



COMMONWEALTH OF PENNSYLVANIA
TEST REPORT
FOR
EXAMINATION OF MODIFCATIONS TO
GEMS SSL CERTIFICATE, EZROSTER 2.7.11
AND BRIDGEPOINT SOFTWARE 1.6.0.0

Prepared by: _____

Jack Cobb
Jack Cobb, Laboratory Director

June 27, 2013

Pro V&V, Inc.
700 Boulevard South, Suite 102
Huntsville, AL 35803
256-713-1111

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	References.....	1
1.2	Terms and Abbreviations.....	1
1.3	Background.....	2
2.0	SYSTEM IDENTIFICATION.....	2
2.1	Software.....	2
2.2	Hardware.....	3
2.3	Peripherals.....	3
2.4	Test Support Equipment/Materials.....	4
3.0	TEST PROCESS.....	4
3.1	General Information.....	4
3.2	Test Approach.....	4
3.3	Test Cases.....	4
4.0	TEST FINDINGS AND RECOMMENDATIONS.....	4
5.0	CERTIFICATION FOR USE.....	8
	ATTACHMENT A.....	9
	ATTACHMENT B.....	19

1.0 INTRODUCTION

An examination was performed to confirm that the submitted modifications to the ES&S Accuvote TSx voting system 4.6.4 and GEMS version 1.18.25 GEMS met the requirements of Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22. This examination was performed per the direction of the Secretary of the Commonwealth, acting through the Pennsylvania Department of State, Bureau of Commissions, Elections and Legislation. This Test Report documents the procedures followed, the results obtained, and the conclusions drawn from that examination.

1.1 References

The documents listed below were utilized in the development of the Test Report.

- Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22
- Federal Election Commission 2002 Voting Systems Standards
- Help America Vote Act (HAVA) of 2002, Public Law 107-252, 42 U.S.C. § 15301 *et seq.*
- Pro V&V Test Protocol for Examination of Modifications to GEMS SSL Certificate, EZRoster 2.7.11 and BridgePoint Software 1.6.0.0

1.2 Terms and Abbreviation

This subsection lists terms and abbreviations relevant to this examination

“COTS” – Commercial Off-The-Shelf

“Department” – Pennsylvania Department of State

“DRE” – Direct Recording Electronic

“EMS” – Election Management System

“Examiner” – The examiner appointed by the Secretary of the Commonwealth to conduct the re-examination

“GEMS” – ES&S election management system

“PA” – The Commonwealth of Pennsylvania

“Pennsylvania Election Code” - Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22

“Secretary” – The Secretary of the Commonwealth

“TDP” – Technical Data Package

“VSS” – Federal Election Commission 2002 Voting System Standards

“VVSG” – Election Assistance Commission 2005 Voluntary Voting System Guidelines

1.3 Background

The Accuvote TSx voting system version 4.6.4 and GEMS version 1.18.25 were certified for use in the Commonwealth of Pennsylvania on January 17, 2006 after an examination conducted pursuant to the Pennsylvania Election Code. The Accuvote TSx voting system version 4.6.4 and GEMS version 1.18.25 have been in use by Pennsylvania counties since its initial certification. Additionally, per the formal request of a group of Pennsylvania voters, a re-examination was performed on March 1, 2012, to ascertain whether the certified system complies with the requirements of the Pennsylvania Election Code.

Since that time, ES&S has submitted the following changes to the previously certified system:

- **BridgePoint v. 1.6.0.0**

BridgePoint is an electronic pollbook data conversion software application that jurisdictions can utilize outside of the election management system to create and finalize all required data needed by their electronic pollbook solution.

- **EZRoster v. 2.7.11**

EZRoster is an application installed on the ExpressPoll 5000 hardware that allows the ExpressPoll to be utilized as an electronic pollbook.

- **GEMS v. 1.18.25 Server Root SSL Certificate and AccuVote TSx v. 4.6.4 SSL Certificate**

System maintenance to update the TSx SSL certificate and the GEMS Server root SSL certificate

2.0 SYSTEM IDENTIFICATION

This section contains detailed descriptions of the items tested during the examination, including all software, hardware, and peripherals, both proprietary and COTS, and any test support equipment or materials necessary for test performance.

2.1 Software

The software listed in Table 2.1 was used during the examination of the voting system. Table 2.1 provides the component name, software/firmware version and a SHA-1 Hash, if calculated, during the examination.

Table 2.1 Software

Component Name	Version	Unique Identifier (digital signature or hash value)
GEMS Server	1.18.25	Gems.exe 522988108278b467846951ce0d8166d539e2233c server.pem c89ef915e91fd6f69d9501c795ed0e0c76e94626
Ballot Station	4.6.4	BS_CE-TSX-4-6-4-106-DS.ins 93bfaf4ac7d31d0627856d15b856698839aae647
BridgePoint	1.6.0.0	Not calculated
EZRoster	2.7.11	Not calculated
CardWriter	1.1.4.0, 1.1.5, 1.1.6	Not calculated

2.2 Hardware

Table 2.2 provides hardware component name, description, model number, and the serial number for the units that were examined.

Table 2.2 Hardware

Component Name	Model/Version Number	Serial Number(s)	Description
AccuVote	TSx	0290760	DRE
ExpressPoll	5000	EPS67ZOM001612 EPS74ZOM008595 EPS7BZOM015932	Electronic Poll Book
GEMS Server	1.18.25	F22N6D1	Dell Latitude 830 EMS Server

2.3 Peripherals

Table 2.3 provides the information for the peripheral components used during the examination.

