record the combined source code and pre-build environment disk image (5.6.2.3)	DS200Firmware_PreBuild_06252009.GHO
Record the Final Build Version – Unique Identifier	Ds200_1.3.10.0
Certification Application Number (if applicable)	Ds200_1.3.10.0
Document during the Build Witness:	
Date / Time Build Initiated	6/25/2009 7.40am
Compiler and Version	GCC-4.0.3 (GNU Compiler Collection). This compiler is part of the LFS (Linux From Scratch) 6.2-5 Live CD
Application Name	DS200
Application Version Order	Ds2001.3.9.0
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness	
Record the disk image of the final build (5.7.3)	DS200Firmware_PostBuild_06252009.hashl
Record file signature of the final build (5.6.3.1)	DS200Firmware_PostBuild_06252009.GHO
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CF card on DS200 machine
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	CF card on DS200 for full install(DS200 1.3.10.0 full)
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	USB on DS200 for upgrade(DS200 1.3.10.0 upgrade)
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T8 hard Drive (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T8 hard Drive (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
Sridevi Jakileti 6/25/2009
ES&S Dave Herrera 6/25/2009

7.7.6 *Witness of the Trusted Build DS200 TOS v.1.0.1.0*

Application/ Component	Version	Language	File Signature
BLFS_1.0.1.0_BuildPkg.iso	1.0.1.0	NA- not	DS200TOSInputTB_05292009.hash.txt

Application/ Component	Version	Language	File Signature
		source code	

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	LFS_BECI_x86-6.2-5 v2.0 BLFS_BECI_v1.0.0.0 v2.0
Equipment Used	Dell Precision 670
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Linux operating system 6.25
Build tool(s) and version(s)	Linux From Scratch 6.25
3rd Party Libraries and Version	None
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	cryptocme-2.0-rhel30.tar.gz 2.0-rhel30, X11R6.9.0-src7.tar.gz R6-6.9.0 , X11R6.9.0-src6.tar.gz R6-6.9.0 ,gtkmm-2.8.12.tar.bz2 2.8.12 , libsigc2.0.18.tar.bz2 2.0.18 ,pango-1.12.3.tar.bz2 1.12.3, jpegsrc.v6b.tar.gz v6b ,libpng-1.2.12.tar.bz2 1.2.12 , giflib-4.1.4.tar.bz2 4.1.4 ,jre-6u3-linux-i586.bin 6u3 , gtk+2.8.20.tar.bz2 2.8.20, tiff-3.8.2.tar.gz 3.8.2, lcms-1.14.tar.gz 1.14 ,X11R6.9.0-src4.tar.gz R6-6.9.0, atk-1.11.4.tar.bz2 1.11.4, X11R6.9.0-src3.tar.gz R6-6.9.0, glibmm-2.12.10.tar.bz2 2.12.10,libmng-1.0.9.tar.gz 1.0.9 , bootsplash-3.2.tar.bz2 3.2,X11R6.9.0-src5.tar.gz R6-6.9.0 , freetype-2.1.10.tar.bz2 2.1.10,glib-2.10.3.tar.bz2 2.10.3, X11R6.9.0-src1.tar.gz R6-6.9.0 ,fontconfig-2.3.2.tar.gz 2.3.2, lcms-1.14-gcc343-1.patch 1.14,bootsplash-3.2_makefile.patch 3.2, X11R6.9.0-src2.tar.gz R6-6.9.0 ,apache-ant-1.7.0-bin.zip 1.7.0, jdk-6u3-linux-i586.bin 6u3 ,cairo-1.2.4.tar.gz 1.2.4 , xorg-6.9.0-luit_race-1.patch R6-6.9.0 ,libusb-0.1.12.tar.gz 0.1.12, gpm-1.20.1-segfault-1.patch 1.20.1 ,openssl-0.9.8d-fix_manpages-1.patch 0.9.8d, cvs-1.11.22.tar.bz2 1.11.22 ,boost_1_34_1.tar.bz2 1.34.1 , e2fsprogs-1.38.tar.bz2 1.38 ,gpm-1.20.1-silent-1.patch 1.20.1 , unzip552.tar.gz 552 ,busybox-1.2.1.tar.bz2 1.2.1 , zip232.tar.gz 232 ,beecrypt-4.1.2.tar.gz 4.1.2, aumix-2.8.tar.bz2 2.8 ,ctags-5.6.tar.gz 5.6 , expat-2.0.0.tar.gz 2.0.0 ,pkg-config-0.20.tar.gz 0.2 , blfs-bootscripts-20060910.tar.bz2 20060910,openssh-4.5p1.tar.gz 4.5p1, cvs-1.11.22-zlib-1.patch 1.11.22,usbutils-0.72.tar.gz 0.72 , dosfstools-2.11.src.tar.gz 2.11,linux-libc-headers-2.6.12.0.tar.bz2 2.6.12.0, gpm-1.20.1.tar.bz2 1.20.1,openssl-0.9.8d.tar.gz 0.9.8d , linux-2.6.16.27-utf8_input-1.patch 2.6.16.27 ,udev-096.tar.bz2 096, bootsplash-3.1.6-2.6.15.diff 3.1.6-2.6.15,linux-2.6.16.27.tar.bz22.6.16.27, lfslivecd-x86-6.2-5.iso 6.25,
Additional file(s) loaded and version(s)	LFS1.sh,BLFS1.sh,BLFS2.sh,BLFS3.sh,

