UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF NEW YORK

ROBERT L. SCHULZ, et al.,	)	
	)	
Plaintiffs,	)	
	)	**No. 07-cv-0943**
	)	**LEK-DRH**
	)	
STATE OF NEW YORK, et al.,	)	
	)	
Defendants,	)	

DECLARATION BY ROBERT L. SCHULZ IN OPPOSITION TO DISMISSAL AND IN SUPPORT OF SUMMARY JUDGMENT

Robert L. Schulz, under penalty of perjury, declares:

1. I am a Plaintiff in the matter captioned above and I make this affidavit in opposition to Defendants' motions to dismiss, and in support of Plaintiffs' motion for summary judgment and injunctive relief.

2. In this declaration I will provide information showing more than "minimal contact" exists between the New York State and the other State Defendants. I will also be providing documentary evidence showing that votes will not be accurately counted if machines or computers are used during elections.

Contact Between New York And The Rest Of The States

3. **The National Election Pool ("NEP")** is a consortium of five dominant television networks that are based in New York City (ABC News, CBS News, CNN, Fox News and NBC News), and the New York City based Associated Press. NEP has retained the Associated Press to tabulate all votes cast in all fifty States in all state caucus elections, primary elections and general elections on all presidential, gubernatorial and congressional races. See accompanying Declaration by Lynn Landes. See also Exhibits F and H attached hereto.

4. On December 21, 2007 I spoke by telephone with Jack Stokes, Director of Corporate Communications for the Associated Press. I asked Mr. Stokes if he would summarize for me AP's network of contacts within the States and how those contacts would enable the National Election Pool to begin reporting, with confidence, the results of the upcoming caucuses, primaries and general elections within minutes of the end of the voting periods in the States. Mr. Stokes said the way it will work for AP during the 2008 election cycle is the same as it has worked for AP for many years, including the most recent federal election, the so-call "Mid-term" election in 2006. He said the information I was looking

can best be found on the AP website. He then walked me though the series of AP website links directly to the information I was seeking as follows:

a. www.ap.org
b. Hover over "About AP"
c. Click on "What's New"
d. Scroll down to and click on "2006 What's New Archive"
e. Scroll down to and click on "11/03/06 2006 Midterm Elections"

5. I thanked Mr. Stokes and proceeded to download, print and read all the documents accessible from the link identified in "e" above.

6. According to AP, more than 5,000 people on AP's vote count and political reporting teams have been and will continue to be in every county in the United States during the general elections in November. People on AP's vote count and political reporting teams will also be in every county, city and town in every State during all caucus and primary elections. See Exhibits A and J.

7. AP's on-going presence and contacts in all the States provides AP with up to the date information regarding voter registrations, voter turnout, voting patterns and exit polling enables AP to call an election result at the scheduled poll close hour even if voting has been extended in selected precincts. See Exhibit B.

8. AP is the only news organization collecting the vote for the media and delivering it to newspapers and broadcasters. See Exhibit C and Exhibit F.

9. AP's contact with all the counties and States has enabled AP to keep up with the way counties and states tally votes. See Exhibit C.

10. Edison Media Research and Mitofsky International, under contract to New York City based NEP and AP, conducts exit polls, but NEP depends "on AP to count actual votes." See Exhibit D.

11. NEP maintains a secret "quarantine room" in New York City, where each member organization can send two experts to monitor the data before 5 p.m. on election day. See Exhibit D and F.

12. AP has been conducting "state-by-state election roundups" at least since 1848. See Exhibits E and H.

13. The New York City based NEP is present in the States conducting exit polls during every presidential, gubernatorial and Congressional race. See Exhibit F.

14. Of the 5,000 people deployed throughout the fifty states by New York City based AP during past presidential and mid-term elections and to be deployed during the 2008

presidential election cycle, about 4,600 are employed to retrieve vote totals and 400 to input that information into a central computer system. See Exhibits F and I.

15. AP's contacts with the States is extensive and on-going. The AP employs stringers in nearly every U.S. County, or every City and town in New England, to call in or otherwise transmit results of more than 6,000 state and local races. See Exhibits F and I.

16. Representatives of New York City based NEP prepares paper questionnaires that are used for exit polls in the States. The exit polls are conducted by NEP contractor Edison/Mitofsky. See Exhibit G.

17. Thousands of people work throughout the States of the Union "on behalf of AP" to report the results of elections, from exit poll interviewers to exit poll analysts, from vote count stringers to vote entry clerks, from bureau chiefs in every state to supervisors in New York and Washington – all part of a precisely calibrated plan. See Exhibit H.

18. Shortly after 6 p.m., in presidential and mid-term elections, the nearly 5,000 AP stringers report to county election centers (city and towns in the North east) in every state in the Union to start phoning in the raw vote as they receive it from the counties. They place calls to two vote centers in New York City: one at AP headquarters and one in Brooklyn. See Exhibits H and I.

19, A total of 450 vote entry clerks punch in the numbers on a computer screen and feed them onto the state and national election tables that will be seen in the news rooms of NEP members and AP's members. See Exhibit H.

20. Edison/Mitofsky, under contract to New York City based NEP and AP, has employed people to conduct exit polls in the States of the Union for NEP since 2004. See Exhibit H.

21. New York City based AP has had statehouse correspondent in each state in the U.S. for decades. See Exhibit I.

22. AP personnel make it a practice to stay in continuous contact with county officials. See Exhibit I.

23. AP uses a variety of sources and methods to obtain results, including personal contact at county, city and town locations where votes are tallied and electronic feeds from, and ostensibly authorized by, the Secretaries of State.

Votes Are Not Accurately Counted When Machines Count the Votes

24. All vote counting machines have been revealed to be far too unreliable and insecure to ensure the integrity of the election results. See Exhibit L hereto, "Annotated Bibliography of Expert Reports on Voting Systems," edited by Rady Ananda, dated December 11, 2007, and filed as Exhibit A to the Memorandum of Law by Andrea Novick, attorney for Amici Curiae, which Memorandum was filed on December 13, 2007 in the case United

States of America v New York State Board of Elections, et al., Case No. 06-cv-263, United States District Court for the Northern District of New York.

25. During the last five years there have been thousands of reports of vote counting machine failures, involving tens of thousands of machines. See "Election Problem Log –2004 to Date" published at http://votersunite.org. Exhibit M attached hereto is an annotated listing of the first forty of the nearly one thousand failures included in said Log. The Log does not include all failures. For instance, following the 2007 general election, the *Glens Falls Post Star* reported the failure of the lever operated machine in use in the Town of Thurman, New York, to count any of the votes cast for one of the candidates for public office. Nor does the Log include the failure of the Diebold optical scan machines used at the 2007 Iowa Presidential Straw Poll, a failure I am personally familiar with: I attended the Iowa Straw Poll.

Elections are Vulnerable to Confusion, Frustration, Error and Fraud When Hand Marked Paper Ballots Are Not Hand Counted In Full View Of The Public Under Government Supervision With Certified Results Posted On State Websites, Precinct-by-Precinct, County-by-County

26. **Figure 1** attached hereto is an overview of the vulnerabilities that have caused confusion, frustration, error and fraud when hand marked paper ballots are not hand counted in full view of the public under Government supervision with certified results posted on state websites, precinct-by-precinct, county-by-county.

Constitutional Caucuses, Primaries and General Elections Are Immediately Available

27. Election procedures that would pass constitutional muster are immediately available and could readily be implemented by all Defendants. See **Figure 2** attached hereto.

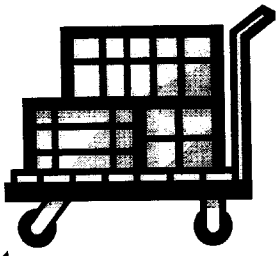
Dated: December 21, 2007

ROBERT L. SCHULZ
2458 Ridge Road
Queensbury, NY 12804

FIGURE 1

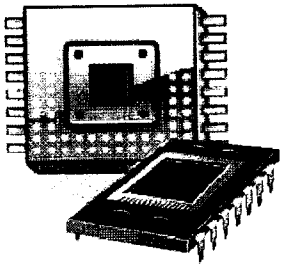
FIGURE 1

County Storage & Set-up of e-Voting Machines



Vulnerabilities at the County:
Pre-election software or memory card sabotage, voting application set-up errors, lack of paper ballots to audit, poss. post-election removal of e-evidence used for sabotage, etc., + inadequate certification testing by state/county.

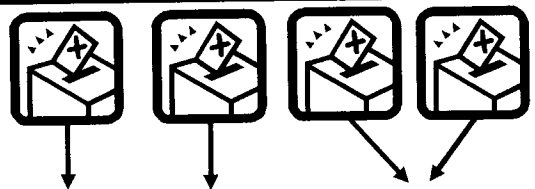
Design & Manufacture of e-Voting Systems



Vulnerabilities Manifest by the Manufacturer:
Hardware/firmware *design* sabotage, assembly component sabotage, e.g., engineered "back doors" or swapped chips, software application design *flaws* or sabotage, mechanical/ electrical design *flaws* (**NOTE**: all the above apply to each and every component of a vendor's voting "system", including the actual voting machines, county or state "mainframes", routers, and system communications hardware components, etc.)

Election Day e-Vote Machine Vulnerabilities:
Machine failures, machine-level hardware/memory card sabotage, power failures, application failures, user errors, administrative operator errors, and repair or recovery errors that DELETE, ALTER or otherwise VOID electronically counted citizen votes.

Voting @ Precinct w/ Electronic Voting Machines



Paper printouts of vote e-totals

Absentee ballots

Networked or modem machine e-Totals

Votes counted in *non-public* rooms & data entry is controlled by system vendor engineers
(e.g., 1994 Cook County, IL)

Real A/P "direct connect" mainframe feeds
(e.g., 1994 Cook County, IL)
?? "Trojan Horses" ??

State & County "Mainframe" Election Computers

Vote totals are phoned to NEP or A/P by County Officials or (allegedly) by A/P Reporters

Possible direct, electronic uploads to NEP

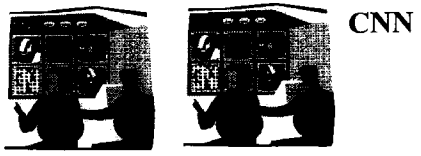
Potential **Remote** vote data ***manipulation*** by NEP via 2-way vendor Internet interfaces

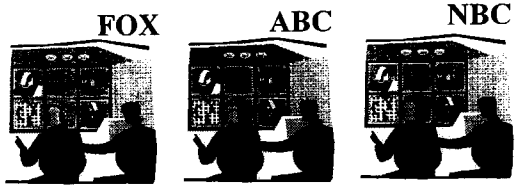
DANGER of the "NEP":
Top-Secret Exit-Polling & Vote Counting for the entire U.S. = **Invitation for FRAUD!**

The "NEP" Consortium: ABC, CBS, NBC, CNN FOX, Assoc. Press + Mikofsky / Edison

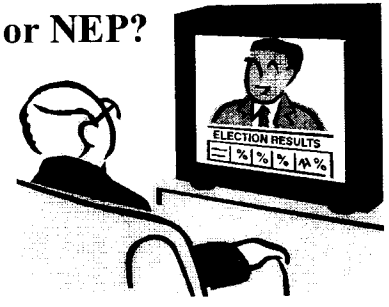
The Secret NYC NEP "Vault" Operations Center

Election "Results" Made Public via Corporate Consortium





Reality or NEP?



Bad Elections:
Confusion, Frustration, Error & Fraud!

Vulnerabilities of "Mainframe" Election System Computer:
Undetectable hacking into LAN connected mainframes by outside 3rd parties, manual input errors, NO public oversight to detect errors OR fraud, 'Direct Connect" machine connections enable undetectable "Trojan Horse" intrusions and data alteration, machine vendor engineers may be easily bribed to alter e-vote data — undetectably via secret engineered "back doors" or by use of pirate applications.

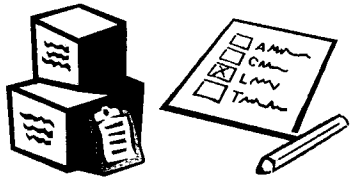
FIGURE 2

Constitutional Elections, *NO* Machines:

FIGURE 2

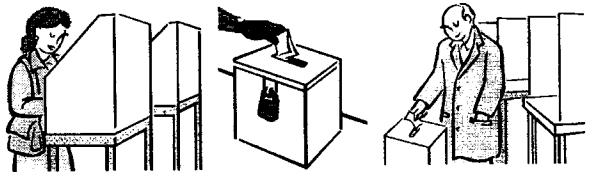
At Every Precinct:

Paper Ballots

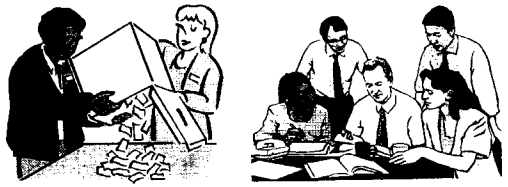


Numbered paper ballots are securely controlled & inventoried. Ballots plainly show the candidates' names and issues for election in text.