Table 2.3 Peripherals

Part Name	Model Number	Serial Number	Description
PCMCIA	---	---	Transport media
Desktop Printer	Seiko MPU-L465-E	02C0020529	Report printer
BridgePoint PC	Dell E6400 Latitude	C8J8GH1	PC running Windows 7 SP1
Signature Pad	T-LBK750SE- BHSB-R T-L460-HSB-R	--- TL460HN10M610	TOPAZ Signature Pad
Scanner	Motorola D58708	1204100503133	Scanner
USB Hub	Belkin	CZA3577629	USB Hub
3 Com Office Connect	---	0100-7T4F043175	Switch
Sandisk CF Reader	ImageMate	0170245	Compact Flash Reader

2.4 Test Support Equipment/Materials

The test materials listed in Table 2.4 were used during the examination.

Table 2.4 Test Support Materials

Part Name	Quantity	Model/Serial Number	Description
Paper rolls	3	---	Results paper roll
Smart Cards	Various	---	Smart cards
USB Flash Drive	1	---	Wyle flash drive
Delkin	1	4GB	USB Drive to transfer media

3.0 TEST PROCESS

3.1 General Information

The examination of the previously identified voting system was performed by Mr. Jack Cobb of Pro V&V, Inc. (the “Examiner”), per the direction of the Secretary of the Commonwealth, acting through the Pennsylvania Department of State, Bureau of Commissions, Elections and Legislations. The examination commenced on June 24, 2012, at the Commonwealth Keystone Building, Hearing Room 5, 400 North Street, Harrisburg, Pennsylvania. The examination lasted approximately seven hours.

3.2 Test Approach

To achieve the objective of this examination, the Examiner performed a review of the submitted test documentation consisting of ITA and other third-party reports. During this review, the Examiner analyzed the previous test results for specific tests that satisfied the requirements of the Pennsylvania Election Code and verified that identified modifications to the previously certified voting system met those requirements. The Examiner then developed test cases designed to confirm that the submitted modifications to the ES&S Accuvote TSx voting system version 4.6.4 and GEMS version 1.18.25 met the requirements of Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22.

3.3 Test Cases

The test cases for this examination are summarized in the following section and are contained in Appendix B of this Test Report. The test cases were executed independently of one another and in random order.

4.0 TEST FINDINGS AND RECOMMENDATIONS

Test Case Identifier: SSL Certificate Update

Since the time of the original certification on January 17, 2006, system maintenance has been performed on an SSL certification used for communication between the GEMS Server and the

AccuVote TSx units which expired in 2013. The update of the SSL certificate was examined by Wyle Laboratory and documented in the letter dated April 12, 2013.

A new installation of the GEMS software was installed as part of the test set up. Once installed, this test case was executed to verify the voting system with the updated SSL certificate met the requirements of Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22.

The main objectives of this test case are as follows:

- Verify that the system can upload and download election data between the server and TSx touch screen units with the SSL authentication turned on.
- Verify that the system can detect matched and unmatched pairs of certificates.
- Check the performance of the system with dates pre and post October 3, 2030.
- Collect, describe and account for all error messages that might be generated by the installation of the certificates and following utilization of the system.

Summary Findings: This test case was performed on Accuvote TSx version 4.6.4, GEMS version 1.18.25, and EZRoster version 2.7.11. No Issues or anomalies were noted during the execution of this test case. The actual results obtained during execution met the expected results. The objective criteria for evaluation were analyzed and the system met the criteria. Therefore, I conclude that the system met the pertinent requirements of Article XI-A of the Pennsylvania Election Code.

During execution of this test case, it was verified that EZRoster version 2.7.11 met the following requirements:

- The computer list shall be in a form prescribed and approved by the Secretary. (25 Pa. C.S. § 1402(b)(2)).
- For each election district, the list shall contain the names of the registered electors – alphabetically by last name. (25 Pa.C.S. § 1402(b)(2)).
- Each page of the list (or each screen) shall contain the name of the county. (25 Pa.C.S. § 1402(b)(2)).
- Each page of the list (or each screen) shall contain the election district. (25 Pa.C.S. § 1402(b)(2)).
- Each page of the list (or each screen) shall contain the date of the election. (25 Pa.C.S. § 1402(b)(2)).
- Each page of the list (or each screen) shall contain the date and time the list was prepared. (25 Pa.C.S. § 1402(b)(2)).
- The list must contain the following:

- A legible signature. (25 Pa.C.S. § 1402(b)(2)).
- The street address. (25 Pa.C.S. § 1402(b)(2)).
- Political party of each registered elector. (25 Pa.C.S. § 1402(b)(2); 4 Pa. Code § 183.11(b)(3)).
- Suitable space for insertion of the signature of the registered elector. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)).
- Suitable space for insertion by the proper election official of the number and letter of the stub of the ballot issued to the registered elector or the registered elector's number in the order of admission to the voting systems. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)).
- Suitable space for insertion of the initials of the election official who enters the record of voting in the district register. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)).
- Indication of whether the elector needs assistance to vote and, if so, the nature of the disability. (25 Pa.C.S. § 1402(b)(2)).
- The date of birth of the registrant. (4 Pa. Code § 183.11(b)(4)).
- The SURE registration number of the registrant. (4 Pa. Code § 183.11(b)(5)).
- An elector's affirmation appears above each signature section and contains the verbiage "I hereby certify that I am qualified to vote in this election." (25 P.S. § 3043).
- An indication of whether the registrant's status is active or inactive. (25 Pa.C.S. § 1901(c); 4 Pa. Code § 183.11(b)(6)).
- The SURE System includes the following flags:
 - "Inactive" -Affirmation is required. (25 Pa.C.S. § 1901(c) and (d)(3); 4 Pa. Code § 183.11).
 - "ID Required" - Indication of whether the voter needs to present voter identification. An elector who appears to vote in an election district for the first time must present valid voter identification. (25 P.S. § 3050(a)).
 - "Absentee Ballot" – If an elector- voted using an absentee ballot is in the municipality on Election Day, he or she must vote in the precinct, and the absentee ballot is voided. (25 P.S. § 3146.6(b)).
 - "Must vote in person"- Indication of whether the voter needs to present voter identification if the elector votes for the first time by mail. (Federal: 42 U.S.C. § 15483(b)).

