

GEMS 1.18.24/ACCUVOTE-TSX WITH ACCUVIEW/ACCUVOTE-OS

DIEBOLD ELECTION SYSTEMS, INC.

**GEMS Version 1.18.24,
Accuvote-TSX with Accuview Printer Module,
Accuvote-TSX Ballot Station Firmware Version 4.6.4,
Accuvote-OS (Model D) with Firmware 1.96.6,
Accuvote-OS Central Count with Firmware Version 2.0.12,
Accufeed,
Spyrus Voter Card Encoder Version 1.3.2,
Key Card Tool Version 4.6.1,
VC Programmer Software Version 4.6.1.**

Staff Review and Analysis

**Prepared by:
Secretary of State Elections Division
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I. SUMMARY OF THE APPLICATION

Procedures, hardware, firmware and software developed by Diebold Election Systems, Inc. for use with GEMS version 1.18.24, AccuVote-TSx with AccuView Printer Module, AccuVote-TSX Ballot Station firmware version 4.6.4, AccuVote-OS (Model D) with firmware 1.96.6, AccuVote-OS Central Count with firmware version 2.0.12, AccuFeed, Spyrus Voter Card Encoder version 1.3.2, Key Card Tool version 4.6.1, VC Programmer software version 4.6.1.

II. SUMMARY OF THE SYSTEM

The application consists of seven components.

1. GEMS v. 1.18.24

GEMS is a Windows-based election management system software application that is used to set the parameters to define an election and ultimately report results. Prior to the election, the jurisdiction uses GEMS to define and configure districts, contests and candidates. The system can then be used to design ballot layout with rotations for the TS and TSX DREs, as well as to produce camera-ready copy for printing optical scan ballots. The election data is downloaded to configure the TS and TSX units, as well as the OS units for an actual election. Finally, the GEMS software is used to upload, tabulate and report actual vote results from the TS, TSX and OS units.

The GEMS software was last certified on August 10, 2004, as version 1.18.19. Significant changes between that version and the current version include:

- GEMS now provides the ability to print out unaccepted provisional ballots. In accordance with election law, this will allow election officials to manually duplicate the valid vote choices for those contests in which a voter was entitled to vote when that voter votes a provisional ballot in the wrong precinct. In previous versions, the vote choices on a ballot could not be viewed until the entire ballot had been accepted.
- The AccuVote-TS Write-In Detail By Ballot and the AccuVote-TS Write-In Detail By Race reports no longer include provisional ballots that have not yet been accepted or that have been rejected.
- In the previous version of GEMS the Election Summary reports indicated an incorrect value for the 'Cards Cast' if the report was filtered to a reporting subset of contests that did not include a jurisdiction-wide contest or to a reporting group (absentee or precinct voters). In this version of GEMS, this has been corrected and the reports show a total 'Cards Cast' appropriate to the report set or group selected.
- Several minor bug fixes such as: the GEMS program would crash if the wrong option was selected when exporting vote results; the contest label would download incorrectly to the AccuVote-TSx if the contest title included the '%'

character; invalid contest IDs when printing artwork if a jurisdiction had over 8192 precincts, invalid options were removed from the user interface.

- Modification to features that are not used or allowed in California.

2. AccuVote-TSx with AccuView Printer Module and Ballot Station firmware version 4.6.4

The AccuVote-TSx is a touch-screen voting device that records the voter's intentions as he or she touches the LCD screen. Voted ballots and results tallies are stored on redundant storage; for every ballot cast, results are stored to both an external PCMCIA memory card and on internal flash memory. The device supports high contrast and enlarged image as well as audio voting for the visually impaired. Finally, the AccuVote-TSx supports presentation of the ballot in multiple languages, including all written languages required in California.

The AccuView Printer Module is a device that can be attached to the AccuVote-TSx to produce an accessible voter-verified paper audit trail (AVVPAT). Prior to finalization of the ballot, the voter's choices are printed and displayed in the selected language under a clear window for verification by the voter. The ballot selections are also printed with a barcode for easier tabulation in an audit after the election. The voted ballots are spooled sequentially and stored in a sealed canister. The AccuView also features a plastic lens that magnifies the paper record for those with low vision and a solid cover to hide the paper record to insure the privacy of blind voters.

The AccuVote-TSx with firmware version number 4.4.3.27 was conditionally certified on November 20, 2003. After problems with the device during the March 2004 Presidential Primary and failure to receive federal qualification, the TSx was decertified for use in California on April 30, 2004. Changes to the firmware in this version from the prior version also include:

- Changes to meet the 2002 Federal Voting System Standards for voting equipment.
- Merging of the development trees for both the AccuVote-TS and the AccuVote-TSx. The current version of firmware will run on either device (Though the current application only covers the TSx)
- Support for the new AccuView Printer Module
- Modification of the firmware to fix a longstanding problem for the AccuVote-TS and -TSX that would intermittently cause a crash of the DREs and necessitate rebooting.
- Better detection of paper feed issues and paper jams on the AVPM.
- Several minor new features and bug fixes such as: indicator to status bar to indicate disk activity; protection to prevent accidental overwrite of the supervisor smart card; clearer warning for low paper.
- Modification to features that are not used or allowed in California.

3. Key Card Tool v. 4.6.1

The Key Card Tool is a PC-based software application designed to enhance the security of the AccuVote-TSx devices. When used with an external smart card

reader, this software programs the smart cards with a user selected security key and encryption that can be changed for each election.

The Key Card Tool was last certified on August 10, 2004 as version 1.0.1. This new version was rewritten to meet the 2002 Voting System Standards. The significant changes between this version and the prior certified version include:

- Implementation of 128 bit security key
- Support for the new Administrator smart card
- Auto-generation of security keys.

4. Spyrus Voter Card Encoder v. 1.3.2

The Spyrus Voter Card Encoder is a handheld device which is used to activate and program individual voter access cards that, when inserted into an AccuVote-TSx touch screen DRE, allow the voter access to the AccuVote and the correct ballot style. Intended for use by poll workers, each Voter Card Encoder is capable of storing ballot styles for up to eight different parties. In a primary, this means that two Spyrus' would need to be used in each precinct to cover the eleven required ballot styles for each precinct. (One ballot style for each of the seven qualified political parties, one additional ballot style for each of the three parties that accept non-partisan voters, and finally a final ballot style for non-partisan voters.)

The Voter Card Encoder v. 1.3.2 was first certified for use with GEMS and the Diebold voting systems on August 10, 2004, and is submitted unchanged for use in this system.

5. VCProgrammer v. 4.6.1

VCProgrammer is a PC based software application that was primarily designed to be used for early voting. When used in conjunction with an external smart card reading device, it is used to activate and program voter access cards for use on the AccuVote-TSx for a virtually unlimited number of ballot styles and parties. Ballot definition and configuration information is imported from the GEMS election database.

Optionally, VCProgrammer may be configured to interface directly with a voter registration system during an actual election, although this functionality has not been tested. In this configuration, once the voter is identified to the system, the voter's precinct and party are automatically identified to configure the voter access card with the correct ballot style.

VCProgrammer was last certified in California on October 4, 2004 as version 4.1.11. This new version was rewritten to meet the 2002 Voting System Standards. The significant changes between this version and the prior certified version include:

- Audit log functionality
- Minor bug fix to resolve an exception error that occurred when launching the application for the first time after installation.

6. AccuVote-OS Optical Scan v. 1.96.6

The AccuVote-OS is Diebold's paper based optical scan ballot reader. With firmware v. 1.96.6, it is configured for stand-alone use in a polling place. Each such precinct count AccuVote-OS unit is loaded with a memory card programmed with ballot information for the corresponding polling location or precinct.