	TOS1.sh,VersionNumbers.txt, BLFS_1.0.1.0_BuildPkg.iso
Record the disk image software version being used	Notron GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	DS200TOS_PostCots_05292009.hashl
Record the filename of the build environment disk image –	DS200TOS_PostCots_05292009.GHO
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	DS200TOS_PreBuild_05292009.hashl
Record the combined source code and pre-build environment disk image (5.6.2.3)	DS200TOS_PreBuild_05292009.GHO
Record the Final Build Version – Unique Identifier	CfCard_ds200_n1.0.1.0.img
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	5/29/2009 8.20am
Compiler and Version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Application Name	CfCard_ds200_n1.0.1.0 (DS200 Target operating system)
Application Version Order	CfCard_ds200_n1.0.1.0.img
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	None
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	DS200TOS_PostBuild_05292009.hashl
Record file signature of the final build (5.6.3.1)	DS200TOS_PostBuild_05292009.GHO
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CF card on DS200 machine
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	See DS200
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_DS200TOS_TBInstall05302009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
Sridevi Jakileti 5/30/2009
ES&S Dave Herrera 5/30/2009

7.7.7 *Witness of the Trusted Build Model 650 v.2.2.2.0*

Application/ Component	Version	Language	File Signature
M650	2.2.2.0.1	C	M650InputTB_05192009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi Jakileti
Witness Title	Trusted Build
Vendor Build Document(s) used and version(s)	Model650_BECI_3.2.0.0_2009.05.12.pdf X4.25_INST_2009.05.12.doc

Equipment Used	Optiplex G110
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to generate HASH file signatures (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	QNX operating system4.25
Build tool(s) and version(s)	QNX Operating System Runtime 4.25 Photon Runtime 1.14 TCP/IP runtime 4.25 Voyager RunTime 2.00 WATCOM C Compiler WATCOM C++ Compiler TCP/IP SDK
3rd Party Libraries and Version	None
3rd Party Source Code (COTS) and Version	None
3rd Party DLLs, Drivers, etc. and Version(s)	None
Additional file(s) loaded and version(s)	QNX 4.25 Product Suite (May 2001) Patch G for QNX 4.25(qnx-4.25-01G.tarx) Patch D for the TCP/IP Runtime(tcprt-4.25-01D.tarx) Patch D for the TCP/IP Runtime Documentation(tcprt-4.25-02D.tarx) Patch C for the TCP/IP Development Kit(tcptk-4.25-01C.tarx) Patch D for the TCP/IP Development Kit Documentation(tcptk-4.25-02C.tarx)
Record the disk image software version being used	Norton GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	M650-PostCots_05192009.hashl
Record the filename of the build environment disk image –	M650_PostCOTS_05192009.GHO
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	M650_PreBuild_05202009.hashl
Record the combined source code and pre-build environment disk image (5.6.2.3)	M650_PreBuild_05202009.GHO
Record the Final Build Version – Unique Identifier	M650 2.2.2.0
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	05/19/2009 8.20am
Compiler and Version	See Build tools and versions
Application Name	M650
Application Version Order	M650 2.2.2.0
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	M650 system not able to recognize the ZIP disk(patches). Formatted new zip disk, copied the patches to it, it worked fine
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	M650_PostBuild_05222009.GHO
Record file signature of the final build (5.6.3.1)	M650_PostBuild_05222009.hahsl

Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	Zip disk on M650 machine
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	M650 2.2.2.0 Install TB5/22/09-->Zip disk
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_M650_TBInstall05222009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard drive & backup on T8 final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard drive & backup on T8 final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	Section 3.3 in QNX4.25_INST.pdf , 4.5-->modify the b drive setting Fatfsys b=/dev/fd1**t11** a=/dev/fd0 & (in the build instead of fdt11 used only fd1) and not inserted these lines section4.6.(This change was made to resolve the troubleshooting with zip disk)

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
Sridevi Jakileti 5/29/2009
ES&S Dave Herrera 5/29/2009

7.7.8 *Witness of the Trusted Build Unity 3.2.0.0*

(Audit Manager 7.5.2.0, EDM 7.8.1.0, ERM7.5.4.0, ESSIM7.7.1.0, & HPM 5.7.1.0)

Application/ Component	Version	Language	File Signature
AuditManager	7.5.2.0a	VB	UnityInputTB_05192009.hash.txt
CB_650	1.2.1.0a	C	UnityInputTB_05192009.hash.txt
CB_Eagl	1.3.2.0a	C++	UnityInputTB_05192009.hash.txt
CB_M100	1.4.1.0a	C++	UnityInputTB_05192009.hash.txt
Cb_PEB	1.0.2.0a	C++	UnityInputTB_05192009.hash.txt
CB_Rand	1.1.1.0a	C++	UnityInputTB_05192009.hash.txt
CF_Utility	9.2.1.0a	VB	UnityInputTB_05192009.hash.txt
CrcDLL	1.4.2.0a	C++	UnityInputTB_05192009.hash.txt
EDM	7.8.1.0a	C++	UnityInputTB_05192009.hash.txt
ElectionPackager	1.1.0.0a	C++	UnityInputTB_05192009.hash.txt
ERM	7.5.4.0b	Cobol	UnityInputTB_05192009.hash.txt
ERMDLL	1.1.0.0a	C++	UnityInputTB_05192009.hash.txt
ESSCRYPT1	1.1.1.0a	C++	UnityInputTB_05192009.hash.txt
ESSCrypt	1.9.3.0a	C++	UnityInputTB_05192009.hash.txt
ESSDecpt	1.9.3.0b	C++	UnityInputTB_05192009.hash.txt
ESSEagl	1.3.2.0a	C++	UnityInputTB_05192009.hash.txt
ESSIM	7.7.1.0a	C++	UnityInputTB_05192009.hash.txt
ESSM100	1.7.2.0b	C/C++	UnityInputTB_05192009.hash.txt
EssPCMIO	1.1.1.0a	C++	UnityInputTB_05192009.hash.txt
ESSPEB	1.0.2.0a	C++	UnityInputTB_05192009.hash.txt
ESSXML	2.1.0.0a	C++	UnityInputTB_05192009.hash.txt
ESSZIP	2.1.0.0a	C++	UnityInputTB_05192009.hash.txt
Events	9.2.1.0a	C/C++	UnityInputTB_05192009.hash.txt
ExitWin	1.1.1.0a	VB	UnityInputTB_05192009.hash.txt
GetAuditData	9.2.1.0a	VB	UnityInputTB_05192009.hash.txt
HPM	5.7.1.0b	Cobol	UnityInputTB_05192009.hash.txt
HPMDLL	1.1.0.0a	C++	UnityInputTB_05192009.hash.txt
Images	9.2.1.0a	C/C++	UnityInputTB_05192009.hash.txt
MakeIBin	9.2.1.0a	C++	UnityInputTB_05192009.hash.txt
MPRBoot	2.6.2.0a	Assembler	UnityInputTB_05192009.hash.txt
MYDLL	1.1.0.1a	C	UnityInputTB_05192009.hash.txt
PBMtoBMP	1.1.0.1a	C++	UnityInputTB_05192009.hash.txt
PCCARD30	3.5.1.0a	C++	UnityInputTB_05192009.hash.txt