In addition, the ExpressPoll 5000 loaded with EZRoster 2.7.11 was used to execute the test cases “Cardwriter Functional Verification (General Election)” and “Cardwriter Functional Verification (Closed Primary).”

Test Case Identifier: Cardwriter Functional Verification (General Election)

The objective of this test case is to determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use. To meet requirements, the Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions to properly be retrieved and presented to a voter in a General Election. This test case was performed on the AccuVote TSx unit configured as described for normal election-day operation by Pennsylvania procedures and/or ES&S technical documentation. The unit was loaded with all precincts from the “Pennsylvania Certification General Election.”

Summary Findings: This test case was performed on CardWriter versions 1.1.4.0, 1.1.5, and 1.1.6. No Issues or anomalies were noted during the execution of this test case. The actual results obtained during execution met the expected results. The objective criteria for evaluation were analyzed and the system met the criteria. Therefore, I conclude that the system met the pertinent requirements of Article XI-A of the Pennsylvania Election Code.

Test Case Identifier: Cardwriter Functional Verification (Closed Primary Election)

The objective of this test case is to determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use. To meet requirements, the Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions and party affiliation to properly be retrieved and presented to a voter in a Closed Primary Election. This test case was performed on the AccuVote TSx unit configured as described for normal election-day operation by Pennsylvania procedures and/or ES&S technical documentation. The unit was loaded with all precincts and parties from the “Pennsylvania Certification Closed Primary Election.”

Summary Findings: This test case was performed on CardWriter versions 1.1.4.0, 1.1.5, and 1.1.6. No Issues or anomalies were noted during the execution of this test case. The actual results obtained during execution met the expected results. The objective criteria for evaluation were analyzed and the system met the criteria. Therefore, I conclude that the system met the pertinent requirements of Article XI-A of the Pennsylvania Election Code.

Test Case Identifier: BridgePoint v. 1.6.0.0 Analysis

The objective of this test case is to focus on the interfacing points of the BridgePoint software and the ExpressPoll 5000 to ensure the software functions as expected and does not adversely affect operation of the ExpressPoll 5000. To meet the designed functional requirements, the BridgePoint software must import the GEMS database, load the election files for the ExpressPoll 5000, and import audit logs from the ExpressPoll 5000. This test case was performed with the BridgePoint software loaded on a laptop/PC.

Summary Findings: This test case was performed on BridgePoint version 1.6.0.0. No Issues or anomalies were noted during the execution of this test case. The actual results obtained during execution met the expected results. The objective criteria for evaluation were analyzed and the system met the criteria. Therefore, I conclude that the system met the pertinent requirements of Article XI-A of the Pennsylvania Election Code.

Note: BridgePoint 1.6.0.0 contains additional functionality to network multiple ExpressPoll 5000 units for real time updating. This functionality was not tested and should not be included in the certification for use of the ExpressPoll 5000. A separate examination will have to be performed to include this functionality.

5.0 CERTIFICATION FOR USE

The Accuvote TSx voting system version 4.6.4 and GEMS version 1.18.25, certified for use in the Commonwealth of Pennsylvania and presented for examination, along with the modifications identified in Section 1.3 of this Test Report, meets the requirements of Article XI-A of the Pennsylvania Election Code, sections 1101-A to 1122-A, 25 P.S. §§ 3031.1 – 3031.22. As the Examiner, I recommend the voting system documented in Section 2.0 of this report be certified for use in the Commonwealth of Pennsylvania.

ATTACHMENT A
ELECTION DEFINITIONS

Election Definition: Pennsylvania Certification Closed Primary Election

Primary Election Description:

A closed primary election for 2 parties in 3 precincts. This election contains 35 contests compiled into 6 ballot styles. Each ballot style contains 15 contests. The voting variations supported in a primary election by the Commonwealth of Pennsylvania are defined in this election. The voting variations are as follows:

- Partisan contest
- Non-Partisan
- Primary Presidential delegation nominations
- Write-In voting
- N of M Contest
- Cross-Party Filed Candidates

This closed primary election was designed to functionally test the handling of multiple ballot styles across geographical subdivisions, support for two languages, and support for common primary specific voting variations.

Configuration:

EMS computer loaded with software certified for use in Pennsylvania to create the following configuration:

Name: Pennsylvania Certification Closed Primary Election

Voting Devices: 1 machine for each precinct

Precincts: Precinct 1, Precinct 2, Precinct 3

Parties: Republican, Democrat

Languages: English, Spanish

Totals Contests: 35

Contests as follows:

Precinct 1 REP	Precinct 2 REP	Precinct 3 REP	Precinct 1 DEM	Precinct 2 DEM	Precinct 3 DEM
<p align="center">President of the United States Vote for One</p> <p>James Collins</p> <p>Alexander P. Bicket</p> <p>Carol Koethen</p> <p>Write-In</p>			<p align="center">President of the United States Vote for One</p> <p>Barry Josey</p> <p>Calvin Marino</p> <p>Write-In</p>		
<p align="center">United States Senator Vote for One</p> <p>Bob Ford <i>Allegheny County</i></p> <p>Colby Lincoln <i>Delaware County</i></p> <p>Write-In</p>			<p align="center">United States Senator Vote for One</p> <p>Oscar Draper <i>Cumberland County</i></p> <p>Carter McGaw <i>Philadelphia County</i></p> <p>Write-In</p>		
<p align="center">Representative in Congress 5th District Vote for One</p> <p>Ben Baker <i>Allegheny County</i></p>		<p align="center">Representative in Congress 10th District Vote for One</p> <p>Cheryl Simon</p>	<p align="center">Representative in Congress 5th District Vote for One</p> <p>Barbara Barret Hicks <i>Montgomery County</i></p>		<p align="center">Representative in Congress 10th District Vote for One</p> <p>William Sullivan</p>

