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# TEST REPORT

**NATIONAL CERTIFICATION TEST REPORT  
 FOR  
 CERTIFICATION TESTING  
 OF THE  
 ELECTION SYSTEMS & SOFTWARE  
 UNITY 3.2.0.0 REV 2 VOTING SYSTEM**

for

Election Systems & Software  
 11208 John Galt Boulevard  
 Omaha, NE 68137

(wo)

STATE OF ALABAMA }  
 COUNTY OF MADISON }

Robert D. Hardy, Department Manager, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted testing and is to the best of his knowledge true and correct in all respects.

*Robert D. Hardy*

SUBSCRIBED and sworn to before me this June day of 2011

*Sandra A. Malone*  
 Notary Public in and for the State of Alabama at Large

My Commission expires June 5, 2011

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REVISION Rev. A  
 REPORT NO. T58506.01-01, Rev. A  
 DATE May 31, 2011

REV	DATE	PAGE OR PARAGRAPH AFFECTED	DESCRIPTION OF CHANGES
---	5-18-11	Entire Document	Original Release
A	5-31-11	Table of Contents	Corrected naming of appendices and page numbering.
A	5-31-11	Section 2.2.2	Changed reference from "Table 2-1" to "Table 2-2".
A	5-31-11	Section 3.5	Corrected table title from "Table 3-1" to "Table 3-2."
A	5-31-11	Section 4.1.1	Corrected reference to VVSG.
A	5-31-11	Section 4.1.2	Corrected spelling of "definitions" in last sentence on page 9.
A	5-31-11	Section 4.1.3	Changed "Attachment" to "Appendix".

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## **1.0 INTRODUCTION**

### **1.1 Scope**

This report presents the test results for Certification Testing of the Election Systems & Software (ES&S) Unity 3.2.0.0 Rev 2 Voting System to the Federal Election Commission (FEC) 2002 Voting System Standards (VSS). Unity 3.2.0.0 Rev 2 is a modification to the certified Unity 3.2.0.0 which was fully tested to the FEC 2002 VSS. Modifications made since initial certification, resulting in a modified version of the Unity 3.2.0.0 system, Unity 3.2.0.0 Rev 1, were tested to the EAC 2005 VVSG. As a result of this testing, the Unity 3.2.0.0 Rev 1 system was granted certification under EAC Certification No. ESSUnity3200Rev1. Since that time, three issues were identified relating to the DS200 component of the Unity 3.2.0.0 system. To resolve the identified issues, ES&S submitted an update to the DS200 firmware. The submitted DS200 firmware (version 1.4.3.11) is the current firmware in the EAC Certified ES&S Unity 3.2.1.0 system (ESSUnity3210). The DS200 with the 1.4.3.11 firmware has not been tested with the Unity 3.2.0.0 Rev 1 EMS. This test campaign will perform integration testing of the DS200 firmware, version 1.4.3.11, and the Unity 3.2.0.0 Rev 1 EMS, therefore resulting in the Unity 3.2.0.0 Rev 2 voting system.

The full system details for the previous test campaigns, including system, performance, security, telecommunication, usability, system verification, and TDP deliverables can be reviewed in the approved final certification report (iBeta Report No. (V)2010-30Jun-001(D)) located on the EAC website ([www.eac.gov](http://www.eac.gov)).

This report is valid only for the equipment identified in Section 2 of this report. Any changes, revisions, or corrections made to the system after this evaluation shall be submitted to the EAC to determine if the modified system requires a new application, or can be submitted as a modified system. The scope of testing required will be determined based upon the degree of modification.

### **1.2 Objective**

The objective of this test campaign was to evaluate the ability of the DS200 firmware, version 1.4.3.11, to interface with the Unity 3.2.0.0 Rev 1 EMS. The firmware had previously been tested in the Unity 3.2.1.0 test campaign and the EMS applications had been tested in the Unity 3.2.0.0 Rev 1 test campaign. The purpose of this test effort will be to verify these two components interface reliably and accurately.

### **1.3 Test Report Overview**

This test report consists of four main sections and appendices:

- 1.0 Introduction – Provides: the architecture of the National Certification Test Report (hereafter referred to as Test Report); a brief overview of the testing scope of the Test Report; a list of documentation, customer information, and references applicable to the voting system hardware, software, and this test report.
- 2.0 System Identification – Provides information about the equipment tested.
- 3.0 Certification Test Background – Contains information about the certification test process and a list of terms and nomenclature pertinent to the Test Report and system tested.
- 4.0 Test Findings and Recommendation – Provides a summary of the results of the testing process.
- Appendices– Information supporting reviews and testing of the voting system are included as appendices to this report.

**1.0 INTRODUCTION (continued)**

**1.4 Customer**

Election Systems & Software  
11208 John Galt Boulevard  
Omaha, NE 68137

**1.5 References**

The documents listed were utilized to perform certification testing.

- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines", and Volume II, Version 1.0, "National Certification Testing Guidelines", dated December 2005
- United States Federal Election Commission Voting System Standards Volume I, "Performance Standards" and Volume II, "Test Standards" dated April 2002
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 1.0, effective date July 2008
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)", dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)", dated May 2008
- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Wyle Laboratories' Test Guidelines Documents: EMI-001A, "Wyle Laboratories' Test Guidelines for Performing Electromagnetic Interference (EMI) Testing", and EMI-002A, "Test Procedure for Testing and Documentation of Radiated and Conducted Emissions Performed on Commercial Products"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 3
- ANSI/NC SL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation (listed on [www.eac.gov](http://www.eac.gov))
- EAC Notices of Clarification (listed on [www.eac.gov](http://www.eac.gov))

## 2.0 SYSTEM IDENTIFICATION AND OVERVIEW

### 2.1 System Overview

The full system details for the previous test campaigns, including system, performance, security, telecommunication, usability, system verification, and TDP deliverables can be reviewed in the approved final certification report (iBeta Report No. (V)2010-30Jun-001(D)) located on the EAC website ([www.eac.gov](http://www.eac.gov)).

### 2.2 System Identification

The materials required for certification testing of the ES&S Unity 3.2.0.0 Rev 2, which included software, hardware, test materials, and deliverable materials, were shipped directly to Wyle by ES&S. Some of the equipment to be used during this test effort is the same equipment used during the original certification campaign performed by Wyle.

#### 2.2.1 Hardware

This subsection categorizes the equipment the manufacturer submitted for testing listed in Table 2-1. Each test element is included in the list of the equipment required for testing of that element, including system hardware, general purpose data processing and communications equipment, and any required test instrumentation.

**Table 2-1 Unity 3.2.0.0 Rev 2 Test Equipment**

Equipment	Description	Serial Numbers
DS200	Precinct Count Optical Scanner	ES0107360007, ES0108340178, ES0107380927
Ballot Box	Plastic Ballot Box	E076, E089, E099
Dell Latitude E6410	Processor: Intel Core VPro I5-520 2.4 Ghz Memory: 2x 1GB, 1067 Mhz Ram Hard Drive Capacity: 250 GB	C42F0M1
COTS Printer	HP LaserJet 4050N	USQX074394
Dell Latitude E6400 (ERM Laptop)	Processor: Intel Duo Core P8600 2.4 Ghz Memory: 1x 2GB, 800 Mhz Ram Hard Drive Capacity: 80 GB	137FMJ1
Transport Media (USB Flash Drives)	SanDisk 2GB Cruzer Micro	Wyle-assigned numbers as needed: TM-XXX
Compact Flash (CF Card)	SanDisk & Toshiba	512 Mb, 1GB,

**2.0 SYSTEM IDENTIFICATION AND OVERVIEW (continued)**

**2.2 System Identification (continued)**

**2.2.2 Software**

The previously certified EMS (version 3.2.0.0 Rev 1) was used in conjunction with the updated DS200 firmware (version 1.4.3.11) for system integration testing of the two components. Both the EMS and the DS200 firmware will be retrieved from the “Trusted Builds” archive for each system. This test campaign will not include any new build, but will rely on software from the previous test campaigns.

Table 2-2 presents the software the manufacturer has submitted for testing.

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**Table 2-2 Software Submitted for Testing**

<b>Software Required For Testing</b>	<b>Software Version</b>
DS200 Firmware	1.4.3.11
HPM	5.7.1.0
EDM	7.8.1.0
ESSIM	7.7.1.0
AM	7.5.2.0
ERM	7.5.4.0
Log Monitor	1.0.0.0

**2.3 Test Support Materials**

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

The following test materials were required to support the Unity 3.2.0.0 Rev 2 test campaign:

**Table 2-3 Test Support Equipment**

<b>Test Material</b>	<b>Quantity</b>
Elections (Wyle 1, ES&S 2)	3
Miscellaneous Office equipment and supplies (such as report paper)	as required
Printer Thermal Paper Rolls	as required
Printed Ballots	as required

**2.4 Deliverable Materials**

The materials delivered by ES&S as part of the Unity 3.2.0.0 Rev 2 system to the user are documented in Section 7.1.5 of the ES&S Configuration Management Plan, Unity v. 3.2.0.0 Revision 2, and include the following: System Installation Instructions, System Operation Procedures, System Maintenance Manuals, Training Manuals, System Security Specifications, System Limitations, and System Change Notes (if required).



### **3.0 CERTIFICATION TEST BACKGROUND**

Wyle Laboratories is an independent testing laboratory for systems and components under harsh environments, including dynamic and climatic extremes as well as the testing of electronic voting systems. Wyle holds the following accreditations:

- ISO-9001:2000
- Nationally Recognized Testing Laboratory (NRTL)
- OSHA Accredited
- NVLAP Accredited ISO 17025:2005
- EAC Accredited VSTL, NIST 150,150-22
- A2LA Accredited (Certification No.'s 845.01, 845.02, and 845.03)
- FCC Approved Contractor Test Site (Part 15, 18, 68)

### **3.1 General Information about the Certification Test Process**

All testing performed as part of the test effort was performed at the Wyle Labs Huntsville, AL facility. Qualification/Certification testing was limited to the ES&S Unity 3.2.0.0 Rev 2 Voting System components previously identified in this report.

All hardware used during testing for this test campaign was configured "As Used" for voting. Each tabulator was placed on a ballot box and loaded with the proper firmware. The Unity 3.2.0.0 Rev 2 EMS suite was loaded on a COTS laptop. All media used during testing was loaded from this EMS laptop.

### **3.2 Certification Testing Scope**

As stated previously, the first modifications tested since initial certification of the Unity 3.2.0.0 system resulted in Unity 3.2.0.0 Rev 1, which was tested to the EAC 2005 VVSG. As a result of this testing, the Unity 3.2.0.0 Rev 1 system was granted certification under EAC Certification No. ESSUnity3200Rev1. Since that time, three issues were identified, either in fielded units or in the test lab environment, relating to the DS200 component of the Unity 3.2.0.0 system. To resolve the identified issues, ES&S submitted an update to the DS200 firmware. The submitted DS200 firmware (version 1.4.3.11) is the current firmware in the EAC Certified ES&S Unity 3.2.1.0 system (ESSUnity3210). The DS200 with the 1.4.3.11 firmware has not been tested with the Unity 3.2.0.0 Rev 1 EMS. This test campaign performed integration testing of the DS200 firmware, version 1.4.3.11, and the Unity 3.2.0.0 Rev 1 EMS, therefore resulting in the Unity 3.2.0.0 Rev 2 voting system.

The strategy for evaluating ES&S Unity 3.2.0.0 Rev 2 was to review the change log and the engineering changes submitted for the modified system. Wyle then determined that the modifications met all applicable EAC 2005 VVSG requirements. During testing, the DS200 and EMS were treated as "black box" components since they are both certified components in other EAC certified voting systems. The approach to testing was to verify that these two components interface without modification and, if so, conclude that version 1.4.3.11 of the DS200 firmware can be used to resolve the issues identified in the Unity 3.2.0.0 Rev 1 system.

**3.0 CERTIFICATION TEST BACKGROUND (CONTINUED)**

**3.2 Certification Testing Scope (continued)**

This test campaign included the following tests:

- Technical Data Package review to ensure all modifications are documented as applicable.
- System Integration Test to ensure the two components are interoperable.
- A limited Physical Configuration Audit to baseline the system.

The specific Wyle WoP's used during testing included the following:

- WoP 1 Operations Status Checks
- WoP 2 Receipt Inspection
- WoP 3 Technical Data Package Review (limited)
- WoP 4 Test Plan Preparation– ES&S Unity Version 3.2.0.0 Rev. 2 (*This document*)
- WoP 25 Physical Configuration Audit (limited)
- WoP 30 System Integration Test
- WoP 34 Test Report

Table 3-1 details the tests to be performed and the related WoPs.

**Table 3-1 Unity 3.2.0.0 Rev 2 Software and System Testing Sequence**

<b>Test</b>	<b>Description</b>	<b>Procedure</b>	<b>Test Level</b>	<b>Specimen</b>	<b>Election Data</b>
<i>Technical Data Package (TDP) Review (Pre-testing Activity)</i>	Documentation review for compliance, correctness, and completeness	WHVS07.1 WoP 3	Document	TDP Package	---
<i>Physical Configuration Audit</i>	Baseline of the system documentation, software, and hardware 2005 VVSG requirements	WHVS07.3 WoP 25	Component & Integration	DS200 & EMS	--
<i>System Integration Test</i>	Test of the entire system end to end.	WHVS07.5 WoP 30	System	DS200 & EMS	GEN01 MI-PRIM OH-PRIM
<i>Test Report</i>	Generation of final test report	WoP 34	---	---	---

### **3.0 CERTIFICATION TEST BACKGROUND (CONTINUED)**

#### **3.2 Certification Testing Scope (continued)**

##### **3.2.2 Technical Data Package Review Description**

The TDP contains information about requirements, design, configuration management, quality assurance, and system operations. For this test campaign, all documentation changes that were made to the TDP since the former version of this system (Unity 3.2.0.0 Rev 1) was certified were tracked through the technical data package.

