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TEST REPORT

COMPLIANCE TESTING OF THE ELECTION SYSTEMS & SOFTWARE UNITY 3.3.0.1 VOTING SYSTEM

for

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

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.

Ralut Hardy

SUBSCRIBED and sworn to before me this 22 day of Feb. 20 12

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

My Commission expires June 2, 2015

Wyle shall have no liability for damages of any kind to person or property, including special or consequential damages, resulting from Wyle's providing the services covered by this report.

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1.0 INTRODUCTION

1.1 Scope

This report documents the procedures followed and the results obtained during compliance testing performed by Wyle for the Election Systems & Software (ES&S) Unity 3.3.0.1 Voting System. The Unity 3.3.0.1 Voting System is a modification to the Unity 3.2.1.0 Voting System certified by the Election Assistance Commission on March 29, 2011 (ESSUnity3210). The Unity 3.3.0.1 Voting System consists of the addition of the DS850, a high speed optical scan central ballot counter and removal of the DS200, a precinct based optical scan counter. The primary purpose of testing was to demonstrate that the DS850 Central Count scanner meets the requirements of the EAC 2005 VVSG; however, the system as a whole is still only compliant to the 2002 VSS certification that it was originally tested under.

1.2 Objective

The objective of this test program was to ensure that the addition of the DS850 and changes made to the Election Management System (EMS) from ES&S Unity 3.2.1.0 Voting System are compliant with the requirements of the EAC 2005 VVSG. Wyle's scope of testing was limited to the DS850, the interfaces between the DS850 and the Election Management System and the changes in the EMS to allow operation of the DS850. Wyle did not perform testing on any other components of the system as they remained unchanged from the previous version. The ES&S Unity 3.3.0.1 Voting System includes the following main components:

- The Unity 3.3.0.1 Election Management System (EMS) software platform.
- The DS850, a high speed digital scan central ballot counter.
- The M650, a high speed optical scan central ballot counter.
- The M100, an optical scan precinct ballot counter.
- The AutoMark, an ADA ballot marking device with audio.

This report is valid only for the equipment identified in Section 2.0 of this report. Any changes, revisions, or corrections made to the system after this evaluation shall be submitted to Wyle to determine the scope of testing for the modified system. The scope of testing required will be determined based upon the degree of modification.

1.3. Test Report Overview

This test report consists of four main sections and appendices:

- **1.0 Introduction:** Provides the architecture of the 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 Test Background:** Contains information about the test process and a list of terms and abbreviations 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 107th 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, Latest Revision
- 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)
- EAC Notices of Clarification (listed on www.eac.gov)
- iBeta Quality Assurance ES&S Unity 3.2.1.0 VSTL Certification Test Plan Version 5.0
- iBeta Test Report No. (V)2010-13Dec-001(A), Version 1.0, “ES&S Unity 3.2.1.0 VSTL Certification Test Report for testing completed by iBeta as of November 29, 2010”

2.0 SYSTEM IDENTIFICATION AND OVERVIEW

2.1 System Overview

The ES&S Unity 3.3.0.1 System is a modification to the Unity 3.2.1.0 System. The full ES&S Unity 3.2.1.0 System description can be found in Section 1.4 of the iBeta Quality Assurance ES&S Unity 3.2.1.0 VSTL Certification Test Plan, Version 5.0. Wyle only tested the DS850 and its interfaces with the EMS; therefore, Wyle only documented the configuration used during testing conducted at Wyle.



Figure No. 1: DS850 S/N DS8509420009

2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.2 System Identification

The materials required for testing of the Unity 3.3.0.1 included software, hardware, test materials, and deliverable materials. The EMS equipment that was shipped directly from iBeta to Wyle and used during the test campaign was the same equipment used during the original certification campaign performed by iBeta. The DS850 equipment was shipped directly from ES&S to Wyle. The materials documented in the following sections are the materials used during the testing of the DS850 and its interfaces with the EMS.

2.2.1 Hardware

This subsection categorizes the equipment the manufacturer submitted for testing 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.

Table 2-1 Unity 3.3.0.1 Test Equipment

Equipment	Description	Serial Numbers
2 DS850 Systems	The DS850 is a high-speed, digital scan central ballot counter that uses advanced cameras and imaging algorithms to capture voter selections on the front and back of a ballot, evaluate results and then sort ballots into discrete bins without interrupting scanning.	DS850: DS8509420009
		Cart: 57936-02
		Laser Printer Oki B430dn: AF97052470A0
		UPS APC-RS 1500: BB0932033646
		Dot Matrix Printer Oki 420: AE72011853C0
		DS850: DS8509420037
		Cart: 58836-01
		Laser Printer Oki B431dn: AK16009803AD
		UPS APC-RS 1500: BB0907016404
	Dot Matrix Printer Oki 420: AE72011780C0	
Dell OptiPlex 760 (EMS/ERM PC)	Processor: Intel Duo Core E5200 Wolfdale Memory: 4x 1GB, 667 Mhz Ram Hard Drive Capacity: 150 GB	3X6FKK1
Transport Media (USB Flash Drives)	SanDisk 2GB Cruzer Micro	Wyle-assigned: TM-XXX
	Delkin 512 MB	Wyle-assigned: TM-XXX
	Delkin 4 GB	Wyle-assigned: TM-XXX
	Delkin 8 GB	Wyle-assigned: TM-XXX
Compact Flash	Delkin 1 GB (DS850 Firmware)	Wyle-assigned: CF-XXX
Dell OptiPlex 760 Build Machine 1	Processor: Intel Duo Core E8400 Wolfdale Memory: 4x 1GB, 800 Mhz Ram Hard Drive Capacity: 80 GB	6DCKJG1
Dell Precision T3500 Build Machine 2	Processor: Intel X5650 2.66/6.4 12MB Xeon Westmere Memory: 1x 2GB, 1333 Mhz Ram Hard Drive Capacity: 160 GB	15TNMN1

2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.2.2 Software

The software evaluated was limited to Hardware Programming Manager (HPM), Election Reporting Manager (ERM), and the firmware build for the DS850. Only the changes incorporated since the iBeta test campaign were evaluated by Wyle. Wyle utilized an EMS setup with new versions of HPM and ERM to load election information onto transport media and receive voted election data from the DS850. Wyle did not test the EMS for any other functionality.

Table 2-2 Software Required for Testing

Software Required For Testing	Software Version
DS850 Firmware	2.2.0.1
Hardware Programming Manager (HPM)	5.7.4.0
Election Reporting Manger (ERM)	7.5.8.0

*The final version tested was 2.2.0.1; however, tests were performed on multiple previous versions.

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 3.3.0.1 test campaign:

Table 2-3 Test Support Equipment

Test Material	Quantity	Make	Model
8 ½" X 11" Paper in Speed Loading Box (2700 Sheets)	2	Dot Matrix	951027
Security Seals	20	Intab	800-0038R
Security Locks	10	E. J. Brooks	86022
	10	A. Rifkin	RIFSI
ES&S Pens	10	BIC	Grip Roller
Ballots	15,000	ES&S	Multiple sizes 11, 14, 17, 19 inch
Report Printer	1	OKI	C9650

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2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.4 Deliverable Materials

The materials listed below are to be delivered as part of the Unity 3.3.0.1 System to the users.

Table 2-4 Deliverable Materials

Deliverable Material	Version	Description
AM	7.5.2.0	EMS
EDM	7.8.1.0	EMS
ESSIM	7.7.1.0	EMS
HPM	5.7.4.0	EMS
ERM	7.5.8.0	EMS
Log Monitor	1.0.0.0	EMS
AIMS	1.3.257	EMS
VAT Previewer	1.3.2907	EMS
DS850	Firmware 2.2.0.1; Hardware 1.0	Central ballot scanner
Model 100	Firmware 5.4.4.5; Hardware 1.3	Optical scan precinct scanner
Model 650	Firmware 2.2.2.0; Hardware 1.1 and 1.2	Central ballot scanner
AutoMARK	Firmware 1.3.2907; Hardware 1.0, 1.1 and 1.3	Voter Assist Terminal
Transport Media (512MB, 2GB, 4GB, and 8GB)	---	USB flash drives
Headphones	Avid FV 60	Stereo headphones
Voting System Overview Unity 3.3.0.1	3.0	TDP Document
ES&S Audit Manager System Operations Procedures	1.0	TDP Document
ES&S Election Data Manager System Operations Procedures	2.0	TDP Document
ES&S Election Reporting Manager System Operations Procedures	1.0	TDP Document
ES&S Image Manager System Operations Procedures	3.0	TDP Document
ES&S Hardware Programming Manager System Operations Procedures	6.0	TDP Document
ES&S LogMonitor System Operations Procedures	1.0.0.0	TDP Document
ES&S DS850 System Operations Procedures	2.2	TDP Document
ES&S Model 100 System Operations Procedures	1.0	TDP Document
ES&S Model 650 System Operations Procedures	2.0	TDP Document
Voting System Security Specification Unity 3.3.0.1	3.3.0.1	TDP Document
Jurisdiction Security Procedures Template	1.0.0.1	TDP Document
Hardening the EMS PC Guide	1.0	TDP Document

2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package

The Technical Data Package (TDP) contains information about requirements, design, configuration management, quality assurance, and system operations. The EAC 2005 VVSG requirements state that, at a minimum, the TDP shall contain the following documentation: system configuration overview; system functionality description; system hardware specifications; software design and specifications; system test and verification specifications; system security specifications; user/system operations procedures; system maintenance procedures; personnel deployment and training requirements; configuration management plan; quality assurance program; and system change notes.

The documents listed in Table 2-5 comprise the Unity 3.3.0.1 Voting System TDP:

Table 2-5 Unity 3.3.0.1 Voting System TDP

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>System Overview</i>			
Voting System Overview	4.0	01-01	U3301_OVR00
OVR Appendices		01-02	Multiple Documents
<i>System Functionality Description</i>			
System Functionality Description – Audit Manager	2.0	02-01	U3301_SFD00_AM
System Functionality Description – Election Data Manager	2.0	02-02	U3301_SFD00_EDM
System Functionality Description – ES&S Ballot Image Manager	2.0	02-03	U3301_SFD00_ESSIM
System Functionality Description – Hardware Programming Manager	2.0	02-04	U3301_SFD00_HPM
System Functionality Description – Election Reporting Manager	2.0	02-05	U3301_SFD00_ERM
System Functionality Description–Model 650	2.0	02-06	U3301_SFD00_M650
System Functionality Description–Log Monitor	2.0	02-07	U3301_SFD00_Log Monitor
System Functionality Description–Model 100	2.0	02-08	U3301_SFD00_M100
System Functionality Description–DS850	4.0	02-09	U3301_SFD00_DS850
<i>System Hardware Specification</i>			
System Hardware Specification–Model 650	1.0	03-01	U3301_SHS00_M650
Model 650 Bill of Materials		03-01-01	U3301_SHS00_M65001_BOM 1.2 3-31-11
System Hardware Specification– Model 100	1.0	03-02	U3301_SHS00_M100
Model 100 Bill of Materials		03-02-01	U3301_SHS00_M10001_BOM0101-100-90126 current
System Hardware Specification – DS850	1.0	03-03	U3301_SHS00_DS850
DS850 Bill of Materials		03-03-01	U3301_SHS00_DS85001_BOM

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2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package (Continued)

Table 2-5 Unity 3.3.0.1 Voting System TDP (Continued)

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>Software Design and Specification</i>			
Software Design and Specification – Audit Manager	1.0	04-01	U3301_SDS00_AM
Audit Manager: County Model		04-01-01	U3301_SDS00_AM01_CountyModel
Software Design and Specification – Election Data Manager	1.0	04-02	U3301_SDS00_EDM
EDM: County Model		04-02-01	U3301_SDS00_EDM01_CountyModel
EDM: Election Model		04-02-02	U3301_SDS00_EDM02_ElectionModel
Software Design and Specification – ES&S Ballot Image Manager	1.0	04-03	U3301_SDS00_ESSIM
Software Design and Specification – Hardware Programming Manager	4.0	04-04	U3301_SDS00_HPM
Software Design and Specification – Election Reporting Manager	2.0	04-05	U3301_SDS00_ERM
Software Design and Specification– Model650	1.0	04-06	U3301_SDS00_M650
Software Design and Specification– Model 100	1.0	04-07	U3301_SDS00_M100
Software Design and Specification – Log Monitor	1.0	04-08	U3301_SDS00_LogMonitor
Software Design and Specification – DS850	6.0	04-09	U3301_SDS00_DS850
SDS Appendix	1.0	04-10	
File Specification: BDF			U3301_SDS01_FS_BDF
File Specification: BSC			U3301_SDS02_FS_BSC
File Specification: EDMXML			U3301_SDS03_FS_EDMXML
File Specification: EL80			U3301_SDS04_FS_EL80
File Specification: ESSCRYPT			U3301_SDS05_FS_ESSCRYPT
File Specification: ESSDECPT			U3301_SDS06_FS_ESSDECPT
File Specification: ESSXML			U3301_SDS07_FS_ESSXML
File Specification: IFC			U3301_SDS08_FS_IFC
File Specification: LDF			U3301_SDS09_FS_LDF
File Specification: M650 OUTPUT			U3301_SDS10_FS_M650 OOUTPUT

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2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package (Continued)

Table 2-5 Unity 3.3.0.1 Voting System TDP (Continued)

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>System Security Specification</i>			
System Security Specification	3.3.0.1	05-01	U3301_SSS00
Jurisdiction Security Procedures Template	1.0.0.1	05-02	U3301_SSS01_JSP Template
Ubuntu Live CD Generation Guild	1.0	05-02	U3301_SSS02.01_UbuntuLiveCD
Validation Guide – Model 650	1.0	05-02	U3301_SSS02.03_Model 650 Validation Guide
Model 650 Validation Guild File Listing	1.0	05-02-01	U3301_SSS02.03.01_Model 650 Validation Guide01_File Listing
Validation Guide – AutoMark	1.0	05-02	U3301_SSS02.04_AutoMARK Validation Guide
Validation Guide – AutoMark Static/Dynamic File List	1.0	05-02-01	U3301_SSS02.04.01_AutoMARK Validation Guide01_File Listing
Validation Guide – Unity Workstation	1.0	05-02	U3301_SSS02.05_Unity Workstation Validation Guide
Validation Guide – Model 100	1.0	05-02	U3301_SSS02.06_M100 Validation Guide
Validation Guide – Unity Workstation Static/Dynamic File List – EDM	1.0	05-02-01	U3301_SSS02.05.01_Unity Workstation Validation Guide01_FileList_EDM
Validation Guide – Unity Workstation Static/Dynamic File List-Audit Manager	1.0	05-02-01	U3301_SSS02.05.02_Unity Workstation Validation Guide02_FileList_AuditManager
Validation Guide – Unity Workstation Static/Dynamic File List – ESSIM	1.0	05-02-01	U3301_SSS02.05.03_Unity Workstation Validation Guide03_FileList_ESSIM
Validation Guide – Unity Workstation Static/Dynamic File List – HPM	2.0	05-02-01	U3301_SSS02.05.04_Unity Workstation Validation Guide04_FileList_HPM
Validation Guide – Unity Workstation Static/Dynamic File List – AIMS	1.0	05-02-01	U3301_SSS02.05.05_Unity Workstation Validation Guide05_FileList_AIMS
Validation Guide – Unity Workstation Static/Dynamic File List-VAT Preview	1.0	05-02-01	U3301_SSS02.05.06_Unity Workstation Validation Guide06_FileList_VAT Preview
Validation Guide – Unity Workstation Static/Dynamic File List – ERM	1.0	05-02-01	U3301_SSS02.05.07_Unity Workstation Validation Guide07_FileList_ERM
Validation Guide – Quick Hash Procedure for the DS850	4.0	05-02	U3301_SSS02.07_DS850Quick Hash Procedure
Validation Guide – DS850 Static/Dynamic File List	1.0	05-02-01	U3301_SSS03_Voting System Validation Guide09_File Listing_DS850
System Hardening Procedure	1.0	05-02	U3301_SSS08_Hardening Procedures

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2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package (Continued)

Table 2-5 Unity 3.3.0.1 Voting System TDP (Continued)

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>System Test/Verification Specification</i>			
Unity 3.3.0.1 System Test Plan	1.0	06-01	U3301_STP00
System Test Cases – Audit Manager	1.0	06-02	U3301_TC00_AM
System Test Cases – Election Data Manager	1.0	06-03	U3301_TC00_EDM
System Test Cases – ES&S Ballot Image Manager	1.0	06-04	U3301_TC00_ESSIM
System Test Cases – Hardware Programming Manager	1.0	06-05	U3301_TC00_HPM
System Test Cases – Election Reporting Manager	1.0	06-06	U3301_TC00_ERM
System Test Cases – Model 650	1.0	06-07	U3301_TC00_M650
System Test Cases – Model 100	1.0	06-08	U3301_TC00_M100
System Test Cases – DS850	1.0	06-09	U3301_TC00_DS850
<i>Systems Operations Procedures</i>			
System Operations Procedures–Audit Manager	1.0	07-01	U3301_SOP00_AM
Audit Manager: Readiness Checklist		07-01-01	U3301_SOP00_AM01_Readiness Checklist
System Operations Procedures – Election Data Manager	3.0	07-02	U3301_SOP00_EDM
EDM: Readiness Checklist		07-02-01	U3301_SOP00_EDM01_Readiness Checklist
System Operations Procedures – ES&S Ballot Image Manager	3.0	07-03	U3301_SOP00_ESSIM
ESSIM: Readiness Checklist		07-03-01	U3301_SOP00_ESSIM01_Readiness Checklist
ES&S BOD Printer Setup and Printing Procedures	1.0	07-03-02	U3301_SOP00_ESSIM2_BOD
System Operations Procedures – Hardware Programming Manager	6.0	07-04	U3301_SOP00_HPM
HPM: Readiness Checklist		07-04-01	U3301_SOP00_HPM01_Readiness Checklist
System Operations Procedures – Election Reporting Manager	1.0	07-05	U3301_SOP00_ERM
ERM: Readiness Checklist		07-05-01	U3301_SOP00_ERM01_Readiness Checklist
System Operations Procedures – Model 650	2.0	07-06	U3301_SOP00_M650
Model 650-Setting the Date and Time		07-06-01	U3301_SOP00_M65001_Date and Time Setting
Model 650-Setting the Machine ID		07-06-02	U3301_SOP00_M65002_Setting Machine ID
Systems Operations Procedures-Log Monitor	1.0	07-09	U3301_SOP00_OmniDrive USB
Systems Operations Procedures-Model 100	1.0	07-10	U3301_SOP00_M100
Systems Operations Procedures-DS850	7.0	07-11	U3301_SOP00_DS850
SOP Appendices			
U3301_SOP01_Sample Deliverable Timeline			Sample Deliverable Timeline
U3301_SOP02_Adobe Install Reference			Adobe Installation Reference
U3301_SOP03_OmniDrive USB-USB2 Installation			OmniDrive USB – USB2 Installation
U3301_SOP04_RMCOBOL Install v 11 01			RMCOBOL Installation Guide
U3301_SOP05_UIG, WinXP – Dell OptiPlex GX520 PC_2008			Windows XP Installation Guide for the Dell OptiPlex GX520 PC

2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package (Continued)

Table 2-5 Unity 3.3.0.1 Voting System TDP (Continued)

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>System Maintenance Manuals</i>			
System Maintenance Manual –Model 650	1.0	08-01	U3301_SMM00_M650
System Maintenance Manual –Model 100	2.0	08-02	U3301_SMM00_M100
System Maintenance Manual –DS850	6.0	08-03	U3301_SMM00_DS850
<i>Deployment and Training</i>			
Personnel Deployment and Training Recommendations	1.0	09-01	U3301_TRN00_ESSTraining Requirements
Training Manual – Audit Manager	08.31.2011	09-02	U3301_TRN00_Audit Manager_TrainingManual
Training Manual – Election Data Manager	08.31.2011	09-03	U3301_TRN00_EDM_TrainingManual
Training Manual – ES&S Ballot Image Manager	08.31.2011	09-04	U3301_TRN00_ESSIM_TrainingManual
Training Manual – Hardware Programming Manager	08.31.2011	09-05	U3301_TRN00_HPM_TrainingManual
Training Manual – Election Reporting Manager – Pre election	12.21.2011	09-06	U3301_TRN00_ERM_PreElection
Training Checklists		09-07	
Training Checklist-Election Results Export: Election Day			U3301_TRN00_EXP_Election
Training Checklist-M100: Pre-Election			U3301_TRN00_M100_PreElection
Training Checklist-M100: Election Day			U3301_TRN00_M100_Election
Training Checklist-M650: Pre-Election			U3301_TRN00_M650_PreElection
Training Checklist-M650: Election Day			U3301_TRN00_M650_Election
Training Checklist-ERM: Election Day			U3301_TRN00_ERM_Election
Training Checklist-AutoMark: Pre-Election			U3301_TRN00_AutoMARK_PreElection
Training Checklist-AutoMark: Election Day			U3301_TRN00_AutoMARK_Election
Training Checklist-DS850: Pre-Election			U3301_TRN00_DS850_PreElection
Training Checklist-DS850: Election Day			U3301_TRN00_DS850_Election
<i>Configuration Management Plan</i>			
Unity 3.3.0.1 Configuration Management Plan	1.0	10-1	U3301_CMP00
CM Plan Appendices		10-2	
ES&S Development Practices and Coding Standards	5.0		U3301_CMP01_DevelPracticesandStandards
ECO Policies and Procedures	1.0		U3301_CMP03_ECO Policies and Procedures
Open Source Code Management	1.2		U3301_CMP05_OpenSourceCodeMng
Product Release Request			U3301_CMP06_Product Release Request
Build Procedure EMS	1.4		U3301_CMP10_BLD01_SEC01_EMSSBuild Procedure
Build Environment Construction	1.0		U3301_CMP10_BLD01_SEC02_EMSSBuild Environment
Build Procedure DS850 Firmware	1.1		U3301_CMP10_BLD05_SEC01_DS850 FirmwareBuildProcedure

2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

2.5 Vendor Technical Data Package (Continued)

Table 2-5 Unity 3.3.0.1 Voting System TDP (Continued)

Unity 3.3.0.1 TDP Documents	Version	Doc. No.	Document Code
<i>QA Program</i>			
Quality Assurance Program Manufacturing	1.0	11-01	U3301_QAP00_MNF
Hardware Acceptance Test Checklist		11-01-01	U3301_QAP00_MNF01_HWAcceptance checklists
Quality Assurance Program – Software and Firmware	1.0	11-02	U3301_QAP00_SWF
Software/Firmware Acceptance Test Checklist		11-02-01	U3301_QAP00_SWF01_SWFAcceptance
DS850 Acceptance Test Procedure			U3301_QAP00_MN02.01_Acceptance TestProcedure_DS850
DS850 Acceptance Checklist			U3301_QAP00_MN02.02_Acceptance TestChecklist_DS850
QAP Program Appendices ISO 9001 Certification: Pivot ISO Quality Assurance Manual: Ricoh ISO Quality Assurance Manual: Pivot ISO 9001 Certification: Ricoh ISO 14001 Certification: Ricoh Ricoh Quality Manual DataWin QA Manual DataWin ISO Certification Certificate	---	11-03	U3301_QAP01_ISO cert Pivot U3301_QAP02_ISO Quality Manual Ricoh U3301_QAP03_QA manual Pivot U3301_QAP04_Ricoh IS9000_OMG_QMS-Jul- 2008[1] U3301_QAP05_RICOHiso14001_omg_ cert[1] U3301_QAP06_REI Quality Manual U3301_QAP07_DataWin Quality Assurance Manual U3301_QAP08_DATAWIN ISO Certification Certificate
<i>System Change Notes</i>			
Unity 3.3.0.0 System Change Notes	1.0		---
<i>Other VSTL Reports</i>			
ES&S Ballot Production Guide	1.31.2011	13-01	U3301_ORPT02_BallotProductionGuide

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3.0 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
- ISO-9001:2008
- NVLAP Accredited ISO/ICE 17025:2005
- EAC Accredited VSTL, NIST 150,150-22
- A2LA Accredited (Certification No.'s 845.01, 845.02, and 845.03)

3.1 General Information

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 3.3.0.1 Voting System components previously identified in this report.

All hardware used during testing for this test campaign was configured "As Used" for voting. The DS850 was configured as documented for use and loaded with the proper firmware. The Unity 3.3.0.1 EMS suite was loaded on a COTS desktop. All media used during testing was loaded from this EMS desktop. All hardware used to build the software was configured by Wyle Laboratories.

3.2 Testing Scope

To evaluate the system test requirements and the scope of the test campaign, each section of the EAC 2005 VVSG was analyzed to determine the applicable tests. The EAC 2005 VVSG, Volume I Sections, along with the strategy for evaluation, are described below:

- **Section 2: Functional Requirements** – The requirements in this section were tested during the FCA utilizing the "Wyle Baseline Test Cases" along with test cases specially designed for the ES&S Unity 3.3.0.1 System.
- **Section 3: Usability and Accessibility** – The requirements in this section were not tested during this test campaign because the DS850 is a central scan component and the Usability and Accessibility requirements are for in-precinct components.
- **Section 4: Hardware Requirements** – The requirements in this section were not tested during this test campaign.
- **Section 5: Software Requirements** – The requirements in this section were tested during source code review, TDP review, and FCA. A combination of review and functional testing was performed to insure these requirements are met.
- **Section 6: Telecommunication** – The ES&S Unity 3.3.0.1 System does not support the use of public telecommunications networks.

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3.0 TEST BACKGROUND (Continued)

3.2 Testing Scope (Continued)

- **Section 7: Security Requirements** – The requirements in this section were tested during source code review, FCA, and Security Tests.
- **Section 8: Quality Assurance (QA) Requirements** – The requirements in this section were tested throughout the test campaign via various methods. TDP review was performed on the Unity 3.3.0.1 QA documentation to determine compliance to EAC 2005 VVSG requirements and the requirements stated in the ES&S QA Program document. All source code was checked to ensure that proper QA documentation had been completed. All equipment received for initial testing and follow up testing was checked against ES&S documentation to ensure their QA process is being followed.
- **Section 9: Configuration Management (CM) Requirements** – The requirements in this section were tested throughout the test campaign. The TDP review was performed on the ES&S configuration management documentation to determine EAC 2005 VVSG compliance and to further determine whether ES&S is following its documented CM requirements within the TDP. Any anomalies were formally reported to ES&S. During source code review, Wyle-qualified personnel verified that ES&S was following EAC 2005 VVSG CM requirements as well as ES&S CM requirements. Any anomalies were formally reported to ES&S. All equipment received for initial testing and follow-up testing was checked against ES&S documentation to ensure their CM process is being followed.

The ES&S Unity 3.3.0.1 is a paper-based counting system. Therefore, all EAC 2005 VVSG requirements intended for DRE were excluded from this test campaign, as well as the following:

- Volume I Section 3 (Usability and Accessibility Requirement) per RFI 2010-06
- Volume I Section 6 (Telecommunication Requirements)
- Volume I Section 7.5.2 (Telecommunications and Data Transmission)
- Volume I Section 7.6 (Use of Public Communication Networks)
- Volume I Section 7.7 (Wireless Communications)
- Volume I Section 7.9 (Voter Verifiable Paper Audit Trail Requirements)

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).

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3.0 TEST BACKGROUND (Continued)

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.

3.5 Terms and Abbreviations

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

Table 3-1 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
Configuration Management	CM	---
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software
Direct Record Electronic	DRE	---
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 Management System	EMS	---
Equipment Under Test	EUT	---
Functional Configuration Audit	FCA	Verification of system functions and combination of functions cited in the manufacturer's documentation.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhances economic security and improves our quality of life.
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.

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3.0 TEST BACKGROUND (Continued)

3.5 Terms and Abbreviations (Continued)

Table 3-1 Terms and Abbreviations (Continued)

Term	Abbreviation	Definition
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 PROCEDURES AND RESULTS

The ES&S Unity 3.3.0.1 Voting System as identified in Section 2.0 of this report, was subjected to the tests as summarized in the following paragraphs.

4.1 Source Code Review

As part of the pre-testing activities, the ES&S Unity 3.3.0.1 Voting System source code was reviewed to the EAC 2005 VVSG coding standards and the manufacturer-supplied coding standards. The review of the source code was limited to HPM, ERM, and the firmware for the DS850. The review was conducted per the guidelines described in the following paragraphs.

As the source code was received, an MD5 hash value was created for each source code file. The source code team then conducted a full review of every line of modified source code. This was done to identify any violation of EAC 2005 VVSG coding standards or manufacturer-supplied coding standards. Each identified violation was then recorded by making notes of the standards violation along with directory name, file name, and line number.

If the review was the initial review, the source code team performed a peer-review on a percentage of the code. This was done to evaluate the correctness of the review and look for standards violations that may have been missed or violations that were noted in error. Any standards violations that the team concluded were recorded in error or missed were then corrected in the code review notes.

Summary Findings

Other than the coding standards noted in the technical summary reports, no other deficiencies or significant problems were found during the source code review. A technical summary report of all identified standards violations were sent to ES&S for resolution and ES&S then corrected all standards violations and re-submitted the source code for re-review. This process was repeated as many times as necessary, until all identified standards violations were corrected. The source code review report that summarizes the discrepancies noted is included in Appendix E-1 of this report. Notice of Anomaly No. 3, documenting that discrepancies were found, is included in Appendix B-1 of this report.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.2 Witnessed Build

A Witnessed Build of the Unity 3.3.0.1 EMS Software was created using the Build Procedure Election Management System, Version 1.4, dated November 15, 2011. A Witnessed Build of the Unity 3.3.0.1 DS850 central count tabulator software was created using the Build Procedure DS850 Firmware, Version 1.2, dated January 27, 2012. The builds included source code and COTS software downloaded by the VSTL. To perform the Witnessed Build, a Linux build machine was used to make the files required to update the tabulator firmware. The build machine had its own build document and COTS software. A Windows XP machine was used to transfer the application build files to the transport media (CF card).

Summary Findings

Wyle performed a Witnessed Build for each of the tested software component of the Unity 3.3.0.1. ES&S's Technical Representative for the Witnessed Build was Mr. Dave Herrera. The products from the Witness Build have been archived as part of the compliance testing effort.

4.3 Technical Data Package Review

ES&S Unity 3.3.0.1 Voting System Technical Data Package (TDP) was reviewed to the VVSG. This review was performed as part of the pre-testing activities. The documents included in the TDP review are listed in Section 2.5 of this document.

The TDP documents were reviewed for accuracy, completeness, and compliance to the VVSG. The TDP documentation served as the basis for design and development of the functional tests. Functional testing also identified text in the TDP that conflicted with the actual operation of the system. These discrepancies were reported to ES&S and tracked as test exceptions until verified that the applicable documents had been corrected.

Summary Findings

The TDP documentation package submitted for this testing campaign initially included components of the ES&S voting system that were excluded from the scope of the voting system submitted for testing. ES&S added disclaimers and footnotes documenting the exclusions to all applicable documents and resubmitted the TDP documents for review. Only the applicable information concerning EMS and DS850 components was verified in each document; any excluded component information was not reviewed.