NO Voting Machines!
Ballot Boxes in Public View!



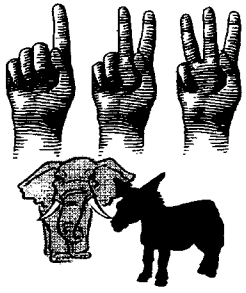
After checking/securing each ballot box, the polling location opens. Verified voters privately hand-mark their choices and deposit their ballot in the box. Ballot boxes remain in full public view at all times.



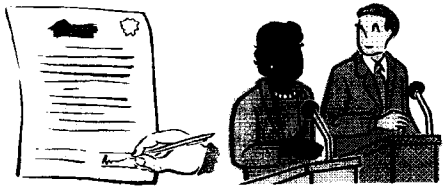
All Ballots Counted in Full Public View

After the polls close, one at a time, ballot boxes are unlocked, and ballots are hand-counted in full view of the public by state officials. Each vote is read aloud, verified by all other counters, & recorded on each of (2) separate paper tally sheets, each controlled by a separate official.

Counted by Hand!

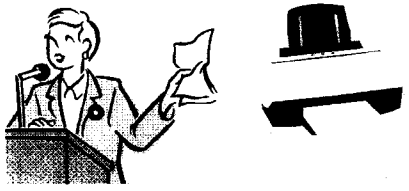


Again, all votes are counted by hand, in public, where cast. **All** voting and counting is performed openly before the public and party observers.



After resolving any counting discrepancies, each box's tally sheets are verified and certified by state officials under penalty of perjury.

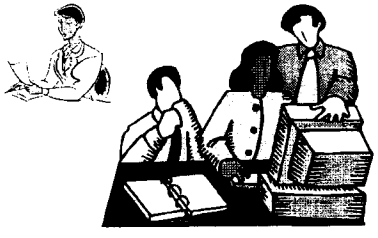
Publicly Announced Results



Certifications are immediately copied and distributed to the public & results announced.

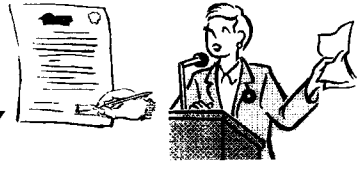
Certifications & secured ballots are transported to the County tabulation center.

At The County:

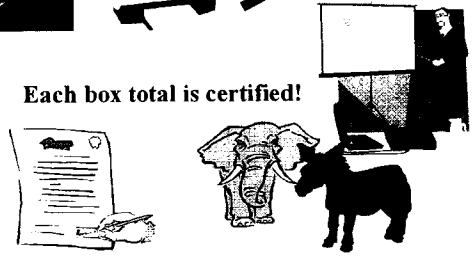


As each box and certification arrives, it is verified, announced publicly, and recorded. Tally-by-tally ballot box totals are recorded on a **"master" paper spreadsheet** and on a computer spreadsheet which is also projected for **live** public viewing. All data recording is observed and by monitored by the public, including counting of absentee/early ballots.

Procedural Safeguards:
Incremental Certifications & Data Backups + Public Web Posting



100% Certified Election!

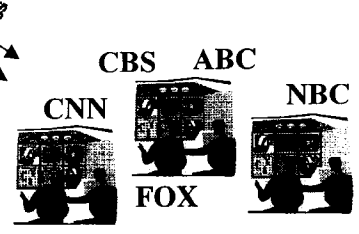


Each box total is certified!

Full Public Observation!

After all box totals are entered and incrementally certified, "Grand Totals" are generated, verified, and certified. All certifications are immediately copied & distributed as requested and results are announced & posted publicly. The totaling & certification process is repeated at the state level.

Liberty is Secured!



OFFICIAL results released **TO** the media/NEP

Open, Honest, Secure Elections.

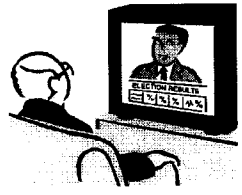
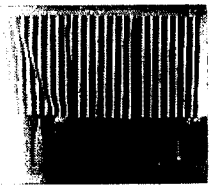


EXHIBIT A

Associated Press

Other AP Sites



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- Newspaper Services
- [illegible]
- Login
- Privacy
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2006 Midterm Elections

On Nov. 7, with the balance of Congress on the line, The Associated Press will cover more than 6,000 midterm races. More than 5,000 people on AP's vote count and political reporting teams will be in every county in the United States. Throughout the night, from the moment the polls close, the AP will report on movements in the battle to control the U.S. House of Representatives and U.S. Senate, as well as statehouses, legislatures and scores of other state and district offices.

You can find AP's election coverage in AP's member newspapers and on their Web sites, on broadcasts and on many other news client Web sites.

On this site, learn more about how AP covers the vote count, calls the winners and provides comprehensive reporting and analysis of the 2006 Midterm Elections.

>> AP Press Releases & Statements

11/07/2006 AP Statement: Calling races at scheduled poll close
11/03/2006 AP to report the vote count on 2006 Election Night

>> AP News Stories

11/09/2006 Allen concedes in election that transfers Senate control to Democrats
11/08/2006 Democrats win turnout battle; Virginia's tally might set record for midterms
11/08/2006 Democrats win control of both houses of Congress for first time since 1994
11/08/2006 History showed recount likely would be futile in Virginia
11/08/2006 ABC wins the election-night ratings race; assessment begins of polling results
11/08/2006 News organizations proceeding with caution in use of exit poll information
11/08/2006 Despite dire predictions, and sporadic hiccups, voting went relatively smoothly
11/08/2006 How the national voter survey was conducted
11/07/2006 asap: Watching the states on election night with AP's Jerry Schwartz
11/02/2006 Revamped exit poll, vote counting operations get test in closely watched election

>> For the Record

The AP on Election Night – On election night, more than 5,000 people work for The Associated Press to count the vote of the U.S. electorate.

Calling the Winners – Dozens of bureau chiefs watch the vote counts carefully until there is sufficient data that they can call the political races in their areas.

Experienced Political Reporters – Experienced AP reporters who cover Congress, statehouses and political issues throughout the U.S.

Access to Exit Polls Information – AP is a member of the National Election Pool that includes the TV networks, and through that organization has

access to a range of exit poll information, starting on election night and continuing through the cycles of analysis and reaction that follow.

The AP and Elections over the Decades – A brief excerpt from the chapter on elections in the soon-to-be-published AP history book "Breaking News".

FAQ on AP's Election coverage

The public feedback e-mail address for The Associated Press is info@ap.org

Updated: 11/08/2006

EXHIBIT B

Associated Press

Other AP Sites

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BACK

11/07/06

AP Statement: Calling races at scheduled poll close

The Associated Press calls races at scheduled poll close when our political experts and analysts are satisfied a candidate has a significant winning margin. They weigh a number of factors, including voter turnout, previous voting patterns, election day exit polling and the experience of AP journalists who have covered the campaigns. When our projections indicate a candidate has that significant winning margin, we will call the race at the scheduled poll close hour even if voting has been extended briefly in selected precincts.

As always, we do not call races until we are confident of that winning margin, whether at poll close or many hours or days later.

Linda M. Wagner, Director of Media Relations and Public Affairs, Associated Press, Corporate Communications

EXHIBIT C

Associated Press

Other AP Sites

BACK

11/03/06

AP to report the vote count on 2006 Election Night

NEW YORK -- The Associated Press will cover more than 6,000 races in the 2006 Midterm Elections on Tuesday, Nov. 7, with some 5,000 people deployed in counties across the United States to handle AP's vote count and political reporting. As in 2004, AP will be once again be the only news organization collecting the vote for the media and delivering it to newspapers and broadcasters.

The news cooperative will reprise the historical role it has had in every U.S. election since Nov. 7, 1848, the first time in which all states voted on the same day. From the moment the polls close, the AP will report on movements in the battle to control the U.S. House of Representatives and U.S. Senate, as well as statehouses, legislatures and scores of other state and district offices. The results will be delivered in a variety of formats, by satellite and online.

"We've kept up with all changes in the way counties and states tally votes since 2004 and we're prepared for anything," said Tom Jory, AP's Director of Election Tabulations. "Based on the stellar track record we've established in the year-round election process, we expect the enhanced procedures on our end to result in a smooth-running night for all the media outlets relying on us for yet-another accurate vote count to relay to their readers, listeners and viewers," he said.

"Control of the House and the Senate is up for grabs, and voters are motivated by the war in Iraq to turn out next week," said AP Washington Chief of Bureau Sandy Johnson. "We'll watch for problems with voting machines on election day itself and roll up our sleeves that night to report and analyze the votes as they are counted."

On election night and the days following, you'll be able to find AP's election coverage in member newspapers and their Web sites, in television and radio broadcasts, and on Internet sites which subscribe to AP for content. To learn more about how AP covers the vote count, calls the winners and provides comprehensive reporting and analysis of the 2006 Midterm Elections, go to the explanatory Web page on the corporate Internet site at http://www.ap.org/elections2006

AP, with roots dating back to 1846, is the world's oldest and largest newsgathering organization, providing content to more than 15,000 news outlets with a daily reach of 1 billion people around the world. Its multimedia services are distributed by satellite and the Internet to more than 120 nations.

Contact: Jack Stokes, AP Corporate Communications, 212.621.1720.

EXHIBIT D

11/08/2006

ABC wins the election-night ratings race; assessment begins of polling results

By DAVID BAUDER
AP Television Writer

NEW YORK (AP) -- A savvy last-minute scheduling shift enabled ABC News' Charles Gibson to claim bragging rights as television's elections source of choice in his first prime-time competition with NBC's Brian Williams and Katie Couric of CBS.

Meanwhile, news organizations pronounced themselves generally satisfied Wednesday with their exit polling and vote counting systems, despite some concerns. With caution the byword, the national organizations made no wrong calls with the information they received.

Gibson, Williams and Couric were back on the air quickly Wednesday as all networks ran two special reports on President Bush's news conference and his announcement of Defense Secretary Donald Rumsfeld's resignation. Couric, flying to Washington, was late and had Harry Smith fill in at the beginning of the first report.

All three broadcast networks had promised one hour of coverage Tuesday starting at 10 p.m. ET. But on Tuesday afternoon, ABC announced that it was pre-empting its half-hour comedy "Help Me Help You" for an extra 30 minutes of news coverage.

Not only did that give ABC a half-hour head start on its rivals, it enabled Gibson to take advantage of directly following "Dancing with the Stars," a major hit seen by more than 20 million people Tuesday.

As a result, ABC's elections coverage was seen by 9.7 million people, according to Nielsen Media Research. NBC had 7 million viewers and CBS 6.3 million, Nielsen said.

Overall, including network and cable viewers, a total of 31.4 million people watched midterm elections coverage Tuesday, up from the 26.3 million who watched in 2002, Nielsen said.

ABC News President David Westin said he asked last Thursday for the extra half hour, mindful of how important the midterm election was during a time of war. He said he got the OK Tuesday morning to bump the sitcom.

The ratings edge was timely given that viewers are still becoming accustomed to Gibson, Williams and Couric in their new roles.

"This was Charlie's first election as an anchor," Westin said. "It was my first election without Peter (Jennings) and the news division's first election without Peter ... It was very important that we do a very strong job."

Election-night ratings tend to resemble viewership for the evening news, where Gibson has been second to Williams the last two months. In 2004, NBC with Tom Brokaw was easily the most popular election-night broadcast.

Among the cable networks, Fox News Channel averaged 3.1 million viewers in prime time, CNN had 3 million and MSNBC had 1.9 million, Nielsen said. CNN beat Fox in the 25-to-54-year-old demographic sought by advertisers.

During 2004 election coverage -- a happier time for the Republicans who dominate Fox's audience -- Fox beat CNN by nearly 2 million viewers.

Edison Media Research and Mitofsky International, which conducts exit polls for ABC, CBS, NBC, CNN, Fox News Channel and The Associated Press, made several changes this year after early data leaked in 2004 gave the misleading indication that Democrat John Kerry was headed to victory in the presidential election.

When early data came in Tuesday suggesting a strong Democratic showing in the midterm, several network experts believed the pollsters hadn't corrected the 2004 tendency to overestimate Democratic strength.

"I didn't think there was this big a Democratic wave," said Sheldon Gawiser, NBC News elections director. He was particularly suspicious about polling in Pennsylvania, where results eventually showed GOP Sen. Rick Santorum losing by a margin of 59 to 41 percent.

The experts said they needed to do a detailed analysis of the data to fairly grade the pollsters' performance. Dan Merkle, ABC's decision-desk director, said he saw problems with poll data in Ohio, Minnesota and Connecticut, for example.

"It doesn't look quite as bad as it did in 2004 but it's definitely something we have to look into," Merkle said.

A Fox News Channel commentator said on the air Tuesday that the numbers looked "out of whack." Joseph Lenski, Edison's executive director, said he hadn't received any complaints from Fox or any network. A Fox representative didn't return a phone call Wednesday.