##### **3.2.3 System Integration Test Description**

A system integration test was performed to ensure all interacting components function as a system without issues. Wyle chose three election definitions for system level testing: a Wyle-generated general election (GEN04), and two ES&S-provided actual state primary elections from states that have the Unity 3.2.0.0 Rev1 system fielded (Michigan and Ohio). The purpose for choosing the three election definitions was to demonstrate that the DS200 and the EMS could interface reliably and accurately using both a primary and a general election containing multiple voting variations.

##### **3.2.4 Physical Configuration Audit Test Description**

A limited Physical Configuration Audit (PCA) was performed in accordance with Section 6.6 of Volume II of the VVSG. The PCA compares the voting system components submitted for certification with the vendor's technical documentation and confirms that the documentation submitted meets the requirements of the Guidelines. The purpose of the PCA is to: establish a configuration baseline (both hardware and software) of the system to be tested; verify that the reviewed source code conforms to the vendor's specification; and assess the adequacy of user acceptance test procedures and data.

#### **3.3 Wyle Quality Assurance**

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

#### **3.4 Test Equipment and Instrumentation**

All instrumentation, measuring, and test equipment used in the performance of this test program was calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL 2540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards, or the basis for calibration is otherwise documented.

**3.0 CERTIFICATION TEST BACKGROUND (CONTINUED)**

**3.5 Terms and Abbreviations**

This subsection defines all terms and abbreviations applicable to this Test Report.

**Table 3-2 Terms and Abbreviations**

Term	Abbreviation	Definition
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability
Audit Manager	AM	System software that provides security and user tracking for Election Data Manager (EDM) and ES&S Ballot Image Manager (ESSIM).
Configuration Management	CM	---
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.
Election Data Manager	EDM	A single-entry database that stores all of a jurisdiction's precinct, office, and candidate information.
Election Management System	EMS	---
Election Reporting Manager	ERM	Election results reporting program.
ESSIM	ESS Image Manager	A desktop publishing tool that allows users to design and print ES&S paper ballots.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
Hardware Programming Manager	HPM	An election package primarily used for converting election files and creating and loading election parameters.
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhances economic security and improves our quality of life.
Physical Configuration Audit	PCA	Review by accredited test laboratory to compare voting system components submitted for certification testing to the manufacturer's technical documentation, and confirmation the documentation meets national certification requirements. A witnessed build of the executable system is performed to ensure the certified release is built from tested components.
Quality Assurance	QA	---
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Voting System Standards	VSS	Published by the FEC, second iteration of national level voting system standards.
Voluntary Voting System Guidelines	2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Operating Procedure	WoP	Wyle Test Method or Test Procedure

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## 4.0 TEST FINDINGS AND RECOMMENDATIONS

### 4.1 Summary Findings and Recommendation

The ES&S Unity 3.2.0.0 Rev 2 Voting System components, as listed in Section 2.0, were subjected to the tests described in Section 3.0 of this report. The results of those tests are summarized in the sections below. All hard copy data generated by the performance of these tests was retained by Wyle as raw data.

#### 4.1.1 Technical Data Package Results

For this test campaign, all documentation changes that were made to the TDP since the former version of this system (Unity 3.2.0.0 Rev 1) was certified were tracked through the technical data package.

**Summary Findings:** All documentation changes were tracked and verified to conform to the requirements of the EAC 2005 VVSG.

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#### 4.1.2 System Integration Test Results

A system integration test was performed to ensure all interacting components function as a system without issues.

The Certified EMS, consisting of a COTS desktop computer as documented in Section 2, was configured as follows for the System Integration Testing:

- HPM – version 5.7.1.0
- EDM – version 7.8.1.0
- ESSIM – version 7.7.1.0
- AM – version 7.5.2.0
- ERM – version 7.5.4.0
- Log Monitor – 1.0.0.0

The DS200 was configured as follows for the System Integration Testing:

*Optical Scanner* – Three DS200's, loaded with firmware version 1.4.3.11, were configured as for normal operation on Election Day.

Wyle chose three election definitions for system level testing: a Wyle-generated general election (GEN04), and two ES&S-provided actual state primary elections from states that have the Unity 3.2.0.0 Rev1 system fielded (Michigan and Ohio). The election definitions used for testing are defined in Tables 4-1, 4-2, and 4-3.

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**4.0 TEST FINDINGS AND RECOMMENDATIONS (CONTINUED)**

**4.1 Summary Findings and Recommendation (continued)**

**4.1.2 System Integration Test Results (continued)**

**Table 4-1 General Election Election Definition Parameters**

Ballot Positions	135 possible positions per ballot
Ballot Styles	1
Election Parameters	Closed Primary: No Open Primary: No Partisan offices: Yes Non-Partisan offices: Yes Write-in voting: Yes Primary presidential delegation nominations: No Ballot Rotation: No Straight Party voting: Yes Cross-party endorsement: Yes Split Precincts: No Vote for N of M: Yes Recall issues, with options: No Cumulative voting: No Ranked order voting: No Provisional or challenged ballots: No Early Voting: No
Precincts	1
Parties	8
Languages	English
Voting Pattern	The Test Deck consisted of 10 hand marked ballots. The voting pattern consisted of a matrix pattern and two exception votes handled by the tabulators. The test decks was voted 1 time using orientation 1 as established by ES&S documentation.
Total Ballots Cast	10

**4.0 TEST FINDINGS AND RECOMMENDATIONS (CONTINUED)**

**4.1 Summary Findings and Recommendation (continued)**

**4.1.2 System Integration Test Results (continued)**

**Table 4-2 Ohio Closed Primary Election Definition Parameters**

Ballot Positions	70 possible positions per ballot
Ballot Styles	4
Election Parameters	Closed Primary: Yes Open Primary: No Partisan offices: Yes Non-Partisan offices: Yes Write-in voting: Yes Primary presidential delegation nominations: Yes Ballot Rotation: No Straight Party voting: No Cross-party endorsement: No Split Precincts: Yes Vote for N of M: Yes Recall issues, with options: No Cumulative voting: No Ranked order voting: No Provisional or challenged ballots: No Early Voting: No
Precincts	1 split
Parties	2
Languages	English
Voting Pattern	The Test Deck consisted of 20 hand marked ballots. The voting pattern consisted of a matrix pattern and two exception votes handled by the tabulators. The test decks was voted 1 time using orientation 1 as established by ES&S documentation.
Total Ballots Cast	20

**4.0 TEST FINDINGS AND RECOMMENDATIONS (CONTINUED)**

**4.1 Summary Findings and Recommendation (continued)**

**4.1.2 System Integration Test Results (continued)**

**Table 4-3 Michigan Open Primary Election Definition Parameters**

Ballot Positions	125 possible positions total of all styles
Ballot Styles	4
Election Parameters	Closed Primary: No Open Primary: Yes Partisan offices: Yes Non-Partisan offices: Yes Write-in voting: Yes Primary presidential delegation nominations: No Ballot Rotation: No Straight Party voting: No Cross-party endorsement: No Split Precincts: No Vote for N of M: Yes Recall issues, with options: No Cumulative voting: No Ranked order voting: No Provisional or challenged ballots: No Early Voting: No
Precincts	1
Parties	2
Languages	English
Voting Pattern	The Test Deck consisted of 10 hand marked ballots. The voting pattern consisted of a matrix pattern and two exception votes handled by the tabulators. The test decks was voted 1 time using orientation 1 as established by ES&S documentation.
Total Ballots Cast	20

**Summary Findings:**

The election definitions were loaded onto the DS200's via the USB flash drive. Each election definition was then voted per the parameters identified in Tables 4-1 through 4-3 on each of the three DS200's under test, resulting in the processing of forty ballots per machine. At the conclusion of the processing of each election, the results were transferred to the ERM via the USB flash drive. This allowed for testing of the interface between the DS200, loaded with firmware version 1.4.3.11, and the ERM.

As required for acceptance, the expected results from all steps in the test cases matched the actual results observed.



#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (CONTINUED)

##### 4.1 Summary Findings and Recommendation (continued)

##### 4.1.3 Physical Configuration Audit Results

The PCA performed on the modified EMS v. 4.0B was abbreviated. All equipment used as the initial baseline was received from the VSTL that performed the initial certification evaluation on the EMS v. 4.0B. This equipment was the equipment used during the original certification.

##### Summary Findings:

The PCA consisted of inspecting and documenting the hardware and software documented in tables 2-1 and 2-2 of this report. Photographs of the equipment were taken and are presented in Appendix A of this report.

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Additionally, TDP documents were reviewed to ensure that the sufficient instruction was provided for a user to install, validate, operate, and maintain the voting system.

##### 4.2 Anomalies and Resolutions

No anomalies were encountered during test performance.

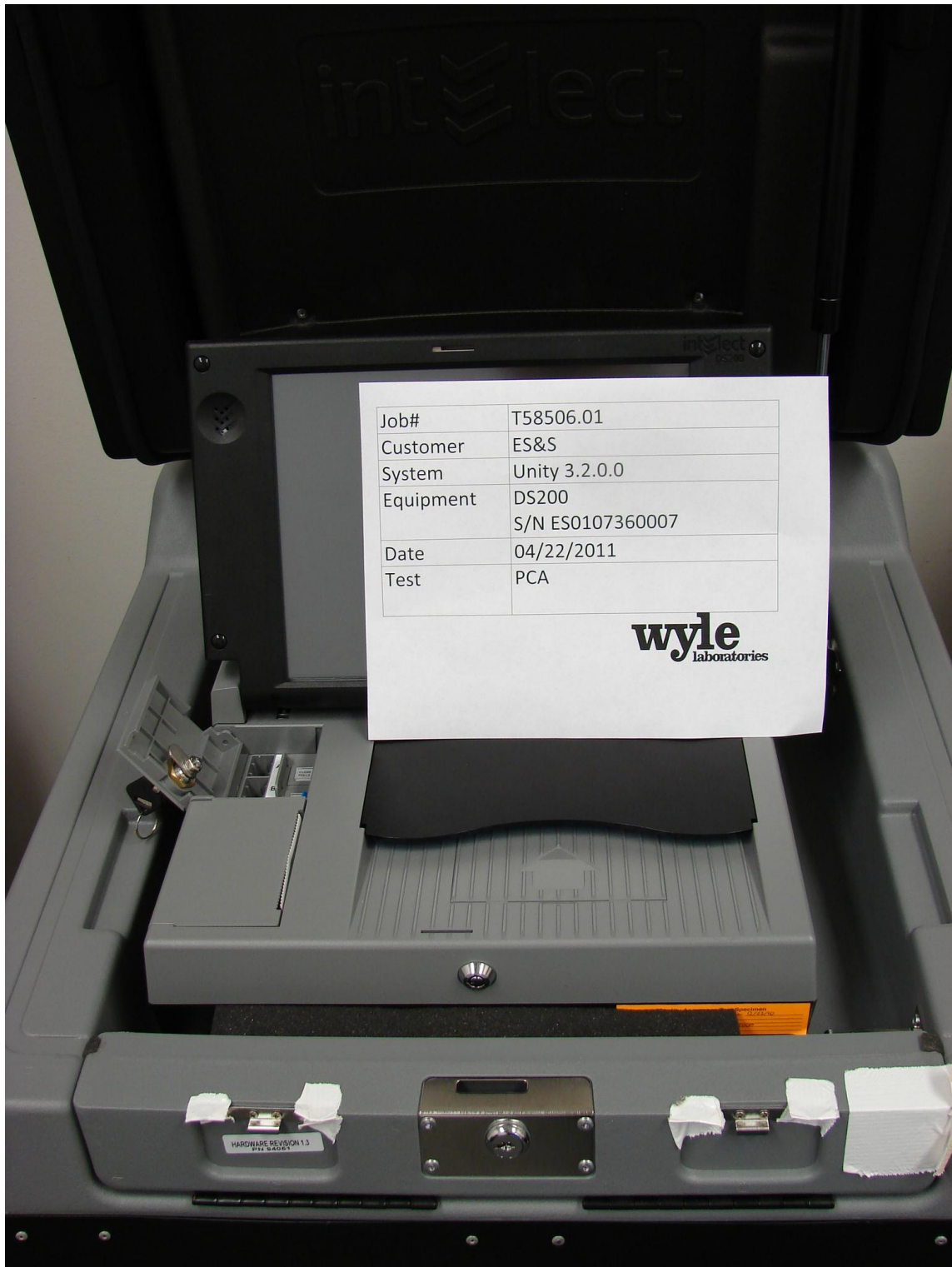
##### 4.3 Recommendation for Certification

The initial version of this system, Unity 3.2.0.0, has been fully tested to the FEC 2002 VSS. Modifications made since initial certification, resulting in the previous version of this system, Unity 3.2.0.0 Rev 1, have been tested to the EAC 2005 VVSG. As a result of this testing, the Unity 3.2.0.0 Rev 1 system was granted certification under EAC Certification No. ESSUnity3200Rev1. This test campaign evaluated an update to the DS200 firmware to resolve issues identified since certification was granted, therefore resulting in the Unity 3.2.0.0 Rev 2 voting system. All modifications incorporated into the Unity 3.2.0.0 Rev 2 voting system have been successfully tested to the EAC 2005 VVSG.