The review results were recorded in a worksheet that provided the pass/fail compliance to each applicable VVSG requirement. ES&S corrected nonconformance observations and resubmitted the associated documents for review. This process continued until the TDP complied with TDP Standards.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.3 Technical Data Package Review (Continued)

A summary of the TDP issues encountered is provided below:

- Initially information for the DS850 was not included in some documents.
- Documents which had not been submitted in the TDP package; were referenced for information.
- Some descriptive information included was inconsistent with descriptions in other TDP documents.
- Placeholders within the some of the documents indicated information was not yet inserted.
- Not all VVSG requirements were initially addressed in some of the documents.
- Some of the individual user guides included information which conflicted with the actual information encountered when verified during the testing process.

All TDP issues listed were resolved prior to review conclusion. Notice of Anomaly No. 4, summarizing that discrepancies were noted, is included in Appendix B of this report.

4.4 QA and CM System Review

The ES&S QA Plan and CM Plan were reviewed to determine compliance with EAC 2005 VVSG Volume II, Section 2, and Volume I, Sections 8 and 9, EAC stated requirements, and with the requirements of the internal ES&S documentation. Also, the ES&S TDP documentation package was reviewed to determine if the ES&S QA Plan and the CM Plan are being followed.

Wyle personnel were on site at ES&S in Omaha, Nebraska from January 17 -19, 2012. During this period Wyle personnel were thoroughly briefed on the ES&S QA and CM program. Wyle personnel visited each section of operation at ES&S that was involved in total process of designing, developing, implementing and testing voting systems. Wyle personnel reviewed test plans, test cases and results from testing for numerous on going and previous projects.

Wyle believes that ES&S has a strong QA and CM system in place and is in compliance with the 2005 VVSG standards.

4.5 Hardware Testing

WYLE Laboratories:

The Election Systems & Software Unity v. 3.3.0.1 System was tested by the Wyle Laboratories' EMI, Dynamics, and Environmental test facilities for testing to the hardware requirements set forth in the EAC 2005 VVSG. The ES&S DS850 was subjected to Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of these tests were to evaluate the operation of the ES&S DS850 under various environmental conditions. The total cumulative duration of the test was at least 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment was operated at room temperature. This test is similar to the low temperature and high temperature tests of MIL-STD-810-D, Method 502.2 and Method 501.2.

4.0 TEST PROCEDURES AND RESULTS (Continued)

4.5 Hardware Testing (Continued)

To perform the test, two ES&S DS850 units, as described in Table 2-1, were placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware varied from 50°F to 95°F and from 105 VAC to 129 VAC. During test performance, the operational functions were continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour were scanned.

Criterion Technologies:

The Election Systems & Software DS850 was tested by the Criterion Technologies: EMI, Dynamics, and Environmental test facilities for testing to the hardware requirements set forth in the EAC 2005 VVSG. The ES&S DS850 was subjected to a Other Environmental Tests, including: IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11; in accordance with Section 4.8 of Volume II of the EAC 2005 VVSG.

Criterion Technology is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the specific scope of accreditation under Lab Code 100396-0. All Criterion Technology instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 9002, ISO 17025, ANSI/NCSL Z540-I-1994 and are traceable to national standards. Criterion Technology has been accredited by the following groups: NVLAP (#100396-0), FCC (#90688), BSMI (#SL2-IN-007R), VCCI (#1255) 3&10 meter site (#R-2826), Immunity Shield room (#C-3118), Open Area Site (#C-3119), Nemko (#ELA-214), NMI (EU Competent Body Accreditation) and Industry Canada (#IC 3301). The National Institute for Standards and Technology (NIST) has designated Criterion Technology a Conformity Assessment Body (CAB) for Taiwan (BSMI # SL2-IN-E-007R) and Korea (#US0026).

Prior to performing the hardware test sequence, Wyle reviewed the results of previous testing in the form of the following test reports:

- Criterion Technology Test Report Number 091014-1481, “EMC Qualification Test Report, Election Systems and Software, Digital Scan Central – Count Vote Tabulation System, DS850(i),” dated August 4, 2010
- Wyle Laboratories Product Safety Test Report T57213-01, “Product Safety Test & Evaluation of the ES&S DS850 Vote Tabulation System,” dated November 24, 2009.

To determine the scope of tests to be performed by Wyle, a hardware qualitative examination was performed to assess if prior testing was performed under the guidelines of the EAC program, per the EAC 2005 VVSG. The results from this examination deemed that the previous test results satisfied EAC requirements; therefore, prior Environmental testing would be accepted.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.5 Hardware Testing (Continued)

Summary Findings

To meet the requirements of the test campaign, the following hardware tests were performed per the EAC 2005 VVSG:

- Environmental Control – Operating Environment (Volume I, Section 4.1.2.13; Volume II, Section 4.7.1) *Includes Data Accuracy and Reliability Test*
- Electrical Supply (Volume I, Section 4.1.2.4)
- Maintainability (Volume I, Section 4.3.4)
- Availability (Volume I, Section 4.3.5)

It was demonstrated that the DS850, as tested, successfully met the hardware test requirements of the EAC 2005 VVSG. During the hardware testing, there were two anomalies encountered during the Temperature and Power Variation Tests. These anomalies were the NOA No. 1 Main Motor Error, and NOA No. 2 - Ballot Jam. The anomalies were successfully resolved prior to test completion.

The procedures followed and the results obtained during the performance of the Environmental Control – Operating Environment Testing are presented in Appendix C of this report.

4.6 System Level Testing

System Level Testing was performed to evaluate the integrated operation of the voting system hardware and software.

The suite of tests that comprise the System level Testing includes:

- Volume and Stress Test
- Security Test
- Data Accuracy
- Physical Configuration Audit
- Functional Configuration Audit

4.6.1 Volume and Stress Test

The Unity v. 3.3.0.1 System was subjected to a Volume and Stress Test in accordance with the requirements of Section 6.2.3 of Volume II of the VVSG. The purpose of the test was to investigate the system's response to conditions that tend to overload the system's capacity to process, store, and report data. The Volume Test parameters were dependent upon the maximum number of active voting positions and the maximum number of ballot styles that the TDP claims the system can support. Testing was performed by exercising an election definition developed specifically to test for volume and stress (Election Definition: Volume and Stress, contained in Appendix D).

4.0 TEST PROCEDURES AND RESULTS (Continued)

4.6 System Level Testing (Continued)

4.6.1 Volume and Stress Test (Continued)

Summary Findings

At the conclusion of voting the Volume and Stress performance, the DS850 system successfully exercised 316 ballot positions in 450 ballot styles to investigate the system's response to conditions that tend to overload the system's capacity to process, store, and report data. "Test Deck A" was created printing just one ballot in 450 precincts. "Test Deck A" ballots was scanned by the DS850 with 450 precincts initialized. ES&S provided 5,000 professional ballots on 19 inch card stock for 5 selected precincts. These ballots were pre-marked in a matrix pattern creating a 100 ballot "Test Deck B". "Test Deck B" ballots was scanned into 1 DS850 unit 100 times for 5 precincts (1, 100, 200, 300, and 400) for a total of 50,000 ballots. There was one anomaly noted during the test, NOA No. 6. ES&S has since added a boot up function that now logs abnormal shutdowns. Wyle successfully tested this addition during regression testing. ES&S has since added a boot up function that now logs abnormal shutdowns. Wyle successfully tested this addition during regression testing.

4.6.2 Security Test

The DS850 was subjected to Security Testing in accordance with the requirements of Section 7 of Volume I and Section 6.4 of Volume II of the VVSG. The purpose of the Security Test was to verify that security technologies implemented in the DS850 to secure the hardware, software, and storage media during voting and post-voting activities are performed as documented in the ES&S supplied technical documentation and that it meets the requirements of the VVSG.

The Security Test was performed by running a security test suite to provide verification of the access controls and the physical controls documented by ES&S and to gather the necessary information. The information gathered was provided to a certified security professional for analysis.

Summary Findings

After the initial security test findings were reported to ES&S, they supplied Wyle with updated System Security Specification document. Wyle reviewed the document and an analysis was performed on the DS850 configuration as documented by ES&S. Attempts were made to access certain functions of the DS850 by users that did not have permissions to access those functions. Those attempts were unsuccessful.

In addition, security tie straps were provided and documented for the DS850 hardware. The security tie straps and their documented installation were analyzed and found to be adequate. Wyle has determined the ES&S DS850 to be compliant with the security requirements of the EAC 2005 VVSG.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.6 System Level Testing (Continued)

4.6.3 Data Accuracy Test

The Unity v. 3.3.0.1 System was subjected to a Data Accuracy Test in accordance with the requirements of Section 4.7.1.1 of Volume II of the VVSG. This test was performed using folded ballots to simulate mail-in ballots for a portion of the accuracy test. Wyle tested all of the supported ballot sizes during this test.

Per the EAC 2005 VVSG, Volume I: “Data accuracy is defined in terms of ballot position error rate. This rate applies to the voting functions and supporting equipment that capture, record, store, consolidate and report the specific selections, and absence of selections, made by the voter for each ballot position.” Per the EAC 2005 VVSG, Volume II, to meet the requirements of this test, the voting system must be subjected to the casting of a large number of ballots to verify vote recording accuracy, i.e., at least 1,549,703 ballot positions correctly read and recorded. The election definitions utilized during this test are presented in Appendix D of this report.

Summary Findings

The Unity v. 3.3.0.1 System successfully met the requirements of the Data Accuracy Test by scanning and processing 1,633,500 ballot positions accurately; therefore, exceeding the minimum requirement.

4.6.4 Physical Configuration Audit (PCA)

A Physical Configuration Audit (PCA) of the Unity v. 3.3.0.1 System was performed as part of the pre-testing activities 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 PCA included the following activities:

- Establishing a configuration baseline of software and hardware to be tested; confirm whether manufacturer’s documentation is sufficient for the user to install, validate, operate, and maintain the voting system.
- Verifying software conforms to the manufacturer’s specifications; inspect all records of manufacturer’s release control system; if changes have been made to the baseline version, verify manufacturer’s engineering and test data are for the software version submitted for certification.
- Reviewing drawings, specifications, technical data, and test data associated with system hardware, if non-COTS, to establish system hardware baseline associated with software baseline.
- Reviewing manufacturer’s documents of user acceptance test procedures and data against system’s functional specifications; resolve any discrepancy or inadequacy in manufacturer’s plan or data prior to beginning system integration functional and performance tests.
- Subsequent changes to baseline software configuration made during testing, as well as system hardware changes that may produce a change in software operation are subject to re-examination.

4.0 TEST PROCEDURES AND RESULTS (Continued)

4.6 System Level Testing (Continued)

4.6.4 Physical Configuration Audit (PCA) (Continued)

The PCA performed on the Unity v. 3.3.0.1 System consisted of inspecting the following:

- The DS850 software platform;
- The DS850 digital ballot counter with data storage capabilities; and
- All accessories, equipment and documentation used with the Unity v. 3.3.0.1 System.

Summary Findings

No discrepancies were noted during the performance of the PCA. All equipment documented during the PCA is retained by Wyle and stored as raw data.

4.6.5 Functional Configuration Audit (FCA)

The functional configuration audit encompasses an examination of manufacturer's tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the manufacturer's documentation submitted for the TDP. In addition to functioning according to the manufacturer's documentation, tests will be conducted to insure all applicable EAC 2005 VVSG requirements are met.

Summary Findings

During the performance of functional testing on the Unity 3.3.0.1 Voting System it was discovered that the DS850 did not log an abnormal shutdown when a "Camera Interface Error" was encountered. Wyle reported the nonconformance to ES&S. ES&S revised the system source code to add a feature into the DS850. During regression testing, Wyle verified that this feature was added. The NOA No. 5 documenting the finding is included in its entirety in Appendix B of this report.

4.7 Test Summary and Conclusion

Wyle performed compliance testing of the DS850, EMS and interfaces of the Election Systems & Software Unity v. 3.3.0.1 System to the EAC 2005 VVSG. During the test campaign, all data from all "pre-testing", hardware testing, software testing, functional testing, security testing, volume testing, stress testing, and reliability testing activities was combined to ensure all applicable EAC 2005 VVSG requirements that are supported by the Unity v. 3.3.0.1 System had been tested.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.7 Test Summary and Conclusion (Continued)

A total of six Notices of Anomaly were issued throughout the test campaign upon occurrence of a verified failure, an unexpected test result, or any significant unsatisfactory condition. All anomalies encountered during testing were successfully resolved prior to test completion. The Notices of Anomaly generated during testing are presented in their entirety in Appendix B of this report and are summarized below.

- Notice of Anomaly No. 1: Temp Power Main Motor Error: At test commencement, prior to the first run of ballot scanning and upon initialization of the ballot input hopper, the ballot input hopper ascended to the top position where it halted, preventing ballot scanning. The machine screen displayed a “Main Motor: Error” notification. Initial attempt to resolve issue was to replace the main motor, whereby the issue remained and the extracted hardware was tested and found to be without fault. Further review identified the drive belts on the transport were not adjusted correctly and the tension was too tight, which caused binding on the transport and thus prevents the motor from coming up to speed on the first run. The adjustments were made to bring the unit into specification and the issue was rectified.
- Notice of Anomaly No. 2: Temp Power Ballot Jam: During the scanning of the first batch of ballots on the second test attempt, a ballot jam was encountered which halted the ballot scanning process. The machine screen displayed a “Transport: Ballot Jam” notification. The ballot jam was cleared by the ES&S On-Site Technical Representative, who followed the ES&S documented procedures. The machine was then subjected to preventive maintenance to verify that all settings were correct. The test was then restarted and completed successfully.
- Notice of Anomaly No. 3: Source Code Review: Review of the submitted source code modules comprising the ES&S Unity 3.3.0.1 System revealed deviations from the standard as well as issues with the commenting. These anomalies are documented in detail in the Wyle generated review reports on file as raw data. Upon completion of the review for each source code submission, a technical summary report of all identified standards violations was sent to ES&S for resolution. ES&S then corrected the reported violations and re-submitted the source code for re-review. This process was repeated as many times as necessary until all identified standards violations were corrected.
- Notice of Anomaly No. 4: Technical Data Package (TDP) Review: Review of the submitted documentation revealed discrepancies between the TDP and the EAC 2005 VVSG requirements. Functional testing also identified text in the TDP that conflicted with the actual operation of the system. Each noted discrepancy was documented in detail in the Wyle-generated TDP review reports on file as raw data. The review results were recorded in a worksheet that provided the pass/fail compliance to each applicable EAC 2005 VVSG requirement. ES&S corrected each nonconformance observation and resubmitted the associated documents for review. This process continued until the TDP complied with all applicable requirements.

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4.0 TEST PROCEDURES AND RESULTS (Continued)

4.7 Test Summary and Conclusion (Continued)

- Notice of Anomaly No. 5: Camera Error: Transport no Response DS850:
At test commencement, during the processing of the: 11”, Left Read, Even Marked, 4 Ovals Per inch, Ballots, a ballot jam occurred in orientation 1. A message was displayed on the screen: “Error: Camera Interface – Transporter no response: Contact your election administrator – Code: 1009568” for which the only option was to select the “Shutdown” radio button. Shutdown was selected and the unit then, shutdown, restarted and the Transport was cleared. 7 Ballots were damaged during this occurrence and had to be replaced. The digital and paper audit log, recorded the event. It was noted that the actual event of the shutdown was not logged in either the digital or the paper audit log. ES&S has since added a change to the source code and the DS850 now logs abnormal shutdowns. Wyle successfully tested this additional change during regression testing and the issue has been resolved.

- Notice of Anomaly No. 6: Volume & Stress MCP Error DS850: At test commencement, between ballots 22950-23050, the UUT displayed an error message: “MCP ERROR: ERROR: The client connection to MCP timed out. Contact your election administrator. CODE: 1009006. The vendor instructed a “SHUTDOWN”, then re-login with the Election Credentials, and resume testing at 22950. This error was not logged in the real time DOT matrix Audit Log, nor was it recorded digitally on the export audit log; the only data depicting the issue was from an external camera. This issue repeated again between ballots 27850-27950, displaying the exact error message and code, for which the same protocol was followed, resuming test at 27850. Both occurrences were immediately provided to the vendor via telephone, and in person to an on-site representative. An inspection was made by the on-site vendor’s representative, inspecting the USB connections on the unit, removing the cage of the door so as to identify any possible loose connections, none were found. The MCP is the program that performs the logging. When the MCP shutdowns it is incapable of logging. ES&S has since made a change to the source code and added a boot up function that now logs abnormal shutdowns. Wyle successfully tested this additional change during regression testing and the issue has been resolved.

Wyle concludes that the DS850, changes to the EMS and the interfaces between EMS and the DS850 in the Unity v. 3.3.0.1 System, submitted by Election Systems & Software, has one non-conformance to the 2005 VVSG, which is listed below:

VVSG Volume I; Section section 4.1.5.1 Ballot Handling Section e. This section states:

- e. Ballot readers shall prevent multiple feed or detect and provide an alarm indicating multiple feed.
Multiple feed occurs when a ballot reader attempts to read more than one ballot at a time.
 - i. If multiple feed is detected, the card reader shall halt in a manner that permits the operator to remove the unread cards causing the error, and reinsert them in the card input hopper.

 - ii. The frequency of multiple feeds with ballots intended for use with the system shall not exceed 1 in 10,000.

(The remainder of this page intentionally left blank)

4.0 TEST PROCEDURES AND RESULTS (Continued)

4.7 Test Summary and Conclusion (Continued)

The DS850 does not meet section i. of this requirement due to the current design of the system not being able to prevent the card reader to halt properly once a multi-feed is detected.

All other aspects of the DS850, changes to the EMS and interfaces tested met all applicable requirements in the EAC 2005 VVSG. The Unity 3.3.0.1 system as a whole is still only compliant to the 2002 VSS certification that it was originally tested under.

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

(The remainder of this page intentionally left blank)

APPENDIX A
PHOTOGRAPHS



Photograph 1: ES&S Unity 3.3.0.1 Accuracy Test Setup



Photograph 2: ES&S Unity 3.3.0.1 Electrical Supply Test Setup



Photograph 3: ES&S Unity 3.3.0.1 Maintainability Test Setup



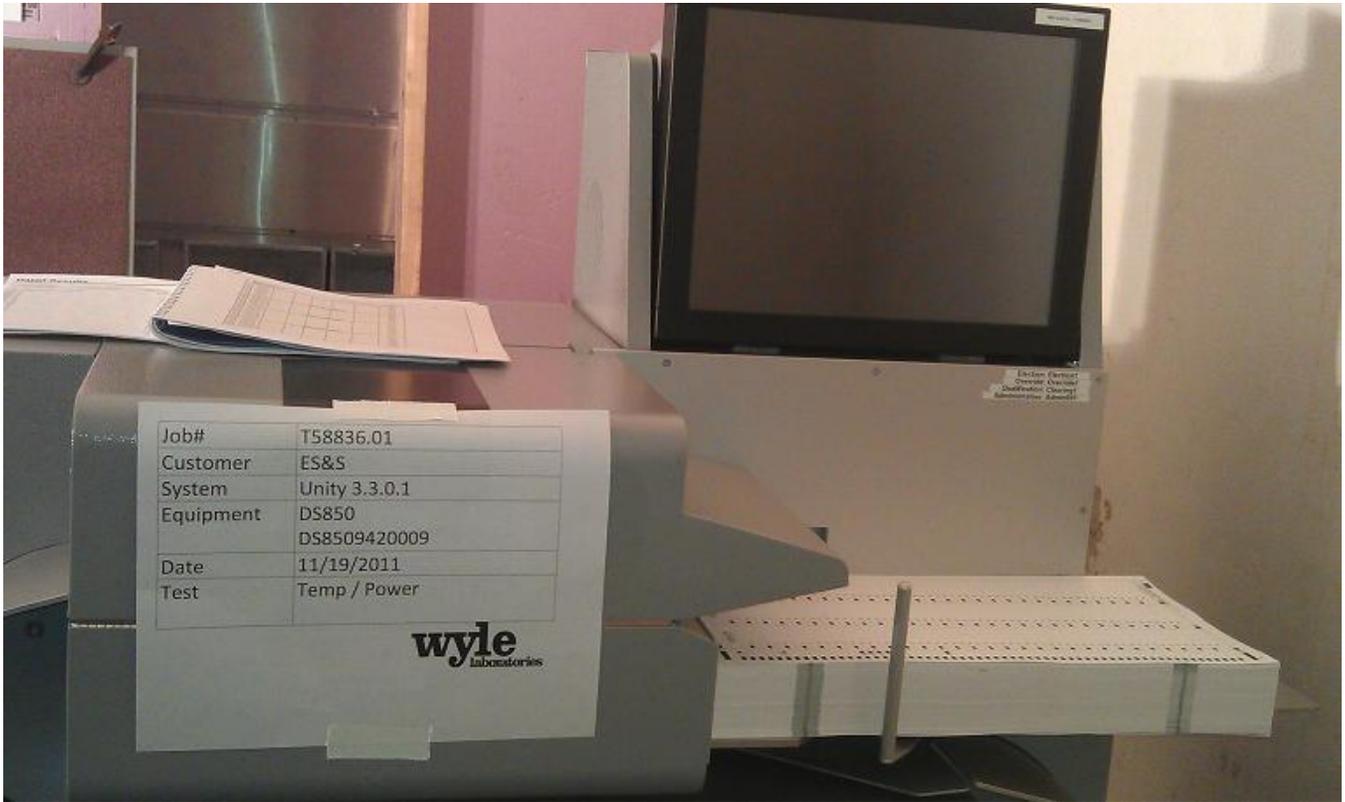
Photograph 4: ES&S Unity 3.3.0.1 Multiple Ballot Lengths Test Setup



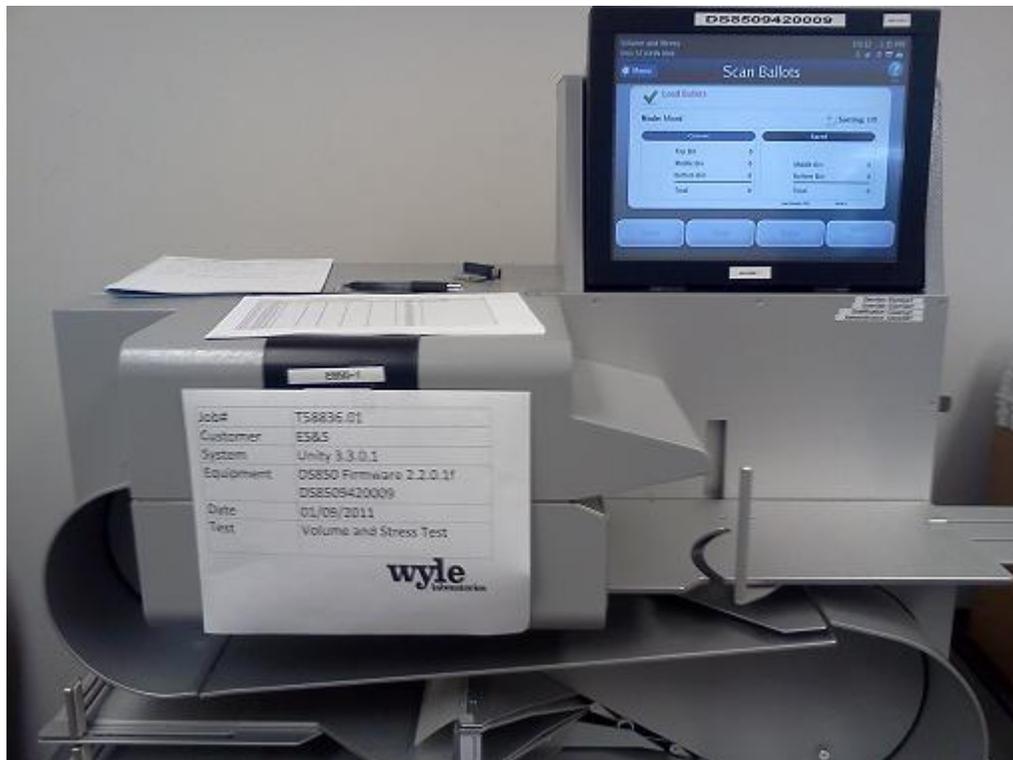
Photograph 5: ES&S Unity 3.3.0.1 Security Test Setup



Photograph 6: ES&S Unity 3.3.0.1 Temp/Power Test Setup



Photograph 7: ES&S Unity 3.3.0.1 Temp/Power Test Setup



Photograph 8: ES&S Unity 3.3.0.1 Volume & Stress Test Setup

APPENDIX B
NOTICES OF ANOMALY



NOTICE OF ANOMALY		DATE: 12-14-11
NOTICE NO: <u>1</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Steve Pearson</u>		NOTIFICATION DATE: <u>11-16-11</u>
NOTIFICATION MADE BY: <u>Wendy Owens</u>		VIA: <u>verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-16-11</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Temperature and Power Variation</u>	I.D. NO. <u>DS8510090037</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>4.7.1</u>	
REQUIREMENTS:		
<p>The EUT shall not demonstrate any signs of operational failure or degradation of performance when subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of this test is to evaluate system operation under various environmental conditions. The cumulative duration of the test is 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment may be operated at room temperature.</p> <p>To perform the test, the EUT shall be placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware shall be varied from 50°F to 95°F and from 105 VAC to 129 VAC. During test performance, the operational functions shall be continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour shall be scanned.</p>		
DESCRIPTION OF ANOMALY:		
<p>At test commencement, prior to the first run of ballot scanning and upon initialization of the ballot input hopper, the ballot input hopper ascended to the top position where it halted, preventing ballot scanning. The machine screen displayed a "Main Motor: Error" notification.</p>		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
<p>In an attempt to resolve the issue, the main motor along with its control components were replaced. Doing so did not rectify the issue. The replaced components were tested back at the factory and none of the components were found to be faulty. With further review, the drive belts on the transport were found to be too tight. This caused binding on the transport, which prevents the motor from coming up to speed on the first run. Doing so resulted in the unit to display the error message. Adjustment to the drive belts, were then made.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CAR No. _____	
VERIFICATION:	PROJECT ENGINEER: <u>[Signature] 12/22/11</u>	
TEST WITNESS: <u>Mark Manarano</u>	PROJECT MANAGER: <u>[Signature] 12/22/11</u>	
REPRESENTING: <u>ES&S</u>	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>[Signature] 1/5/12</u>	_____	



NOTICE OF ANOMALY		DATE: 12-14-11
NOTICE NO: <u>2</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Steve Pearson</u>	NOTIFICATION DATE: <u>11-16-11</u>	
NOTIFICATION MADE BY: <u>Wendy Owens</u>	VIA: <u>verbal</u>	
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-16-11</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Temperature and Power Variation</u>	I.D. NO. <u>DS850942009</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>4.7.1</u>	
REQUIREMENTS:		
<p>The EUT shall not demonstrate any signs of operational failure or degradation of performance when subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of this test is to evaluate system operation under various environmental conditions. The cumulative duration of the test is 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment may be operated at room temperature.</p> <p>To perform the test, the EUT shall be placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware shall be varied from 50°F to 95°F and from 105 VAC to 129 VAC. During test performance, the operational functions shall be continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour shall be scanned.</p>		
DESCRIPTION OF ANOMALY:		
<p>During the scanning of the first batch of ballots on the second test attempt, a ballot jam was encountered which halted the ballot scanning process. The machine screen displayed a "Transport: Ballot Jam" notification.</p>		
DISPOSITION - COMMENTS - RECOMMENDATIONS:		
<p>The ballot jam was cleared by the ES&S On-Site Technical Representative, who followed the ES&S documented procedures. The machine was then subjected to preventive maintenance to verify that all settings were correct. The test was then restarted and completed successfully.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CAR No. _____		
VERIFICATION: TEST WITNESS: <u>Mark Mansavage</u>	PROJECT ENGINEER: <u>Steph W 12/14/11</u> PROJECT MANAGER: <u>Fred Melt 12/14/11</u>	
REPRESENTING: <u>ES&S</u>	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>Patricia Brewster 12/14/11</u>		



NOTICE OF ANOMALY		DATE: 02/06/12
NOTICE NO: <u>3</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Sue McKay</u>		NOTIFICATION DATE: <u>02/06/12</u>
NOTIFICATION MADE BY: <u>Stephen Han</u>		VIA: <u>e-mail</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-5-2011 to 2-6-2012</u>	
PART NAME: <u>Unity 3.3.0.1</u>	PART NO. <u>---</u>	
TEST: <u>Source Code Review</u>	I.D. NO. _____	
SPECIFICATION: <u>EAC 2005 VVSG, Volume I</u>	PARA. NO. <u>Section 5</u>	
REQUIREMENTS:		
Software used in voting systems shall meet the essential design and performance characteristics detailed in Section 5 of the EAC 2005 VVSG.		
DESCRIPTION OF ANOMALY:		
Review of the submitted source code nodules comprising the ES&S Unity 3.3.0.1 System revealed deviations from the standard as well as issues with the commenting. These anomalies are documented in detail in the Wyle generated review reports on file as raw data.		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
Upon completion of the review for each source code submission, a technical summary report of all identified standards violations was sent to ES&S for resolution. ES&S then corrected the reported violations and re-submitted the source code for re-review. This process was repeated as many times as necessary until all identified standards violations were corrected.		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Potential 10 CFR Part 21 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CAR No. _____		
VERIFICATION:	PROJECT ENGINEER: <u>Alpha Hh 2/7/12</u>	
TEST WITNESS: <u>N/A</u>	PROJECT MANAGER: <u>Paul R... 2/7/12</u>	
REPRESENTING: _____	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>Patricia M... 2/7/12</u>		



NOTICE OF ANOMALY		DATE: 02/06/2012
NOTICE NO: <u>4</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Sue McKay</u>		NOTIFICATION DATE: <u>02/06/2012</u>
NOTIFICATION MADE BY: <u>Stephen Han</u>		VIA: <u>e-mail</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-5-2011 to 2-6-2012</u>	
PART NAME: <u>Unity 3.3.0.1</u>	PART NO. <u>---</u>	
TEST: <u>TDP Review</u>	I.D. NO. <u>---</u>	
SPECIFICATION: <u>EAC 2005 VVSG, Volume I</u>	PARA. NO. <u>Section 2</u>	
REQUIREMENTS:		
<p>The ES&S Unity 3.3.0.1 System Technical Data Package (TDP) shall be reviewed for accuracy, completeness, and compliance to the EAC 2005 VVSG.</p>		
DESCRIPTION OF ANOMALY:		
<p>Review of the submitted documentation revealed discrepancies between the TDP and the EAC 2005 VVSG requirements. Functional testing also identified text in the TDP that conflicted with the actual operation of the system. Each noted discrepancy was documented in detail in the Wyle-generated TDP review reports on file as raw data.</p>		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
<p>The review results were recorded in a worksheet that provided the pass/fail compliance to each applicable EAC 2005 VVSG requirement. ES&S corrected each nonconformance observation and resubmitted the associated documents for review. This process continued until the TDP complied with all applicable requirements.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CAR No. _____		
VERIFICATION: TEST WITNESS: <u>N/A</u>	PROJECT ENGINEER: <u>Stephen Han 2/7/12</u> PROJECT MANAGER: <u>Fuel Rohit 2/7/12</u>	
REPRESENTING: _____	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>Patricia Meints 2/7/12</u>		



NOTICE OF ANOMALY		DATE: 02-16-2012
NOTICE NO: <u>5</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Sue McKay</u>		NOTIFICATION DATE: <u>02-06-12</u>
NOTIFICATION MADE BY: <u>Stephen Han</u>		VIA: <u>email</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>12-28-11</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Functional Testing</u>	I.D. NO. <u>DS8509420009</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>3.3.2</u>	
REQUIREMENTS:		
<p>Per Section 3.3.2 of the EAC 2005 VVSG Volume II For testing voting functions defined in Volume I, Sections 2, the following procedures shall be performed during the functional tests. The procedure to prepare election programs shall: Procure test ballots with formats, voting patterns, and format identifications sufficient to verify performance of the test election programs.</p>		
DESCRIPTION OF ANOMALY:		
<p>At test commencement, during the processing of the: 11", Left Read, Even Marked, 4 Ovals Per inch, Ballots, a ballot jam occurred in orientation 1. A message was displayed on the screen: "Error: Camera Interface – Transporter no response: Contact your election administrator – Code: 1009568" for which the only option was to select the "Shutdown" radio button. Shutdown was selected and the unit then, shutdown, restarted and the Transport was cleared. 7 Ballots were damaged during this occurrence and had to be replaced. The digital and paper audit log, recorded the event. It was noted that the actual event of the shutdown was not logged in either the digital or the paper audit log.</p>		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
<p>The camera is the communication link from the motherboard to the transport. When the transport received a jam, its subsequent error messages to the camera caused the system to halt. The only recovery from this is a reboot of the system to bring all components of the system to a known state. The audit log issue has been address in our current build which Wyle will test during regression.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CAR No. _____	
VERIFICATION:	PROJECT ENGINEER: <u>Stephen Han 2/16/12</u>	
TEST WITNESS: _____	PROJECT MANAGER: <u>Paul Padgett 2/14/12</u>	
REPRESENTING: _____	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>Patricia Stewart 2/17/12</u>	_____	



NOTICE OF ANOMALY		DATE: 02-16-2012
NOTICE NO: <u>6</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Sue McKay</u>	NOTIFICATION DATE: <u>1-11-12</u>	
NOTIFICATION MADE BY: <u>Stephen Han</u>	VIA: <u>verbal & in person</u>	
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>1-11-12</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Volume and Stress</u>	I.D. NO. <u>DS8509420009</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>6.2.3</u>	

REQUIREMENTS:

The EUT shall not demonstrate any signs of operational failure or degradation of performance when subjected to a Volume and Stress Test in accordance with Section 6.2.3 of Volume II of the EAC 2005 VVSG. The purpose of this test is to verify the total number of ballots to be processed by each precinct counting device, for which the maximum number of active voting positions and the maximum number of ballot styles that the TDP claims the system can support will also be validated.