News organizations said they were happy with their "quarantine room," where their representatives were kept from releasing any early exit-poll information until 5 p.m. ET.

"It just seemed like Election Day was so much calmer without knowing all this stuff at 1 o'clock," said Kathleen Frankovic, CBS News director of surveys.

The television networks depended on the AP to count actual votes. While network representatives said some of the House results came in slower than expected, they had been warned this might happen because so many counties were using new polling equipment.

"In many ways, yesterday appeared to be AP's best election night effort ever, and that's saying something after nearly 160 years of counting votes," Thomas Curley, the AP's president and CEO, said in a message to his staff Wednesday. "With razor-thin vote margins and more than half the country using new machines to cast ballots, anything could have happened -- but didn't."

ABC is owned by The Walt Disney Co. CBS is a division of CBS Corp. NBC is owned by General Electric Co. Fox News Channel is owned by News Corp. CNN is a division of Time Warner.

EXHIBIT E

ELECTION 2006

`We've seen history made tonight'

asap gets some insight on how election night unfolded across the land through audio interviews with the AP's JERRY SCHWARTZ, who kept an eye on key races.

Watching the races from sea to shining sea. (AP Illustration/Shazna Nessa)

Wednesday, 8 November, 2006, 02:23 EST, US

NEW YORK

Covering election night is a gargantuan task for The Associated Press, with countless reporters and editors from all over the world's largest newsgathering organization asked to do their part.

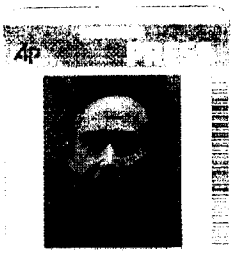
At the center of the action was Jerry Schwartz, the editor in charge of the AP's NewsFeatures department. His role, well into the early hours of Wednesday: to oversee the "50-state glance," a regularly updated set of brief capsules on big races across the country.

That gave him a unique feel for the nation's electoral pulse. And every hour or so on election night, Schwartz took a few moments to offer asap's **JAIME HOLGUIN** some insight on what was happening where. The attached audio clips show, in Schwartz's own words, how the night unfolded.

Some races were decided when the polls closed. Other results took longer to come together.

"There's a good chance that a lot of these races, even at the end of the night, will be in question," Schwartz said early Tuesday evening. It looks like he was right. As of 2 a.m. EST on Wednesday, two Senate races -- and the balance of power in the chamber -- remained up for grabs.

EXPECT THE UNEXPECTED



Jerry Schwartz

Final thoughts.

1:40 a.m.: Dems take House.

12:37 a.m.: Senate races heat up.

11:35 p.m.: Schwarzenegger wins, Dems pick up 18 House seats.

10:34 p.m.: GOP still losing ground.

NEWS

Top News Stories

- Our final deadline
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- Life at the ends of ...
- Slideshow: When wars ...
- Why I, an American, ...
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- Europe's political ...
- Cuban missile crisis
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- An Afghan lawmaker's ...
- asap Retro: American ...
- The end of Che Guevara
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- Sputnik launches; the ...
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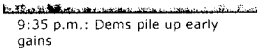
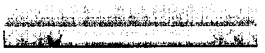
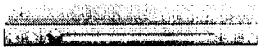
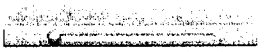

9:35 p.m.: Dems pile up early gains


8:31 p.m.: Santorum loses.


7:30 p.m.: First returns.


6:33 p.m.: Races to watch and polling problems.

For Schwartz, who's been supervising state-by-state election roundups since 1990, things started picking up around 9 p.m. on Tuesday, when a lot of results began rolling in. That was the beginning of a long night.

If there's one thing Schwartz has learned in all his election nights, it's that they're never easy and they always have many pieces to them -- kind of "like a huge interlocking puzzle."

"We have seen nights that have been just extraordinarily complex and difficult," he says. "In 2000, for example, we watched as at one point it seemed we had a president and then it turned out we did not.

"You just never know what to expect."

Jaime Holguin is an asap reporter based in New York.

Want to comment? Sound off at soundoffasap@ap.org .

PRINT PAGE

EXHIBIT F

Associated Press

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11/02/2006

Revamped exit poll, vote counting operations get test in closely watched election

By DAVID BAUDER
AP Television Writer

NEW YORK (AP) -- With public interest running unusually high, this year's midterm elections pose tough challenges for the vote-counting and exit poll operations that major news organizations rely on to provide speedy word about the outcome.

The system for tabulating votes, run by The Associated Press, will have to deal with a greater than normal number of polling places that are using new voting machines, increasing the possibility of glitches or delays.

And the consortium formed by ABC, CBS, NBC, CNN, Fox News Channel and the AP to conduct exit polls on Election Day has made changes to prevent a repeat of problems experienced in 2004. That year, early poll results were leaked to the Internet and created a misleading picture of how the presidential race was going. Later exit poll results also were unreliable in some cases because of problems that included insufficient training of interviewers.

The 2006 midterms are being watched especially keenly because Democrats are hoping to ride public anger about the Bush administration's handling of the war in Iraq to take control of the House and Senate away from Republicans.

"We're prepared for a late night, maybe being here all night and into the next morning," said Dan Merkle, ABC News decision desk director. ABC, CBS and NBC plan one-hour prime-time specials and periodic updates, while cable news networks will follow the elections full-time.

As they did in 2004, the networks will rely solely on the AP to tabulate returns. The news cooperative's vote-count operation will employ an estimated 5,000 people on Nov. 7 -- about 4,600 to retrieve vote totals and 400 to input that information into a central computer system.

The AP employs stringers in nearly every U.S. county, or every city and town in New England, to call in results of more than 6,000 state and local races to one of more than a dozen tabulation centers, with regional hubs in New York and Spokane, Wash. The earliest returns begin to trickle out shortly after 6 p.m. ET, when the first polls close in Indiana and Kentucky, and the pace quickens to a peak between 10 p.m. and midnight ET.

Updated counts are sent to newspapers, broadcasters and Web sites every few minutes.

In a typical year, 5 percent of counties are dealing with new voting equipment at some of their polling places. This year, it's 60 percent.

"That's scary. It's real scary," said Sheldon Gawiser, elections director at NBC News, who added that the possibility of voting machine breakdowns slowing the process is his biggest worry this year.

Several problems surfaced during primary elections this year. Equipment trouble in Chicago caused very late results there. A software bug prevented many counties in Florida from delivering precinct totals. Up to 20 percent of California's vote wasn't counted on primary night, according to an AP analysis.

"There's always something," said Sandy Johnson, the AP's Washington bureau chief, "and if you're in the business of counting votes and calling elections as the AP is, you take that into consideration and are as careful and accurate and fast as you can be."

During the last six election cycles, the AP has never declared control of the House for one party until after midnight Eastern time; the earliest was 12:56 a.m. in 2004. In two of the past six cycles, the AP called the Senate for one party before midnight.

While exit poll information will be used to help call Senate and governor's races, news organizations for the most part have to rely on the actual results in House contests to make their calls. The increased number of mail-in or provisional ballots also works against quick resolutions.

"That makes this potentially a very exciting election night," said Kathleen Frankovic, CBS News director of surveys "You have to wait for vote counts in close races anyway. Now you have to wait for vote counts by people learning how to use the equipment."

Edison Media Research conducts the exit polls for the six news organizations. In 2004, early poll results appeared on Web sites wrongly suggesting that Democrat John Kerry was beating President Bush in battleground states that Bush won when the votes were counted.

"The question I'm always getting is `why were the exit polls wrong?'" said Keating Holland, CNN polling director. "It was like a baseball game -- 'I left early and the scoreboard was saying the Yankees were winning and they lost. So why was the scoreboard wrong?'"

This year, Edison will not release any polling data to its clients until 5 p.m. ET. This way, the first wave of numbers most news executives and reporters see will reflect polls taken through the afternoon, instead of just in the morning hours.

Edison is setting up a "quarantine room" where each organization can send two experts to monitor the data before 5 p.m. to make sure there are no problems. But these representatives will be forbidden from communicating with anyone outside the room.

Edison also toughened its training of the people who will question voters at about 1,000 polling places across the country. The training stressed how important it is for interviewers to approach prospective respondents randomly, using a set interval like every fifth person leaving the voting place.

Edison also has hired a more mature group of interviewers, in part by relying less on recruitment on college campuses, said Joseph Lenski, the company's executive vice president.

"They learned from 2004 and implemented a series of things that should help us in 2006," said CBS' Frankovic. "I also think that everybody is going to be more cautious in jumping to conclusions."

EXHIBIT G

Associated Press

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11/08/2006

How the national voter survey was conducted

By The Associated Press

The survey of voters across the country was conducted for the National Election Pool -- The Associated Press and the networks -- by Edison Media Research and Mitofsky International.

An Election Day exit poll was conducted in person at a randomly selected probability sample of 250 precincts around the country. Edison/Mitofsky also surveyed 1,500 absentee or early voters by telephone in the past week in 10 states with high rates of early voting.

In the Election Day exit poll, as people left the voting booths, Edison/Mitofsky interviewers asked them to fill out a confidential paper questionnaire prepared by NEP representatives. The interviewers selected voters at a set interval -- such as every fifth person -- so that each participant had an equal chance of being picked.

The results were adjusted to reflect the different probabilities of selecting a sample precinct and people attending each, as well as by the observed sex, race and estimated age of voters who refused to participate. Data from the early voter telephone polls -- in Arizona, California, Florida, Michigan, Nevada, New Mexico, Oregon, Tennessee, Texas and Washington -- were combined with the exit poll data to represent about 15 percent of the overall sample. Early vote nationwide was expected to be at least 20 percent but absentee voters in the other 40 states were not represented in the survey.

As with any survey, the results could vary because of chance variations in the sample. For this poll of 13,208 respondents, the margin of sampling error is plus or minus 1 percentage point for the overall sample, larger for subgroups.

Sampling error in exit polls also depends on how many poll sites have voters with the characteristic of interest. For example, black or high-income voters may be found clustered in only a few sample precincts. Sampling error may be up to three times larger for clustered characteristics.

Polls are subject to other sources of error, such as from question wording or order.

11/08/06

Angry voters put war, scandal ahead of local issues, poll says

By CONNIE CASS
Associated Press Writer

WASHINGTON (AP) -- It turns out all politics isn't local.

Voters angry at President Bush, peeved by Washington scandal and tired of the war in Iraq vented their frustration on Republican candidates across the country.

"Maybe it'll send a message," said Sheila Perkinson, a registered Republican who acknowledged to voting for a "mixed bag" of candidates in Baltimore. "I'm sort of embarrassed to be a Republican, sort of whispering it when I go in there."

Rejecting an old political saw, 60 percent of voters questioned after casting their ballots Tuesday said national issues trumped local matters. Democrats enjoyed a 10-point advantage among those voters more worried about national problems.

The wave that swept Democrats back into control of the House had contours similar to the Republican takeover of Congress 12 years ago.

Middle-class voters who defected to the GOP in 1994 came back to the Democrats this year. Independents voters and suburbanites followed suit, according to the exit polls.

Democrats and Republicans split white voters, who had stuck by Republicans in the last midterm election. Three-fourths of Hispanics backed Democrats, despite Republican efforts, led by Bush, to woo more of them over the last few years. Blacks remain reliably Democratic.

An issue that Bush and the Republicans relied on in the past two elections -- combatting terrorists -- slipped away from them this time.

More than seven in 10 people surveyed said terrorism was very important to their vote, but they divided their ballots between the two parties. In the 2004 presidential election, Bush had almost a 20-point advantage over Democrat John Kerry on handling terrorism.

Anger at Bush bubbled up in the Democrats' column. More than a third of those surveyed said their House vote was cast partly to oppose the president. Fifty-seven percent of voters disapproved of Bush's presidency; three in 10 were angry about it.

"I think in the back of my mind I probably was voting against Bush," Gwen McIntosh, 56, of Cincinnati said after voting a straight Democratic ticket.

Voters were even less impressed with Congress. Only 37 percent approved of the way Congress was doing its job, compared with 42 percent approval for Bush.

Those who said scandals and corruption were extremely important -- about four in 10 of all voters -- were far more likely to vote Democratic. Just over half of voters disapproved of the way Republican leaders have dealt with the congressional page scandal.

As he campaigned for fellow Republicans, Bush warned that Democrats wanted to cut and run in Iraq. To many voters, that seemed like a good idea: 29 percent want to withdraw all troops, and an additional 26 percent said the U.S. should bring some of them home now. Thirty-seven percent want to keep troop strength the same or even send more.

Six in 10 voters said the war hasn't improved the nation's long-term security, and they voted for Democrats by 3-1.

Greg Boyce, 24, who voted in Morgantown, W.Va., described himself as a moderate with not party loyalty. But the Iraq war, he said, "kind of soured me on the Republican Party."

