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1.0 INTRODUCTION

The purpose of this National Certification Test Plan (Test Plan) is to document the strategy Wyle Laboratories, Inc., will follow during certification testing of the Election Systems and Software (ES&S) Unity 3.2.1.0 Rev. 1 system. ES&S submitted the Unity 3.2.1.0 Rev. 1 system to Wyle Laboratories, Inc., for certification to the 2002 VSS. Per section 4.4.2.3 of the EAC Testing and Certification Program Manual, all testing on the modifications to the system will be tested to the 2005 VVSG; however, pending successful completion of this test campaign, the system will only be granted a 2002 VSS certification since the system, as a whole, will not be tested to the 2005 VVSG.

The purpose of the modification to the system was to incorporate the proposed resolution of a condition with a low-level logging function of the DS200 system certified with Unity 3.2.1.0 (ESSUnity3210) on March 29, 2011 by the EAC.

At test conclusion, the results of all testing performed as part of this test campaign will be submitted to the EAC in the form of a final report.

1.1 Scope

The focus of this test campaign will be to test all modifications made to the system firmware as well as:

That each issue identified in the California Secretary of State's Office of Voting Systems Technology Assessment Letter dated January 1, 2011, has been properly adjudicated.

The sufficiency of the modifications made to the firmware to address the two technical advisories that have been released by the EAC concerning known field issues of the DS200:

EAC Technical Advisory ESS2011-02: During local acceptance testing in a jurisdiction, multiple DS200 Ballot Scanners exhibited an anomaly where the touch screen interface would stop responding to touches.

EAC Technical Advisory ESS2011-03: During local acceptance testing, a DS200 Ballot Scanner failed to count a marked ballot position resulting in a lost vote.

Note: In response to the technical advisories, ES&S has published two Technical Bulletins (PRBDS2000013 and FYIDS2000021, both of which are dated 8/3/2011).

Additionally, as a result of the issues identified above, the prevalence of the DS200 component across the ES&S Unity line of products, and the fact that the DS200 was tested in part by three separate VSTLs, the EAC has instructed Wyle to perform full regression testing on the DS200 for all functional requirements set forth in the EAC 2005 VVSG, with the following requirements of Volume I identified by the EAC as being of particular interest: 2.1.1 (b); 2.1.2, 2.1.3 (a); 2.1.4 (e, g, h, I, j); 2.1.5.1 (a) (i), (b) (i, ii, iii, iv, v, vi), 2.1.7.1 (a), (c); 2.3.1.1 (b); 2.3.1.2 (f); 2.3.3.1 (c); 4.1.1; 4.1.4.2 (a) (iii), (b) (all); 4.1.5.2 (all); 4.1.6.1 (all); 4.3.4.2 (a) (b); and 5.4 (all).

Upon the completion of this test campaign, the results of the testing will be evaluated and an analysis of the impact on all related systems shall be performed prior to completion of the final test report.

1.0 INTRODUCTION

1.2 References

The documents listed below were used in the development of the Test Plan and are 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

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, Revision 4

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 (listed on www.eac.gov)

EAC Notices of Clarification (listed on www.eac.gov)

EAC Quality Monitoring Program residing on:

http://www.eac.gov/testing_and_certification/quality_monitoring_program.aspx

EAC Letter Re: Agency Guidance – Unity 3.2.1.0 Rev. 1, dated August 26, 2011

A listing of the Unity 3.2.1.0 Rev 1 System Technical Data Package (TDP) documents submitted for this certification test effort is listed in Section 3.4: Deliverable Materials.

1.0 INTRODUCTION (CONTINUED)

1.3 Terms and Abbreviations

This subsection defines all terms and abbreviations applicable to the development of this Test Plan.

Table 1-2 Terms and Abbreviations

Term	Abbreviation	Definition
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability.
AutoMARK Management Information System	AIMS	A windows-based election management system software application to define election parameters for the VAT, including functionality to import election definition files produced by the Unity EMS and create VAT flash memory cards
Audit Manager	AM	System software that provides security and user tracking for Election Data Manager (EDM) and ES&S Ballot Image Manager (ESSIM).
Configuration Management	CM	---
Commercial Off the Shelf	COTS	---
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.
Election Data Manager	EDM	Unity EMS data entry component.
Election Management System	EMS	Within the Unity 3.2.1.0 Rev 1 System, the EMS is comprised of seven components: AIMS, AM, EDM, HPM, ESSIM, ERM, and Log Monitor.
Election Reporting Manager	ERM	Unity EMS reporting component.
Election Systems and Software	ES&S	---
ESSIM	ESS Image Manager	A desktop publishing tool that allows users to design and print ES&S paper ballots.
Equipment Under Test	EUT	---
Functional Configuration Audit	FCA	Verification of system functions and combination of functions cited in the manufacturer's documentation.
Hardware Programming Manager	HPM	An election package primarily used for converting election files and creating and loading election parameters.
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
Intelligent Mark Recognition	IMR	Visible light scanning technology to detect completed ballot targets
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.

1.0 INTRODUCTION (CONTINUED)

1.3 Terms and Abbreviations (continued)

Table 1-2 Terms and Abbreviations (continued)

Term	Abbreviation	Definition
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	--
System Under Test	SUT	---
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Test Case Procedure Specifications	TCPS	Wyle-developed document that specifies test items, input specifications, output specifications, environmental needs, special procedural requirements, inter-case dependencies, and all validated test cases that will be executed during the area under test.
Uninterruptible Power Supply	UPS	---
Voter Assist Terminal	VAT	The electronic ballot marking device component is the ES&S AutoMARK
Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Laboratories, Inc.	Wyle	---
Wyle Operating Procedure	WoP	Wyle Test Method or Test Procedure.

1.4 Testing Responsibilities

Prior to the development of this test plan, Wyle evaluated test results from previous test campaigns performed by EAC accredited VSTL’s as well as test cases and results of developmental testing conducted by ES&S during the pre-certification process that were provided by ES&S in their TDP. The purpose of this evaluation was to determine the scope of testing required for system certification. Following the review, Wyle determined that testing from previous test campaigns could be utilized to satisfy the requirements of this test campaign. All other core and non-core software and hardware certification testing will be conducted under the guidance of Wyle by personnel verified by Wyle to be qualified to perform the testing.

Review of test cases and results of developmental testing conducted by ES&S during the pre-certification process also allowed for assessment of ES&S’ efforts to develop and test the system and to correct any known defects.

1.4.1 Project Schedule

This information is contained in a Wyle-generated Microsoft Project schedule. This schedule is presented in Appendix A “ES&S Project Schedule”. The dates on the schedule are not firm dates but planned estimates presented for informational purposes.

1.0 INTRODUCTION (CONTINUED)

1.4 Testing Responsibilities (continued)

1.4.2 Owner Assignments

This information is contained in a Wyle generated Microsoft Project schedule. This schedule is presented in Appendix A “ES&S Project Schedule”.

1.4.3 Test Case Development

Wyle will utilize the “Wyle Baseline Test Cases” for the Functional Configuration Audit (FCA). These will be augmented with specially designed test cases tailored to the ES&S Unity 3.2.1.0 Rev 1 System. Wyle has designed specific election definition and test cases for the Operational Status Check and the Logic and Accuracy Tests. The “Baseline” functional test cases and the election definitions have been previously submitted to the EAC for review. Wyle has developed test cases specifically designed to test the issues identified in the DS200.

1.4.4 Test Procedure Development and Validation

Wyle will utilize the Wyle Operating Procedures (WoPs) during the duration of this test program. The validated WoPs have been previously submitted to the EAC for review.

1.4.5 Third-Party Tests

Wyle will not utilize any 3rd party testing during performance of the ES&S Unity 3.2.1.0 Rev 1 system test campaign.

1.4.6 EAC and Manufacturer Dependencies

This information is contained in a Wyle-generated Microsoft Project schedule. This schedule is presented in Appendix A “ES&S Project Schedule”.

1.4.7 VVSG

The Unity 3.2.1.0 Rev 1 System test campaign will consist of testing all modifications (including all ECO’s and source code updates) to the applicable EAC 2005 VVSG requirements. Additionally, as previously stated, due to the prevalence of the DS200 component across the ES&S Unity line of products, and the fact that the DS200 was tested in part by three separate VSTLs, the EAC has instructed Wyle to perform full regression testing on the DS200 for all functional requirements set forth in the EAC 2005 VVSG, with the following requirements of Volume I identified by the EAC as being of particular interest: 2.1.1 (b); 2.1.2, 2.1.3 (a); 2.1.4 (e, g, h, I, j); 2.1.5.1 (a) (i), (b) (i, ii, iii, iv, v, vi), 2.1.7.1 (a), (c); 2.3.1.1 (b); 2.3.1.2 (f); 2.3.3.1 (c); 4.1.1; 4.1.4.2 (a) (iii), (b) (all); 4.1.5.2 (all); 4.1.6.1 (all); 4.3.4.2 (a) (b); and 5.4 (all).

1.4.8 Beyond VVSG

No additional test results have been submitted for consideration as part of this test campaign.

1.5 Target of Evaluation Description

The following sections address the design methodology and product description of the Unity 3.2.1.0 Rev 1 System, as taken from the ES&S technical documentation.

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.1 System Overview

The ES&S Unity 3.2.1.0 Rev 1 Election System is a comprehensive suite of vote tabulation equipment and software solutions providing end-to-end election management. The Unity 3.2.1.0 Rev 1 voting system includes the following core system components detailed in Table 1-1.

Table 1-2 Unity 3.2.1.0 Rev 1 System Components

System Hardware	System Software
Model 100 Hardware v. 1.3.0 Firmware v. 5.4.4.5	Audit Manager (AM) v. 7.5.2.0
DS200 Hardware v. 1.2.0 and 1.2.1 Firmware v. 1.4.3.13	Election Data Manager (EDM) v. 7.8.1.0
Model 650 Hardware v. 1.1 and 1.2 Firmware v. 2.2.2.0	ES&S Ballot Image Manager (ESSIM) v. 7.7.1.0
AutoMARK Hardware v. 1.0, 1.2, and 1.3.12 Firmware v. 1.3.2907	Hardware Programming Manager (HPM) v. 5.7.3.0
	Election Reporting Manager (ERM) v. 7.5.7.0
	Log Monitor v. 1.0.0.0
	AIMS v. 1.3
	VAT Previewer v. 1.3

1.5.2 System Hardware

The ES&S Unity 3.2.1.0 Rev 1 System can be set up to support one or more of the following hardware components:

- Model 650 Central Tabulator
- Model 100 Precinct Tabulator
- DS200 Precinct Tabulator
- AutoMARK Voting Assist Terminal

Each of these components is described in the paragraphs that follow.

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.2 System Hardware (continued)

Model 100

The Model 100 is a precinct-based, voter-activated paper ballot tabulator that uses advanced Intelligent Mark Recognition (IMR) visible light scanning technology to detect completed ballot targets. The Model 100 is designed to alert voters to overvoted races, undervoted races, and blank ballots. It accepts ballots inserted in any orientation. Once the ballot is scanned by the Model 100, it is passed to the integrated ballot box.



Photograph 1: M100 (on plastic ballot box)

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.2 System Hardware (continued)

Precinct Ballot Tabulator: DS200

The DS200 is an optical scan paper ballot tabulator designed for use at the polling place level. After the voter marks a paper ballot, their ballot is inserted into the unit and immediately tabulated. The tabulator uses a high-resolution image-scanning device to image the front and rear of the ballot simultaneously. The resulting ballot images are then decoded by a proprietary recognition engine.

The system includes a 12-inch touch screen display providing clear voter feedback and poll worker messaging. Once a ballot is tabulated and the system updates internal vote counters, the ballot is dropped into an integrated ballot box. The DS200 includes an internal thermal printer for the printing of the printing of zero reports, log reports, and polling place totals upon the official closing of the polls.



Photograph 2: DS200 (on plastic ballot box)

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.2 System Hardware (continued)



Photograph 3: DS200 (on metal ballot box)

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.2 System Hardware (continued)

Tabulator: Model 650

The Model 650 is a high-speed, optical scan central ballot counter. During scanning, the Model 650 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 to a Zip disk that officials can use to generate results reports from a PC running Election Reporting Manager. The Model 650 sorts write-in ballots, blank ballots, overvoted ballots and illegal ballots.



Photograph 5: M650

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

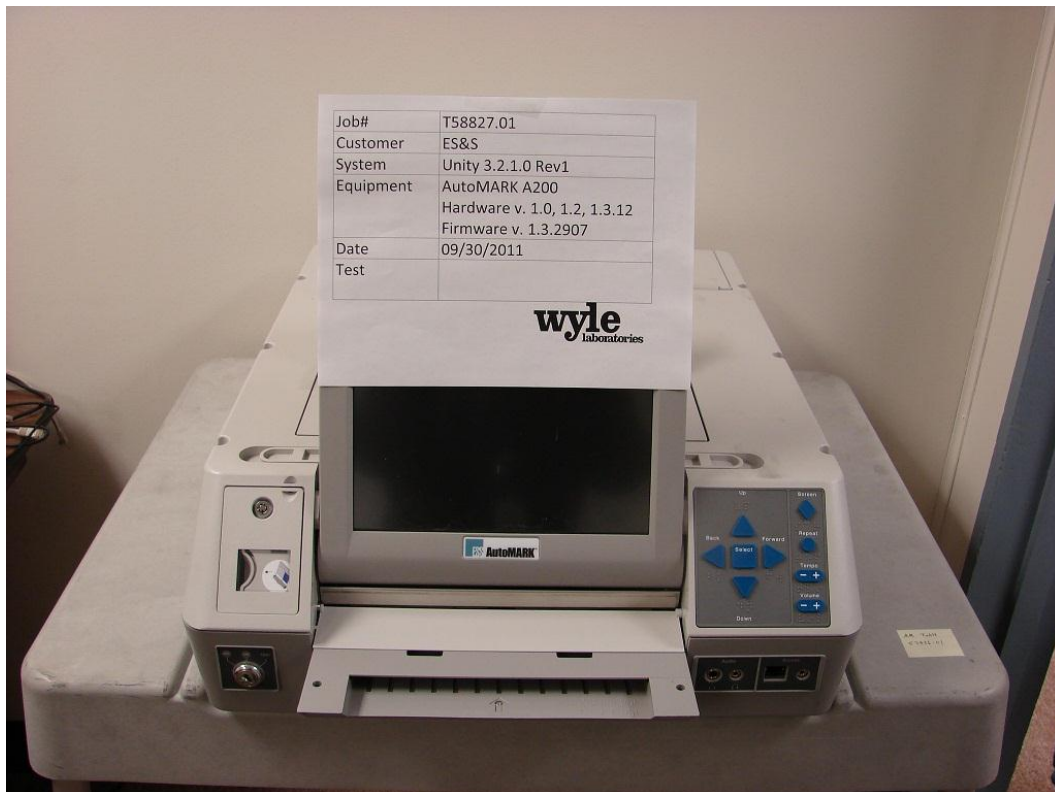
1.5.2 System Hardware (continued)

Electronic Ballot Marking Device: AutoMARK Voter Assist Terminal (VAT)

The electronic ballot marking device component is the ES&S AutoMARK Voter Assist Terminal (VAT). The AutoMARK VAT assists voters with disabilities by marking optical scan ballots.