DESCRIPTION OF ANOMALY:

At test commencement, between ballots 22950-23050, the EUT displayed a error message: "MCP ERROR: ERROR: The client connection to MCP timed out. Contact your election administrator. CODE: 1009006. The vendor, instructed a "SHUTDOWN", then re-login with the Election Credentials, and resume testing at 22950. This error was not logged in the real time DOT matrix Audit Log printer, nor was it recorded digitally on the export audit log, the only data depicting the issue was from an external camera. This issue repeated again between ballots 27850-27950, displaying the exact error message and code, for which the same protocol was followed, resuming test at 27850. Both occurrences were immediately provided to the vendor via telephone, and in person to an on-site representative.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

An inspection was made by the onsite vendor's representative, inspecting the USB connections on the unit, removing the cage of the door so as to identify any possible loose connections, none were found. The issue occurred 2 times during the Volume and Stress test duration. The MCP is the program that performs the logging. When the MCP shutdowns it is incapable of logging. ES&S has since added a boot up function that now logs abnormal shutdowns. Wyle will test this addition during regression testing.

Safety Related YES NO Potential 10 CFR Part 21 YES NO N/A
 RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: CUSTOMER WYLE

CAR Required: YES NO CAR No. _____

VERIFICATION: PROJECT ENGINEER: *Stephen Han 2/16/12*
 TEST WITNESS: Mark Mangarano PROJECT MANAGER: *Fred Park 2/16/12*
 REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: _____
 QUALITY ASSURANCE: *Rachel Griffin 2/17/12* _____

APPENDIX C

**OPERATING ENVIRONMENTAL TEST REPORT
TEMPERATURE/POWER VARIATION TEST
DATA ACCURACY/RELIABILITY TEST**



Wyle Laboratories, Inc.
7800 Highway 20 West
Huntsville, Alabama 35806
Phone (256) 837-4411 • Fax (256) 721-0144
www.wyle.com

REPORT NO.: T58836.01-01
WYLE JOB NO.: T58836.01
CLIENT P.O. NO.: ES&S-MSA-TA014
CONTRACT: N/A
TOTAL PAGES (INCLUDING COVER): 27
DATE: January 25, 2012

TEST REPORT

ENVIRONMENTAL HARDWARE TEST REPORT FOR THE ES&S DS 850 CENTRAL TABULATOR

for

Election Systems & Software (ES&S)
11208 John Galt Blvd.
Omaha, NE 68137

(sd)

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 Hardy

SUBSCRIBED and sworn to before me this 26 day of Jan 20 12

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

My Commission expires June 2, 2015

Wyle shall have no liability for damages of any kind to person or property, including special or consequential damages, resulting from Wyle's providing the services covered by this report.

PREPARED BY: Steph H 1/25/12
Stephen Han, Senior Project Engineer Date

APPROVED BY: Frank Padilla 1/25/12
Frank Padilla, Voting Systems Manager Date

WYLE Q. A.: Raul F. Terceno 1/25/12
Raul F. Terceno, Q. A. Manager Date

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ATTACHMENTS

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1.0 INTRODUCTION

1.1 Scope

This report documents the test procedures followed and the results obtained during Operating Environmental Testing performed on the Election Systems and Software (ES&S) DS850 Central Tabulator, hereinafter referred to as the ES&S DS850. Upon receipt by Wyle Laboratories, the systems to be tested were inspected and subjected to a Physical Configuration Audit (PCA). The receiving inspection revealed the systems to be in good condition. All testing was performed at Wyle Laboratories' Huntsville, Alabama, Test Facility.

1.2 Objective

The objective of this test program was to ensure that the ES&S DS850 complied with the operating environmental hardware requirements of the Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG) as described in this report. Specifically, the units were subjected to the Temperature and Power Variation Test per Section 4.7.1 of Volume II of the EAC 2005 VVSG.

1.3 References

The documents listed below were utilized to perform testing.

- Election Systems and Software (ES&S) Purchase Order No. ES&S-MSA-TA014
- Wyle Laboratories Quotation No. 545/053830/DB
- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines," and Volume II, Version 1.0, "National Certification Testing Guidelines", dated December 2005
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- 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 107th 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, Latest Revision
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation and Notices of Clarification (listed on www.eac.gov)

1.0 INTRODUCTION (Continued)

1.4 Test Specimen Description

The following paragraphs address the design methodology and product description of the ES&S DS850, as taken from the ES&S technical documentation.

The ES&S DS850, depicted in Figure 1-1, is a high-speed, optical scan central ballot counter. During scanning, the ES&S DS850 prints a continuous audit log to a dedicated audit log printer and can print results directly from the scanner to a second connected printer. The scanner saves results internally and to results collection media that officials can use to format and print results from a PC running Election Reporting Manager. The ES&S DS850 has an optimum throughput rate of nearly 400 ballots per minute and uses cameras and imaging algorithms to image the front and back of a ballot, evaluate the results and sort ballots into discrete bins to maintain continuous scanning.



Figure 1-1: ES&S DS850

WYLE LABORATORIES, INC.
Huntsville Facility

1.0 INTRODUCTION (Continued)

1.5 Test Program Summary (Continued)

The ES&S DS850 was subjected to a Temperature and Power Variation Test in accordance with the operating hardware test requirements set forth in Section 4.7.1 of the EAC 2005 VVSG. Two anomalies were encountered during test performance, each of which resulted in the generation of a formal Notice of Anomaly (NOA). The first anomaly (NOA No. 1) was encountered at test initiation when a "Main Motor: Error" was displayed. The second anomaly (NOA No. 2) was encountered during a ballot jam. Both anomalies are discussed in full detail in the following section.

Each anomaly was successfully resolved prior to test completion.

2.0 TEST PROCEDURES AND RESULTS

2.1 Temperature and Power Variation Test

The ES&S DS850 was subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of these tests was to evaluate the operation of the ES&S DS850 under various environmental conditions. The total cumulative duration of the test was at least 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment was operated at room temperature. This test is similar to the low temperature and high temperature tests of MIL-STD-810-D, Methods 502.2 and 501.2.

To perform the test, two ES&S DS850 units, described in Table 2-1, were placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware varied from 50°F to 95°F and from 105 VAC to 129 VAC (as depicted in Figures 2-1 through 2-4). During test performance, the operational functions were continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour were scanned.

Table 2-1 Temperature and Power Variation Test Equipment

Equipment	Hardware	Firmware	Serial Numbers
DS850	v. 1.0	v. 2.2.0.1	DS850: DS8509420009 Cart: 57936-02 Laser Printer Oki B430dn: AF97052470A0 UPS APC-RS 1500: BB0932033646 Dot Matrix Printer Oki 420: AE72011853C0
DS850	v. 1.0	v. 2.2.0.1	DS850: DS8510090037 Cart: T58836.01-Cart01 Laser Printer Oki B431dn: AK16009803A0 UPS APC-RS 1500: BB090716404 Dot Matrix Printer Oki 420: AE72011780C0

2.0 TEST PROCEDURES AND RESULTS (Continued)

2.1 Temperature and Power Variation Test (Continued)

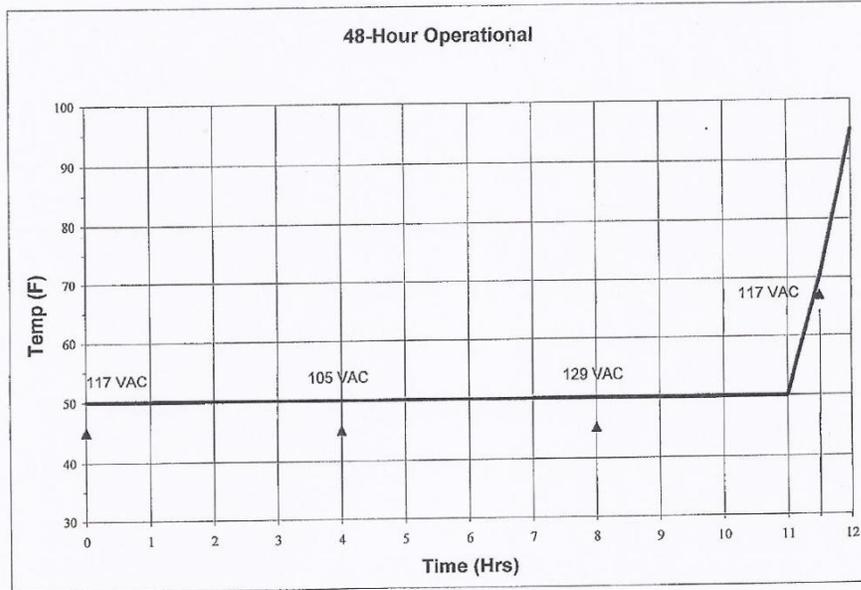


Figure 2-1 Temperature/Power Variation Profile Hours 0-12

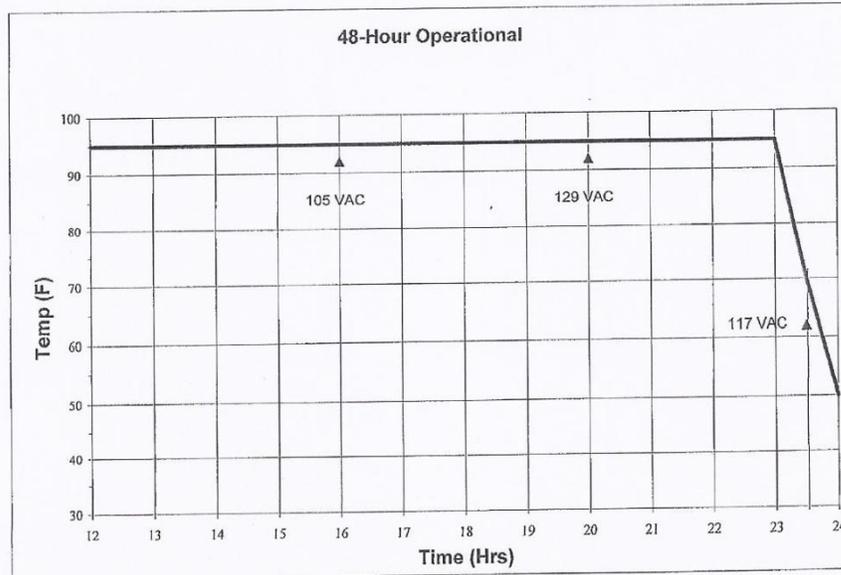


Figure 2-2 Temperature/Power Variation Profile Hours 12-24

2.0 TEST PROCEDURES AND RESULTS (Continued)

2.1 Temperature and Power Variation Test (Continued)

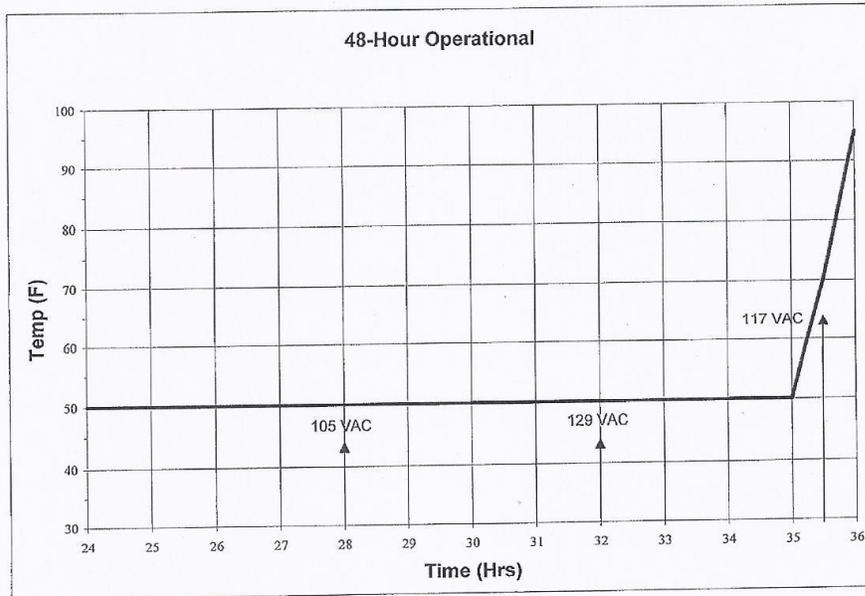


Figure 2-3 Temperature/Power Variation Profile Hours 24-36

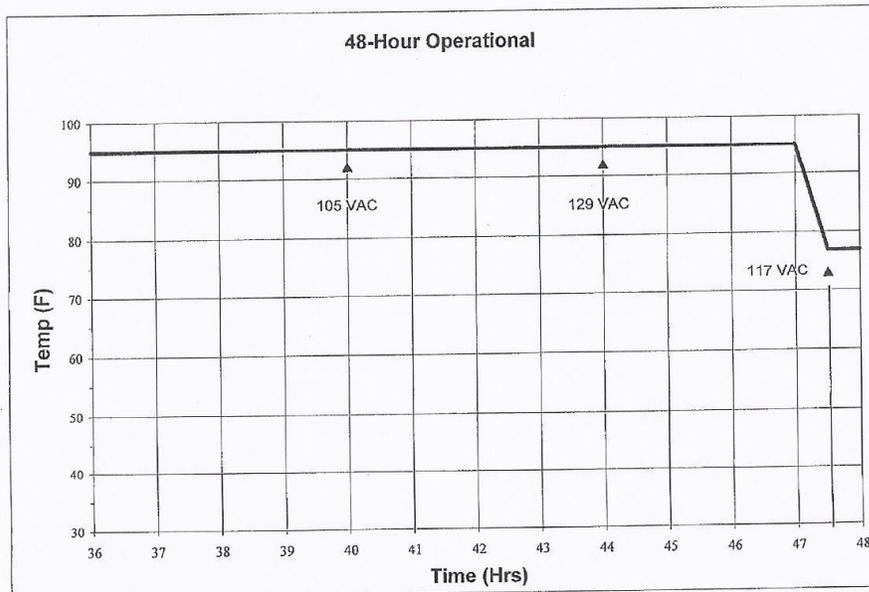


Figure 2-4 Temperature/Power Variation Profile Hours 36-48

2.0 TEST PROCEDURES AND RESULTS (Continued)

2.1 Temperature and Power Variation Test (Continued)

Two anomalies were encountered during test performance, each of which resulted in the generation of a formal Notice of Anomaly (NOA). The first anomaly (documented in NOA No. 1, presented in Attachment A) occurred at test commencement, prior to the first run of ballot scanning and upon initialization of the ballot input hopper, the ballot input hopper ascended to the top position where it halted, preventing ballot scanning. The machine screen displayed a "Main Motor: Error" notification (as depicted in Photograph No. 4, presented in Attachment B). The ES&S On-Site Technical Representative, Mark Manganaro, corrected the error and the test was re-started.

The second anomaly (documented in NOA No. 2, presented in Attachment A) occurred during the scanning of the first batch of ballots on the second test attempt when a ballot jam was encountered that halted the ballot scanning process. The machine screen displayed a "Transport: Ballot Jam" notification (as depicted in Photograph No. 5, presented in Attachment B). The ballot jam was cleared by the ES&S On-Site Technical Representative, who followed the ES&S documented procedures. The machine was then subjected to preventive maintenance to verify that all settings were correct. The test was then restarted and completed successfully.

The ES&S DS850 successfully completed the requirements of the Temperature and Power Variation Test. The Test Setup photographs are included in Attachment B. The Environmental Test Data which consists of the Chamber Thermal Circular Charts are included in Attachment C. The Instrumentation Equipment Sheet for the test is presented in Attachment D.

3.0 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/NCSS Z540-1, 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.

4.0 QUALITY ASSURANCE PROGRAM

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).

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Wyle Report No. T58836.01-01

ATTACHMENT A
NOTICES OF ANOMALY NOS. 1 AND 2

WYLE LABORATORIES, INC.
Huntsville Facility



NOTICE OF ANOMALY		DATE: 12-14-11
NOTICE NO: <u>1</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>	WYLE JOB NO: <u>T58836.01</u>	
NOTIFICATION MADE TO: <u>Steve Pearson</u>	NOTIFICATION DATE: <u>11-16-11</u>	
NOTIFICATION MADE BY: <u>Wendy Owens</u>	VIA: <u>verbal</u>	
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-16-11</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Temperature and Power Variation</u>	I.D. NO. <u>DS8510090037</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>4.7.1</u>	
REQUIREMENTS:		
<p>The EUT shall not demonstrate any signs of operational failure or degradation of performance when subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of this test is to evaluate system operation under various environmental conditions. The cumulative duration of the test is 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment may be operated at room temperature.</p> <p>To perform the test, the EUT shall be placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware shall be varied from 50°F to 95°F and from 105 VAC to 129 VAC. During test performance, the operational functions shall be continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour shall be scanned.</p>		
DESCRIPTION OF ANOMALY:		
<p>At test commencement, prior to the first run of ballot scanning and upon initialization of the ballot input hopper, the ballot input hopper ascended to the top position where it halted, preventing ballot scanning. The machine screen displayed a "Main Motor: Error" notification.</p>		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
<p>In an attempt to resolve the issue, the main motor along with its control components were replaced. Doing so did not rectify the issue. The replaced components were tested back at the factory and none of the components were found to be faulty. With further review, the drive belts on the transport were found to be too tight. This caused binding on the transport, which prevents the motor from coming up to speed on the first run. Doing so resulted in the unit to display the error message. Adjustment to the drive belts, were then made.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CAR No. _____		
VERIFICATION:		
TEST WITNESS: <u>Mark Mangarano</u>	PROJECT ENGINEER: <u>[Signature] 12/22/11</u>	
REPRESENTING: <u>ES&S</u>	PROJECT MANAGER: <u>[Signature] 12/22/11</u>	
QUALITY ASSURANCE: <u>[Signature] 1/5/12</u>	INTERDEPARTMENTAL COORDINATION: _____	



NOTICE OF ANOMALY		DATE: 12-14-11
NOTICE NO: <u>2</u>	P.O. NUMBER: <u>ES&S-MSA-TA014</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Election Systems and Software (ES&S)</u>		WYLE JOB NO: <u>T58836.01</u>
NOTIFICATION MADE TO: <u>Steve Pearson</u>		NOTIFICATION DATE: <u>11-16-11</u>
NOTIFICATION MADE BY: <u>Wendy Owens</u>		VIA: <u>verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>11-16-11</u>	
PART NAME: <u>DS850 Central Tabulator</u>	PART NO. <u>---</u>	
TEST: <u>Temperature and Power Variation</u>	I.D. NO. <u>DS850942009</u>	
SPECIFICATION: <u>EAC 2005 VVSG Volume II</u>	PARA. NO. <u>4.7.1</u>	
REQUIREMENTS:		
<p>The EUT shall not demonstrate any signs of operational failure or degradation of performance when subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the EAC 2005 VVSG. The purpose of this test is to evaluate system operation under various environmental conditions. The cumulative duration of the test is 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment may be operated at room temperature.</p> <p>To perform the test, the EUT shall be placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware shall be varied from 50°F to 95°F and from 105 VAC to 129 VAC. During test performance, the operational functions shall be continuously exercised by the scanning of ballots. A minimum of 300 ballots per hour shall be scanned.</p>		
DESCRIPTION OF ANOMALY:		
<p>During the scanning of the first batch of ballots on the second test attempt, a ballot jam was encountered which halted the ballot scanning process. The machine screen displayed a "Transport: Ballot Jam" notification.</p>		
DISPOSITION • COMMENTS • RECOMMENDATIONS:		
<p>The ballot jam was cleared by the ES&S On-Site Technical Representative, who followed the ES&S documented procedures. The machine was then subjected to preventive maintenance to verify that all settings were correct. The test was then restarted and completed successfully.</p>		
Safety Related <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Potential 10 CFR Part 21 <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
CAR Required: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CAR No. _____	
VERIFICATION:	PROJECT ENGINEER: <u>Steph G 12/14/11</u>	
TEST WITNESS: <u>Mark Mangarano</u>	PROJECT MANAGER: <u>Fu... 12/4/11</u>	
REPRESENTING: <u>ES&S</u>	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>Rabit Brewster 12/14/11</u>	_____	

WH 1066, Rev. March '09

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Huntsville Facility

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ATTACHMENT B
TEST SETUP PHOTOGRAPHS

WYLE LABORATORIES, INC.
Huntsville Facility

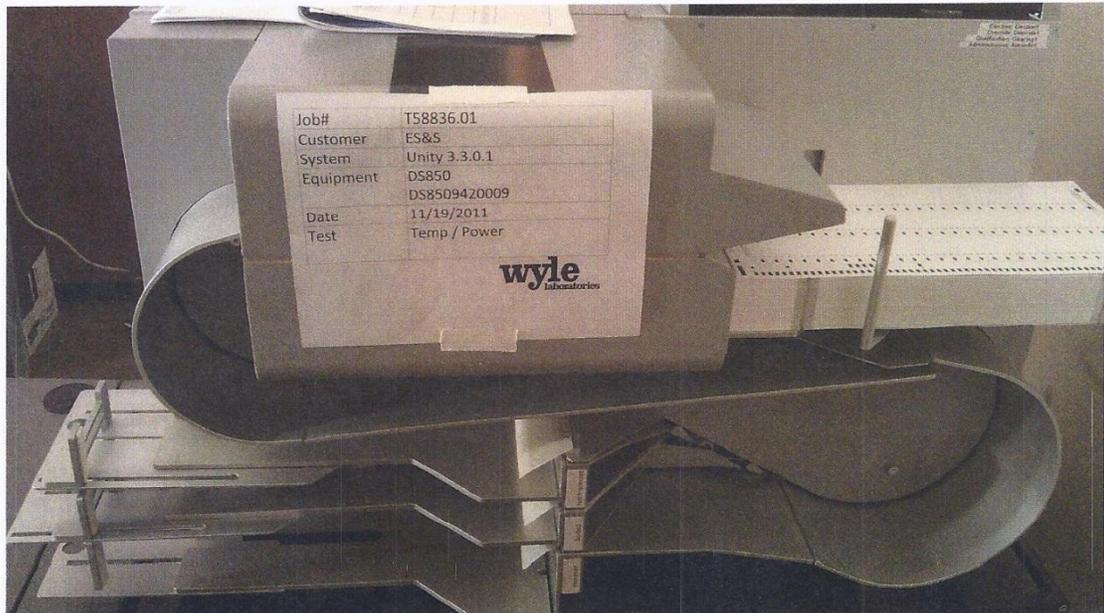


Photograph No 1: Temperature and Power Variation Test

WYLE LABORATORIES, INC.
Huntsville Facility

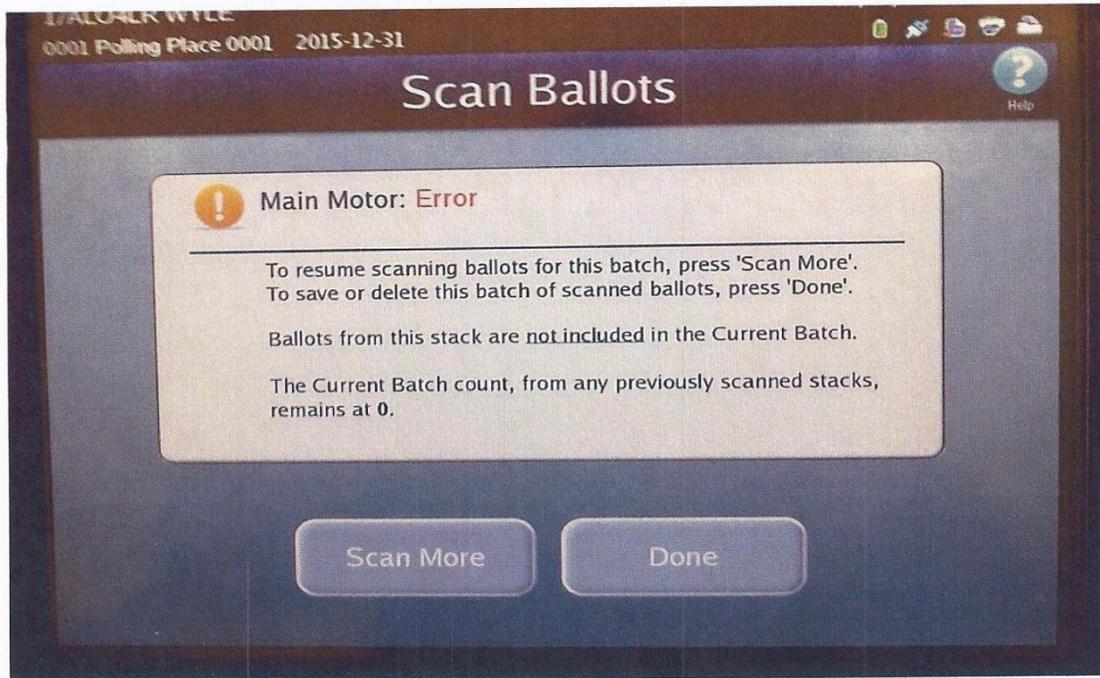


Photograph No. 2: Temperature and Power variation Test Setup

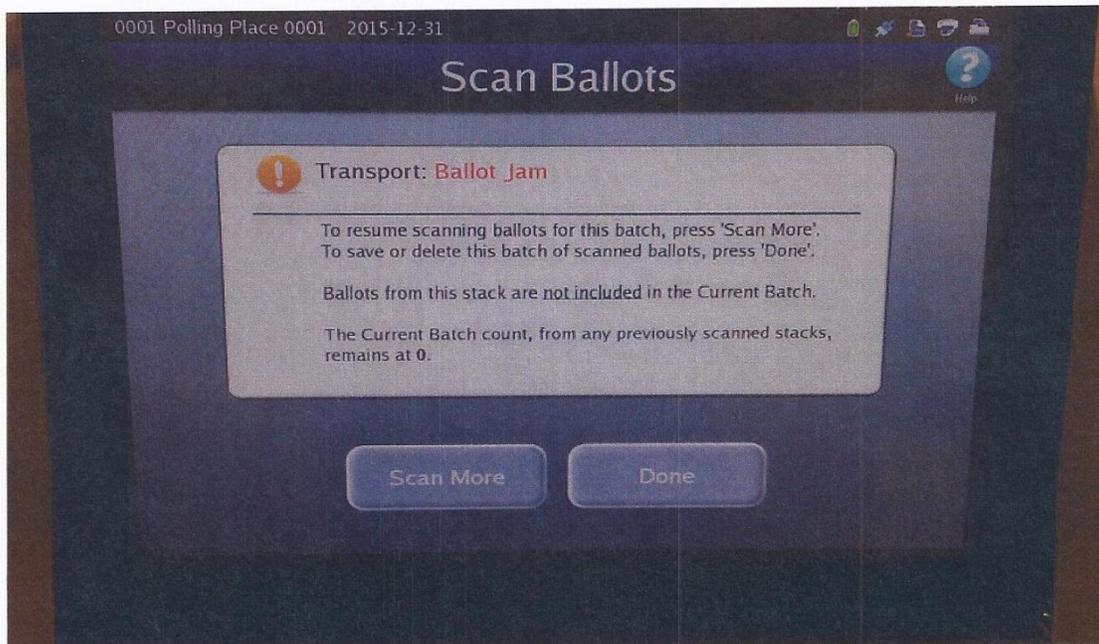


Photograph No. 3: Temperature and Power variation Test Setup

WYLE LABORATORIES, INC.
Huntsville Facility

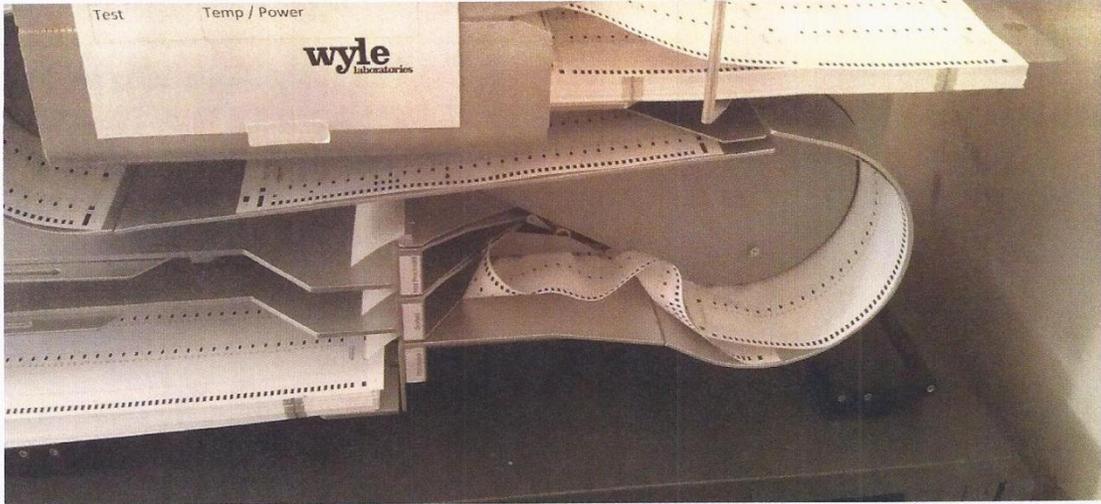


Photograph No. 4: Notice of Anomaly No. 1 Error Message



Photograph No. 5: Notice of Anomaly No. 2 Error Message

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Photograph No. 6: Ballot Jam (NOA No. 2)