The AccuVote-OS will accommodate three different size ballots: 8 ½" x 11", 8 ½" x 14" and 8 ½" x 18". Throughout the election, the AccuVote-OS tabulates votes on the memory card as the ballots are fed individually by the voter. The precinct counter can be configured to reject ballots or sort them separately in the ballot box based on user-determined parameters such as over-votes or under-votes. At the close of the election, vote results are uploaded to the GEMS system either by loading the memory card or, optionally, over a telephone connection using the AccuVote's internal modem.

The AccuVote-OS was last certified in the precinct count configuration on August 17, 2004 with firmware version 1.96.4. The firmware in this new version, 1.96.6, has been rewritten to be compliant with 2002 Voting System Standards. Other changes between this version and the prior version include:

- Audit log now registers ballot overrides
- Support for ballot sorting options in addition to sorting on write-ins
- Improved modem diagnostics
- New features not used in California.

7. AccuVote-OS Central Count v 2.0.12 with AccuFeed Ballot Feeder

When the AccuVote-OS ballot reader is configured with firmware v. 2.0.12 and linked to the GEMS server with a network connection, it can be used for central batch tabulation of ballots.

As a central tabulator, the AccuVote accepts the same size ballots as when the reader is configured for precinct use. As each ballot is read, the scanner validates the ballot type and uploads vote selections directly to the GEMS server. The AccuVote accepts and reads any valid ballot style regardless of orientation. Ballots need not be presorted by precinct.

The AccuVote-OS Central Count with firmware v. 2.0.12 was first certified for use with GEMS and the Diebold voting systems on September 28, 2004, and is submitted unchanged for use in this application.

The AccuFeed ballot feeder is a mechanical ballot feeding device which can be used with the AccuVote-OS. This hardware allows the operator to place stacks of ballots into the input stacker tray that are then fed into the AccuVote-OS optical scan unit. The AccuFeed ballot reader does not have any resident firmware; it is a hardware only device. The AccuFeed ballot feeder sits on top of the AccuVote-OS and is controlled by the AccuVote-OS via a single optical coupler.

The AccuFeed ballot feeder was first certified for use with the AccuVote-OS on September 28, 2004, and is submitted unchanged for use in this application.

III. TESTING INFORMATION AND RESULTS

1. Federal Testing

Wyle Laboratories has successfully completed federal qualification testing of the AccuVote-OS Model D, firmware v. 1.96.6, to the 2002 Federal Voting System Standards. We have received copy of the final report, dated August 4, 2005.

Wyle Laboratories also successfully completed federal qualification testing of the AccuVote-TSX with AccuView Printer Module, firmware v. 4.6.3, to the 2002 Federal Voting System Standards. We have received a copy of that final report, also dated August 4, 2005. A subsequent modification to the firmware, to address the issues found in volume testing, was designated version 4.6.4. While this version was also tested by Wyle to the 2002 Federal Voting Systems Standards, the final report on testing of this version has not been releases.

Finally, Wyle Laboratories completed federal qualification testing of both Key Card Tool, v. 4.6.1 and VC Programmer, v. 4.6.1, to the 2002 Federal Voting System Standards. We have also received a copy of the final report of that testing, dated August 4, 2005.

Ciber, Inc. successfully completed federal qualification testing of GEMS v. 1.18.24 in conjunction with the remainder of the system to the 2002 Federal Voting Systems Standards. We have received the final copy of this report, dated August 3, 2005, as well as the final copy of an addendum to the report, dated September 30, 2005.

NASED qualified the entire system, with AccuVote-TSX firmware version 4.6.3, to the 2002 Federal Voting System Standards on June 27, 2005 and assigned it system number N-1-06-22-22-001. We are expecting a modification to that qualification to encompass the upgraded AccuVote-TSX firmware, version 4.6.4, discussed below.

2. State Testing by the Secretary of State and Consultant

Testing Overview

This system was originally presented with AccuVote-TSX firmware v. 4.6.3. Initial testing of this system was conducted by Secretary of State staff in conjunction with the state's technical expert, Mr. Steve Freeman, at the Secretary of State's Office from June 27 through June 30, 2005. During this initial testing, multiple paper jams were experienced on two of the three AccuVote-TSX machines used for testing. At that point, testing of the system was halted until a volume test could be conducted to appraise reliability across a large sample of TSX machines.

On July 20, 2005, a volume reliability test was conducted in a warehouse supplied by the San Joaquin County Elections Department. The test was conducted from approximately 9:00am to 4:00pm on ninety-six AccuVote-TSX devices equipped with the AccuFeed Printer Module (AVPM). Approximately forty-two volunteers, most of whom were election staff from various counties, cast over 10,000 ballots for the test primary election on the ninety-six TSX/AVPM units.

During the volume reliability test, a total of twelve AVPM paper jams were experienced across ten of the TSX/AVPM units. In at least six instances of these jams, the paper audit trail was affected so that the record of one or more ballots was lost. Additionally, nineteen of the machines experienced twenty-one incidents of a software error or “screen freeze” requiring the TSX to be rebooted. For a more detailed analysis of the errors encountered in this volume reliability test, please see the Voting Systems Technology Assessment Advisory Board (VSTAAB) report “Analysis of Volume Testing of the AccuVote TSX/AccuView”.

In concurrence with the volume reliability test, Secretary of State staff and consultant Steve Freeman resumed and completed normal state testing of the system July 20 through July 22, 2005 at the San Joaquin warehouse facility.

Due to the problems experienced with the TSX during the volume test, certification of this system was suspended until the vendor could resolve those problems. At the same time, the Secretary of State declined pending certification of a previous version of this system that had been presented in March 2005.

On September 15, 2005, Diebold Election Systems, Inc. reported to Secretary of State staff that they believed they had resolved the issues with screen freezes and reduced that incidence of paper jams sufficiently so that they were prepared for a new volume reliability test. Diebold reported that the screen freezes, in all forms, were attributed to a program bug that was triggered when the voter dragged their finger across the screen to select the “cast vote” button at the conclusion of the ballot. This bug was corrected in an upgraded version of the TSX Ballot Station firmware, version 4.6.4. This new version had completed federal testing at both Ciber and Wyle Laboratories. **The paper jams were reduced with a combination of modifications, including changes to the paper guide and firmware changes that were included in version 4.6.4.**

A second reliability test was conducted on September 28, 2005, at the Bahia Hotel in San Diego, California. The testing procedures and the results from that test are discussed in more detail below. On September 29 and 30, the State Consultant and Secretary of State staff conducted regression testing on the modified AccuVote-TSX with firmware version 4.6.4 to verify it still integrated successfully with the remainder of the system that had been previously tested.

Finally, representatives from the counties, the VSTAAB and the accessibility community were invited to attend a demonstration of the system on October 20, 2005, at the Secretary of State’s Office in Sacramento, and to provide feedback on the system.

General Testing Results

Testing on the AccuVote-TSx v. 4.6.4 with AccuView Printer Module (AVPM) hardware, Key Card Tool Version 4.6.1, Voter Card Encoder v. 1.3.2, VC Programmer v. 4.6.1, AccuVote-OS v. 1.96.6, and AccuVote-OS v. 2.0.12 with AccuFeed hardware in conjunction with GEMS v. 1.18.22 was generally completed successfully. During that testing, installation of the trusted software build was verified. Sufficient ballots were processed for the standard state primary and general test elections to verify features and modifications identified in the system change logs, as well as to test the system's capability to conduct elections in accordance with California law.

