



STATE OF UTAH

Office of the Legislative Auditor General

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Audit Subcommittee of the Legislative Management Committee
President John L. Valentine, Co-Chair • Speaker Greg J. Curtis, Co-Chair
Senator Mike Dmitrich • Representative Ralph Becker

JOHN M. SCHAFF, CIA
AUDITOR GENERAL

January 16, 2007
ILR 2007-A

President John Valentine
Speaker Greg Curtis
Utah State Capitol
Salt Lake City, Utah 84114

**Subject: Observations of Electronic Voting System and Procedures Used in Utah's
November 7, 2006 Election**

President Valentine and Speaker Curtis:

As you noted in your letter, maintaining the integrity of Utah's voting system is of utmost importance to the Legislature. Utah voters appeared to have some fears with the overall security of the new electronic voting machines, in particular the memory cards recording the votes. So, at your request, we observed the November 7th election process during which electronic voting machines were used in Utah for the first time in a General Election.

We conducted observations at various polling locations in Salt Lake County, Utah County, Weber County, Davis County, and Tooele County and focused on the following:

- The initial activation procedures of the electronic voting machines before the polls opened.
- The closeout and deactivation procedures of the electronic voting machines after the polls closed.

Voters seemed fearful that during machine activation and deactivation, the memory cards could be switched or the voting machine could be tampered with in some way. Further, it is during these times that poll workers put in place controls and audit trails that enable a vote recount or a reconciliation, if necessary. In addition to poll opening and closing times, we also randomly visited poll locations during the day to determine what, if any, problems were occurring.

We did not observe widespread concerns, but we did have some concerns in three general areas: 1) security, 2) procedure, and 3) equipment. While we believe there are some procedures that counties should strengthen before the next election, we do not believe that the problems observed necessitate an audit.

Security Concerns Observed

Memory Cards Were Not Secured at Two Observed Locations. The memory cards record and store the votes so maintaining their security is important. At a Utah County polling location, the memory cards did not arrive in a secured fashion, such as a tamper-proof bag. Instead, the memory cards arrived in an unlocked zippered pouch. At a Weber polling location, memory card security and protocol procedures were forfeited by the struggle to get the voting machines operational, which did not occur until two hours after the polls officially opened.

Procedural Concerns Observed

Appropriate Contingency Procedures in the Event the Machines Failed Were Not Clear. As was widely reported in the media, in Utah County, the encoders failed to work properly in many polling locations. As a result, the voting machines became nonfunctional for a period of time. The voting procedures implemented while the machines were down varied among polling locations. Of concern is the possibility that some polling locations asked voters to come back later. We observed a polling location in Weber County making this choice. At this location, the poll workers were unable to get the voting machines operational until 9:20 a.m. Those voters who showed up before that time were asked to come back later. In our opinion, when people come to vote during voting hours, they should somehow be allowed to vote by either a paper or a provisional ballot.

Only One Person in Each Poll Location Knew How to Activate and Deactivate the Voting Machines. In one Salt Lake polling location, delays were caused by the fact that only one person knew how to activate the voting machines and that one person could not quickly get all eight machines activated. Also contributing to the delays was the fact that the poll manager did not arrive until 6:25 a.m. Only one voting machine was operational by 7:00 a.m. All eight voting machines were operational by 8:30 a.m. Similar delays occurred in the evening when the machines were being closed out and the votes were being reconciled at the poll location. Observations at poll locations in Tooele County were similar to the Salt Lake County observation just described. Many poll workers waited for one individual to activate and deactivate the machines. In our opinion, it would seem more efficient to have a second person capable of activating and deactivating the voting machines at the larger poll locations.

All Early Voters Should Be Clearly Identified. In a polling location in Salt Lake County, those who had voted early were not clearly identified in the poll register. As a result, one auditor

who had voted early was not prevented from casting a second ballot. In Tooele and Davis counties, those who voted early were so designated by a large "Early Voter" stamp placed on the voter's signature line in the poll register. In our opinion, all counties should make their "Early Voter" designation clear and obvious.

Equipment Concerns Observed

The Printing System Was the Most Problematic Part of the Voting Machine. In particular, loading the printer paper and attaching the printer cartridge correctly was sometimes difficult and time consuming. The printers are important because they provide an audit trail to validate machine accuracy. Problems involving the printing system were the reason the Weber County poll location did not get its machines operational until 9:20a.m. Also, a particular printing problem experienced by more than one poll location was that the printer would stop working and report low paper when, in fact, the paper was not low. The voting machine will not function unless the printer is working, and often poll workers did not know how to handle this problem. As a result, a voting machine might be out of service for some time while waiting for county technical support.

In addition to the problems already outlined, various process problems were observed, such as workers not understanding what tracking numbers to record on the closeout log or what to do with the various paper tapes generated; but, we believe these types of problems will lessen as the poll workers gain more experience with the new voting system.

Finally, while we did not observe the paper audits after the elections, the Lieutenant Governor's Office reported no exceptions or problems.

We hope this addresses your concerns regarding the new electronic voting machines. Again, we do not view the concerns identified as necessitating an audit at this time. If you have any further questions, please call Janice Coleman at (801) 326-1727.