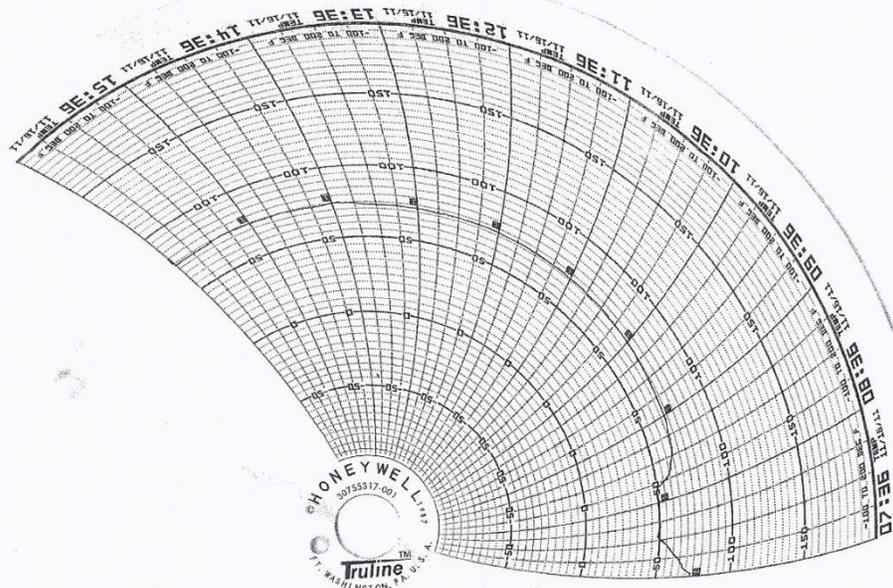


Photograph No. 7: Ballot Jam (NOA No. 2)

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ATTACHMENT C
OPERATING ENVIRONMENTAL TEST DATA

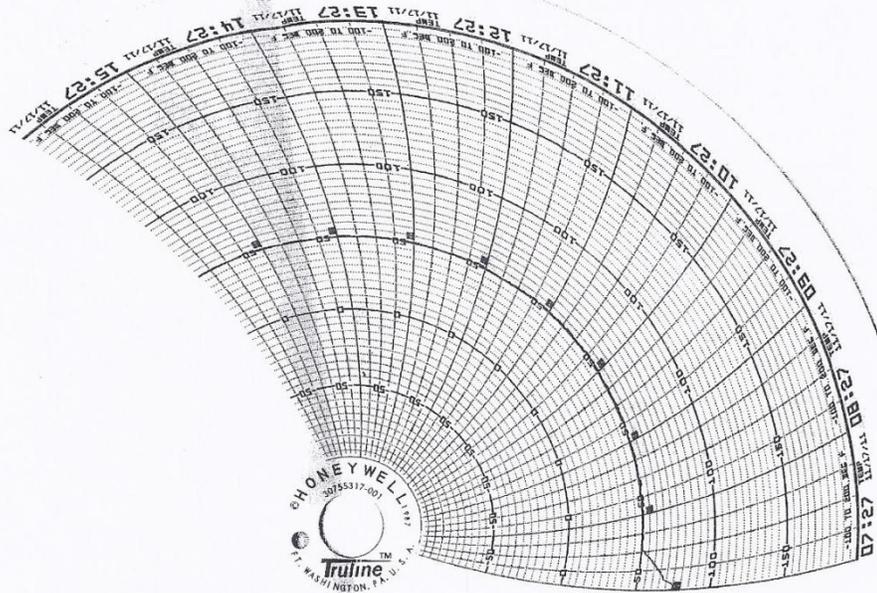
WYLE LABORATORIES, INC.
Huntsville Facility



CD #/HR	T 58836.01
CUSTOMER	ES & S
TYPE TEST	Temp cycle
DRY BULB	1 WET BULB
CHAMBER	SIA
START DATE	11-16-11
TECHNICIAN	DR. CAPS
CHECKED BY	160
DATE	12/13/11

WYLE LABORATORIES, INC.
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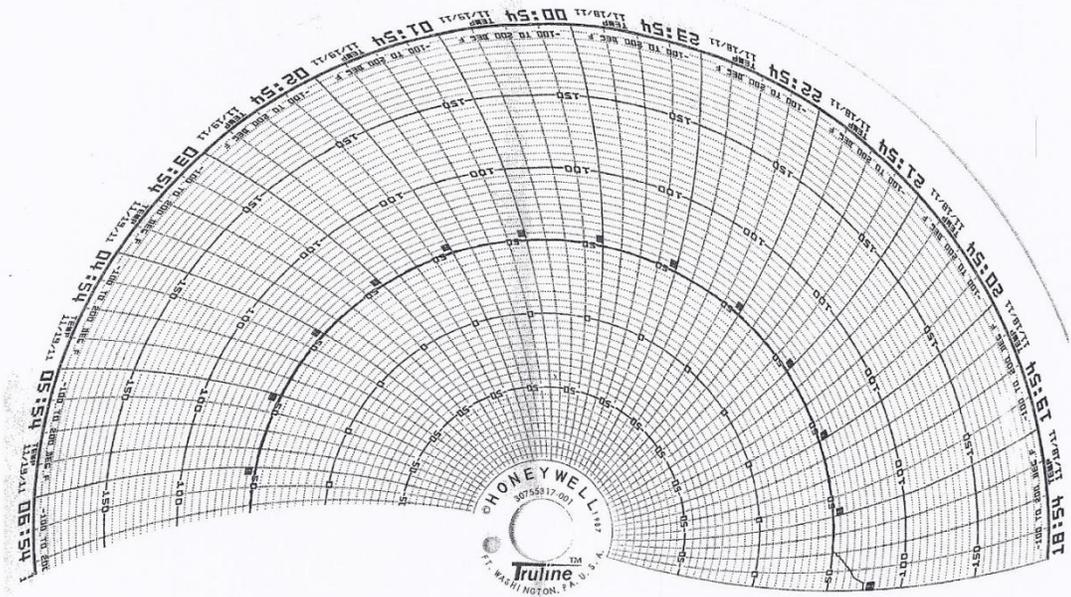
WYLE LABORATORIES, INC.
Huntsville Facility



WYLE LABS	J/NR	T58836.01
	CUSTOMER	ES&S
	TYPE TEST	Temp/hum cycle
	DRY BULB	1 WET BULB
	CHAMBER	57A
	START DATE	11-27-11
	TECHNICIAN	DL Lewis
	CHECKED BY:	AKD
	DATE:	12/13/11

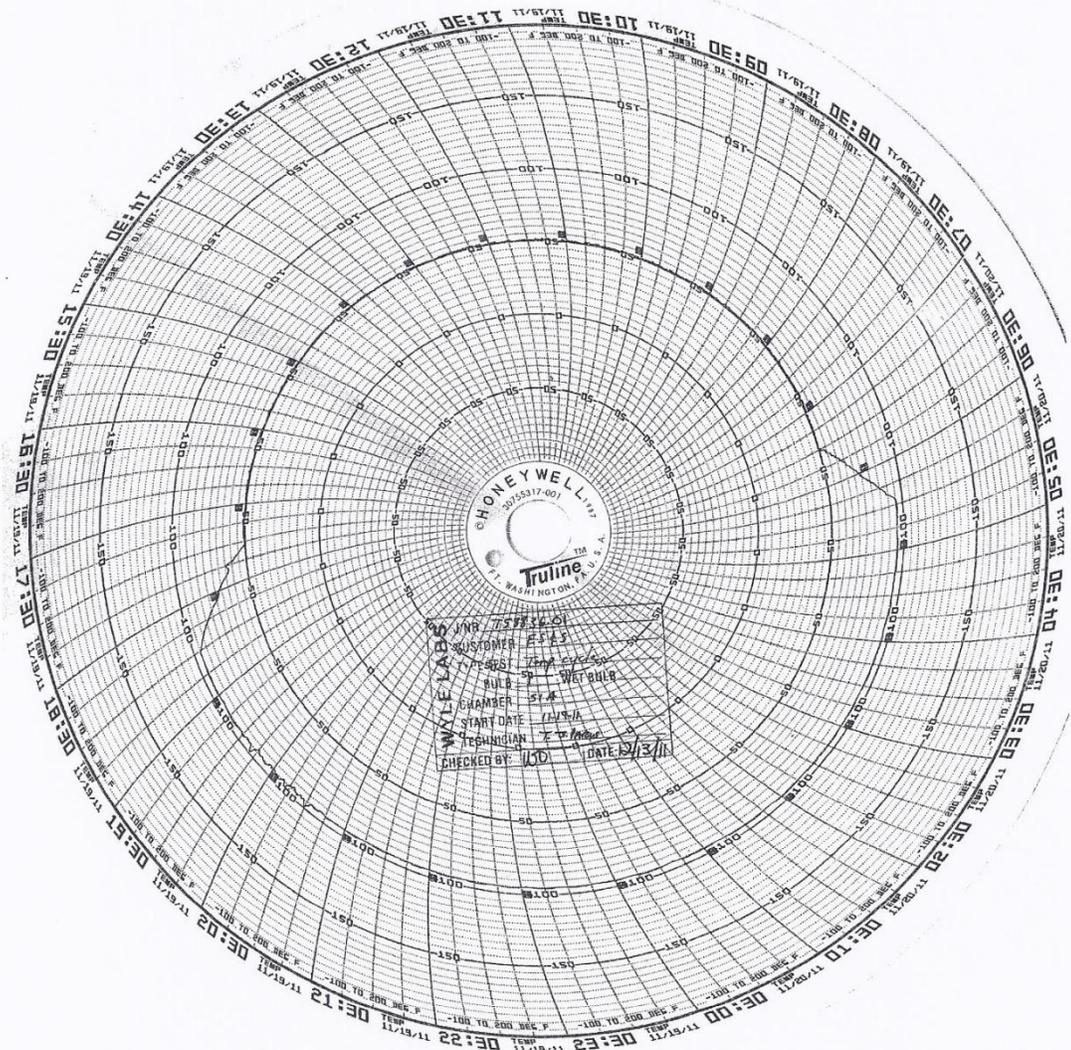
WYLE LABORATORIES, INC.
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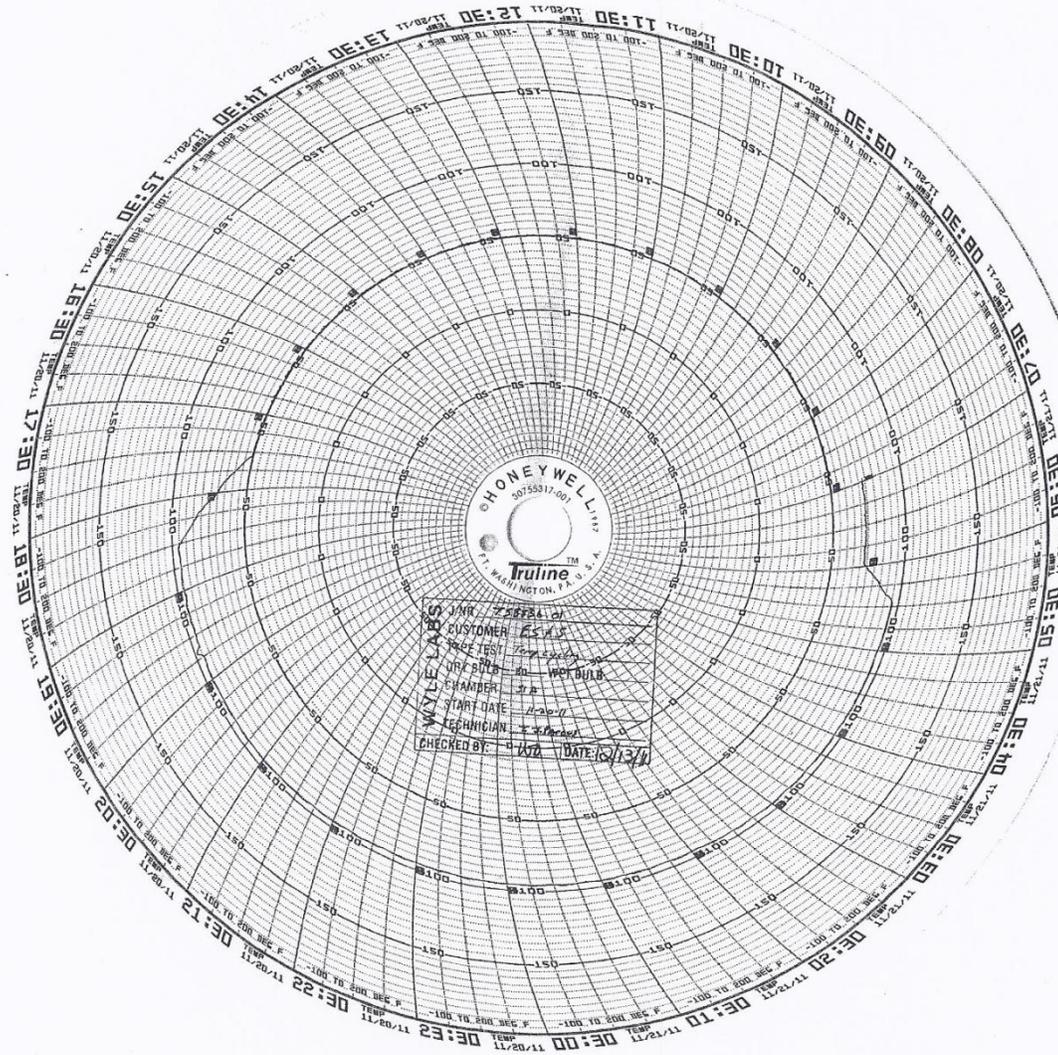
J/NR	T58836.01
CUSTOMER	ES&S
TYPE TEST	Temp Post cycle
DRY BULB	1 WET BULB
CHAMBER	57A
START DATE	11-18-11
TECHNICIAN	J.M.C.
CHECKED BY:	UJD
DATE:	12/1/11

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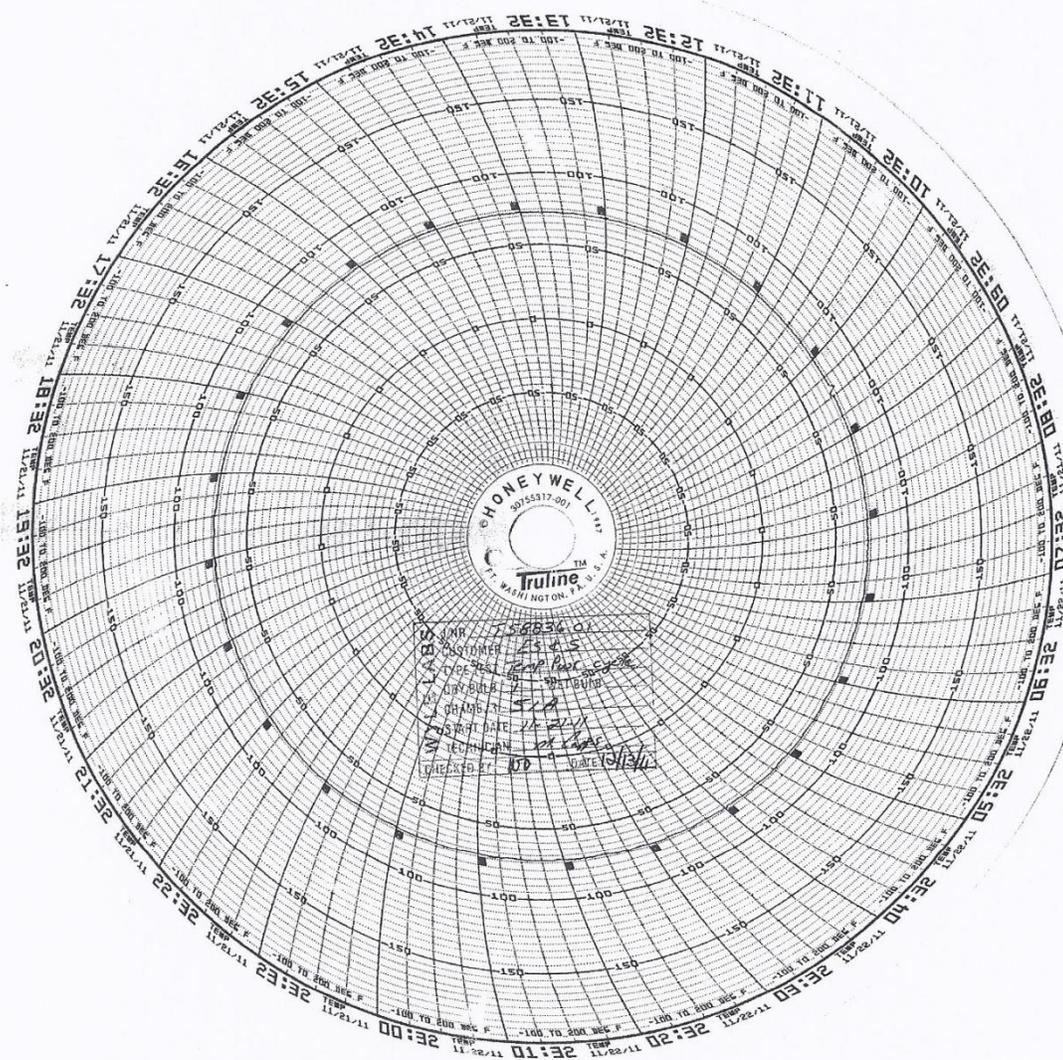


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ATTACHMENT D
INSTRUMENTATION EQUIPMENT SHEETS

WYLE LABORATORIES, INC.
Huntsville Facility



INSTRUMENTATION EQUIPMENT SHEET

DATE: 11/15/2011 JOB NUMBER: T58836.01 TYPE OF TEST: TEMP PWR CYCLE
 TECHNICIAN: M CAPPS CUSTOMER: ES&S TEST AREA: CH 51A

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	POWER SOURCE	CALIFORNIA INST	1251RP/IF	L06361	117347	0-135VAC RMS	1%	11/10/2011	11/9/2012
2	TEMP	MICRISTAR	828-B11	10033	108416	-400-700°F	.1%FS	1/28/2011	1/28/2012
3	TEMP IND	NEWPORT	Q2001TC	N/A	116533	TYPE T	±1.5%	1/28/2011	1/28/2012
4	TEMP RECORDER	HONEYWELL	DR450T	924488505000	109830	-200-600°F	.4°F	1/28/2011	1/28/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION:

[Signature] 11-15-11

CHECKED & RECEIVED BY:

[Signature] 11/15/11

Q.A.:

[Signature] 11/15/11

WH-1029A,REV,APR'99

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WYLE LABORATORIES, INC.
 Huntsville Facility



INSTRUMENTATION EQUIPMENT SHEET

DATE: 11/18/2011 JOB NUMBER: T58836.01 TYPE OF TEST: TEMP PWR CYCLE
TECHNICIAN: M CAPPS CUSTOMER: ES&S TEST AREA: CH 51A

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	DMM	FLUKE	87 CAT III	74260258	115802	MULTI	.05%,1%,2%	4/21/2011	4/20/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [Signature] 11-18-11 CHECKED & RECEIVED BY: [Signature] 11-18-11
Q.A.: Bandy Mesa Wells

WH-1029A,REV,APR'99

Page 1 of 1

WYLE LABORATORIES, INC.
Huntsville Facility

APPENDIX D
ELECTION DEFINITIONS

ELECTION DEFINITION: Accuracy Test

Accuracy Testing:

This test must exercise all possible voting positions for this ballot. There are 135 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 contest 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: 1 DS850

Configuration

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

Election named: : Accuracy Test

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:

ELECTION DEFINITION: Accuracy Test

General Election	
Straight Party	
American	
Communist	
Constitution	
Democrat	
Green	
Labor	
Libertarian	
Republican	
Vote for 1	
President of the United States	
Barbara Barrett Hicks	Amer
Edris Thomas	Comm
Fiero Finn	Const
Gail Keefe	Dem
Imran Rashid	Green
Jack "Duke" Brodisky	Labor
Kay Raab	Lib
Sam Patel	Rep
Write-In	
Vote for 1	
United States Senator	
Barry Josey	Amer
Edwin Best	Comm
Floyd W. Schisler	Const
Gail Ross	Dem
Jack Hall	Green
Keith Satterwhite	Labor
Laurie St Laurent	Lib
Tetty Rogiers	Rep
Write-In	
Vote for 1	
Representative in Congress	
District 1	
Ben Baker	Amer
Edwin Lewis	Comm
Frank L. Matthews	Const
Gale Smith	Dem
James A. Clark	Green
Ken Anderson	Labor
Leo Cross	Lib
Theodore Judd	Rep
Write-In	
Vote for 1	
State Assembly	
District 1	
Betty Williams	Amer
Elizabeth Mack	Comm
Frank Pearson	Const
Gary Klemann	Dem
James Ayers	Green
Kenneth Interlicchio	Labor
Leon Lewis	Lib
Theodore Kopp	Rep
Write-In	
Vote for 1	
State Supreme Court Justice	
Seat A	
Bruce Willis	Amer

ELECTION DEFINITION: Accuracy Test

Ernst Lynch Glenn T Combs Herbert Schweppenhauser Linda Hall Micheal McClelland Philip Thorpp Eugene Kessler Write-In	Comm Const Dem Green Labor Lib Rep
Vote for 1	
Associate Judge of Court of Appeals District 1	
Ala Dee Smith Calvin Marino David Cox Eugene Ruff Kerry Jones Mildred Dudo Philip Thorpp Thomas Reiss Write-in	Amer Comm Const Dem Green Labor Lib Rep
Vote for 1	
County Commissioner District 1	
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
Vote for 1	
County Comptroller Seat A	
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
Vote for 1	
County Assessor	
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
Vote for 1	
Councilman District 2 (Non-Partisan)	
Arthur Salamack Carter McGaw Derek Persons Elizabeth Piazza Franklin Margo Louis Korte, Jr Mary L. Daniel Write-In	

ELECTION DEFINITION: Accuracy Test

	<p>Vote for 1 Councilman District 5 (Non-Partisan)</p>
	<p>Arnold Krill Christopher R. Richardson Delores DeVan Ernest Snyder George A. Fisk Helena Slack Imran Rashid Write-In</p>
	<p>Vote for 1 Alderman District 11 (Non-Partisan)</p>
	<p>Arthur Kumar Barry Josey Cecil Carey David Heroux Frank Pearson Gloria Dillion Howard Hwang Write-In</p>
	<p>Vote for 1 State University Trustees (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>Vote for 5 Delegates to 3rd Judicial Convention (Non-Partisan)</p>
	<p>Anne Neet Barry Josey Colby Lincoln Davina Ayers-Grant Edris Thomas Floyd W. Schisler Gloria Castle Write-In</p>
<p>Vote for 1</p>	
<p>Constitutional Amendment Temporary Assignment of Family Court Judges</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>Vote for 1</p>	
<p>Referendum A Bond Issue</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</p>	

ELECTION DEFINITION: Accuracy Test

No

Vote for 1

Voting Devices Used:

1 DS850

Test Deck Pattern:

The Test Deck will consist of 100 hand marked ballots for each precinct. The voting pattern will consist of a matrix pattern and three exception votes handled by the tabulators. The test decks will be voted 121 times rotating the orientation on each deck cycle. The 4 orientations will be cycled for the duration of the accuracy test.

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 16-45. Vote "Yes" for each proposal on the first ballot, vote "No" for the second ballot and vote Yes for the remaining ballots 4-45. Each candidate should have the number of ballots corresponding to their position on the ballot: First candidate- 1 ballot, Second candidate – 2 ballots, Third candidate – 3 ballots and continue the pattern for all 9 candidates including write in. The last position should include 9 ballots with all write-ins selected. B) Vote the American Straight party candidate and under vote all other races on the ballot. Repeat this pattern voting the next Straight party and under voting all other races on the ballot. Continue this pattern until all 8 Straight party contests have been voted while under voting the remaining races on each ballot. Each Straight Party should have the number of ballots corresponding to their position on the ballot C) Vote the Non-Partisan races only once for each candidate and under voting all other races. 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 87-89. D) Vote the Partisan races only once for each candidate and under voting all other races. E) Include 2 Blank Ballots to complete the deck of 100.

ELECTION DEFINITION: Accuracy Test

TEST RESULTS

Total ballots cast = 100

Straight party

American Amer	1
Communist Comm	2
Constitution Const	3
Democrat Dem	4
Green Green	5
Labor Labor	6
Libertarian Lib	7
Republican Rep	8
Over Votes	0
Under Votes	64
Totals	100

President of the United States

Barbara Barrett Hicks Amer	3
Edris Thomas Comm	5
Fiero Finn Const	7
Gail Keefe Dem	9
Imran Rashid Green	11
Jack "Duke" Brodisky Labor	13
Kay Raab Lib	15
Sam Patel Rep	17
Write-In	10
Over Votes	0
Under Votes	10
Totals	100

United States Senator

Barry Josey Amer	3
Edwin Best Comm	5
Floyd W. Schisler Const	7
Gail Ross Dem	9
Jack Hall Green	11
Keith Satterwhite Labor	13
Laurie St Laurent Lib	15
Tetty Rogiers Rep	17
Write-In	10
Over Votes	0
Under Votes	10
Totals	100

Representative in Congress

Ben Baker Amer	3
Edwin Lewis Comm	5
Frank L. Matthews Const	7
Gale Smith Dem	9
James A. Clark Green	11
Ken Anderson Labor	13
Leo Cross Lib	15
Theodore Judd Rep	17
Write-In	10
Over Votes	0

ELECTION DEFINITION: Accuracy Test

Under Votes	10
Totals	100

State Assembly

Betty Williams Amer	3
Elizabeth Mack Comm	5
Frank Pearson Const	7
Gary Klemann Dem	9
James Ayers Green	11
Kenneth Interlicchio Labor	13
Leon Lewis Lib	15
Theodore Kopp Rep	17
Write-In	10
Over Votes	0
Under Votes	10
Totals	100

State Supreme Court Justice

Bruce Willis Amer	3
Ernst Lynch Comm	5
Glenn T Combs Const	7
Herbert Schweppenhauser Dem	9
Linda Hall Green	11
Micheal McClelland Labor	13
Philip Thorpp Lib	15
Eugene Kessler Rep	17
Write-In	10
Over Votes	0
Under Votes	10
Totals	100

Associate Judge of Court of Appeals

Ala Dee Smith Amer	3
Calvin Marino Comm	5
David Cox Const	7
Eugene Ruff Dem	9
Kerry Jones Green	11
Mildred Dudo Labor	13
Philip Thorpp Lib	15
Thomas Reiss Rep	17
Write-in	10
Over Votes	0
Under Votes	10
Totals	100

County Commissioner

Brent Gilley Amer	3
Elizabeth Piazza Comm	5
Franklin Margo Const	7
Gene Tillman Dem	9
James Collins Green	11
Kerry Jones Labor	13
Lewis Tese Lib	15
Tony Grzanich Rep	17
Write-In	10
Over Votes	0
Under Votes	10
Totals	100

County Comptroller

Brian Edwards Amer	3
Eric Sheehy Comm	5
George A. Fisk Const	7
Helena Slack Dem	9

ELECTION DEFINITION: Accuracy Test

Lewis Touhay	Green	11
Mary L. Daniel	Labor	13
Nyda E Hamblin	Lib	15
Charles Place	Rep	17
Write-In		10
Over Votes		0
Under Votes		10
Totals		100

County Assessor

Brian Getz	Amer	3
Ernest Snyder	Comm	5
Gerald Danson	Const	7
Herbert Devine	Dem	9
Linda Gapp	Green	11
Micheal H Walker	Labor	13
Philip Rebis	Lib	15
William Sullivan	Rep	17
Write-In		10
Over Votes		0
Under Votes		10
Totals		100

Councilman District 2
(Non-Partisan)

Arthur Salamack		2
Carter McGaw		3
Derek Persons		4
Elizabeth Piazza		5
Franklin Margo		6
Louis Korte, Jr		7
Mary L. Daniel		8
Write-In		18
Over Votes		0
Under Votes		47
Totals		100

Councilman District 5
(Non-Partisan)

Arnold Krill		2
Chistopher R. Richardson		3
Delores DeVan		4
Ernest Snyder		5
George A. Fisk		6
Helena Slack		7
Imran Rashid		8
Write-In		18
Over Votes		0
Under Votes		47
Totals		100

Alderman District 11
(Non-Partisan)

Arthur Kumar		2
Barry Josey		3
Cecil Carey		4
David Heroux		5
Frank Pearson		6
Gloria Dillion		7
Howard Hwang		8
Write-In		18
Over Votes		0
Under Votes		47
Totals		100

State University Trustees
(Non-Partisan)

Angela Pogoda		2
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ELECTION DEFINITION: Accuracy Test

Charles Jasen	5
Derek Carlson	9
Eugene Ruff	14
Glenna P Cook-Lincoln	20
Write-In	215
Over Votes	0
Under Votes	235
Totals	500

Delegates to 3rd Judicial Convention
(Non-Partisan)

Anne Neet	2
Barry Josey	3
Colby Lincoln	4
Davina Ayers-Grant	5
Edris Thomas	6
Floyd W. Schisler	7
Gloria Castle	8
Write-In	18
Over Votes	0
Under Votes	47
Totals	100

Constitutional Amendment Temporary Assignment

Yes	43
No	2
Over Votes	0
Under Votes	55
Totals	100

Referendum A Bond Issue

Yes	43
No	2
Over Votes	0
Under Votes	55
Totals	100

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.

ELECTION DEFINITION: GEN-01

General Election: GEN-01

ELECTION DEFINITION: GEN-01

A basic election held in 4 precincts one of which is a split precinct. This election contains 19 contests compiled into 4 ballot styles. 5 of the contests are in all 4 ballot styles. The other 15 contests are split between at least 2 of the precincts with a maximum of 4 different contest spread across the 4 precincts. The voting variations supported by this election are as follows:

- 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: 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: Yes
- Early Voting: No

This election was designed to functionally test the handling of multiple ballot styles, support for common voting variations.