The AutoMARK VAT includes two user interfaces, to accommodate voters who are visually or physically impaired or voters who are more comfortable reading or hearing instructions and choices in an alternative language. The AutoMARK is equipped with a touch screen, and keypad. The touch screen interface includes various colors and effects to prompt and guide the voter through the ballot marking process. Each key has both Braille and printed text labels designed to indicate function and a related shape to help the voter determine its use.

Regardless whether the voter uses the touch screen or other audio interface, changes can be made throughout the voting process by navigating back to the appropriate screen and selecting the change or altering selections at the mandatory vote summary screen that closes the ballot marking session.



Photograph 6: AutoMARK A200 VAT

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.2 System Hardware (continued)



Photograph 7: AutoMARK A100 VAT

1.5.3 System Software

The Unity 3.2.1.0 Rev 1 Election Management System is an application suite comprised of eight components: AutoMark Information Management System, Audit Manager, Election Data Manager, ES&S Ballot Image Manager, Hardware Programming Manager, Election Reporting Manager, Log Monitor, and VAT Previewer.

AIMS

AIMS is a windows-based election management system software application used to define election parameters for the VAT, including functionality to import election definition files produced by the Unity EMS and create VAT flash memory cards.

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.3 System Software (continued)

Audit Manager (AM)

The Audit Manager (AM) utility provides security and user tracking for Election Data Manager and Ballot Image Manager. Audit Manager runs in the background of the other Unity programs and provides password security and a real-time audit log of all user inputs and system outputs. Election coders use Audit Manager to set Unity system passwords and track user activity.

Election Data Manager (EDM)

Election Data Manager (EDM) is the entry point for the Unity Election Management System. Election Data Manager is a single-entry database that stores precinct, office, and candidate information. Data entered for an initial election is stored to a re-useable database to be recalled and edited for all elections that follow. Election Data Manager is used in conjunction with other Unity software to format and print ballots, program ballot scanning equipment, and produce Election Day reports.

ES&S Ballot Image Manager (ESSIM)

ES&S Ballot Image Manager (ESSIM) uses ballot style information created by Unity Election Data Manager to display the ballots in a WYSIWIG design interface. Users can apply typographic formatting (font, size, attributes, etc.) to individual components of the ballot. Text and graphic frames can also be added to the ballot.

Hardware Programming Manager (HPM)

Hardware Programming Manager (HPM) uses the election specific database created with Election Data Manager and Ballot Image Manager to program the appropriate media for ES&S tabulation devices. Hardware Programming Manager converts the ballot layout data into the format required for each ES&S system. HPM then writes this data to the appropriate required media required; for the DS200 this would be a USB flash drive or a Zip disk for Model 650 tabulators.

Election Reporting Manager (ERM)

Election Reporting Manager (ERM) generates paper and electronic reports for election workers, candidates, and the media. Jurisdictions can use a separate ERM installation to display updated election totals on a monitor as ballot data is tabulated, and send results reports directly to media outlets. ERM support accumulation and combination of ballot results data from all ES&S tabulators. Precinct and accumulated totals reports provide a means to accommodate candidate and media requests for totals and are available upon demand. High-speed printers are configured as part of the system accumulation/reporting stations - PC and related software.

Log Monitor

Log Monitor is a Windows Service that runs in the background of any active ES&S Election Management software application to monitor the proper functioning of the Windows Event Viewer. Log Monitor closes any active ES&S software application if the system detects the improper deactivation of the Windows Event Viewer.

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.5 System Limits

The system limits and the ballot target limits that ES&S has stated to be supported by the Unity 3.2.1.0 Rev 1 System are compiled in the tables below.

Table 1-3 Unity 3.2.1.0 Rev 1 System Limits

Limit Description (Maximum)	Limit Value	Limiting Factor
Precincts allowed in an election	2900(1639 if using paper ballot coded by precinct)	HPM/ERM (ballot sequence code)
Precinct included per poll (reporting limit)	1900	HPM
Candidate/counters per election	21000	ERM
Maximum candidates	9900	HPM
Contest allowed in an election	Depends on election(limited by 21,000 maximum counters)	ERM
Candidates/Counters allowed per precinct	1,000	ERM Import
Ballot styles allowed per election	5500 (1639 if using paper ballot coded by style)	HPM (ballot sequence code)
Contests allowed per ballot style	200 or number of positions on a ballot	HPM
Precincts allowed per ballot style	1500	HPM
Candidates (ballot choices) allowed per contest	175	HPM
Count for any precinct element	500,000 (65,550 from any tabulator media)	ERM report (ERM results Import)
Number of parties allowed	18	HPM
'Vote for' per contest	90	HPM

Table 1-4 Unity 3.2.1.0 Rev 1 Ballot Target Limits

Ballot Size (ovals per inch)	Positions per Column x Row
8 ½ x 14" (4 ovals per inch)	3 Columns x 36 rows = 108/side
8 ½ x 17" (3 ovals per inch)	3 Columns x 41 = 123/side
8 ½ x 19" (3 ovals per inch)	3 Columns x 51 rows = 153/side
8 ½ x 19" (4 ovals per inch)	3 Columns x 68 rows = 204/side

1.5.6 Supported Languages

The following languages have been stated by ES&S to be supported by the Unity 3.2.1.0 Rev 1 System:

English

Spanish

1.0 INTRODUCTION (CONTINUED)

1.5 Target of Evaluation Description (continued)

1.5.7 Supported Functionality

The Unity 3.2.1.0 Rev 1 is designed to support the following voting variations:

- General Election
- Open and Closed Primaries
- Partisan offices
- Non-Partisan offices
- Write-in voting
- Straight Party voting
- Cross-Party endorsement
- Split Precincts
- Ballot Rotation
- Recall Issue with Options
- Provisional or Challenged Ballots
- Vote for N of M
- Audio Ballot

The Unity 3.2.1.0 Rev 1 System does not include functions for Primary Presidential Delegation Nominations, Ranked Order Voting, Cumulative Voting, or Recall Issues; therefore, testing will not be conducted on these functions.

2.0 PRE-CERTIFICATION TESTING AND ISSUES

2.1 Evaluation of Prior VSTL Testing

ES&S began the test campaign for the Unity 3.2.1.0 (a predecessor to the Unity 3.2.1.0 Rev 1 System) at iBeta Quality Assurance. iBeta performed an initial baseline high level TDP review, source code review for ERM and COTS source verification. Wyle was provided a summary report from iBeta (iBeta report number (V) 2010-17SEP-001(A)) detailing what was performed and the discrepancies discovered during testing. Wyle then tested the system as documented in Wyle Test Report No. T58200.01-01, Rev. B.

2.2 Known Field Issues

Two technical advisories have been issued by the EAC concerning known field issue of the DS200, each of which is summarized below:

EAC Technical Advisory ESS2011-02: During local acceptance testing in a jurisdiction, multiple DS200 Ballot Scanners exhibited an anomaly where the touch screen interface would stop responding to touches.

EAC Technical Advisory ESS2011-03: During local acceptance testing, a DS200 Ballot Scanner failed to count a marked ballot position resulting in a lost vote.

3.0 MATERIALS REQUIRED FOR TESTING

The materials required for certification testing of the Unity 3.2.1.0 Rev 1 System include software, hardware, test materials, and deliverable materials to enable the test campaign to occur will be delivered by ES&S to Wyle.

3.1 Software

The tables below list the software the manufacturer must submit for testing. This section defines the two types of software needed for testing:

software used for the testing of hardware, software, and security

supporting software required for the test environment (operating systems, compilers, assemblers, database managers, and any other supporting software)

The Unity 3.2.1.0 Rev 1 System software and firmware submitted for review is identified in the table below. Wyle will only be reviewing and building the source code pertaining to the DS200 and the EMS. All other software components will be harvested from previous test campaigns Unity 3.2.1.0 and Unity 3.2.0.0 Rev 1. All software reviewed and built by Wyle will have a SHA1 hash made of the resulting software files or disc images.

Table 3-1 Unity 3.2.1.0 Rev 1 System Software and Firmware

Software/Firmware	Version	Description
AIMS	1.3.257	A windows-based election management system software application to define election parameters for the VAT, including functionality to import election definition files produced by the Unity EMS and create VAT flash memory cards
Audit Manager (AM)	7.5.2.0	The Audit Manager (AM) utility provides security and user tracking for Election Data Manager and Ballot Image Manager. Audit Manager runs in the background of the other Unity programs and provides password security and a real-time audit log of all user inputs and system outputs.
Log Monitor	1.0.0.0	Log Monitor is a Windows Service that runs in the background of any active ES&S Election Management software application to monitor the proper functioning of the Windows Event Viewer.
Election Data Manager (EDM)	7.8.1.0	Election Data Manager (EDM) is the entry point for the Unity Election Management System. Election Data Manager is a single-entry database that stores precinct, office, and candidate information. Data entered for an initial election is stored to a re-useable database to be recalled and edited for all elections that follow.
ES&S Ballot Image Manager (ESSIM)	7.7.1.0	ES&S Ballot Image Manager (ESSIM) uses ballot style information created by Unity Election Data Manager to display the ballots in a WYSIWIG design interface. Users can apply typographic formatting (font, size, attributes, etc.) to individual components of the ballot.

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-1 Unity 3.2.1.0 Rev 1 System Software and Firmware (continued)

Software/Firmware	Version	Description
Hardware Programming Manager (HPM)	5.7.3.0	Hardware Programming Manager (HPM) uses the election specific database created with Election Data Manager and Ballot Image Manager to program the appropriate media for ES&S tabulation devices.
Election Reporting Manager (ERM)	7.5.7.0	Election Reporting Manager (ERM) generates paper and electronic reports for election workers, candidates, and the media. Jurisdictions can use a separate ERM installation to display updated election totals on a monitor as ballot data is tabulated, and send results reports directly to media outlets.

The Unity 3.2.1.0 Rev 1 System includes the following COTS software which has been delivered by ES&S:

Table 3-2 Unity 3.2.1.0 Rev 1 System Third Party Software Descriptions

Software Product	Software Version	Filename	Hash Value
Microsoft Windows XP, SP3	5.1	Original Disk	N/A
Microsoft Windows XP Updates	N/A	N/A	N/A
Micro Focus RM/COBOL Runtime	11.01	Original Disc	N/A
Microsoft Server 2003	R2	Original Disc	N/A
Microsoft Server 2003 Updates	N/A	N/A	N/A
Adobe Acrobat Standard	9.0	N/A	N/A
AVG Business Edition	9.0	N/A	N/A
Microsoft Excel 2003	Office 2003	Original Disc	N/A

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions

Software Product	Software Version	Filename	SHA1 Hash Value (Original CD's will be marked N/A as no hash value is required.)
EMS Build Environment			
Apache Software Foundation Xerces-C++	2.7.0	xerces-c_2_7_0-windows_2000-msvc_60.zip	1887a204bfd208971daf993881e331a99ca89f8f
Avocet ADX-Z180	5.2	Original CD	N/A
Business Objects Crystal Reports	9 Developer	Original CD	N/A
Business Objects Crystal Reports	9 Developer Hot Fix (05/14/2003)	cr90dbexwin_en.zip	6086c0de9072136b263047f40862d22c1b46702b
Business Objects Crystal Reports	9 Developer Hot Fix (05/14/2003)	cr90mainwin_en.zip	3086da615d8178bed4af5c8a7d2500b8b96b50cc