Application/ Component	Version	Language	File Signature
RegUtil	1.1.0.1a	C++	UnityInputTB_05192009.hash.txt
Shell	1.1.1.0a	C++	UnityInputTB_05192009.hash.txt
ShellSetup	1.1.1.0a	C++	UnityInputTB_05192009.hash.txt
Undrvote	9.2.2.0a	C++	UnityInputTB_05192009.hash.txt
VIODialog	9.2.2.0a	C/C++	UnityInputTB_05192009.hash.txt
VioWin	9.2.1.0a	C++	UnityInputTB_05192009.hash.txt
Win650	2.2.2.0.1	C	UnityInputTB_05192009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	Unity_BECI_3.2.0.0_2009.05.20 WinXP-CorsairwithVGA_INST_2009.04.22.pdf Visual Studio_6.0_EntEdwithSP5_INST_2009.04.30.pdf vbAdvance3.1_INST_2009.04.30.pdf VisualStudio2005ProEd_INST_2009.04.21.pdf RMCOBOLDeveloper11.01_INST_2009.04.29.pdf AvocetADXZ180_INST_2009.04.30.pdf Codebase6.5Release3_INST_2009.04.21.pdf CrystalReports9_INST_2009.04.29.pdf PCCardSDKv2.20_INST_2009.04.30.pdf Xerces2.7.0_INST_2009.04.25.pdf InstallShieldPro7.01_INST_2009.03.23.doc InstallShieldExpress2.1_INST_2008.11.30.pdf
Equipment Used	Corsair Orbit PC
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Active KillDisk for DOS V:4.1 Build 2380
iBeta COTS used to clean the build environment disk (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Windows XP with Service Pack 3
Build tool(s) and version(s)	**AuditManager**: MicroVisual Studio 2005 **ALL other unity software**: Visual Studio 6.0 Enterprise with Service Pack 5 **ERM and HPM**: RM/COBOL v11.01
3rd Party Libraries and Version	**ESSZIP**: zip32.lib; unzip32.lib, **AuditManager**: asycfilt.dll2.40.4275.1, Comcat.dll,comct332.ocx6.7.0.8988, comdlg32.ocx6.0.84.18,msado25.tlb2.5 2.60.6526.0, msadodc.ocx6.0.88.4, msbind.dll6.0.88.62,mscdrun.dll6.0.88.4 mscomct2.ocx 6.0.88.4 ,mscomctl.ocx 6.0.88.62 ,msderun.dll6.0.88.4 msflxgrd.ocx6.0.84.18,msvbvm60.dll6.0.89.64 oleaut32.dll2.40.4275.1,olepro32.dll5.0.4275.1 stdole2.tlb2.40.4275.1,sysinfo.ocx6.0.81.69 vb6stkit.dll 6.0.84.50, comct332.ocx 6.7.0.8988,comdlg32.ocx6.0.84.18, msadodc.ocx6.0.88.4,mscomct2.ocx6.0.88.4, mscomctl.ocx6.0.88.62,msflxgrd.ocx6.0.84.18, sysinfo.ocx6.0.81.69,msbind.dll6.0.88.62, mscdrun.dll6.0.88.4,msderun.dll6.0.88.4,