Configuration

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

General Election named: GEN-01 General Election

Precinct Based Testing

1 machine used for each precinct

4 precincts: Precinct 1, Precinct 2a, Precinct 2b, Precinct 3

3 parties: Democrat, Libertarian, Republican

Languages: English

Contest Totals: 19

Contests as listed:

Precinct 1 (4,5,6)	Precinct 2a	Precinct 2b	Precinct 3 (7,8,9)
Straight Party			

ELECTION DEFINITION: GEN-01

Libertarian Republican Democrat			
Vote for one President and Vice President of the United States			
Harry Brown LIB Jim Doyle			
George Bush REP Dick Cheney			
Al Gore DEM Joe Liberman Write-In			
Vote for 1 United States Senator			
Ed Johnson LIB John Rusco REP Katie Bernstein DEM Write-In			
Vote for 1			
Representative in Congress District 1		Representative in Congress District 2	
Jim Gibbons LIB Daniel Laws REP Mary Cahill DEM Write-In		Habib Smith LIB Bonnie Wyatt REP Jim Hinkle DEM Write-In	
Jim Gibbons LIB Daniel Laws REP Mary Cahill DEM Write-In		Jim Gibbons LIB Daniel Laws REP Mary Cahill DEM Write-In	
Vote for 1		Vote for 1	
State Assembly District 1		State Assembly District 2	
Marcia Jones DEM Write-In		Pat Thomas DEM Write-In	
Marcia Jones DEM Write-In		Yevette Downs DEM Write-In	
Vote for 1		Vote for 1	
Proposal 1 District 1		Proposal 1 District 2a	Proposal 1 District 2b
Should Taxes be raised for road improvement? Yes No		Should the city fund the new stadium? Yes No	Should the sales tax be increased to 9%? Yes No
Should the city fund the new stadium? Yes No		Should the city fund the new stadium? Yes No	Should the city fund the new stadium? Yes No
Vote for 1		Vote for 1	Vote for 1
County Commissioner District 1		County Commissioner District 2	
Arlyn Beal REP Write-In		Jack Howard DEM Write-In	
Arlyn Beal REP Write-In		Jay Scott LIB Write-In	
Vote for 1		Vote for 1	
County Assessor			
Dave Backus LIB Myron Ensign LIB Ralph Savage REP Ernie Banks REP			

ELECTION DEFINITION: GEN-01

Angus McFarland DEM Mick Manson DEM Write-In Write-In			Vote for 2		
Supreme Court Justice Seat A Robert Rose LIB Gary Becker DEM Write-In Vote for 1	Supreme Court Justice Seat B Laura Denise LIB Barbara Young DEM Write-In Vote for 1	Supreme Court Justice Seat C Millie Farmer LIB Ray Jones DEM Write-In Vote for 1			
Dog Catcher Bill Bates Nancy Ingram Roland Gustiv Write-In Vote for 1					

Applicable Voting Devices :
DS850

Test Deck Pattern:
Ballots voted or pre-marked with the following pattern. The following is the test pattern to be voted for the given precinct:

Precinct 1	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Straight Party										
Libertarian	X									
Republican		X								
Democrat			X							
President of the United States										
Harry Brown LIB				X				X		
George Bush REP					X				X	
Al Gore DEM						X				
Write-In							X			X
United States Senator										
Ed Johnson LIB				X				X		
John Rusco REP					X				X	
Katie Bernstein DEM						X				
Write-In							X			X
Representative in Congress District 1										
Jim Gibbons LIB				X				X		
Daniel Laws REP					X				X	
Mary Cahill DEM						X				
Write-In							X			X
State Assembly District 1										
Marcia Jones DEM				X		X		X		
Write-In					X		X			X
Proposal 1 District 1										

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Yes		X		X		X		X		X
No	X		X		X		X		X	
County Commissioner District 1										
Arlyn Beal	REP			X		X		X		
Write-In					X		X		X	X
County Assessor										
Dave Backus	LIB			X				X		
Myron Ensign	LIB			X					X	
Ralph Savage	REP				X					
Ernie Banks	REP				X					
Angus McFarland	DEM					X				
Mick Manson	DEM					X				
Write-In							X	X	X	X
Write-In							X			X
Supreme Court Justice Seat A										
Robert Rose	LIB			X			X			
Gary Becker	DEM				X			X		
Write-In						X			X	X
City of Priceville Dog Catcher (Non-Partisan)										
Bill Bates		X		X				X		
Nancy Ingram			X		X				X	
Roland Gustiv			X			X				
Write-In							X			X

Precinct 2a	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Straight Party										
Libertarian	X									
Republican		X								
Democrat			X							
President of the United States										
Harry Brown	LIB			X				X		
George Bush	REP				X				X	
Al Gore	DEM					X				
Write-In							X			X
United States Senator										
Ed Johnson	LIB			X				X		
John Rusco	REP				X				X	
Katie Bernstein	DEM					X				
Write-In							X			X
Representative in Congress District 2										
Habib Smith	LIB			X				X		
Bonnie Wyatt	REP				X				X	
Jim Hinkle	DEM					X				
Write-In							X			X
State Assembly District 2										
Pat Thomas	DEM			X		X		X		
Write-In					X		X			X
Proposal 1 District 2a										

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Yes		X		X		X		X		X
No	X		X		X		X		X	
County Commissioner District 2										
Jack Howard	DEM			X		X		X		
Write-In					X		X		X	X
County Assessor										
Dave Backus	LIB			X				X		
Myron Ensign	LIB			X					X	
Ralph Savage	REP				X					
Ernie Banks	REP				X					
Angus McFarland	DEM					X				
Mick Manson	DEM					X				
Write-In							X	X	X	X
Write-In							X			X
Supreme Court Justice Seat B										
Laura Denise	LIB			X			X			
Barbara Young	DEM				X			X		
Write-In						X			X	X
City of Priceville Dog Catcher (Non-Partisan)										
Bill Bates		X		X				X		
Nancy Ingram			X		X				X	
Roland Gustiv			X			X				
Write-In							X			X

Precinct 2b	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Straight Party										
Libertarian	X									
Republican		X								
Democrat			X							
President of the United States										
Harry Brown	LIB			X				X		
George Bush	REP				X				X	
Al Gore	DEM					X				
Write-In							X			X
United States Senator										
Ed Johnson	LIB			X				X		
John Rusco	REP				X				X	
Katie Bernstein	DEM					X				
Write-In							X			X
Representative in Congress District 2										
Habib Smith	LIB			X				X		
Bonnie Wyatt	REP				X				X	
Jim Hinkle	DEM					X				
Write-In							X			X
State Assembly District 2										
Pat Thomas	DEM			X		X		X		
Write-In					X		X			X
Proposal 1 District 2b										
Yes		X		X		X		X		X
No	X		X		X		X		X	

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County Commissioner District 2											
Jack Howard	DEM				X		X		X		
Write-In						X		X		X	X
County Assessor											
Dave Backus	LIB				X				X		
Myron Ensign	LIB				X					X	
Ralph Savage	REP					X					
Ernie Banks	REP					X					
Angus McFarland	DEM						X				
Mick Manson	DEM						X				
Write-In								X	X	X	X
Write-In								X			X
Supreme Court Justice Seat B											
Laura Denise	LIB				X			X			
Barbara Young	DEM					X			X		
Write-In							X			X	X
City of Priceville Dog Catcher (Non-Partisan)											
Bill Bates		X			X				X		
Nancy Ingram			X			X				X	
Roland Gustiv				X			X				
Write-In								X			X

Precinct 3	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Straight Party										
Libertarian	X									
Republican		X								
Democrat			X							
President of the United States										
Harry Brown	LIB				X			X		
George Bush	REP					X			X	
Al Gore	DEM						X			
Write-In								X		X
United States Senator										
Ed Johnson	LIB				X			X		
John Rusco	REP					X			X	
Katie Bernstein	DEM						X			
Write-In								X		X
Representative in Congress District 1										
Jim Gibbons	LIB				X			X		
Daniel Laws	REP					X			X	
Mary Cahill	DEM						X			
Write-In								X		X
State Assembly District 3										
Yevette Downs	DEM				X		X		X	
Write-In						X		X		X
Proposal 1 District 2a										
Yes		X		X		X		X		X
No	X		X		X		X		X	

County Commissioner District 3											
Jay Scott	LIB				X		X		X		
Write-In						X		X		X	X
County Assessor											
Dave Backus	LIB				X				X		
Myron Ensign	LIB				X					X	
Ralph Savage	REP					X					
Ernie Banks	REP					X					
Angus McFarland	DEM						X				
Mick Manson	DEM						X				
Write-In								X	X	X	X
Write-In								X			X
Supreme Court Justice Seat C											
Millie Farmer	LIB				X			X			
Ray Jones	DEM					X			X		
Write-In							X			X	X
City of Priceville Dog Catcher (Non-Partisan)											
Bill Bates		X			X				X		
Nancy Ingram			X			X				X	
Roland Gustiv				X			X				
Write-In								X			X

Test Results:

Precinct 1:

Straight Party

Libertarian 1
 Republican 1
 Democrat 1

President

Harry Brown LIB 3
 George Bush REP 3
 Al Gore DEM 2
 Write-In 2

US Senator

Ed Johnson LIB 3
 John Rusco REP 3
 Katie Bernstein DEM 2
 Write-In 2

Rep in Congress District 1

Jim Gibbons LIB 3
 Daniel Laws REP 3
 Mary Cahill DEM 2
 Write-In 2

State Assembly District 1

Marcia Jones DEM 4
 Write-In 3

Proposal 1 District 1

Yes 5
 No 5

County Commissioner District 1

Arlyn Beal REP 4
 Write-In 4

County Assessor

Dave Backus LIB 3

Myron Ensign LIB	3
Ralph Savage REP	2
Ernie Banks REP	2
Angus McFarland DEM	2
Mick Manson DEM	2
Write-In	4
Write-In	2
Supreme Court Justice Seat A	
Robert Rose LIB	3
Gary Becker DEM	3
Write-In	3
City of Priceville Dog Catcher	
Bill Bates	3
Nancy Ingram	3
Roland Gustiv	2
Write-In	2
Precinct 2a:	
Straight Party	
Libertarian	1
Republican	1
Democrat	1
President	
Harry Brown LIB	3
George Bush REP	3
Al Gore DEM	2
Write-In	2
US Senator	
Ed Johnson LIB	3
John Rusco REP	3
Katie Berstein DEM	2
Write-In	2
Rep in Congress District 2	
Habib Smith LIB	3
Bonnie Wyatt REP	3
Jim Hinkle DEM	2
Write-In	2
State Assembly District 2	
Pat Thomas DEM	4
Write-In	3
Proposal 1 District 2	
Yes	5
No	5
County Commissioner District 2	
Jack Howard DEM	4
Write-In	4
County Assessor	
Dave Backus LIB	3
Myron Ensign LIB	3
Ralph Savage REP	2
Ernie Banks REP	2
Angus McFarland DEM	2
Mick Manson DEM	2
Write-In	4
Write-In	2
Supreme Court Justice Seat B	
Laura Denise LIB	3
Barbara Young DEM	3
Write-In	3
City of Priceville Dog Catcher	

Bill Bates	3
Nancy Ingram	3
Roland Gustiv	2
Write-In	2
Precinct 2b:	
Straight Party	
Libertarian	1
Republican	1
Democrat	1
President	
Harry Brown LIB	3
George Bush REP	3
Al Gore DEM	2
Write-In	2
US Senator	
Ed Johnson LIB	3
John Rusco REP	3
Katie Berstein DEM	2
Write-In	2
Rep in Congress District 2	
Habib Smith LIB	3
Bonnie Wyatt REP	3
Jim Hinkle DEM	2
Write-In	2
State Assembly District 2	
Pat Thomas DEM	4
Write-In	3
Proposal 1 District 2b	
Yes	5
No	5
County Commissioner District 2	
Jack Howard DEM	4
Write-In	4
County Assessor	
Dave Backus LIB	3
Myron Ensign LIB	3
Ralph Savage REP	2
Ernie Banks REP	2
Angus McFarland DEM	2
Mick Manson DEM	2
Write-In	4
Write-In	2
Supreme Court Justice Seat B	
Laura Denise LIB	3
Barbara Young DEM	3
Write-In	3
City of Priceville Dog Catcher	
Bill Bates	3
Nancy Ingram	3
Roland Gustiv	2
Write-In	2
Precinct 3:	
Straight Party	
Libertarian	1
Republican	1
Democrat	1
President/	
Harry Brown LIB	3

George Bush REP	3
Al Gore DEM	2
Write-In	2
US Senator	
Ed Johnson LIB	3
John Rusco REP	3
Katie Berstein DEM	2
Write-In	2
Rep in Congress District 1	
Jim Gibbons LIB	3
Daniel Laws REP	3
Mary Cahill DEM	2
Write-In	2
State Assembly District 3	
Yvette Downs DEM	4
Write-In	3
Proposal 1 District 2a	
Yes	5
No	5
County Commissioner District 3	
Jay Scott LIB	4
Write-In	4
County Assessor	
Dave Backus LIB	3
Myron Ensign LIB	3
Ralph Savage REP	2
Ernie Banks REP	2
Angus McFarland DEM	2
Mick Manson DEM	2
Write-In	4
Write-In	2
Supreme Court Justice Seat C	
Millie Farmer LIB	3
Ray Jones DEM	3
Write-In	3
City of Priceville Dog Catcher	
Bill Bates	3
Nancy Ingram	3
Roland Gustiv	2
Write-In	2
Cumulative Totals:	
Straight Party	
Libertarian	4
Republican	4
Democrat	4
President	
Harry Brown LIB	12
George Bush REP	12
Al Gore DEM	8
Write-In	8
US Senator	
Ed Johnson LIB	12
John Rusco REP	12
Katie Berstein DEM	8
Write-In	8
Rep in Congress District 1	
Jim Gibbons LIB	6
Daniel Laws REP	6
Mary Cahill DEM	4

Write-In	4
Rep in Congress District 2	
Habib Smith LIB	6
Bonnie Wyatt REP	6
Jim Hinkle DEM	4
Write-In	4
State Assembly District 1	
Marcia Jones DEM	4
Write-In	3
State Assembly District 2	
Pat Thomas DEM	8
Write-In	6
State Assembly District 3	
Yvette Downs DEM	4
Write-In	3
Proposal 1 District 1	
Yes	5
No	5
Proposal 1 District 2a	
Yes	10
No	10
Proposal 1 District 2b	
Yes	5
No	5
County Commissioner District 1	
Arlyn Beal REP	4
Write-In	4
County Commissioner District 2	
Jack Howard DEM	8
Write-In	8
County Commissioner District 3	
Jay Scott LIB	4
Write-In	4
County Assessor	
Dave Backus LIB	12
Myron Ensign LIB	12
Ralph Savage REP	8
Ernie Banks REP	8
Angus McFarland DEM	8
Mick Manson DEM	8
Write-In	16
Write-In	8
Supreme Court Justice Seat A	
Robert Rose LIB	3
Gary Becker DEM	3
Write-In	3
Supreme Court Justice Seat B	
Laura Denise LIB	6
Barbara Young DEM	6
Write-In	6
Supreme Court Justice Seat C	
Millie Farmer LIB	3
Ray Jones DEM	3
Write-In	3
City of Priceville Dog Catcher	
Bill Bates	12
Nancy Ingram	12

Roland Gustiv	8
Write-In	8

Criteria For Evaluation of Test Results:

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.

ELECTION DEFINITION: GEN-02

General Election

A basic election held in 3 precincts. This election contains 15 contests compiled into 3 ballot styles. 10 of the contests are in all 3 ballot styles with the other five split across the 3 precincts. The voting variations supported by this election are as follows:

- 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: 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: Yes
- Provisional or challenged ballots: No
- Early Voting: Yes

This election was designed to functionally test the handling of multiple ballot styles, support for complex voting variations. The election will be an early voting election with the machine running all precincts. Voting options for Over-voting and Under-voting will be exercised.

Configuration:

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

Election named: GEN-02 General Election

Precinct Based Testing

3 machines used for voting one for Mooring, one for Hillwood and one for all precincts.

3 precincts: Creekside, Mooring, Hillwood

2 parties: Democrat, Republican

Languages: English

Contest Totals: 15

Contests as listed:

ELECTION DEFINITION: GEN-02

Creekside	Mooring	Hillwood
President of the United States <i>(Rotated)</i>		
Albina Sepich – DEM Barbara Barrett Hicks – REP Write-In Vote for One		
Senator of the United States <i>(Rotated)</i>		
Carl Moore - DEM David Heroux - REP Write-in Vote for One		
Lieutenant Governor <i>(Rotated)</i>		
Edwin Best - DEM Fiero Finn – REP Write-In Vote for One		
Secretary of State <i>(Rotated)</i>		
Gail Keefe - DEM Harry Levin - REP Write-In Vote for One		
Sheriff of Morgan County (Non-Partisan)		
Imran Rashid Jack "Duke" Brodisky Ken Anderson Leo Cross Mary Burke Nora Kling Write-In Vote for First Three Choices		
State House of Representative District 1	State House of Representative District 2	
Kay Raab -DEM Laurie Cioffi - REP Write-In Vote for One	Keith Satterwhite – DEM Laurie St Laurent – REP Write-In Vote for One	
Member of Assembly Seat A	Member of Assembly Seat B	Member of Assembly Seat C
Maribeth Clark – DEM Nathan Johnson –REP Write-In Vote for One	Marjorie Hall - DEM Neil Carey - REP Write-In Vote for One	Marsha Johnson - DEM Neil Pitzsimmons - REP Write-In Vote for One
School Board District 21		

ELECTION DEFINITION: GEN-02

(Non-Partisan)

Patricia Smallmon
R Nicholas Burton
Sam Patel
Tabathia Song
Vicent Gould

Vote for Two

Proposal A
County Charter

Shall there be approved and adopted in the County, a Local Law passed by the Board of the County on August 19, 1974 entitled "A Local Law to amend section six (a) of Article II of the County Charter - changing the elected term of the County Board to four years," which enlarges the term of office of each member of the County Board of Legislators from two (2) years to four (4) years?

Yes
No

Vote for One

Proposal B
Exchange or Certain Property

Shall the proposed amendment to Article XIV, section 1 of the Constitution, authorizing the conveyance of approximately ten acres of State Land in exchange for approximately two hundred acres of wild forest land in order to facilitate the preservation of certain historic buildings, be approved?

Yes
No

Vote for One

Applicable Voting Devices:

DS850

ELECTION DEFINITION: GEN-02

Test Deck Pattern:

Ballots voted or pre-marked with the following pattern. The following is the test pattern to be voted for the given precinct:

Creekside	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19	B 20	B 21
President of the United States																					
Albina Sepich	X	X	X	X	X	X	X	X	X	X								X			
Barbara Barrett Hicks											X	X	X	X	X	X	X	OX	U		
Write-In																				X	X
Senator of the United States																					
Carl Moore	U	U	X	X	X	X	X										X	X	X	X	X
David Heroux									X	X	X	X	X	U	U						
Write-in								X								X					
Lieutenant Governor																					
Edwin Best			X		X			U		X		X			X	X	X		X		X
Fiero Finn	X	X		X	OX	X	X		X		X		X					X		X	
Write-In													X			OX					
Secretary of State																					
Gail Keefe	X		X			U	X		X	X		X	X		X		X	X		X	
Harry Levin		X		X				X		X		OX	X		X		X		X		X
Write-In					X					X							OX				OX
Sheriff of Morgan County																					
Imran Rashid	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	U
Jack "Duke" Brodisky	2	2	2	2	2										3				2	U	2
Ken Anderson	3					2	2	2	2							3				U	
Leo Cross		3				3				2	2	2					3			U	
Mary Burke			3				3			3			2	2				3			U
Nora Kling				3				3			3		3		2	2	2	2			
Write-In					3				3			3		3							
State House of Representative District 1																					
Kay Raab	X	X	X	X	X	X	X	U	X												
Laurie Cioffi									OX		X	X	X	X	X	X	X	X	X	U	
Write-In										X										OX	X
Member of Assembly Seat A																					
Maribeth Clark		X		X		X		X		X		X		X	U	X		X		X	U
Nathan Johnson	X		X		X		X		X		X		X			OX	X		X		
Write-In																					
School Board District 21																					
Patricia Smallmon	X					X	X	X	X	U	X							X		X	
R Nicholas Burton	X	X					U	X	U				X					X			
Sam Patel		X	X					OX						X	X	X					
Tabathia Song			X	X							X										
Vicent Gould				X	X						X	X	X	X	X	X	X	X		X	
Write-In					X	X				X										XX	XX
Proposal A																					

ELECTION DEFINITION: GEN-02

Write-In					X	X				X										XX		XX
Proposal A																						
Yes	X		X		X		U		X		X		X	X		X		U	X			
No		X		X		X		X		X		U	OX		X		X		X		X	X
Proposal B																						
Yes		X		X		X		U		X		X		X		X		X		X	X	X
No	X		X		X		X		X		X		X	OX	X		X		X		X	
Hillwood																						
	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19	B 20	B 21	
President of the United States																						
Albina Sepich	X	X	X	X	X	X	X	X	X	X								X				
Barbara Barrett Hicks											X	X	X	X	X	X	X	OX	U			
Write-In																				X	X	
Senator of the United States																						
Carl Moore	U	U	X	X	X	X	X										X	X	X	X	X	
David Heroux								X	X	X	X	X	U	U								
Write-in							X								X							
Lieutenant Governor																						
Edwin Best			X		X			U		X		X			X	X	X		X		X	
Fiero Finn	X	X		X	OX	X	X		X		X		X					X		X		
Write-In													X		OX							
Secretary of State																						
Gail Keefe	X		X			U	X		X		X	X		X		X	X		X		X	
Harry Levin		X		X			X		X		OX		X		X			X		X		
Write-In					X					X						OX					OX	
Sheriff of Morgan County																						
Imran Rashid	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	U	
Jack "Duke" Brodisky	2	2	2	2	2										3				2	U	2	
Ken Anderson	3					2	2	2	2							3				U		
Leo Cross		3				3				2	2	2					3			U		
Mary Burke			3				3			3			2	2				3			U	
Nora Kling				3				3				3		3		2	2	2	2			
Write-In					3				3			3		3								
State House of Representative District 2																						
Keith Satterwhite	X	X	X	X	X	X	X	U	X													
Laurie St Laurent									OX		X	X	X	X	X	X	X	X	X	U		
Write-In										X									OX		X	
Member of Assembly Seat C																						
Marsha Johnson		X		X		X		X		X		X		X	U	X		X		X	U	
Neil Pitzsimmons	X		X		X		X		X		X		X			OX	X		X			
Write-In																						
School Board District 21																						
Patricia Smallmon	X					X	X	X	X	U	X							X		X		
R Nicholas Burton	X	X					U	X	U				X				X					
Sam Patel		X	X					OX						X	X	X						

ELECTION DEFINITION: GEN-02

Tabathia Song			X	X							X									
Vicent Gould				X	X					X	X	X	X	X	X	X	X		X	
Write-In					X	X				X									XX	XX
Proposal A																				
Yes	X		X		X		U		X		X		X	X		X		U	X	
No		X		X		X		X		X		U	OX		X		X		X	X
Proposal B																				
Yes		X		X		X		U		X		X		X		X		X		X
No	X		X		X		X		X		X		X	OX	X		X		X	X

ELECTION DEFINITION: GEN-02

Test Results:

Creekside

President of the United States

Albina Sepich	10
Barbara Barrett Hicks	7
Write-In	2
Under Vote	1
OverVote	1

Senator of The United States

Carl Moore	10
David Heroux	5
Write-In	2
Under Vote	4
OverVote	

Lieutenant Governor

Edwin Best	7
Fiero Finn	10
Write-In	1
Under Vote	1
OverVote	2

Secretary of State

Gail Keefe	8
Harry Levin	7
Write-In	2
Under Vote	1
OverVote	3

Sheriff of Morgan County

Imran Rashid	1-20
Jack "Duke" Brodisky	2-7, 3-1
Ken Anderson	2-4, 3-2
Leo Cross	2-3, 3-3
Mary Burke	2-2, 3-4
Nora Kling	2-4, 3-4
Write-In	3-4
Under Vote	5
OverVote	

State House of Representative District 1

Kay Raab	7
Laurie Cioffi	8
Write-In	2
Under Vote	2
OverVote	2

Member of Assembly Seat A

Maribeth Clark	9
Nathan Johnson	9
Write-In	0
Under Vote	2
OverVote	1

School Board District 21

Patricia Smallmon	7
R Nicholas Burton	4
Sam Patel	5
Tabthia Song	3
Vicent Gould	11
Write-In	7
Under Vote	3
OverVote	1

Proposal A

Yes	8
No	9

ELECTION DEFINITION: GEN-02

Under Vote 3
 OverVote 1

Proposal B

Yes 9
 No 10
 Under Vote 1
 OverVote 1

Mooring

President of the United States

Albina Sepich 10
 Barbara Barrett Hicks 7
 Write-In 2
 Under Vote 1
 OverVote 1

Senator of The United States

Carl Moore 10
 David Heroux 5
 Write-In 2
 Under Vote 4
 OverVote

Lieutenant Governor

Edwin Best 7
 Fiero Finn 10
 Write-In 1
 Under Vote 1
 OverVote 2

Secretary of State

Gail Keefe 8
 Harry Levin 7
 Write-In 2
 Under Vote 1
 OverVote 3

Sheriff of Morgan County

Imran Rashid 1-20
 Jack "Duke" Brodisky 2-7, 3-1
 Ken Anderson 2-4, 3-2
 Leo Cross 2-3, 3-3
 Mary Burke 2-2, 3-4
 Nora Kling 2-4, 3-4
 Write-In 3-4
 Under Vote 5
 OverVote

State House of Representative District 2

Keith Satterwhite 7
 Laurie St Laurent 8
 Write-In 2
 Under Vote 2
 OverVote 2

Member of Assembly Seat B

Marjorie Hall 9
 Neil Carey 9
 Write-In 0
 Under Vote 2
 OverVote 1

School Board District 21

Patricia Smallmon 7
 R Nicholas Burton 4

ELECTION DEFINITION: GEN-02

Sam Patel	5
Tabthia Song	3
Vicent Gould	11
Write-In	7
Under Vote	3
OverVote	1

Proposal A

Yes	8
No	9
Under Vote	3
OverVote	1

Proposal B

Yes	9
No	10
Under Vote	1
OverVote	1

Hillwood

President of the United States

Albina Sepich	10
Barbara Barrett Hicks	7
Write-In	2
Under Vote	1
OverVote	1

Senator of The United States

Carl Moore	10
David Heroux	5
Write-In	2
Under Vote	4
OverVote	

Lieutenant Governor

Edwin Best	7
Fiero Finn	10
Write-In	1
Under Vote	1
OverVote	2

Secretary of State

Gail Keefe	8
Harry Levin	7
Write-In	2
Under Vote	1
OverVote	3

Sheriff of Morgan County

Imran Rashid	1-20
Jack "Duke" Brodisky	2-7, 3-1
Ken Anderson	2-4, 3-2
Leo Cross	2-3, 3-3
Mary Burke	2-2, 3-4
Nora Kling	2-4, 3-4
Write-In	3-4
Under Vote	5
OverVote	

State House of Representative District 2

Keith Satterwhite	7
Laurie St Laurent	8
Write-In	2
Under Vote	2
OverVote	2

ELECTION DEFINITION: GEN-02

Member of Assembly Seat C

Marsha Johnson	9
Neil Pitzsimmons	9
Write-In	0
Under Vote	2
OverVote	1

School Board District 21

Patricia Smallmon	7
R Nicholas Burton	4
Sam Patel	5
Tabthia Song	3
Vicent Gould	11
Write-In	7
Under Vote	3
OverVote	1

Proposal A

Yes	8
No	9
Under Vote	3
OverVote	1

Proposal B

Yes	9
No	10
Under Vote	1
OverVote	1

Cumulative Totals

President of the United States

Albina Sepich	30
Barbara Barrett Hicks	21
Write-In	6
Under Vote	3
OverVote	3

Senator of The United States

Carl Moore	30
David Heroux	15
Write-In	6
Under Vote	12
OverVote	

Lieutenant Governor

Edwin Best	21
Fiero Finn	30
Write-In	3
Under Vote	3
OverVote	6

Secretary of State

Gail Keefe	24
Harry Levin	21
Write-In	6
Under Vote	3
OverVote	9

Sheriff of Morgan County

Imran Rashid	1-60
Jack "Duke" Brodisky	2-21, 3-3
Ken Anderson	2-12, 3-6
Leo Cross	2-9, 3-9
Mary Burke	2-6, 3-12
Nora Kling	2-12, 3-12
Write-In	3-12
Under Vote	15

ELECTION DEFINITION: GEN-02

OverVote

State House of Representative District 1

Kay Raab	7
Laurie Cioffi	8
Write-In	2
Under Vote	2
OverVote	2

State House of Representative District 2

Keith Satterwhite	14
Laurie St Laurent	16
Write-In	4
Under Vote	4
OverVote	4

Member of Assembly Seat A

Maribeth Clark	9
Nathan Johnson	9
Write-In	0
Under Vote	2
OverVote	1

Member of Assembly Seat B

Marjorie Hall	9
Neil Carey	9
Write-In	0
Under Vote	2
OverVote	1

Member of Assembly Seat C

Marsha Johnson	9
Neil Pitzsimmons	9
Write-In	0
Under Vote	2
OverVote	1

School Board District 21

Patricia Smallmon	21
R Nicholas Burton	12
Sam Patel	15
Tabthia Song	9
Vicent Gould	33
Write-In	21
Under Vote	9
OverVote	3

Proposal A

Yes	24
No	27
Under Vote	9
OverVote	3

Proposal B

Yes	27
No	30
Under Vote	3
OverVote	3

Criteria For Evaluation of Test Results:

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.

ELECTION DEFINITION: GEN-03

General Election

A basic election held in 2 precincts. This election contains 8 contests and compiled into 2 ballot styles. 4 of the contests are in both ballot styles. The other 4 contests are split between the two precincts. The voting variations supported by this election are as follows:

- 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: No
- Cross-party endorsement: No
- Split Precincts: No
- Vote for N of M: No
- Recall issues, with options: No
- Cumulative voting: No
- Ranked order voting: No
- Provisional or challenged ballots: Yes
- Early Voting: No

This election was designed to functionally test the handling of multiple ballot styles, support for common voting variations.