Write-In	<p style="text-align: center;"><i>York County</i></p> Lois Koss <i>Erie County</i> Write-In	Clinton Testo <i>Centre County</i> Write-In	<p style="text-align: center;"><i>Butler County</i></p> Write-In
<p style="text-align: center;">Governor Vote for One</p> Dean Lindsey <i>Allegheny County</i> Don Etter <i>Allegheny County</i> Joe Carlton <i>Washington County</i> Edwin Lewis <i>Lancaster County</i> Samuel Lawton <i>Bucks County</i> Write-In		<p style="text-align: center;">Governor Vote for One</p> Charles Jasen <i>Montgomery County</i> Shirley Henning <i>Luzerne County</i> Write-In	
<p style="text-align: center;">Lieutenant Governor Vote for One</p> Scott Montes <i>Berks County</i> Saul Currier <i>Lehigh County</i> Arnold Krill <i>Lycoming County</i> Write-In		<p style="text-align: center;">Lieutenant Governor Vote for One</p> Sherman R. Bucher <i>Philadelphia County</i> Richard V. Suits <i>Cambria County</i> Tabathia Song <i>Allegheny County</i> Kenneth Interlicchio <i>Philadelphia County</i> Write-In	
<p style="text-align: center;">Representative in the General Assembly 83rd District Vote for One</p> Harry Rider <i>Cascade</i> Robert Tyrell <i>McNett</i> Write-In	<p style="text-align: center;">Representative in the General Assembly 84th District Vote for One</p> Peter Valle <i>Muncy</i> Write-In	<p style="text-align: center;">Representative in the General Assembly 83rd District Vote for One</p> R. J. Abbott <i>Shrewsbury</i> Peter F. Saxton <i>Willamspport</i> Write-In	<p style="text-align: center;">Representative in the General Assembly 84th District Vote for One</p> Neil Carey <i>Lewis</i> Saul Currier <i>Eldred</i> Write-In
<p style="text-align: center;">Delegate to the National Convention –5th District Vote for Not More Than Three</p> Gloria Dillion Heather Heidelbaugh Herbert Devine George A. Fisk Doris Shiddles Andre Ninia Brian Getz Chad Snow Diane Rubin Elizabeth Piazza		<p style="text-align: center;">Delegate to the National Convention –5th District Electing 2 Males and 2 Females Vote Not More Than Four</p> Vincent Seymour <i>(M) Committed to Barry Josey</i> Toni Hamilton <i>(F) Committed to Calvin Marino</i> Sam Patel <i>(M) Committed to Barry Josey</i>	

<p>Write-In Write-In Write-In</p>	<p>Robert Rocco <i>(M) Committed to Calvin Marino</i></p> <p>Renee Cohn Jubelrier <i>(F) Committed to Calvin Marino</i></p> <p>Morton Steele <i>(M) Committed to Calvin Marino</i></p> <p>Mary Burke <i>(F) Committed to Barry Josey</i></p> <p>Nyda E. Hambin <i>(F) Committed to Barry Josey</i></p> <p>Write-In Write-In Write-In Write-In</p>
<p align="center">Judge of the Superior Court Vote for One</p> <p>Richard Maxian <i>Philadelphia County</i></p> <p>Marjorie Hall <i>Delaware County</i></p> <p>Robert L. Linkey <i>Bucks County</i></p> <p>Write-In</p>	<p align="center">Judge of the Superior Court Vote for One</p> <p>Linda Gapp <i>Cumberland County</i></p> <p>Patricia Smallmon <i>Allegheny County</i></p> <p>Write-In</p>
<p align="center">Judge of the Commonwealth Court Vote for One</p> <p>Chris Carpenter <i>Montgomery County</i></p> <p>Write-In</p>	<p align="center">Judge of the Commonwealth Court Vote for One</p> <p>Eugene Ruff <i>Washington County</i></p> <p>Lewis Tese <i>Luzerne County</i></p> <p>Write-In</p>
<p align="center">Judge of the Court of Common Pleas Vote for Not More Than Two</p> <p>Mary L. Daniel <i>Armstrong</i></p> <p>John Roy <i>Clinton</i></p> <p>Jack "Duke" Brodisky <i>McNett</i></p> <p>Jon Young <i>Muncy</i></p> <p>Vic Stabile <i>Gamble</i></p> <p>Write-In</p> <p>Write-In</p>	<p align="center">Judge of the Court of Common Pleas Vote for Not More Than Two</p> <p>Joanne Shollzert <i>Williamsport</i></p> <p>Kerry Jones <i>Williamsport</i></p> <p>Steven Miller <i>Lewis</i></p> <p>Shirley Henning <i>Mill Creek</i></p> <p>Write-In</p> <p>Write-In</p>
<p align="center">County Chief Executive Four Year Term Vote for One</p>	<p align="center">County Chief Executive Four Year Term Vote for One</p>

