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Subject: Admendment to Certification Test for the Diebold Election Systems, Inc. (DESI) GEMS 1.18.22/AV-TSX 4.6.1 (4.6.2) Voting System Including the AccuView Printer Module

Executive Summary

The Diebold Election Systems, Inc. (DESI) Voting System test system presented for state certification testing on 28 Mar to 1 Apr, 2004, was a pre-production model that required further revisions. We tested the revisions on 2-3 Jun 2005 in Sacramento. The revision consisted of a changed design and materials for the chassis and take up reel security canister for the AccuView Printer Module (AVPM) and a minor change to the firmware supporting the AVPM operations on the AV-TSX. The revised configuration for certification is:

1. The GEMS Version 1.18.22(G) (GEMS 1.18.22G) election management system,
2. The AccuVote-TSx (AV-TSx) Model Revision 7 with Ballot Station Firmware Release 4.6.2 and the AccuView Printer Module (AVPM)
3. Other components exercised in the early test did not involve the revised components and were not retested but should be considered as part of the full certification.

The Central Administrator mode and access card was successfully demonstrated. The new restricted Administrator functionality is not supported by the current release of the Key Card Tool. As a result, the system encryption key and pin number can only be set by Diebold at the McKinley offices until the new Key Card Tool is released and approved for use.

This report does not apply to the AV-TS R6 model, an earlier version of the DESI touch screens which are currently certified for use in California.

As configured and presented for testing, this version meets current standards for use in California. Recommendations for security seals and other procedures described for the AV-TS R6 still apply.

References:

1. [SVF0515] Freeman, *Certification Test for the Diebold Election Systems, Inc. (DESI) GEMS 1.18.22/AV-TSX 4.6.1 Voting System Including the AccuView Printer Module*, 15 May 2005
2. [SOSPROC] Diebold Election Systems, Inc., *State of California PROCEDURES Required for Use of the Diebold Election Systems AccuVote-TSx Electronic Ballot Station [Draft]*, 28 Mar 2005.

Introduction

In compliance with California Elections Code 19200 and 19205, Diebold Election Systems applied for certification for the following:

1. GEMS, Version Release 1.18.22(G)
2. AV-TSx R7 running Microsoft Windows CE R7-410.2.1 with AccuView Printer Module, Rev 3.0.1.1.
3. Ballot Station Firmware Release 4.6.2. This firmware is used on the AV-TSx with the AVPM.

These components are supported and tested with the following components of the Diebold Election System which have been approved for use in California with an earlier release:

4. Key Card Tool Version 1.0.1
5. Voter Card Encoder (VCE) Version 1.3.2
6. VC Programmer Version 4.1.11
7. AV-OS Precinct Firmware Release 1.96.4
8. AV-OS Central Count 2.0.12 Firmware Release 2.0.12

During earlier testing [SVF0515], DESI provided a pre-production model of the AVPM. The take-up reel canister provided had trouble staying engaged with the gear motor and was frequently jamming, not taking up the output from the printer. The model tested this time had a better quality plastic and some other changes in the design (including the addition of a hinged magnifying lens that can be swung down over the view port). The newer model showed none of the characteristics of the previous test model with the minor distinction of a noisy ratcheting action that sounds like a New Year's Eve noise maker.

The earlier version printed a Ballot Serial Number (Ballot S/N) on the paper ballot record which was visible as part of the voter verification. The Ballot S/N is assigned internally at random and provides a unique identifier to recover and view the ballot image. The Ballot Station firmware revision removed the printed Ballot S/N from the printed receipt.

Observations and Issues

The only paper jam occurred when the terminal was recycled into an election startup and the zero totals report was printed with the cover latched. The operating procedures require the zero totals report and the reports printed after polls closed to be done with the cover up to allow the report to check and certified by the poll worker. These reports print out without being automatically taken into the security canister. After the reports are certified, the supervisor poll-worker has an option to finish taking up the report so the certified report is stored in the secure canister.