Configuration:

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

General Election named: GEN-03 General Election

Precinct Based Testing

1 machine used for each precinct

2 precincts: Fire Station 23, Aldersgate Church

2 parties: Democrat, Republican

Languages: English

Contest Totals: 8

Contests as listed:

ELECTION DEFINITION: GEN-03

Fire Station 23	Aldersgate Church
President of the United States	
Arthur Kumar REP Brian Getz DEM Write-In	
Vote for 1	
United States Senator	
Chad Snow REP Don Etler DEM Write-In	
Vote for 1	
Representative in Congress District 1	Representative in Congress District 2
Eric Sheehy REP Fiero Finn DEM Write-In	Ernest Snyder REP Frank L. Matthews DEM Write-In
Vote for 1	Vote for 1
State Assembly District 1	State Assembly District 2
Gloria Castle REP Harry Sosses DEM Write-In	Glenna P Cook-Lincoln REP Heidi Hatzinger DEM Write-In
Vote for 1	Vote for 1
Measure 22.6 Exchange or Certain Property	
Shall the proposed amendment to Article XIV, section 1 of the Constitution, authorizing the conveyance of approximately ten acres of State Land in exchange for approximately two hundred acres of wild forest land in order to facilitate the preservation of certain historic buildings, be approved?	
Yes No	
Vote for one	
Measure 25.3 County Charter	
Shall there be approved and adopted in the County, a Local Law passed by the Board of the County on August 19, 1974 entitled "A Local Law to amend section six (a) of Article II of the County Charter - changing the elected term of the County Board to four years," which enlarges the term of office of each member of the County Board of Legislators from two (2) years to four (4) years?	
Yes No	
Vote for one	
Applicable Voting Devices : DS580	

ELECTION DEFINITION: GEN-03

Test Deck Pattern

Ballots voted or pre-marked with the following pattern. The following is the test pattern to be voted for the given precinct:

Fire Station 23	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
President of the United States										
Arthur Kumar REP	X		X		X		X		X	
Brian Getz DEM		X		X				X		X
Write-In						X				
United States Senator										
Chad Snow REP	X		X		X		X		X	
Don Etler DEM		X				X		X		X
Write-In				X						
Representative in Congress										
District 1										
Eric Sheehy REP	X		X				X		X	
Fiero Finn DEM		X		X		X		X		X
Write-In					X					
State Assembly										
District 1										
Gloria Castle REP	X		X		X					
Harry Sosses DEM		X		X		X				
Write-In							X	X	X	X
Measure 22.6										
Yes	X		X		X		X		X	
No		X		X		X		X		X
Measure 25.3										
Yes	X		X		X		X		X	
No		X		X		X		X		X

Aldersgate Church	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
President of the United States										
Arthur Kumar REP	X		X		X		X		X	
Brian Getz DEM		X		X		X		X		X
Write-In										
United States Senator										
Chad Snow REP	X		X		X		X		X	
Don Etler DEM		X				X		X		X
Write-In				X						
Representative in Congress District 2										
Ernest Snyder REP	X		X				X		X	
Frank L. Matthews DEM		X		X		X		X		X
Write-In					X					
State Assembly District 2										
Glenna P Cook-Lincoln REP	X		X		X					
Heidi Hatzinger DEM		X		X		X				
Write-In							X	X	X	X
Measure 22.6										
Yes	X		X		X		X		X	
No		X		X		X		X		X

ELECTION DEFINITION: GEN-03

Measure 25.3

Yes	X		X		X		X		X
No		X		X		X		X	X

Test Results:

Fire Station 23

President of the United States

Arthur Kumar REP 5
 Brian Getz DEM 4
 Write-In 1

United States Senator

Chad Snow REP 5
 Don Etler DEM 4
 Write-In 1

Representative in Congress

District 1

Eric Sheehy REP 4
 Fiero Finn DEM 5
 Write-In 1

State Assembly

District 1

Gloria Castle REP 3
 Harry Sosses DEM 3
 Write-In 4

Measure 22.6

Yes 5
 No 5

Measure 25.3

Yes 5
 No 5

AldersGate Church

President of the United States

Arthur Kumar REP 5
 Brian Getz DEM 5
 Write-In 0

United States Senator

Chad Snow REP 5
 Don Etler DEM 4
 Write-In 1

Representative in Congress

District 2

Ernest Snyder REP 4
 Frank L. Matthews DEM 5
 Write-In 1

State Assembly

District 2

Glenna P Cook-Lincoln REP 3
 Heidi Hatzinger DEM 3
 Write-In 4

Measure 22.6

Yes 5
 No 5

Measure 25.3	
Yes	5
No	5
Cumulative Totals:	
President of the United States	
Arthur Kumar REP	10
Brian Getz DEM	9
Write-In	1
United States Senator	
Chad Snow REP	10
Don Etler DEM	8
Write-In	2
Representative in Congress	
District 1	
Eric Sheehy REP	8
Fiero Finn DEM	10
Write-In	2
Representative in Congress	
District 2	
Ernest Snyder REP	4
Frank L. Matthews DEM	5
Write-In	1
State Assembly	
District 1	
Gloria Castle REP	6
Harry Sosses DEM	6
Write-In	8
State Assembly	
District 2	
Glenna P Cook-Lincoln REP	3
Heidi Hatzinger DEM	3
Write-In	4
Measure 22.6	
Yes	10
No	10
Measure 25.3	
Yes	10
No	10

Criteria For Evaluation of Test Results:
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.

ELECTION DEFINITION: GEN-04

General Election:

This test must exercise all possible voting positions for this ballot. There are 135 possible positions per ballot. ES&S will provide professional ballots on 19 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: 1 DS850 unit and 40 printed hand marked ballots

Configuration

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

Election named: : GEN-04

Precinct Based Testing

1 machine used for voting in 1 precinct

1 precinct: Hillwood

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

Languages: English

Contests as listed:

ELECTION DEFINITION: GEN-04

General Election	
Straight Party	
American	
Communist	
Constitution	
Democrat	
Green	
Labor	
Libertarian	
Republican	
Vote for 1	
President of the United States	
Barbara Barrett Hicks	Amer
Edris Thomas	Comm
Fiero Finn	Const
Gail Keefe	Dem
Imran Rashid	Green
Jack "Duke" Brodisky	Labor
Kay Raab	Lib
Sam Patel	Rep
Write-In	
Vote for 1	
United States Senator	
Barry Josey	Amer
Edwin Best	Comm
Floyd W. Schisler	Const
Gail Ross	Dem
Jack Hall	Green
Keith Satterwhite	Labor
Laurie St Laurent	Lib
Tetty Rogiers	Rep
Write-In	
Vote for 1	
Representative in Congress	
District 1	
Ben Baker	Amer
Edwin Lewis	Comm
Frank L. Matthews	Const
Gale Smith	Dem
James A. Clark	Green
Ken Anderson	Labor
Leo Cross	Lib
Theodore Judd	Rep
Write-In	
Vote for 1	
State Assembly	
District 1	
Betty Williams	Amer
Elizabeth Mack	Comm
Frank Pearson	Const
Gary Klemann	Dem
James Ayers	Green
Kenneth Interlicchio	Labor
Leon Lewis	Lib
Theodore Kopp	Rep
Write-In	
Vote for 1	
State Supreme Court Justice	
Seat A	
Bruce Willis	Amer
Ernst Lynch	Comm
Glenn T Combs	Const
Herbert Schwepenhauser	Dem

ELECTION DEFINITION: GEN-04

Linda Hall	Green
Micheal McClelland	Labor
Philip Thorpp	Lib
Eugene Kessler	Rep
Write-In	
Vote for 1	
Associate Judge of Court of Appeals District 1	
Ala Dee Smith	Amer
Calvin Marino	Comm
David Cox	Const
Eugene Ruff	Dem
Kerry Jones	Green
Mildred Dudo	Labor
Philip Thorpp	Lib
Thomas Reiss	Rep
Write-in	
Vote for 1	
County Commissioner District 1	
Brent Gilley	Amer
Elizabeth Piazza	Comm
Franklin Margo	Const
Gene Tillman	Dem
James Collins	Green
Kerry Jones	Labor
Lewis Tese	Lib
Tony Grzanich	Rep
Write-In	
Vote for 1	
County Comptroller Seat A	
Brian Edwards	Amer
Eric Sheehy	Comm
George A. Fisk	Const
Helena Slack	Dem
Lewis Touhay	Green
Mary L. Daniel	Labor
Nyda E Hamblin	Lib
Charles Place	Rep
Write-In	
Vote for 1	
County Assessor	
Brian Getz	Amer
Ernest Snyder	Comm
Gerald Danson	Const
Herbert Devine	Dem
Linda Gapp	Green
Micheal H Walker	Labor
Philip Rebis	Lib
William Sullivan	Rep
Write-In	
Write-In	
Vote for 2	
Councilman District 2 (Non-Partisan)	
Arthur Salamack	
Carter McGaw	
Derek Persons	
Elizabeth Piazza	
Franklin Margo	
Louis Korte, Jr	
Mary L. Daniel	
Write-In	
Vote for 1	
Councilman District 5	

ELECTION DEFINITION: GEN-04

<p style="text-align: center;">(Non-Partisan)</p> <p>Arnold Krill Christopher R. Richardson Delores DeVan Ernest Snyder George A. Fisk Helena Slack Imran Rashid Write-In</p> <p style="text-align: center;">Vote for 1</p>
<p style="text-align: center;">Alderman District 11 (Non-Partisan)</p> <p>Arthur Kumar Barry Josey Cecil Carey David Heroux Frank Pearson Gloria Dillion Howard Hwang Write-In</p> <p style="text-align: center;">Vote for 1</p>
<p style="text-align: center;">State University Trustees (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 style="text-align: center;">Vote for 5</p>
<p style="text-align: center;">Delegates to 3rd Judicial Convention (Non-Partisan)</p> <p>Anne Neet Barry Josey Colby Lincoln Davina Ayers-Grant Edris Thomas Floyd W. Schisler Gloria Castle Write-In</p> <p style="text-align: center;">Vote for 1</p>
<p style="text-align: center;">Constitutional Amendment Temporary Assignment of Family Court Judges</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 style="text-align: center;">Vote for 1</p>
<p style="text-align: center;">Referendum A Bond Issue</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>

ELECTION DEFINITION: GEN-04

Vote for 1

Voting Devices Used:

DS850 Central Count Tabulator

Test Deck Pattern:

The Test Deck will consist of 40 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 per orientation 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 = 40

Straight party

American Amer	4
Communist Comm	0
Constitution Const	0
Democrat Dem	0
Green Green	0
Labor Labor	0
Libertarian Lib	0
Republican Rep	0
Over Votes	4
Under Votes	32
Totals	40

President of the United States

Barbara Barrett Hicks Amer	8
Edris Thomas Comm	4
Fiero Finn Const	4
Gail Keefe Dem	4
Imran Rashid Green	4
Jack "Duke" Brodisky Labor	4
Kay Raab Lib	4
Sam Patel Rep	4
Write-In	0
Over Votes	0
Under Votes	4
Totals	40

United States Senator

Barry Josey Amer	8
Edwin Best Comm	4
Floyd W. Schisler Const	4
Gail Ross Dem	4
Jack Hall Green	4
Keith Satterwhite Labor	4
Laurie St Laurent Lib	4
Tetty Rogiers Rep	4
Write-In	0
Over Votes	0

ELECTION DEFINITION: GEN-04

Under Votes	4
Totals	40

Representative in Congress

Ben Baker Amer	8
Edwin Lewis Comm	4
Frank L. Matthews Const	4
Gale Smith Dem	4
James A. Clark Green	4
Ken Anderson Labor	4
Leo Cross Lib	4
Theodore Judd Rep	4
Write-In	0
Over Votes	0
Under Votes	4
Totals	40

State Assembly

Betty Williams Amer	8
Elizabeth Mack Comm	4
Frank Pearson Const	4
Gary Klemann Dem	4
James Ayers Green	4
Kenneth Interlicchio Labor	4
Leon Lewis Lib	4
Theodore Kopp Rep	4
Write-In	0
Over Votes	0
Under Votes	4
Totals	40

State Supreme Court Justice

Bruce Willis Amer	8
Ernst Lynch Comm	4
Glenn T Combs Const	4
Herbert Schweppenhauser Dem	4
Linda Hall Green	4
Micheal McClelland Labor	4
Philip Thorpp Lib	4
Eugene Kessler Rep	4
Write-In	0
Over Votes	0
Under Votes	4
Totals	40

Associate Judge of Court of Appeals

Ala Dee Smith Amer	8
Calvin Marino Comm	4
David Cox Const	4
Eugene Ruff Dem	4
Kerry Jones Green	4
Mildred Dudo Labor	4
Philip Thorpp Lib	4
Thomas Reiss Rep	4
Write-in	0
Over Votes	0
Under Votes	4
Totals	40

County Commissioner

Brent Gilley Amer	8
Elizabeth Piazza Comm	4
Franklin Margo Const	4

ELECTION DEFINITION: GEN-04

Gene Tillman	Dem	4
James Collins	Green	4
Kerry Jones	Labor	4
Lewis Tese	Lib	4
Tony Grzanich	Rep	4
Write-In		0
Over Votes		0
Under Votes		4
Totals		40

County Comptroller

Brian Edwards	Amer	8
Eric Sheehy	Comm	4
George A. Fisk	Const	4
Helena Slack	Dem	4
Lewis Touhay	Green	4
Mary L. Daniel	Labor	4
Nyda E Hamblin	Lib	4
Charles Place	Rep	4
Write-In		0
Over Votes		0
Under Votes		4
Totals		40

County Assessor

Brian Getz	Amer	8
Ernest Snyder	Comm	8
Gerald Danson	Const	8
Herbert Devine	Dem	8
Linda Gapp	Green	8
Micheal H Walker	Labor	8
Philip Rebis	Lib	8
William Sullivan	Rep	8
Write-In		4
Write-In		0
Over Votes		0
Under Votes		12
Totals		80

Councilman District 2
(Non-Partisan)

Arthur Salamack		4
Carter McGaw		4
Derek Persons		4
Elizabeth Piazza		4
Franklin Margo		4
Louis Korte, Jr		4
Mary L. Daniel		4
Write-In		4
Over Votes		0
Under Votes		8
Totals		40

Councilman District 5
(Non-Partisan)

Arnold Krill		4
Chistopher R. Richardson		4
Delores DeVan		4
Ernest Snyder		4
George A. Fisk		4
Helena Slack		4
Imran Rashid		4
Write-In		4
Over Votes		0
Under Votes		8
Totals		40

ELECTION DEFINITION: GEN-04

Alderman District 11
 (Non-Partisan)

Arthur Kumar	4
Barry Josey	4
Cecil Carey	4
David Heroux	4
Frank Pearson	4
Gloria Dillion	4
Howard Hwang	4
Write-In	4
Over Votes	0
Under Votes	8
Totals	40

State University Trustees
 (Non-Partisan)

Angela Pogoda	4
Charles Jasen	8
Derek Carlson	12
Eugene Ruff	16
Glenna P Cook-Lincoln	20
Write-In	28
Write-In	24
Write-In	20
Write-In	16
Write-In	12
Over Votes	0
Under Votes	40
Totals	200

Delegates to 3rd Judicial Convention
 (Non-Partisan)

Anne Neet	4
Barry Josey	4
Colby Lincoln	4
Davina Ayers-Grant	4
Edris Thomas	4
Floyd W. Schisler	4
Gloria Castle	4
Write-In	4
Over Votes	0
Under Votes	8
Totals	40

Constitutional Amendment Temporary Assignment

Yes	28
No	4
Over Votes	0
Under Votes	8
Totals	40

Referendum A Bond Issue

Yes	28
No	4
Over Votes	0
Under Votes	8
Totals	40

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.

ELECTION DEFINITION: Volume and Stress

Volume Stress

This test will exercise 316 ballot positions in 450 ballot styles to investigate the system's response to conditions that tend to overload the system's capacity to process, store, and report data. "Test Deck A" will be created printing just one ballot in 450 precincts. "Test Deck A" ballots will be scanned by the DS850 with 450 precincts initialized. ES&S will provide 5,000 professional ballots on 19 inch card stock for 5 selected precincts. These ballots will be pre-marked ballots in a matrix pattern creating 100 ballot "Test Deck B". "Test Deck B" ballots will be scanned into 1 DS850 units 100 times for 5 precincts (1, 100, 200, 300, 400) for a total of 50,000 ballots.

- 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: 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: Yes

Equipment: 1 DS850 and 5450 printed ballots

Configuration

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

Election named: 2011VMST

Precinct Based Testing

1 DS850 machine used for voting

Precincts: Precinct 1 – Precinct 450

17 parties:

In EMS one party is always default to Nonpartisan

PARTY ONE, PARTY TWO, PARTY THREE, PARTY FOUR, PARTY FIVE, PARTY SIX, PARTY SEVEN, PARTY EIGHT, PARTY NINE, PARTY TEN, PARTY ELEVEN, PARTY TWELVE, PARTY THIRTEEN, PARTY FOURTEEN, PARTY FIFTEEN, PARTY SIXTEEN, PARTY SEVENTEEN

Languages: English

Contests as listed:

2011VMST

ELECTION DEFINITION: Volume and Stress

PARTISAN CONTEST ONE

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST TWO

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST THREE

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST FOUR

Vote for One

ELECTION DEFINITION: Volume and Stress

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST FIVE

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST SIX

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST SEVEN

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO

ELECTION DEFINITION: Volume and Stress

CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST EIGHT

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST NINE

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST TEN

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR

ELECTION DEFINITION: Volume and Stress

CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST ELEVEN

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

PARTISAN CONTEST TWELVE

Vote for One

CANDIATE 1	PARTY ONE
CANDIATE 2	PARTY TWO
CANDIATE 3	PARTY THREE
CANDIATE 4	PARTY FOUR
CANDIATE 5	PARTY FIVE
CANDIATE 6	PARTY SIX
CANDIATE 7	PARTY SEVEN
CANDIATE 8	PARTY EIGHT
CANDIATE 9	PARTY NINE
CANDIATE 10	PARTY TEN
CANDIATE 11	PARTY ELEVEN
CANDIATE 12	PARTY TWELVE
CANDIATE 13	PARTY THIRTEEN
CANDIATE 14	PARTY FOURTEEN
CANDIATE 15	PARTY FIFTEEN
CANDIATE 16	PARTY SIXTEEN
CANDIATE 17	PARTY SEVENTEEN
WRITE-IN	

NON PARTISAN CONTEST A

Vote for NINETY

CANDIATE 1
CANDIATE 2
CANDIATE 3
CANDIATE 4
CANDIATE 5
CANDIATE 6

ELECTION DEFINITION: Volume and Stress

CANDIATE 7
CANDIATE 8
CANDIATE 9
CANDIATE 10
CANDIATE 11
CANDIATE 12
CANDIATE 13
CANDIATE 14
CANDIATE 15
CANDIATE 16
CANDIATE 17
CANDIATE 18
CANDIATE 19
CANDIATE 20
CANDIATE 21
CANDIATE 22
CANDIATE 23
CANDIATE 24
CANDIATE 25
CANDIATE 26
CANDIATE 27
CANDIATE 28
CANDIATE 29
CANDIATE 30
CANDIATE 31
CANDIATE 32
CANDIATE 33
CANDIATE 34
CANDIATE 35
CANDIATE 36
CANDIATE 37
CANDIATE 38
CANDIATE 39
CANDIATE 40
CANDIATE 41
CANDIATE 42
CANDIATE 43
CANDIATE 44
CANDIATE 45
CANDIATE 46
CANDIATE 47
CANDIATE 48
CANDIATE 49
CANDIATE 50
CANDIATE 51
CANDIATE 52
CANDIATE 53
CANDIATE 54
CANDIATE 55
CANDIATE 56
CANDIATE 57
CANDIATE 58
CANDIATE 59
CANDIATE 60
CANDIATE 61
CANDIATE 62
CANDIATE 63
CANDIATE 64
CANDIATE 65
CANDIATE 66
CANDIATE 67
CANDIATE 68
CANDIATE 69
CANDIATE 70
CANDIATE 71
CANDIATE 72
CANDIATE 73
CANDIATE 74
CANDIATE 75
CANDIATE 76

ELECTION DEFINITION: Volume and Stress

CANDIATE 77
CANDIATE 78
CANDIATE 79
CANDIATE 80
CANDIATE 81
CANDIATE 82
CANDIATE 83
CANDIATE 84
CANDIATE 85
CANDIATE 86
CANDIATE 87
CANDIATE 88
CANDIATE 89
CANDIATE 90
CANDIATE 91
CANDIATE 92
CANDIATE 93
CANDIATE 94
CANDIATE 95
CANDIATE 96
CANDIATE 97
CANDIATE 98
CANDIATE 99
CANDIATE 100

Voting Devices Used: 1 DS850

Error Handling: Throughout the duration of the test attention will be paid to any errors that occur. The error handling abilities of the voting system will be evaluated and documented if any such instances occur. The audit logs will be inspected to assess the error handling abilities of the system in any such situation throughout the duration of the test.

ELECTION DEFINITION: Volume and Stress

Test Deck Pattern:

Test Deck A – Partisan contest 1-12 Candidate 1 is marked and write-in is marked causing an overvote on all partisan contests. The vote for ninety has 91 marks causing an overvote on that contest

Test Deck B – Matrix test pattern below.

Test Results:

Total ballots cast = 50,450

Test Deck A:

PARTISAN CONTEST ONE

Vote for one

Overvote 450

PARTISAN CONTEST TWO

Vote for one

Overvote 450

PARTISAN CONTEST THREE

Vote for one

Overvote 450

PARTISAN CONTEST FOUR

Vote for one

Overvote 450

PARTISAN CONTEST ONE

Vote for one

Overvote 450

PARTISAN CONTEST FIVE

Vote for one

Overvote 450

PARTISAN CONTEST SIX

Vote for one

Overvote 450

PARTISAN CONTEST SEVEN

Vote for one

Overvote 450

PARTISAN CONTEST EIGHT

Vote for one

Overvote 450

PARTISAN CONTEST NINE

Vote for one

Overvote 450

PARTISAN CONTEST TEN

Vote for one

Overvote 450

PARTISAN CONTEST ELEVEN

Vote for one

Overvote 450

ELECTION DEFINITION: Volume and Stress

PARTISAN CONTEST TWELVE

Vote for one

Overvote 450

NON PARTISAN CONTEST A

Vote for NINETY

Overvote 40500

Test Deck B: Precinct 1, 100, 200, 300, 400. The results below are for one test deck for each precinct.

PARTISAN CONTEST ONE

Vote for One

CANDIDATE 1	PARTY ONE	4
CANDIDATE 2	PARTY TWO	6
CANDIDATE 3	PARTY THREE	7
CANDIDATE 4	PARTY FOUR	5
CANDIDATE 5	PARTY FIVE	6
CANDIDATE 6	PARTY SIX	7
CANDIDATE 7	PARTY SEVEN	5
CANDIDATE 8	PARTY EIGHT	6
CANDIDATE 9	PARTY NINE	7
CANDIDATE 10	PARTY TEN	5
CANDIDATE 11	PARTY ELEVEN	6
CANDIDATE 12	PARTY TWELVE	7
CANDIDATE 13	PARTY THIRTEEN	5
CANDIDATE 14	PARTY FOURTEEN	6
CANDIDATE 15	PARTY FIFTEEN	7
CANDIDATE 16	PARTY SIXTEEN	5
CANDIDATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST TWO

Vote for One

CANDIDATE 1	PARTY ONE	4
CANDIDATE 2	PARTY TWO	6
CANDIDATE 3	PARTY THREE	7
CANDIDATE 4	PARTY FOUR	5
CANDIDATE 5	PARTY FIVE	6
CANDIDATE 6	PARTY SIX	7
CANDIDATE 7	PARTY SEVEN	5
CANDIDATE 8	PARTY EIGHT	6
CANDIDATE 9	PARTY NINE	7
CANDIDATE 10	PARTY TEN	5
CANDIDATE 11	PARTY ELEVEN	6
CANDIDATE 12	PARTY TWELVE	7
CANDIDATE 13	PARTY THIRTEEN	5
CANDIDATE 14	PARTY FOURTEEN	6
CANDIDATE 15	PARTY FIFTEEN	7
CANDIDATE 16	PARTY SIXTEEN	5
CANDIDATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST THREE

Vote for One

CANDIDATE 1	PARTY ONE	4
CANDIDATE 2	PARTY TWO	6
CANDIDATE 3	PARTY THREE	7
CANDIDATE 4	PARTY FOUR	5
CANDIDATE 5	PARTY FIVE	6
CANDIDATE 6	PARTY SIX	7
CANDIDATE 7	PARTY SEVEN	5
CANDIDATE 8	PARTY EIGHT	6

ELECTION DEFINITION: Volume and Stress

CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST FOUR

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST FIVE

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST SIX

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6

ELECTION DEFINITION: Volume and Stress

CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST SEVEN

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST EIGHT

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST NINE

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6

ELECTION DEFINITION: Volume and Stress

CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST TEN

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST ELEVEN

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5
CANDIATE 17	PARTY SEVENTEEN	6
WRITE-IN		

PARTISAN CONTEST TWELVE

Vote for One

CANDIATE 1	PARTY ONE	4
CANDIATE 2	PARTY TWO	6
CANDIATE 3	PARTY THREE	7
CANDIATE 4	PARTY FOUR	5
CANDIATE 5	PARTY FIVE	6
CANDIATE 6	PARTY SIX	7
CANDIATE 7	PARTY SEVEN	5
CANDIATE 8	PARTY EIGHT	6
CANDIATE 9	PARTY NINE	7
CANDIATE 10	PARTY TEN	5
CANDIATE 11	PARTY ELEVEN	6
CANDIATE 12	PARTY TWELVE	7
CANDIATE 13	PARTY THIRTEEN	5
CANDIATE 14	PARTY FOURTEEN	6
CANDIATE 15	PARTY FIFTEEN	7
CANDIATE 16	PARTY SIXTEEN	5

ELECTION DEFINITION: Volume and Stress

CANDIATE 17 PARTY SEVENTEEN 6
WRITE-IN

NON PARTISAN CONTEST A

Vote for NINETY

CANDIATE 1	11
CANDIATE 2	22
CANDIATE 3	35
CANDIATE 4	47
CANDIATE 5	58
CANDIATE 6	71
CANDIATE 7	76
CANDIATE 8	82
CANDIATE 9	89
CANDIATE 10	94
CANDIATE 11	100
CANDIATE 12	100
CANDIATE 13	100
CANDIATE 14	100
CANDIATE 15	100
CANDIATE 16	100
CANDIATE 17	100
CANDIATE 18	100
CANDIATE 19	100
CANDIATE 20	100
CANDIATE 21	100
CANDIATE 22	100
CANDIATE 23	100
CANDIATE 24	100
CANDIATE 25	100
CANDIATE 26	100
CANDIATE 27	100
CANDIATE 28	100
CANDIATE 29	100
CANDIATE 30	100
CANDIATE 31	100
CANDIATE 32	100
CANDIATE 33	100
CANDIATE 34	100
CANDIATE 35	100
CANDIATE 36	100
CANDIATE 37	100
CANDIATE 38	100
CANDIATE 39	100
CANDIATE 40	100
CANDIATE 41	100
CANDIATE 42	100
CANDIATE 43	100
CANDIATE 44	100
CANDIATE 45	100
CANDIATE 46	100
CANDIATE 47	100
CANDIATE 48	100
CANDIATE 49	100
CANDIATE 50	100
CANDIATE 51	100
CANDIATE 52	100
CANDIATE 53	100
CANDIATE 54	100
CANDIATE 55	100
CANDIATE 56	100
CANDIATE 57	100
CANDIATE 58	100
CANDIATE 59	100
CANDIATE 60	100
CANDIATE 61	100
CANDIATE 62	100
CANDIATE 63	100
CANDIATE 64	100

ELECTION DEFINITION: Volume and Stress

CANDIATE 65	100
CANDIATE 66	100
CANDIATE 67	100
CANDIATE 68	100
CANDIATE 69	100
CANDIATE 70	100
CANDIATE 71	100
CANDIATE 72	100
CANDIATE 73	100
CANDIATE 74	100
CANDIATE 75	100
CANDIATE 76	100
CANDIATE 77	100
CANDIATE 78	100
CANDIATE 79	100
CANDIATE 80	100
CANDIATE 81	100
CANDIATE 82	100
CANDIATE 83	100
CANDIATE 84	100
CANDIATE 85	100
CANDIATE 86	100
CANDIATE 87	100
CANDIATE 88	100
CANDIATE 89	100
CANDIATE 90	100
CANDIATE 91	89
CANDIATE 92	78
CANDIATE 93	65
CANDIATE 94	53
CANDIATE 95	42
CANDIATE 96	29
CANDIATE 97	24
CANDIATE 98	18
CANDIATE 99	11
CANDIATE 100	6

Criteria For Evaluation of Test Results:

APPENDIX E
SOURCE CODE REVIEW REPORT

Unity 3.3.0.1 System Software Report Summary

This review covers the Election Systems & Software Unity 3.3.0.1 System software. Wyle only reviewed the software that was modified for the Unity 3.3.0.1 System. The review involved evaluation of its compliance with the Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG). This evaluation included, but was not limited to, the following considerations:

Readability	How straightforward and apparent was the design?
Understandability	How complicated was the code to implement it?
Modularity	How well was the code divided into logical, functional units?
Robustness	How well does the code handle error conditions or unexpected inputs?
Security	Does the code protect the integrity of voting data at all times?
Maintainability	How easy would it be to extend, fix, or modify this code in the future?
Consistency	Was the design of the code coherent throughout?
Documentation	Does the code contain useful and frequent comments?
Usability	Does the code inform the user about progress or errors?
Flow control	Are control constructs and entry/exit points logical and controlled?

The technical reports detail specific instances where it was felt that the code fell short in some areas being reviewed, and lists directories, file names, line numbers, and notes to notify the maintainers of the standards violations.

1. Initial Observations

The ES&S Unity 3.3.0.1 software and firmware package consists of multiple components and subcomponents. The major components can be broken into two main areas: election management system (EMS) and software and firmware that operate tabulators and peripheral devices.

2. Summary Assessment Findings

In general, review of the source code modules comprising the submitted Election Systems & Software Unity 3.3.0.1 System software found that most of the code was written and commented to EAC 2005 VVSG standards. The anomalies discovered during the review process consisted of issues dealing with comments, and are discussed in more detail below.

Other deviations from the standards include:

- Units Called not being documented in the header
- Variables not having a declaration comment
- Lines exceeding 120 characters
- Parameters not being validated prior to use
- Header purposes not being documented in the header
- Header Inputs or Outputs not being documented in the header
- Header Revision History not being documented in the header
- Inconsistent indenting

- Multiple embedded statements on one line
- Non enumerated constants
- Over six levels of indentation
- Modules exceeding 240 lines in length

Volume I Section 5.2.7 requires every source module to contain a header. The header must have a purpose describing how the unit works, other units called and the calling sequence, a description of input and output parameters, file references by name and method of access, all global variables used in the unit, and a date of creation and revision history.

- Module Header
 - a.i. The purpose of the unit and how it works
 - a.ii. Other units called and the calling sequence
 - a.iii. A description of input parameters and outputs
 - a.iv. Date of creation and a revision record
- Variable Comments
 - b. Descriptive comments shall be provided to identify objects and data types. All variables shall have comments at the point of declaration clearly explaining their use.

Volume II Section 5.4.2 Assessment of Coding Conventions

The accredited test lab shall test for compliance with the coding conventions specified by the vendor. If the vendor does not identify an appropriate set of coding conventions in accordance with the provisions of Volume I, Subsection 5.2.6, the accredited test lab shall review the code to ensure that it:

- Parameter Validation
 - a. Uses uniform calling sequences. All parameters shall either be validated for type and range on entry into each unit
- Unit Length
 - i. Has no modules exceeding 240 lines in length.
- Line Length
 - k. Has no line of code exceeding 120 columns in width (including comments and tab expansions) without justification
- Executable Statements
 - l. Contains no more than one executable statement and no more than one flow control statement for each line of source code
- six Levels Indented Scope

- r. Has functions with fewer than six levels of indented scope
- Enumerated Constants
- t. Has all constants other than 0 and 1 defined or enumerated

3. Code Review Process

The source code went through several iterations of standards violations being identified by Wyle and Election Systems & Software attempting to bring the code up to standards. Code changes were made during the code review process that also had to be brought up to standards. All identified standards violations of the code, were corrected during this process.