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
EMS Build Environment (continued)			
CodeSynthesis XSD (Includes Apache Software Foundation Xerces C++ 2.8.0)	3.1.0	xsd-3.1.msi	aa5f2fb2c815e8e1aa94314c08697751d056690b
CSM PC-Card SDK	2.20	Original CD	N/A
InstallShield Software InstallShield	Professional 7.01	Original CD	N/A
MacroVision InstallShield	2008 Premier Edition	Original CD (two disk set)	N/A
MacroVision InstallShield Standalone Build Script Objects	2008 Premier Edition	installshieldinstallscript objects.exe	N/A
MicroFocus (Liant) RM/COBOL Development System	11.01	setup.exe	b8b2a175511130633d6f10bcb2545f732944caf8
MicroFocus (Liant) WOW Designer	11.01	setup.exe	23a6d81415db51683360dd55e8c11eb091610c4f
Microsoft Visual Studio	6.0 Enterprise Edition	Original CD (three disk set)	N/A
Microsoft Visual Studio	6.0 Service Pack 6	Vs6sp6.exe	2292437a8967349261c810ae8b456592eeb76620
Microsoft Visual Studio	2005 Professional Edition	Original CD (two disk set)	N/A
Microsoft Visual Studio	2005 Service Pack 1	VS80sp1-KB926601-X86-ENU.exe	d4b5c73253a7a4f5b4b389f41b94fea4a7247b57
Microsoft Windows	XP Professional with Service Pack 3	Original CD	N/A
RoboHelp Office	9	Original CD	N/A
RSA BSAFE Crypto-C	Micro Edition (ME) 3	r_unpack.exe	5c48f05c4cf65784f5b129e15a0538361193f015
RSA BSAFE Crypto-C	Micro Edition (ME) 3	cryptocme-3_0_0_1-win32vc8.pkg	30fb23005a0e315a5eecee37cfbf64b3e3f62b20
Sequiter Codebase	6.5 Release 3	cb_setup.exe	797ad01a3297fb36cbf0bd7313d904f1d32714b0
SourceForge Boost C++ Libraries	1.34.1	boost_1_34_1.zip	90a10d2e3591fcaa2b8cd10121980133af3eb2ff
SourceForge Boost C++ Libraries	1.34.1	libboost_filesystem-vc80-mt-s-1_34_1.zip	5bdd6acc0e9aa1894c52cc3a71c0f6f2387f28d0

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
EMS Build Environment (continued)			
Young Dynamic Software vbAdvance	3.1	vbAdvance3_1.exe	25d7f60e7f02fb461856b80e45f2cc37c191debb
InfoZip	2.32	unzip.exe	e1652b058195db3f5f754b7ab430652ae04a50b8
	5.52	zip.exe	55c5a72010291fca2275ccfb5b497dd0bac11a60
MarshallSoft	0.0.0.0 Linker Rev. 3	WSC32.DLL	ac0d9b7d7ac30e98af162735bc9e7b1b24c48d23
Microsoft	2.40.4275.1	asycfilt.dll	72fb4f088c6ac02097b55fb267c76fbf5e0fa1f7
	4.71.1460.1	COMCAT.DLL	2a409311853ad4608418e790621f04155e55000
	6.7.0.8988	COMCT32.OCX	398f64c00b026d1c6d94a6efd180f20c010f5ee9
	6.0.84.18	COMDLG32.OCX	34e4213d8bf0e150d3f50ae0bd3f5b328e1105f5
	6.0.8447.0	MFC42D.DLL	4fd93acca2de6c40f40e54ada9e6e17a18688dc9
	6.0.88.4	MSCOMCT2.OCX	c0c55de97f41a24bf50b2d08eb428371bb4a3cce
	6.0.88.62	MSCOMCTL.OCX	d904d2fa7639c38ffb6e69f1ef779ca1001b8c18
Microsoft	6.4.9.1128	msdxm.ocx	5ec3d82bbf004b82e0232e56fc7105ea26df59b2
	6.1.43.19	MSVBVM50.DLL	75d05db7085de3222951eaa5fee2b74feaf88e17
	6.0.89.64	MSVBVM60.DLL	ce82d1ccf593088d09694ef90e44c4ea2761be92
	6.0.8168.0	MSVCP60.DLL	8770ec0910b7cc9a0461a40dfb495ee7f5b4267b
	6.0.8168.0	MSVCP60D.DLL	6de04508e27dd7022a4d4826b0f15d702fdd9f8a
	6.0.8797.0	msvcrt.dll	63a4fcd64ecea975c1b91de04702c68a9f2a3c7d
	5.0.0.7022	MSVCRTD.DLL	d24d0335eae1cfa63c8a68718b54ce223baee9d3
	2.40.4275.1	oleaut32.dll	6b58e20b2538cb308091da838710f6aad933a301
	5.0.4275.1	olepro32.dll	8adff69050d14a57d7f553ca8978439af188c192
	6.4.2600.1221	quartz.dll	607329d446b344209ade8b501ba37893b95f3e2a
	6.0.88.4	RICHTX32.OCX	90fec763edfb0b0924700be6b914292c591a152c
	2.40.4275.1	stdole2.tlb	36f701ccec78a5d218fea23fd05351890f14cf7d
	6.0.81.69	SYSINFO.OCX	fc5cd0599a43faebf9e7e9179defb79999215286
6.0.90.43	TABCTL32.OCX	e8648d6d69fd5cf900c4bf98b210f6921bed3ef5	
RoboHelp 2000	8.0.131.0	ROBOEX32.DLL	964d83c7f4dedc10241408de04e7d44cb599ef3d
RoboHelp X5	13.10.606.0	wh2robo.dll	4ff22cf837373459232906078dc1d4d1464598db
Shamir Optical	1.0.0.0	OpenSaveFile.ocx	47f736752a9894553ec11134bffcd5a4455e29ef
AutoMARK Build Environment			
AutoIt Consulting AutoIt	3.2.10.0	autoit-v3-setup.exe	bb913c21b1eeb8a580ea226d0a524f339d752596
Applied Data Systems Xscale	4.2	ADS_XSCALE_4_2_S DK.msi	991746a6251c28fe8b28b439c00565f23603f35e
Atmel Flip for Windows	2.4.6	flip_2_4_6.zip	02877cdbd07c74c92b12c7ad14ca22411abc5045
Atmel Microcontroller ISP Software	1.0	Original CD	N/A
Cosmic Software 68HC08 C Compiler	4.1h	Original CD	N/A

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
AutoMARK Build Environment (continued)			
InfoZip Zip Utilities	Unknown	zip_utils_src.zip	17d8fc37a477de0c5e3217a2b82245bd3de2fae1
Future Technology Devices Intl. Ltd. D2XX WinCE Driver	Unknown	ARM4D2XXDriver.zip	be6d74e8a9a038af3fadbbdd30153609621267a9
Keil µVision2 Note: CD is mislabeled µVision3	Release 04.2004	Original CD	N/A
Keil µVision2	Add-On Disk	Original 3.5" High-Density Floppy Diskette Note: Must transfer to a CD	N/A
MacroVision InstallShield Professional	10.5	Original CD	N/A
Microsoft Office	XP Professional 2002	Original CD	N/A
Microsoft SQL Server	2000 Enterprise Edition	Original CD	N/A
Microsoft Visual Studio	.Net 2003	Original CD	N/A
Microsoft Windows	XP Professional with Service Pack 2	Original CD	N/A
Microsoft Windows CE Platform Builder	5.0	Original CD	N/A
Microsoft Windows CE Platform Builder	Cumulative 2004 Update	WinCEPB50-041231-Product-Update-Rollup-Armv4I.msi	2a33a1540e25118e9360e7298af7c96da206006f
Microsoft Windows CE Platform Builder	Cumulative 2005 Update	WinCEPB50-051231-Product-Update-Rollup-Armv4I.msi	331f874c41fd2abe79ddc97ac9a47b91d203bdf9
Microsoft Windows CE Platform Builder	January 2006 Update	WinCEPB50-060131-2006M01-Armv4I.msi	884241dd89bd1fda9683fb6d6ba14f1c82cf9b2c
Microsoft Windows CE Platform Builder	February 2006 Update	WinCEPB50-060228-2006M02-Armv4I.msi	4695c80aff3707a1926ec54d0756af3a426d8e0f
Microsoft Windows CE Platform Builder	March 2006 Update	WinCEPB50-060331-2006M03-Armv4I.msi	39dc323b9736441893322fc1b159bc94dd2ec3b5
Microsoft Windows CE Platform Builder	April 2006 Update	WinCEPB50-060430-2006M04-Armv4I.msi	823c496b554f9d3d29cd491f80ffda9729176b89
Microsoft Windows CE Platform Builder	May 2006 Update	WinCEPB50-060531-2006M05-Armv4I.msi	29df27801c8bd2a3a68567cfa65e1ff54de8ae63
Microsoft Windows CE Platform Builder	June 2006 Update	WinCEPB50-060630-2006M06-Armv4I.msi	7421d73ec31cd1e9250e6c591e14f00a98988f59

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
AutoMARK Build Environment (continued)			
Microsoft Windows CE Platform Builder	July 2006 Update	WinCEPB50-060731-2006M07-Armv4I.msi	f8ab5055a648ea23a64e3e89ef01e88ec9836b5c
Microsoft Windows CE Platform Builder	August 2006 Update	WinCEPB50-060831-2006M08-Armv4I.msi	43b5d5a6f1be643e9dd4af970dc1785188bbe622
Microsoft Embedded Visual C++	4.0	Original CD	N/A
Microsoft Embedded Visual C++	4.0 Service Pack 4	evc4sp4.exe	77d2cf961acc96fd78fdaa910f989a41010edd45
P&E Microcomputer Systems PKG08SZ 68HC08 Development Package	2006	Original CD	N/A
SpeechWorks International, Inc. ETI-Eloquence TTS Engine	6.1.0.0	chsrom.dll	f3ae8a1f7d0369d387b8f2ee0a47a76efee2bc2f
		eci.dll	7aa1085174b7bce6016c8074297bc6cb40b823df
		jpnrom.dll	7557c00e8ace29affdabebddb73f466d0877a866
		korrom.dll	76219d7f9f76f021b4815fa796f80e3ca49e3446
		chs.syn	ff7c1873b84256c25da601d70ad280333e5ce167
		enu.syn	3e69875d11e0a53c39c211c484cb6520f8d87f25
		esm.syn	d8037d86e5f677e89eca7834ae47fd030a043aa
		jpn.syn	99a931e76e6008da9f01b91b4d91c116ece8f7d7
kor.syn	f32f8ae286ed278320dbb829df338b97a2c846b5		
Texas Instruments Code Composer Studio	v2 TMS320C5000 DSP Platform	Original CD	N/A
DS200 Ancillary Devices			
Keil μ Vision3	3.51	Original CD	N/A
Cypress EZ-USB Dev Kit	2.31	Original CD	N/A
IAR MPS430 Embedded Workbench	3.40A	Original CD	N/A
Microsoft Windows	XP Professional with Service Pack 3	Original CD	N/A
DS200 Precinct Digital Scanner			
Linux From Scratch	6.2.5	lfslivecd-x86-6.2-5.iso	b3e3947bf2c3616fa45541c0643a2adfa0618207
KernelBuild			
boot splash	3.1.6-2.6.15	boot splash-3.1.6-2.6.15.diff	a16583e58e6a020817cacabf28e6239975f73c24
linux-utf8_input-1	2.6.16.27	linux-2.6.16.27-utf8_input-1.patch	1245a73e16a0d6d1b1adfa167bbe2c02ca92dd5

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
linux kernel	2.6.16.27	linux-2.6.16.27.tar.bz2	ef8635746668d49ba76e799ca681c1b46837e176
udev	096	udev-096.tar.bz2	8d15b89fd93ba84e2d33ff6061e140aed0a4dce
BoothbyGraphics			
apache-ant	1.7.0	apache-ant-1.7.0-bin.zip	81aeb13c75edeee51dd5bb1c62001fac47b127a5
atk	1.11.4	atk-1.11.4.tar.bz2	808df9fb6f8c19b21c1169665dcd74629ae26c50
bdftopcf	1.0.2	bdftopcf-1.0.2.tar.bz2	245778068b5e5ccde07151635ded50da90333524
bigreqsproto	1.1.0	bigreqsproto-1.1.0.tar.bz2	32ae0505ec963cc5c0e3ee9258b126e6865d1b1b
bootsplash	3.2	bootsplash-3.2.tar.bz2	096721c11058f64ea6e79f11af8ea71e16ce1843
bootsplash_makefile	3.2	bootsplash-3.2_makefile.patch	570db9875c653eed9cafeeb05a884889e612f2bc
cairo	1.8.10	cairo-1.8.10.tar.gz	fd5e8ca82ff0e8542ea4c51612cad387f2a49df3
compositeproto	0.4.1	compositeproto-0.4.1.tar.bz2	fb1ae34418855c313a75e8e697b414a4935e13d6
damageproto	1.2.0	damageproto-1.2.0.tar.bz2	ffe177a6ae2cf023d41e015aa6ece2b191cb8a8a
dmxproto	2.3	dmxproto-2.3.tar.bz2	a3636d1b54d7bbf273f28c0d3c44101777047865
dri2proto	2.2	dri2proto-2.2.tar.bz2	21e9c0c7e0be5fe971f51589d0573b0273202b7f
encodings	1.0.3	encodings-1.0.3.tar.bz2	615b8367ee20fc50688e4876aa250419927d64cc
fixesproto	4.1.1	fixesproto-4.1.1.tar.bz2	fb47920c629e08a56442a51968a02a22733085e5
font-adobe-100dpi	1.0.1	font-adobe-100dpi-1.0.1.tar.bz2	814baccf5cf6c6545b7e8f3bbbad377be369042d
font-adobe-75dpi	1.0.1	font-adobe-75dpi-1.0.1.tar.bz2	3cbcd8a4a3a6bbe6ccd3d6e07a238f8c9ab7a26c
font-adobe-utopia-100dpi	1.0.2	font-adobe-utopia-100dpi-1.0.2.tar.bz2	e692c3d3933c47c69656be0fd0f06218c2db138d
font-adobe-utopia-75dpi	1.0.2	font-adobe-utopia-75dpi-1.0.2.tar.bz2	2db08c2e0186831e4d68f7a2ffb2f9fe598a7280
font-adobe-utopia-type1	1.0.2	font-adobe-utopia-type1-1.0.2.tar.bz2	565cb66523f59f02da02aa9e74604634a2113643
font-alias	1.0.2	font-alias-1.0.2.tar.bz2	9a0e97d974349e3a943b0ab77015f115f15d34c3
font-arabic-misc	1.0.1	font-arabic-misc-1.0.1.tar.bz2	d11a7bdce7500c3ccc2fe59505f2bc89e4c7aa2a
font-bh-100dpi	1.0.1	font-bh-100dpi-1.0.1.tar.bz2	4f3edda5dd35145cbd1ce8759e0a999b3a04f9c0
font-bh-75dpi	1.0.1	font-bh-75dpi-1.0.1.tar.bz2	7b891d5bfd966c405c19574bca8f87b8803146d1
font-bh-lucidatypewriter-100dpi	1.0.1	font-bh-lucidatypewriter-100dpi-1.0.1.tar.bz2	a1c9d28a619358092f7196473ff3e0f0dc5304d0
font-bh-lucidatypewriter-75dpi	1.0.1	font-bh-lucidatypewriter-75dpi-1.0.1.tar.bz2	26efd25d2802c8406a96ccc3240b2c14e511d49f
font-bh-ttf	1.0.1	font-bh-ttf-1.0.1.tar.bz2	0e9ffbc738072ca832cdf5f82bff071c67b71825