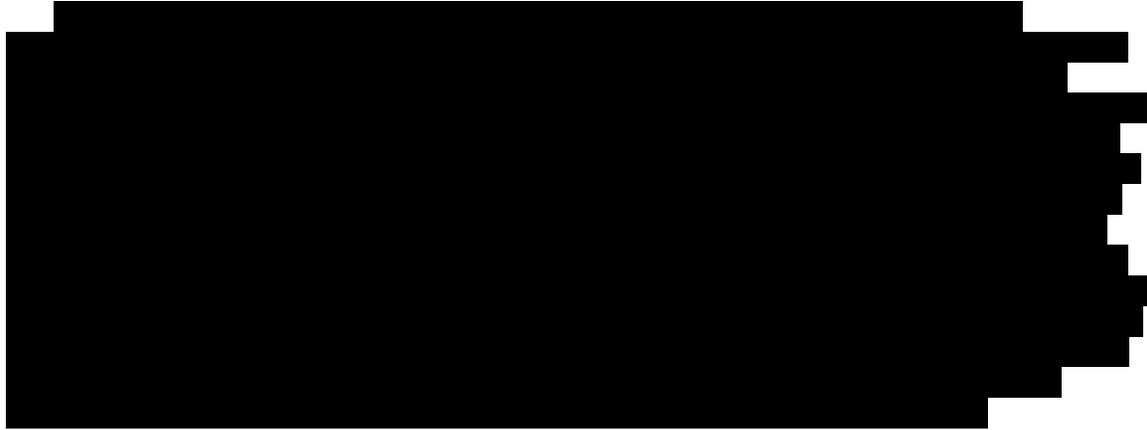
We also noticed some hesitation and stopping on the take-up action when the canister started to fill. The supply reel provided more paper than fits in the security canister (the take up reel is not as tightly wound as the supply reel). Procedures may require a limit to the number of voters before the canister is checked and replaced as there does not seem to be any indicator that the canister is too full.

The magnifying lens may not be practical for users requiring its use. The limited focused field of view in the paper view window left edges and top/bottom elements in the paper view window distorted. Overhead and side lighting created areas of glare and shadow adding to the potentially difficulty for reading the ballot. The magnification level appears to meet current expectation for the degree of magnification but we do not have a basis for accepting or rejecting the adequacy of this feature except public comment

The new BS Ver. 4.6.x firmware includes a requirement for a Central Administrator access card, more secure pin number, and a special mode of operation. The Administrator mode supports pre-election setup and diagnostics and post-election maintenance including the capability to work with the secured archives. Some of the more sensitive operations are also available in the Election mode of operation using the Administrator's access card and secure pin. However, the current Ver. 1.0.1 of the Key Card Tool does not support setting the encryption key and pin number for the Administrator's access card. The Administrator's card must be set and enabled at a Diebold facility in Texas. Once the encryption key and pin are assigned, the same key must be used for the other cards and the AV-TSx with BS 4.6.x, essentially preventing the codes to be reset locally. Should an error or other problem result in a need to recode the keys or

the original encryption key and pin number are lost, then use of the access cards and AV-TSx may be blocked until a new Administrator card is provided from Diebold. This condition is expected to be temporary pending acceptance of the new Key Card Tool set.

Further testing was done on the user accounts. The use procedures [SOSPROC] recommend the setup of administrator and user system logons which allow the restriction to changes to program installations and security settings to a limited set of administrators. By setting the user accounts to the default Microsoft super user profile, more restricted user logon accounts permitted the successful operation of basic GEMS functions while denying some higher levels of changes to the operating system environment.



The AV-TSx R7 design is very similar to the AV-TS R6. Although there are some minor differences in the configuration, recommendations of physical and procedural security for the AV-TS R6, including the use of paper seals, still apply to the AV-TSx R7.

NASED Qualifications/State Certifications

	<u>Component</u>	<u>NASED #</u>	<u>State Certification</u>
1.	GEMS 1.18.22	N-1-06-12-12-005	none
	GEMS 1.18.22G	N-1-06-12-12-004	(see note in observations)
2.	AV-TSx/AVPM	N-1-06-12-22-008	none
3.	BS 4.6.2	N-1-06-12-22-008	none
4.	Key Card Tool 1.0.1	N-1-06-12-12-002	(1.18.19) 08/10/2004
		N-1-06-12-12-003	(1.18.22) none
5.	VCE 1.3.2 (Spyrus)	N-1-06-12-12-002	(1.18.19) 08/10/2004
		N-1-06-12-12-003	(1.18.22) none
6.	VC Programmer 4.1.11	N-1-06-12-12-004	(1.18.19) 10/04/2004
		N-1-06-12-12-005	(1.18.22) none
7.	AV-OS Precinct 1.96.4	N-1-06-12-12-002	(1.18.19) 08/10/2004
		N-1-06-12-12-003	(1.18.22) none
8.	AV-OS CC 2.0.12	N-1-06-12-12-004	(1.18.19) 09/28/2004
		N-1-06-12-12-005	(1.18.22) none

Note: The delivered trusted build for the testing was for 1.18.22G. The 'G' version is a minor change showing the NASED certification number in the 'About Windows and uses the same executable programs as 1.18.22 and does not effect the outcomes of this test. The version which should be certified in California is the 1.18.22 (NASED # N-1-06-12-12-005).