4. Source Files

```
+---2012-02-01 DS850 2.2.0.1j
| +---cong_engine-2.2.0.1j
| | +---CoNGBaseline
| | | +---CommandInterpreter
| | | | AuditDataContainer.cpp
| | | | AuditDataContainer.h
| | | | Command.cpp
| | | | Command.h
| | | | CommandFactory.cpp
| | | | CommandFactory.h
| | | | CommandInterpreter.cpp
| | | | CommandInterpreter.h
| | | | CommandList.cpp
| | | | CommandList.h
| | | | Communicator.cpp
| | | | Communicator.h
| | | | ReplyDataContainer.cpp
| | | | ReplyDataContainer.h
| | | | SimpleSocket.cpp
| | | | SimpleSocket.h
| | | | SocketCommunicator.cpp
| | | | SocketCommunicator.h
| | | | SStreamCommunicator.cpp
| | | | SStreamCommunicator.h
| | | |
| | | +---CommonIncludes
| | | | AuditDefines.h
| | | | CommonDefines.h
| | | | PlatformCommonDefines.h
| | | | SchemaDefines.h
| | | | UtilMacros.h
| | | |
| | | +---Contexts
| | | | EdbContext.cpp
| | | | EdbContext.h
| | | | PlatformContext.cpp
| | | | PlatformContext.h
| | | | ReportingContext.cpp
| | | | ReportingContext.h
| | | | TermConfigContext.cpp
| | | | TermConfigContext.h
| | | | TrmContext.cpp
| | | | TrmContext.h
| | | |
| | | +---CryptoExtensions
```

```
| | | | +---RealCommands
| | | | | ClearCommand.cpp
| | | | | ClearCommand.h
| | | | | CopyAndSignSystemLogCommand.cpp
| | | | | CopyAndSignSystemLogCommand.h
| | | | | DecryptConfig.cpp
| | | | | DecryptConfig.h
| | | | | DecryptKeys.cpp
| | | | | DecryptKeys.h
| | | | | DecryptResults.cpp
| | | | | DecryptResults.h
| | | | | DigestBasedPasswordCommand.cpp
| | | | | DigestBasedPasswordCommand.h
| | | | | EncryptResults.cpp
| | | | | EncryptResults.h
| | | | | LoadTrmWithObfuscator.cpp
| | | | | LoadTrmWithObfuscator.h
| | | | | LoadUvcInfoAndVerifyContents.cpp
| | | | | LoadUvcInfoAndVerifyContents.h
| | | | | PersistKeys.cpp
| | | | | PersistKeys.h
| | | | | PersistPassword.cpp
| | | | | PersistPassword.h
| | | | | RedundantSignature.cpp
| | | | | RedundantSignature.h
| | | | | RemovePersistedPassword.cpp
| | | | | RemovePersistedPassword.h
| | | | | RetrievePassword.cpp
| | | | | RetrievePassword.h
| | | | | SignatureOpenPolls.cpp
| | | | | SignatureOpenPolls.h
| | | | | SignedLogCommand.cpp
| | | | | SignedLogCommand.h
| | | | | ValidateSignatures.cpp
| | | | | ValidateSignatures.h
| | | | | VerifyLog.cpp
| | | | | VerifyLog.h
| | | | |
| | | | \---Strategies
| | | | | DecryptFile.cpp
| | | | | DecryptFile.h
| | | | | EncryptedBundleStrategy.cpp
| | | | | EncryptedBundleStrategy.h
| | | | | EncryptedConfigDataHandler.cpp
| | | | | EncryptedConfigDataHandler.h
| | | | | EncryptedSignedReportingStrategy.cpp
| | | | | EncryptedSignedReportingStrategy.h
| | | | | EncryptedTermConfigStrategy.cpp
| | | | | EncryptedTermConfigStrategy.h
| | | | | EncryptFile.cpp
| | | | | EncryptFile.h
| | | | | SignatureBundleStrategy.cpp
| | | | | SignatureBundleStrategy.h
| | | | | SignatureEdbStrategy.cpp
| | | | | SignatureEdbStrategy.h
| | | | | SignatureFile.cpp
| | | | | SignatureFile.h
| | | | | SignedBasicReportingStrategy.cpp
| | | | | SignedBasicReportingStrategy.h
| | | | | SignedEventReportingStrategy.cpp
| | | | | SignedEventReportingStrategy.h
| | | | | SignedStoredDataHandler.cpp
| | | | | SignedStoredDataHandler.h
| | | | | SignFile.cpp
```

```
| | | | SignFile.h
| | | | TrmSignatureVerificationStrategy.cpp
| | | | TrmSignatureVerificationStrategy.h
| | | | TrmStoreEncryptedPublicKey.cpp
| | | | TrmStoreEncryptedPublicKey.h
| | | | UnityNonEncryptedBundleStrategy.cpp
| | | | UnityNonEncryptedBundleStrategy.h
| | | |
| | | | +---RealCommands
| | | | AudioEnableCheck.cpp
| | | | AudioEnableCheck.h
| | | | BacklightCommand.cpp
| | | | BacklightCommand.h
| | | | BallotStatusAccountingReportCommand.cpp
| | | | BallotStatusAccountingReportCommand.h
| | | | BatteryCheckCommand.cpp
| | | | BatteryCheckCommand.h
| | | | BlankBallotCheckCommand.cpp
| | | | BlankBallotCheckCommand.h
| | | | CheckVoteStoreCommand.cpp
| | | | CheckVoteStoreCommand.h
| | | | ClearVotesCommand.cpp
| | | | ClearVotesCommand.h
| | | | ClosePolls.cpp
| | | | ClosePolls.h
| | | | CollectElectionData.cpp
| | | | CollectElectionData.h
| | | | CollectElectionDataByPath.cpp
| | | | CollectElectionDataByPath.h
| | | | CopySystemLogCommand.cpp
| | | | CopySystemLogCommand.h
| | | | DailyBallotStatusAccountingReportCommand.cpp
| | | | DailyBallotStatusAccountingReportCommand.h
| | | | DeepDirectoryArchiveImages.cpp
| | | | DeepDirectoryArchiveImages.h
| | | | DsSendConfigCommand.cpp
| | | | DsSendConfigCommand.h
| | | | DstInfoCommand.cpp
| | | | DstInfoCommand.h
| | | | EventLogReportCommand.cpp
| | | | EventLogReportCommand.h
| | | | GetBallotListCommand.cpp
| | | | GetBallotListCommand.h
| | | | GetBallotSheetStyleListCommand.cpp
| | | | GetBallotSheetStyleListCommand.h
| | | | GetFlaggedContestList.cpp
| | | | GetFlaggedContestList.h
| | | | GetLogicalBallotStyleListCommand.cpp
| | | | GetLogicalBallotStyleListCommand.h
| | | | GetMatchedPrecinctCommand.cpp
| | | | GetMatchedPrecinctCommand.h
| | | | GetOvervoteListCommand.cpp
| | | | GetOvervoteListCommand.h
| | | | GetPartyListCommand.cpp
| | | | GetPartyListCommand.h
| | | | GetPrecinctCommand.cpp
| | | | GetPrecinctCommand.h
| | | | GetTimeZoneCommand.cpp
| | | | GetTimeZoneCommand.h
| | | | GetUndervoteListCommand.cpp
| | | | GetUndervoteListCommand.h
| | | | HalCommands.cpp
| | | | HalCommands.h
| | | | HwmStatusCommand.cpp
```

| | | | HwmStatusCommand.h
| | | | InitWithRemovableConfig.cpp
| | | | InitWithRemovableConfig.h
| | | | IsTrmPresentCommand.cpp
| | | | IsTrmPresentCommand.h
| | | | IsUniqueBallotStyleCommand.cpp
| | | | IsUniqueBallotStyleCommand.h
| | | | LoadElectionDefinition.cpp
| | | | LoadElectionDefinition.h
| | | | LoadTrmInfoCommand.cpp
| | | | LoadTrmInfoCommand.h
| | | | LoadUvcInfoCommand.cpp
| | | | LoadUvcInfoCommand.h
| | | | LogCommand.cpp
| | | | LogCommand.h
| | | | OpenPolls.cpp
| | | | OpenPolls.h
| | | | ParseTrmInfoCommand.cpp
| | | | ParseTrmInfoCommand.h
| | | | ParseTrmInfoCommandByPath.cpp
| | | | ParseTrmInfoCommandByPath.h
| | | | PasswordCommand.cpp
| | | | PasswordCommand.h
| | | | PlayToneCommand.cpp
| | | | PlayToneCommand.h
| | | | PrecinctListCommand.cpp
| | | | PrecinctListCommand.h
| | | | PrintStateCommand.cpp
| | | | PrintStateCommand.h
| | | | ProcessAudioChoiceCommand.cpp
| | | | ProcessAudioChoiceCommand.h
| | | | ProcessChoiceCommand.cpp
| | | | ProcessChoiceCommand.h
| | | | ProcessChoiceMinusCommand.cpp
| | | | ProcessChoiceMinusCommand.h
| | | | ProcessMarginalMarkListCommand.cpp
| | | | ProcessMarginalMarkListCommand.h
| | | | ProcessMarkCommand.cpp
| | | | ProcessMarkCommand.h
| | | | ProcessMarkListCommand.cpp
| | | | ProcessMarkListCommand.h
| | | | PurgeAudioInfo.cpp
| | | | PurgeAudioInfo.h
| | | | PurgeTrmInfoCommand.cpp
| | | | PurgeTrmInfoCommand.h
| | | | ReopenPolls.cpp
| | | | ReopenPolls.h
| | | | ReportingCommandBase.cpp
| | | | ReportingCommandBase.h
| | | | ResultsReportCommand.cpp
| | | | ResultsReportCommand.h
| | | | RunSystemCommand.cpp
| | | | RunSystemCommand.h
| | | | SendChoiceListCommand.cpp
| | | | SendChoiceListCommand.h
| | | | SendClearInfoCommand.cpp
| | | | SendClearInfoCommand.h
| | | | SendContestChoiceList.cpp
| | | | SendContestChoiceList.h
| | | | SendOverVotedWriteInListCommand.cpp
| | | | SendOverVotedWriteInListCommand.h
| | | | SendProtectiveCountCommand.cpp
| | | | SendProtectiveCountCommand.h
| | | | SendStateDataCommand.cpp

| | | | SendStateDataCommand.h
| | | | SendTrmKeys.cpp
| | | | SendTrmKeys.h
| | | | SendValidWriteInListCommand.cpp
| | | | SendValidWriteInListCommand.h
| | | | SendWriteInListCommand.cpp
| | | | SendWriteInListCommand.h
| | | | SetBallotCommand.cpp
| | | | SetBallotCommand.h
| | | | SetCollectionInfo.cpp
| | | | SetCollectionInfo.h
| | | | SetLogicalBallotStyle.cpp
| | | | SetLogicalBallotStyle.h
| | | | SetPaperBallotCommand.cpp
| | | | SetPaperBallotCommand.h
| | | | SetPartyCommand.cpp
| | | | SetPartyCommand.h
| | | | SetPrecinctCommand.cpp
| | | | SetPrecinctCommand.h
| | | | SetProvisionalIdCommand.cpp
| | | | SetProvisionalIdCommand.h
| | | | SetTimeCommand.cpp
| | | | SetTimeCommand.h
| | | | SetTimeZoneCommand.cpp
| | | | SetTimeZoneCommand.h
| | | | SetVoteSession.cpp
| | | | SetVoteSession.h
| | | | SipCheckCommand.cpp
| | | | SipCheckCommand.h
| | | | StartAudioSession.cpp
| | | | StartAudioSession.h
| | | | StartVoteSessionCommand.cpp
| | | | StartVoteSessionCommand.h
| | | | SystemLogReportCommand.cpp
| | | | SystemLogReportCommand.h
| | | | TestVotesCommand.cpp
| | | | TestVotesCommand.h
| | | | TrmCheckCommand.cpp
| | | | TrmCheckCommand.h
| | | | TrmMountHelper.cpp
| | | | TrmMountHelper.h
| | | | UvcCheckCommand.cpp
| | | | UvcCheckCommand.h
| | | | ValidateConfigStoreCommand.cpp
| | | | ValidateConfigStoreCommand.h
| | | | VoteBallotCommand.cpp
| | | | VoteBallotCommand.h
| | | | VoteBallotOnRemovableStorage.cpp
| | | | VoteBallotOnRemovableStorage.h
| | | | WriteinNameCommand.cpp
| | | | WriteinNameCommand.h
| | | |
| | | | +---Rules
| | | | ApplyStraightPartyMarksRule.h
| | | | BasicPostProcessRule.h
| | | | BasicPreProcessRule.h
| | | | ControlledByExclusiveSpRule.h
| | | | ControlledByGroupVoteRule.h
| | | | ControlledByInclusiveSpRule.h
| | | | ControlledByUnionSlateRule.h
| | | | DeselectOverVotedSpMarksRule.h
| | | | DreControlledContestChange.h
| | | | DreNyCrossEndorsedRule.h
| | | | DrePostProcessRule.h

| | | | DreRuleContainer.h
| | | | DreStraightPartySelectionChange.h
| | | | GroupVoteRule.h
| | | | OpenPrimaryPostProcessRule.h
| | | | OpenPrimaryPreProcessRule.h
| | | | OverVotedSpAllOverVotedRule.h
| | | | PaperNyCrossEndorsedRule.h
| | | | PaperRuleContainer.h
| | | | PartyPreferenceRule.h
| | | | StraightPartySelectionRule.h
| | | | TabulationRule.h
| | | | TabulationRuleList.cpp
| | | | TabulationRuleList.h
| | | | UpdateWriteInRule.h
| | | | VirtualMarkRule.h
| | | |
| | | | +---Strategies
| | | | ConcurrentConfigDataHandler.cpp
| | | | ConcurrentConfigDataHandler.h
| | | | ConcurrentVoteSessionStrategy.cpp
| | | | ConcurrentVoteSessionStrategy.h
| | | | DeepDirectoryVoteSessionStrategy.cpp
| | | | DeepDirectoryVoteSessionStrategy.h
| | | | DsHalClient.cpp
| | | | DsHalClient.h
| | | | DSPlatformStrategy.cpp
| | | | DSPlatformStrategy.h
| | | | DsPmtClient.cpp
| | | | DsPmtClient.h
| | | | DsTermConfigStrategy.cpp
| | | | DsTermConfigStrategy.h
| | | | EdbStatus.h
| | | | EdbStrategy.cpp
| | | | EdbStrategy.h
| | | | EventReportingStrategy.cpp
| | | | EventReportingStrategy.h
| | | | FileTimeObfuscator.cpp
| | | | FileTimeObfuscator.h
| | | | LsTermConfigStrategy.cpp
| | | | LsTermConfigStrategy.h
| | | | LsTrmStrategy.cpp
| | | | LsTrmStrategy.h
| | | | NyPaperVoteSessionStrategy.cpp
| | | | NyPaperVoteSessionStrategy.h
| | | | PlatformStrategy.cpp
| | | | PlatformStrategy.h
| | | | ReportingStrategy.cpp
| | | | ReportingStrategy.h
| | | | RuleBasedVoteSessionStrategy.cpp
| | | | RuleBasedVoteSessionStrategy.h
| | | | SessionStatus.h
| | | | StoredDataHandler.cpp
| | | | StoredDataHandler.h
| | | | TermConfigEnums.h
| | | | TermConfigStrategy.cpp
| | | | TermConfigStrategy.h
| | | | TrmKeyFinder.cpp
| | | | TrmKeyFinder.h
| | | | TrmKeySerialNums.cpp
| | | | TrmKeySerialNums.h
| | | | TrmSignatureFileFinder.cpp
| | | | TrmSignatureFileFinder.h
| | | | TrmStatus.h
| | | | TrmStrategy.cpp

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| | | | TrmStrategy.h
| | | | UnityBasicReportingStrategy.cpp
| | | | UnityBasicReportingStrategy.h
| | | | UnityBasicVoteSessionStrategy.cpp
| | | | UnityBasicVoteSessionStrategy.h
| | | | UnityEdbStrategy.cpp
| | | | UnityEdbStrategy.h
| | | | VerificationPublicKeyPool.cpp
| | | | VerificationPublicKeyPool.h
| | | | VoteSessionStrategy.cpp
| | | | VoteSessionStrategy.h
| | | | XsdEdbStrategy.cpp
| | | | XsdEdbStrategy.h
| | | | XsdReportingStrategy.cpp
| | | | XsdReportingStrategy.h
| | | |
| | | | +---TxtFileParser
| | | | | SoftwareConfigParser.cpp
| | | | | SoftwareConfigParser.h
| | | | | TxtFileParser.cpp
| | | | | TxtFileParser.h
| | | | |
| | | | +---UtilityClasses
| | | | | ESSException.cpp
| | | | | ESSException.h
| | | | | ESSFileWrapper.cpp
| | | | | ESSFileWrapper.h
| | | | |
| | | | \---XsdXmlParser
| | | | | AffidavitData.cpp
| | | | | AffidavitData.h
| | | | | BallotData.cpp
| | | | | BallotData.h
| | | | | BallotDataXmlAccess.cpp
| | | | | BallotDataXmlAccess.h
| | | | | BallotStyle.cpp
| | | | | BallotStyle.h
| | | | | BatchData.cpp
| | | | | BatchData.h
| | | | | BusinessData.cpp
| | | | | BusinessData.h
| | | | | Candidate.cpp
| | | | | Candidate.h
| | | | | CentralScannerData.cpp
| | | | | CentralScannerData.h
| | | | | Contest.cpp
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| | | | | Counter.h
| | | | | ElectionData.cpp
| | | | | ElectionData.h
| | | | | ElectionOptions.cpp
| | | | | ElectionOptions.h
| | | | | Identifier.h
| | | | | LogicalBallotStyle.cpp
| | | | | LogicalBallotStyle.h
| | | | | MultiSheetBallotData.cpp
| | | | | MultiSheetBallotData.h
| | | | | Party.cpp
| | | | | Party.h
| | | | | PollOptions.cpp
| | | | | PollOptions.h
| | | | | PollPlaceData.cpp
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| | | | | Precinct.cpp
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| | | Precinct.h
| | | PtrHelp.h
| | | ResolveManifestData.cpp
| | | ResolveManifestData.h
| | | ResultsData.cpp
| | | ResultsData.h
| | | Signature.cpp
| | | Signature.h
| | | TimeStamp.cpp
| | | TimeStamp.h
| | | WriteIn.h
| | | XmlFileVersion.cpp
| | | XmlFileVersion.h
| | | XsdXmlReportOptions.cpp
| | | XsdXmlReportOptions.h
| | | XsdXmlTypes.h
| | |
| | | +---cong_extensions
| | | | +---Contexts
| | | | | DataExportContext.cpp
| | | | | DataExportContext.h
| | | | | TrmOverrideContext.cpp
| | | | | TrmOverrideContext.h
| | | |
| | | | +---RealCommands
| | | | | CentralScannerClearCommand.cpp
| | | | | CentralScannerClearCommand.h
| | | | | CentralScannerSendConfigCommand.cpp
| | | | | CentralScannerSendConfigCommand.h
| | | | | CheckPersistentMediaCommand.cpp
| | | | | CheckPersistentMediaCommand.h
| | | | | CheckTrmContentsCommand.cpp
| | | | | CheckTrmContentsCommand.h
| | | | | ClearAndInitCommand.cpp
| | | | | ClearAndInitCommand.h
| | | | | ClearOutstacksCommand.cpp
| | | | | ClearOutstacksCommand.h
| | | | | ClearPrecinctCommand.cpp
| | | | | ClearPrecinctCommand.h
| | | | | ClearResultsCommand.cpp
| | | | | ClearResultsCommand.h
| | | | | CollectElectionDataCommand.cpp
| | | | | CollectElectionDataCommand.h
| | | | | CreateAbbreviatedBallotRecord.cpp
| | | | | CreateAbbreviatedBallotRecord.h
| | | | | CreateBatchRecordCommand.cpp
| | | | | CreateBatchRecordCommand.h
| | | | | CreateElectionMediaCommand.cpp
| | | | | CreateElectionMediaCommand.h
| | | | | EncryptAdjudicationDataCommand.cpp
| | | | | EncryptAdjudicationDataCommand.h
| | | | | EncryptResultsOnMediaCommand.cpp
| | | | | EncryptResultsOnMediaCommand.h
| | | | | ExportAdjudicationDataCommand.cpp
| | | | | ExportAdjudicationDataCommand.h
| | | | | ExportArchiveCommand.cpp
| | | | | ExportArchiveCommand.h
| | | | | ExportCollectionDataCommand.cpp
| | | | | ExportCollectionDataCommand.h
| | | | | GetBallotCountsCommand.cpp
| | | | | GetBallotCountsCommand.h
| | | | | GetBallotSpecIdCommand.cpp
| | | | | GetBallotSpecIdCommand.h
| | | | | GetCentralScannerSettingsCommand.cpp

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| | | | GetCentralScannerSettingsCommand.h
| | | | GetDivertSettingsCommand.cpp
| | | | GetDivertSettingsCommand.h
| | | | GetPrecinctBallotListCommand.cpp
| | | | GetPrecinctBallotListCommand.h
| | | | InvalidateBallotRecordCommand.cpp
| | | | InvalidateBallotRecordCommand.h
| | | | LoadElectionDataCommand.cpp
| | | | LoadElectionDataCommand.h
| | | | MarkBatchTimeCommand.cpp
| | | | MarkBatchTimeCommand.h
| | | | OpenForScanningCommand.cpp
| | | | OpenForScanningCommand.h
| | | | PasswordVerificationCommand.cpp
| | | | PasswordVerificationCommand.h
| | | | PersistKeysOnMediaCommand.cpp
| | | | PersistKeysOnMediaCommand.h
| | | | PrecinctNameIDListCommand.cpp
| | | | PrecinctNameIDListCommand.h
| | | | ProcessMarkListCommand.cpp
| | | | ProcessMarkListCommand.h
| | | | ProcessScannedBallotIdCommand.cpp
| | | | ProcessScannedBallotIdCommand.h
| | | | SaveBallotDataCommand.cpp
| | | | SaveBallotDataCommand.h
| | | | SendBatchListCommand.cpp
| | | | SendBatchListCommand.h
| | | | SetBallotScanInfoCommand.cpp
| | | | SetBallotScanInfoCommand.h
| | | | SetMachineSerialNumberCommand.cpp
| | | | SetMachineSerialNumberCommand.h
| | | | SetPathsCommand.cpp
| | | | SetPathsCommand.h
| | | | SignFilesCommand.cpp
| | | | SignFilesCommand.h
| | | |
| | | | \---Strategies
| | | |   DataExportCentralScannerBasicStrategy.cpp
| | | |   DataExportCentralScannerBasicStrategy.h
| | | |   DataExportDefines.h
| | | |   DataExportStrategy.cpp
| | | |   DataExportStrategy.h
| | | |   PlatformCentralScannerBasicStrategy.cpp
| | | |   PlatformCentralScannerBasicStrategy.h
| | | |   TermConfigCentralScannerStrategy.cpp
| | | |   TermConfigCentralScannerStrategy.h
| | | |   TrmCentralScannerBasicStrategy.cpp
| | | |   TrmCentralScannerBasicStrategy.h
| | | |   VoteSessionCentralScannerBasicStrategy.cpp
| | | |   VoteSessionCentralScannerBasicStrategy.h
| | | |
| | | | +---Crypto
| | | | | \---src
| | | | |   AsymmetricEncryptOp.cpp
| | | | |   AsymmetricEncryptOp.h
| | | | |   AsymmetricKey.cpp
| | | | |   AsymmetricKey.h
| | | | |   AsymmetricKeyContext.cpp
| | | | |   AsymmetricKeyContext.h
| | | | |   AsymmetricKeyPair.cpp
| | | | |   AsymmetricKeyPair.h
| | | | |   Context.cpp
| | | | |   Context.h
| | | | |   CryptoFwd.h
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| | | DigestOp.cpp
| | | DigestOp.h
| | | Exception.h
| | | HighLevelOps.cpp
| | | HighLevelOps.h
| | | KeyGenerationOp.cpp
| | | KeyGenerationOp.h
| | | LibContext.cpp
| | | LibContext.h
| | | Operation.cpp
| | | Operation.h
| | | ParameterKey.cpp
| | | ParameterKey.h
| | | Portability.h
| | | PrivateKey.cpp
| | | PrivateKey.h
| | | PublicKey.cpp
| | | PublicKey.h
| | | RandomNumberGenerator.cpp
| | | RandomNumberGenerator.h
| | | RandomOp.cpp
| | | RandomOp.h
| | | RandomSeed.cpp
| | | RandomSeed.h
| | | RSAHelper.cpp
| | | RSAHelper.h
| | | Sha2Digest.cpp
| | | Sha2Digest.h
| | | SignatureOp.cpp
| | | SignatureOp.h
| | | SymmetricCipherOp.cpp
| | | SymmetricCipherOp.h
| | | SymmetricDecipherOp.cpp
| | | SymmetricDecipherOp.h
| | | SymmetricKey.cpp
| | | SymmetricKey.h
| | | Util.cpp
| | | Util.h
| | | VerificationOp.cpp
| | | VerificationOp.h
| | |
| | | +---HAL
| | | | BlockDevMountClient.c
| | | | comm.c
| | | | CpuClient.c
| | | | DmiClient.c
| | | | EbaClient.c
| | | | Elo2500uClient.c
| | | | hal.c
| | | | HalClientLock.c
| | | | HddDeviceClient.c
| | | | log.c
| | | | PmtClient.c
| | | | SysClient.c
| | | | UsbDeviceClient.c
| | | | VideoClient.c
| | | |
| | | +---client
| | | | BlockDevMountClient.h
| | | | CpuClient.h
| | | | DmiClient.h
| | | | EbaClient.h
| | | | Elo2500uClient.h
| | | | HalClientLock.h
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| | | HddDeviceClient.h
| | | PmbClient.h
| | | PmtClient.h
| | | PMTMessageDefines.h
| | | PwpClient.h
| | | SipClient.h
| | | SysClient.h
| | | UsbDeviceClient.h
| | | UvcClient.h
| | | VideoClient.h
| | |
| | | \---include
| | |   cmds.h
| | |   comm.h
| | |   hal.h
| | |   log.h
| | |
| | | +---include
| | |   AuditCodeDef.h
| | |   Defines.h
| | |   globalData.cpp
| | |   globalData.h
| | |
| | | +---server_application
| | |   main.cpp
| | |   MainApp.cpp
| | |   MainApp.h
| | |
| | | \---XmlSchemas
| | |   \---xml_data_binding
| | |     Ballot.cpp
| | |     Ballot.h
| | |     BallotSpecs.cpp
| | |     BallotSpecs.h
| | |     Batch.cpp
| | |     Batch.h
| | |     BStylePaper.cpp
| | |     BStylePaper.h
| | |     Business.cpp
| | |     Business.h
| | |     ds200settings.cpp
| | |     ds200settings.h
| | |     ds850settings.cpp
| | |     ds850settings.h
| | |     Election.cpp
| | |     Election.h
| | |     PollPlace.cpp
| | |     PollPlace.h
| | |     PollPlaceCollection.cpp
| | |     PollPlaceCollection.h
| | |     ResolveManifest.cpp
| | |     ResolveManifest.h
| | |     UnityTabTypes.cpp
| | |     UnityTabTypes.h
| | |     UnityTypes.cpp
| | |     UnityTypes.h
| | |
| | | +---mcp-2.2.0.lj
| | |   main.cpp
| | |   main.h
| | |
| | | +---bap_interface
| | |   c_bap_if.cpp
| | |   c_bap_if.h
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| | |
| | | +---Common
| | | | +---include
| | | | | utils.h
| | | | |
| | | | \---src
| | | | | utils.c
| | | |
| | | +---cong_interface
| | | | cifFactory.cpp
| | | | | cifFactory.h
| | | | | cifGets.cpp
| | | | | cifGets.h
| | | | | c_cong_if.cpp
| | | | | c_cong_if.h
| | | |
| | | | \---commands
| | | | | c_cifCommandBase.cpp
| | | | | c_cifCommandBase.h
| | | | | c_internalTest.cpp
| | | | | c_internalTest.h
| | | |
| | | +---factory
| | | | c_command.h
| | | | c_commandFactory.cpp
| | | | c_commandFactory.h
| | | | c_creator.h
| | | | c_creatorBase.h
| | | |
| | | +---imageHandler
| | | | c_ballot.cpp
| | | | | c_ballot.h
| | | | | c_diverterLogic.cpp
| | | | | c_diverterLogic.h
| | | | | c_imageHandler.cpp
| | | | | c_imageHandler.h
| | | | | c_tabulatorCmd.cpp
| | | | | c_tabulatorCmd.h
| | | | | c_worker.cpp
| | | | | c_worker.h
| | | |
| | | +---events
| | | | c_event.cpp
| | | | | c_event.h
| | | | | c_eventClearBatchOutstack.cpp
| | | | | c_eventClearBatchOutstack.h
| | | | | c_eventClearCurrentRun.cpp
| | | | | c_eventClearCurrentRun.h
| | | | | c_eventClearElection.cpp
| | | | | c_eventClearElection.h
| | | | | c_eventClearLimboData.cpp
| | | | | c_eventClearLimboData.h
| | | | | c_eventClearPrecinct.cpp
| | | | | c_eventClearPrecinct.h
| | | | | c_eventClearResults.cpp
| | | | | c_eventClearResults.h
| | | | | c_eventDefaultCameraImageSettings.cpp
| | | | | c_eventDefaultCameraImageSettings.h
| | | | | c_eventExportAdjudicationData.cpp
| | | | | c_eventExportAdjudicationData.h
| | | | | c_eventFindPrecinct.cpp
| | | | | c_eventFindPrecinct.h
| | | | | c_eventFinished.cpp
| | | | | c_eventFinished.h
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| | | | c_eventLoadElection.cpp
| | | | c_eventLoadElection.h
| | | | c_eventNewBallot.cpp
| | | | c_eventNewBallot.h
| | | | c_eventPreLoadElection.cpp
| | | | c_eventPreLoadElection.h
| | | | c_eventSaveBallotData.cpp
| | | | c_eventSaveBallotData.h
| | | | c_eventSaveCameraImageSettings.cpp
| | | | c_eventSaveCameraImageSettings.h
| | | | c_eventSetPrecinct.cpp
| | | | c_eventSetPrecinct.h
| | | | c_eventSetTime.cpp
| | | | c_eventSetTime.h
| | | | c_eventStartProcessing.cpp
| | | | c_eventStartProcessing.h
| | | | c_eventStoppedScanning.cpp
| | | | c_eventStoppedScanning.h
| | | | c_eventStopProcessing.cpp
| | | | c_eventStopProcessing.h
| | | | c_eventToggleBinSorting.cpp
| | | | c_eventToggleBinSorting.h
| | | | c_eventXferDataToLimbo.cpp
| | | | c_eventXferDataToLimbo.h
| | | |
| | | | \---tasks
| | | |   c_task.cpp
| | | |   c_task.h
| | | |   c_taskConvertImage.cpp
| | | |   c_taskConvertImage.h
| | | |   c_taskCreateMarkCodeReport.cpp
| | | |   c_taskCreateMarkCodeReport.h
| | | |   c_taskCreateVoteRecord.cpp
| | | |   c_taskCreateVoteRecord.h
| | | |   c_taskDivertBallot.cpp
| | | |   c_taskDivertBallot.h
| | | |   c_taskProcessMarks.cpp
| | | |   c_taskProcessMarks.h
| | | |
| | | | +---imageProcessor
| | | | | AbstractComputationNode.cpp
| | | | | AbstractComputationNode.h
| | | | | AggregateClassifier.cpp
| | | | | AggregateClassifier.h
| | | | | array.h
| | | | | Ballot.cpp
| | | | | Ballot.h
| | | | | BallotFactory.cpp
| | | | | BallotFactory.h
| | | | | BallotImageDelegate.cpp
| | | | | BallotImageDelegate.h
| | | | | BallotParameters.cpp
| | | | | BallotParameters.h
| | | | | BallotSpecParameters.cpp
| | | | | BallotSpecParameters.h
| | | | | BasePixelSubRectProcessor.cpp
| | | | | BasePixelSubRectProcessor.h
| | | | | BitRange.cpp
| | | | | BitRange.h
| | | | | BytePixelCountRectProcessor.cpp
| | | | | BytePixelCountRectProcessor.h
| | | | | CenterCellHelper.cpp
| | | | | CenterCellHelper.h
| | | | | Classifier.cpp
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| | | | Classifier.h
| | | | ClassifierFactory.cpp
| | | | ClassifierFactory.h
| | | | CodeChannelOffset.cpp
| | | | CodeChannelOffset.h
| | | | ComputationDependency.cpp
| | | | ComputationDependency.h
| | | | ComputationExecutor.cpp
| | | | ComputationExecutor.h
| | | | ComputationNode.cpp
| | | | ComputationNode.h
| | | | ComputedSearchArea.h
| | | | config.h
| | | | DecodeCodeChannel.cpp
| | | | DecodeCodeChannel.h
| | | | DecodeInfo.cpp
| | | | DecodeInfo.h
| | | | DynamicBallot.cpp
| | | | DynamicBallot.h
| | | | DynamicBallotSide.cpp
| | | | DynamicBallotSide.h
| | | | DynamicDSIMBallot.cpp
| | | | DynamicDSIMBallot.h
| | | | DynamicESSIMBallot.cpp
| | | | DynamicESSIMBallot.h
| | | | DynamicMarkCalibration.cpp
| | | | DynamicMarkCalibration.h
| | | | DynamicMarkLocationComputation.cpp
| | | | DynamicMarkLocationComputation.h
| | | | EastEdgeStats.cpp
| | | | EastEdgeStats.h
| | | | ESSException.cpp
| | | | ESSException.h
| | | | ESSIMMarkLocationComputation.cpp
| | | | ESSIMMarkLocationComputation.h
| | | | ExtractEdge.cpp
| | | | ExtractEdge.h
| | | | FilterNoise.cpp
| | | | FilterNoise.h
| | | | FindMarkCenters.cpp
| | | | FindMarkCenters.h
| | | | HorizontalEdgeStats.cpp
| | | | HorizontalEdgeStats.h
| | | | image.c
| | | | Image.cpp
| | | | image.h
| | | | ImageListener.h
| | | | ImageProcessorError.cpp
| | | | ImageProcessorError.h
| | | | ImageRatioPoint.cpp
| | | | ImageRatioPoint.h
| | | | ImageSubRect.h
| | | | Image_1.h
| | | | IMRClassifier.cpp
| | | | IMRClassifier.h
| | | | IMRConfigTable.cpp
| | | | IMRConfigTable.h
| | | | IMRException.cpp
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| | | | IMRForward.h
| | | | IMRRectProcessor.cpp
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| | | | IMRRowStats.cpp
| | | | IMRRowStats.h