	msrdo20.dll6.0.88.62,msstdfmt.dll6.0.88.4, rdocurs.dll6.0.88.4, **ESSIM**: mfc80.dll8.0.50727.42, mfc80u.dll8.0.50727.42,mfcm80.dll8.0.50727.42, mfcm80u.dll8.0.50727.42,msvcm80.dll8.0.50727.42, msvcp80.dll8.0.50727.42,msvcr80.dll8.0.50727.42, msvcr71.dll8.0.50727.42,msvcrt.dll6.0.8797.0, roboex32.dll9.20.534.0,unzip32.dll5.5.2.0, zip32.dll 2.3.1.0,microsoft.vc80.crt.manifest, microsoft.vc80.mfc.manifest, **EDM** :c4dll.dll1.0.0.1, crdb_p2bxbse.dll9.2.1.106,crpe32.dll9.2.3.745, crqe.dll9.2.1.605,crtslv.dll9.2.0.528, crxf_pdf.dll9.2.1.567,crxf_rtf.dll9.2.0.566, crxf_wordw.dll9.2.0.566,crxf_xls.dll9.2.1.662, exportmodeller.dll9.2.1.559,inetwh32.dll7.0.133.0, msvcr71.dll7.10.3052.4,roboex32.dll9.0.79.0, u2ddisk.dll9.2.0.541,u2ftext.dll9.2.1.555, ufmanager.dll9.0.0.1,xerces-c_2_7.dll2.7.0.0, **ERM**:ROBOEX32.DLL 5.0.0.7.022,wh2robo.dll13.10.606.6,asycfilt.dll2.40.4275.1,comcat.dll4.71.1460.1, comct332.ocx6.7.0.8988, comdlg32.ocx6.0.84.18,mscomct2.ocx6.0.88.4,mscomctl.ocx6.0.88.62,MSVBVM50.DLL5.1.43.19, msvbvm60.dll6.0.89.64,msvcp60.dll6.0.8168.0, MSVCRTD.DLL6.0.8447.0,oleaut32.dll2.40.4275.1,olepro32.dll5.0.4275.1,OpenSaveFile.ocx1.0.0.0, RICHTX32.OCX6.0.88.4,stdole2.tlb2.40.4275.1, sysinfo.ocx6.0.81.69,tabctl32.ocx6.0.90.43,WSC32.DLL0.0.0.0 Linker Rev. 3, WSC32.lib, **HPM**: HtmlWH.dll7.0.131.0,ROBOEX32.DLL8.0.131.0,asycfilt.dll2.40.4275.1, comcat.dll4.71.1460.1,comct332.ocx6.7.0.8988,comdlg32.ocx6.0.84.18, MFC42D.DLL6.0.8447.0,mscomct2.ocx6.0.88.4,mscomctl.ocx6.0.88.62, msdxm.ocx6.4.9.1128,msvbvm60.dll6.0.89.64,msvcp60.dll6.0.8168.0, MSVCP60D.DLL6.0.8168.0,msvcrt.dll6.0.8797.0,MSVCRTD.DLL6.0.8447.0, oleaut32.dll2.40.4275.1,olepro32.dll5.0.4275.1,OpenSaveFile.ocx1.0.0.0, Quartz.dll6.4.2600.1221,RICHTX32.OCX6.0.88.4,stdole2.tlb2.40.4275.1,
3rd Party Source Code (COTS) and Version	Codebase 6.5, Release 3 Modified COTS Codebase file - d4all.h
3rd Party DLLs, Drivers, etc. and Version(s)	Windows XP with Service Pack 3,MicroVisual Studio 2005 Visual Studio 6.0 Enterprise with Service Pack 5 Yong Dynamic Software vbAdvance 3.1 RM/COBOL v11.01 Compiler RM/COBOL v11.01 WOW Extensions 64180 macro assembler version 4.01a by 2500 A.D. Software Crystal Reports 9 Full Developer Crystal Reports 9 Main Program Files Patch (05/14/2003) Crystal Reports 9 Database and Export Patch (05/14/2003) OmniDrive SDK v1.01 Sourceforge Info-Zip Zip version 2.32 Sourceforge Info-Zip Unzip version 5.52 Xerces-C 2.7.0 InstallShield Professional version 7.01 InstallShield Express version 2.1

Additional file(s) loaded and version(s)	Codebase file - d4all.h(Modified COTS)
Record the disk image software version being used	Norton GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	Unity3.2.0.0_PostCOTS_05212009.hash.txt
Record the filename of the build environment disk image –	Unity3.2.0.0_PostCOTS_05212009.GHO
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	Unity3.2.0.0_PreBuild_05212009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	Unity3.2.0.0_PreBuild_05212009.GHO
Record the Final Build Version – Unique Identifier	AuditManager 7.5.2.0 EDM 7.8.1.0 ERM 7.5.3.0 (superseded in Supplemental A) ESSIM 7.7.1.0 HPM 5.7.1.0
Certification Application Number (if applicable)	ESS0701
Document during the Build Witness:	
Date / Time Build Initiated	5/19/2009 12.45PM
Compiler and Version	**ERM**: WOW Extensions Designer version 11.01, RM/Cobol for Windows version 11.01, RM/Cobol Codebridge for Windows, Microsoft Visual C++ 6.0, Borland C/C++ 5.01, Microsoft Visual Basic 5.0, InstallShield Express 2.12 **HPM**: Cobol-WOW version 3.12, RM/Cobol for Windows version 7.50.01, RM/Cobol Codebridge for Windows, Microsoft Visual C++ 6.0, Borland C/C++ 5.01, Microsoft Visual Basic 5.0, InstallShield Express 2.12 **EDM**: Microsoft Visual Studio 6.0 SP 5, InstallShield Professional 7.01 **AuditManger and ESSIM**: Microsoft Visual Basic 6.0 SP6, InstallShield Professional 7.01
Application Name	Unity3.2.0.0
Application Version Order	AuditManager 7.5.2.0 EDM 7.8.1.0 ERM 7.5.3.0 (superseded in Supplemental A) ESSIM 7.7.1.0 HPM 5.7.1.0
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	Unity3.2.0.0_PostCots_05212009.GHO
Record file signature of the final build (5.6.3.1)	Unity3.2.0.0_PostCots_05212009.hash.txt
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	Unity3.2.0.0_TBINSTALLS05192009.hash.txt
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	ESS_Unity3.2.0.0_TBInstall05212009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T9 hard Drive backed up on T8 (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	No differences