Norman Powers <i>Williamsport</i> Sandra Reilly <i>McNett</i> Write-In			Micheal Santarcangelo <i>Fairfield</i> Charles Place <i>Gamble</i> Write-In		
School Director Region 6 Four Year Term Vote for Not More Than Two			School Director Region 6 Four Year Term Vote for Not More Than Two		
Gerald Danson Greg Ortiz Shlomo Archibald Delores DeVan Write-In Write-In			Douglas Stone Gerald Danson Greg Ortiz Shlomo Archibald Delores DeVan Write-In Write-In		
Commissioner Seat 1 Four Year Term Vote for One	Commissioner Seat 2 Four Year Term Vote for One	Commissioner Seat 3 Four Year Term Vote for One	Commissioner Seat 1 Four Year Term Vote for One	Commissioner Seat 2 Four Year Term Vote for One	Commissioner Seat 3 Four Year Term Vote for One
Stephen Harrick	Steve West	William Malicki	George Fisk	Tetty Rogiers	Arnold Wells
Write-In	Write-In	Gary Klemann Write-In	Write-In	Write-In	Write-In
Referendum A Bond Issue					
To promote and assure the preservation and improvement of essential rail passenger and freight services to the inhabitants of the state, shall section two of chapter one hundred eighteen of the laws of nineteen hundred seventy-four, authorizing the creation of a state debt in the amount of two hundred fifty million dollars for capital facilities be approved?					
Yes					
No					

Election Definition: Pennsylvania Certification General Election

General Election Description:

A general election combining presidential year contests, non-presidential year contests, and municipal contests into a single election held in 3 precincts one of which is a split precinct on the “Representative in the General Assembly” contests. This election contains 21 contests compiled into 4 ballot styles (excluding language styles). 15 of the contests are in all ballot styles. The other 6 are split between at least 2 of the precincts with a maximum of 21 different contests spread across the 3 precincts. All voting variations supported by the Commonwealth of Pennsylvania are defined in this election. The voting variations are as follows:

- Partisan contest
- Non-Partisan contest
- N of M contest
- Referendum contest
- Retention Contest
- Straight Party voting
- Write-In voting
- Split Precinct
- Cross-Party Nominated

This general election was designed to functionally test the handling of multiple ballot styles across geographical subdivisions, support for English and Spanish languages, support for all Pennsylvania voting variations, and audio support for English and Spanish.

Configuration:

EMS computer loaded with software certified for use in Pennsylvania to create the following configuration:

Name: Pennsylvania Certification General Election

Voting Devices: 1 machine for each precinct

Precincts: Precinct 1, Precinct 2 split into 2a and 2b, Precinct 3

Parties: Republican, Democratic, Green, Libertarian

Languages: English, Spanish

Totals Contests: 21

Contests as follows:

Precinct 1	Precinct 2a	Precinct 2b	Precinct 3
Straight Party			
Republican			
Democratic			
Green			
Libertarian			
President/Vice President of the United States			
Vote for the Candidate of One Party for President and Vice President or insert the names of candidates			
James Collins			
Arthur Remus			

<p><i>Republican</i></p> <p>Calvin Marino Keith Satterwhite <i>Democratic</i></p> <p>John P. Defazio Louis Denn <i>Green</i></p> <p>June Perkins David Heroux <i>Libertarian</i></p> <p>Write-In</p>	
<p>United States Senator Vote for One</p>	
<p>Colby Lincoln <i>Republican</i></p> <p>Oscar Draper <i>Democratic</i></p> <p>Eric Sheely <i>Libertarian</i></p> <p>Write-In</p>	
<p>Representative in Congress 5th District Vote for One</p>	<p>Representative in Congress 10th District Vote for One</p>
<p>Ben Baker <i>Republican</i></p> <p>Barbara Barrett Hicks <i>Democratic</i></p> <p>Write-In</p>	<p>Lois Koss <i>Republican</i></p> <p>William Sullivan <i>Democratic</i></p> <p>Write-In</p>
<p>Governor/Lieutenant Governor Vote for the Candidate of One Party for Governor and Lieutenant Governor</p>	
<p>Joe Carlton Arnold Krill <i>Republican</i></p> <p>Charles Jasen Kenneth Interlicchio <i>Democratic</i></p> <p>Robert Marsh Theodore Kopp <i>Green</i></p> <p>Write-In</p>	
<p>Representative in the General Assembly 83rd District Vote for One</p>	<p>Representative in the General Assembly 84th District Vote for One</p>
<p>Harry Rider <i>Republican</i></p> <p>R. J. Abbott <i>Democratic</i></p>	<p>Peter Valle <i>Republican</i></p> <p>Neil Carey <i>Democratic</i></p>

Derek Carlson <i>Libertarian</i> Write-In	Write-In
<p style="text-align: center;">Judge of the Superior Court Vote for One</p> Robert L. Linkey <i>Republican</i> Patricia Smallmon <i>Democratic</i> Write-In	
<p style="text-align: center;">Judge of the Commonwealth Court Vote for One</p> Chris Carpenter <i>Republican</i> Eugene Ruff <i>Democratic</i> Write-In	
<p style="text-align: center;">Judge of the Court of Common Pleas Vote for Not More Than Two</p> Mary L. Daniel <i>Republican</i> Jack "Duke" Brodisky <i>Republican</i> Joanne Schollzert <i>Democratic</i> Kerry Jones <i>Democratic</i> Write-In Write-In	
<p style="text-align: center;">County Chief Executive Four Year Term Vote for One</p> Norman Powers <i>Republican</i> Micheal Santarcangelo <i>Democratic</i> Write-In	
<p style="text-align: center;">County Controller Four Year Term Vote for One</p> Paul M Bertel-Lincoln <i>Republican</i>	