Sincerely,

John M. Schaff, CIA
Auditor General

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Agency Responses



Sherrie Swensen

Salt Lake County Clerk

Jason Yocom

Chief Deputy Clerk



January 12, 2007

John M. Schaff, CIA
Darin Underwood, CIA
Legislator Auditor General's Office
W815 Utah State Capitol Complex
Salt Lake City, UT 84114-5915

Dear Mr. Schaff and Mr. Underwood,

Thank you for the opportunity to review and respond to the confidential "Exposure Draft" of the Observations of Electronic Voting System and Procedures Used in Utah's November 7, 2006 Election (Report No. ILR2007 A). In that regard, I would like to offer the following clarifications to a few of the items mentioned in the draft report.

1. "Voters seemed fearful that during machine activation and deactivation, the memory cards could be switched or the voting machine could be tampered with in some way."

It may be worth noting that each component of the electronic system, including the machines, memory cards, and encoders are all loaded with a security encryption key that is randomly generated by the Global Elections Management System (GEMS) server. Any tampering with the memory cards or machines would render those components of the system inoperable with the rest of the voting system and the GEMS server.

2. "Appropriate Contingency Procedures in the Event the Machines Failed Were Not Clear."

While this may have been true in other counties, in Salt Lake County, our poll workers were instructed in training and in their reminder materials to issue paper optical scan ballots to voters if there were no electronic machines up and running. (See attached "5-Star Tips for Election Day Success" sent to all poll workers)

3. "Only One Person in Each Poll Location Knew How to Activate and Deactivate the Voting Machines."

In Salt Lake County, all poll workers were required to attend a mandatory three hour training which included setting up (activating) and taking down (deactivating) the voting machines. Training materials and quick reference guides were available for all poll

workers to follow step-by-step instructions for these processes. However, it is accurate that the main responsibility for these activities fell to the poll manager and the touch screen technician, both of which attended a three-hour advanced training along with the three hour basic training session before serving. If one or the other did not show up, the remaining poll workers were trained to use the instruction guides to complete the tasks. Also, nearly 100 alternates were trained (advanced and basic training) and were deployed to locations where a poll worker(s) did not show up.

4. "All Early Voters Should Be Clearly Identified."

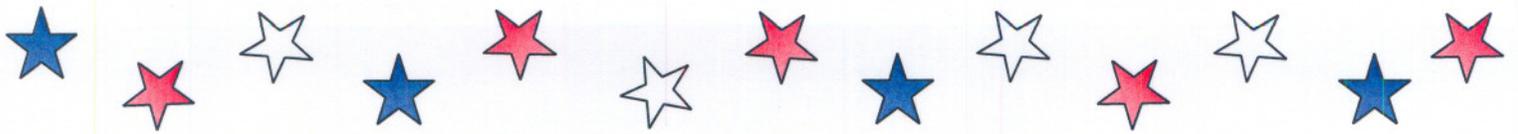
We agree with this assertion and the suggestion that there may be better ways to identify early voters in the Official Register. Our poll workers are trained to use the Official Register Update Report that they are given to go through the Official Register and mark in the "Challenge Column" by each voters' name if they have voted early or been issued an absentee ballot. (See page 27 of the Salt Lake County Poll Worker Instruction Manual 2006.) It is a good suggestion to make adjustments to this process to make these identifiers more obvious to the poll workers.

Thank you for the opportunity to respond to the Exposure Draft and to make these clarifications. If you have any questions, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sherrie Swensen".

Sherrie Swensen
Salt Lake County Clerk



SALT LAKE COUNTY CLERK
Poll Worker Training
*“5-Star” Tips for
Election Day Success*

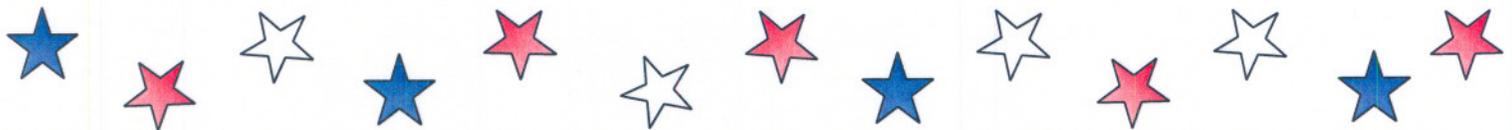
Stay Calm – follow each step of the instructions.

Total both reconciliation forms.

All memory cards and canisters are ballots.
(Return all memory cards and canisters on Election night.)

Resort to paper ballots in an emergency.
(Notify Elections Division immediately.)

Set up at least one voting machine by 7 a.m. so the
polls can open on time.



SALT LAKE COUNTY CLERK
Poll Worker Training
*“5-Star” Tips for
Election Day Success*

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Handling Absentee Ballots:

The Elections Division sends out thousands of ballots by mail to voters before each election. Voters who vote their Absentee Ballot are NOT eligible to vote a second time at the polls.

Before the election, the Poll Manager will receive an Official Register Update Report listing the names of individuals who received an Absentee Ballot or who voted early. The Poll Manager should update the Official Register (as shown below) by putting "AB" in the challenge column for each person who already voted .