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
font-bh-type1	1.0.1	font-bh-type1-1.0.1.tar.bz2	b960d8523b02d4401dc6e1257f68dc120761ee4b
font-bitstream-100dpi	1.0.1	font-bitstream-100dpi-1.0.1.tar.bz2	ba163df365a591de5eb9e45fa302059d572dd171
font-bitstream-75dpi	1.0.1	font-bitstream-75dpi-1.0.1.tar.bz2	43344b8ff3b2c2fda8d4cdbcc12c0688b2e04789
font-bitstream-type1	1.0.1	font-bitstream-type1-1.0.1.tar.bz2	53800b904fc3ead6b577a34fb7c1f96c1af4423f
font-cronyx-cyrillic	1.0.1	font-cronyx-cyrillic-1.0.1.tar.bz2	dfff5974629dab97677a70fa20e21c2cf48071a0
font-cursor-misc	1.0.1	font-cursor-misc-1.0.1.tar.bz2	5087a94e74f8157cb6989f71fb3b4815b236065a
font-daewoo-misc	1.0.1	font-daewoo-misc-1.0.1.tar.bz2	d169cec4e92fe1e99f3ff6766d4c6edcbb808860
font-dec-misc	1.0.1	font-dec-misc-1.0.1.tar.bz2	2489d19650f2a787b476dab2fa2412d20b95f38e
font-ibm-type1	1.0.1	font-ibm-type1-1.0.1.tar.bz2	9bcf72bcabfcbe218ad3a96ba2a45e92ef9efbc3
font-isas-misc	1.0.1	font-isas-misc-1.0.1.tar.bz2	13fe07a669dd93dfdb08717a03efe47936ab9cea
font-jis-misc	1.0.1	font-jis-misc-1.0.1.tar.bz2	adb3275d19e71e9553aa8a5fdc3b2c647277d8d4
font-micro-misc	1.0.1	font-micro-misc-1.0.1.tar.bz2	74a8be2b0b6ace97d8841356e88570f5fa3faad6
font-misc-cyrillic	1.0.1	font-misc-cyrillic-1.0.1.tar.bz2	c178f8a8b6897a8382a0f4315a5b577760ba703c
font-misc-ethiopic	1.0.1	font-misc-ethiopic-1.0.1.tar.bz2	2677191fd8b515c53bde6402513249fc0f48d53a
font-misc-meltho	1.0.1	font-misc-meltho-1.0.1.tar.bz2	d20d9f8ffdeb88b62842b021d5d3d2a8cc31ea2c
font-misc-misc	1.0.1	font-misc-misc-1.1.0.tar.bz2	83c44111b5727c26e52eb915b66dc6c9eba4c458
font-mutt-misc	1.0.1	font-mutt-misc-1.0.1.tar.bz2	b677831b477027f56ad3f35c95ef3cd6711f87ac
font-schumacher-misc	1.1.0	font-schumacher-misc-1.1.0.tar.bz2	ea7e009e222379fa31a16bdbd4ca5b1e9d412944
font-screen-cyrillic	1.0.2	font-screen-cyrillic-1.0.2.tar.bz2	4795ea77e14246122d21bc0fa68a3c0d5261e39d
font-sony-misc	1.0.1	font-sony-misc-1.0.1.tar.bz2	e9717546682382ebf3e6e7039766fe52bdb8846c
font-sun-misc	1.0.1	font-sun-misc-1.0.1.tar.bz2	fc91999e66fe479d07ea74e5dd2d950ff02ccb80
font-util	1.1.1	font-util-1.1.1.tar.bz2	6ee3af5466de84d61411e173e578a256aeb1074d
font-winitzki-cyrillic	1.0.1	font-winitzki-cyrillic-1.0.1.tar.bz2	d19f476710783d784dfdbcb6a1f34ef7746d3439
font-xfree86-type1	1.0.2	font-xfree86-type1-1.0.2.tar.bz2	09a4c9b8455f3f4954bfe9dd991d7fd1d0f5595a
fontconfig	2.8.0	fontconfig-2.8.0.tar.gz	570fb55eb14f2c92a7b470b941e9d35dbfafa716
fontproto	2.1.0	fontproto-2.1.0.tar.bz2	395b300fd5120a7ff90cb8fea4e2356b9632dc3e
freetype	2.3.12	freetype-2.3.12.tar.bz2	ebf0438429c0bedd310059326d91646c3c91016b

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
giflib	4.1.4	giflib-4.1.4.tar.bz2	2f9aed5d20d862270008bd2f8d4c91cf14c6067b
glib	2.10.3	glib-2.10.3.tar.bz2	bba1dea73c4426f6a130c82e0b7a07b78dfc73ce
glibmm	2.12.10	glibmm-2.12.10.tar.bz2	361466df6302ec5626a87e75786da4c7c39ffe14
glproto	1.4.11	glproto-1.4.11.tar.bz2	7c2a723d488dc0e09e7e0e28bde838502d774b16
gtk+	2.8.20	gtk+2.8.20.tar.bz2	8ea2449ff139b8bc457f8b5bcdcad93b02cfba9e
gtkmm	2.8.12	gtkmm-2.8.12.tar.bz2	38d11d72ac242178703b81f6d2ed6ddec78867b9
iceauth	1.0.3	iceauth-1.0.3.tar.bz2	b75b87fed108bc4fe14ef06f76025016fa54299a
inputproto	2.0	inputproto-2.0.tar.bz2	3ed9879b7dd3c14ae2283959f5962162fc01c219
intltool	0.40.6	intltool-0.40.6.tar.bz2	4f6469e09e2c06a8072dffff36f84ff401d7ea75
jdk-linux-i586	6u3	jdk-6u3-linux-i586.bin	9bc1aaaaabd35052d50c55e6462df70b4d0694ab
jpegsrvc	v6b	jpegsrvc.v6b.tar.gz	7079f0d6c42fad0cfba382cf6ad322add1ace8f9
jre-linux-i586	6u3	jre-6u3-linux-i586.bin	6d729efc48b2539ffcc216a7fadf8fb1d9294410
kbproto	1.0.4	kbproto-1.0.4.tar.bz2	d300745389d3a80d90c9a3c989651f228db486e5
lcms-gcc343-1	1.14	lcms-1.14-gcc343-1.patch	0520773f547c5bc923046d2f5dfff899b97f88fb
lcms	lcms	lcms-1.14.tar.gz	7f98d09bc2acc46d7641034b88449142f78bf8ff
libdmx	libdmx	libdmx-1.1.0.tar.bz2	8719434f167d476d53fca57c5be516c153354d60
libdrm	2.4.14	libdrm-2.4.14.tar.bz2	a18cc2cdfd02b8ba1c91c3e9ac609521ad3e2fe9
libfontenc	1.0.5	libfontenc-1.0.5.tar.bz2	e71370c349e93ba70f91ad1148ca9e5cabfcca4f
libFS	1.0.2	libFS-1.0.2.tar.bz2	41cf53fae37210acaa034199f01f36af3f3ec548
libICE	1.0.6	libICE-1.0.6.tar.bz2	ac1f702ea580bd496610266b13434858b62df9e1
libmng	1.0.9	libmng-1.0.9.tar.gz	d32e939ec95caff7839c6c9a5896e4d575c77d35
libpciaccess	0.11.0	libpciaccess-0.11.0.tar.bz2	bcebba8b8441af151b59b63e8e91e66133b64158
libpng	1.2.42	libpng-1.2.42.tar.bz2	e41cea7a6f5e3065f4289de3742db87ded05b99d
libpthread-stubs	0.1	libpthread-stubs-0.1.tar.bz2	34ef40880d0112dc6d32b386d59ce94f2c139eef
libsigc	2.0.18	libsigc2.0.18.tar.bz2	75df46c977a3418bda4d5ae7e21c9ede28993835
libSM	1.1.1	libSM-1.1.1.tar.bz2	dc535af7328dee9a6121b85c3f8041656681a195
libX11	1.3.3	libX11-1.3.3.tar.bz2	2a19724ccf78b5bb5a8eba9159d2b95e640e7b11
libXau	1.0.5	libXau-1.0.5.tar.bz2	b1c68843edf7e80ce952f7ee0541448f41bac202
libXaw	1.0.7	libXaw-1.0.7.tar.bz2	0e5effe33c4c44d960132e3dd50370134a28f8b2
libXcomposite	0.4.1	libXcomposite-0.4.1.tar.bz2	959180b067c64f3f7ac06e85400bd265e5579031
libXcursor	1.1.10	libXcursor1.1.10.tar.bz2	096d0e538d37fd865705e5f45b0e96c7294c1f2f
libXdamage	1.1.2	libXdamage-1.1.2.tar.bz2	dc1fbc938e9bbc859c70cf2087440fc15b00bb1e
libXdmcp	1.0.3	libXdmcp-1.0.3.tar.bz2	7efd71d29d6cfba797b8791398e4d81ade677d77

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
libXext	1.1.1	libXext-1.1.1.tar.bz2	c2eb8d8d760c6881e51c938812764d1d6cefd51c
libXfixes	4.0.4	libXfixes-4.0.4.tar.bz2	3f2d1c473855ba0cf13137a80d585df7fe37111c
libXfont	1.4.1	libXfont-1.4.1.tar.bz2	f8dc669760975b41885143f828b54164224c8a31
libXft	2.1.14	libXft-2.1.14.tar.bz2	e08ae6b1f56e160179b9f141b4ab799333ec725e
libXi	1.3	libXi-1.3.tar.bz2	7685f2881ce40b13028d9409eedbb9cf1ed0d8ef
libXinerama	1.1	libXinerama-1.1.tar.bz2	5f445194ef3318f66c287c0c69f778988a3f9266
libxkbfile	1.0.6	libxkbfile-1.0.6.tar.bz2	6364e0679eb893d6fbb6adcf0e8230cfdefe0b68
libXmu	1.0.5	libXmu-1.0.5.tar.bz2	e7ff5960f2374852b941f909cdbdeafe7d29322f
libXpm	3.5.8	libXpm-3.5.8.tar.bz2	3bfc833ed4527f74b1c66c386da62271d0313413
libXrandr	1.3.0	libXrandr-1.3.0.tar.bz2	33dd2f67060465f872db9ea03f597e28517f0c8e
libXrender	0.9.5	libXrender-0.9.5.tar.bz2	278f762feb8e754aa5214175abf580ff486281f7
libXres	1.0.4	libXres-1.0.4.tar.bz2	d5ee9560a61666e6bb3d2285b9634fccd7211d65
libXScrnSaver	1.2.0	libXScrnSaver-1.2.0.tar.bz2	ea2935eb67efa77fd90372337f2d782a8ef74cea
libXt	1.0.7	libXt-1.0.7.tar.bz2	3c285b9c04a393dec1cc3d60cf5582d798eb3272
libXtst	1.1.0	libXtst-1.1.0.tar.bz2	4363e9285bfb5a884073efacc50d39deb803a1a5
libXv	1.0.5	libXv-1.0.5.tar.bz2	3936dd661e75d173b9fd1da9d97e5720e9657254
libXvMC	1.0.5	libXvMC-1.0.5.tar.bz2	153b85884f22b882cecb9fc462fe24c669a80dbd
libXxf86dga	1.1.1	libXxf86dga-1.1.1.tar.bz2	a93004cfbe4fd6bc37c6645705d5a6d90c0940b7
libXxf86vm	1.1.0	libXxf86vm-1.1.0.tar.bz2	f5ce7854f201d9c69dfcdd13123b51f497b69a47
makedepend	1.0.2	makedepend-1.0.2.tar.bz2	57e092856580d9984e47c4b1433b69391de07df3
mkfontdir	1.0.5	mkfontdir-1.0.5.tar.bz2	971728b0f453ea5df028aa5d54fe3fbbdb8e99a7d
mkfontscale	1.0.7	mkfontscale-1.0.7.tar.bz2	0a0c25da68c87380e2c013c808a6e0cc0983fae9
pango	1.12.3	pango-1.12.3.tar.bz2	ad493c4560c0ffd9dcdb8a1724d5bff058ef112c
pixman	0.15.20	pixman-0.15.20.tar.gz	a5f973b6895e269731964fbc328f61a8cbfdc931
randrproto	1.3.1	randrproto-1.3.1.tar.bz2	36731bae6e815453af4b055c26ad8e9e2653ca05
recordproto	1.14	recordproto-1.14.tar.bz2	21292857289ed150366c6026e2694b193ff9f79
renderproto	0.11	renderproto-0.11.tar.bz2	d30cf508b1a1b5f0deb1c6db41ba2f4e57680637
resourceproto	1.1.0	resourceproto-1.1.0.tar.bz2	36b86840005c15e393c86d7075688d430ab2a11d
scrnsaverproto	1.2.0	scrnsaverproto-1.2.0.tar.bz2	c734cfe9a1ce57fd42957389dcc90518fd7ca6b6
sessreg	1.0.5	sessreg-1.0.5.tar.bz2	d1dac6a398b23ed44bb67286ec083e9071bd00e7
setxkbmap	1.1.0	setxkbmap-1.1.0.tar.bz2	f02f93a08ac060d760566693c748e0fba3db8a06