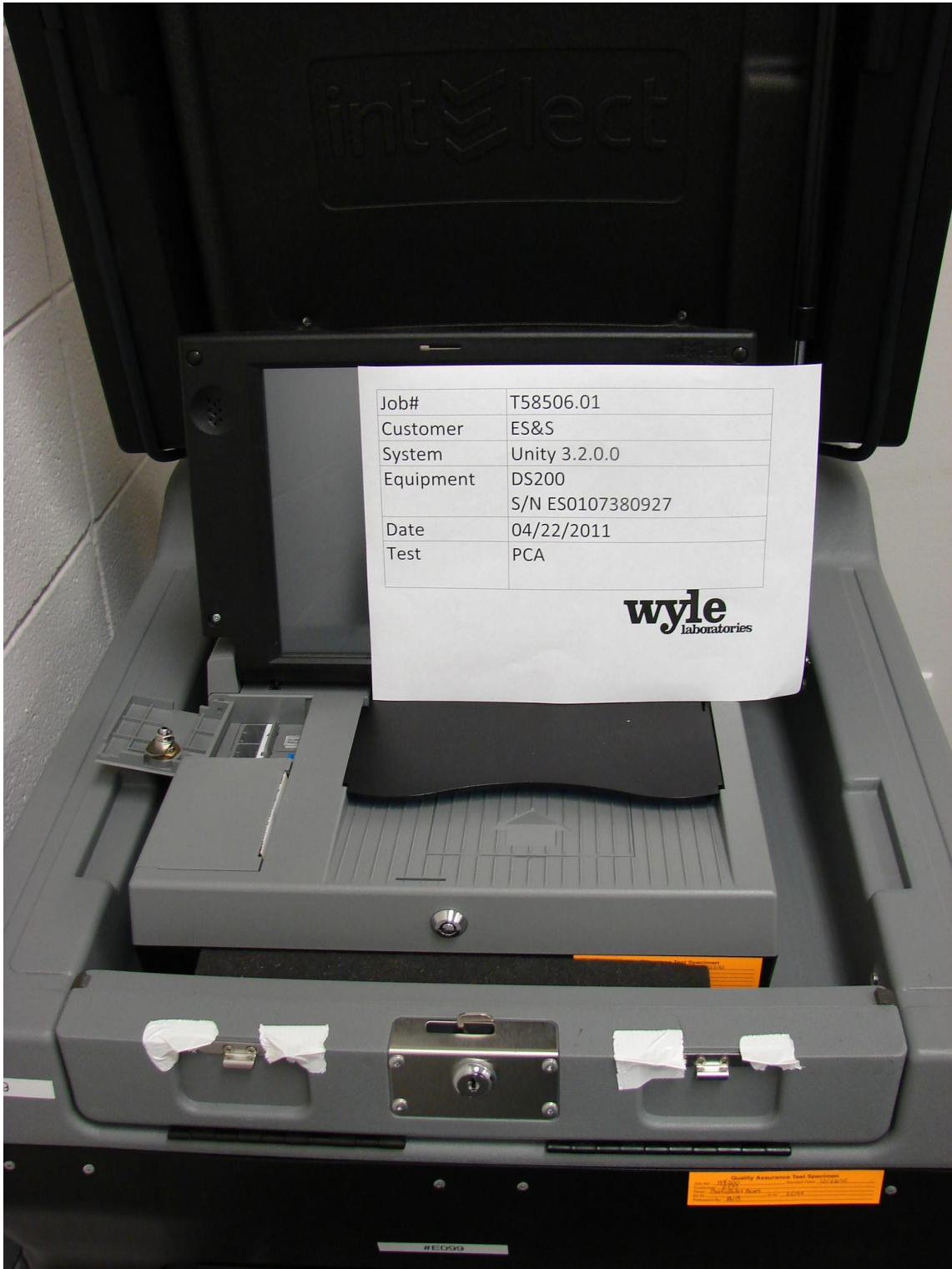
As such, Wyle recommends that the EAC grant the ES&S Unity 3.2.0.0 Rev 2 certification to the FEC 2002 VSS.

This report is valid only for the equipment identified in Section 2 of this report. Any changes, revisions, or corrections made to the system after this evaluation shall be submitted to the EAC for determination on the nature and scope of testing. The scope of testing required will be determined based upon the degree of modification.

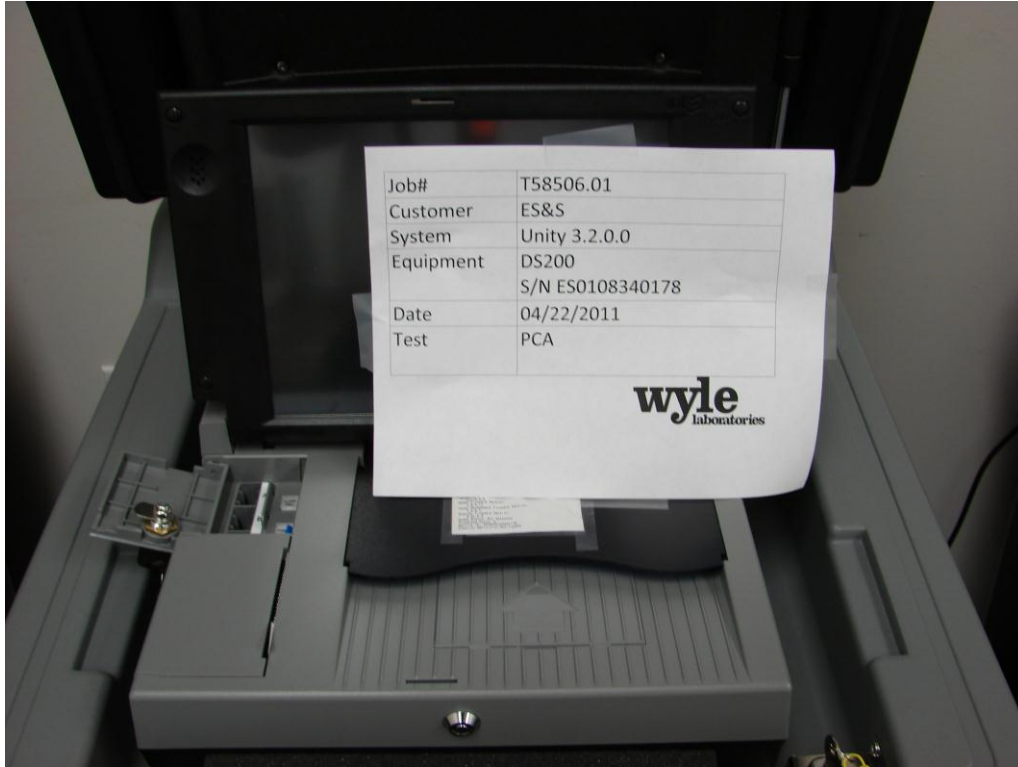
**APPENDIX A**  
**PHOTOGRAPHS**



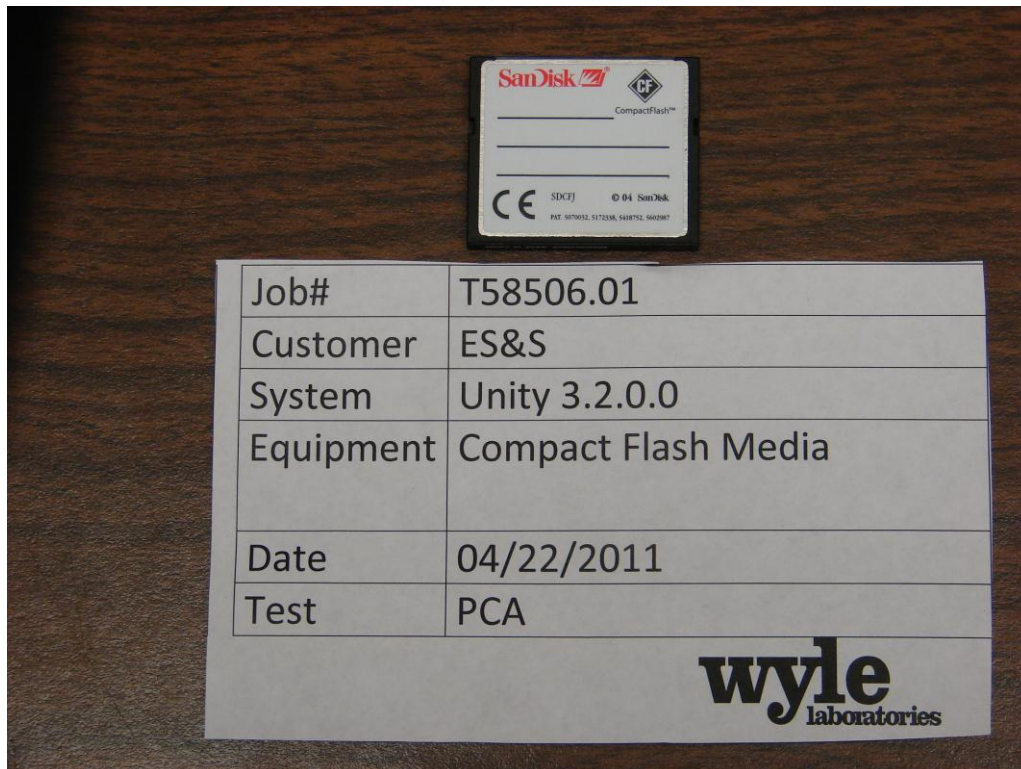
Photograph 1: DS200 (S/N ES0107360007)



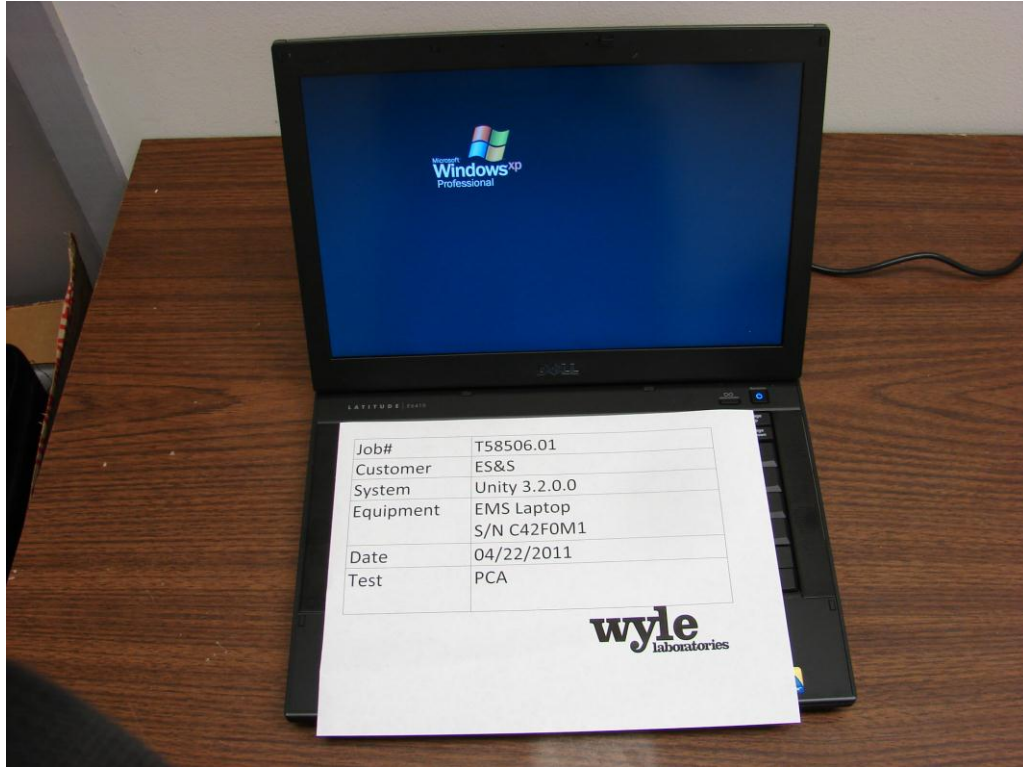
Photograph 2: DS200 (S/N ES0107380927)



Photograph 3: DS200 (S/N ES0108340178)



Photograph 4: Compact Flash Media



**Photograph 5: EMS Laptop**

**APPENDIX B**  
**ELECTION DEFINITIONS**

**GENERAL ELECTION ELECTION DEFINITION**



**ELECTION DEFINITION: GEN-04**

**Regression Testing:**

This test must exercise all possible voting positions for this ballot. There are 139 possible positions per ballot. ES&S will provide professional ballots on 14 inch card stock which will be hand marked with the pre-determined voting pattern. This election contains 15 contests compiled in 1 ballot style with 2 proposals.

- Closed Primary: No
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: No
- Ballot Rotation: No
- Straight Party voting: Yes
- Cross-party endorsement: Yes
- Split Precincts: No
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: No
- Early Voting: No

**Equipment:** 3 DS200 units and 10 printed hand marked ballots per machine

**Configuration**

**EMS computer is used to create ballots with the following characteristics:**

**Election named: :** GEN-04

**Precinct Based Testing**

**3 machines used for voting in 1 precinct**

**1precinct:** Hillwood

**8 parties:** American, Communist, Constitution, Democrat, Green, Labor, Libertarian, Republican

**Languages:** English

**Contests as listed:**

<b>General Election</b>
<b>Straight Party</b>
American Communist Constitution Democrat Green Labor Libertarian Republican
<b>Vote for 1</b>
<b>President of the United States</b>

<b>ELECTION DEFINITION: GEN-04</b>	
Barbara Barrett Hicks Edris Thomas Fiero Finn Gail Keefe Imran Rashid Jack "Duke" Brodisky Kay Raab Sam Patel Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>United States Senator</b>	
Barry Josey Edwin Best Floyd W. Schisler Gail Ross Jack Hall Keith Satterwhite Laurie St Laurent Tetty Rogiers Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>Representative in Congress District 1</b>	
Ben Baker Edwin Lewis Frank L. Matthews Gale Smith James A. Clark Ken Anderson Leo Cross Theodore Judd Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>State Assembly District 1</b>	
Betty Williams Elizabeth Mack Frank Pearson Gary Klemann James Ayers Kenneth Interlicchio Leon Lewis Theodore Kopp Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>State Supreme Court Justice Seat A</b>	
Bruce Willis Ernst Lynch Glenn T Combs Herbert Schweppenhauser Linda Hall Micheal McClelland Philip Thorp Eugene Kessler Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>Associate Judge of Court of Appeals District 1</b>	
Ala Dee Smith Calvin Marino	Amer Comm

<b>ELECTION DEFINITION: GEN-04</b>	
David Cox Eugene Ruff Kerry Jones Mildred Dudo Philip Thorp Thomas Reiss Write-in	Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>County Commissioner District 1</b>	
Brent Gilley Elizabeth Piazza Franklin Margo Gene Tillman James Collins Kerry Jones Lewis Tese Tony Grzanich Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>County Comptroller Seat A</b>	
Brian Edwards Eric Sheehy George A. Fisk Helena Slack Lewis Touhay Mary L. Daniel Nyda E Hamblin Charles Place Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>County Assessor</b>	
Brian Getz Ernest Snyder Gerald Danson Herbert Devine Linda Gapp Micheal H Walker Philip Rebis William Sullivan Write-In Write-In	Amer Comm Const Dem Green Labor Lib Rep
<b>Vote for 1</b>	
<b>Councilman District 2 (Non-Partisan)</b>	
Arthur Salamack Carter McGaw Derek Persons Elizabeth Piazza Franklin Margo Louis Korte, Jr Mary L. Daniel Write-In	
<b>Vote for 1</b>	
<b>Councilman District 5 (Non-Partisan)</b>	
Arnold Krill Chistopher R. Richardson Delores DeVan Ernest Snyder George A. Fisk Helena Slack Imran Rashid Write-In	