The national poll of 13,208 voters was conducted for The Associated Press and television networks by Edison Media Research and Mitofsky International. Results for the full sample were subject to sampling error of plus or minus 1 percentage point, higher for subgroups.

In the exit polls, people leaving voting booths in selected precincts around the country are asked by interviewers to fill out a confidential questionnaire to learn how they voted and why.

Besides in-person interviews Tuesday, the survey included 1,500 absentee or early voters interviewed by telephone during the past week in 10 states with heavy early voting.

EXHIBIT H

Associated Press

Other AP Sites

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11/03/06

Associated Press Count Focuses on Congressional Races

Both houses of Congress appear to be up for grabs on Tuesday, Nov. 7, as America votes in the 2006 so-called"midterm" elections. Up for election are all 435 members of the U.S. House, and the Democrats have to pick up 15 seats to wrest control from the Republicans. The Democrats need to pick up six seats in the 100-member Senate to gain control there.

Thirty-six states elect governors in 2006, and there are nearly 6,000 other races, most of them for state legislatures, also on the ballots in all states and the District of Columbia.

The Associated Press has been counting the vote since 1848, when Zachary Taylor of the Whig Party defeated Democrat Lewis Cass, and the news organization will be the sole source of national returns again this year for the national newspapers, broadcasters, and in increasing numbers, media Web sites. Results will be delivered in a variety of formats, by satellite and online.

The AP is the world's oldest and largest newsgathering organization, providing content to more than 15,000 news outlets with a daily reach of 1 billion people around the world. Its multimedia services are distributed by satellite and the Internet to more than 120 nations.

Here's an explanation of how the AP will provide results in 2006 with the speed and accuracy on which its members and subscribers have learned to rely.

Q: What's different about counting the vote this time?

A: Before this year, companies that manufactured and supplied voting equipment to counties and others were accustomed to a 5-percent turnover rate each year in the machines they had in use. This year, almost every town, city and county added new equipment, and in many cases entirely new voting systems. The turnover rate after 2004 was about 60 percent. The effects of this turnover were evident as AP counted the vote in primary elections this year. County and other election officials changed, too, in the way they report returns to the media and the public. AP stringers at the counties, cities and towns, may run into obstacles that might interrupt or slow the count. They have been trained to be persistent without interrupting the work that voting officials must do.

Q: What is involved in AP's election coverage?

A: From before dawn on Nov. 7 and continuing for the next 20 hours or more, thousands of people will be working fulltime on behalf of the AP to report the election. From exit poll interviewers to exit poll analysts, from vote count stringers to vote entry clerks, from bureau chiefs in the states to supervisors in New York and Washington — all will be part of a precisely calibrated plan designed to report election results accurately.

Q: How will the votes be counted?

A: By shortly after 6 p.m. EST on Tuesday the first of nearly 5,000 stringers will have started to report to county election centers. When the first polls close in Indiana and Kentucky, they'll be ready to start phoning in the raw vote as it is reported by the counties. They'll place their calls to one of AP's four regional and 11 state vote collection centers, the largest of which is the Western Election Center at Eastern Washington University in Cheney, Wash., where the votes from 22 states will be reported by AP stringers. Stringers for another nine states will call their returns to a vote center at AP headquarters in New York. Other regional centers are in Brooklyn, New York, and Spokane, Wash.

A total of 450 vote entry clerks will punch in the numbers on a computer screen and feed them onto the state and national election tables that will be seen in the newsrooms of AP's members.

The clerks are encouraged to ask questions to ensure accuracy. They'll ask the stringers whether there are problems in their county, question votes and precincts if results look suspect, and make sure that those working around them are asking questions, too.

The vote count and entry operation will continue in full swing across the 50 states and the District of Columbia all night, tapering down about 4 a.m. Wednesday morning and then picking up again at 9 a.m. so AP can chase down the final results and go after returns in undecided races.

Each state is assigned at least one "chase" person whose job is to do nothing but pursue missing vote reports. They will scan for counties that haven't been heard from and call the stringers. If they can't find the stringers, they'll go directly to the county clerk or to AP members to get the numbers. Others scan state and county Web sites to make sure AP's

numbers are competitive with those from available sources.

Q. How does AP make sure the count is accurate?

A: As votes are entered into the AP system they must pass through computer programs that set off alerts in cases of discrepancies or apparent inconsistencies with previous voting history or other data. If a clerk enters numbers that show a significant disparity from expected patterns, for example, a popup box appears on his or her screen that summons a supervisor to intervene. In addition, experienced analysts examine post-entry alerts that call attention to developments like lead changes in races, inconsistent reporting like more votes for lieutenant governor than governor, and the like.

Q. What about technical problems?

A. What's called "failover testing" is a regular part of AP's pre-election routine. If one or more of AP's state computers goes down, the system automatically fails over to a backup system. If one of AP's technical centers, in Cranbury, N.J., or Kansas City, loses power, the system seamlessly swings over to the alternate site.

Q: Does AP do exit polling?

A: AP is a member of the National Election Pool, which includes the five U.S. television networks ABC, CBS, CNN, Fox and NBC. Edison Media Research/Mitofsky International has conducted exit polls for NEP since 2004. Even before the first polls have opened at 6 a.m., exit poll interviewers report for duty at randomly selected precincts. They report the results of their interviews to EMR/MI which, some time before the first of the polls close on election night, report the compiled information to NEP members. The on-site polling is supplemented by telephone surveys in selected states.

Q. How does AP call races?

A. The responsibility for calling races rests with the AP bureau chief for each state. They are armed with on-the-ground knowledge of their territory that no other national news organization can match. Plus they have information on demographics, absentee and other voting history and political issues that may affect the outcome of races they must call. On election night, they are assisted by experts in AP's Washington, D.C., bureau who examine exit poll numbers and votes as they are counted. A "decision desk" in Washington headed by the Washington bureau chief has the final signoff on all top of the ticket calls.

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11/03/06

How the AP Uses its Experienced Political Reporters

Unlike other global news organizations, AP has a statehouse correspondent in each state in the U.S. In many states, these political reporters have decades of knowledge and experience in their craft.

AP's Washington, D.C. bureau has numerous veteran political reporters and editors covering the 2006 Congressional races and other political contests and issues with national significance. From the New York bureau, a correspondent experienced in reporting state government trends will track the 2006 governors races, while another veteran political reporter will follow key ballot initiatives. In all states where AP provides exit polls, there is an AP reporter designated to write a story about the poll and what it tells us about why the voters in that state voted as they did.
Bureau chiefs always have looked to AP's top political reporters and veteran staffers for advice and help in calling races. They have "a wealth of insight," said Larry Laughlin, one of the AP bureau chiefs interviewed about "Best Practices" at The Associated Press for calling election winners. "Handicap the races ahead of time and use his/her knowledge of the state as the results come in. Consult with them and agree you're going to call a winner. Do it so there's no miscommunication," Laughlin says in the "Best Practices" compendium for AP bureau chiefs..

Lee Hughes said he talks to political editors and reporters at his best members in key legislative districts. "Local political reporters often have a better read on the district than the AP does from afar," he said. "And get that reporter's election night phone number so you can call him if you need to compare notes."

Charles Hill makes it a practice to call election stringers or officials in key counties to determine which part of the county's vote is in and which is still outstanding. "In suburban Oakland County, it makes a big difference if the outstanding vote is in Pontiac and Southfield rather than Troy and Rochester Hills," he said. "This information can make a difference between making a call now or 45 minutes later." Pontiac and Southfield are traditionally Democratic while Troy and Rochester Hills regularly vote Republican.

As Hill indicates, county election stringers, who work for the AP, often can provide crucial information beyond the vote counts they're collecting. Make it a point before the election to get their election night telephone numbers either from your election coordinator or the person in your bureau responsible for hiring stringers.

Hill also asks his lead writers in key races to let him know when they think races are getting close to being ready to call and to be prepared to tell him why. "This brings their expertise and knowledge of the race to bear and it also helps keep some races from falling through the cracks at a time when I am being pulled in a dozen or more directions."

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11/03/06

The AP on Election Night

The AP assigns county reporters on election night to nearly every county (and city and town in New England), about 4,600 in all, to report the vote on 5,900 races nationwide.

These county reporters, more commonly referred to in the industry as "stringers," obtain the official vote counts from local election officials and relay them to AP's election centers.

Most county reporters make multiple calls to one of four regional election tabulation centers, two of them in Spokane, Washington, a third at AP headquarters in Manhattan and a fourth in Brooklyn, or to one of a dozen state centers. There they are entered into AP's computer election system, tabulated, and distributed by satellite or the Internet to members and other customers.

The earliest returns show up on news wires and special election services shortly after 6 p.m. EST, when the polls close in Indiana and Kentucky, and the pace quickens soon to peak between 10 p.m. and midnight EST. The count continues well into the early morning hours, and through the day Wednesday.

In addition to transmitting returns in standard newspaper formats, AP delivers returns online to newspapers, broadcasters and others. Regularly updated reports show up on customers' Web sites and are available though the AP Vote Count system for newsroom use.

With the focus in this non-presidential year on races for both houses of Congress, in addition to reports on every race the AP distributes frequently updated "trend" tables showing the party breakdown for the House and Senate.

AP serves the television networks with results on top-of-the-ticket races for Congress, governor and some ballot issues of national interest. Election computers serve ever state and the District of Columbia. AP members and subscribers get returns on state races at least through legislature, as well as state ballot issues.

AP uses a variety of sources to obtain results, including county reporters at locations where votes are counted, plus electronic feeds from some secretaries of state.

Before results are entered into AP election computers, they are run through a system of software checks that look for reports that exceed parameters based on voter registration and voting history. In addition, a team of experienced analysts examine returns after they are entered for accuracy and thoroughness.

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EXHIBIT K

Associated Press

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11/03/06

How AP Calls Election Winners

Bureau chiefs are responsible for calling election winners for The Associated Press. Talk to AP bureau chiefs with successful track records in calling election winners quickly and accurately and you hear three things over and over -- preparation, organization and consultation.

For an inside look at the process from the perspective of a chief of bureau, a handful of current and former AP bureau chiefs were interviewed for this election background piece. They tell how they prepare for election night and how they work through their list of races amid the tension and drama of one of the biggest news nights of the year. Here's an abbreviated compendium of "Best Practices" for bureau chiefs at The Associated Press from Tena Haraldson, Charles Hill, Lee Hughes, Larry Laughlin, Dale Leach, Julie Aicher March and Kevin Walsh.

Preparation

"Know your state," Kevin Walsh advises bureau chiefs. Walsh was Florida chief of bureau in 2000 when the AP was the only news organization that did not prematurely declare George W. Bush president. "You can't make effective election night decisions if you don't understand voting patterns and changing demographics in your state," Walsh says. "Take time in advance of the general election to understand the latest trends in Census data and state and county demographic research. Talk with a state or university demographic research expert. Assign a story on the subject as part of your pre-election coverage package. Demographic changes can have profound implications on traditional voting patterns on the county level, particularly with states with high immigration and increasing diversity." It's also important to know the candidates' hometowns, because it could confound your normal perception of that area.

Charles Hill gets ready for an election by compiling spreadsheets with county-by-county past election results for all statewide and congressional races. "I color code with a highlighter so I can see instantly which counties went which way previously," he says. For each race being called, bureau chiefs should use their political judgment to pick a past reference race that best compares in terms of turnout and competitiveness.

Julie Aicher March made a habit of touching bases before every election with her state's most high profile political pollster to "go over historical data and discuss any changes around the state that might impact top races. We'd then focus on the top 10 counties and what was expected to happen in each. You need to be aware of demographic and social changes on the local, state and federal level that may sway voters from past practices."

Tena Haraldson makes personal contact with the Secretary of State and his or her election coordinator, and sends someone to represent the AP at their annual meeting of county election officials, or auditors. "These are numbers people, so we stress that the AP system is designed to be as accurate as possible and that's why we must call them back and verify votes. Auditors respect those efforts. Most of them have no idea that AP supplies the vote tabulation for most of the nation," she says.

Dale Leach spends time trying to figure out what's unique about the upcoming election. "Are there multiple candidates for governor? A controversial ballot issue? Then figure out how that might impact other races in the state. Will it increase turnout among a certain segment of voters? Split an important bloc of voters? Once you've figured that out, decide what you're going to do about it. Are there counties that might bear closer than normal watching?"

An increasingly important focus of pre-election preparation is absentee and early voters. In the 2004 presidential election, absentee and early votes accounted for more than 20 percent of the total vote in 20 states. Eleven more states had between 10 percent and 20 percent of their total vote cast prior to election day. No AP bureau chief can safely call any non-blowout race without a careful assessment of those non-election day voters. As Seattle chief of bureau, Leach had staffers call county election officials daily in the week before election day to find out how many absentee ballots had been requested and how many returned. His detailed county-by-county spreadsheets on absentees kept the AP from calling a 2000 Senate race that the networks all called prematurely and had to rescind.