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
smproxy	1.0.3	smproxy-1.0.3.tar.bz2	1ba44a4a58b05d6a6f7c4b1f67b793dce2ccf2ba
tiff	3.8.2	tiff-3.8.2.tar.gz	549e67b6a15b42bfc72fe17cda7c9a198a393eb
twm	1.0.4	twm-1.0.4.tar.bz2	7456e90f19e4747e1785f596b93f692d68a9f079
util-macros	1.5.0	util-macros-1.5.0.tar.bz2	ac61387be2a0b97f839041832bd8d06e03cfc942
videoproto	2.3.0	videoproto-2.3.0.tar.bz2	4aef2b438d45b3ab75e640996ce1267d3468f48c
x11perf	1.5.1	x11perf-1.5.1.tar.bz2	d1f85da3df5b216b64c1735d109380214787222d
xauth	1.0.4	xauth-1.0.4.tar.bz2	90d32f28bb61ca6d831dcc35429a5ad53be73283
xbacklight	1.1.1	xbacklight-1.1.1.tar.bz2	3541ab5e0956b4f0c97b1200dc32a35d2ccb0f0f
xbitmaps	1.1.0	xbitmaps-1.1.0.tar.bz2	845b825f7e6d193d47db8b67ae8332d87ef8c2b3
xclock	1.0.4	xclock-1.0.4.tar.bz2	1987cafb3163c6b68bc7ecfbc143c8cd373d64bb
xcmiscproto	1.2.0	xcmiscproto-1.2.0.tar.bz2	1a55e042b33c0e0aaf2299942315a5208d644707
xcmsdb	1.0.2	xcmsdb-1.0.2.tar.bz2	8341f7219a5720da758b0571eb1f4d9072265485
xcursor-themes	1.0.2	xcursor-themes-1.0.2.tar.bz2	12b865c17c65e70a6bc20300dfa660fe8faaa0a4
xcursorgen	1.0.3	xcursorgen-1.0.3.tar.bz2	7df26b371476654dc191c45e7d20ae3a5e0cad87
xdpiinfo	1.1.0	xdpiinfo-1.1.0.tar.bz2	01971f007048a46a4a31a69c661bc3a378de60f0
xdriinfo	1.0.3	xdriinfo-1.0.3.tar.bz2	d211d6f12f4c801d2f4cf184c6daae37aa5858ff
xev	1.0.4	xev-1.0.4.tar.bz2	4f62e131ba96842eef1660e8869533cd3923ac35
xextproto	7.1.1	xextproto-7.1.1.tar.bz2	1bb4bd12d65a17b3168dc9b4e028b33a2f7b2cad
xf86-input-keyboard	1.4.0	xf86-input-keyboard-1.4.0.tar.bz2	5061fdaff8b7ddcbcca82f065c4abffbf255a1da
xf86-input-mouse	1.5.0	xf86-input-mouse-1.5.0.tar.bz2	b9213bf745b793a3da2c946ea4d8ee5768e560f4
xf86-video-vesa	2.3.0	xf86-video-vesa-2.3.0.tar.bz2	4689b7c295d7a8d7326302dafecb812739617134
xf86bigfontproto	1.2.0	xf86bigfontproto-1.2.0.tar.bz2	312a2ea708b257520c1af4393b69d73a393a478f
xf86dgaproto	2.1	xf86dgaproto-2.1.tar.bz2	97a06120e7195c968875e8ba42e82c90ab54948b
xf86driproto	2.1.0	xf86driproto-2.1.0.tar.bz2	0dfc6616ffc68ca3c3b5decbe1e365aaa93be8548
xf86vidmodeproto	2.3	xf86vidmodeproto-2.3.tar.bz2	22d034c2f66985f8541b9ea3421096ceaa006355
xgamma	1.0.3	xgamma-1.0.3.tar.bz2	f9c7d93f4b271bab41ee3c91b371d52572e4e08c
xhost	1.0.3	xhost-1.0.3.tar.bz2	ebcdccdc908e642e527eebbde6ba8084d90c04f6
xineramaproto	1.2	xineramaproto-1.2.tar.bz2	3c397c9ea38aaae785dd7901f250891dfa7f3249
xinit	1.2.0	xinit-1.2.0.tar.bz2	85a838c2010f27ef6d09d6ec4b1208a66cc8d697
xinput	1.5.0	xinput-1.5.0.tar.bz2	02d1ccc83007aa7848b1b024ac64c310303f973e
xkbcomp	1.1.1	xkbcomp-1.1.1.tar.bz2	aeb733c495d7afd42136bf8ae5c6e792c63f0b4b

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
xkbevd	1.1.0	xkbevd-1.1.0.tar.bz2	b510b4a1b7486beacb5570c204f7fdd4b61f0ab4
xkbutils	1.0.2	xkbutils-1.0.2.tar.bz2	2c025038ca12ee2494b2401ea2c12c74fe88bf91
xkeyboard-config	1.7	xkeyboard-config-1.7.tar.bz2	d6df43bfc0596be04865f2be7c4e794e198358c8
xkill	1.0.2	xkill-1.0.2.tar.bz2	90f08652859daf71b682c3b9163ebf72ce88c4bc
xlsatoms	1.0.2	xlsatoms-1.0.2.tar.bz2	3855734b5ec0d43b5886ac0ffa58d7cf96f46926
xlsclients	1.0.2	xlsclients-1.0.2.tar.bz2	5cde39a28c5352d1d555714836f57c05197e419d
XML-Parser	2.36	XML-Parser-2.36.tar.gz	74acac4f939ebf788d8ef5163cbc9802b1b04bfa
xmodmap	1.0.4	xmodmap-1.0.4.tar.bz2	9b49388bb527a8f7b7e86c4aa4c75a83372f6baa
xorg-server	1.7.1	xorg-server-1.7.1.tar.bz2	d31e259b3ab975e2c1baea8f7310b57152ae3c62
xpr	1.0.3	xpr-1.0.3.tar.bz2	9dbd0ff136b612285e00d92d0c7675a4207b1c4a
xprop	1.1.0	xprop-1.1.0.tar.bz2	16b377c76a4a010200063a056e7a5e244ab6ff00
xproto	7.0.16	xproto-7.0.16.tar.bz2	0eda5588d42f2c810d8491da44fe84a4093e12bc
xrandr	1.3.2	xrandr-1.3.2.tar.bz2	0e49b0a0889ae8a590452c6cd0d60a2253a8d940
xrdb	1.0.6	xrdb-1.0.6.tar.bz2	e4faff5e02b3027298dc589e318a6dc7eb30a6d5
xrefresh	1.0.3	xrefresh-1.0.3.tar.bz2	3f34ceca9509f47e60ddfe14a98225eaffeba705
xset	1.1.0	xset-1.1.0.tar.bz2	ff4295442821826092b17248c1ad65e16cd860ef
xsetroot	1.0.3	xsetroot-1.0.3.tar.bz2	56ed1df9834627a107550475629df51275cd0c44
xterm	254	xterm-254.tgz	934811737745b76ca75bf940feb975943bf1084d
xtrans	1.2.5	xtrans-1.2.5.tar.bz2	e8c4ce58b42d05e613fe535319a7d7f45f30f3e9
xvinfo	1.1.0	xvinfo-1.1.0.tar.bz2	8695bfb597dbf3ed8e3277fddda4722da21baaa3
xwd	1.0.3	xwd-1.0.3.tar.bz2	f6708d14040630d1d3255987c28efcbf7aee05aa
xwininfo	1.0.5	xwininfo-1.0.5.tar.bz2	9730db0d1bd75b8bc5bc399f56cab9f5aee3bcfc
xwud	1.0.2	xwud-1.0.2.tar.bz2	15a6c5e3ffc03b7e8e597947061940fee6c0a9fc
BoothbyEnhanced			
aumix	2.8	aumix-2.8.tar.bz2	5cea563ae91f628433a1950a36efd23681da4bf4
beecrypt	4.1.2	beecrypt-4.1.2.tar.gz	71cebd3329bb2561ffba24a2004dfac50b143f59
blfs-bootscripts	20060910	blfs-bootscripts-20060910.tar.bz2	58ff10492f9abcecd6ca4a105c479d5f2e3e8002
BLFS-ca-bundle	3.12.5	BLFS-ca-bundle-3.12.5.tar.bz2	8cf4be3072184940f8cfc3888ef0ba1cb58a5377
boost	1.34.1	boost_1_34_1.tar.bz2	b771271d5cbd3bdb0f119dd66dfd36bad7a66866
busybox	1.2.1	busybox-1.2.1.tar.bz2	487ef51209e253d3aa981dc0b0645063a804f4c7
cryptocme	2.0	cryptocme-2.0-rhel30.tar.gz	e06505ee2312f4b5d8f90f6cd5260022bd862b82
ctags	5.6	ctags-5.6.tar.gz	930afaa138624717393fe475201f795251bd5e5e
cvz-zlib-1	1.11.22	cvz-1.11.22-zlib-1.patch	0d20bab8a6b6e419a8c900d082b487ad6a3aec38

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
cvsv	1.11.22	cvsv-1.11.22.tar.bz2	5dfa11da84a890d7d61516fd450c001dc24bcc0d
dosfstools	2.11	dosfstools-2.11.src.tar.gz	b0d8714475ca7c7a96a46adf7c4839d69ce2f412
e2fsprogs	1.38	e2fsprogs-1.38.tar.bz2	6252152e90c52a8cf158559cd16c0d0ec236c980
expat	2.0.1	expat-2.0.1.tar.gz	663548c37b996082db1f2f2c32af060d7aa15c2d
gpm-segfault-1	1.20.1	gpm-1.20.1-segfault-1.patch	da53bf78a0ebaa5020e332aa6d6861159170ed86
gpm-silent-1	1.20.1	gpm-1.20.1-silent-1.patch	8899a212eadfbd201d8da3e44590bd05b97f9f6
gpm	1.20.1	gpm-1.20.1.tar.bz2	c48d937e62abb438c2f6439b34ef3332c89af8d1
libusb	0.1.12	libusb-0.1.12.tar.gz	599a5168590f66bc6f1f9a299579fd8500614807
linux-libc-headers	2.6.12.0	linux-libc-headers-2.6.12.0.tar.bz2	e72c9b260995b269c9fb9248ed468c18fb01f3fd
openssh	4.5p1	openssh-4.5p1.tar.gz	2eefcbb9e4fa16fa4500dec107d1a09d3d02d7
openssl-fix_manpages-1	0.9.8n	openssl-0.9.8n-fix_manpages-1.patch	afb498051e466131ae90dfc678234e8876af88a4
openssl	0.9.8n	openssl-0.9.8n.tar.gz	595f5ebf592568515964f0adc62239e7012ef08b
pkg-config	0.22	pkg-config-0.22.tar.gz	3ec40bda9864d7aa3c912c6ae87a750fd8b6e420
unzip552	5.52	unzip552.tar.gz	1831bd59b9e607a69052f83b263384895e2d4a19
usbutils	0.72	usbutils-0.72.tar.gz	891b8825d964880146d5c980e52bb9e23d92fe2b
zip232	2.32	zip232.tar.gz	5bc562bf95d9aee0cb6625e6038898e1f191a4aa
DirectFB	0.9.22	DirectFB-0.9.22.tar.gz	f3a586c654086c287cd1bcc683be0f234973ee17
dmxproto	2.3	dmxproto-2.3.tar.bz2	a3636d1b54d7bbf273f28c0d3c44101777047865
dri2proto	2.2	dri2proto-2.2.tar.bz2	21e9c0c7e0be5fe971f51589d0573b0273202b7f
encodings	1.0.3	encodings-1.0.3.tar.bz2	615b8367ee20fc50688e4876aa250419927d64cc
fbida	2.07	fbida-2.07.tar.gz	4758178299e09d5251b9cf20337a81cc20553d45
fixesproto	4.1.1	fixesproto-4.1.1.tar.bz2	fb47920c629e08a56442a51968a02a22733085e5
font-adobe-100dpi	1.0.1	font-adobe-100dpi-1.0.1.tar.bz2	814baccf5cf6c6545b7e8f3bbbada377be369042d
font-adobe-75dpi	1.0.1	font-adobe-75dpi-1.0.1.tar.bz2	3cbcd8a4a3a6bbe6ccd3d6e07a238f8c9ab7a26c
font-adobe-utopia-type1	1.0.2	font-adobe-utopia-type1-1.0.2.tar.bz2	565cb66523f59f02da02aa9e74604634a2113643
font-alias	1.0.2	font-alias-1.0.2.tar.bz2	9a0e97d974349e3a943b0ab77015f115f15d34c3
font-arabic-misc	1.0.1	font-arabic-misc-1.0.1.tar.bz2	d11a7bdce7500c3ccc2fe59505f2bc89e4c7aa2a
font-bh-100dpi	1.0.1	font-bh-100dpi-1.0.1.tar.bz2	4f3edda5dd35145cbd1ce8759e0a999b3a04f9c0
font-bh-75dpi	1.0.1	font-bh-75dpi-1.0.1.tar.bz2	7b891d5bfd966c405c19574bca8f87b8803146d1
font-bh-lucidatypewriter-100dpi	1.0.1	font-bh-lucidatypewriter-100dpi-1.0.1.tar.bz2	a1c9d28a619358092f7196473ff3e0f0dc5304d0