<b>ELECTION DEFINITION: GEN-04</b>	
	<p><b>Vote for 1</b></p> <p><b>Alderman District 11</b> (Non-Partisan)</p> <p>Arthur Kumar Barry Josey Cecil Carey David Heroux Frank Pearson Gloria Dillion Howard Hwang Write-In</p>
	<p><b>Vote for 1</b></p> <p><b>State University Trustees</b> (Non-Partisan)</p> <p>Angela Pogoda Charles Jasen Derek Carlson Eugene Ruff Glenna P Cook-Lincoln Write-In Write-In Write-In Write-In Write-In</p>
	<p><b>Vote for 5</b></p> <p><b>Delegates to 3<sup>rd</sup> Judicial Convention</b> (Non-Partisan)</p> <p>Anne Neet Barry Josey Colby Lincoln Davina Ayers-Grant Edris Thomas Floyd W. Schisler Gloria Castle Write-In</p>
	<p><b>Vote for 1</b></p> <p><b>Constitutional Amendment</b> <b>Temporary Assignment of</b> <b>Family Court Judges</b></p> <p>Shall the proposed amendment to subdivision of section 26 of article VI of the Constitution, permitting the temporary assignment of a Judge of the family court to the supreme court in the judicial department of his residence, be approved?</p> <p>Yes No</p>
	<p><b>Vote for 1</b></p> <p><b>Referendum A</b> <b>Bond Issue</b></p> <p>To promote and assure the preservation and improvement of essential rail passenger and freight services to the inhabitants of the state, shall section two of chapter one hundred eighteen of the laws of nineteen hundred seventy-four, authorizing the creation of a state debt in the amount of two hundred fifty million dollars for capital facilities be approved?</p> <p>Yes No</p>
	<p><b>Vote for 1</b></p>
<p><b>Voting Devices Used:</b> DS 200 precinct tabulation device</p>	

**ELECTION DEFINITION: GEN-04**

**Test Deck Pattern:**

The Test Deck will consist of 10 hand marked ballots for each precinct. The voting pattern will consist of a matrix pattern and two exception votes handled by the tabulators. The test decks will be voted 1 time using orientation 1 as established by ES&S documentation.

A) Under vote the straight party selections, vote for each candidate in each party per race and select the corresponding to Non Partisan ballot position in each Non Partisan race. Vote the "State University Trustee" race by selecting the corresponding five candidates to the ballot position of the other races. After the last candidate has been chosen in race 5 select all written in choices for ballots 6-8. Vote "Yes" for each proposal on the first ballot; vote "No" for the second ballot and vote Yes for the remaining ballots 3-8. B) For Ballot 9 Vote the American Straight party candidate and under vote all other races on the ballot. C) For Ballot 10 Over Vote American Straight Party and Communist Straight Party and under vote all other races on the ballot.

**TEST RESULTS**

**Total ballots cast = 10**

Straight party

American Amer	1
Communist Comm	0
Constitution Const	0
Democrat Dem	0
Green Green	0
Labor Labor	0
Libertarian Lib	0
Republican Rep	0
Over Votes	1
Under Votes	8
Totals	10

President of the United States

Barbara Barrett Hicks Amer	2
Edris Thomas Comm	1
Fiero Finn Const	1
Gail Keefe Dem	1
Imran Rashid Green	1
Jack "Duke" Broditsky Labor	1
Kay Raab Lib	1
Sam Patel Rep	1
Write-In	0
Over Votes	0
Under Votes	1
Totals	10

United States Senator

Barry Josey Amer	2
Edwin Best Comm	1
Floyd W. Schisler Const	1
Gail Ross Dem	1
Jack Hall Green	1
Keith Satterwhite Labor	1
Laurie St Laurent Lib	1
Tetty Rogiers Rep	1
Write-In	0
Over Votes	0
Under Votes	1
Totals	10

Representative in Congress

**ELECTION DEFINITION: GEN-04**

Ben Baker Amer	2
Edwin Lewis Comm	1
Frank L. Matthews Const	1
Gale Smith Dem	1
James A. Clark Green	1
Ken Anderson Labor	1
Leo Cross Lib	1
Theodore Judd Rep	1
Write-In	0
Over Votes	0
Under Votes	1
Totals	10

State Assembly

Betty Williams Amer	2
Elizabeth Mack Comm	1
Frank Pearson Const	1
Gary Klemann Dem	1
James Ayers Green	1
Kenneth Interlicchio Labor	1
Leon Lewis Lib	1
Theodore Kopp Rep	1
Write-In	0
Over Votes	0
Under Votes	1
Totals	10

State Supreme Court Justice

Bruce Willis Amer	2
Ernst Lynch Comm	1
Glenn T Combs Const	1
Herbert Schweppenhauser Dem	1
Linda Hall Green	1
Micheal McClelland Labor	1
Philip Thorp Lib	1
Eugene Kessler Rep	1
Write-In	0
Over Votes	0
Under Votes	1
Totals	10

Associate Judge of Court of Appeals

Ala Dee Smith Amer	2
Calvin Marino Comm	1
David Cox Const	1
Eugene Ruff Dem	1
Kerry Jones Green	1
Mildred Dudo Labor	1
Philip Thorp Lib	1
Thomas Reiss Rep	1
Write-in	0
Over Votes	0
Under Votes	1
Totals	10

County Commissioner

Brent Gilley Amer	2
Elizabeth Piazza Comm	1
Franklin Margo Const	1
Gene Tillman Dem	1
James Collins Green	1
Kerry Jones Labor	1

ELECTION DEFINITION: GEN-04		
Lewis Tese	Lib	1
Tony Grzanich	Rep	1
Write-In		0
Over Votes		0
Under Votes		1
Totals		10
County Comptroller		
Brian Edwards	Amer	2
Eric Sheehy	Comm	1
George A. Fisk	Const	1
Helena Slack	Dem	1
Lewis Touhay	Green	1
Mary L. Daniel	Labor	1
Nyda E Hamblin	Lib	1
Charles Place	Rep	1
Write-In		0
Over Votes		0
Under Votes		1
Totals		10
County Assessor		
Brian Getz	Amer	2
Ernest Snyder	Comm	1
Gerald Danson	Const	1
Herbert Devine	Dem	1
Linda Gapp	Green	1
Micheal H Walker	Labor	1
Phillip Rebis	Lib	1
William Sullivan	Rep	1
Write-In		0
Over Votes		0
Under Votes		1
Totals		10
Councilman District 2 (Non-Partisan)		
Arthur Salamack		1
Carter McGaw		1
Derek Persons		1
Elizabeth Piazza		1
Franklin Margo		1
Louis Korte, Jr		1
Mary L. Daniel		1
Write-In		1
Over Votes		0
Under Votes		2
Totals		10
Councilman District 5 (Non-Partisan)		
Arnold Krill		1
Christopher R. Richardson		1
Delores DeVan		1
Ernest Snyder		1
George A. Fisk		1
Helena Slack		1
Imran Rashid		1
Write-In		1

ELECTION DEFINITION: GEN-04	
Over Votes	0
Under Votes	2
Totals	10
Alderman District 11 (Non-Partisan)	
Arthur Kumar	1
Barry Josey	1
Cecil Carey	1
David Heroux	1
Frank Pearson	1
Gloria Dillion	1
Howard Hwang	1
Write-In	1
Over Votes	0
Under Votes	2
Totals	10
State University Trustees (Non-Partisan)	
Angela Pogoda	3
Charles Jasen	3
Derek Carlson	3
Eugene Ruff	4
Glenna P Cook-Lincoln	5
Write-In	22
Over Votes	0
Under Votes	10
Totals	50
Delegates to 3rd Judicial Convention (Non-Partisan)	
Anne Neet	1
Barry Josey	1
Colby Lincoln	1
Davina Ayers-Grant	1
Edris Thomas	1
Floyd W. Schisler	1
Gloria Castle	1
Write-In	1
Over Votes	0
Under Votes	2
Totals	10
Constitutional Amendment Temporary Assignment	
Yes	7
No	1
Over Votes	0
Under Votes	2
Totals	10
Referendum A Bond Issue	
Yes	7
No	1
Over Votes	0
Under Votes	2
Totals	10

**Criteria For Evaluation of Test Results:** The results for this test will be accepted if no anomalies are recorded during the test execution and the results match the expected results for the test pattern.



**OHIO CLOSED PRIMARY ELECTION DEFINITION**

**ELECTION DEFINITION: OHIO CLOSED PRIMARY**

**CLOSED PRIMARY: CP-OHIO**

Closed Primary Election used for Ohio State Certification. An election held in 1 split precincts with multi-page ballots. This election contains 32 contests compiled into 4 ballot styles. It is a two party primary with 3 contests split between 2 precinct by party. The voting variations supported by this election are as follows:

- Closed Primary: Yes
- Open Primary: No
- Partisan offices: Yes
- Non-Partisan offices: Yes
- Write-in voting: Yes
- Primary presidential delegation nominations: Yes
- Ballot Rotation: No
- Straight Party voting: No
- Cross-party endorsement: No
- Split Precincts: Yes
- Vote for N of M: Yes
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: No
- Early Voting: No

This election was designed to functionally test the handling of multiple ballot styles, multi-page ballot, split precinct, and support for common voting variations.

**Configuration**

**EMS computer is used to create ballots with the following characteristics:**

**Primary Election named:** CP-OHIO Ohio Closed Primary

**Precinct Based Testing**

**3 machine used for all precincts**

**1 precinct:** Precinct 2 Split 1, Precinct 2 Split 2

**2 parties:** Democrat, Republican

**Languages:** English

**Contest Totals:** 32

**Contests as listed:**

Democrat Precinct 2 Split 1	Democrat Precinct 2 Split 2	Republican Precinct 2 Split 1	Republican Precinct 2 Split 2
<b>US Congress District 15</b> FOUR Year Term (Vote For Not More Than ONE)  Mary Jo Kilroy		<b>US Congress District 15</b> FOUR Year Term (Vote For Not More Than ONE) Robert Wagner Steve Stivers	
<b>For Delegate and Alternate to the National Convention</b> FOUR Year Term (Vote For Not More Than ONE)  Hillary Clinton		<b>For Delegate-at-Large and Alternate-at Large to the National Convention</b> FOUR Year Term (Vote For Not More Than ONE)  Mike Huckabee John McCain Ron Paul	

<b>ELECTION DEFINITION: OHIO CLOSED PRIMARY</b>			
		Mitt Romney Fred Thompson Rudy Giuliani	
		For District Delegate and District Alternate to the National Convention FOUR Year Term (Vote For Not More Than ONE)	
		Mike Huckabee John McCain Ron Paul Mitt Romney Fred Thompson Rudy Giuliani	
For State Senator (10 <sup>TH</sup> DISTRICT) FOUR Year Term (Vote For Not More Than ONE)		For State Senator (10 <sup>TH</sup> DISTRICT) FOUR Year Term (Vote For Not More Than ONE)	
Roger Tackett		W. Reed Madden Chris Widener James E. Howard	
		For Representative to Congress US CONGRESS DISTRICT 15 FOUR Year Term (Vote For Not More Than ONE)	
		Robert Wagner Steve Stivers	
For State Representative (84 <sup>th</sup> District) FOUR Year Term (Vote For Not More Than ONE)		For State Representative (84 <sup>th</sup> District) FOUR Year Term (Vote For Not More Than ONE)	
Connie Crockett		Craig W. Saunders Robert D. Hackett	
For County Commissioner (Full Term Commencing 1-2-09) FOUR Year Term (Vote For Not More Than ONE)		For County Commissioner (Full Term Commencing 1-2-09) FOUR Year Term (Vote For Not More Than ONE)	
Thomas Buscemi		Mark A. Forrest Charlie M. Miller John J. Stahl Michael K. Boerger	
For County Commissioner (Full Term Commencing 1-3-09) FOUR Year Term (Vote For Not More Than ONE)		For County Commissioner (Full Term Commencing 1-3-09) FOUR Year Term (Vote For Not More Than ONE)	
Stephen J. Pronai		Chris Snyder	
For Sheriff FOUR Year Term (Vote For Not More Than ONE)		For Sheriff FOUR Year Term (Vote For Not More Than ONE)	

<b>ELECTION DEFINITION: OHIO CLOSED PRIMARY</b>	
James Winston Kaehr	David P.Brand
For Justice of the Supreme Court (Full Term Commencing 1-1-09) FOUR Year Term (Vote For Not More Than ONE)	For Justice of the Supreme Court (Full Term Commencing 1-1-09) FOUR Year Term (Vote For Not More Than ONE)
Joseph D. Russo	Maureen O'Conner
For Justice of the Supreme Court (Full Term Commencing 1-2-09) FOUR Year Term (Vote For Not More Than ONE)	For Justice of the Supreme Court (Full Term Commencing 1-2-09) FOUR Year Term (Vote For Not More Than ONE)
Peter M. Sikora	Evelyn L. Stratton
For Judge of the Court of Appeals (12 <sup>th</sup> District) FOUR Year Team (Vote For Not More Than ONE)	For Judge of the Court of Appeals (12 <sup>th</sup> District) FOUR Year Team (Vote For Not More Than ONE)
Bruce Carter	Robert P. Ringland
For Judge of the Court of Appeals (12 <sup>th</sup> District) FOUR Year Team (Vote For Not More Than ONE)	For Judge of the Court of Appeals (12 <sup>th</sup> District) FOUR Year Team (Vote For Not More Than ONE)
Laura Curliss	Mary H. Mcelwee Robert A. Hendrickson
For Member of State Central Committee, Man FOUR Year Term (VOTE For Not More Than ONE)	
David M. Farrell	
For Member of State Central Committee, Woman FOUR Year Term (VOTE For Not More Than ONE)	For Member of State Central Committee, Woman FOUR Year Term (VOTE For Not More Than ONE)
Nora M. Parker	Betty Kitchen
For Judge of the Court of Common Pleas Probate Division FOUR Year Term (Vote for Not More Than ONE)	For Judge of the Court of Common Pleas Probate Division FOUR Year Term (Vote for Not More Than ONE)
NO CANDIDATE FILED	R. David Picken Glenn S. Hamilton
For Mayor – South Salon FOUR Year Term (Vote For Not More Than TWO)	
Jamie Wood Doug Worthington Lawrence Wilson	
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOL DISTRICT</b> A majority affirmative vote is necessary for passage. Shall bonds be issued by the Miami Trace Local School District TO PAY THE LOCAL SHARE OF SCHOOL CONSTRUCTION UNDER THE STATE OF OHIO CLASSROOM FACILITIES ASSISTANCE PROGRAM in the	