However, during testing the following issues were noted:

1. During testing of the previous version of the system last June, it was discovered that the magnifying lens supplied with the AVPM for use by the visually impaired did not display the bottom lines of the ballot image in the magnified view. The vendor, DESI, did not present a new, alternative magnifying lens with this system, so counties would still be responsible for providing such a lens.
2. The AccuView printer module spools ballot images in sequential order. Previously, the VSPP ruled that such systems are acceptable if procedures are in place to protect the anonymity of the voter;
3. The TSx uses two types of smart cards for access to managerial functions: the Supervisor card and the Administrator card. The Supervisor card allows the holder to perform diagnostic tests, create voter access cards, open and close the polls, generate reports, and upload vote results to GEMS and is designed primarily for use by poll workers. The Administrator card allows its user to access such functions as resetting an election, setting TSx system options, and accessing election data archives and is designed for use by elections officials. The new version of Key Card Tool, v. 4.6.1, now allows the county to set the encryption key for the Administrator card as well as the Supervisor card. (The inability of Key Card Tool to recognize the Administrator card was a shortcoming noted in the previous version of the system.)
4. Problems with the AccuVote-TS Write-In Detail By Ballot and the AccuVote-TS Write-In Detail By Race reports noted in the previous system have been corrected in this version of the GEMS, so there should be no problem casting provisional ballots on the TSX.

Volume Testing Results

As noted above, a second volume reliability test of the Diebold AccuVote-TSX was conducted in San Diego on September 28, 2005. For this test, the vendor supplied one hundred (100) TSX devices equipped with the AVPM. These units were configured for the standard test primary election. A minimum of one hundred (100) ballots was cast on each TSX between 9:15am and the conclusion of the test at 4:00pm. Temporary workers contracted by the Secretary of State did all test voting. Support operations, such as programming the voter activation cards, were performed by Diebold staff under the observation of Secretary of State staff. Finally, Secretary of State staff videotaped the instruction to the testers, as well as various views of the entire test.

When any error was encountered, the testers suspended testing until Secretary of State staff or the State Consultant, Steve Freeman, documented the error. An error report was completed for every such error encountered. Most errors were also documented with photographs. (Only trivial or repetitive errors were not photographed.) Finally, if Secretary of State staff felt the error warranted it, the inspection and clearing of the error were videotaped with a handheld video camera.

Appendix A of this report details the protocol used for conducting this volume test. Appendix B of this report presents a summary of the errors encountered over the course of the test. Images of the actual error reports and error log will be available for download from the Secretary of State's web site.

A total of twenty-nine (29) errors were logged over the course of the test. The majority of those errors, nineteen (19), were attributed to human error and not related to any kind of equipment failure. The remaining ten incidents were related to the TSX/AVPM equipment. In each case, there was a "graceful" recovery without rebooting the DRE. While three of these incidents involved a paper jam, there were no incidents of the "screen freeze" observed in the previous volume test.

None of the errors resulted in a loss of the record of a vote, either in the TSX memory or on the AVPM paper audit trail.

Of the three paper jams encountered, one was first detected when the voter noticed the paper was creased in the AVPM viewing window. The second was detected when the "low paper warning" was triggered. Both of these occurred between ballots. The final incident occurred mid-ballot, while printing the paper audit record for viewing. While the printed audit record was unreadable, the machine recovered by canceling that ballot so the voter could start over again. It should be noted that each incident of these paper jams required the pollworker to unlock and open the AVPM to take up the slack paper and clear the jam. In two incidents, previously voted ballots were briefly visible outside of the security canister. Therefore, official Use Procedures for this system must address this by specifying a process to clear paper jams while taking care not to observe previously printed ballots or, alternatively, requiring jammed machines to be taken out of service.

There were two incidents reported by a voter on the same TSX machine where the paper record line spacing was expanded so that part of the ballot was not visible through the AVPM viewing window. In the first instance, the voter had seen his correct vote choices scroll past so he accepted the ballot and cleared the error before it could be photographed. The second time this happened, the voter rejected the ballot and then immediately recast it. The ballot then printed normally.

There were two incidents of the TSX displaying a false "paper low" warning on screen in between ballots. Each of these required a poll worker to open and close the AVPM to verify the paper was not low and then clear the error so that voting could resume.

Finally, there were three incidents where the voter received an error message that the voter activation card had been inserted upside down or incorrectly immediately after insertion of the card to begin voting. In each case, after the card was ejected and reinserted, the voter was able to successfully cast a ballot on the TSX. Because these incidents occurred in close physical and temporal proximity, it was suspected the errors might be attributable to a defective voter access card, although this could not be conclusively verified.

The nineteen (19) human error incidents included: voter errors (nine incidents); voter access card incorrectly programmed for the wrong precinct by support staff (eight incidents); and errors in the election definition and configuration prior to the test (two incidents). It should be noted that the nature of VC Programmer does not inherently safeguard against programming the voter access card for the wrong precinct. In a normal polling place where the TSX is programmed only for one precinct, this is not a significant problem because the TSX will simply reject a card for the wrong precinct. In an early voting venue, this becomes more critical because the TSX is typically programmed to accept ballots for many or all of the precincts within the jurisdiction. In these settings, extra care should be taken to be sure voters aren't given cards programmed for the wrong precinct and ballot style. Use procedures for this voting system should address this issue.

IV. COMPLIANCE WITH STATE AND FEDERAL LAWS AND REGULATIONS

The Secretary of State of California has developed and promulgated a procedure for approving, certifying, reviewing, modifying, and decertifying voting systems, vote tabulating systems, election observer panel plans, and auxiliary equipment, materials and procedures.

Four sections of this procedure, Sections 103, 104, 504, and 601, describe in detail the requirements any voting system must meet in order to be approved for use in California elections. These sections are described in detail and the system is analyzed for compliance in this Administrative Review and Analysis of the system.

1. §103 (a) (1): The machine or device and its software shall be suitable for the purpose for which it is intended.

The system meets this requirement except as noted under Section III. These exceptions can and should be addressed in the system's Use Procedures.

2. §103 (a) (2): The system shall preserve the secrecy of the ballot.

Due to the sequential storage of the ballot images on the AccuView, procedures will be required to protect the secrecy of the ballot. Otherwise, the system meets this requirement.

3. §103 (a) (3): The system shall be safe from fraud or manipulation.

The system is more secure than the previously certified Diebold system as the functions on the Supervisor and Administrator cards have been separated into two separate cards, restricting the features that can be used by poll workers.

4. §103 (a) (4): The system shall be auditable for the purposes of an election recount or contest procedure.

The system meets these requirements. The AccuVote-TSx configured with the AccuView provides a voter verified paper audit trail in addition to the ballot images stored in memory on the TSx.

5. §103 (a) (5): The system shall comply with all appropriate federal and California laws and regulations.

The system meets this requirement. The AccuVote-TSx configured with the AccuView view printer module meets the California AVVPAT standards.

6. §103 (a) (6): The system shall have been certified, if applicable, by means of qualification testing by a Nationally Recognized Test Laboratory (NRTL) and shall meet or exceed the minimum requirements set forth in the *Performance and Test Standards for Punch Card, Mark Sense, and Direct Recording Electronic Voting Systems*, or in any successor voluntary standard document, developed and promulgated by the Federal Election Commission.

The system has successfully completed federal qualification testing to the 2002 Federal Voting System Standards. While an initial qualification number has been issued by NASED on the original system, a revised qualification number is expected to be issued shortly by NASED to cover the modified system that includes Ballot Station firmware version 4.6.4. That issuance is required before this system can be certified.