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
DS200 Precinct Digital Scanner (continued)			
font-bh-lucidatypewriter-75dpi	1.0.1	font-bh-lucidatypewriter-75dpi-1.0.1.tar.bz2	26efd25d2802c8406a96ccc3240b2c14e511d49f
font-bh-ttf	1.0.1	font-bh-ttf-1.0.1.tar.bz2	0e9ffbc738072ca832cdf5f82bff071c67b71825
font-bh-type1	1.0.1	font-bh-type1-1.0.1.tar.bz2	b960d8523b02d4401dc6e1257f68dc120761ee4b
font-bitstream-100dpi	1.0.1	font-bitstream-100dpi-1.0.1.tar.bz2	ba163df365a591de5eb9e45fa302059d572dd171
font-bitstream-75dpi	1.0.1	font-bitstream-75dpi-1.0.1.tar.bz2	43344b8ff3b2c2fda8d4cdbcc12c0688b2e04789
font-bitstream-type1	1.0.1	font-bitstream-type1-1.0.1.tar.bz2	53800b904fc3ead6b577a34fb7c1f96c1af4423f
fontconfig	2.8.0	fontconfig-2.8.0.tar.gz	570fb55eb14f2c92a7b470b941e9d35dbfafa716
font-cronyx-cyrillic	1.0.1	font-cronyx-cyrillic-1.0.1.tar.bz2	dfff5974629dab97677a70fa20e21c2cf48071a0
font-cursor-misc	1.0.1	font-cursor-misc-1.0.1.tar.bz2	5087a94e74f8157cb6989f71fb3b4815b236065a
font-daewoo-misc	1.0.1	font-daewoo-misc-1.0.1.tar.bz2	d169cec4e92fe1e99f3ff6766d4c6edcbb808860
font-dec-misc	1.0.1	font-dec-misc-1.0.1.tar.bz2	2489d19650f2a787b476dab2fa2412d20b95f38e
font-ibm-type1	1.0.1	font-ibm-type1-1.0.1.tar.bz2	9bcf72bcabfcbe218ad3a96ba2a45e92ef9efbc3
font-isas-misc	1.0.1	font-isas-misc-1.0.1.tar.bz2	13fe07a669dd93dfdb08717a03efe47936ab9cea
font-jis-misc	1.0.1	font-jis-misc-1.0.1.tar.bz2	adb3275d19e71e9553aa8a5fdc3b2c647277d8d4
font-micro-misc	1.0.1	font-micro-misc-1.0.1.tar.bz2	74a8be2b0b6ace97d8841356e88570f5fa3faad6
font-misc-cyrillic	1.0.1	font-misc-cyrillic-1.0.1.tar.bz2	c178f8a8b6897a8382a0f4315a5b577760ba703c
font-misc-ethiopic	1.0.1	font-misc-ethiopic-1.0.1.tar.bz2	2677191fd8b515c53bde6402513249fc0f48d53a
font-misc-meltho	1.0.1	font-misc-meltho-1.0.1.tar.bz2	d20d9f8ffdeb88b62842b021d5d3d2a8cc31ea2c
Model 100 Precinct Scanner			
QNX Operating System	4.22A	Original 3-1/2" High-Density Floppy Diskettes (Four Diskettes)	N/A
QNX Operating System	4.22A Manual Patches	gmake	1683c7d6fee0aaf82cf8fa16a3d53e69a861ff39
QNX/Sybase WATCOM C	10.6	Original CD	N/A
QNX Product Suite	May 2001 Upgrade	Original CD	Original CD
QNX Embedded Kit	1.0	Original 3-1/2" High-Density Floppy Diskette	N/A

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.1 Software (continued)

Table 3-3 Unity 3.2.1.0 Rev 1 System Third Party Build Software Descriptions (continued)

Software Product	Software Version	Filename	SHA1 Hash Value
Model 100 Precinct Scanner			
QNX Embedded Kit	1.0 Manual Patches	Efsys.386ex	b0e0e35d9feb036d9b0b6f8260f18d9eb3b4c877
		Efsys.cirrus	5aa5510925cdb0cd2d6fcefb3ae4d4f8d03b4dea
		boot.386exp	708590c7feec1ba8db6dd4a503dc49a88d0818cb
		commons.lib	6bb7f353ce429c9e35551a7f0d806c48adac19bd
		compress.o	c317315d9f58a9d3c25349e2b18110712395e3ff
		cstart_copy.o	761182fffb4ab2f2932a2b9be21dee4ea4ee2488
		cstart_ram.o	9fbf727c32521c631196f220a592bb5c8a404bd7
		nocis.o	bd56005d8d7c510dfc8296ffc3c89ea98f232f07
		sss.lib	c4fd16198dffca3a33b14022cf100a68cbde93a6
xip.o	bc729655ef6851fd1f711844dd198b02b6638fde		
Model 650 Central Scanner			
QNX Product Suite	May 2001 Upgrade	Original CD	N/A
QNX Operating System	4.25 Patch G	qnx-4.25-01G.tarx	a7b88ce9674e6bdf48f8edd1600f2b15b31d5e1d
QNX TCP/IP Runtime	4.25 Patch D	tcpert-4.25-01D.tarx	77fe7148af16a7a5685e19bc91f732d5b12907e6
QNX TCP/IP Runtime Documentation	4.2.5 Patch D	tcpert-4.25-02D.tarx	99ef2f21e37beaea69a1f9d509c981fbc80ad570
QNX TCP/IP Development Kit	4.25 Patch C	tcptk-4.25-01C.tarx	2f04519b314d991361b9be78c30f61c1d75e9be5
QNX TCP/IP Development Kit Documentation	4.25 Patch C	tcptk-4.25-02C.tarx	e7daea43f69384900931203c47c4748555f5a8ec

3.2 Equipment

This subsection categorizes the equipment the manufacturer has submitted for testing. 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.

Every effort is made to verify that the COTS equipment has not been modified for use. Wyle will perform research using the COTS equipment manufacturers' websites based on the serial and service tag numbers for each piece of equipment and will evaluate COTS hardware, system software and communications components for proven performance in commercial applications other than elections. For PCs, laptops, and servers, the service tag information is compared to the system information found on each machine. Physical external and internal examination is also performed to the best of Wyle's abilities when the equipment is easily accessible without the possibility of damage. Hard drives, RAM memory, and other components are examined to verify that the components match the information found on the COTS equipment manufacturers' websites.

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.2 Equipment (continued)

Table 3-4 Unity 3.2.1.0 Rev 1 Voting System Equipment Description

Equipment	Description	Serial Numbers
Model 100 Hardware v. 1.3.0 Firmware v. 5.4.4.5	A precinct-based, voter-activated paper ballot tabulator that uses a proprietary recognition engine to detect completed ballot targets.	205071
DS200 Hardware v. 1.2.0 and 1.2.1 Firmware v. 1.4.3.13	An optical scan paper ballot tabulator designed for use at the polling place level.	ES0108340178, ES0107380927, ES0107360007
Model 650 Hardware v. 1.1 and 1.2 Firmware v. 2.2.2.0	A high-speed, optical scan central ballot counter. During scanning, the Model 650 prints a continuous audit log to a dedicated audit log printer and can print results directly from the scanner to a second connected printer.	2406 8013
AutoMARK A100	ADA Ballot Marking Device	AM0105490825
AutoMARK A200	ADA Ballot Marking Device	AM0208470644
Ballot Box	Plastic Ballot Box	E076, E089, E099
Ballot Box (Versions 1.0, 1.1 & 1.2)	Metal Box with Diverter	E015, E017
Ballot on Demand Printer	OKI C9650	AF85027113A0
Report Printer	HP LaserJet 4050N	USQX074394
Zip Disk	Used to store Model 650 results data	---
Headphones	Avid FV 60	HP-57936-1, HP-57936-2, HP-57936-3, HP-57936-4, HP-57936-5, HP-57936-6, HP-57936-7, HP-57936-8 and HP-57936-9

In order to perform the software witness and trusted builds, the following equipment will be used:

Table 3-5 Unity 3.2.1.0 Rev 1 Voting System Build Machine Description

Description of Equipment	Serial Number	Operating System
Dell Optiplex 760	6DCKJG1	Windows XP SP3 or Vista
Dell Keyboard – Model L100	CN0RH659735716B402JS	N/A
Dell Mouse – Model XN966	HS847130DLE	N/A
ACER Monitor – Model AL1716 P/N: ET 1716B.012	ETL460C005609012DCPY11	N/A
Dell Precision T3500	15TNMN1	Windows 7

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.2 Equipment (continued)

Dell Keyboard – Model L100	CN0RH65965890660029T	N/A
Dell Mouse – Model DHY933	F0N002Y1	N/A
LG Monitor – Model L1942TT	904NDNU09543	N/A

3.3 Test Support Materials

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

The following test materials are required to support the Unity 3.2.1.0 Rev 1 System certification testing.

Table 3-9 Unity 3.2.1.0 Rev 1 System Test Support Materials

Test Material	Quantity	Make	Model
Paper Rolls	25	DS200	N/A
COTS Printer	1	EPSON LQ-590	FSQY140868
Security Seals	5000	Intab	800-0038R
Security Locks	20	E. J. Brooks	86022
	25	E. J. Brooks	6024
	50	American Casting Corp.	00561-03
	50	A. Rifkin	RIFSI
ES&S Pens	10	BIC	Grip Roller
Security Sleeves	7	ES&S	PS-S7-936-XX(1-7)
CF Card Reader	1	SanDisk	018-6305
Magnifier	3	---	---
Headphone Covers	30	---	---
Paddles (yes/no)	3	---	---

3.4 Deliverable Materials

The materials listed below are to be delivered as part of the Unity 3.2.1.0 Rev 1 System to the users.

Table 3-10 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
DS200	Firmware 1.4.3.13; Hardware 1.2.0 and 1.2.1	Precinct ballot scanner

3.0 MATERIALS REQUIRED FOR TESTING (CONTINUED)

3.4 Deliverable Materials (continued)

Deliverable Material	Version	Description
Model 100	Firmware 5.4.4.5; Hardware 1.3.0	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 3.2.1.0 Rev 1	25.0	TDP Document
ES&S DS200 System Operations Procedures	Firmware 1.4.3.13 1.2.1	TDP Document
ES&S AM System Operations Procedures	7.5.2.0	TDP Document
ES&S EDM System Operations Procedures	7.8.1.0	TDP Document
ES&S ERM System Operations Procedures	7.5.7.0	TDP Document
ES&S ESSIM System Operations Procedures	7.7.1.0	TDP Document
ES&S HPM System Operations Procedures	5.7.3.0	TDP Document
ES&S LogMonitor System Operations Procedures	1.0.0.0	TDP Document
ES&S M100 System Operations Procedures	Firmware 5.4.4.5; Hardware 1.3.0	TDP Document
ES&S M650 System Operations Procedures	Firmware 2.2.2.0; Hardware 1.1 and 1.2	TDP Document
Voting System Security Specification Unity 3.4.0.0	3.2.1.0 rev 1	TDP Document
Jurisdiction Security Practices Template	1.0.0.1	TDP Document
Hardening the EMS PC Guide	6.0	TDP Document

4.0 TEST SPECIFICATIONS

Certification testing of the Unity 3.2.1.0 Rev 1 System is to the configuration submitted in the EAC application ESS1104. Wyle qualified personnel will ensure that all certification testing performed on the manufacturer’s voting system follows Wyle’s procedures for testing and the specific test cases to ensure the requirements of the EAC 2005 VVSG and EAC Testing and Certification Program Manual are met.

This test campaign is based on the previous test campaign conducted for the ES&S Unity 3.2.1.0 System, the results of which are documented in Wyle Report No. T58200.01-01, Rev. B. During this test campaign, the ES&S Unity 3.2.1.0 System was tested to, and found to be in conformance with, the United States Federal Election Commission (FEC) 2002 Voting System Standards (VSS) and all applicable EAC 2005 Voluntary

4.0 TEST SPECIFICATIONS (CONTINUED)

Voting Systems Guidelines (VVSG). Per section 4.4.2.3 of the EAC Testing and Certification Program Manual, all testing on the modifications to the system will be tested to the 2005 VVSG; however, pending successful completion of this test campaign, the system will only be granted a 2002 VSS certification since the system, as a whole, will not be tested to the 2005 VVSG.

Below is a list of EAC Request for Interpretations (RFI) and Notice of Clarifications (NOC) that will be incorporated in the test campaign:

Interpretations

2010-08 EAC Decision on Calling Sequence
2010-07 EAC Decision on Module Length
2010-06 EAC Decision on DRE Accessibility Requirements and Other Accessible Voting stations
2010-05 EAC Decision on Testing of Modifications to a Certified System
2010-04 EAC Decision on Functional Requirements with Respect to Security
2010-03 EAC Decision on Database Coding Conventions
2010-02 EAC Decision on Coding Conventions
2010-01 EAC Decision on Voltage Levels and ESD Test
2009-06 EAC Decision on Temperature and Power Variation
2009-05 EAC Decision on T-Coil Requirements
2009-04 EAC Decision on Audit Log Events
2009-03 EAC Decision on Battery Backup for Central Count Systems
2009-02 EAC Decision on Alternate Languages
2009-01 EAC Decision on VVPAT Accessibility New
2008-12 EAC Decision on Ballot Marking Device/Scope of Testing
2008-10 EAC Decision on Electrical Fast Transient
2008-09 EAC Decision on Safety Testing
2008-08 EAC Decision on Automatic Bar Code Readers
2008-07 EAC Decision on Zero Count to Start Election
2008-06 EAC Decision on Battery Backup for Central Count
2008-05 EAC Decision on Durability
2008-04 EAC Decision on Supported Languages
2008-03 EAC Decision on OS Configuration
2008-02 EAC Decision on Battery Backup for Optical Scan Voting Machines
2008-01 EAC Decision on Temperature and Power Variation
2007-06 EAC Decision on Recording and Reporting Undervotes
2007-05 EAC Decision on Testing Focus and Applicability
2007-04 EAC Decision on Presentation of Alternative Language

4.0 TEST SPECIFICATIONS (CONTINUED)

Interpretations (continued)

2007-03 EAC Decision on Summative Usability Testing

2007-02 EAC Decision on Variable Names

2007-01 EAC Decision on Accessible Design

Notice of Clarifications

NOC 09-005 – Development and Submission of Test Plans for Modifications to EAC Certified Systems

NOC 09-004 – Development and Submission of Test Reports

NOC 09-003 – De Minimis Change Determination Requirement

NOC 09-002 -- Laboratory Independence Requirement

NOC 09-001 -- Requirements for Test Lab Development and Submission of Test Plans

NOC 08-003 -- EAC Conformance Testing Requirements

NOC 08-002 -- EAC Mark of Certification

NOC 08-001 -- Validity of Prior Non-core Hardware Environmental and EMC Testing

NOC 07-005 -- Voting System Test Laboratory Responsibilities in the Management and Oversight of Third Party Testing

NOC 07-004 -- Voting System Manufacturing Facilities

NOC 07-003 -- State Testing Done in Conjunction with Federal Testing within the EAC Program

NOC 07-002 -- VSTL Work with Manufacturers Outside of Voting System Certification Engagements

NOC 07-001 -- Timely Submission of Certification Application

4.1 Requirements (Strategy of Evaluation)

The strategy for evaluating ES&S Unity 3.2.1.0 Rev 1 will be based on 2 phases of testing. One is to review the change log and the engineering changes submitted for the modified system and evaluate those changes for conformance to the applicable EAC 2005 VVSG requirements. The second is to evaluate the DS200 to determine if ballot skew and mark recognition is affecting the accuracy and reliability of the unit and review the logging procedures used in the DS200 to ensure it complies with all VVSG requirements. The outcome of this evaluation will determine what further testing is required and what modifications to this test plan are to be submitted.