**ELECTION DEFINITION: OHIO CLOSED PRIMARY**

principal amount of \$9,154,794 to be repaid annually over a maximum period of twenty-eight (28) years, and an annual levy of property taxes be made outside the ten-mill limitation, estimated by the county auditor to average over the repayment period of the bond issue two (2) mills for each one dollar of tax valuation, which amounts to twenty cents (\$0.20) for each one hundred dollars of tax valuation, commencing in 2008, first due in calendar year 2009, to pay the annual debt charges on any notes issued in anticipation of the bonds? and,  
Shall an additional levy of taxes be made for a period of twenty-three (23) years, commencing in 2008, first due in calendar year 2009, to benefit the Miami Trace Local School District, THE PROCEEDS OF WHICH SHALL BE USED TO PAY THE COST OF MAINTAINING THE CLASSROOM FACILITIES INCLUDED IN THE PROJECT, at the rate of one-half (0.5) mill for each one dollar of valuation? and, Shall bonds be issued by the Miami Trace Local School District for the purpose of PAYING THE COST OF CONSTRUCTING SCHOOL FACILITY IMPROVEMENTS THAT ARE NOT INCLUDED IN THE COSTS COVERED BY THE STATE OF OHIO CLASSROOM FACILITIES ASSISTANCE PROGRAM in the principal amount of \$3,000,000, to be repaid over a maximum period of twenty-eight (28) years and an annual levy of property taxes be made outside the ten-mill limitation, estimated by the county auditor to average over the repayment period of the bond issue seven-tenths (0.7) mill for each one dollar of tax valuation, which amounts to seven cents (\$0.07) for each one hundred dollars of tax valuation, commencing in 2008, first due in calendar year 2009, to pay the annual debt charges on the bonds and to pay the debt charges on any notes issued in anticipation of the bonds?

For the Bond Issues and Tax Levy

Against the Bond Issues and Tax Levy

**PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY**

A Majority Affirmative Vote Is Necessary For Passage  
An additional tax for the benefit of Mt. Sterling Public Library for the purpose of CURRENT OPERATING EXPENSES at a rate not exceeding one (1) mill for each one dollar of valuation, which amounts to ten cents (\$0.10) for each one hundred dollars of valuation, for ten years, commencing in 2008, first due in calendar year 2009.

For the Tax Levy

Against the Tax Levy

**A Majority Affirmative Vote Is Necessary For Passage**

A replacement of a tax for the benefit of the Madison County for the purpose of OPERATION AND MAINTENANCE OF FAIRHAVEN PROGRAMS FOR THE MENTALLY RETARDED AND DEVELOPMENTALLY DISABLED PERSONS by the Madison County Board of Mental Retardation/Developmental Disabilities at a rate not exceeding 1 mill for each one dollar of valuation, which amounts to \$0.10 for each one hundred dollars of valuation for 5 years, commencing in 2008, first due in calendar year 2009.

For the Tax Levy

Against the Tax Levy

**Applicable Voting Devices :**  
OP Scanner

**ELECTION DEFINITION: OHIO CLOSED PRIMARY**

**Test Deck Pattern:**

The Test Deck will consist of 20 hand marked ballots for each precinct. The voting pattern will consist of a matrix pattern with expected results tallied and detailed below. The test decks will be voted 1 time using orientation 1 as established by ES&S documentation.

A) Vote 5 ballots by selecting the 1<sup>st</sup> position and 1<sup>st</sup> and 2<sup>nd</sup> position in "N of M" races in each Partisan and Non-partisan race for the Republican Primary Split 01. Vote "Yes" for each proposal. B) Vote 5 ballots by selecting the 1<sup>st</sup> position and 1<sup>st</sup> and 2<sup>nd</sup> position in "N of M" races in each Partisan and Non-partisan race for the Republican Primary Split 02. Vote "NO" for each proposal. C) Vote 5 ballots by selecting the 1<sup>st</sup> position and 1<sup>st</sup> and 2<sup>nd</sup> position in "N of M" races in each Partisan and Non-partisan race for the Democratic Primary Split 01. Vote "Yes" for each proposal. D) Vote 5 ballots by selecting the 1<sup>st</sup> position and 1<sup>st</sup> and 2<sup>nd</sup> position in "N of M" races in each Partisan and Non-partisan race for the Democratic Primary Split 02. Vote "No" for each proposal.

Each unit under test will receive 5 votes for each of the Republican and Democratic splits for a total of 20 ballots. Listed below is the voting pattern and expected results for the contest.

Dem Precinct 2, Split 1	B-1	B-2	B-3	B-4	B-5
<b>US Congress District 15</b>					
Mary Jo Kilroy	X	X	X	X	X
<b>For Delegate and Alternate to the National Convention</b>					
Hillary Clinton	X	X	X	X	X
<b>For State Senator</b>					
Roger Tackett	X	X	X	X	X
<b>For State Representative (84<sup>th</sup> District)</b>					
Connie Crockett	X	X	X	X	X
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>					
Thomas Buscemi	X	X	X	X	X
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>					
Stephen J. Pronai	X	X	X	X	X
<b>For Sheriff</b>					
James Winston Kaehr	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>					
Joseph D. Russo	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>					
Peter M. Sikora	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Bruce Carter	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Laura Curliss	X	X	X	X	X
<b>For Member of State Central Committee, Man</b>					
David M. Farrell	X	X	X	X	X
<b>For Member of State Central Committee, Woman</b>					
Nora M. Parker	X	X	X	X	X

<b>For Judge of the Court of Common Pleas</b>					
NO CANDIDATE FILED					
<b>For Mayor – South Salon</b>					
Jamie Wood	X	X	X	X	X
Doug Worthington	X	X	X	X	X
Lawrence Wilson					
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOL DISTRICT</b>					
For the Bond Issues and Tax Levy	X	X	X	X	X
Against the Bond Issues and Tax Levy					
<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>					
For the Tax Levy	X	X	X	X	X
Against the Tax Levy					
<b>A Majority Affirmative Vote Is Necessary For Passage</b>					
For the Tax Levy	X	X	X	X	X
Against the Tax Levy					

<b>Dem Precinct 2, Split 2</b>	<b>B-1</b>	<b>B-2</b>	<b>B-3</b>	<b>B-4</b>	<b>B-5</b>
<b>For Delegate and Alternate to the National Convention</b>					
Hillary Clinton	X	X	X	X	X
<b>For State Senator</b>					
Roger Tackett	X	X	X	X	X
<b>For State Representative (84<sup>th</sup> District)</b>					
Connie Crockett	X	X	X	X	X
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>					
Thomas Buscemi	X	X	X	X	X
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>					
Stephen J. Pronai	X	X	X	X	X
<b>For Sheriff</b>					
James Winston Kaehr	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>					
Joseph D. Russo	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>					
Peter M. Sikora	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Bruce Carter	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					

Laura Curliss	X	X	X	X	X
<b>For Member of State Central Committee, Man</b>					
David M. Farrell	X	X	X	X	X
<b>For Member of State Central Committee, Woman</b>					
Nora M. Parker	X	X	X	X	X
<b>For Judge of the Court of Common Pleas</b>					
NO CANDIDATE FILED					
<b>For Mayor – South Salon</b>					
Jamie Wood	X	X	X	X	X
Doug Worthington	X	X	X	X	X
Lawrence Wilson					
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOL DISTRICT</b>					
For the Bond Issues and Tax Levy					
Against the Bond Issues and Tax Levy	X	X	X	X	X
<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>					
For the Tax Levy					
Against the Tax Levy	X	X	X	X	X
<b>A Majority Affirmative Vote Is Necessary For Passage</b>					
For the Tax Levy					
Against the Tax Levy	X	X	X	X	X

Rep Precinct 2, Split 1	B-1	B-2	B-3	B-4	B-5
<b>For Delegate-at-Large and Alternate-at-Large to the National Convention</b>					
Mike Huckabee	X	X	X	X	X
John McCain					
Ron Paul					
Mitt Romney					
Fred Thompson					
Rudy Giuliani					
<b>For District Delegate and District Alternate to the National Convention</b>					
Mike Huckabee	X	X	X	X	X
John McCain					
Ron Paul					
Mitt Romney					
Fred Thompson					
Rudy Giuliani					
<b>For State Senator (10<sup>th</sup> District)</b>					
W. Reed Madden	X	X	X	X	X
Chris Widener					
James E. Howard					
<b>US Congress District 15</b>					
Robert Wagner	X	X	X	X	X
Steve Stivers					
<b>For State Representative (84<sup>th</sup> District)</b>					
Craig W. Saunders	X	X	X	X	X



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Robert D. Hackett					
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>					
Mark A. Forrest	X	X	X	X	X
Charlie M. Miller					
John J. Stahl					
Michael K. Boerger					
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>					
Chris R. Snyder	X	X	X	X	X
<b>For Sheriff</b>					
David P. Brand	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>					
Maureen O'Connor	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>					
Evelyn L. Stratton	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Robert P. Ringland	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Mary H. Mcelwee	X	X	X	X	X
Robert A. Hendrickson					
<b>For Member of State Central Committee, Woman</b>					
Betty Kitchen	X	X	X	X	X
<b>For Judge of the Court of Common Pleas</b>					
R. David Picken	X	X	X	X	X
Glenn S. Hamilton					
<b>For Mayor – South Salon</b>					
Jamie Wood	X	X	X	X	X
Doug Worthington	X	X	X	X	X
Lawrence Wilson					
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOLDISTRICT</b>					
For the Bond Issues and Tax Levy	X	X	X	X	X
Against the Bond Issues and Tax Levy					
<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>					
For the Tax Levy	X	X	X	X	X
Against the Tax Levy					
<b>A Majority Affirmative Vote Is Necessary For Passage</b>					
For the Tax Levy	X	X	X	X	X
Against the Tax Levy					

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**Test Report No. T58506.01-01**

Rep Precinct 2, Split 2	B-1	B-2	B-3	B-4	B-5
<b>For Delegate-at-Large and Alternate-at-Large to the National Convention</b>					
Mike Huckabee	X	X	X	X	X
John McCain					
Ron Paul					
Mitt Romney					
Fred Thompson					
Rudy Giuliani					
<b>For District Delegate and District Alternate to the National Convention</b>					
Mike Huckabee	X	X	X	X	X
John McCain					
Ron Paul					
Mitt Romney					
Fred Thompson					
Rudy Giuliani					
<b>For State Senator (10<sup>th</sup> District)</b>					
W. Reed Madden	X	X	X	X	X
Chris Widener					
James E. Howard					
<b>US Congress District 15</b>					
Robert Wagner	X	X	X	X	X
Steve Stivers					
<b>For State Representative (84<sup>th</sup> District)</b>					
Craig W. Saunders	X	X	X	X	X
Robert D. Hackett					
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>					
Mark A. Forrest	X	X	X	X	X
Charlie M. Miller					
John J. Stahl					
Michael K. Boerger					
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>					
Chris R. Snyder	X	X	X	X	X
<b>For Sheriff</b>					
David P. Brand	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>					
Maureen O'Connor	X	X	X	X	X
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>					
Evelyn L. Stratton	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					
Robert P. Ringland	X	X	X	X	X
<b>For Judge of the Court of Appeals (12<sup>th</sup> District)</b>					

Mary H. McElwee	X	X	X	X	X
Robert A. Hendrickson					
<b>For Member of State Central Committee, Woman</b>					
Betty Kitchen	X	X	X	X	X
<b>For Judge of the Court of Common Pleas</b>					
R. David Picken	X	X	X	X	X
Glenn S. Hamilton					
<b>For Mayor – South Salon</b>					
Jamie Wood	X	X	X	X	X
Doug Worthington	X	X	X	X	X
Lawrence Wilson					
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOLDISTRICT</b>					
For the Bond Issues and Tax Levy					
Against the Bond Issues and Tax Levy	X	X	X	X	X
<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>					
For the Tax Levy					
Against the Tax Levy	X	X	X	X	X
<b>A Majority Affirmative Vote Is Necessary For Passage</b>					
For the Tax Levy					
Against the Tax Levy	X	X	X	X	X

<b>Test Results:</b>	
<b>Dem Precinct 2:</b>	
<b>US Congress District 15</b>	
Mary Jo Kilroy	5
<b>For Delegate and Alternate to the National Convention</b>	
Hillary Clinton	10
<b>For State Senator</b>	
Roger Tacket	10
<b>For State Representative (84th District)</b>	
Connie Crockett	10
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>	
Thomas Buscemi	10
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>	
Stephen J. Pronai	10
<b>For Sheriff</b>	
James Winston Kachr	10
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>	
Joseph D. Russo	10
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>	
Peter M. Sikora	10