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:
Sridevi Jakileti 5/27/2009
ES&S Dave Herrera 5/27/2009

7.7.9 *Witness of the Trusted Build Unity 3.2.0.0 (Supplemental Build A) - ERM v.7.5.4.0*

Application/ Component	Version	Language	File Signature
ERM	7.5.4.0b	Cobol	Unity_ERM_Source_TB06252009.hash.txt

Document Prior to the Build Witness:	
Vendor Name	ES&S
Vendor Consultant(s) (5.6)	Dave Herrera
Witness Name (5.6)	Sridevi jakileti
Witness Title	Trusted Builder
Vendor Build Document(s) used and version(s)	Unity_BECI_3.2.0.0_2009.06.25.pdf Unity_PreBuildTaskList_3.2.0.0_2009.06.25.pdf WinXP-CorsairwithVGA_INST_2009.04.22.pdf Visual Studio_6.0_EntEdwithSP5_INST_2009.04.30.pdf vbAdvance3.1_INST_2009.04.30.pdf VisualStudio2005ProEd_INST_2009.04.21.pdf RMCOBOLDeveloper11.01_INST_2009.04.29.pdf AvocetADXZ180_INST_2009.04.30.pdf Codebase6.5Release3_INST_2009.04.21.pdf CrystalReports9_INST_2009.04.29.pdf PCCardSDKv2.20_INST_2009.04.30.pdf Xerces2.7.0_INST_2009.04.25.pdf InstallShieldPro7.01_INST_2009.03.23.doc InstallShieldExpress2.1_INST_2008.11.30.pdf
Equipment Used	Corsair Orbit PC
iBeta COTS used to clean the build environment disk (name and version) (5.6.1.1)	Restored from post cots image from Unity3.2.0.0 TB05212009 (Unity3.2.0.0_PostCOTS_05212009.GHO)
iBeta COTS used to clean the build environment disk (name and version)	Mares Hash Ver. 07.08.10.07.12
Construct the build environment (5.6.1.2)	
Verify (by signature) that the build environment is isolated and controlled by iBeta	Sridevi Jakileti
Witness attests to verifying that the source code being built is the source code provided by iBeta	Dave Herrera
Vendor CM Tool and version	Listed in TDP document: Unity 3.2.0.0 Source Code Repository & Version
Build Environment Operating System	Windows XP with Service Pack 3
Build tool(s) and version(s)	AuditManager: MicroVisual Studio 2005 ALL other unity software: Visual Studio 6.0 Enterprise with Service Pack 5 ERM and HPM: RM/COBOL v11.01
3rd Party Libraries and Version	ESSZIP: zip32.lib; unzip32.lib, AuditManager: asycfilt.dll2.40.4275.1, Comcat.dll,comct332.ocx6.7.0.8988, comdlg32.ocx6.0.84.18,msado25.tlb2.5 2.60.6526.0, msadodc.ocx6.0.88.4, msbind.dll6.0.88.62,mscdrun.dll6.0.88.4 mscomct2.ocx 6.0.88.4 ,mscomctl.ocx 6.0.88.62 ,msderun.dll6.0.88.4 msflxgrd.ocx6.0.84.18,msvbvm60.dll6.0.89.64 oleaut32.dll2.40.4275.1,olepro32.dll5.0.4275.1 stdole2.tlb2.40.4275.1,sysinfo.ocx6.0.81.69 vb6stkit.dll 6.0.84.50, comct332.ocx 6.7.0.8988,comdlg32.ocx6.0.84.18, msadodc.ocx6.0.88.4,mscomct2.ocx6.0.88.4,