This test campaign includes the following tests:

Technical Data Package review to ensure all modifications are documented as applicable.

System integration test to ensure the components are interoperable.

A Physical Configuration Audit on the DS200.

A Logic & Accuracy Test on the DS200 with the results being tallied by the EMS

Security Testing

4.0 TEST SPECIFICATIONS (CONTINUED)

4.1 Requirements (Strategy of Evaluation) (continued)

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

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

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

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

- WoP 1 Operations Status Checks
- WoP 2 Receipt Inspection
- WoP 3 Technical Data Package Review (limited)
- WoP 4 Test Plan Preparation (*This document*)
- WoP 5a-d Source Code Review
- WoP 6 Security
- WoP 25 Physical Configuration Audit (limited)
- WoP 30 System Integration Test
- WoP 34 Test Report
- WoP 41 Logic & Accuracy

4.2 Hardware Configuration and Design

The ES&S Unity 3.2.1.0 Rev 1 System is a paper-based precinct voting system using touch screen and scan technology to scan and validate ballots, provide voter-assisted ballots, and tabulate precinct results. The ES&S Unity 3.2.1.0 Rev 1 System consists of an election management system (an application suite consisting of AM, AIMS, EDM, ESSIM, HPM, ERM, and Log Monitor); the DS200 voting device that scans, validates and tabulates voter ballots; either the AutoMARK model A100 or A200 voter assisted terminal to facilitate special needs voters; and the M650 high-speed, optical scan central ballot counter.

The ES&S Unity 3.2.1.0 Rev 1 System is comprised of four proprietary pieces of hardware: DS200, M650, M100, and the AutoMARK. All EMS functions are handled by proprietary software run on COTS PC/Laptops and Servers. Wyle has determined that these COTS PC/Laptops and Servers are not subject to the hardware test requirements per the EAC 2005 VVSG per "2007-05 Decision on Testing Focus and Applicability". The provided PC/Laptops documented in Section 3 Materials Required For Testing all contained CE, UL, and FCC labeling.

4.0 TEST SPECIFICATIONS (CONTINUED)

4.3 Software System Functions

The strategy for this test campaign will be to test the modifications of the software incorporated into the system and ensure the full functionality of the DS200 and the interface with the previously certified EMS. As a result of the issues identified above, the EAC has instructed Wyle to perform full regression testing on the DS200 for all functional requirements set forth in the EAC 2005 VVSG.

4.4 System-Level Test Case Design

During System Level Testing, Wyle will test the ability of proprietary software, proprietary hardware, proprietary peripherals, COTS software, COTS hardware, and COTS peripherals to function as a complete system in a configuration of the systems intended use. The ES&S Unity 3.2.1.0 Rev 1 System is intended to support both large and small jurisdictions. Wyle's approach for the ES&S Unity 3.2.1.0 Rev 1 System will be to execute System Level Testing with a variety of elections that include various combinations of jurisdictions, parties and styles of ballots.

The ACCEPT/REJECT criteria for System Level testing is whether the system can continue in testing. The two scenarios are: Accept or Reject. 'Accept' is either 1) if no errors are found, or 2) if an error is encountered but the system continues to operate and engineering analysis determines that the root cause does not affect testing. 'Reject' if the system is too unstable to continue or engineering analysis determines the root cause could affect further testing. If an error occurs during System Level Testing the error will be documented. If the ES&S Unity 3.2.1.0 Rev 1 System is able to recover and continue, the test will continue. If the error causes the system to become unstable the test will be halted. All errors documented during System Level Testing will be tracked through resolution. Engineering analysis will be performed to determine what effect the resolution has on the system. A determination will be made by Wyle's senior level engineer whether regression testing will be sufficient or a complete re-test is necessary.

Wyle implements Acceptance Level testing focusing on all the data collected during the entire test campaign along with performing the "Trusted Build" for the system. All data from pre-testing, hardware testing, software testing, functional testing, security testing, volume testing, stress testing, telecommunication testing, usability testing, accessibility testing, and reliability testing activities will be combined to ensure all requirements that are supported by the ES&S Unity 3.2.1.0 Rev 1 System in the EAC 2005 VVSG have been tested. All requirements will be checked against the test data to ensure the EAC 2005 VVSG requirements are met. Items not supported by the ES&S Unity 3.2.1.0 Rev 1 System will be documented. Any issues documented during testing will be resolved or annotated in the test report.

Wyle will test every EAC 2005 VVSG requirement supported by the ES&S Unity 3.2.1.0 Rev 1 System. Wyle will report all issues discovered during this test campaign to the EAC. The EAC has the final determination on whether the system meets all the requirements for an EAC certified system. The ACCEPT/REJECT criteria for Acceptance Level testing is whether the data for the test campaign supports a recommendation for certification by the EAC or not. If Wyle determines there is not enough data to insure a requirement was met, the test plan will be altered and further testing will be done.

4.5 Security Functions

Wyle will perform a Security validation to determine if any of the changes from 3.2.1.0 affect the security testing that was already completed. If changes are made that affect security testing Wyle will document these tests and submit them to the EAC and include them in the As Run Test Plan.

4.0 TEST SPECIFICATIONS (CONTINUED)

4.6 TDP Evaluation

Wyle qualified personnel will perform a comprehensive review of the ES&S TDP to determine compliance to the EAC 2005 VVSG, EAC requirements, and ES&S-specific requirements. The focus of this review will be on any modifications made to the TDP documents due to the changes in firmware from 3.2.1.0 and 3.2.1.0 Rev. 1.

During the TDP review process, each document will be reviewed for completeness, clarity, and correctness, and continuity between the TDP documents. The review results will be formally reported to ES&S for resolution. If a revised document is received, it will be re-reviewed as discussed in this section.

The TDP will be continuously reviewed during the entire testing process as these documents will be utilized to set up the systems, verify correct operational results and numerous other tests.

At the end of the TDP review process, an Anomaly Report will be issued listing the non-compliant items on a document-by-document basis.

A listing of all documents contained in the ES&S Unity 3.2.1.0 Rev 1 System TDP is provided in Table 4-2.

Table 4-2 Unity 3.2.1.0 Rev 1 TDP Documents

Unity 3.2.1.0 Rev 1 TDP Documents	Version	Doc #	Document Code
Voting System Overview	25.0	01-01	U3210R1_OVR00
<i>System Functionality Description</i>			
System Functionality Description – Audit Manager	4.0	02-01	U3210R1_SFD00_AM
System Functionality Description – Election Data Manager	4.0	02-02	U3210R1_SFD00_EDM
System Functionality Description – ES&S Ballot Image Manager	4.0	02-03	U3210R1_SFD00_ESSIM
System Functionality Description – Hardware Programming Manager	5.0	02-04	U3210R1_SFD00_HPM
System Functionality Description – Election Reporting Manager	6.0	02-05	U3210R1_SFD00_ERM
System Functionality Description – DS200	8.0	02-06	U3210R1_SFD00_DS200
System Functionality Description – Model 650	4.0	02-07	U3210R1_SFD00_M650
System Functionality Description – Log Monitor	4.0	02-08	U3210R1_SFD00_Log Monitor
System Functionality Description – Model 100	12.0	02-09	U3210R1_SFD00_M100
<i>System Hardware Specification</i>			
System Hardware Specification – DS200	4.0	03-01	U3210R1_SHS00_DS200
System Hardware Specification – Model 650	4.0	03-02	U3210R1_SHS00_M650
System Hardware Specification – Model 100	5.0	03-03	U3210R1_SHS00_M100

4.0 TEST SPECIFICATIONS (CONTINUED)

4.6 TDP Evaluation (CONTINUED)

Table 4-2 Unity 3.2.1.0 Rev 1 TDP Documents (continued)

Unity 3.2.1.0 Rev 1 TDP Documents	Version	Doc #	Document Code
<i>Software Design and Specification</i>			
Software Design and Specification – Audit Manager	4.0	04-01	U3210R1_SDS00_AM
Software Design and Specification – Election Data Manager	4.0	04-02	U3210R1_SDS00_EDM
Software Design and Specification – ES&S Ballot Image Manager	4.0	04-03	U3210R1_SDS00_ESSIM
Software Design and Specification – Hardware Programming Manager	7.0	04-04	U3210R1_SDS00_HPM
Software Design and Specification – Election Reporting Manager	10.0	04-05	U3210R1_SDS00_ERM
Software Design and Specification – DS200	15.0	04-06	U3210R1_SDS00_DS200
Software Design and Specification – Model 650	5.0	04-07	U3210R1_SDS00_M650
Software Design and Specification – Log Monitor	4.0	04-08	U3210R1_SDS00_LogMonitor
SDS Appendix	---	04-10	File Specifications: BDF, BSC, EDMXML, EL80, ESSCRYPT, ESSML, IFC, LDF, M650 OUTPUT
<i>System Security Specification</i>			
System Security Specification	6.22.2011	05-01	U3210R1_SSS00
SS Appendix – Jurisdiction Security Procedures Template	1.0.0.1	05-02	U3210R1_SSS01_JSP Template
SSS Appendix – Validation Guide – DS200	4.0	05-02	U3210R1_SSS02.02_DS200 Validation Guide
SSS Appendix – Validation Guide – Model 650	2.0	05-02	U3210R1_SSS02.03_Model 650 Validation Guide
SSS Appendix – Validation Guide – AutoMARK	2.0	05-02	U3210R1_SSS02.04_AutoMARK Validation Guide
SSS Appendix – Validation Guide – Unity Workstation	2.0	05-02	U3210R1_SSS02.05_Unity Workstation Validation Guide
SSS Appendix – System Hardening Procedures	2.0	05-02	U3210R1_SSS08_Hardening Procedures
<i>System Test/Verification Specification</i>			
Unity 3.2.1.0 Rev 1 System Test Plan	4.0	06-01	U3210R1_STP00
System Test Cases – Audit Manager	1.0	06-02	U3210R1_TC00_AM
System Test Cases – Election Data Manager	1.0	06-03	U3210R1_TC00_EDM
System Test Cases – ES&S Ballot Image Manager	1.0	06-04	U3210R1_TC00_ESSIM

4.0 TEST SPECIFICATIONS (CONTINUED)

4.6 TDP Evaluation (continued)

Table 4-2 Unity 3.2.1.0 Rev 1 TDP Documents (continued)

Unity 3.2.1.0 Rev 1 TDP Documents	Version	Doc #	Document Code
<i>System Test/Verification Specification (continued)</i>			
System Test Cases – Hardware Programming Manager	1.0	06-05	U3210R1_TC00_HPM
System Test Cases – Election Reporting Manager	1.0	06-06	U3210R1_TC00_ERM
System Test Cases – DS200	1.4.3.12	06-07	U3210R1_TC00_DS200
System Test Cases – Model 650	1.0	06-08	U3210R1_TC00_M650
System Test Cases – Model 100	1.0	06-09	U3210R1_TC00_M100
<i>Systems Operations Procedures</i>			
System Operations Procedures – Audit Manager	8.13.2009	07-01	U3210R1_SOP00_AM
System Operations Procedures – Election Data Manager	10.16.2009	07-02	U3210R1_SOP00_EDM
System Operations Procedures – ES&S Ballot Image Manager	6.7.2010	07-03	U3210R1_SOP00_ESSIM
System Operations Procedures – Hardware Programming Manager	10.1.2010	07-04	U3210R1_SOP00_HPM
System Operations Procedures – Election Reporting Manager	10.3.2010	07-05	U3210R1_SOP00_ERM
System Operations Procedures – DS200	8.26.2011	07-06	U3210R1_SOP00_DS200
System Operations Procedures – Model 650	8.17.2010	07-07	U3210R1_SOP00_M650
SOP Appendix- Sample Deliverable Timeline	N/A	07-08	U3210R1_SOP01_Sample Deliverable Timeline
SOP Appendix- Adobe Install Reference	N/A	07-08	U3210R1_SOP02_Adobe Install Reference
SOP Appendix- Omni Drive USB	N/A	07-08	U3210R1_SOP00_LogMonitor
Systems Operations Procedures- Log Monitor	8.29.2009	07-09	U3210R1_SOP00_OmniDrive USB
Systems Operations Procedures- Model 100	12.7.2010	07-10	U3210R1_SOP00_M100
<i>System Maintenance Manuals</i>			
System Maintenance Manual – DS200	7.18.2011	08-01	U3210R1_SMM00_DS200
System Maintenance Manual – Model 650	8.17.2011	08-02	U3210R1_SMM00_M650
System Maintenance Manual – Model 100	12.7.2010	08-03	U3210R1_SMM00_M100

4.0 TEST SPECIFICATIONS (CONTINUED)

4.6 TDP Evaluation (continued)

Table 4-2 Unity 3.2.1.0 Rev 1 TDP Documents (continued)

Unity 3.2.1.0 Rev 1 TDP Documents	Version	Doc #	Document Code
<i>Personnel Deployment</i>			
Personnel Deployment and Training Recommendations	4.0	09-01	U3210R1_TRN00_ESSTraining Requirements
Training Manual – Election Data Manager	7.31.2009	09-02	U3210R1_TRN00_EDM_Training Manual
Training Manual – ES&S Ballot Image Manager	7.31.2009	09-03	U3210R1_TRN00_ESSIM_TrainingManual
Training Manual – Hardware Programming Manager	7.31.2009	09-04	U3210R1_TRN00_HPM_Training Manual
Training Manual – Election Reporting Manager	6.7.2010	09-05	U3210r1_TRN00_ERM_PreElection
Training Checklists	---	09-06	Multiple Documents
<i>Configuration Management Plan</i>			
ES&S Configuration Management Plan	5.0	10-1	U3210R1_CMP00
CM Plan Appendices	---	10-2	Multiple Documents
<i>QA Program</i>			
Quality Assurance Program - Manufacturing	4.0	11-01	U3210R1_QAP00_MNF
Quality Assurance Program – Software and Firmware	3.0	11-02	U3210R1_QAP00_SWF
QAP Program Appendices	---	11-03	Multiple Documents
<i>System Change Notes</i>			
Unity 3.2.1.0 Rev 1 System Change Notes	29.0	---	---
<i>Other VSTL Reports</i>			
ES&S Ballot Production Guide	1.31.2011	13-01	U3210R1_ORPT02_BallotProduct ionGuide

4.7 Source Code Review

All changes from 3.2.1.0 will be reviewed to the EAC 2005 VVSG coding standards and the manufacturer supplied coding standards. Based on this review, system integration testing with all components of the ES&S Unity 3.2.1.0 Rev 1 System may be required.