<b>For Judge of the Court of Appeals (12th District)</b>	
Bruce Carter	10
<b>For Judge of the Court of Appeals (12th District)</b>	
Laura Curliss	10
<b>For Member of State Central Committee, Man</b>	
David M. Farrell	10
<b>For Member of State Central Committee, Woman</b>	
Nora M. Parker	10
<b>For Judge of the Court of Common Pleas</b>	
NO CANDIDATE FILED	0
UNDERVOTES	10
<b>For Mayor - South Salon</b>	
Jamie Wood	20
Doug Worthington	20
Lawrence Wilson	0
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOL DISTRICT</b>	
For the Bond Issues and Tax Levy	10
Against the Bond Issues and Tax Levy	10
<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>	
For the Tax Levy	10
Against the Tax Levy	10
<b>A Majority Affirmative Vote Is Necessary For Passage</b>	
For the Tax Levy	10
Against the Tax Levy	10
<b>Rep Precinct 2: US Congress District 15</b>	
Robert Wagner	5
Steve Stivers	0
<b>For Delegate-at-Large and Alternate-at-Large to the National Convention</b>	
Mike Huckabee	10
John McCain	0
Ron Paul	0
Mitt Romney	0
Fred Thompson	0
Rudy Giuliani	0
<b>For Delegate and Alternate to the National Convention</b>	
Mike Huckabee	10
John McCain	0
Ron Paul	0
Mitt Romney	0
Fred Thompson	0
Rudy Giuliani	0

<b>For State Senator (10th District)</b>	
W. Reed Madden	10
Chris Widener	0
James E. Howard	0
<b>For State Representative (84th District)</b>	
Craig W. Saunders	10
Robert D. Hackett	0
<b>For County Commissioner (Full Term Commencing 1-2-09)</b>	
Mark A. Forrest	10
Charlie M. Miller	0
John J. Stahl	0
Michael K. Boerger	0
<b>For County Commissioner (Full Term Commencing 1-3-09)</b>	
Chris R. Snyder	10
<b>For Sheriff</b>	
David P. Brand	10
<b>For Justice of the Supreme Court (Full Term Commencing 1-1-09)</b>	
Maureen O'Connor	10
<b>For Justice of the Supreme Court (Full Term Commencing 1-2-09)</b>	
Evelyn L. Stratton	10
<b>For Judge of the Court of Appeals (12th District)</b>	
Robert P. Ringland	10
<b>For Judge of the Court of Appeals (12th District)</b>	
Mary H. Mcelwee	10
Robert A. Hendrickson	0
<b>For Member of State Central Committee, Woman</b>	
Betty Kitchen	10
<b>For Judge of the Court of Common Pleas</b>	
R. David Picken	10
Glenn S. Hamilton	0
<b>For Mayor - South Salon</b>	
Jamie Wood	20
Doug Worthington	20
Lawrence Wilson	0
<b>PROPOSED BOND ISSUES AND TAX LEVY MIAMI TRACE LOCAL SCHOOL DISTRICT</b>	
For the Bond Issues and Tax Levy	10
Against the Bond Issues and Tax Levy	10

<b>PROPOSED TAX LEVY (ADDITIONAL) MT. STERLING PUBLIC LIBRARY</b>	
For the Tax Levy	10
Against the Tax Levy	10
<b>A Majority Affirmative Vote Is Necessary For Passage</b>	
For the Tax Levy	10
Against the Tax Levy	10
<b>Criteria For Evaluation of Test Results:</b>	
The results of this test will be accepted if the stated election definition can be input into the EMS, the election transferred to the voting machine, voted according to the test vote pattern, and the results reported and audited to match the expected results. During the execution of this election all errors need to be logged and analyzed by Wyle qualified personal to determine if the error is an actual error or another issue.	

**MICHIGAN OPEN PRIMARY ELECTION DEFINITION**

<b>ELECTION DEFINITION: Michigan Open Primary</b>	
<p><b>Open Primary Election</b>            A basic election held in 1 precinct. This election contains 10 contests compiled in 1 ballot style with 5 proposals. The voting variations supported by this election are as follow:</p> <ul style="list-style-type: none"> <li>• Closed Primary: No</li> <li>• Open Primary: Yes</li> <li>• Partisan offices: Yes</li> <li>• Non-Partisan offices: Yes</li> <li>• Write-in voting: Yes</li> <li>• Primary presidential delegation nominations: No</li> <li>• Ballot Rotation: No</li> <li>• Straight Party voting: No</li> <li>• Cross-party endorsement: No</li> <li>• Split Precincts: No</li> <li>• Vote for N of M: Yes</li> <li>• Recall issues, with options: No</li> <li>• Cumulative voting: No</li> <li>• Ranked order voting: No</li> <li>• Provisional or challenged ballots: No</li> <li>• Early Voting: No</li> </ul>	
<p><b>Configuration:</b>            EMS computer is used to create ballots with the following characteristics:            Election named: Michigan Open Primary</p> <p><b>Precinct Based Testing</b>            3 machines used for voting in one precinct            1 precincts: Clinton Township            2 parties: Democrat, Republican            Languages: English            Contest Totals: 10            Contests as listed:</p>	
<p><b>Republican Party</b>            GOVERNOR</p> <p>Dick Posthumus            John Joe Schwarz            Write-In</p> <p align="center">Vote for One</p>	<p><b>Democratic Party</b>            GOVERNOR</p> <p>James J. Blanchard            David Bonoir            Jennifer M. Granholm            Write-In</p> <p align="center">Vote for One</p>
<p><b>US SENATOR</b></p> <p>Andrew Raczkowski            Write-in</p> <p align="center">Vote for One</p>	<p><b>US SENATOR</b></p> <p>Carl Levin            Write-in</p> <p align="center">Vote for One</p>
<p><b>REPRESENTATIVE IN CONGRESS</b>            12<sup>th</sup> DISTRICT</p> <p>Harvey R. Dean</p>	<p><b>REPRESENTATIVE IN CONGRESS</b>            12<sup>th</sup> DISTRICT</p> <p>William J. Callahan</p>



<b>ELECTION DEFINITION: Michigan Open Primary</b>	
<p>Charles Frangie Jamie Morgan Write-in</p> <p align="center">Vote for One <b>STATE SENATOR</b> 10<sup>th</sup> District</p>	<p>Mario Nesr Fundarski Sandewr Levin Write-in</p> <p align="center">Vote for One <b>STATE SENATOR</b> 10<sup>th</sup> District</p>
<p>Steve Rice Write-in</p> <p align="center">Vote for One <b>STATE REPRESENTATIVE</b> 33<sup>rd</sup> District</p>	<p>Sharon Gire Roger M. Maceroni Michael Switalski</p> <p align="center">Vote for One <b>STATE REPRESENTATIVE</b> 33<sup>rd</sup> District</p>
<p>Leon Drolet Write-in</p> <p align="center">Vote for One <b>COUNTY COMMISSIONER</b> 16<sup>th</sup> District</p>	<p>Donna Gore Anthony Ventmiglia</p> <p align="center">Vote for One <b>COUNTY COMMISSIONER</b> 16<sup>th</sup> District</p>
<p>William Revior Write-in</p> <p align="center">Vote for One <b>DELEGATE TO COUNTY CONVENTION</b></p>	<p>Write-in</p> <p align="center">Vote for One <b>DELEGATE TO COUNTY CONVENTION</b></p>
<p>Leon Drolet Marlene J. Reed Write-in Write-in</p> <p align="center">Vote for Two</p>	<p>Write-in Write-in</p> <p align="center">Vote for Two</p>
<p><b>JUDGE OF THE CIRCUIT COURT</b> 16<sup>TH</sup> CIRCUIT Non-Incumbent Position TERM ENDING 1/1/2009 (Non-Partisan)</p>	
<p>George G. Constance Diane M. Druzinski Fred L. Gibson David J. Portuesi John Russi Joe Toia Write-in</p> <p align="center">Vote for One</p>	

<b>ELECTION DEFINITION: Michigan Open Primary</b>	
<p><b>JUDGE OF THE CIRCUIT COURT 16<sup>TH</sup> CIRCUIT NEW JUDGESHIPS TERMS ENDING 1/1/2009 AND 1/1/2011 (Non-Partisan)</b></p> <p>Albert Markowski Michael R. Osaer Kay Schwarzberg Matthew Switalski Tony Viviano Write-in Write-in</p>	<p>Vote for Two</p>
<p><b>JUDGE OF THE PROBATE COURT Non-Incumbent Position (Non-Partisan)</b></p> <p>Nick Ciaramitaro Kathryn George Donald J. Housey Patricia L. Patterson Paul Piatt John F. Temrowski Write-in</p>	<p>Vote for One</p>
<p><b>PROPOSAL 02-1</b> <b>A PROPOSAL TO AMEND THE PROVISION OF THE STATE CONSTITUTION GOVERNING THE STATE OFFICERS COMPENSATION COMMISSION</b></p> <p>The proposed constitutional amendment would:</p> <p>*Add Attorney General and Secretary of State to a list of state officials whose salaries and expense allowance are determined by the SOCC. The list currently includes the State Legislature, Governor, Lieutenant Governor, and Supreme Court Justices. *Require the legislature to approve by majority vote any salary and expense allowance determinations proposed by the SOCC before determinations go into effect unless rejected by a 2/3 vote of legislature. *Allow the legislature to reduce compensation increases proposed by the SOCC. *Provide that the SOCC's salary and expense determinations would take effect after the next general election.</p> <p>Should this proposal be adopted?</p> <p>YES NO</p>	
<p><b>PROPOSAL 02-2</b> <b>A PROPOSAL TO ALLOW CERTAIN PERMANENT AND ENDOWMENT FUNDS TO BE INVESTED AS PROVIDED BY LAW AND INCREASE ALLOWED SPENDING FOR STATE PARKS, LOCAL PARKS, AND OUTDOOR RECREATION.</b></p> <p>The proposed constitutional amendment would:</p> <p>*Allow certain permanent and endowment funds, including Natural Resources Trust Fund, State parks Endowment Fund, and Veterans Trust Fund to be invested as provided by law, eliminating prior restrictions on investing in stocks. *Increase Natural Resources Trust Fund cap on assets from \$400 million to \$500 million *Allow the Natural Resources Trust Fund to continue to annually extend up to 33% of Fund royalties or other revenues, up to a new asset cap of \$100 million. *Increase allowed State Parks Endowment Fund spending to include interest and earnings and up to 50% of funds received from Natural Resources Trust Fund.</p> <p>Should this proposal be adopted?</p> <p>YES NO</p>	

<b>ELECTION DEFINITION: Michigan Open Primary</b>	
<b>MACOMB COUNTY PUBLIC TRANSPORTATIONAL MILLAGE PROPOSAL</b>	
If approved, this proposal will authorize the level of .6 mills levied by Macomb County in 2002 and allow continued support in aid of the Suburban Mobility Authority for Regional Transportation (SMART) and its purpose of serving the elderly, handicapped and general public of Macomb County.	
Shall the tax imposed on taxable property in Macomb county which was levied at .33 mills and expired with the 2001 tax be increased to .6 mills 60 cents per \$1,000.00 taxable value for four (4) years, 2002, 2003, 2004, and 2005, inclusive for the purpose of making contributions in aid of the Suburban mobility Authority for Regional transportation (SMART) and its purpose of serving the elderly, handicapped, and general public in Macomb County? It is estimated that the .6 mills would raise approximately \$14 million dollars when levied in 2002.	
YES	
NO	
Vote for One	
<b>MUNICIPAL FACILITIES MILLAGE PROPOSITION</b>	
Shall the limitation on the amount of taxes which may be imposed on all taxable property in the Charter township of Clinton, Macomb County, Michigan be increased by One Dollar (\$1.00) per thousand dollars (1mill) of the taxable value for a period of Twenty (20) years 2002 to 2021, inclusive as new additional millage to provide funds for (a) acquiring, constructing, furnishing, and equipping, additions, extensions, and improvements to the existing Senior Citizen Center, together with site, utility, and parking improvements, therefore, together with operating and maintaining the Senior Center, as expanded and (b) acquiring, constructing, furnishing, equipping, and operating a new Community Resource Center for the Township, together with site utility and parking improvements therefor?	
It is estimated that 1 mill will raise approximately \$2,450,000 when first levied in 2002.	
YES	
NO	
Vote for One	
<b>FIRE DEPARTMENT MILLAGE PROPOSITION</b>	
Shall the limitation on the amount of taxes which may be imposed on all taxable property in the Charter Township of Clinton, Macomb County, Michigan, be increased by One Dollar (\$1.00) per thousand dollars (1 mill) of taxable value for a period of Twenty years, 2002 to 2021, inclusive, as new additional millage to provide funds for (a) acquiring, constructing, furnishing, and equipping new Fire Station numbers 1 and 5, together with site, utility, and parking improvements, therefor, together demolition of existing Fire Station number 1, (b) acquiring new fire apparatus and other Fire Department capital improvements, (c) operating an advanced life support program and (d) other operational costs for the Fire Department, including additional firefighters?	
It is estimated that the 1 mill will raise approximately \$2,450,000 when first levied in 2002.	
YES	
NO	
Vote for One	
<b>Applicable Voting Devices:</b> DS200	

<b>ELECTION DEFINITION: Michigan Open Primary</b>										
<b>Test Deck Pattern:</b>										
The Test Deck will consist of 10 hand marked ballots for each precinct. The voting pattern will consist of a matrix pattern with expected results tallied and detailed below. The test decks will be voted 1 time using orientation 1 as established by ES&S documentation.										
A) Vote 5 ballots by selecting the 1 <sup>st</sup> position and 1 <sup>st</sup> and 2 <sup>nd</sup> position in "N of M" races in each Partisan and Non-partisan race for the Republican Party. Vote "Yes" for each proposal on the first ballot, vote "No" for the second ballot and vote Yes for the remaining ballots 3-5.B) Vote 5 ballots by selecting the 1 <sup>st</sup> position and 1 <sup>st</sup> and 2 <sup>nd</sup> position in "N of M" races in each Partisan and Non-Partisan race for the Democratic party Vote "Yes" for each proposal on the first ballot, vote "No" for the second ballot and vote Yes for the remaining ballots 3-5.										
Clinton Township	1	2	3	4	5	6	7	8	9	10
<b>Republican Party Ballot</b>										
<b>GOVERNOR</b>										
Dick Posthumus	X	X	X	X	X					
John Joe Schwarz										
Write-In										
<b>US SENATOR</b>										
Andrew Raczkowski	X	X	X	X	X					
Write-in										
<b>REPRESENTATIVE IN CONGRESS 12th DISTRICT</b>										
Harvey R. Dean	X	X	X	X	X					
Charles Frangie										
Jamie Morgan										
Write-in										
<b>STATE SENATOR 10th District</b>										
Steve Rice	X	X	X	X	X					
Write-in										
<b>STATE REPRESENTATIVE 33rd District</b>										
Leon Drolet	X	X	X	X	X					
Write-in										
<b>COUNTY COMMISSIONER 16th District</b>										
William Revior	X									
Write-in										
<b>DELEGATE TO COUNTY CONVENTION</b>										
Leon Drolet	X	X	X	X	X					
Marlene J. Reed	X	X	X	X	X					
Write-in										
Write-in										