	mscomctl.ocx6.0.88.62,msflxgrd.ocx6.0.84.18, sysinfo.ocx6.0.81.69,msbind.dll6.0.88.62, mscdrun.dll6.0.88.4,msderun.dll6.0.88.4, msrdo20.dll6.0.88.62,msstdfmt.dll6.0.88.4, rdocurs.dll6.0.88.4, ESSIM: mfc80.dll8.0.50727.42, mfc80u.dll8.0.50727.42,mfcm80.dll8.0.50727.42, mfcm80u.dll8.0.50727.42,msvcm80.dll8.0.50727.42, msvcp80.dll8.0.50727.42,msvcr80.dll8.0.50727.42, msvcr71.dll8.0.50727.42,msvcrt.dll6.0.8797.0, roboex32.dll9.20.534.0,unzip32.dll5.5.2.0, zip32.dll 2.3.1.0,microsoft.vc80.crt.manifest, microsoft.vc80.mfc.manifest, EDM :c4dll.dll1.0.0.1, crdb_p2bxbse.dll9.2.1.106,crpe32.dll9.2.3.745, crqe.dll9.2.1.605,crtslv.dll9.2.0.528, crxf_pdf.dll9.2.1.567,crxf_rtf.dll9.2.0.566, crxf_wordw.dll9.2.0.566,crxf_xls.dll9.2.1.662, exportmodeller.dll9.2.1.559,inetwh32.dll7.0.133.0, msvcr71.dll7.10.3052.4,roboex32.dll9.0.79.0, u2ddisk.dll9.2.0.541,u2ftext.dll9.2.1.555, ufmanager.dll9.0.0.1,xerces-c_2_7.dll2.7.0.0, ERM:ROBOEX32.DLL 5.0.0.7.022,wh2robo.dll13.10.606.6,asycfilt.dll2.40.4275.1,comc at.dll4.71.1460.1, comct332.ocx6.7.0.8988, comdlg32.ocx6.0.84.18,mscomct2.ocx6.0.88.4,mscomctl.ocx6.0 .88.62,MSVBVM50.DLL5.1.43.19, msvbvm60.dll6.0.89.64,msvcp60.dll6.0.8168.0, MSVCRTD.DLL6.0.8447.0,oleaut32.dll2.40.4275.1,olepro32.dll5 .0.4275.1,OpenSaveFile.ocx1.0.0.0, RICHTX32.OCX6.0.88.4,stdole2.tlb2.40.4275.1, sysinfo.ocx6.0.81.69,tabctl32.ocx6.0.90.43,WSC32.DLL0.0.0.0 Linker Rev. 3, WSC32.lib, HPM: HtmlWH.dll7.0.131.0,ROBOEX32.DLL8.0.131.0,asycfilt.dll2.40. 4275.1, comcat.dll4.71.1460.1,comct332.ocx6.7.0.8988,comdlg32.ocx6. 0.84.18, MFC42D.DLL6.0.8447.0,mscomct2.ocx6.0.88.4,mscomctl.ocx6. 0.88.62, msdxm.ocx6.4.9.1128,msvbvm60.dll6.0.89.64,msvcp60.dll6.0.8 168.0, MSVCP60D.DLL6.0.8168.0,msvcrt.dll6.0.8797.0,MSVCRTD.DL L6.0.8447.0, oleaut32.dll2.40.4275.1,olepro32.dll5.0.4275.1,OpenSaveFile.o cx1.0.0.0, Quartz.dll6.4.2600.1221,RICHTX32.OCX6.0.88.4,stdole2.tlb2.4 0.4275.1,
3rd Party Source Code (COTS) and Version	Codebase 6.5, Release 3 Modified COTS Codebase file - d4all.h
3rd Party DLLs, Drivers, etc. and Version(s)	Windows XP with Service Pack 3,MicroVisual Studio 2005 Visual Studio 6.0 Enterprise with Service Pack 5 Yong Dynamic Software vbAdvance 3.1 RM/COBOL v11.01 Compiler RM/COBOL v11.01 WOW Extensions 64180 macro assembler version 4.01a by 2500 A.D. Software Crystal Reports 9 Full Developer Crystal Reports 9 Main Program Files Patch (05/14/2003) Crystal Reports 9 Database and Export Patch (05/14/2003) OmniDrive SDK v1.01 Sourceforge Info-Zip Zip version 2.32 Sourceforge Info-Zip Unzip version 5.52