Challenges ID Required ID Source	Date Registered Voter #	Birth Date Birth Place	Voter's Name Address Ballot Code	
AB	03/13/98 009118659	11/12/76 UT	HARN, STEPHANIE LYNN 467 OAK HILLS CIRCLE 3498C	84119-5441
			Ballot #	Voter's Signature
IDREQ	09/02/01 009731153	12/10/82 UT	HARRIS, STEVEN 4015 CREST LANE 3496	84119-5441
			Ballot #	Voter's Signature
	06/27/03 008148557	09/26/65 NM	HENRY, MICHELLE RAE 4385 LEONARDO WAY 3495KL	84119-2424
			Ballot #	Voter's Signature

- If the Official Register indicates that the voter has been issued an Absentee Ballot, the voter must surrender the un-voted Absentee Ballot before being allowed to vote on the touch screen voting machines. Spoil the un-voted Absentee Ballot. (Instructions on pg. 42)
- If the voter does not or cannot surrender the un-voted Absentee Ballot, he/she must vote a Provisional Ballot. Provisional Ballot procedures can be found on page 36.
- If a voter brings a completed Absentee Ballot to the polls, the poll workers may accept the ballot and place it in the Red Ballot Bag. Record the receipt of an Absentee Ballot in the Absentee Ballot section of the Pollbook.

Encoding Voter Access Cards Using a TSx

A touch screen machine may be used to encode voter access cards if the Card Encoder is not functioning.

Take the voting machine out of service while encoding voter access cards.

INSTRUCTIONS:

- Insert the Supervisor Card and enter the PIN # provided. When the card ejects on its own, remove and return to the binder or poll worker apron.
- At the **ELECTION MODE** screen, touch the “Create Voter Cards” button.
- The *****BLANK CARD INSERTED***** screen will appear with two windows displaying “Precinct” and “Party” options.
- Touch the precinct number onscreen that corresponds with voter’s information in the Official Register.
- If the voter is visually impaired or requests an audio ballot, touch the “Audio” ballot square under the **Voter Card Options** portion of the screen. **DO NOT SELECT “PROVISIONAL” BALLOT FOR ANY VOTER – ALL PROVISIONAL VOTERS WILL USE THE OPTICAL SCAN BALLOTS PROVIDED.**
- Insert a Voter Access Card into the card slot.
- **IF** the message **UNVOTED CARD FOR PCT [X] INSERTED** displays, press “CLEAR.” A message “Clearing access card, please wait” will appear momentarily.
- Touch the “Create Card” option on the bottom left side of the screen. The newly-encoded Voter Access Card will automatically eject from the slot when finished.
- To create additional Voter Access Cards, repeat the steps starting at **ELECTION MODE** screen.
- When finished, touch the “Close” button on the bottom right side of the *****BLANK CARD INSERTED***** screen. At the **ELECTION MODE** screen, touch “Resume Voting” to allow the machine to continue processing voters.



UTAH COUNTY CLERK/AUDITOR
ELECTIONS OFFICE

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Bryan E. Thompson, Clerk/Auditor

Sandy Hoffmann, Elections Coordinator

January 12, 2007

John M. Schaff, CIA
Auditor General
W315 Utah State Capital Complex
PO Box 145315
Salt Lake City, UT 84114-5315

Mr. Schaff,

I would like to respond on behalf of the Utah County Elections office to the "Exposure Draft" of Observations of Electronic Voting System and Procedures Used in Utah's November 7, 2006 Election (Report No. ILR 2007-A).

The report specifically refers to two items observed in Utah County during the 2006 November General Election.

One item was a security concern as it related to the memory cards for the voting machines. It was noted that the memory cards did not arrive at the polling location in a secured fashion, such as a tamper proof bag. The elections staff of Utah County under the previous Clerk/ Auditor's administration recognized this security concern and had already begun to discuss possible remedies. Under my direction as the new Clerk/ Auditor we plan to move forward with a previously discussed proposal to secure the memory card in a bank deposit type bag with a security clasp.

The second item involved a procedural concern. As most everyone is aware, we experienced encoder problems at many of our polling locations in Utah County on the morning of Election Day. These problems resulted in some voters being asked to come back later in the day to cast their ballots once the problems were solved. In a review of this problem with the Elections staff, it was determined that we need to emphasize some items in our future poll worker trainings and implement a means to test the encoders prior to the election.

First, if the voting machines are inoperable due to this or a similar problem, the poll workers need to give the voters the option to use a paper ballot rather than being asked to return later in the day. Secondly, it was determined that we need to provide additional training and clear instructions on the contingency option of using a voting machine at each location as an encoder in case we are unable to program the encoders as occurred on Election day. Third, we plan to work with Diebold to determine what test program we can run on the encoders to ensure that they are functioning properly in advance of the election.

In closing I would also like to note that I observed the post election paper audits for Utah County at the invitation of the previously administration. No exceptions or problems were identified during the Utah County audit.

If you have any additional questions, please feel free to contact me.

Sincerely,

Bryan E. Thompson
Utah County Clerk/ Auditor

CC: Darin Underwood