ELECTION DEFINITION: Michigan Open Primary										
JUDGE OF THE CIRCUIT COURT 16TH CIRCUIT Non-Incumbent Position TERM ENDING 1/1/2009 (Non-Partisan)										
George G. Constance	X	X	X	X	X					
Diane M. Druzinski										
Fred L. Gibson										
David J. Portuesi										
John Russi										
Joe Toia										
Write-in										
JUDGE OF THE CIRCUIT COURT 16TH CIRCUIT NEW JUDGESHIPS TERMS ENDING 1/1/2009 AND 1/1/2011 (Non-Partisan)										
Albert Markowski	X	X	X	X	X					
Michael R. Osier	X	X	X	X	X					
Kay Schwarzberg										
Matthew Switalski										
Tony Viviano										
Write-in										
Write-in										
JUDGE OF THE PROBATE COURT Non-Incumbent Position (Non-Partisan)										
Nick Ciaramitaro	X	X	X	X	X					
Kathryn George										
Donald J. Housey										
Patricia L. Patterson										
Paul Piatt										
John F. Temrowski										
Write-in										
PROPOSAL 02-1										
Yes	X		X	X	X					
No		X								
PROPOSAL 02-2										
Yes	X		X	X	X					
No		X								
MACOMB COUNTY PUBLIC TRANSPORTATIONAL MILLAGE PROPOSAL										
Yes	X		X	X	X					
No		X								
MUNICIPAL FACILITIES MILLAGE PROPOSITION										
Yes	X		X	X	X					
No		X								
FIRE DEPARTMENT MILLAGE PROPOSITION										
Yes	X		X	X	X					
No		X								

ELECTION DEFINITION: Michigan Open Primary										
Clinton Township	1	2	3	4	5	6	7	8	9	10
<b>Democratic Party Ballot</b>										
<b>GOVERNOR</b>										
James J. Blanchard						X	X	X	X	X
David Bonoir										
Jennifer M. Granholm										
<b>US SENATOR</b>										
Carl Levin						X	X	X	X	X
Write-in										
<b>REPRESENTATIVE IN CONGRESS 12th DISTRICT</b>										
William J. Callahan						X	X	X	X	X
Mario Nesr Fundarski										
Sandewr Levin										
Write-in										
<b>STATE SENATOR 10th District</b>										
Sharon Gire						X	X	X	X	X
Roger M. Maceroni										
Michael Switalski										
Write-in										
<b>STATE REPRESENTATIVE 33rd District</b>										
Donna Gore						X	X	X	X	X
Anthony Ventmiglia										
Write-in										
<b>COUNTY COMMISSIONER 16th District</b>										
Write-in						X	X	X	X	X
<b>DELEGATE TO COUNTY CONVENTION</b>										
Write-in						X	X	X	X	X
Write-in						X	X	X	X	X
<b>JUDGE OF THE CIRCUIT COURT 16TH CIRCUIT Non-Incumbent Position TERM ENDING 1/1/2009 (Non-Partisan)</b>										
George G. Constance						X	X	X	X	X
Diane M. Druzinski										
Fred L. Gibson										
David J. Portuesi										
John Russi										
Joe Toia										
Write-in										

<b>ELECTION DEFINITION: Michigan Open Primary</b>										
<b>JUDGE OF THE CIRCUIT COURT 16TH CIRCUIT NEW JUDGESHIPS TERMS ENDING 1/1/2009 AND 1/1/2011 (Non-Partisan)</b>										
Albert Markowski						X	X	X	X	X
Michael R. Osaer						X	X	X	X	X
Kay Schwarzberg										
Matthew Switalski										
Tony Viviano										
Write-in										
Write-in										
<b>JUDGE OF THE PROBATE COURT Non-Incumbent Position (Non-Partisan)</b>										
Nick Ciaramitaro						X	X	X	X	X
Kathryn George										
Donald J. Housey										
Patricia L. Patterson										
Paul Piatt										
John F. Temrowski										
Write-in										
<b>PROPOSAL 02-1</b>										
Yes						X		X	X	X
No							X			
<b>PROPOSAL 02-2</b>										
Yes						X		X	X	X
No							X			
<b>MACOMB COUNTY PUBLIC TRANSPORTATIONAL MILLAGE PROPOSAL</b>										
Yes						X		X	X	X
No							X			
<b>MUNICIPAL FACILITIES MILLAGE PROPOSITION</b>										
Yes						X		X	X	X
No							X			
<b>FIRE DEPARTMENT MILLAGE PROPOSITION</b>										
Yes						X		X	X	X
No							X			

<b>ELECTION DEFINITION: Michigan Open Primary</b>	
<b>Test Results:</b>	
<b>Clinton Township</b>	
<b>REP</b>	
<b>GOVERNOR</b>	
Dick Posthumus	5
John Joe Schwarz	0
Write-In	0
UNDERVOTES	0
OVERVOTES	0
<b>US SENATOR</b>	
Andrew Raczkowski	5
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>REPRESENTATIVE IN CONGRESS</b>	
<b>12th DISTRICT</b>	
Harvey R. Dean	5
Charles Frangie	0
Jamie Morgan	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>STATE SENATOR</b>	
<b>10th District</b>	
Steve Rice	5
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>STATE REPRESENTATIVE</b>	
<b>33rd District</b>	
Leon Drolet	5
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>COUNTY COMMISSIONER</b>	
<b>16th District</b>	
William Revior	5
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>DELEGATE TO COUNTY CONVENTION</b>	
Leon Drolet	5
Marlene J. Reed	5
Write-in	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0



ELECTION DEFINITION: Michigan Open Primary	
<b>JUDGE OF THE CIRCUIT COURT</b>	
<b>16TH CIRCUIT Non-Incumbent Position</b>	
<b>TERM ENDING 1/1/2009</b>	
<b>(Non-Partisan)</b>	
George G. Constance	10
Diane M. Druzinski	0
Fred L. Gibson	0
David J. Portuesi	0
John Russi	0
Joe Toia	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>JUDGE OF THE CIRCUIT COURT</b>	
<b>16TH CIRCUIT NEW JUDGESHIPS</b>	
<b>TERMS ENDING 1/1/2009 AND 1/1/2011</b>	
<b>(Non-Partisan)</b>	
Albert Markowski	10
Michael R. Osaer	10
Kay Schwarzberg	0
Matthew Switalski	0
Tony Viviano	0
Write-in	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>JUDGE OF THE PROBATE COURT</b>	
<b>Non-Incumbent Position</b>	
<b>(Non-Partisan)</b>	
Nick Ciaramitaro	10
Kathryn George	0
Donald J. Housey	0
Patricia L. Patterson	0
Paul Piatt	0
John F. Temrowski	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>PROPOSAL 02-1</b>	
Yes	8
No	2
<b>PROPOSAL 02-2</b>	
Yes	8
No	2
<b>MACOMB COUNTY PUBLIC</b>	
<b>TRANSPORTATION MILLAGE</b>	
<b>PROPOSAL</b>	
Yes	8
No	2
<b>MUNICIPAL FACILITIES</b>	
<b>MILLAGE PROPOSITION</b>	
Yes	8
No	2
<b>FIRE DEPARTMENT</b>	
<b>MILLAGE PROPOSITION</b>	
Yes	8
No	2

ELECTION DEFINITION: Michigan Open Primary	
<b>DEM</b>	
<b>GOVERNOR</b>	
James J. Blanchard	5
David Bonoir	0
Jennifer M. Granholm	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>US SENATOR</b>	
Carl Levin	5
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>REPRESENTATIVE IN CONGRESS</b>	
<b>12th DISTRICT</b>	
William J. Callahan	5
Mario Nestr Fundarski	0
Sandewr Levin	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>STATE SENATOR</b>	
<b>10th District</b>	
Sharon Gire	5
Roger M. Maceroni	0
Michael Switalski	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>STATE REPRESENTATIVE</b>	
<b>33rd District</b>	
Donna Gore	5
Anthony Ventmiglia	0
Write-in	0
UNDERVOTES	0
OVERVOTES	0
<b>COUNTY COMMISSIONER</b>	
<b>16th District</b>	
Write-in	5
UNDERVOTES	0
OVERVOTES	0
<b>DELEGATE TO COUNTY CONVENTION</b>	
Write-in	10
UNDERVOTES	0
OVERVOTES	0
<b>Criteria For Evaluation of Test Results:</b>	
The results of this test will be accepted if the stated election definition can be input into the EMS, the election transferred to the voting machine, voted according to the test vote pattern, and the results reported and audited to match the expected results. During the execution of this election all errors need to be logged and analyzed by Wyle qualified personal to determine if the error is an actual error or another issue.	

**APPENDIX C**

**WYLE TEST PLAN NO. 58506.01-01, REV. B**



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Job No. T58506.01  
Test Plan No. T58506.01-01, Rev. B  
May 16, 2011

## CERTIFICATION TEST PLAN

Prepared for:

<b>Manufacturer Name</b>	ES&S
<b>Manufacturer System</b>	Unity 3.2.0.0 Rev 2
<b>EAC Application No.</b>	ESS1101
<b>Manufacturer Address</b>	11208 John Galt Boulevard Omaha, NE 68137

B

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			REVISION      B
<b>wyle</b> <small>laboratories</small>			REPORT NO.    Test Plan T58506.01-01, Rev. B
			DATE            May 16, 2011
REV	DATE	PAGE OR PARAGRAPH AFFECTED	DESCRIPTION OF CHANGES
---	4-22-11	Entire Document	Original Release
A	5-5-11	Sections 1.0 and 1.3	Corrected DS200 version number (changed from 1.4.5.11 to 1.4.3.11).
B	5-16-11	Cover Page	Added "Rev 2" to manufacturer system.
B	5-16-11	Section 1.0	Changed sentence to read as follows: "This test campaign will perform integration testing of the DS200 1.4.3.11 firmware and the Unity 3.2.0.0 Rev 1 EMS, therefore resulting in the Unity 3.2.0.0 Rev 2 voting system." Also reworded paragraph to provide clarification on certification.
B	5-16-11	Section 2.1	Changed "build" to "builds" in the last sentence of the first paragraph.
B	5-16-11	Section 3.2	Corrected version numbers for HPM and ERM. Reworded Optical Scanner configuration description to provide clarity.
B	5-16-11	Section 4.2	Changed "E&S" to "ES&S".
B	5-16-11	Section 5.2	Added "Rev 2" where applicable.
B	5-16-11	Section 5.3	Added "Rev 2" where applicable.

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APPENDICES

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## 1.0 INTRODUCTION

The purpose of this Test Plan is to document the procedures that Wyle will follow to perform certification testing of the Election Systems and Software (ES&S) Unity 3.2.0.0 Rev 2 voting system. The initial version of this system, Unity 3.2.0.0, has been fully tested to the FEC 2002 VSS. Modifications made since initial certification that resulted in the previous version of this system, Unity 3.2.0.0 Rev 1, have been tested to the EAC 2005 VVSG. As a result of this testing, the Unity 3.2.0.0 Rev 1 system was granted certification under EAC Certification No. ESSUnity3200Rev1. Since that time, three issues were identified, either in fielded units or in the test lab environment, relating to the DS200 component of the Unity 3.2.0.0 system. To resolve the identified issues, ES&S submitted an update to the DS200 firmware. The submitted DS200 firmware (version 1.4.3.11) is the current firmware in the EAC Certified ES&S Unity 3.2.1.0 system (ESSUnity3210). The DS200 with the 1.4.3.11 firmware has not been tested with the Unity 3.2.0.0 Rev 1 EMS. This test campaign will perform integration testing of the DS200 1.4.3.11 firmware and the Unity 3.2.0.0 Rev 1 EMS, therefore resulting in the Unity 3.2.0.0 Rev 2 voting system.

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A  
B

The full system details for the previous test campaigns, including system, performance, security, telecommunication, usability, system verification, and TDP deliverables can be reviewed in the approved final certification report (iBeta Report No. (V)2010-30Jun-001(D)) located on the EAC website ([www.eac.gov](http://www.eac.gov)).

## 1.1 References

The list below includes all documents cited in the Test Plan and used in the development of the Test Plan. The documents listed were utilized to perform certification testing.

- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines", and Volume II, Version 1.0, "National Certification Testing Guidelines", dated December 2005
- United States Federal Election Commission Voting System Standards Volume I, "Performance Standards" and Volume II, "Test Standards" dated April 2002
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- Election Assistance Commission Voting System Test laboratory Program Manual, Version 1.0, effective date July 2008
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)", dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)", dated May 2008
- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Wyle Laboratories' Test Guidelines Documents: EMI-001A, "Wyle Laboratories' Test Guidelines for Performing Electromagnetic Interference (EMI) Testing", and EMI-002A, "Test Procedure for Testing and Documentation of Radiated and Conducted Emissions Performed on Commercial Products"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 3
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"

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WYLE LABORATORIES, INC.  
Huntsville Facilities

**1.0 INTRODUCTION (CONTINUED)**

**1.1 References (continued)**

- EAC Notices of Clarification (listed on [www.eac.gov](http://www.eac.gov))
- EAC Requests for Interpretation (listed on [www.eac.gov](http://www.eac.gov))

**1.2 Terms and Abbreviations**

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

**Table 1-1 Terms and Abbreviations**

Term	Abbreviation	Definition
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability
Audit Manager	AM	System software that provides security and user tracking for Election Data Manager (EDM) and ES&S Ballot Image Manager (ESSIM).
Configuration Management	CM	---
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.
Election Data Manager	EDM	A single-entry database that stores all of a jurisdiction's precinct, office, and candidate information.
Election Management System	EMS	---
Election Reporting Manager	ERM	Election results reporting program.
ESSIM	ESS Image Manager	A desktop publishing tool that allows users to design and print ES&S paper ballots.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
Hardware Programming Manager	HPM	An election package primarily used for converting election files and creating and loading election parameters.
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhances economic security and improves our quality of life.
Physical Configuration Audit	PCA	Review by accredited test laboratory to compare voting system components submitted for certification testing to the manufacturer's technical documentation, and confirmation the documentation meets national certification requirements. A witnessed build of the executable system is performed to ensure the certified release is built from tested components.
Quality Assurance	QA	---
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Voting System Standards	VSS	Published by the FEC, second iteration of national level voting system standards.
Voluntary Voting System Guidelines	2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Operating Procedure	WoP	Wyle Test Method or Test Procedure



**1.0 INTRODUCTION (CONTINUED)**

**1.3 Scope of Testing**

The scope of testing for this test campaign will be limited to evaluating the ability of the DS200 firmware version 1.4.3.11 to interface with the Unity 3.2.0.0 Rev 1 EMS. The firmware has been previously tested in the Unity 3.2.1.0 test campaign and the EMS applications have been tested in the Unity 3.2.0.0 Rev 1 test campaign. The purpose of this test effort will be to verify these two components interface reliably and accurately.