7. §103 (b): In addition to the requirements of subdivision (a) of this section, voting systems, procedures, and equipment approved and certified by the Secretary of State shall promote accessible voting opportunities for persons with physical disabilities.

The AccuVote-TSx provides improved access for the visually impaired through its audio mode, as well as its high contrast and enlarged text for the LCD display.

It should be noted that:

1. The AccuVote-TSx does not yet support “sip-and-puff” technology.

2. The AccuVote-TSx does not support curbside voting.

8. §104 (a): Certification consists of three separate levels of testing: qualification, certification and acceptance.

Federal qualification testing has been successfully completed and an initial qualification number has been issued by NASED on the original system. A revised qualification number is expected to be issued shortly by NASED to cover the modified system that includes Ballot Station firmware version 4.6.4.

Staff in conjunction with a technical consultant to the Secretary of State successfully performed state certification testing.

The county elections official will conduct acceptance testing as each county takes receipt of the system. Procedures for that acceptance testing are specified in the official Use Procedures.

9. §104 (b): Certification tests shall include functional tests and qualitative assessment to ensure that the system operates in a manner that is acceptable under federal and state law and regulations.

It is the opinion of the expert technical consultant that the scope of the certification test was adequate to make basic recommendations and observations about the logical accuracy, some user friendliness issues, and compliance with state law.

10. §104 (c): Certification tests shall enhance public confidence by assuring that the system protects the secrecy of the ballot and the security of the voting process, and records and counts votes accurately.

In the tests performed, this system recorded and counted votes accurately. With procedures to address the sequential nature of the audit trail storage, the secrecy of the paper record can be protected. With the new Administrator smart card and the 128-bit encryption key of Key Card Tool, the system is more secure than its predecessor. Finally, the AccuView's voter verified paper audit trail should serve to enhance public confidence that their vote is accurately recorded when using the AccuVote-TSx DRE device.

11. §104 (d): Certification tests shall promote public confidence that the system is easy to use or 'voter friendly.'

The proposed system is at least as user-friendly as the currently certified Diebold systems.

12. §104 (e): Certification testing shall demonstrate that the system creates an audit trail showing both that the voter was able to vote for the candidate or for or against a measure of his or her choice and that the system correctly and consistently interpreted the voter's votes.

The system meets this requirement. The AccuVote-TSx configured with the AccuView printer module provides an AVVPAT.

13. §504: The Evaluation shall include a review of California Elections Code sections, which address the application.

A review of the appropriate Elections Code sections was conducted.

§15360. During the official canvass of every election in which a voting system is used, the official conducting the election shall conduct a public manual tally of the ballots tabulated by those devices cast in 1 percent of the precincts chosen at random by the elections official. If 1 percent of the precincts should be less than one whole precinct, the tally shall be conducted in one precinct chosen at random by the elections official.

In addition to the 1 percent count, the elections official shall, for each race not included in the initial group of precincts, count one additional precinct. The manual tally shall apply only to the race not previously counted.

The system meets this requirement.

§19300 permit the voter to vote for all the candidates of one party or in part for the candidates of one party and in part for the candidates of one or more other parties.

The system meets this requirement.

§19301. A voting machine shall provide in the general election for grouping under the name of the office to be voted on, all the candidates for the office with the designation of the parties, if any, by which they were respectively nominated.

The designation may be by usual or reasonable abbreviation of party names.

The system meets this requirement.

§19302. The labels on voting machines and the way in which candidates' names are grouped shall conform as nearly as possible to the form of ballot provided for in elections where voting machines are not used.

The system meets this requirement.

§19303. If the voting machine is so constructed that a voter can cast a vote in part for presidential electors of one party and in part for those of one or more other parties or those not nominated by any party, it

may also be provided with: (a) one device for each party for voting for all the presidential electors of that party by one operation, (b) a ballot label therefore containing only the words “presidential electors” preceded by the name of the party and followed by the names of its candidates for the offices of President and Vice President, and (c) a registering device therefore which shall register the vote cast for the electors when thus voted collectively.

If a voting machine is so constructed that a voter can cast a vote in part for delegates to a national party convention of one party and in part for those of one or more other parties or those not nominated by any party, it may be provided with one device for each party for voting by one operation for each group of candidates to national conventions that may be voted for as a group according to the law governing presidential primaries.

No straight party voting device shall be used except for delegates to a national convention or for presidential electors.

The system complies with these requirements.

§19304. A write-in ballot shall be cast in its appropriate place on the machine, or it shall be void and not counted.

The system complies with these requirements.

§19320. Before preparing a voting machine for any general election, the elections official shall mail written notice to the chairperson of the county central committee of at least two of the principal political parties, stating the time and place where machines will be prepared. At the specified time, one representative of each of the political parties shall be afforded an opportunity to see that the machines are in proper condition for use in the election.

The party representatives shall be sworn to perform faithfully their duties but shall not interfere with the officials or assume any of their duties. When a machine has been so examined by the representatives, it shall be sealed with a numbered metal seal. The representatives shall certify to the number of the machines, whether all of the counters are set at zero (000), and the number registered on the protective counter and on the seal.

The system meets this requirement.

§19321. The elections official shall affix ballot labels to the machines to correspond with the sample ballot for the election. He or she shall employ competent persons to assist him or her in affixing the labels

and in putting the machines in order. Each machine shall be tested to ascertain whether it is operating properly.

The system meets this requirement.

§19322. When a voting machine has been properly prepared for an election, it shall be locked against voting and sealed. After that initial preparation, a member of the precinct board or some duly authorized person, other than the one preparing the machines, shall inspect each machine and submit a written report. The report shall note the following: (1) Whether all of the registering counters are set at zero (000), (2) whether the machine is arranged in all respects in good order for the election, (3) whether the machine is locked, (4) the number on the protective counter, (5) the number on the seal. The keys shall be delivered to the election board together with a copy of the written report, made on the proper blanks, stating that the machine is in every way properly prepared for the election.

The system meets this requirement.

§19340. Any member of a precinct board who has not previously attended a training class in the use of the voting machines and the duties of a board member shall be required to do so, unless appointed to fill an emergency vacancy.

The system meets this requirement.

§19341. The precinct board shall consist of one inspector and two judges who shall be appointed and compensated pursuant to the general election laws. One additional inspector or judge shall be appointed for each additional voting machine used in the polling place.

The system meets this requirement.

§19360. Before unsealing the envelope containing the keys and opening the doors concealing the counters the precinct board shall determine that the number on the seal on the machine and the number registered on the protective counter correspond to the numbers on the envelope.

Each member of the precinct board shall then carefully examine the counters to see that each registers zero (000). If the machine is provided with embossing, printing, or photography devices that record the readings of the counters the board shall, instead of opening the counter compartment, cause a “before election proof sheet” to be produced and determined by it that all counters register zero (000).

If any discrepancy is found in the numbers registered on the counters or the “before election proof sheet” the precinct board shall make, sign, and post a written statement attesting to this fact. In filling out the statement of return of votes cast, the precinct board shall subtract any number shown on the counter from the number shown on the counter at the close of the polls.

The system meets this requirement.

§19361. The keys to the voting machines shall be delivered to the precinct board no later than 12 hours before the opening of the polls. They shall be in an envelope upon which is written the designation and location of the election precinct, the number of the voting machine, the number on the seal, and the number registered on the protective counter. The precinct board member receiving the key shall sign a receipt.

The envelope shall not be opened until at least two members of the precinct board are present to determine that the envelope has not been opened.