Chiefs also need procedures to track provisional votes, a new election night wrinkle that grew out of the post-2000 election reforms. The AP held back from calling Ohio -- and with it the presidency-- in 2004 because of the uncertainty over how many provisional ballots had been cast and how they might break. This year, there will be provisional voting history

from 2004 to guide bureau chiefs in close elections.

Information Available

Here's the information AP bureau chiefs have at their disposal:

• Complete spreadsheets of county-by-county results for all recent statewide and U.S. House elections, including a breakout of absentee, early and provisional votes.

• A wealth of information about state and county election practices, including when and where absentees are counted and added to the count, the names and phones numbers of county election officials, the type of voting equipment used in each county, and provisional voting rules.

• Spreadsheets showing statewide and county-by-county the differences between the final AP vote count in the 2004 presidential election and the official, certified count.

• Detailed information on when AP's county election stringers in each state reported in 2004, and a breakdown of those county reports by different time periods.

Making the Call -- the Tough Part

At the AP, we strive for both speed and accuracy in making election calls, and making accurate calls as quickly as possible is even more important in the Internet age. That's why preparation, organization and consultation are so important. "Being right every time is always the top priority," says Charles Hill. "The key is not to rely on that standard as a crutch that prevents you from making a timely call."

• Bottom line, says Hill: "Making the final call is a matter of math, history and gut."

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EXHIBIT L

Annotated Bibliography of Expert Reports on Voting Systems
Edited by Rady Ananda
December 11, 2007

REPORTS ANNOTATED:

Compuware Corp. DRE Technical Security Assessment Report for Ohio, November 2003. Accessed December 11, 2007. http://www.sos.state.oh.us/sos/hava/compuware112103.pdf

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Feldman, Ariel J., J. Alex Halderman, and Edward W. Felten. Security Analysis of the Diebold AccuVote-TS Voting Machine, Center for Information Technology Policy and Dept. of Computer Science, Woodrow Wilson School of Public and International Affairs, Princeton University, 2006. Accessed December 11, 2007. http://itpolicy.princeton.edu/voting/ts-paper.pdf

Fischer, Eric A. Election Reform and Electronic Voting Systems (DREs): Analysis of Security Issues, Congressional Research Service CRS Report for Congress, November 4, 2003. Accessed December 11, 2007. http://theory.lcs.mit.edu/~rivest/voting/reports/Fischer-ElectionReformAndElectronicVotingSystemsDREs.pdf

Gardner, Ryan, Alec Yasinsac, Matt Bishop, Tadayoshi Kohno, Zachary Hartley, John Kerski, David Gainey, Ryan Waalega, Evan Hollander, and Michael Gerke. Review and Security Analysis of the Diebold Voting Machine Software, Security and Assurance in Information Technology Laboratory Florida State University, July 27, 2007. Accessed December 11, 2007. http://election.dos.state.fl.us/pdf/SAITreport.pdf

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http://www.wijvertrouwenstemcomputersniet.nl/images/c/ce/ES3B_EVT07.pdf

Goodwin-Gill, Guy S. Free & Fair Elections. International Parliamentary Union, 2006. Accessed December 11, 2007. http://www.ipu.org/PDF/publications/Free&Fair06-e.pdf

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Kiayias, A., L. Michel, A. Russell, and A. A. Shvartsman, with the assistance of M. Korman, A. See, N. Shashidhar, and D. Walluck. Security Assessment of the Diebold Optical Scan Voting Terminal, UConn VoTeR Center and Department of Computer Science and Engineering, University of Connecticut, October 30, 2006. Accessed December 11, 2007. http://voter.engr.uconn.edu/voter/Report-OS_files/uconn_report-os.pdf

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U.S. Government Accountability Office. Elections: Federal Efforts to Improve Security and Reliability of Electronic Voting Systems Are Under Way, But Key Activities Need to Be Completed, September 2005. Accessed December 11, 2007. http://www.gao.gov/new.items/d05956.pdf

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ANNOTATIONS:

Compuware Corp. DRE Technical Security Assessment Report for Ohio, November 2003. Accessed December 11, 2007.
http://www.sos.state.oh.us/sos/hava/compuware112103.pdf

Confidential report prepared for Ohio Secretary of State Ken Blackwell. High risks include:

> With access to the supervisor card, someone could guess the four digit PIN. The four digit PIN is a factory default from Diebold and cannot be changed. In our test it was guessed in less than two minutes of testing.
>
> Smart Card Writer - with access to the small handheld writer, someone could use a voting card more than once while at the voting booth.
>
> Diebold's voting system uses MS Access as the database to store the Ballot definition, Audit logs and Tally results. The Database has no password protection. The audit logs and the tally results can be changed.

Epstein, Jeremy. Improving Kentucky's Electronic Voting System Certifications. Letter to Kentucky Attorney General Greg Stumbo. September 28, 2007. Accessed December 11, 2007. http://ag.ky.gov/NR/rdonlyres/1B3F7428-0728-4E83-AADB-51343C13FA29/0/votingexpertletter.pdf

Review of Diebold/Premier, Hart InterCivic, and ES&S.

The review relies on the completeness and accuracy of the testing by the Independent Testing Authorities (ITA) for conformance to voluntary Federal guidelines (Voting systems Standards 2002). However, it has been well established that the ITAs do not adequately perform this role.

The ITA reports used for Federal certification and included in the review packages used by the SBE certifiers are cursory.... (as) reinforced by the fact that none of the ITAs identified the flaws found by the California or Florida source code review teams.

Because the ITA reports are of limited value, the quality examination of the machines as part of the certification processes is crucial, but it too can best be described as cursory.

The security of all of the machines appears to be extremely dependent on their never coming in contact with malicious code, as once that occurs there are few defenses or recovery mechanisms. This is sometimes referred to as the M&M model of security: there is a hard crunchy exterior that protects a soft chewy interior.

Short-term recommendations include developing written rules and procedures avoiding network connectivity and using sniffers to detect same, changing and properly storing all

encryption keys and passwords, checking that physical seals are unbroken, and checking that the version of hardware and software being used is that which was certified.

Some long-term recommendations include a more thorough certification process, additional security measures, avoiding use of continuous tape so that voter privacy is better protected, and review of software source code for all machines used in Kentucky.

Feldman, Ariel J., J. Alex Halderman, and Edward W. Felten. Security Analysis of the Diebold AccuVote-TS Voting Machine, Center for Information Technology Policy and Dept. of Computer Science, Woodrow Wilson School of Public and International Affairs, Princeton University, 2006. http://itpolicy.princeton.edu/voting/ts-paper.pdf

The Diebold AccuVote-TS and its newer relative the AccuVote-TSx are together the most widely deployed electronic voting platform in the United States [8]. In the November 2006 general election, these machines are scheduled to be used in 357 counties representing nearly 10% of registered voters (~ 15 million).

All of Maryland and Georgia—will employ the AccuVote-TS model. More than 33,000 of the TS machines are in service nationwide.

The machine is vulnerable to a number of extremely serious attacks that undermine the accuracy and credibility of the vote counts it produces.

Malicious software running on a single voting machine can steal votes with little if any risk of detection. The malicious software can modify all of the records, audit logs, and counters kept by the voting machine, so that even careful forensic examination of these records will find nothing amiss. We have constructed demonstration software that carries out this vote-stealing attack.

Anyone who has physical access to a voting machine, or to a memory card that will later be inserted into a machine, can install said malicious software using a simple method that takes as little as one minute. In practice, poll workers and others often have unsupervised access to the machines.

AccuVote-TS machines are susceptible to voting-machine viruses—computer viruses that can spread malicious software automatically and invisibly from machine to machine during normal pre- and post-election activity. We have constructed a demonstration virus that spreads in this way, installing our demonstration vote-stealing program on every machine it infects.

While some of these problems can be eliminated by improving Diebold's software, others cannot be remedied without replacing the machines' hardware. Changes to election procedures would also be required to ensure security.

Fischer, Eric A. Election Reform and Electronic Voting Systems (DREs): Analysis of Security Issues, Congressional Research Service CRS Report for Congress, November 4, 2003. Accessed December 11, 2007.
http://theory.lcs.mit.edu/~rivest/voting/reports/Fischer-ElectionReformAndElectronicVotingSystemsDREs.pdf

This is a comprehensive report on several expert studies of electronic voting systems. Problems noted include:

There appears to be an emerging consensus that in general, current DREs do not adhere sufficiently to currently accepted security principles for computer systems, especially given the central importance of voting systems to the functioning of democratic government.

The ballot itself consists of redundant electronic records in the machine's computer memory banks, which the voter cannot see. This is analogous to the situation with mechanical lever voting machines, where casting the ballot moves counters that are out of view of the voter. In a lever machine, if the appropriate counters do not move correctly when a voter casts the ballot, the voter will not know, nor would an observer. Similarly, with a DRE, if the machine recorded a result in its memory that was different from what the voter chose, neither the voter nor an observer would know.

The same is true with a computerized counting system when it reads punch cards or optical scan ballots. Even if the ballot is tabulated in the precinct and fed into the reading device in the presence of the voter, neither the voter nor the pollworker manning the reader can see what it is recording in its memory.

Malicious computer code, or *malware,* can often be written in such a way that it is very difficult to detect.

DRE software is moderately complex, and it is generally accepted that the more complex a piece of software is, the more difficult it can be to detect unauthorized modifications.

Most manufacturers of DREs treat their software code as proprietary information and therefore not available for public scrutiny. Consequently, it is not possible for experts not associated with the companies to determine how vulnerable the code is to tampering.

Scientists at the California Institute of Technology and the Massachusetts Institute of Technology performed the most extensive examination of security. The Caltech/MIT report identified four main security strengths of the electoral process that has evolved in the United States:

- the openness of the election process, which permits observation of counting and other aspects of election procedure;
- the decentralization of elections and the division of labor among different levels of government and different groups of people;
- equipment that produces redundant trusted recordings of votes; and
- the public nature and control of the election process.

The report expressed concern that current trends in electronic voting are weakening those strengths and pose significant risks.

Gardner, Ryan, Alec Yasinsac, Matt Bishop, Tadayoshi Kohno, Zachary Hartley, John Kerski, David Gainey, Ryan Walega, Evan Hollander, and Michael Gerke. **Review and Security Analysis of the Diebold Voting Machine Software**, Security and Assurance in Information Technology Laboratory Florida State University, July 27, 2007. Accessed December 11, 2007. http://election.dos.state.fl.us/pdf/SAITreport.pdf

The two primary systems analyzed consist of the Diebold Optical Scan, firmware version 1.96.8, and Touch Screen, firmware version 4.6.5. We also examined the Diebold Touch Screen bootloader version 1.3.6 as well as GEMS server software version 1.18.25.

We considered flaws in previous versions of the software for all parts of the system, including those found in the AccuBasic interpreters.

Our analysis focuses on two attacker categories... voters and poll workers. Attacks by elections officials and voting system vendors are largely outside the scope of this review. We did ***not*** conduct penetration or red team testing for these systems.

Our analysis examined only those flaws previously reported in the cited literature.

Flaws in the Optical Scan software enable an unofficial memory card to be inserted into an active terminal. Such a card can be preprogrammed to swap the electronically tabulated votes for two candidates, reroute all of a candidate's votes to a different candidate, or tabulate votes for several candidates of choice toward a different candidate.

Data on optical scan memory cards is neither encrypted nor authenticated, leading to many potential attacks that could manipulate vote counts on a memory card prior to or during the voting day.

Unsupervised access allows an attacker to place the Optical Scan terminal into diagnostics mode and obtain all or most of the data on the memory card, or to reset the machine clock.

The hand-coded RSA signature verification is insecure and can be forged. This applies to both the optical scan and touch screen systems. With technical knowledge and unsupervised access, an attacker can copy or dump the memory card contents by connecting a laptop or modem to the optical scanner.

The system uses the same cryptographic key for multiple purposes and is tied to publicly-known machine serial numbers. Its value is never changed after being created. The security key cards are insecurely protected, the same as all other smart cards, which allows anyone to read all data from them.

The public key is hard-coded into the source code. Such key-reuse is discouraged by the cryptographic community since such reuse introduces vulnerability. Supervisor PIN is not cryptographically protected.

System configuration information is unprotected. The protected counter is stored in a mutable file, and the ballot definition file is unprotected. Since stored votes are only associated with a candidate number and not a name, the ability to create custom ballot definition files allows one to alter or switch candidate names without any record in the vote counts or electronically stored ballots.

In the Touch Screen software, flaws allow an adversary to prepare official, activated voter smart cards that would enable voters to cast multiple ballots in a ballot-stuffing attack. Once an adversary obtained the necessary information, smart cards could be created and used in any precinct through a county. Even if detected, this attack is not correctable: the malicious ballots, either in electronic or paper form, are essentially unidentifiable and thus cannot be removed.

Memory card update file is unprotected. The file assure.ini remains unencrypted and unauthenticated and is subject to malicious manipulation. Removal of a memory card allows an attacker to create valid voter cards.