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**2.0 MATERIALS REQUIRED FOR TESTING**

The materials required for certification testing of the ES&S Unity 3.2.0.0 Rev 2, which include software, hardware, test materials, and deliverable materials, were shipped directly to Wyle by ES&S. Some of the equipment to be used during this test effort is the same equipment used during the original certification campaign performed by Wyle.

**2.1 Software**

The previously certified EMS (version 3.2.0.0 Rev 1) shall be used in conjunction with the updated DS200 Firmware (version 1.4.3.11) for system integration testing of the two components. Both the EMS and the DS200 firmware will be retrieved from the "Trusted Builds" archive for each system. This test campaign will not include any new builds, but will rely on software from the previous test campaigns.

B

Table 2-1 presents the software the manufacturer has submitted for testing.

**Table 2-1 Software Submitted for Testing**

Software Required For Testing	Software Version
DS200 Firmware	1.4.3.11
HPM	5.7.1.0
EDM	7.8.1.0
ESSIM	7.7.1.0
AM	7.5.2.0
ERM	7.5.1.0
Log Monitor	1.0.0.0

**2.2 Equipment**

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

2.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

2.2 Equipment (continued)

Table 2-2 Unity 3.2.0.0 Test Equipment

Equipment	Description	Serial Numbers
DS200	Precinct Count Optical Scanner	ES0107360007, ES0108340178, ES0107380927
Ballot Box	Plastic Ballot Box	E076, E089, E099
Dell Latitude E6410	Processor: Intel Core VPro I5-520 2.4 Ghz Memory: 2x 1GB, 1067 Mhz Ram Hard Drive Capacity: 250 GB	C42F0M1
COTS Printer	HP LaserJet 4050N	USQX074394
Dell Latitude E6400 (ERM Laptop)	Processor: Intel Duo Core P8600 2.4 Ghz Memory: 1x 2GB, 800 Mhz Ram Hard Drive Capacity: 80 GB	137FMJ1
Transport Media (USB Flash Drives)	SanDisk 2GB Cruzer Micro	Wyle-assigned numbers as needed: TM-XXX
Compact Flash (CF Card)	SanDisk & Toshiba	512 Mb, 1GB,

2.3 Test Tools/Material

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

Table 2-3 Test Materials

Test Material	Quantity
Elections (Wyle 1, ES&S 2)	3
Miscellaneous Office equipment and supplies (such as report paper)	as required
Printer Thermal Paper Rolls	as required
Printed Ballots	as required

2.4 Deliverable Materials

At test conclusion, Wyle shall deliver a final report to ES&S and the EAC that includes the following:

- A description of the system integration testing and test results.
- An anomaly list listing any anomalies on Wyle form WH1066, Notice of Anomaly.

All supplied equipment and software furnished to Wyle for this program, except for hardware from the initial certification test campaign, shall be returned to the customer at the conclusion of testing unless otherwise agreed in writing.

**2.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)**

**2.5 Proprietary Data**

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

**3.0 TEST SPECIFICATIONS**

**3.1 Requirements**

The strategy for evaluating ES&S Unity 3.2.0.0 Rev 2 was to review the change log and the engineering changes submitted for the modified system. Wyle has determined that the software and hardware meet all applicable EAC 2005 VVSG requirements. This test campaign does not change any of those requirements nor does it add any new requirements.

This test campaign includes the following tests:

- Technical Data Package review to ensure all modifications are documented as applicable.
- System integration test to ensure the two components are interoperable.
- A limited Physical Configuration Audit to baseline the system.

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

In the event that the project engineer deems it necessary to deviate from requirements pertaining to the test environment, the equipment arrangement and method of operation, the specified test procedure, or the provision of test instrumentation and facilities, the deviation shall be recorded in the test log. (A discussion of the reasons for the deviation and the effect of the deviation on the validity of the test procedure shall also be provided and approved.)

The designated Wyle Operating Procedures (WoP's) for this program are listed below together with the identification and a brief description of the hardware and software to be tested and any special considerations that affect the test design and procedure.

The specific Wyle WoP's to be used during testing include the following:

- WoP 1 Operations Status Checks
- WoP 2 Receipt Inspection
- WoP 3 Technical Data Package Review (limited)
- WoP 4 Test Plan Preparation– ES&S Unity Version 3.2.0.0 Rev. 2 (*This document*)
- WoP 25 Physical Configuration Audit (limited)
- WoP 30 System Integration Test
- WoP 34 Test Report

**3.0 TEST SPECIFICATIONS (CONTINUED)**

**3.2 Requirements (continued)**

The Certified EMS, consisting of a COTS desktop computer as documented in Section 2, shall be configured as follows for the System Integration Testing:

- HPM – version 5.7.1.0
- EDM – version 7.8.1.0
- ESSIM – version 7.7.1.0
- AM – version 7.5.2.0
- ERM – version 7.5.4.0
- Log Monitor – 1.0.0.0

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The DS200 shall be configured as follows for the System Integration Testing:

*Optical Scanner* – Three DS200's, loaded with firmware version 1.4.3.11, will be configured as for normal operation on Election Day.

B

**3.2 Hardware Configuration and Design**

This test campaign requires no hardware testing.

The hardware used in this test campaign will be configured for normal use on Election Day.

**3.3 Software System Functions**

The strategy for this test campaign will be to treat the two components; DS200 and EMS, as black box components since they are both certified components in other EAC certified voting systems. The approach will be to verify these two components interface without modification. If both components interface reliably and accurately without modification then it will be concluded that version 1.4.3.11 of the DS200 firmware can be used to resolve the issues identified in the Unity 3.2.0.0 Rev 1 system.

**4.0 TEST DATA**

**4.1 Data Recording**

All equipment utilized for test data recording shall be identified in the test data package. The output test data shall be recorded in an appropriate manner as to allow for data analysis. For TDP reviews, results shall be compiled in output reports and submitted to ES&S for resolution. Additionally, all test results, including functional test data, shall be recorded on the relevant WoP's and Test Cases. Results shall also be recorded real-time in engineering log books.

**4.0 TEST DATA (CONTINUED)**

**4.2 Test Data Acceptance Criteria**

Wyle shall evaluate all test results against the ES&S provided technical documentation for the ES&S Unity, Version 3.2.0.0 Rev 2, and the requirements set forth in the EAC 2005 VVSG. The ES&S Unity, Version 3.2.0.0 Rev 2, shall be evaluated for its performance against the EAC 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the ES&S Unity, Version 3.2.0.0 Rev 2 documentation. Per the EAC 2005 VVSG, these parameters shall encompass the test tolerances, the minimum number of combinations or alternatives of input and output conditions that can be exercised to constitute an acceptable test of the parameters involved, and the maximum number of interrupts, halts or other system breaks that may occur due to non-test conditions (excluding events from which recovery occurs automatically or where a relevant status message is displayed).

**5.0 TEST PROCEDURE AND CONDITIONS**

This section describes Wyle's proposed test procedures and the conditions under which those tests shall be conducted.

The following subsections describe test procedures and a statement of the criteria by which readiness and successful completion shall be indicated and measured.

**5.1 Test Facilities**

All testing shall be conducted at the Wyle, Huntsville, AL facility unless otherwise annotated. Hardware operating testing shall be conducted at the appropriate test site with the required support equipment. All instrumentation, measuring, and test equipment used in the performance of this test campaign shall be listed on the Instrumentation equipment Sheet for each test and shall be calibrated in accordance with Wyle's Quality Assurance Program, which complies with the requirements of ANSI/NCSL Z540-1 and ISO 10012-1. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

Unless otherwise specified herein, all remaining tests, including system level functional testing, shall be performed at standard ambient conditions:

- Temperature:  $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$  ( $77^{\circ}\text{F} \pm 18^{\circ}\text{F}$ )
- Relative Humidity: 20 to 90%
- Atmospheric Pressure: Local Site Pressure

Unless otherwise specified herein, the following tolerances shall be used:

- Time  $\pm 5\%$
- Temperature  $\pm 3.6^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ )
- Vibration Amplitude  $\pm 10\%$
- Vibration Frequency  $\pm 2\%$
- Random Vibration Acceleration
  - 20 to 500 Hertz  $\pm 1.5$  dB
  - 500 to 2000 Hertz  $\pm 3.0$  dB
- Random Overall grms  $\pm 1.5$  dB
- Acoustic Overall Sound Pressure Level  $+4/-2$  dB

**5.0 TEST PROCEDURE AND CONDITIONS**

**5.2 Test Set-Up**

All voting machine equipment (hardware and software), shall be received and documented utilizing Wyle Receiving Ticket (Wyle Form No. WL-218) and proper Quality Assurance (QA) procedures. When voting system hardware is received, Wyle Shipping and Receiving personnel shall notify Wyle QA personnel. With Wyle QA personnel present, each test article shall be unpacked and inspected for obvious signs of degradation and/or damage that may have occurred during transit. Noticeable degradation and/or damage, if present, shall be recorded, photographs shall be taken, and the ES&S representative shall be notified.

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

TDP items, including all manuals, and all source code modules received shall be inventoried and maintained by the Wyle Project Engineer assigned to the test program.

For hardware test setup, the system shall be configured as it would be for normal field use. This includes connecting all supporting equipment and peripherals. Wyle personnel shall properly configure and initialize the system, and verify that it is ready to be tested, by following the procedures detailed in the ES&S Unity, Version 3.2.0.0 Rev 2 technical documentation. Wyle will use the operational status test and will measure the system performance levels used during the original certification.

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**5.3 Test Sequence**

The components of the ES&S Unity, Version 3.2.0.0 Rev 2, shall be subjected to the tests described in Table 5-1, below. There is no specific sequencing enforced for the execution of the required tests.

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**Table 5-1 Unity 3.2.0.0 Rev 2 Software and System Testing Sequence**

Test	Description	Procedure	Test Level	Specimen	Election Data
<i>Technical Data Package (TDP) Review</i> <i>(Pre-testing Activity)</i>	Documentation review for compliance, correctness, and completeness	WHVS07.1 WoP 3	Document	TDP Package	---
<i>Physical Configuration Audit</i>	Baseline of the system documentation, software, and hardware 2005 VVSG requirements	WHVS07.3 WoP 25	Component & Integration	DS200 & EMS	--
<i>System Integration Test</i>	Test of the entire system end to end.	WHVS07.5 WoP 30	System	DS200 & EMS	GEN01 MI-PRIM OH-PRIM
<i>Test Report</i>	Generation of final test report	WoP 34	---	---	---

**5.0 TEST PROCEDURE AND CONDITIONS (CONTINUED)**

**5.4 Test Operation Procedures**

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

Any test failures shall be recorded on the Wyle Notice of Anomaly form (Wyle Form No. WH1066). These Anomalies shall be reported to the manufacturer and the EAC.

**5.5 System Level Test**

A system integration test shall be performed to ensure all interacting components function as a system without issues. Wyle has chosen three election definitions for system level testing: a Wyle-generated general election (GEN04), and two ES&S-provided actual state primary elections from states that have the Unity 3.2.0.0 Rev1 system fielded (Michigan and Ohio). This strategy was chosen to demonstrate that the DS200 and the EMS can interface reliably and accurately using both a primary and a general election containing multiple voting variations.

Wyle will input the GEN04 election definition to test support for the following:

- Partisan offices
- Non-Partisan offices
- Write-in voting
- Straight Party voting
- N-of-M voting.

The two state primary election definitions shall be used to test support for the following:

- Michigan
  - Open Primary
  - Two Parties
  - Partisan offices
  - Non-Partisan offices
  - Write-in voting
  - N-of-M voting
  - Referendums
- Ohio
  - Closed Primary
  - Partisan offices
  - Non-Partisan offices
  - N-of-M voting
  - Multi-page ballot
  - Split Precincts

**APPENDIX A**  
**TEST PROCEDURE DESCRIPTION**

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**WYLE LABORATORIES, INC.**  
Huntsville Facilities

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**WYLE LABORATORIES, INC.**  
Huntsville Facility



Test Procedure	Test Procedure Description
WoP 1 Operational Status Checks	When all tests, inspections, repairs, and adjustments have been completed, normal operation shall be verified by conducting an operational status check. During this process, all equipment shall be operated in a manner and under environmental conditions that simulate election use to verify the functional status of the system. Prior to the conduct of each of the environmental hardware non-operating tests, a supplemental test shall be made to determine that the operational state of the equipment is within acceptable performance limits.
WoP 2 Receipt Inspection	Documenting the receiving inspection of equipment.
WoP 3 Technical Data Package Review	Track all documentation changes through the technical data package.
WoP 4 Test Plan Preparation – ES&S Unity 3.2.0.0 Rev 2 ( <i>This Document</i> )	Approval of this document shall fulfill the requirements of this procedure.
WoP 25 Physical Configuration Audit	The physical configuration audit will be limited to baselining the system to ensure all software and hardware used in testing is the software and hardware that was certified.
WoP 30 System Integration Test	Test to ensure the DS200 firmware version 1.4.3.11 and the EMS Unity 3.2.0.0 Rev 1 components interface reliably and accurately.
WoP 34 Test Report	National Certification Test Report