Final test reports for this version have not been received from either the hardware nor the software ITAs verifying software review and system integration testing.

Conclusion

As configured and presented for testing, this version meets current standards for use in California pending receipt of the ITA reports. Recommendations for security seals and other procedures described for the AV-TS R6 still apply.

Sincerely,

A handwritten signature in cursive script that reads "Steven V. Freeman".

Steven V. Freeman

Attachments:

- A. List of the test configuration components
- B. Photos of revised unit

Attachment A

Test Configuration Inventory

1. Dell Power Edge 600SC, HH18021 Chassis S/N
 - a. 1.8 gigahertz, Pentium 4 processor
 - b. 1 GByte RAM
 - c. 20 GByte IDE Internal Hard Drive
 - d. ViewSonic VE 155, 905035200089
 - e. PLEXTOR CD-R PX-W1210S SCSI CdRom Drive
 - f. 3.5 Diskette Drive
2. Hewitt Packard Laser 1020 Printer S/N: CNF B989445
3. Commercial-Off-The-Shelf Software
 - a. MS Windows 2000 Server, Service Pack 4 (Build 2195) w additional patches for SP5.
 - i. Window Internet Explorer 6.00.2800.1106
 - b. Adobe Acrobat Version 6.0.0.2003051900
 - c. Adobe Audition Version 1.0
 - d. Nero CD/DVD Rom Burning Suite, Version 6,
 - e. WinZip 8.1, SR1
 - f. McAfee SecurityCenter Version 5.0.0.0
 - g. McAfee VirusScan Version 9.0.0.0
 - h. SEIKO Epson Driver
 - i. (The application also includes Seagate Crystal Reports)
4. Diebold Election Systems, Inc. Software:
 - a. GEMS 1-18-22G
 - b. Key Card Tool 1.0.1
 - c. VC Programmer 4.1.11
5. Voting Machine
 - a. AV-TSx Rev 7,
 - b. BS Firmware Ver. 4.6.2, S/N 213112
 - c. AVPM Model 3 Rev 0 (3.0.1.1) (See note 2)
6. Documentation
 - a. GEMS 1.18 Users Guide, revision 11.0
 - b. GEMS 1.18 Reference Guide, revision 7.0
 - c. GEMS 1.18 Election Administrators Guide, revision 7.0
 - d. GEMS 1.18 System Administrators Guide, revision 5.0
 - e. AccuVote-TSX Hardware Guide, revision 8.0
 - f. AccuVote-TSX Pollworkers Guide, revision 4.0
 - g. Key Card Tool 1.0 Users Guide, revision 2.0
 - h. Voter Card Encoder 1.3, Users Guide 2.0
 - i. VCPprogrammer 4.1 Users Guide, revision 4.0
 - j. AccuVote-OS Hardware Guide, revision 6.0
 - k. AccuVote-OS Pollworkers Guide, revision 3.0
 - l. AccuVote-OS 1.96 Precinct Count Users Guide, revision 3.0
 - m. AccuFeed 1.0 Hardware Guide, revision 1.0

Configuration Notes:

1. The trusted build version provided for testing was a special Georgia modification that provides the NASED Certification number in the GEMS help/about screens. The Georgia modified version does not materially effect the outcomes of this test because known of

- the executable files (including the changed DLL files reported elsewhere) are different but some report and wav (sound) files are different.
2. The model identification provided for the AVPM comes from the Diebold Assure Umbrella report, an online report of installed versions and security settings available to the election official in the BS Ver. 4.6.2. However, no model identification is labeled on the AVPM itself .

Test Election.

The same test election was used that was used in the May 05 testing. Enough ballots (76) were entered to verify the correct identification of the candidates and measurers in all precincts and parties and ensure the formats for all variations of the paper verification ballot were confirmed as being free of the ballot serial number These included:

1. Ballots accepted on the first printing.
2. Ballots accepted on the second printing
3. Ballots rejected twice and automatically accepted on the third printing
4. Provisional ballots
5. Multi-page ballots (both accepted and rejected one or more times).
6. Ballots showing English, Spanish, and Vietnamese.
7. DTS and Declared voter ballots in American Independent, Democratic, and Republican primary ballots.

Testing also included bringing in the voting results and confirming the capability to identify the ballot images and resolve write-ins and (not used in California under current procedures) provisional ballots using the internally assigned ballot serial number was not diminished by removing the number from the paper verification ballot printouts.