As the source code is received, an SHA1 hash value will be created for each source code file. The source code team will then conduct a visual scan of every line of source code for an initial review and every line of modified source code for a re-review. This is done to identify any violation of EAC 2005 VVSG coding standards or manufacturer supplied coding standards. Each identified violation will be recorded by making notes of the standards violation along with directory name, file name, and line number.

A technical summary report of all identified standards violations will be sent to ES&S for resolution. ES&S will then correct all standards violations and re-submit the source code for re-review. This process will be repeated as many times as necessary, until all identified standards violations are corrected. All reports will be included in an anomaly report for source code and submitted to the EAC and included in the final test report.

4.0 TEST SPECIFICATIONS (CONTINUED)

4.7 Source Code Review (continued)

A “Compliance Build” will be built by Wyle from the reviewed source code using the Compliance Build Procedure to build iterative builds throughout the test campaign. This process follows the documented procedure in the EAC Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007 with two exceptions: The image products will not be submitted to the EAC, and no manufacturer representative will be required to be present or on-site for these builds.

The final step in the source code review will be to create a “Trusted Build” from the reviewed source code. The “Trusted Build” follows the steps below:

- Clean the build machine
- Retrieve the compliant source code
- Retrieve the installation media for OS, compilers, and build software
- Construct the build environment
- Create digital signatures of the build environment
- Load the compliant source code into the build environment
- Create a digital signature of the pre build environment
- Create a disk image of the pre-build environment
- Build executable code
- Create a digital signature of executable code
- Create a disk image of the post-build environment
- Build installation media
- Create a digital signature of the installation media
- Install executable code onto the system to validate the software/firmware
- Deliver source code with digital signature, disk image of pre-build environment with digital signatures, disk image of post-build environment with digital signatures, executable code with digital signatures, and installation media with signatures to EAC Approved Repository.

The “Trusted Build” for the ES&S Unity 3.2.1.0 Rev 1 System includes source code, data, and script files, in clear text form. The build also includes COTS software on commercially available media, COTS software downloaded by the VSTL, COTS software verified by digital signature from the software supplier, and picture and sound files in binary format provided by ES&S. The first step of the process is to clean the hard drives by writing zeros to every spot on the hard drive, so the drive is cleared of existing data. The operating system will then be loaded and the applications from the VSTL reviewed source along with the VSTL verified COTS software will be built. The final step is installing the applications on the hardware.

4.8 QA and CM System Review

Both the ES&S QA Plan and CM Plan will be 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 will be reviewed to determine if the ES&S QA Plan and the CM Plan are being followed. The results of the TDP review will be entered on a spreadsheet as previously described in Section 4.6 TDP Evaluation of this test plan. The results of the TDP review, including the QA and CM compliance results Technical Data Package Review. The results of the TDP review will also be included in the final Test Report.

5.0 TEST DATA

5.1 Test Data Recording

All equipment utilized for test data recording shall be identified in the test data package. For hardware environmental and operational testing, the equipment will be listed on the Instrumentation Equipment Sheet for each test. The output test data will be recorded in an appropriate manner as to allow for data analysis. For source code and TDP reviews, results will be compiled in output reports and submitted to ES&S for resolution. Additionally, all test results, including functional test data, will be recorded on the relevant Wyle Laboratories' Operating Procedure and Test Cases. Results will also be recorded real-time in engineering log books. Incremental reports will be submitted to ES&S and the EAC at the completion of major test areas to communicate progress and results as deemed necessary by the stakeholders.

5.2 Test Data Criteria

Wyle will evaluate all test results against the ES&S-provided technical documentation for the Unity 3.2.1.0 Rev 1 System and the requirements set forth in the EAC 2005 VVSG. The Unity 3.2.1.0 Rev 1 System shall be evaluated for its performance against the EAC 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the Unity 3.2.1.0 Rev 1 System documentation and the 2005 VVSG. Per the EAC 2005 VVSG, these parameters shall encompass the test tolerances, the minimum number of combinations or alternatives of input and output conditions that can be exercised to constitute an acceptable test of the parameters involved, and the maximum number of interrupts, halts or other system breaks that may occur due to non-test conditions (excluding events from which recovery occurs automatically or where a relevant status message is displayed).

5.3 Test Data Reduction

Test data shall be manually processed and recorded in the relevant Wyle Operating Procedures and Test Cases. Results will also be recorded real-time in engineering log books.

6.0 TEST PROCEDURES AND CONDITIONS

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

6.1 Facility Requirements

All testing will be conducted at the Wyle Huntsville, AL facility unless otherwise annotated.

6.2 Test Set-Up

All voting machine equipment (hardware and software), shall be received and documented utilizing Wyle Receiving Ticket (WL-218, Nov'85) and proper QA procedures. When voting system hardware is received, Wyle Shipping and Receiving personnel will notify Wyle QA personnel. With Wyle QA personnel present, each test article will be unpacked and inspected for obvious signs of degradation and/or damage that may have occurred during transit. Noticeable degradation and/or damage, if present, shall be recorded, photographs shall be taken, and the ES&S Representative shall be notified.

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

6.0 TEST PROCEDURES AND CONDITIONS (CONTINUED)

6.2 Test Set-Up (continued)

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

For test setup, the system will be configured as would for normal field use. This includes connecting all supporting equipment and peripherals. Wyle personnel will properly configure and initialize the system, and verify that it is ready to be tested, by following the procedures detailed in the Unity 3.2.1.0 Rev 1 System technical documentation. Wyle will develop an Operational Status Check to be performed prior to and immediately following each hardware test. Wyle will develop the system performance levels to be measured during operational tests.

Wyle has developed eight election definitions that could be used during this test campaign.

Operational Status Check

This election definition will exercise the operational status of the DS200, during the operational tests, and prior to and immediately following the non-operational hardware tests.

Logic and Accuracy

This test must exercise all possible voting positions for the ballot. All ballots will be hand-marked prior to being scanned into the DS200.

General Election: GEN-01

A basic election held in four precincts, one of which is a split precinct, containing nineteen contests compiled into four ballot styles. Five of the contests are in all four ballot styles. The other fifteen contests are split between at least two of the precincts with a maximum of four different contests spread across the four precincts. This election was designed to functionally test the handling of multiple ballot styles, support for at least two languages, support for common voting variations, and audio support for at least two languages.

General Election: GEN-02

A basic election held in three precincts. This election contains fifteen contests compiled into three ballot styles. Ten of the contests are in all three ballot styles with the other five split across the three precincts. This election was designed to functionally test the handling of multiple ballot styles, support for ballot rotation, support for two languages, support for complex voting variations, and audio support for multiple languages.

General Election: GEN-03

A basic election held in two precincts. This election contains eight contests compiled into two ballot styles. Four of the contests are in both ballot styles. The other four contests are split between the two precincts. This election was designed to functionally test the handling of multiple ballot styles, support for at least three languages including a character-based language, support for common voting variations, and audio support for at least three languages and an ADA binary input device.

6.0 TEST PROCEDURES AND CONDITIONS (CONTINUED)

6.2 Test Set-Up (continued)

Primary Election: PRIM-01

An open primary election in two precincts, containing thirty contests compiled into five ballot styles. Each ballot style contains six contests. This election was designed to functionally test an open primary with multiple ballot styles, support for two languages, and support for common voting variations.

Primary Election: PRIM-02

A basic election held in two precincts. This election contains thirteen contests compiled into three ballot styles. One contest is in all three ballot styles and all other contests are independent. This election was designed to functionally test the handling of multiple ballot styles, support for Primary presidential delegation nominations, support for two languages, support for complex voting variations, and audio support for multiple languages.

Primary Election: PRIM-03

A basic election held in two precincts. This election contains ten contests and is compiled into two ballot styles. Two of the contests are in both ballot styles. The other eight contests are split between the two parties' ballots. This election was designed to functionally test the handling of multiple ballot styles, support for at least three languages including an Ideographic based language, support for common voting variations, and audio support for at least three languages and an ADA binary input device.

Wyle has developed three special test cases and election definitions that will be used during the analysis phase of ballot skew, mark recognition and logging requirements.

6.3 Test Sequence

The DS200 component of the Unity 3.2.1.0 Rev 1 System will undergo all applicable tests in the EAC 2005 VVSG. The following sections provide a list of each test, a brief description of each, and a location of each test. Wyle will utilize a combination of functional testing, source code review, and TDP reviews to evaluate the DS200. The list of tests is not in a specific sequence.

6.3.1 Hardware Test Descriptions

No hardware testing will be performed as part of this test campaign.

6.3.2 Software Test Description

The software tests include the following:

Source Code Compliance Review – Wyle Laboratories personnel will compare the source code to the manufacturer's software design documentation to ascertain how completely the software conforms to the manufacturer's specifications. Source code inspection shall also assess the extent to which the code adheres to the requirements in Section 5 of Volumes I and II.

Compliance Build of the Unity 3.2.1.0 Rev 1 System Software, Firmware, and Utilities– Before testing can begin a compliance build of all the applications will be constructed by Wyle personnel using the build environment, build documentation and reviewed source code. This is to insure the software being tested is constructed from the same source code that was reviewed.

6.0 TEST PROCEDURES AND CONDITIONS (CONTINUED)

6.3 Test Sequence (continued)

6.3.2 Software Test Description (continued)

Trusted Build – The trusted build is a process of converting the reviewed source code into machine-readable binary instructions for a computer. This test will follow Section 5.6 of the EAC Testing and Certification Program manual.

Table 6-1 Unity 3.2.1.0 Rev 1 System Software Test Sequence

Test	Description	Procedure	Test Level	Specimen
<i>Compliance Source Code Review (Pre-testing Activity)</i>	Source code review for compliance	WHVS07.2 WOP 5a	Component	Source Code
<i>Compliance Build</i>	Using the build documents and source code to construct the EMS	WHVS07.3 WOP 25	Component	Source Code
<i>Source Code Functional Review</i>	Source code review for functionality and high level software design	WHVS07.2 WOP5b	Component	Source Code

6.3.3 System Testing

Physical Configuration Audit – The Physical Configuration Audit compares the voting system components submitted for qualification to the manufacturer’s technical documentation, and shall include the following activities:

Establish 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

Verify 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

Review drawings, specifications, technical data, and test data associated with system hardware, if non-COTS, to establish system hardware baseline associated with software baseline

Review 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

6.0 TEST PROCEDURES AND CONDITIONS (CONTINUED)

6.3 Test Sequence (continued)

6.3.3 System Testing (continued)

TDP Review – The technical data package must be submitted as a precondition of national certification testing. These items are necessary to define the product and its method of operation; to provide technical and test data supporting the manufacturer’s claims of the system’s functional capabilities and performance levels; and to document instructions and procedures governing system operation and field maintenance. Any information relevant to the system evaluation shall be submitted to include source code, object code, and sample output report formats.

Logic and Accuracy – The logic and accuracy test insures the voting system and telecommunications can process 1,549,703 consecutive ballot positions accurately and reliably within the Mean Time Between Failure (MTBF) ratio.

Table 6-2 Unity 3.2.1.0 Rev 1 System Testing Sequence

Test	Description	Procedure	Test Level	Specimen	Election Data
<i>Technical Data Package (TDP) Review</i>	Documentation review for compliance, correctness, and completeness	WHVS07.1 WOP 3	Document	TDP package	---
<i>Physical Configuration Audit</i>	Audit hardware and software models and versions	WHVS07.3 WOP 25	Component & System	System hardware and software	---
<i>Evaluation of DS200</i>	Tests conducted to gain data for engineering analysis on skew, ballot marking and logging.	Wyle Test Cases	Component & System	System hardware and software	---
<i>Logic and Accuracy</i>	Test of accuracy to ~1.6 million ballot positions	WHVS07.9 WOP 30	System	System	L&A Election
<i>Trusted Build</i>	Creation and installation of the final system software	WHVS07.6 WOP 7 WOP 7a	Component	System software	Unity 3.2.1.0 Rev 1 Source Code Package

7.0 TEST OPERATIONS PROCEDURES

7.1 Proprietary Data

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

APPENDIX A

Project Schedule

To be provided separately