At the close of the polls the keys shall be placed in the envelope supplied by the official and the number of the machine, the number written on the envelope.

The system meets this requirement.

§19362. The exterior of the voting machine and every part of the polling place shall be in plain view of the election precinct board and the poll watchers.

Each machine shall be at least four feet from the poll clerk’s table.

The system meets this requirement.

§19363. Voters shall not remain in or occupy the booths or compartments longer than is necessary to mark their ballots, which shall not exceed five minutes. However, where no other voter would be inconvenienced, a longer period shall be allowed.

The system meets this requirement.

§19370. As soon as the polls are closed, the precinct board, in the presence of the watchers and all others lawfully present, shall immediately lock the voting machine against voting and open the counting compartments, giving full view of all counter numbers. A board member shall in the order of the

offices as their titles are arranged on the machine, read and distinctly announce the name or designating number and letter on each counter for each candidate's name and the result as shown by the counter numbers. He or she shall also in the same manner announce the vote on each measure.

If the machine is provided with a recording device, in lieu of opening the counter compartment the precinct board shall proceed to operate the mechanism to produce the statement of return of votes cast record in a minimum of three copies, remove the irregular ballot, if any, record on the statement of return of votes cast record. The irregular ballot shall, be attached to the statement of result record of votes cast for the machine and become a part thereof. One copy of the statement of return of votes cast for each machine shall be posted upon the outside wall of the precinct for all to see. The statement of return of votes cast for each machine for the precinct shall constitute the precinct statement of result of votes cast.

The system meets this requirement.

§19371. Before adjourning, the precinct board shall seal the operating lever with the seal provided and lock the machine so that the voting and counting mechanism may not be operated.

It shall remain locked and sealed against operation until the time for filing a contest of election has expired, which shall not exceed a period of 30 days following the declaration of the result of the election by the body canvassing the returns.

Does not apply.

§19380. During the reading of the result of votes cast, any candidate or watcher who may desire to be present shall be admitted to the polling place. The proclamation of the result of the votes cast shall be distinctly announced by the precinct board who shall read the name of each candidate, or the designating number and letter of his or her counter, and the vote registered on the counter. The board shall also read the vote cast for and against each measure submitted. The board shall not count votes cast for write-in candidates, but shall have these counted by the elections official. During the proclamation, many opportunities shall be given to any person lawfully present to compare the result so announced with the counter dials of the machine, and any necessary corrections shall immediately be made by the precinct board, after which the doors of the voting machine shall be closed and locked.

If the machine is provided with a recording device, the alternate procedures in Section 19370 may be used.

The system meets this requirement.

§19381. In each election district where voting machines are used, statements of the results of the vote cast shall be printed to conform with the type of voting machine used.

The designating number and letter on the counter for each candidate shall be printed next to the candidate's name on the statements of result of the vote cast. Two such statements shall be used in each election district.

The system meets this requirement.

§19382. The statement of the result of votes cast, which shall be certified by the precinct board, shall contain:

- (a) The total number of votes cast.**
- (b) The number of votes cast for each candidate and measure as shown on the counter.**
- (c) The number of votes for persons not nominated.**
- (d) Printed directions to the precinct board for their guidance before the polls are opened and when the polls are closed.**
- (e) A certificate, which shall be signed by the election officers before the polls are opened, showing:
 - (1) The delivery of the keys in a sealed envelope.**
 - (2) The number on the seal.**
 - (3) The number registered on the protective counter.**
 - (4) Whether all of the counters are set at zero (000).**
 - (5) Whether the public counter is set at zero (000).**
 - (6) Whether the ballot labels are properly placed in the machine.****
- (f) A certificate that shall be filled out after the polls have been closed, showing:
 - (1) That the machine has been locked against voting and sealed.**
 - (2) The number of voters as shown on the public counter.**
 - (3) The number on the seal.**
 - (4) The number registered on the protective counter.**
 - (5) That the voting machine is closed and locked.****

The system meets this requirement.

§19383. A member of the precinct board shall enter the vote, as registered, on the statements of result of votes cast, in the same order on the space that has the same name or designating number and letter, after which another member shall verify the figures by calling them off in the same manner from the counters of the machine.

The counter compartment of the voting machine shall remain open until the official returns and all other reports have been fully completed and verified by the precinct board.

If the machine is provided with a recording device, the alternate procedures in Section 19370 may be used.

The system meets this requirement.

§19384. The precinct board shall, before it adjourns, post conspicuously on the outside of the polling place a copy of the result of the votes cast at the polling place. The copy of the result shall be signed by the members of the precinct board.

If the machine is provided with a recording device, the statement of result of vote's cast produced by operating its mechanism may be considered the "result of the votes cast" at the polling place.

The system meets this requirement.

§19385. The precinct board shall immediately transmit unsealed to the elections official a copy of the result of the votes cast at the polling place, the copy shall be signed by the members of the precinct board, and shall be open to public inspection.

The system meets this requirement.

§19386. Before proceeding to canvass the returns of an election at which voting machines have been used to register the votes cast, the board authorized to canvass returns shall open the counter compartment and compare the records of votes cast for the several candidates voted for and for and against the several measures voted upon shown on each machine with those recorded on the statement of results of votes cast prepared from that machine by the precinct board. Any errors found on the statement shall be corrected by crossing out the recorded incorrect number, and recording the correct number nearby.

The system meets this requirement.

14. §504 (b): A review of federal statutes or regulations, which address the application.

The Voting Rights Act of 1965, as amended (42 U.S.C. 1973), requires all elections in certain covered jurisdictions to provide registration and voting materials and oral assistance in the language of a qualified language minority group in addition to English. Currently in California, there are six VRA languages (Spanish, Chinese, Japanese, Vietnamese Korean and Tagalog) as prescribed under the law.

The system fully meets this requirement. The AccuVote-TSx can be configured to display a ballot in any of the required languages. Additionally, the AccuView will automatically print the voter verifiable paper ballot image in the same language used for

the ballot on the AccuVote-TSx. Finally AccuVote-OS ballots can be printed in any of the required languages.

The National Voter Registration Act of 1993 (42 U.S.C. 1973gg and 11 CFR 8) allows for the casting of provisional ballots through Fail-Safe Voting procedures.

The system meets this requirement.

The Voting Accessibility for the Elderly and Handicapped Act of 1984 (42 U.S.C. 1973ee through 1973ee-6) requires each political subdivision conducting elections within each state to assure that all polling places for federal elections are accessible to elderly and handicapped voters, except in the case of an emergency as determined by the state's chief election officer or unless the state's chief election officer: (1) determines, by surveying all potential polling places, that no such place in the area is accessible or can be made temporarily accessible, and (2) assures that any handicapped voter assigned to an inaccessible polling place will, upon advance request under established state procedures, either be assigned to an accessible polling place or be provided an alternative means of casting a ballot on election day.

The system is at least as accessible as the previously certified version.

The Retention of Voting Documentation (42 U.S.C. 1974 through 1974e) statute applies in all jurisdictions and to all elections in which a federal candidate is on a ballot. It requires elections officials to preserve for 22 months all records and papers which came into their possession relating to an application, registration, payment of a poll tax, or other act requisite to voting. Note: The US Department of Justice considers this law to cover all voter registration records, all poll lists and similar documents reflecting the identity of voters casting ballots at the polls, all applications for absentee ballots, all envelopes in which absentee ballots are returned for tabulation, all documents containing oaths of voters, all documents relating to challenges to voters or absentee ballots, all tally sheets and canvass reports, all records reflecting the appointment of persons entitled to act as poll officials or poll watchers, and all computer programs used to tabulate votes electronically. In addition, it is the Department of Justice's view that the phrase "other act requisite to voting" requires the retention of the ballots themselves, at least in those jurisdictions where a voter's electoral preference is manifested by marking a piece of paper or by punching holes in a computer card.