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| | | | IMRValue.cpp
| | | | IMRValue.h
| | | | IMRVariables.cpp
| | | | IMRVariables.h
| | | | InlinedIMRRectProcessor.h
| | | | InlinedPixelCountRectProcessor.h
| | | | LengthOffsetRelativePoint.cpp
| | | | LengthOffsetRelativePoint.h
| | | | Mark.cpp
| | | | Mark.h
| | | | MarkCalibration.cpp
| | | | MarkCalibration.h
| | | | MarkLocationComputation.h
| | | | MaskParameters.cpp
| | | | MaskParameters.h
| | | | NoiseFilter1D.cpp
| | | | NoiseFilter1D.h
| | | | NorthEdgeStats.cpp
| | | | NorthEdgeStats.h
| | | | PackedPixelTraits.cpp
| | | | PackedPixelTraits.h
| | | | PairOfPoints.h
| | | | PixelCountClassifier.cpp
| | | | PixelCountClassifier.h
| | | | PixelCountRectProcessor.cpp
| | | | PixelCountRectProcessor.h
| | | | PixelOffsetRelativePoint.cpp
| | | | PixelOffsetRelativePoint.h
| | | | Point.h
| | | | Rectangle.h
| | | | REIScannerTraits.cpp
| | | | REIScannerTraits.h
| | | | RelativePoint.h
| | | | RunLengthDataSet.cpp
| | | | RunLengthDataSet.h
| | | | ScannerDefs.h
| | | | ScannerTraits.h
| | | | SearchEdge.cpp
| | | | SearchEdge.h
| | | | SouthEdgeStats.cpp
| | | | SouthEdgeStats.h
| | | | StaticPoint.cpp
| | | | StaticPoint.h
| | | | Tiff2Image.cpp
| | | | Tiff2Image.h
| | | | TimingTrackArea.cpp
| | | | TimingTrackArea.h
| | | | utils.c
| | | | utils.h
| | | | VerticalEdgeStats.cpp
| | | | VerticalEdgeStats.h
| | | | WeightedLineFit.cpp
| | | | WeightedLineFit.h
| | | | WestEdgeStats.cpp
| | | | WestEdgeStats.h
| | | |
| | | | \---XmlSchemas
| | | | \---xml_data_binding
| | | |     BallotSpecs.cpp
| | | |     BallotSpecs.h
| | | |
| | | | +---include
| | | |     AuditCodeDef.h
| | | |     AuditLogDef.h
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| | | Defines.h
| | | globalData.cpp
| | | globalData.h
| | | Properties.h
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| | |
| | +---logicProcessor
| | | | c_logicProcessor.cpp
| | | | c_logicProcessor.h
| | | |
| | | \---events
| | | | c_eventBapPassThruCmd.cpp
| | | | c_eventBapPassThruCmd.h
| | | | c_eventBatteryCharge.cpp
| | | | c_eventBatteryCharge.h
| | | | c_eventBatteryStatus.cpp
| | | | c_eventBatteryStatus.h
| | | | c_eventCalibrateCameras.cpp
| | | | c_eventCalibrateCameras.h
| | | | c_eventCheckForUnsavedBallots.cpp
| | | | c_eventCheckForUnsavedBallots.h
| | | | c_eventClearPaperPathCmd.cpp
| | | | c_eventClearPaperPathCmd.h
| | | | c_eventClearPersistedPassword.cpp
| | | | c_eventClearPersistedPassword.h
| | | | c_eventDataIntegrityCheck.cpp
| | | | c_eventDataIntegrityCheck.h
| | | | c_eventErrorBeforeScanning.cpp
| | | | c_eventErrorBeforeScanning.h
| | | | c_eventExportArchive.cpp
| | | | c_eventExportArchive.h
| | | | c_eventExportArchiveFull.cpp
| | | | c_eventExportArchiveFull.h
| | | | c_eventExportArchiveIncremental.cpp
| | | | c_eventExportArchiveIncremental.h
| | | | c_eventExportAuditLog.cpp
| | | | c_eventExportAuditLog.h
| | | | c_eventExportCollectionData.cpp
| | | | c_eventExportCollectionData.h
| | | | c_eventExportFullArchiveToMediaStick.cpp
| | | | c_eventExportFullArchiveToMediaStick.h
| | | | c_eventExportInterfaceLog.cpp
| | | | c_eventExportInterfaceLog.h
| | | | c_eventInitTabulator.cpp
| | | | c_eventInitTabulator.h
| | | | c_eventLoginLoadedElection.cpp
| | | | c_eventLoginLoadedElection.h
| | | | c_eventPersistElectionProperties.cpp
| | | | c_eventPersistElectionProperties.h
| | | | c_eventPersistPassword.cpp
| | | | c_eventPersistPassword.h
| | | | c_eventPersistProperties.cpp
| | | | c_eventPersistProperties.h
| | | | c_eventPresentationLayerReady.cpp
| | | | c_eventPresentationLayerReady.h
| | | | c_eventPrintReport.cpp
| | | | c_eventPrintReport.h
| | | | c_eventUpdateArchiveTargetList.cpp
| | | | c_eventUpdateArchiveTargetList.h
| | | | c_eventUpdateBatchesCount.cpp
| | | | c_eventUpdateBatchesCount.h
| | | | c_eventUpdateProcessedBallotsCount.cpp
| | | | c_eventUpdateProcessedBallotsCount.h
| | | | c_eventValidateElectionMedia.cpp

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```
| | | c_eventValidateElectionMedia.h
| | | c_eventValidatePassword.cpp
| | | c_eventValidatePassword.h
| | | c_lpEvent.cpp
| | | c_lpEvent.h
| | |
| | | +---powmon
| | | | c_powmon.cpp
| | | | c_powmon.h
| | | |
| | | +---Printer
| | | | FilePrinter.cpp
| | | | FilePrinter.h
| | | | Printer.cpp
| | | | Printer.h
| | | | USBLinePrinter.cpp
| | | | USBLinePrinter.h
| | | |
| | | +---propertyBank
| | | | c_propertyBank.cpp
| | | | c_propertyBank.h
| | | |
| | | +---TouchScreen
| | | | +---include
| | | | | cal.h
| | | | |
| | | | \---src
| | | | | cal.c
| | | | | xf86Elo.c
| | | |
| | | +---ui_mcp
| | | | c_client.cpp
| | | | c_client.h
| | | | c_event.cpp
| | | | c_event.h
| | | | c_parser.cpp
| | | | c_parser.h
| | | | c_server.cpp
| | | | c_server.h
| | | | c_token.cpp
| | | | c_token.h
| | | | factory.cpp
| | | | factory.h
| | | |
| | | \---commands
| | | | c_addPropertySubscription.cpp
| | | | c_addPropertySubscription.h
| | | | c_bapPassThruCmd.cpp
| | | | c_bapPassThruCmd.h
| | | | c_calibrateCamerasCmd.cpp
| | | | c_calibrateCamerasCmd.h
| | | | c_clearPaperPathCmd.cpp
| | | | c_clearPaperPathCmd.h
| | | | c_clearPersistedPassword.cpp
| | | | c_clearPersistedPassword.h
| | | | c_clearPrecinctCmd.cpp
| | | | c_clearPrecinctCmd.h
| | | | c_clearResults.cpp
| | | | c_clearResults.h
| | | | c_clearRunOutstackCmd.cpp
| | | | c_clearRunOutstackCmd.h
| | | | c_commandBase.cpp
| | | | c_commandBase.h
| | | | c_defaultCameraImageSettingsCmd.cpp
```

c_defaultCameraImageSettingsCmd.h
c_deleteBallotDataCmd.cpp
c_deleteBallotDataCmd.h
c_delPropertySubscription.cpp
c_delPropertySubscription.h
c_enableUpdateChannel.cpp
c_enableUpdateChannel.h
c_exportAdjudicationData.cpp
c_exportAdjudicationData.h
c_exportAmalgamatedData.cpp
c_exportAmalgamatedData.h
c_exportArchiveCmd.cpp
c_exportArchiveCmd.h
c_exportAuditLogCmd.cpp
c_exportAuditLogCmd.h
c_exportCollectionData.cpp
c_exportCollectionData.h
c_exportInterfaceLogCmd.cpp
c_exportInterfaceLogCmd.h
c_findPrecinctCmd.cpp
c_findPrecinctCmd.h
c_loadClear.cpp
c_loadClear.h
c_loadElection.cpp
c_loadElection.h
c_logCmd.cpp
c_logCmd.h
c_loginLoadedElection.cpp
c_loginLoadedElection.h
c_performStartupChecks.cpp
c_performStartupChecks.h
c_persistPassword.cpp
c_persistPassword.h
c_ping.cpp
c_ping.h
c_preLoadElectionCmd.cpp
c_preLoadElectionCmd.h
c_presentationLayerReadyCmd.cpp
c_presentationLayerReadyCmd.h
c_printReportCmd.cpp
c_printReportCmd.h
c_printTestCmd.cpp
c_printTestCmd.h
c_saveAdaptiveToleranceCmd.cpp
c_saveAdaptiveToleranceCmd.h
c_saveBallotData.cpp
c_saveBallotData.h
c_saveBWThresholdsCmd.cpp
c_saveBWThresholdsCmd.h
c_saveDespeckleSensitivityCmd.cpp
c_saveDespeckleSensitivityCmd.h
c_savePrecinctSelectionCmd.cpp
c_savePrecinctSelectionCmd.h
c_saveProcessingModeCmd.cpp
c_saveProcessingModeCmd.h
c_setBatchBinReportOptionsCmd.cpp
c_setBatchBinReportOptionsCmd.h
c_setDateTimeCmd.cpp
c_setDateTimeCmd.h
c_setDiverterSettingsCmd.cpp
c_setDiverterSettingsCmd.h
c_setPickDelayCmd.cpp
c_setPickDelayCmd.h
c_setProperty.cpp

```
| | | c_setProperty.h  
| | | c_setRealTimePrintingCmd.cpp  
| | | c_setRealTimePrintingCmd.h  
| | | c_startProcessing.cpp  
| | | c_startProcessing.h  
| | | c_stopProcessing.cpp  
| | | c_stopProcessing.h  
| | | c_toggleBallotSortOption.cpp  
| | | c_toggleBallotSortOption.h  
| | | c_toggleBinSorting.cpp  
| | | c_toggleBinSorting.h  
| | | c_validatePassword.cpp  
| | | c_validatePassword.h
```

\---util

```
| | | c_auditLog.cpp  
| | | c_auditLog.h  
| | | c_auditPrinter.cpp  
| | | c_auditPrinter.h  
| | | c_fileSysUtil.cpp  
| | | c_fileSysUtil.h  
| | | c_hardwareInfo.cpp  
| | | c_hardwareInfo.h  
| | | c_iniFile.cpp  
| | | c_iniFile.h  
| | | c_locationInfo.cpp  
| | | c_locationInfo.h  
| | | c_mediaInfo.cpp  
| | | c_mediaInfo.h  
| | | c_params.cpp  
| | | c_params.h  
| | | c_printerMon.cpp  
| | | c_printerMon.h  
| | | c_processMon.cpp  
| | | c_processMon.h  
| | | c_readinessReport.cpp  
| | | c_readinessReport.h  
| | | c_serialNumber.cpp  
| | | c_serialNumber.h  
| | | c_stickDetect.cpp  
| | | c_stickDetect.h  
| | | c_stopWatch.cpp  
| | | c_stopWatch.h  
| | | c_storageMon.cpp  
| | | c_storageMon.h  
| | | c_thread.cpp  
| | | c_thread.h  
| | | c_versionInfo.cpp  
| | | c_versionInfo.h  
| | | templates.h  
| | | tokenize.cpp  
| | | tokenize.h  
| | | types.h
```

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```
| | | defines.h  
| | | main.cpp  
| | | main.h  
| | | utility.cpp  
| | | utility.h
```

+---comms

```
| | | commands.cpp  
| | | commands.h
```

- | c_clientSocket.cpp
- | c_clientSocket.h
- | c_commsThread.cpp
- | c_commsThread.h
- | c_mcpMsgParser.cpp
- | c_mcpMsgParser.h
- | c_server.cpp
- | c_server.h
- | c_serverSocketThread.cpp
- | c_serverSocketThread.h

+---debug_modules

- | c_debugEventSimulator.cpp
- | c_debugEventSimulator.h
- | c_debugMenuFuncTable.cpp
- | c_debugMenuFuncTable.h
- | c_debugTimedPropertyThread.cpp
- | c_debugTimedPropertyThread.h
- | c_debugTimedSignalThread.cpp
- | c_debugTimedSignalThread.h
- | c_mockMcp.cpp
- | c_mockMcp.h
- | c_mockPropBank.cpp
- | c_mockPropBank.h

+---include

- | AuditCodeDef.h
- | AuditLogDef.h
- | Defines.h
- | globalData.cpp
- | globalData.h
- | Properties.h
- | Signals.h

+---utilities

- | c_progressBarUtil.cpp
- | c_progressBarUtil.h

+---widgets

- | | c_ballotImageItem.cpp
- | | c_ballotImageItem.h
- | | c_baseUiComponent.cpp
- | | c_baseUiComponent.h
- | | c_errorAuditListModel.cpp
- | | c_errorAuditListModel.h
- | | c_imageView.cpp
- | | c_imageView.h
- | | c_mainWindow.cpp
- | | c_mainWindow.h
- | | c_screen.cpp
- | | c_screen.h

+---events

- | | c_buttonClickedEvent.cpp
- | | c_buttonClickedEvent.h
- | | c_changeBodyEvent.cpp
- | | c_changeBodyEvent.h
- | | c_changeFunctionTablesEvent.cpp
- | | c_changeFunctionTablesEvent.h
- | | c_changeStatusBarEvent.cpp
- | | c_changeStatusBarEvent.h
- | | c_clearFunctionTablesEvent.cpp
- | | c_clearFunctionTablesEvent.h
- | | c_commandEvent.cpp

c_commandEvent.h
c_displayErrorEvent.cpp
c_displayErrorEvent.h
c_displayPopUpEvent.cpp
c_displayPopUpEvent.h
c_hidePopUpEvent.cpp
c_hidePopUpEvent.h
c_imageViewEvent.cpp
c_imageViewEvent.h
c_propBankUpdateEvent.cpp
c_propBankUpdateEvent.h
c_setNextBodyEvent.cpp
c_setNextBodyEvent.h
c_setPreviousBodyEvent.cpp
c_setPreviousBodyEvent.h
c_tabSelectedEvent.cpp
c_tabSelectedEvent.h

\---functionTables

c_accessCodeBtnFuncTable.cpp
c_accessCodeBtnFuncTable.h
c_accessCodeSigFuncTable.cpp
c_accessCodeSigFuncTable.h
c_cameraBtnFuncTable.cpp
c_cameraBtnFuncTable.h
c_cameraSigFuncTable.cpp
c_cameraSigFuncTable.h
c_clearInitBtnFuncTable.cpp
c_clearInitBtnFuncTable.h
c_clearInitSigFuncTable.cpp
c_clearInitSigFuncTable.h
c_clearInitStartupBtnFuncTable.cpp
c_clearInitStartupBtnFuncTable.h
c_clearInitStartupSigFuncTable.cpp
c_clearInitStartupSigFuncTable.h
c_commonBtnFuncTable.cpp
c_commonBtnFuncTable.h
c_commonSigFuncTable.cpp
c_commonSigFuncTable.h
c_configurationMenuFuncTable.cpp
c_configurationMenuFuncTable.h
c_configurationSigFuncTable.cpp
c_configurationSigFuncTable.h
c_functionTable.cpp
c_functionTable.h
c_imageViewBtnFuncTable.cpp
c_imageViewBtnFuncTable.h
c_imageViewSigFuncTable.cpp
c_imageViewSigFuncTable.h
c_keyboardBtnFuncTable.cpp
c_keyboardBtnFuncTable.h
c_loadElecBtnFuncTable.cpp
c_loadElecBtnFuncTable.h
c_loadElecSigFuncTable.cpp
c_loadElecSigFuncTable.h
c_logPrinterSigFuncFilterTable.cpp
c_logPrinterSigFuncFilterTable.h
c_logPrinterStartUpSigFuncFilterTable.cpp
c_logPrinterStartUpSigFuncFilterTable.h
c_mainMenuBtnFuncTable.cpp
c_mainMenuBtnFuncTable.h
c_mainMenuSigFuncTable.cpp
c_mainMenuSigFuncTable.h
c_postScanErrSigFuncTable.cpp

```
| | | c_postScanErrSigFuncTable.h
| | | c_postScanSigFuncTable.cpp
| | | c_postScanSigFuncTable.h
| | | c_precinctSelectionBtnFuncTable.cpp
| | | c_precinctSelectionBtnFuncTable.h
| | | c_precinctSelectionSigFuncTable.cpp
| | | c_precinctSelectionSigFuncTable.h
| | | c_preScanSigFuncTable.cpp
| | | c_preScanSigFuncTable.h
| | | c_printersBtnFuncTable.cpp
| | | c_printersBtnFuncTable.h
| | | c_reportsBtnFuncTable.cpp
| | | c_reportsBtnFuncTable.h
| | | c_reportsSigFuncTable.cpp
| | | c_reportsSigFuncTable.h
| | | c_resultsAdjMediaSigFuncTable.cpp
| | | c_resultsAdjMediaSigFuncTable.h
| | | c_resultsArchiveSigFuncTable.cpp
| | | c_resultsArchiveSigFuncTable.h
| | | c_resultsBtnFuncTable.cpp
| | | c_resultsBtnFuncTable.h
| | | c_resultsLogSigFuncTable.cpp
| | | c_resultsLogSigFuncTable.h
| | | c_resultsMediaSigFuncTable.cpp
| | | c_resultsMediaSigFuncTable.h
| | | c_resultsSigFuncTable.cpp
| | | c_resultsSigFuncTable.h
| | | c_scanBtnFuncTable.cpp
| | | c_scanBtnFuncTable.h
| | | c_scanErrorBtnFuncTable.cpp
| | | c_scanErrorBtnFuncTable.h
| | | c_scanSigFuncTable.cpp
| | | c_scanSigFuncTable.h
| | | c_setDateTimeBtnFuncTable.cpp
| | | c_setDateTimeBtnFuncTable.h
| | | c_setDateTimeSigFuncTable.cpp
| | | c_setDateTimeSigFuncTable.h
| | | c_setupMenuBtnFuncTable.cpp
| | | c_setupMenuBtnFuncTable.h
| | | c_shutdownNormalSigFuncTable.cpp
| | | c_shutdownNormalSigFuncTable.h
| | | c_startUpBtnFuncTable.cpp
| | | c_startUpBtnFuncTable.h
| | | c_startUpSigFuncFilterTable.cpp
| | | c_startUpSigFuncFilterTable.h
| | | c_startUpSigFuncTable.cpp
| | | c_startUpSigFuncTable.h
| | | c_transportMenuBtnFuncTable.cpp
| | | c_transportMenuBtnFuncTable.h
| | | c_transportMenuSigFuncTable.cpp
| | | c_transportMenuSigFuncTable.h
| | |
| | | \--helperFunctions
| | |     setDateFuncs.cpp
| | |     setDateFuncs.h
| | |
| | | \--xmlParsers
| | |     c_messageXmlHandler.cpp
| | |     c_messageXmlHandler.h
| | |     c_messageXmlParser.cpp
| | |     c_messageXmlParser.h
| | |     c_reportXmlHandler.cpp
| | |     c_reportXmlHandler.h
| | |     c_reportXmlParser.cpp
```

```
|      c_reportXmlParser.h
+---CB_HPMCoNG_1.0.0.0a_Source
| \---CB_HPMCoNG
|      CB_HPMCoNGInterface.cpp
+---CB_XMLConv_1.2.0.0a_Source
| \---CB_XMLConv
|      CB_DS200XMLConvBody.cpp
+---CB_XML_1.2.0.0a_Source
| \---CB_XML
|      CB_XMLInterface.cpp
+---ERMXMLConvDLL_2.2.0.0a_Source
| \---ERMXMLConvDLL
|      ConsoleSubverter.cpp
|      ConsoleSubverter.h
|      ERMXMLConvEngine.cpp
|      ERMXMLConvEngine.h
|      ERMXMLConverterDLL.h
|      ERMXMLConvLogUtilities.cpp
|      ERMXMLConvLogUtilities.h
|      ERMXMLConvUtilities.cpp
|      ERMXMLConvUtilities.h
|      ERMXMLDllInterface.cpp
|      ERMXMLDllInterface.h
|      UtilityFunctions.cpp
|      UtilityFunctions.h
|      ValidationUtilities.cpp
|      ValidationUtilities.h
+---ERMXMLDATA_1.2.0.0b_Source
| \---ERMXMLDATA
|      \---ERMXMLDATA
|          BStylePaperInterface.cpp
|          BStylePaperInterface.h
|          BusinessInterface.cpp
|          BusinessInterface.h
|          DataTypesPollPlaceCollection.h
|          Ds200SettingsInterface.cpp
|          Ds200SettingsInterface.h
|          Ds850SettingsInterface.cpp
|          Ds850SettingsInterface.h
|          ElectionInterface.cpp
|          ElectionInterface.h
|          ermxmldatainterface.cpp
|          ERMXMLDATAInterface.h
|          GetPollPlaceCollectionData.cpp
|          GetPollPlaceCollectionData.h
|          JurisdictionInterface.cpp
|          JurisdictionInterface.h
|          PollPlaceInterface.cpp
|          PollPlaceInterface.h
|          UnityTabTypesInterface.cpp
|          UnityTabTypesInterface.h
|          UnityTypesInterface.cpp
|          UnityTypesInterface.h
|          Utilities.cpp
|          Utilities.h
+---ERM_7.5.8.0f_Source
| \---ERM_7.5.8.0f_Source
|      \---ERM 7.5.8.0
```

ABSACCEP.WPR
ABSACCEP.WWS
ACCEPT.A5
ACUCFG.A5
ACUCFG.CBL
ACUCFG.PRC
ACUCFG.WPR
ACUCFG.WS
ACUCFG.WWS
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ACUDRIVE.WWS
ADMIN.PRC
AERO.CBL
AERODB.CBL
AERODB.WPR
AERODB.WWS
AERODBMI.WPR
AERODBMI.WWS
AEROLOG.A5
AEROSTRT.WPR
AEROSTRT.WWS
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AS100MSG.WWS
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AS100PCM.WPR
AS100PCM.WWS
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AS550-01.WWS
AS550-02.WPR
AS550-02.WWS
AS550.CBL
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AS550DRV.WWS
AS550RES.WPR
AS550RES.WWS
AS550STR.WPR
AS550STR.WWS
ASCIFIL2.A5
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ASCIFILE.WWS
ASCII.WPR
ASCII.WWS
AUDITCON.A5
BALIMGE.A5
batfile.a5
BIMFILE.A5
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BLANK.WWS
CAENTRY.WPR
CAENTRY.WWS
CALFILE.WPR
CALFILE.WWS
CALSTART.WPR
CALSTART.WWS
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CANDDISP.WWS
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CANV2HLP.PRC
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CANVASS.CBL

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CANVASS2.PRC
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CANVASS2.WWS
CANVHLP.PRC
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CAXMAIN.WWS
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CAXNEW.WWS
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CAXPREC.WWS
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CHECKERR.WS
CHECKERR.WWS
CHIDISTS.CBL
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CHIDISTS.WS
CHIDISTS.WWS
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CLEARCOD.WS
CLEARCOD.WWS
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CNTLFILE.WWS

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CNTLPATH.WWS
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CNTRFLE2.A5
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CODEDBAL.WPR
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CODEDBAL.WWS
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CODEDOPT.WWS
CODEDSTR.WPR
CODEDSTR.WWS
CODEFILE.CBL
CODEFILE.WPR
CODEFILE.WS
CODEFILE.WWS
CODFILE.A5
CODLOG.A5
COLAUDIT.WPR
COLAUDIT.WWS
CONTDISP.CBL
CONTDISP.PRC
CONTDISP.WPR
CONTDISP.WS
CONTDISP.WWS
CONTEST.CBL
CONTEST.WPR
CONTEST.WWS
CONTLIST.PRC
CONTLIST.WPR
CONTLIST.WS
CONTLIST.WWS
CONTROL.A5
COPYDRV.WPR
COPYDRV.WWS
COPYFILE.A5
COPYINIT.CBL
copyinit.prc
COPYINIT.WPR
COPYINIT.WS
COPYINIT.WWS
COPYRES.CBL
COPYRES.WPR
COPYRES.WS
COPYRES.WWS
COPYRT.WPR
COPYRT.WWS
COUNTER.A5
CP.CBL
CP.PRC
CP.WS
CPYMERGE.CBL
CPYMERGE.WPR
CPYMERGE.WS
CPYMERGE.WWS
DATABASE.A5
DATABSE2.A5
DELPR-01.WPR
DELPR-01.WWS

DELPRFLS.CBL
DELPRFLS.PRC
DELPRFLS.WS
DELSFILE.CBL
DELSFILE.PRC
DELSFILE.WPR
DELSFILE.WS
DELSFILE.WWS
DESCRIP.WPR
DESCRIP.WWS
DIRFILE.A5
DISCLOSE.A5
DISPCNTL.A5
DISPOVUN.WPR
DISPOVUN.WWS
DISPRPT.CBL
DISPRPT.WPR
DISPRPT.WWS
DISPSUSP.CBL
DISPSUSP.PRC
DISPSUSP.WPR
DISPSUSP.WS
DISPSUSP.WWS
DRIVE.WPR
DRIVE.WWS
DS2-MODE.WPR
DS2-MODE.WWS
DS2-OPTS.WPR
DS2-OPTS.WWS
DS2-READ.WPR
DS2-READ.WWS
DS200-01.WPR
DS200-01.WWS
DS200-EP.WPR
DS200-EP.WWS
DS200CLR.WPR
DS200CLR.WWS
DS200DRV.WPR
DS200DRV.WWS
DS200IMG.WPR
DS200IMG.WWS
DS200KEY.WPR
DS200KEY.WWS
DS200LEG.CBL
DS200LEG.PRC
DS200LEG.WPR
DS200LEG.WS
DS200LEG.WWS
DS200MSG.WPR
DS200MSG.WWS
DS200PRR.A5
DS200RES.A5
DS200STK.CBL
DS200STK.PRC
DS200STK.WS
DS200TS.A5
DS2UKPID.A5
DSCAN200.CBL
DSCAN200.PRC
DSCAN200.WS
DSTFILE.A5
DSTFILE2.A5
DSTFILE3.A5
ECFILE2.A5

ECFILE3.A5
ELECA1.CPY
ELECA2.CPY
ELECA3.CPY
ELECA4.CPY
ELECA5.CPY
ELECB.CPY
ELECC.CPY
ELECD.CPY
ELECDISP.PRC
ELECDISP.WPR
ELECDISP.WWS
ELECE.CPY
ELECF.CPY
elecfile.a5
ELECFILE.WPR
ELECFILE.WWS
ELECG.CPY
EMSLOG.CPY
ERM.REV
ERMADMIN.A5
ERMCHKBC.WPR
ERMCHKBC.WWS
ERMUSER.A5
ETP4C.CBL
ETP4C.WPR
ETP4C.WWS
ETP4CDRV.WPR
ETP4CDRV.WWS
ETP4CRES.WPR
ETP4CRES.WWS
EVTFILE.A5
EVTFILELA5
EVTFILEO.A5
EXITWIN.WPR
EXITWIN.WWS
FILECANV.WPR
FILECANV.WWS
FILEIO.CBL
FILEIO.CPY
FILEIO.PRC
FILEIO.WPR
fileio.ws
FILEIO.WWS
FILENAME.WPR
FILENAME.WWS
FILESEL.CBL
FILESEL.PRC
FILESEL.WPR
filese1.ws
FILESEL.WWS
FIND.WPR
FIND.WWS
FLASHDRV.WPR
FLASHDRV.WWS
FONTSIZE.WPR
FONTSIZE.WWS
GOTOPAGE.WPR
GOTOPAGE.WWS
GROUP.WPR
GROUP.WWS
GRPMAINT.CBL
GRPMAINT.WPR
GRPMAINT.WS

GRPMANT.WWS
GRPUTIL.CBL
GRPUTIL.WPR
grputil.ws
GRPUTIL.WWS
HARDWARE.CBL
HARDWARE.PRC
HARDWARE.WPR
HARDWARE.WS
HARDWARE.WWS
IMPFILE.WPR
IMPFILE.WWS
IMPORT.WPR
IMPORT.WWS
INFILE.A5
INSRTDSK.WPR
INSRTDSK.WWS
INTERVAL.WPR
INTERVAL.WWS
JURISCTL.CBL
JURISCTL.PRC
JURISCTL.WPR
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JURISLST.WWS
KEYBOARD.WPR
KEYBOARD.WWS
LAINSDSK.WPR
LAINSDSK.WWS
LAPRINT.WPR
LAPRINT.WWS
LASTATE.CBL
LASTATE.WPR
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LAXCAND.WWS
LAXMAIN.WPR
LAXMAIN.WWS
LAXNEW.WPR
LAXNEW.WWS
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LAXPREC.WWS
LAXREF.CBL
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log.a5
LOGFILE.A5
LOGIN.CBL
LOGIN.WPR
LOGIN.WS
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LOGIO.CBL
LOGIO.PRC
LOGIO.WS
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LPTPORT.WPR
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M100-002.WPR
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| XREFFLE2.CPY
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|  RSACrypto.h
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|---ds200
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|---Crypto
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