Donna Berke <i>Democratic</i> Write-In		
District Attorney Four Year Term Vote for One		
Franklin Margo <i>Republican</i> Donald Hensley <i>Democratic</i> Write-In		
School Director Region 6 Four Year Term Vote for Not More Than Two		
Gerald Danson <i>Republican/Democratic</i> Shlomo Archibald <i>Republican/Democratic</i> Write-In Write-In		
Commissioner Seat 1 Four Year Term Vote for One Stephen Harrick <i>Republican</i> George Fisk <i>Democratic</i> Write-In	Commissioner Seat 2 Four Year Term Vote for One Steve West <i>Republican</i> Tetty Rogiers <i>Democratic</i> Write-In	Commissioner Seat 3 Four Year Term Vote for One William Malicki <i>Republican</i> Arnold Wells <i>Democratic</i> Write-In
Statewide Referendum Water and Sewer Improvements Bond Referendum		
Do you favor the incurring of indebtedness by the Commonwealth of \$400,000,000 for grants and loans to municipalities and public utilities for the cost of all labor, materials, necessary operational machinery and equipment, lands, property, rights and easements, plans and specifications, surveys, estimates of costs and revenues, prefeasibility studies, engineering and legal services and all other expenses necessary or incident to the acquisition, construction, improvement, expansion, extension, repair or rehabilitation of all or part of the drinking water system, storm water, nonpoint source projects, nutrient credits and wastewater treatment system projects? Yes No		
Retention of Tony Grzanich		
Shall Tony Grzanich be retained for an additional term as Justice of the Supreme Court of the Commonwealth of Pennsylvania? Yes		

No
Retention of Debbie Marks
Shall Debbie Marks be retained for an additional term as Justice of the Supreme Court of the Commonwealth of Pennsylvania?
Yes
No

ATTACHMENT B

TEST CASES

Test Case Identifier: SSL Certificate Update

The system under test will be set up and configured by ES&S. The election data used during this test will be the General Election from Appendix A. The main objectives of this test are as follow:

- Verify that the system can upload and download election data between the server and TSx touch screen units with the SSL authentication turned on.
- Verify that the system can detect matched and unmatched pairs of certificates.
- Check the performance of the system with dates pre and post October 3, 2030.
- Collect, describe and account for all error messages that might be generated by the installation of the certificates and following utilization of the system.

Procedure

The following actions shall be performed in the stated order, to test the installation of new SSL Authentication Certificates on GEMS Servers and the interaction of the servers with client TSx touch screen voting devices and any errors or malfunctions that may result. The following basic steps will provide a means to ensure that the requirements are met. The Examiner will document the exact test procedures at the time of the test to ensure repeatability.

Objective 1

- Step 1: Record all Hash value for the certificates and .ins files prior to loading in the test environment.
- Step 2: Set up the system as it would be used in the field with the provided SSL certificates
- Step 3: Record the location and process for the installation of SSL certificates.
- Step 4: Verify that SSL authentication is active on the GEMS Server and the TSx touch screen device.
- Step 5: Attempt to transfer election data from the GEMS Server to touch screen device using SSL Authentication.
- Step 6: Verify that process was successful and record any errors that occur.

Objective 2

Step 7: Combinations of old and new certificates will be tested to verify that the systems will detect mismatched pairs of certificates. The table below lists the combinations of certificates that will be tested. The date on each machine will be altered to ensure the expiration validation is passed.

GEMS Server	Touch screen Device
Old Certificate	Old Certificate
Old Certificate	New Certificate
New Certificate	Old Certificate
New Certificate	New Certificate

- Step 8 Attempt to transfer election data from GEMS Server to the TSx touch screen device to ensure the system detects mismatched pairs, for each combination. Record results and note any errors that occur.
- Step 9: Install new SSL Authentication Certificate on the GEMS Server and verify that the new certificate is properly installed, noting any errors that occur.

Objective 3

- Step 10: Change the date and time on GEMS Server to a time prior to October 3, 2030 and note any errors that may occur.
- Step 11: Change the date and time to a date after October 3, 2030, and record the results while noting any errors that occur.

Test Case Identifier: Cardwriter Functional Verification (General Election) CardWriter 1.1.4.0	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions to properly be retrieved and presented to a voter in a General Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts from the "Pennsylvania Certification General Election."
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode two voter access cards for each precinct in the General Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The voter access cards were programmed.
1010	Insert the first Precinct 1 voter access card into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1. <i>Actual:</i> Ballot style for Precinct 1 was displayed.
1020	Use the designated method to advance the through the ballot. Observe the contests and candidates for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> All contests and candidates were displayed.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the "Ballot Review." Observe the "Ballot Review" to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the "Ballot Review" screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot was cast.

<p>1050</p>	<p>Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the used voter access card.</p> <p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> The TSX display a message that the card had already been voted.</p>
<p>1060</p>	<p>Insert the second Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1.</p> <p><i>Actual:</i> The ballot style for precinct one was displayed.</p>
<p>1070</p>	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> Every candidate was displayed.</p>
<p>1080</p>	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> Ballot review was displayed and the ballot cast.</p>
<p>1090</p>	<p>Repeat steps 1060- 1080 for each precinct.</p> <p><i>Expected:</i></p> <p style="padding-left: 40px;">Repeat 1060 ___X___</p> <p style="padding-left: 40px;">Repeat 1070 ___X___</p> <p style="padding-left: 40px;">Repeat 1080 ___X___</p> <p><i>Actual:</i> Repeated all steps.</p>
<p>1080</p>	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> The polls were closed and report printed.</p>
<p>1090</p>	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p> <p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> The totals were correct.</p>

Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.	

Test Case Identifier: Cardwriter Functional Verification (Closed Primary Election) CardWriter 1.1.4.0	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions and party affiliation to properly be retrieved and presented to a voter in a Closed Primary Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts and parties from the “Pennsylvania Certification Closed Primary Election.”
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode one voter access cards for each party and each precinct in the Closed Primary Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The cards were programmed.
1010	Insert the Democratic voter access card for Precinct 1 into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style for Democratic party for Precinct 1. <i>Actual:</i> The Democratic ballot was displayed.
1020	Use the designated method to advance through the ballot. Observe the contests and candidates for Democratic party for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> Contested displayed accurately.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot was cast.
1050	Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the used voter access card.