	Xerces-C 2.7.0 InstallShield Professional version 7.01 InstallShield Express version 2.1
Additional file(s) loaded and version(s)	Codebase file - d4all.h(Modified COTS) Build Scripts
Record the disk image software version being used	Notron GHOST V:11.0
Record the filename of the build environment file signature (5.6.1.3) –	Unity3.2.0.0_PostCOTS_05212009.hash.txt
Record the filename of the build environment disk image –	Restored from post cots image from Unity3.2.0.0 TB05212009 (Unity3.2.0.0_PostCOTS_05212009.GHO)
Verify (by signature) the build environment file signature (5.6.1.3)	Sridevi Jakileti
Loading Source Code (5.6.2)	
Record the file signature of the source code (5.6.2.1)	see table of source code, above
Verify (by signature) that each file signature of the source code loaded matches as documented above (5.6.2.1)	Sridevi Jakileti
Method of Build Witness	Trusted Build
Record the combined source code and pre-build environment file signature (5.6.2.2)	Unity3.2.0.0_PreBuild_06252009.hash.txt
Record the combined source code and pre-build environment disk image (5.6.2.3)	Unity3.2.0.0_PreBuild_06252009.GHO
Record the Final Build Version – Unique Identifier	ERM7.5.4.0
Certification Application Number (if applicable)	ERM7.5.4.0
Document during the Build Witness:	
Date / Time Build Initiated	06/25/2009 7.15am
Compiler and Version	ERM: WOW Extensions Designer version 11.01, RM/Cobol for Windows version 11.01, RM/Cobol Codebridge for Windows, Microsoft Visual C++ 6.0, Borland C/C++ 5.01, Microsoft Visual Basic 5.0, InstallShield Express 2.12 HPM: Cobol-WOW version 3.12, RM/Cobol for Windows version 7.50.01, RM/Cobol Codebridge for Windows, Microsoft Visual C++ 6.0, Borland C/C++ 5.01, Microsoft Visual Basic 5.0, InstallShield Express 2.12 EDM: Microsoft Visual Studio 6.0 SP 5, InstallShield Professional 7.01 AuditManger and ESSIM: Microsoft Visual Basic 6.0 SP6, InstallShield Professional 7.01
Application Name	Unity3.2.0.0
Application Version Order	ERM7.5.4.0
Obtain Names and Signatures of all persons present during build (record below)	Sridevi Jakileti Dave Herrera
Issue(s) and Resolution(s)	No Issues
Document at Completion of the Build Witness:	
Record the disk image of the final build (5.7.3)	Unity3.2.0.0_PostBuild_06252009.GHO
Record file signature of the final build (5.6.3.1)	Unity3.2.0.0_PostBuild_06252009.hash.txt
Record the type of unalterable storage media being used for installation disk(s) (i.e., CD) – (5.6.3.2)	CD
Record each piece of media that is part of the installation disk (each must have a unique identifier) (5.6.3.2, 5.7.5)	Unity3.2.0.0(ERM) TB062509 Installs
Record the file signature of the installation disk(s). (5.6.3.3, 5.7.5) (include in below archive)	Unity3.2.0.0_TBINSTALLS06252009.hash.txt
Record the type of unalterable storage media being used for pre-build and post-build archive disk (i.e., CD) –	T8 hard Drive (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Record each piece of media that is part of the pre-build archive disk (each must have a unique identifier) (5.6.2.4, 5.7.2, 5.7.3)	T8 hard Drive (Pending Burning DVD or CD) final burn to unalterable media is pending the EAC Initial Decision
Explanation of any significant differences observed	Restored the PostCots Image from TB05192009

Build Witnesses): Hard copies of the witness signatures are on file at iBeta:

Sridevi Jakileti 6/25/2009
ES&S Dave Herrera 6/25/2009

7.7.10 *ES&S Unity 3.2.0.0 System Identification Tools*

As identified in Section 5.8 and 5.9 of the *US Election Assistance Commission Test and Certification Program Manual* delivery of the System Identification Tools to the EAC is the responsibility of ES&S following the EAC Initial Decision. Review of the System Identification Tools is the responsibility of the EAC.

7.8 *Appendix H: Amended Test Plan*

The Election Systems & Software Unity 3.2.0.0 Voting System VSTL Certification Test Plan and the EAC Approval letter of ES&S Unity 3.2 Test Plan version 2.0 are found on the EAC website.

This test plan was amended during test execution. This amended test plan is attached, *ES&S Unity 4.0 VSTL Certification Test Plan v. 3.0.* Changes are provided in red text for easy identification.

7.9 *Appendix I: State Test Reports*

No state testing was performed by iBeta concurrent to certification testing.

No state testing was identified by ES&S, the EAC or SysTest Labs.

7.10 *Appendix J ES&S Unity 3.2.0.0 Implementation Statement*

A copy of the ES& S Unity 3.2.0.0 implementation statement is attached as a separate document.

7.11 *Appendix K – EAC Certification Number & Voting System Configuration*

This report was submitted to the Election Assistance Commission on June 30, 2009. It is pending their acceptance.

No certification number has been issued. When iBeta receives notification that the report is accepted, a revised version of the report will be issued. The Certification number will appear here and on the Title page. Any other revisions will be noted in the version history

This Certification is for the Voting System Hardware and Software configuration(s) listed in section 3.1.