The system meets this requirement. The AccuVote-TSx allows for the retention of the electronic record of the ballots as well as the paper record produced by the AccuView printer module.

15. 504 (c): A copy of the approved Qualification Test results released directly to the Secretary of State by a Nationally Recognized Test Laboratory (NRTL).

Draft copies of the ITA reports have been receive. Final copies of those reports will be secured before the system is certified.

16. **§504 (d): A review, if applicable, of transcripts or other materials from prior meetings or hearings on the proposed system, procedure, or modification, either in whole or in part.**

The relevant documentation has been reviewed.

17. **§504 (e): A review, if applicable, of any procedures manuals, guidelines or other materials adopted for use with the system addressed by the application.**

The procedures for use and other relevant materials for this system have been reviewed. The system use procedures will not be finalized until final State certification of the system to allow for incorporation of any conditions that are imposed on the system as part of the certification.

18. **§504 (f): A review of any effect the application will have on the security of the election system.**

The application was reviewed for any potential effect on the security of the election system.

19. **§504 (g): A review of any effect the application will have on the accuracy of the election system.**

The system was tested by federal and state testers and deemed to record votes accurately.

20. **§504 (h): A review of any effect the application will have on the ease and convenience with which voters use the system.**

The proposed system is more voter friendly than the currently certified Diebold systems. Further, the addition of the AVPM voter verified paper audit trail should significantly increase public confidence in the DRE component of this system.

21. **§504 (i): A review of any effect the application will have on the timeliness of vote reporting.**

The proposed system will not delay the reporting of election results relative to the currently certified system.

22. **§504 (j): A review of any effect the application will have on the overall efficiency of the election system.**

The proposed system is at least as efficient as the currently certified Diebold voting system.

23. **§504 (k): A Description of Deposit Materials showing that the Ballot Tally Software Source Code has been deposited in Escrow with an Escrow Company**

approved pursuant to Chapter 6, Division 7, Title 2 of the California Administrative Code, beginning with Section 20630.

The vendor must deposit the source code in compliance with this requirement before this system can be used.

24. **§601: The Secretary of State shall not approve a proposed item without a finding that the item conforms to all applicable laws, procedures and regulations, including the right to a secret ballot, does not compromise the accuracy, security or integrity of the election process, nor interferes with the voter's ease and convenience in voting.**

As noted above, with procedures in place, the proposed system is at least as effective in maintaining the secrecy of the ballot, the accuracy, security and integrity of the elections process, and voter ease and convenience as the currently certified Diebold systems.

V. PUBLIC COMMENT

On October 20, 2005, an “open house” demonstration of this system was held at the Secretary of State headquarters for invited representatives of the accessibility community, as well as county elections officials and members of the VSTAAB to observe and review this system with Secretary of State and vendor staff. Participants included:

- sixteen elections staff representing nine counties,
- four representatives of the accessibility community,
- two representatives of the VSTAAB, and
- various members of the Secretary of State staff.

Several participants in this event have subsequently sent written comments that will be submitted to the Secretary of State with this report.

The major issues raised in these comments, as well as by other participants in the “open house” are:

1. People with limited hand dexterity could have difficulty inserting the Voter Access smart card without some form of assistance.
2. There is no “sip-and-puff” capability for people with limited hand dexterity.
3. If the AccuVote-TSx voting tablet is removed from the cradle (i.e., for placement in the voter's lap or for curbside voting), the AccuView Printer Module does not go with the tablet. People who vote in this mode will not have the opportunity to verify their ballot with the paper trail. In fact, when the tablet is replaced in the stand, the current firmware is not capable of printing to the AccuView any ballots that were cast while the tablet was out of its cradle.
4. The voter verified paper trail cannot be read or verified by someone who is blind.

VI. RECOMMENDATION

Staff recommends the certification of the Diebold Election Systems, Inc. GEMS Version 1.18.24, AccuVote-TSx Ballot Station, firmware version 4.6.4, with AccuView Printer Module hardware, Key Card Tool Version 4.6.1, Spyrus Voter Card Encoder 1.3.2, VC Programmer 4.6.1, AccuVote-OS (model D) firmware 1.96.6, AccuVote-OS firmware 2.0.12 with AccuFeed with the following conditions:

1. A final version of the Use Procedures for the system is submitted to and approved by the Secretary of State.
2. No additional software developed by the Vendor other than that specifically listed in this certification shall be installed on a computer running GEMS Version 1.18.24.
3. No substitution or modification of the voting systems shall be made with respect to any component of the voting systems, including the Procedures, until the Secretary of State has been notified in writing and has determined that the proposed change or modification does not impair the accuracy and efficiency of the voting systems sufficient to require a re-examination and approval.
4. The Secretary of State reserves the right, with reasonable notice to Vendor and to the counties using any of the voting systems, to modify the Procedures used with any of the voting systems and to impose additional requirements with respect to the use of any of the systems if the Secretary of State determines that such modifications or additions are necessary to enhance the accuracy, reliability or security of any of the voting systems. Such modifications or additions shall be deemed to be incorporated herein as if set forth in full.
5. Any county using any voting system shall, prior to such use, file with the California Secretary of State a copy of its Election Observer Panel plan.
6. Pursuant to this (application, agreement, contract, etc.) and by order of the Secretary of State, voting systems certified for use in California shall comply with all applicable state and federal statutes, regulations, rules and requirements, including, but not limited to, those voting system requirements set forth in the California Elections Code and the Help America Vote Act of 2002, and those requirements incorporated by reference in the Help America Vote Act of 2002, that are in effect as of the date of this (application, agreement, contract, etc). Further, voting systems shall also comply with all applicable state and federal voting system guidelines, standards, regulations and requirements that derive authority from or are promulgated pursuant to and in furtherance of the California Elections Code or the Help America Vote Act of 2002 or other applicable state or federal law when appropriate, that are in effect as of the date of this (application, agreement, contract, etc), including but not limited to, the 2002 Voting System Standards/Guidelines, developed by the Federal Election Commission and adopted by the Election Assistance Commission (EAC) and EAC Advisory 2005-004, dated July 20, 2005. This does not include future final

court interpretations of existing state or federal law not in effect as of the date of this (application, agreement, contract, etc.).

7. Voting system manufacturers and/or their agents shall assume full responsibility for any representation that a voting system complies with all applicable state and federal requirements as referenced above. In the event such representation is determined to be false or misleading, voting system manufacturers or their agents shall be responsible for the cost of any upgrade, retrofit or replacement, of any voting system or its component parts, found to be necessary for certification or to otherwise be in compliance.
8. Any voting system purchased with funds allocated by the Secretary of State's Office shall meet all applicable state and federal standards, regulations and requirements, including, but not limited to, those voting system requirements as set forth in the California Elections Code and the Help America Vote Act of 2002 and those requirements incorporated by reference in the Help America Vote Act of 2002 that are in effect as of the date of this (application, agreement, contract, etc), including but not limited to, the 2002 Voting System Standards/Guidelines, developed by the Federal Election Commission and adopted by the Election Assistance Commission (EAC) and EAC Advisory 2005-004, dated July 20, 2005.
9. The vendor must establish a California County User Group and hold at least one annual meeting where all California users and Secretary of State staff are invited to attend and review the system and ensure voter accessibility.
10. In addition to depositing the source code in an approved escrow facility, the vendor must deposit a copy of the system source code and binary executables with the Secretary of State. The Secretary of State reserves the right to perform a full independent review of the source code.
11. The vendor must provide printing specifications for paper ballots to the Secretary of State. The Secretary of State will certify printers to print ballots for this system based upon their demonstrated ability to do so. The vendor may not require exclusivity in ballot printing and must cooperate fully in certification testing of ballots produced by other ballot printers.