If the authentication key necessary to validate voter cards is the same across precincts, as we understand to be common practice in Florida, these cards could easily be modified to be used at any other precinct within a county.

Data and smart card passwords can now be set by election workers. The authentication protocol is not secure, allowing an attacker to create counterfeit, validating smart cards, including voter cards.

There is no integrity protection of stored electronic ballots and ballots are stored sequentially. This defeats voter privacy by allowing a voter's selections to be tied to a voter's name.

Audit logs are not cryptographically protected and data transmitted over communication lines is neither authenticated nor encrypted.

A custom, malicious bootloader is possible if the terminal is delivered to a polling place in debug mode. If not in debug mode, an attacker can open the case and move a hardware switch to enable this attack. An attacker can hide preloaded votes on a forged memory card that the terminal will recognize.

Gainey, David, Michael Gerke, and Alec Yasinsac. Software Review and Security Analysis of the Diebold Voting Machine Software Supplemental Report, Security and Assurance in Information Technology Laboratory Florida State University, August 10, 2007. Accessed December 11, 2007.
http://election.dos.state.fl.us/pdf/DieboldSupplementalReportFinalSubmission.pdf

This report reflects the narrow investigative scope requested by FLDoS (Florida Department of State). These results are not comprehensive in any sense, nor is this report an endorsement of the system's overall security. We examined only a small subset of the flaws from the SAIT Diebold Report.

All other flaws identified in that report remain in the code base, including vulnerability to a sleepover attack that may allow an intruder to manipulate vote computation or worse.

Significant, critical vulnerability remains in this code base independent of repairs documented in this report.

Until voting systems are developed for high assurance, election officials face an unnecessarily high risk and must exercise significantly expanded election security procedures to mitigate known and unknown software vulnerability.

The signature flaw was fixed. This makes it much more difficult for preloaded votes to be hidden.

(Note: Other flaws reported to have been fixed were not detailed above. ~ RA)

Gonggrijp, Rop, and Willem-Jan Hengeveld. Studying the Nedap/Groenendaal ES3B Voting Computer: A Computer Security Perspective. Presented August 6, 2007 at the USENIX/ACCURATE Electronic Voting Technology Workshop, Boston, USA. (Marketed as Liberty DRE in the U.S.) Accessed December 11, 2007. http://www.wijvertrouwenstemcomputersniet.nl/images/c/ce/ES3B_EVT07.pdf

Ninety percent of the votes in The Netherlands are cast on the Nedap/Groenendaal ES3B voting computer. With very minor modifications, the same computer is also being used in parts of Germany and France.

The Nedap ES3B electronic voting computer is a touch screen system that only records votes in memory. The system requires ultimate trust, since it produces an election outcome that cannot be independently verified.

Anyone with brief access to the device at any time before an election can gain complete and virtually undetectable control over election results.

Radio emanations from an unmodified Nedap can be received at several meters distance and be used to tell who votes what.

The over-all security design relies almost solely on the near-universally deprecated concept of 'security by obscurity.' Since the problems we found stem from the very design, we see no quick fixes that could make this device sufficiently secure.

We conclude that the Nedap ES3B is unsuitable for use in elections, that the Dutch regulatory framework surrounding electronic voting insufficiently addresses security, and we pose that not enough thought has been given to the trust relationships and verifiability issues inherent in DRE class voting systems.

Given the fact that technical specifications and source code to most electronic voting systems are not publicly available, we see grave danger to our democracy by the use of secret voting technology.

Password stored in the code and quickly found, allowing attacks to read and modify election results.

Software code could be inserted, and in response to Nedap's challenge, **this team programmed the machine to play chess**. (Emphasis added. ~RA)

Software could be manipulated to steal a certain percentage of votes, for a given party. In this way, elections could be predetermined without knowing candidate names.

Parallel testing is ineffective, and only tests for outside threats - not insider attacks. The Brennan Center (2006) reached the same conclusion:

Even under the best of circumstances, Parallel Testing is an imperfect security measure. The testing creates an 'arms race' between the testers and the attacker, but the race is one in which the testers can never be certain that they have prevailed.

In the case of voting systems, the only meaningful security against insider attacks is to have a voting mechanism of which all the details are published and that a substantial portion of the general public is capable of comprehending in-depth.

By adding extra security measures against the over-emphasized threat posed by outsiders, one can actually ***increase*** the risk posed by insiders.

For example, today's mobile phones often combine a processor, execution memory and tamper-resistant key storage to make sure only the manufacturer (who has the cryptographic signing keys) can update the software. These mechanisms can sometimes still be circumvented, but at least they offer a layer of security that is completely absent in the Nedap ES3B. But by adding 'security' in this way, the device could also resist any attempts to independent inspectors to see what code it is actually running.

Goodwin-Gill, Guy S. Free & Fair Elections, International Parliamentary Union, 2006. Accessed December 11, 2007. http://www.ipu.org/PDF/publications/Free&Fair06-e.pdf

Page 157 presents a summary of the theory behind an observable vote count, and describes the benefits of a parallel election. http://www.ipu.org/PDF/publications/Free&Fair06-e.pdf

> Finally, there is the *count* and, in appropriate cases, the *transfer of power* to the successful party in the election. Complementary to the principle of secret ballot is the integrity of the count, which looks both to ensure that the expressed wish of the elector is taken into account, and that the result declared corresponds with the totality of the votes cast.
>
> Sometimes, the ballots will be counted on the spot, and at others, the ballot boxes are transported to central or regional counting stations. In either case, transparency of process is as valuable as accuracy in counting.
>
> Transportation of ballot boxes commonly gives rise to fear of substitution... Confidence in the process can be enhanced by the presence of party representatives both at the count and during any interim period of transport.

As to citizen-run parallel elections, the International Parliamentary Union explains:

> *Parallel voting tabulation* has also proven its value as a means of independently verifying the results reported by electoral authorities. In this process, monitors record results obtained from selected polling sites, and compare them with the official results: The monitoring of vote counts as part of an overall election-observation effort
>
> - Can boost the confidence of voters suspicious of possible fraud;
> - Permit results to be projected more quickly than the official results;
> - Allow for the identification of actual winners; and
> - Allow for the consequent exposure of any attempted manipulations.

Hertzberg, Steven. DRE Analysis for May 2006 Primary Cuyahoga County, Ohio, Election Science Institute, August 2006. Accessed December 11, 2007. http://bocc.cuyahogacounty.us/GSC/pdf/esi_cuyahoga_final.pdf

Steve Hertzberg of Election Science Institute (ESI) reported serious problems with Cuyahoga's May 2006 primary to Cuyahoga County Commissioners:

"I believe it is important to say directly to you ... that the election system, in its entirety, exhibits shortcomings with extremely serious consequences, especially in the event of a close election. These shortcomings merit your urgent attention." (Emphasis in original)

One table in the ESI report on Cuyahoga County's May 06 primary election reports missing election assets (p.107):

- 13 VVPAT Summaries (voter verifiable paper audit trails)
- 86 VVPAT Cartridges
- 29 DREs (touch screen voting machines; one was later found)
- 24 DRE Election Archives (the archives displayed no data)
- 3 DRE memory cards.

The current election system contains significant threats to inventory control of mission critical election assets, error-free vote tabulation, and tabulation transparency.

The machines' four sources of vote totals – VVPAT individual ballots, VVPAT summary, election archive, and memory cards – did not agree with one another.

Due to limits in the data, software computational abnormality contributing to the count inaccuracies cannot be ruled out. Computational abnormality could be the result of a failure to adequately test the voting equipment before the election or to manage the various databases appropriately.

A lack of inventory controls and gaps in the chain of custody of mission critical assets, such as DRE memory cards, DRE units, and VVPAT cartridges, resulted in a significant amount of missing data. Because of the missing data, ESI is unable to give a definitive opinion of the accuracy of the Diebold TSX system.

In multi-precinct polling places, voters could vote on machines located in other precincts. Accordingly, ballots from a number of precincts appeared on the same VVPAT tape. VVPAT ballots, however, lack a header identifying the precinct. Without this information, it is not possible to conduct a precinct-level tally of the VVPAT ballots.

Consider that each machine has a printer and potentially multiple rolls of paper. Paper records of votes (the official records) may be lost without voters' awareness because of paper jams, paper not being loaded properly, ink issues, and other problems.

Lack of a standardized proven manual count process is likely to result in recount error and inefficiency.

ESI founder Steve Hertzberg spoke with wired.com's Kim Zetter in October, 2006.
http://www.wired.com/news/technology/0,71999-0.html?tw=wn_politics_evote_5
Zetter writes:

"Out of 467 touch-screen machines assigned to 145 precincts that ESI audited, officials could not locate 29 machines after the election, despite days of searching. And 24 machines that were found had no data on them. 'All their paperwork says (the machines) were deployed to polling locations but we can't figure out why there's no election data on them,' says ESI founder Steve Hertzberg. Cuyahoga County Board of Elections Director Michael Vu provided no explanation for the missing machines."

Hoke, Candice. California Top-To-Bottom Review ('TTBR') of Voting Technology.
Cleveland State University Center for Election Integrity, 2007. Accessed December 11, 2007
http://urban.csuohio.edu/cei/TTBR_Summary-Voting_Tech.pdf

In a personal email, Dr. Hoke wrote:

"Full disclosure: I was the team leader for the TTBR Diebold Documentation assessment. The TTBR study's lead scientists provided suggestions for this short summary but it is ultimately my work.

"To reduce over 500 pages to two pages, *at least a few* important findings -- especially about design flaws not relating to security issues -- had to be sidestepped."

Two-Page Summary of California's Top-To-Bottom Review:

Background

Initiated by the California Secretary of State (SOS), Debra Bowen, whose office contracted with the University of California system. Technical assessment research teams (focusing on security, accuracy and reliability issues) were led and staffed by some of the most respected computer scientists in the nation, from California and elsewhere. Documentation assessment teams involved both regulatory specialists and technically trained experts (software engineers or information systems). The Accessibility team focused on physical disability-related issues and involved two noted specialists.

Three California voting systems (VS) were comprehensively assessed: the election management/tabulation software plus the voting devices (optical scanning and DRE touchscreens), from Diebold, Hart, and Sequoia. With minor differences, all of these systems are in use in other States. ES&S systems were not evaluated.

Researchers had unprecedented access to the voting devices, software source code, testing lab and regulatory system certification reports, and other technical information.

When focusing on security and accuracy, teams considered activities that might be conducted by insiders as well as external intruders; they also considered protection of voting data from operator/election official mistakes.

Summary or Exemplar Findings

Overview: The most troubling security flaws are at the level of baseline, elementary computer security, i.e., they are not concerned with sophisticated or contested security principles on which scientists might disagree.

Election management/tabulation software

For all VS, the system architecture depends on a commercial operating system known to have security vulnerabilities. All vendors failed to secure this system properly. System architecture had not been designed with either basic or sophisticated security protections. All systems failed to follow standard security design principles.

All systems were susceptible to viruses that could be introduced from a number of vectors, including from voting device memory cards. (Viruses and other rogue programming can, e.g., flip votes among candidates, scramble tabulation data, delete voting data, and cause system programming to fail.)

Viruses could infect the central computer and then be spread to all the voting devices when their memory cards are prepared for the next election.

System logs of operator activity (audit logs) could be overwritten or erased, meaning that insider attackers could manipulate voting data and results, and then erase the logging

inventories that would show the access and activity; or, could be used to frame a different employee.

Systems permitted relatively easy bypassing of passwords, thus permitting broader access than authorized.

In each VS, many other security holes exist that could compromise the system's ability to report accurate election results -- or any results.

Voting Devices

All systems failed to follow standard security design principles, and lacked even basic security protections. All systems' devices (DREs and precinct-based optical scanners) were subject to easy, undetectable attacks that could occur during the normal time that a voter would be at a voting machine casting a ballot.

Some devices permitted the researchers to introduce malicious code onto a voting machine in under a minute, while appearing to be in the process of voting.

All DRE touchscreen voting units permit a voter to generate and cast multiple ballots during a normal time voting could occur, in ways that would be largely undetectable to poll workers unless they were specially trained and closely supervising the voter's activity at the unit (voter privacy might still be compromised).

Some DRE devices permitted the researchers to damage the Voter-Verified Paper Audit Trail (VVPAT) covertly, so the voters could verify that their votes were printed correctly, but after the election the VVPAT could not be read.

Other DRE devices could be modified to store votes incorrectly, but print them on the VVPAT correctly (for example, a voter's choice of John Adams results in the VVPAT printing John Adams but the DRE stores the vote as a vote for Thomas Jefferson).

Documentation Review

The NASED qualification (certification) of all systems was based on testing lab (ITA) studies that were seriously flawed. While the ITA reports varied significantly, generally it was not possible to ascertain whether the lab had conducted the independent tests needed to determine VS satisfaction of FEC 2002 standards. Often the ITA would test a device but not the voting system as a whole, despite the guidelines' requirements for system testing to determine whether the various components worked accurately and reliably in concert.