	<p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> The TSx display a message that the card had been voted.</p>
1060	<p>Insert the Republican voter access card for Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1.</p> <p><i>Actual:</i> The republican ballot was displayed.</p>
1070	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> All input correctly.</p>
1080	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> The ballot review screen was displayed and the ballot was cast.</p>
1090	<p>Repeat steps 1010- 1080 excluding step 1050 for each precinct.</p> <p><i>Expected:</i> Repeat 1010 ___X___ Repeat 1020 ___X___ Repeat 1030 ___X___ Repeat 1040 ___X___ Repeat 1060 ___X___ Repeat 1070 ___X___ Repeat 1080 ___X___</p> <p><i>Actual:</i> Repeated all steps.</p>
1080	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> The polls were closed and report printed.</p>
1090	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p> <p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> All totals were correct.</p>

Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.

Test Case Identifier: Cardwriter Functional Verification (General Election) CardWriter 1.1.5	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions to properly be retrieved and presented to a voter in a General Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts from the "Pennsylvania Certification General Election."
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode two voter access cards for each precinct in the General Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The cards were programmed.
1010	Insert the first Precinct 1 voter access card into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1. <i>Actual:</i> The ballot style for precinct one was displayed.
1020	Use the designated method to advance the through the ballot. Observe the contests and candidates for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> The contests and candidates were displayed accurately.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the "Ballot Review." Observe the "Ballot Review" to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the "Ballot Review" screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot was cast.

<p>1050</p>	<p>Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the used voter access card.</p> <p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> The TSx displayed a message stating the card had been voted.</p>
<p>1060</p>	<p>Insert the second Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1.</p> <p><i>Actual:</i> The ballot style for precinct 1 was displayed.</p>
<p>1070</p>	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> Every candidate was input.</p>
<p>1080</p>	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> The ballot review screen was displayed and the ballot cast.</p>
<p>1090</p>	<p>Repeat steps 1060- 1080 for each precinct.</p> <p><i>Expected:</i></p> <p style="padding-left: 40px;">Repeat 1060 <u> X </u></p> <p style="padding-left: 40px;">Repeat 1070 <u> X </u></p> <p style="padding-left: 40px;">Repeat 1080 <u> X </u></p> <p><i>Actual:</i> The steps were repeated.</p>
<p>1080</p>	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> The polls were closed and report printed.</p>
<p>1090</p>	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p>

	<p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> The totals were as input.</p>
<p>Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.</p>	

Test Case Identifier: Cardwriter Functional Verification (Closed Primary Election) CardWriter 1.1.5	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions and party affiliation to properly be retrieved and presented to a voter in a Closed Primary Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts and parties from the “Pennsylvania Certification Closed Primary Election.”
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode one voter access cards for each party and each precinct in the Closed Primary Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The cards were programmed.
1010	Insert the Democratic voter access card for Precinct 1 into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style for Democratic party for Precinct 1. <i>Actual:</i> The ballot style for the Democratic party was displayed.
1020	Use the designated method to advance through the ballot. Observe the contests and candidates for Democratic party for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> The contests and candidates were displayed.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot cast.
1050	Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the used voter access card.

	<p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> The TSx displayed a message that the card had already been voted.</p>
1060	<p>Insert the Republican voter access card for Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style for the Republican Precinct 1.</p> <p><i>Actual:</i> The Republican ballot was displayed.</p>
1070	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> Every candidate was input.</p>
1080	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> The ballot review screen was displayed and the ballot cast.</p>
1090	<p>Repeat steps 1010- 1080 excluding step 1050 for each precinct.</p> <p><i>Expected:</i> Repeat 1010 __X__ Repeat 1020 __X__ Repeat 1030 __X__ Repeat 1040 __X__ Repeat 1060 __X__ Repeat 1070 __X__ Repeat 1080 __X__</p> <p><i>Actual:</i> All steps were repeated.</p>
1080	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> Polls were closed and the report was printed.</p>
1090	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p> <p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> The totals were accurate.</p>

Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.

Test Case Identifier: Cardwriter Functional Verification (General Election) CardWriter 1.1.6	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions to properly be retrieved and presented to a voter in a General Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts from the "Pennsylvania Certification General Election."
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode two voter access cards for each precinct in the General Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The cards were programmed.
1010	Insert the first Precinct 1 voter access card into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1. <i>Actual:</i> The ballot style for precinct 1 is displayed.
1020	Use the designated method to advance the through the ballot. Observe the contests and candidates for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> All contests and candidates were displayed.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the "Ballot Review." Observe the "Ballot Review" to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the "Ballot Review" screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot cast.

<p>1050</p>	<p>Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the used voter access card.</p> <p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> The TSx displayed a message stating the card had already been voted.</p>
<p>1060</p>	<p>Insert the second Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style of Precinct 1.</p> <p><i>Actual:</i> The ballot style for Precinct 1 was displayed.</p>
<p>1070</p>	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> Every candidate was input.</p>
<p>1080</p>	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> The ballot review screen was displayed and the ballot was cast.</p>
<p>1090</p>	<p>Repeat steps 1060 - 1080 for each precinct.</p> <p><i>Expected:</i></p> <p style="padding-left: 40px;">Repeat 1060 <u> X </u></p> <p style="padding-left: 40px;">Repeat 1070 <u> X </u></p> <p style="padding-left: 40px;">Repeat 1080 <u> X </u></p> <p><i>Actual:</i> All steps were repeated.</p>
<p>1080</p>	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> The polls were closed and the report was printed.</p>
<p>1090</p>	