APPENDIX A-

TEST PLAN FOR FINAL TESTING OF DIEBOLD GEMS/ACCUVOTE-TSX/AVPM SYSTEM

OVERVIEW

On June 27, 2005, Diebold Elections Systems, Inc. (DESI) submitted an application for California certification of a new voting system that included the following components:

- GEMS Software version 1.18.24
- AccuVote-TSX with AccuView Printer Module (AVPM) hardware
- AccuVote-TSX Ballot Station firmware version 4.6.3
- AccuVote-OS (model D) with firmware version 1.96.6
- AccuVote-OS Central Count firmware version 2.0.12
- Voter Card Encoder version 1.3.2
- Key Card Tool software version 4.6.1
- VC Programmer software version 4.6.1
- Election Media Processor (EMP) version 4.6.1
- AccuFeed

During State certification of this system the week of June 27, 2005, there were several instances of paper jamming in the AVPM. Consequently, certification testing of the system was halted until Diebold could resolve this problem.

On July 20, 2005, a large scale “volume” test was held at San Joaquin County warehouse facilities. Over a period of approximately six hours, an average of more than 100 votes were cast on ninety six AccuVote-TSX (TSX) machines equipped with the AVPM. During the course of testing, ten machines had incidents of paper jams. Nineteen machines experienced one or another forms of “freezing” that required the TSX to be rebooted. Although these failure rates were determined to be unacceptable, certification testing of the rest of the system was completed over the following two days and DESI was advised that this application for certification was suspended until they had determined the cause of the TSX/AVPM failures and could demonstrate a fix for these failures.

Since that time, DESI has notified the State that they have resolved these issues and are prepared for retesting of the system. Because that resolution involved modifications to the hardware and software, they have completed testing of these modifications at the Federal ITAs.

This paper will, therefore, set forth the conditions for retesting the modified system under consideration.

PRECONDITIONS TO FURTHER TESTING

Prior to scheduling further testing of the system, the following conditions must be satisfied:

- DESI must supply the California Secretary of State (SOS) with an amended application for the system to be certified, indicating the correct version numbers of all components.
- DESI must supply the SOS with detailed change logs identifying all changes to the hardware and software from the versions previously tested.
- DESI must supply a statement identifying the causes for all problems experienced in the volume test and the changes made to resolve those problems. DESI must further provide sufficient details to SOS staff and the State Consultant about the cause and solution of the problems experienced in the previous volume test that they are satisfied they have a clear understanding of the problems and their resolution.
- The California Secretary of State (SOS) must receive notification from the ITAs that federal testing has been successfully completed.

Upon satisfaction of these requirements, SOS and DESI will schedule new testing of the system for a mutually agreeable date. Volume testing will occur at a location in California that is mutually acceptable to SOS and DESI.

“VOLUME” TEST

Test Specifications

- The test will be based on the standard California test primary election that was used for the volume test on July 20th.
- A minimum of 100 TSX machines equipped with AVPM will be tested. All should be configured with the updated BallotStation firmware/software, as well as any hardware modifications that were made to resolve the problems identified in the previous test.
- One half of the TSX/AVPM machines should be programmed for votes in precincts 1, 2-1 & 2-2. The other half of the machines should be programmed for precincts 3, 4 & 5.
- A minimum of 100 ballots will be cast manually on each TSX/AVPM unit over a period of six hours and the scenario created will resemble actual voters voting at a poll on election day. One person will be assigned to vote on every two machines. This is a minimum of 48 “voters”, none of whom may be a direct employee of Diebold.
- Predefined test scripts will be furnished to pollworkers that have been mutually agreed upon by SOS and DESI.
- Voter access cards will be created on the Voter Card Encoder (firmware version 1.3.2), the AV-TSX unit and VCProgrammer (firmware version 4.6.1) that will be loaded on laptops to create the cards.
- The volume test will be continuously video taped by three stationary cameras. One camera will be focused on two to four TSX units and their voters. The other two cameras will be positioned at mutually agreeable locations to cover the maximum number of machines and their voters possible. All videotapes of the test from these three cameras will be the property of SOS. DESI may conduct

additional videotaping of the test as they deem appropriate and, if so, will retain ownership and control of any such videotapes. A fourth, mobile video camera will be used to provide video documentation of all problems encountered as well as their resolution.

- Zero-tapes will be printed on each machine prior to the commencement of testing. At the conclusion of testing, total tapes will be printed on each machine. All TSX/AVPM printed tapes will be the property of SOS.
- A GEMS server with software version 1.18.24 that has been configured will be available to download the PCMCIA cards and upload the results of the voting test. At SOS option, total vote counts from any or all TSX units will be uploaded to a single GEMS server for aggregation of vote results and reporting. All GEMS vote reports will be the property of SOS.

Testing Criteria

The volume test shall be deemed successful if no more than 1% of the machines experience a failure that affects the record of the vote on the TSX or on the AVPM paper trail and if no more than 3% of the machines experience a substantive failure.

Error Handling

Upon any error, the voter will immediately stop all voting activity on the TSX/AVPM that generated the error and notify an SOS representative of the error. For each problem encountered, SOS staff will complete an error report that will be supplied by the SOS.

The error report will include the following information:

- Machine number
- Time of occurrence
- Number of ballots voted on the machine
- Voter Name
- Description of the problem encountered
- Notation of any error messages.
- Procedure(s) taken to resolve the problem.

All such problems will also be recorded in an error log for the test. All such errors, as well as the corrective action taken, will be documented on video tape. Additionally, all errors will be optionally photographed by an SOS representative.

No action may be taken to resolve any errors or problems until an SOS representative gives permission and unless observed directly by an SOS representative.

All error logs, error reports and photographic documentation of problems shall remain property of the SOS.

Other

Observers- SOS may designate up to three official observers of this test. DESI will not be responsible for any of the expenses associated with these observers. Any additional observers will be discussed and mutually approved by the Secretary of State's office and

DESI. Anyone observing shall be identified by a badge and will not be allowed to talk to or interfere in any way with those conducting this test.

Security- DESI will arrange for adequate security to protect the testing. This test will not be open to the public and no one other than test participants, SOS testing staff, DESI staff and official “observers” (as identified above) will be admitted to the test. All participants in the test will be issued appropriate security badges.

Confidentiality- It is agreed prior to the beginning of this test by all participants that the results of it are not to be released to the public except in a format, report or document that is officially sanctioned by the SOS.

FUNCTIONAL AND REGRESSION TESTING

At the conclusion of successful volume testing, normal State functional and regression testing will be conducted on the updated TSX/AVPM units in conjunction with the remainder of the proposed Diebold system. Details of these tests will be finalized after the required documentation (*see Prerequisites for Testing*) has been supplied by Diebold and reviewed by SOS Staff and the State’s Consultant. At a minimum, sufficient manual votes will be cast on each TSX/AVPM in the standard State primary, general and recall test elections.

RESPONSIBILITIES

Diebold will be responsible for all costs associated with these tests other than those of the three authorized official SOS designate observers.