Documentation was uniformly seriously deficient in alerting officials to security vulnerabilities and the management and training strategies so that election officials could protect the voting systems and accuracy of results.

The VS vendors varied significantly in the adequacy of the documentation they provided to local election officials. Some documentation was clear and well-written for support; other manuals were vague, contradictory and confusing.

Poor quality in a vendor's documentation for election officials can lead to a series of expensive technical services contracts with the vendors, so that a jurisdiction can run the systems.

Accessibility

Although some voting systems could be used by some voters with certain disabilities, each of the tested systems has accessibility design limitations that will not allow independent voting by voters with other disabilities.

Support stands for all the voting systems impeded physical access by most voters in wheelchairs.

The VVPAT paper trail printouts of the tested systems cannot be directly read and verified by blind voters, and were also found to be difficult or impossible to read and verify for many other voters with disabilities.

Impact

The California SOS decertified all VS that were reviewed and recertified them with special system-specific requirements. DRE units can be used only for accessibility, and a 100% hand-count audit of the votes.

The Secretaries of State in several other states have convened experts and election officials to respond to the TTBR findings relevant to their states' VS and to develop operational plans for protecting the integrity of the vote.

In other states, such as in Kentucky, the Attorney General initiated action: he convened an expert study to review VS reports with an expedited review of Kentucky's VS. Link to the report is below.

New concerns have arisen over the VS regulatory system for it did not weed out seriously flawed systems. Despite regulatory changes, these studies have raised concerns about the new regulatory system/standards.

Harry Hursti, Critical Security Issues with Diebold Optical Scan Design, The Black Box Report Security Alert: July 4, 2005. Accessed December 11, 2007. http://www.blackboxvoting.org/BBVreport.pdf

With this design, the functionality – the critical element to be certified during the certification process -- can be modified every time an election is prepared. Functionality is downloaded separately into each and every machine, via memory card, for every election. With this design, there is no way to verify that the certified or even standard functionality is maintained from one voting machine to the next.

Paper trail falsification – Ability to modify the election results reports so that they do not match the actual vote data 1.1) Production of false optical scan reports to facilitate checks and balances (matching the optical scan report to the central tabulator report), in order to conceal attacks like redistribution of the votes or Trojan horse scripts such as those designed by Dr. Herbert Thompson.(19)

Removal of information about pre-loaded votes 2.1) Ability to hide pre-loaded votes 2.2) Ability to hide a pre-arranged integer overflow

The exploits demonstrated in the false optical scan machine reports (poll tapes) shown on page 16 do not change the votes, only the report of the votes. When combined with the Trojan horse attack demonstrated by Dr. Thompson, this attack vector maintains an illusion

of integrity by producing false reports to match the contaminated central tabulator report. The exploit demonstrated in the poll tape with a true report containing false votes, example pre-stuffs the ballot box in such a way as to produce an integer overflow.

In this exploit, a small number of votes is loaded for one candidate, offset by a large number of votes for the opposing candidate such that the sum of the numbers, because of the overflow, will be zero. The large number is designed to trigger an integer overflow such that after a certain number of votes is received it will flip the vote counter over to begin counting from zero for that candidate.

Kiayias, A., L. Michel, A. Russell, and A. A. Shvartsman, with the assistance of M. Korman, A. See, N. Shashidhar, and D. Walluck. Security Assessment of the Diebold Optical Scan Voting Terminal, UConn VoTeR Center and Department of Computer Science and Engineering, University of Connecticut, October 30, 2006. Accessed December 11, 2007. http://voter.engr.uconn.edu/voter/Report-OS_files/uconn_report-os.pdf

We identify a number of new vulnerabilities of this system which, if exploited maliciously, can invalidate the results of an election process utilizing the terminal.

An Accu-Vote Optical Scan can be compromised with off-the-shelf equipment in a matter of minutes even if the machine has its removable memory card sealed in place. The basic attack can be applied to effect a variety of results, including entirely neutralizing one candidate so that their votes are not counted, swapping the votes of two candidates, or biasing the results by shifting some votes from one candidate to another.

Such vote tabulation corruptions can lay dormant until Election Day, thus avoiding detection through pre-election tests.

The candidate names that are printed for the voter verified paper trail are based on the same RTF file that is displayed to the voter. However, the name printed for the final results is based on data from the .edb file. Because of this, **voters could be unaware of any discrepancies between their cast votes and the internally recorded votes.** Such a problem can only be detected by performing a manual count of the ballots from the VVPAT and comparing with the printed final counts. (However) [t]here is also no global check to ensure the entire election data is correct. For example, **the RTF files for candidates could be swapped ... along with their integrity check.**

[emphasis added for clarity ~ RA]

Kiayias, A., L. Michel, A. Russell, and A. A. Shvartsman, with the assistance of S. Davtyan, A. See, and N. Shashidhar. Security Assessment of the Diebold TSx Voting Terminal, UConn VoTeR Center and Department of Computer Science and Engineering, University of Connecticut, July 16, 2007. Accessed December 11, 2007. http://voter.engr.uconn.edu/voter/Report-TSX_files/TSXVoting_Terminal_Report.pdf

The attacks presented in this report were discovered through direct experimentation with the voting terminal and without access to any internal documentation or the source code from the manufacturer.

We present two attacks based on these vulnerabilities: one attack swap the votes of two candidates and another erases the name of one candidate from the slate.

These attacks do not require the modification of the operating system of the voting terminal, and can be launched in a matter of minutes, requiring only a computer with the capability to mount a PCMCIA card file system (a default capability in current operating systems).

Security problems are present in the system despite the fact that a cryptographic integrity check appears to be employed in the voting system's memory card.

Mercuri, Rebecca. Affidavit filed in *Squire v. Geer*, Franklin County (Ohio) Court of Appeals, 06APD-12-1285.

Dr. Rebecca Mercuri has been studying electronic vote tabulation since 1989, and has published over 40 scientific papers on electronic voting technology. She observed the partial recount of Frankin County, Ohio's November 7, 2006 election. She also oversaw the Signature Audit of 25% of Franklin County's records. Her report found systemic problems, concluding there cannot be full confidence in the results of these (35) problematic precincts.

She describes Franklin County's recount process as constituting a breach of procedure that thwarts any meaningfully appropriate and independent recount of the election from the RTALs (real time audit logs that serve as the ballot of record in Ohio, often referred to as Voter Verified Paper Audit Trail, or VVPAT.)

The recount methodology used by Franklin County did not conform, and in fact significantly varied from the method prescribed by Ohio Secretary of State's Directive No. 2006.50 in many respects.

Dr. Mercuri concludes:

In summary, there are numerous reasons why there cannot be confidence in the election process, the recount, and the vote totals for the Franklin County, Ohio November 7, 2006 election. These reasons include:

a) the denial of an appropriate recount from the VVPAT/RTAL materials for the requested precincts;
b) significant evidence that parts of original RTALs and end tally reports were missing;
c) evidence the voting system was inappropriately configured and improperly used during the election;
d) indication that election procedures were violated, including the possibility of password overrides during setup, and use of the machines to cast ballots after RTAL paper supplies has run out;
e) evidence of inappropriate impounding and handling of election materials at the County warehouse following the election, including improper exposure of the VVPAT/RTALs;
f) unexplained disparities between the public counters of ballots cast and the number of voters who signed the poll books in many precincts; and
g) misleading information provided to voters, and not properly followed up by the County, regarding the safety and examination of the voting machines and system.

Norden, Lawrence, Chair, Brennan Center Task Force on Voting System Security. **The Machinery of Democracy: Protecting Elections in an Electronic World**, Brennan Center for Justice at New York School of Law, June 27, 2006. Accessed December 11, 2007. http://www.brennancenter.org/dynamic/subpages/download_file_39288.pdf

Studied 3 voting systems by type: DRE, DRE w/VVPAT, and Optical Scan. Brennan identified 120 vulnerability points.

Report is limited to identifying the least difficult way to alter results on a statewide basis. It is also limited to studying attacks that cannot be prevented by physical security and accounting measures taken by election officials. The analysis further assumed that certain fundamental physical security and accounting procedures were already in place.

Concluded that it would take only one person, with a sophisticated technical knowledge and timely access to the software that runs the voting machines, to change the outcome.

All three voting systems have significant security and reliability vulnerabilities, which pose a real danger to the integrity of national, state, and local elections.

The most troubling vulnerabilities of each system can be substantially remedied if proper countermeasures are implemented at the state and local level.

Few jurisdictions have implemented any of the key countermeasures that could make the least difficult attacks against voting systems much more difficult to execute successfully.

For *all three* types of voting systems:

1. When the goal is to change the outcome of a close statewide election, attacks that involve the insertion of Software Attack Programs or other corrupt software are the least difficult attacks.

2. Voting machines that have wireless components are significantly more vulnerable to a wide array of attacks.

DREs without voter-verified paper trails do not have available to them a powerful countermeasure to software attacks: post-election Automatic Routine Audits that compare paper records to electronic records.

For DREs w/VVPT and PCOS:

1. The voter-verified paper record, *by itself*, is of questionable security value. The paper record has significant value only if an Automatic Routine Audit is performed (and a well-designed chain of custody and physical security procedures is followed).

2. Even if jurisdictions routinely conduct audits of voter-verified paper records, DREs w/VVPT and PCOS are vulnerable to certain software attacks or errors.

Organization for Security and Co-operation in Europe, Office of Democratic Institutions and Human Rights. **Election Observation Manual**, 2005. Accessed December 11, 2007. http://www.osce.org/publications/odihr/2005/04/14004_240_en.pdf

Seventeen Criteria for a Fair Vote Count (p. 62) precludes machine tabulation:

1. Is the count performed by polling-station officials, or are other persons involved?

2. Do election officials appear to understand and adhere to the required procedures?

3. Are ballots counted in an orderly and secure manner?

4. Is the count conducted in a transparent environment, with adequate arrangements for domestic observers?

5. Does the number of registered voters recorded as having voted correspond with the number of ballots cast?

6. Are unused ballots secured, cancelled, or destroyed after being counted?

7. Are invalid ballots properly identified in a uniform manner? Are invalid ballots appropriately segregated and preserved for review?

8. Do the ballots contain any unusual markings intended to violate the secrecy of the vote?

9. Does the number of invalid ballots seem inordinately high?

10. Does the counting adhere to the principle that the ballot is deemed valid if the will of the voter is clear?

11. Are ballots for each party or candidate separated correctly and counted individually?

12. Are any disputes or complaints resolved in a satisfactory manner?

13. Are official counting records correctly completed at the end of the count and signed by all authorized persons?

14. Are domestic observers and poll watchers from political parties able to obtain official copies of the protocol for the polling station?

15. Are the results publicly posted at the polling station?

16. Are there inappropriate activities by police and/or security forces, such as taking notes and reporting figures or results by telephone?

17. Did polling-station officials agree on the vote-count procedures and results, and, if not, what action was taken in case of disagreement?

Ryan, Thomas P., and Candace Hoke. GEMS Tabulation Database Design Issues in Relation to Voting Systems Certification Standards, 2007. Accessed November 25, 2007. http://www.usenix.org/events/evt07/tech/full_papers/ryan/ryan.pdf

Abstract: This paper analyzes the Diebold Election Systems, Inc. election management software (GEMS) using publicly accessible postings of GEMS election databases.

It finds that the GEMS architecture fails to conform to fundamental database design principles and software industry standards for ensuring accurate data. Thus, in election tabulations, aspects of the GEMS design can lead to, or fail to protect against, erroneous

reporting of election results. Further, GEMS' dependence on Microsoft's JET technology introduces additional risks to data accuracy and security.

Despite these technical and systemic deficiencies, GEMS received approval as complying with Federal Voting System 2002 standards. Questions then arise concerning the adequacy of the 2002 and 2005 regulatory standards.

The paper concludes that the standards structurally encourage and reward election system vendors for using less exacting database design standards.

U.S. Commission on Federal Election Reform. Building Confidence in U.S. Elections. September 2005. Accessed December 11, 2007.
http://www.american.edu/ia/cfer/report/full_report.pdf

Former Secretary of State James A. Baker III and former President Jimmy Carter, who were co-chairmen of the bipartisan Commission on Federal Election Reform, warned in their 2005 final report that (fraud) could happen.

"Software can be modified maliciously before being installed into individual voting machines. There is no reason to trust insiders in the election industry any more than in other industries."

U.S. Government Accountability Office. Elections: Federal Efforts to Improve Security and Reliability of Electronic Voting Systems Are Under Way, But Key Activities Need to Be Completed, September 2005. Accessed December 11, 2007.
http://www.gao.gov/new.items/d05956.pdf

Voting system vulnerabilities and problems found include:

- Cast ballots, ballot definition files, and audit logs could be modified;
- Supervisor functions were protected with weak or easily guessed passwords;
- Systems had easily picked locks and power switches that were exposed and unprotected;
- Local jurisdictions misconfigured their electronic voting systems, leading to election day problems;
- Voting systems experienced operational failures during elections;
- Vendors installed uncertified software;
- Some electronic voting systems did not encrypt cast ballots or system audit logs, and it was possible to alter both without being detected;
- It was possible to alter the files that define how a ballot looks and works so that the votes for one candidate could be recorded for a different candidate.