	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p> <p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> A totals were accurate.</p>
<p>Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.</p>	

Test Case Identifier: Cardwriter Functional Verification (Closed Primary Election) CardWriter 1.1.6	
Functional Requirements:	The Express Poll 5000 card writing functionality must be able to program voter access card media with the proper keys to allow for ballot styles based on geographical subdivisions and party affiliation to properly be retrieved and presented to a voter in a Closed Primary Election
Test Objective: To determine if the card writer functionality of the Express Poll 5000 can properly write smart cards for voter access for one time use.	Test Configuration: Precinct tabulation device configured as described for normal election day operation by Pennsylvania procedures and/or the device manufacturer. A TSx unit will be loaded with all precincts and parties from the “Pennsylvania Certification Closed Primary Election.”
Test Equipment:	Express Poll 5000, 10 voter access cards, TSx units
Special Procedural Requirements:	None
Assumptions:	None
Step	Description
1000	From the Express Poll unit encode one voter access cards for each party and each precinct in the Closed Primary Election. <i>Expected:</i> The voter access cards can be programmed. <i>Actual:</i> The cards were programmed.
1010	Insert the Democratic voter access card for Precinct 1 into the TSx. <i>Expected:</i> The TSx accepts the voter access card and displays the ballot style for Democratic party for Precinct 1. <i>Actual:</i> The Democratic ballot was displayed.
1020	Use the designated method to advance through the ballot. Observe the contests and candidates for Democratic party for Precinct 1 ballot style are displayed <i>Expected:</i> All contests and candidates are accurately displayed. <i>Actual:</i> All contests and candidates were displayed.
1030	Use the designated method to navigate to the first contest and select the first candidate. <i>Expected:</i> The TSx navigates to the first contest and the selection for the first candidate is input. <i>Actual:</i> The first candidate was input.
1040	Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections. <i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully. <i>Actual:</i> The ballot review screen was displayed and the ballot was cast.
1050	Remove the ejected voter access card or use the designated method to remove the used voter access card. Reinsert the

	<p>used voter access card.</p> <p><i>Expected:</i> The TSx should give an indication that the voter access card has been used.</p> <p><i>Actual:</i> A message was displayed stating the card had already been voted.</p>
1060	<p>Insert the Republican voter access card for Precinct 1 voter access card into the TSx.</p> <p><i>Expected:</i> The TSx accepts the voter access card and displays the ballot style for Republican Precinct 1.</p> <p><i>Actual:</i> The Republican ballot style was displayed.</p>
1070	<p>Select the first candidate in every “1 of 1” race, the first N in every “N of M” race, and “Yes” for every Referendum race.</p> <p><i>Expected:</i> Every candidate can be input as described.</p> <p><i>Actual:</i> Every candidate was input.</p>
1080	<p>Use the designated method to advance the “Ballot Review.” Observe the “Ballot Review” to see if the above selections are indicated. Use the designated method to cast the voted selections.</p> <p><i>Expected:</i> The precinct tabulation device advances to the “Ballot Review” screen. After review and ballot is cast successfully.</p> <p><i>Actual:</i> The ballot review screen was displayed and the ballot was cast.</p>
1090	<p>Repeat steps 1010- 1080 excluding step 1050 for each precinct.</p> <p><i>Expected:</i> Repeat 1010 <input checked="" type="checkbox"/>____ Repeat 1020 <input checked="" type="checkbox"/>____ Repeat 1030 <input checked="" type="checkbox"/>____ Repeat 1040 <input checked="" type="checkbox"/>____ Repeat 1060 <input checked="" type="checkbox"/>____ Repeat 1070 <input checked="" type="checkbox"/>____ Repeat 1080 <input checked="" type="checkbox"/>____</p> <p><i>Actual:</i> All steps were repeated.</p>
1080	<p>Close the polls and print the closed polls report tape.</p> <p><i>Expected:</i> The polls closed and a report is printed.</p> <p><i>Actual:</i> The polls were closed and the report was printed.</p>
1090	<p>Review the closed polls report to ensure all selections input above are recorded and reported correctly.</p> <p><i>Expected:</i> The closed polls report presents the accumulated totals for the selections input above.</p> <p><i>Actual:</i> All totals were accurate.</p>

Criteria for Evaluation of the Test Results: The intended selections input above are recorded, stored, and reported as input by the tester. The voter access cards are accepted and display the proper ballot style and cannot be reused.	

Test Case Identifier: BridgePoint v. 1.6.0.0 Analysis	
Functional Requirements:	BridgePoint software imports the GEMS database, loads the election files for the ExpressPoll 5000, and imports audit logs from the ExpressPoll 5000.
Test Objective: This test will focus on the interfacing points of the BridgePoint software and the ExpressPoll 5000 to ensure the software functions as expected and does not adversely affect operation of the ExpressPoll 5000.	
Test Configuration: The BridgePoint software will be loaded on a laptop/PC.	
Test Method: The method for testing these requirements is defined below: The test steps that will be followed to evaluate the BridgePoint software generally will be: <ul style="list-style-type: none"> • Verify the version of the software • Import election files from the GEMS server • Program the election compact flash for the ExpressPoll 5000 • Verify the ExpressPoll 5000 is able to function as designed • Verify audit log retrieval • Evaluate other features and functions within the application 	
Criteria for Evaluation of the Test Results: The BridgePoint software is able to import the election files, program the election onto a compact flash that can be read by the ExpressPoll 5000.	
Comments: All functionality tested performed as expected. Note: The BridgePoint software contains additional functionality to network ExpressPoll units for real time updates. This functionality was not tested.	
Tester Approval: _____ <u>On File</u> _____ Date: <u>On File</u> _____	
Test Witness: _____ <u>On File</u> _____	