Diebold will also be responsible to supply the following:

- 96 or more AccuVote-TSX units equipped with AVPM for volume testing
- 3 or more AccuVote-TSX units equipped with AVPM for function and regression testing
- GEMS server and all associated hardware, software and voter activation cards to conduct testing as outlined above
- Test scripts for all “voters”
- Sufficient Diebold staff to support all testing functions, including voter activation card programming
- Video equipment and sufficient blank video tapes to video tape the testing as detailed above
- Sufficient non-DESI personnel to function as voters per the requirements above. If contractors are used, the contractors and their contracting firm may not be directly paid by Diebold.
- All security arrangements for the test, including security badges for all participants

SOS responsibilities:

- Assist DESI in development of test scripts for the volume test
- Error log and error report forms
- Test plan and test scripts for the functional and regression testing

APPENDIX B – SUMMARY OF RESULTS FROM VOLUME TEST SEPTEMBER 28, 2005

Incident#	Time	Machine #	Ballot #	Incident Report	Photos	Video	Error	Critical (Vote Record Lost)	Machine Error	User Error	Paper jam or paper feed issue	Paper trail ballot image expanded/scrrolled beyond viewing window	False "paper low" warning	False "card upside down or inserted incorrectly" warning	Voter error	VAC programmed with wrong pct	Election definition/configuration error
1	9:20	67	3	X	X		VAC Programmed incorrectly			1						1	
2	9:33	55	5	X			VAC Programmed incorrectly			1						1	
3	9:34	56	5				VAC Programmed incorrectly			1						1	
4	9:47	20	10	X	X		"Paper Low" warning (not low)		1				1				
5	10:27	61	23	X			VAC Programmed incorrectly			1						1	
6	10:38	3	17	X			"Card upside down/inserted incorrectly" warning"		1					1			
7	10:41	24	31	X	X		VAC Programmed incorrectly			1						1	
8	10:47	71	38	X	X	X	Paper folded in display window, bunching up between printer and view window		1		1						
9	11:12	23	38	X	X		"Card upside down/inserted incorrectly" warning"		1					1			
10	11:20	22	22	X	X		"Card upside down/inserted incorrectly" warning"		1					1			
11	11:28	14	38	X			VAC Programmed incorrectly			1						1	
12	11:47	20	44	X	X		"Paper Low" warning (not low)		1				1				
13	11:47	49	50	X	X		Contests on screen did not match script			1							1
14	1:08	5	44	X	X		Ballot style label incorrect on paper trail			1							1
15	13:12	16	49	X	X		Voter mistakenly hit "Back" button			1					1		
16	13:23	53	67	X			Voter reinserted voted access card			1					1		
17	13:28	60	66	X	X		Voter reinserted voted access card			1					1		
18	13:41	82	54	X	X		VAC Programmed incorrectly			1						1	
19	13:45	83	54	X			VAC Programmed incorrectly			1						1	
20	13:55	30	76	X	X		"Paper Low" warning w/ take-up problem		1		1						

APPENDIX B – SUMMARY OF RESULTS FROM VOLUME TEST SEPTEMBER 28, 2005

21	13:59	76	98	X	X	X	Paper jam at printer		1		1						
22	14:11						Disconnected power for machines #31 - #40										
23	14:18	63	73	X			Voter reinserted voted access card			1					1		
24	14:52	67	100	X			Voter reinserted voted access card			1					1		
25	15:14	64	89	X			Voter reinserted voted access card			1					1		
26	15:19	81	88	X			Voter reinserted voted access card			1					1		
27	15:19	3	87	X			Vote choices not all displayed through window		1			1					
28	15:25	3	90	X	X		Vote choices not all displayed through window		1			1					
29	15:36	52	107	X			Voter reinserted voted access card			1					1		
30	15:45	82	101	X			Voter reinserted voted access card			1					1		
								0	10	19	3	2	2	3	9	8	2

Machines with Errors: Count = 7 (3, 20, 22, 23, 30, 71 & 76)

Paper jam or paper feed issue

- On one machine (incident #8) voter noted paper folded over in the viewing window. When the AVPM was opened, it was discovered that paper was bunching up in between the printer and the viewing window. One ballot record was viewable. After inserting the Supervisor card and taking up the slack paper, normal voting resumed on the machine with no further paper errors. After the test it was verified that no ballots were lost from the audit trail.
- On one machine (incident #20) the "paper low" warning came up on the screen after completing a ballot and before starting the next. Upon opening the AVPM it was discovered that there was loose paper between the viewing window and the take up canister. One ballot record was viewable. After inserting the Supervisor card and taking up the slack paper, normal voting resumed on the machine with no further paper errors. After the test it was verified that no ballots were lost from the audit trail.
- On one machine (incident #21) while printing the ballot image for review the paper jammed and a warning about the jam came up on the screen. Upon opening the AVPM it was discovered that the paper had jammed at the printer. After clearing the jam and taking up the paper in the cannister, the voter selected the cancel button. The ballot was cancelled, both on the machine and the paper trail, and control was returned to the voter to revote the ballot. After the test it was verified that no ballots were lost from the audit trail.

Paper trail ballot image expanded/scrolls beyond viewing window

- On one machine (incident #27) the ballot image on the paper trail line spacing was slightly expanded so that the vote choice for the first contest had scrolled past the window and was not viewable. (The voter did state that he had verified his vote choice was accurately recorded as it scrolled by.) A few ballots later this happened again (incident #28). This time the voter chose to reject the ballot and then reprint it. When he reprinted the ballot, it printed normally and the entire ballot was viewable.

False "paper low" warning

APPENDIX B – SUMMARY OF RESULTS FROM VOLUME TEST SEPTEMBER 28, 2005

- One machine twice displayed the "paper low" warning on screen (incidents #4 & 12). In both instances the warning appeared after completing the ballot and before starting the next. Upon opening the AVPM in both instances it was determined that there was plenty of paper in the AVPM and the warning was false. No voted ballot image was visible, the last ballot image had already been spooled into the canister. After inserting the Supervisor card into the machine to clear the error, normal voting resumed.

False "card upside down or inserted incorrectly" warning

- On three occasions (incidents #6, 9 & 10), after the voter inserted the voter access card (VAC), the machine immediately rejected the card and displayed a warning that the VAC had been inserted upside down or incorrectly. In each instance, upon removing and immediately reinserting the VAC, the card was accepted and the voter was able to vote the ballot normally. It is possible these errors could have been caused by a defective or dirty VAC.

Voter error

- There were nine incidents attributed to voter error. In one instance (incident #15) the voter had mistakenly hit the "back" button while voting. This was corrected by hitting the forward button (normal operation). The other eight instances occurred when the voter mistakenly reinserted a VAC that had already been used to vote a ballot. The machine correctly prohibits this.

VAC programmed with wrong pct

- There were eight incidents where the poll worker had accidentally programmed the VAC for the wrong precinct and ballot style. When inserted by the voter, the machine correctly recognized the error and rejected the VAC. While this is not an error of the voting machine, it does suggest a real life mistake that can occur in an early voting center that covers multiple precincts and ballot styles. To minimize voter confusion, use procedures for this voting system should address this with a way to minimize occurrences.

Election definition/configuration error

- Two incidents were attributed to errors made in the election definition and setup on the GEMS election management software and had nothing to do with the performance of the voting machine.

NOTE: To test backup batteries, the power to ten AccuVote-TSX machines was turned off at 2:11pm. Three hours later, all these machines were still operating on battery power and the indicator displayed approximately 17-20% power remaining. The machines were reconnected to power and left connected to power overnight. The next morning (12 hours) power levels had returned to the 93-97% power levels. Use procedures should include reference or guidance to monitoring and responding to conditions of the battery to recognize deterioration in recharge capability over time.