Wagner, David. Written Testimony before the Committee on Science and Committee on House Administration U.S. House of Representatives, July 19, 2006.

The federal qualification process is not working. Federal standards call for voting machines to be tested by Independent Testing Authorities (ITAs) before the machines are approved for use, but ITA-approved machines have:

* Lost thousands of votes across the country, and have reported thousands more votes than voters;

* Failed to catch numerous security defects found by academics, industry consultants and interested outsiders.

The 2005 VVSG standards contain significant shortcomings regarding the security, reliability, and auditability of electronic voting:

* ITAs are paid by the vendors whose systems they are evaluating, raising conflicts of interest between the voting public and client-vendors;

* The process lacks transparency, rendering effective public oversight difficult or impossible;

* Technical information about voting systems is often considered proprietary and secret by vendors, and voting system source code is generally not available to independent experts. In the rare cases where independent experts have been able to gain access to source code, they have discovered reliability and security problems;

* Testing is too lax to ensure the machines are secure, reliable, and trustworthy.

* Many standards in the requirements appear to be ignored during ITA testing;

* If serious flaws are discovered in a voting system after it has been approved, there is no mechanism to decertify the flawed system.

Wertheimer, Michael A. Trusted Agent Report: Diebold AccuVote-TS Voting System (report prepared under cover of RABA Innovative Solution Cell on behalf of Maryland General Assembly Department of Legislative Services, Annapolis, Md.) January 2004. Accessed December 11, 2007. http://www.raba.com/press/TA_Report_AccuVote.pdf

The general lack of security awareness, as reflected in the Diebold code, is a valid and troubling revelation. In addition, it is not evident that widely accepted standards of software development were followed.

Knowing the password, a smart card can be replicated, and the voter can vote multiple times. RABA was able to guess the passwords quickly, and access each card's contents (Supervisor Card, Voter Card, and Security Key Card). Given access to the cards' contents it became an easy matter to duplicate them, to change a voter card to a supervisor card (and vice versa) and to reinitialize a voter card so that it could be used to vote multiple times.

The use of hardcoded passwords is surprising both as an inferior design principle and in light of them being published openly in the Hopkins report. It must be assumed these passwords are well known.

The contents of these cards are neither encrypted nor digitally signed. Thus, for example, the PIN associated with a Supervisor Card23 can be read directly from the card – provided the password is known. This means creating Supervisor Cards is a simple task: a perpetrator could program his card with an arbitrary PIN that the AccuVote-TS would readily accept.

It is reasonable to assume that a working key to the AccuVote hardware is available to an attacker. The hardware consists of a touch-screen voting terminal with two locked bays.

Maryland has ordered approximately 16,000 AccuVote-TS terminals each equipped with two locking bays and supplied with two keys accounting for 32,000 locks and keys. Surprisingly, *each lock is identical and can be opened by any one of the 32,000 keys*. Furthermore, team members were able to have duplicates made at local hardware stores.

One team member picked the lock in approximately 10 seconds. Individuals with no experience (in picking locks) were able to pick the lock in approximately 1 minute.

A sampling of the vulnerabilities found as a result of poor physical security coupled with software that fails to use robust encryption and authentication include six methods of attack. (Not reproduced herein.)

The GEMS server lacks several critical security updates from Microsoft. The team was able to *remotely* upload, download and execute files with full system administrator privileges.

The server enables the autorun feature. Given physical access to the server, one can insert a CD that will automatically upload malicious software, modify or delete elections, or reorder ballot definitions.

The back panel of the GEMS server is not protected. Given physical access to a running device it is possible to insert a USB flash drive and upload malicious software onto the server.

The database files that contain the election definition (and results) are neither encrypted nor authentication protected. By removing the front panel of the server (this is held in place by a small keyed lock), one can insert a CD, power up the server, and have it boot its operating system off the CD. A sophisticated user can automate this procedure requiring only a few minutes access to the server.

Because both the database password and audit logs are stored within the database itself, it is possible to modify the contents without detection. Furthermore, system auditing is not configured to detect access to the database. Given either physical or remote access it is possible to modify the GEMS database.

The procedure by which precincts upload votes to their LBE is vulnerable to a man-in-the-middle attack.

The team identified fifteen additional Microsoft patches that have not been installed on the servers. In addition, the servers lack additional measures (all considered best practice) for defense such as the use of firewall antivirus programs as well as the application of least privilege, i.e. turning off the services that are unused or not needed. Each of these represents a potential attack vector for the determined adversary.

####

EXHIBIT M

VotersUnite.Org

An electronic ballot is a secret from the voter who cast it!
~Ellen Theisen

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Election Problem Log - 2004 to Date

Have a news story we should list here? Tell us!

VotersUnite! began this problem log with the November 2004 election. It continues its compilation of problems reported in the media by adding **news stories** about subsequent elections.

Favorites
Election Problem Log
2004 to Date
Previous Features
Failures grouped by vendor
Failures listed by state
Local Groups
Accessibility Issues
Handouts
Handouts

Sort Order: Date, State, Type | --All States-- | --All Vendors-- | --All Problem Types-- | select

Date	Problem Type	State	Description	Vendor
12/3/2007	Canvass anomalies	SC	ESS	Florence County. 108 blank ballots were recorded by ES&S iVotronic machines in last month's one-contest election. *Florence County Elections Director Mike Young wants to find out what caused that phenomenon. "I'd like to know why 108 people would go into a polling place and go through all the trouble of signing in, showing their identification, and going into the voting booth and casting a blank ballot," Young said.* Story Archive Note: High "undervotes" on iVotronics are common, and in some elections, lost votes and inaccurate tallies were proven to be caused by machine malfunction. For example, Raleigh, NC, 2002, and LaPorte Co, IN, 2004, and Waldenberg, AR, 2006.
11/28/2007	Machine malfunction	OH		Cuyahoga County. 20% of the voter-verified paper records were unreadable and could not be used in the recount required by the narrow margin of victory in nine races. County officials reprinted the paper records from memory cards. This means that **20% of the recounted ballots were not verified by voters.** Story Archive A reminder: A study commissioned by the same county to study the 2006 primary election records showed discrepancies -- in 72.5% of the vote centers -- between voter-verified paper totals and electronic records on the memory cards. Report review
11/14/2007	Wrong ballot	TX	Hart InterCivic	Harris County (Houston). Incomplete ballots appeared on the eSlate electronic voting machines in three early voting precincts, thus denying voters their votes on a tax proposal. Though election day voters were given the correct ballots, the article says "it was too late to have those votes recorded on the main computer." So, the county technician hacked into the computer and changed the totals to include the votes from election day. John R. Behrman, a computer expert and longtime election observer representing the Democratic Party, astutely pointed out, "Basically it turns out, without regard to any ballots that have been cast, you can enter arbitrary numbers in there and report them out in such a way that, unless you go back to these giant (computer) logs and interpret the logs, you wouldn't know it has been done." Story Archive
11/12/2007	Machine malfunction	CT	Diebold	East Haven. A hand recounted, required because of the slim margin in the mayoral race, showed about a 40 vote discrepancy from the optical scanner count (out of about 8,000 ballots cast). Compounding the issue is the fact that there were over 100 ballots more than voters who signed in to vote. Story Archive Story2 Archive2
11/12/2007	Machine malfunction	TX	ESS	Wharton County. The voting machine, not voter error, not a calibration problem, switched votes. When Jim Welch voted last Tuesday, he watched as the voting machine changed the vote he'd entered a few moments earlier. "What Welch witnessed was votes that registered CORRECTLY when he touched the screen, switching later to a different vote choice, when he was almost finished voting the full page. "Welch was stunned to see a correctly marked vote take on a life of its own, hopping over to a different spot while he voted on other items. He called an elections worker over to show him the problem. The elections worker helped him re-vote the ballot, and both men watched as the vote registered correctly, but later spontaneously altered to shift

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				to another ballot choice." Story
11/9/2007	Voter challenges	GA		A group in Statesboro, GA., called the Statesboro Citizens for Good Government challenged 909 registered voters on the grounds that as students at Georgia Southern University, they were not residents entitled to vote in city elections. The 909 challenges used an identical form, with a blank space for filling in the names of individual voters, and identical language that "the elector has come to Statesboro, Georgia, only for the temporary purpose of attending Georgia Southern University." In 1980 a Georgia court had ruled that it was unconstitutional to presume nonresidence because a voter was a student. Nevertheless, the county board of supervisors sustained the challenge and the voters could only vote by provisional ballot. A hearing is pending. Story Archive
11/8/2007	Poor design	CO	Sequoia	Denver. Election officials are overwhelmed with the counting process, and only one person has the expertise to tally the votes. Officials are concerned about the 2008 election when the turnout is expected to be significantly higher. Story Archive
11/8/2007	Poor design	IA	ESS	Johnson County. An error in the tally procedure flipped the results on an ordinance that would keep children out of bars after 10pm. Because the error caused a last-minute surge in "no" votes, the error was caught and corrected. Story Archive
11/8/2007	Machine malfunction	IN	Microvote	LaPorte County. Microvote Infinity electronic voting machines were programmed with the wrong date and did not start up at five polling places. Technicians corrected the problems by 7:30 am. Story Archive
11/8/2007	Machine malfunction	NJ	Sequoia	Mercer County. Two Sequoia Advantage electronic voting machines malfunctioned during the election and were removed from service. One was repaired. The memory cartridges, which hold the votes, were not removed from the machines on election night. The votes will be counted with the provisional ballots. Story Archive
11/8/2007	Machine malfunction	OH	ESS	Lawrence County. A ballot programming error, by ES&S, on the M100 tabulator caused the votes for Hamilton Township trustee to be reversed. Story Archive
11/8/2007	Poor design	OH	ESS	Seneca County. ES&S M100 optical scanners could not be programmed to handle both the general election and primary election occuring at the same time. Only the general election ballots could be scanned at the polling place. The primary election ballots had to be taken back to the central office and fed into the machine one by one. Story Archive
11/8/2007	Machine malfunction	VA	Sequoia	Scott County. More than 30 of the county's 45 electronic voting machines displayed errors instead of working properly when they first started up in the morning. The machines had been "upgraded" with new firmware that displays larger fonts, but the technician from Atlantic Election Services who installed the new firmware missed a step and the installation went awry. AES managed to get one or two machines per precinct working. "Each machine required software changes, as well as a diagnostic check that took about 12 minutes." **Software changes in the middle of an election!** Story Archive Story2 Archive2
11/7/2007	Machine malfunction	FL	Diebold	Sarasota County. Scanners broke down at three precincts. One man said the scanner rejected his ballot four times before a poll worker took it to be scanned later. Story Archive
11/7/2007	Poor design	IN	ESS	Marion County. Memory cards -- small electronic ballot boxes -- went missing. The bipartisan board is looking for them. Story Archive
11/7/2007	Machine malfunction	NJ	Sequoia	Atlantic County. Sequoia Advantage. When election workers tried to transfer the data from about 320 electronic voting machines to a central database that would count them all, the central computer wouldn't read the cards. Eventually Sequoia helped them resolve the problem. Story Archive Story2 Archive2
11/7/2007	Malfeasance	NJ	Sequoia	Camden County. Cartridges were never removed from 12 of the voting machines, so the votes on them were not included in the count. But "the additional votes were not expected to affect the outcome of any races" said the election officials. A court order would be required to open the machines and count the votes. Story Archive

				The second article says it was seven machines. Story2
				11/10/07 update. A superior court judge ordered the machines to be opened and the cartridges to be removed so the votes could be tallied. Story Archive Archive2
11/7/2007	Machine malfunction	OH	Hart InterCivic	Hamilton County. Some of the memory chips (probably "memory cards") from the eScan optical scanners were "giving false readings." Story Archive
11/7/2007	Machine malfunction	OH	Diebold	Cuyahoga County (Cleveland). Counting was delayed because of "a problem with the computer server that uploads totals from memory cards". Story Archive
				Another article says, "The system went down twice Tuesday, each time for about a half-hour. After that, election officials decided to take the server down every forty-five minutes on their own, and then restart it ten minutes later." Story Archive
11/7/2007	Machine malfunction	OH	ESS	Putnam County. iVotronic electronic voting machines. Flash card problems caused delays. According to the director of the Board of Elections, every precinct had problems with at least one machine. Story Archive Story2 Archive2
11/7/2007	Machine malfunction	PA	Hart InterCivic	Blair County. (Bedford). eScan optical scanners weren't recognizing the ballots. It took most of the day to resolve the programming problem. Story Archive
11/6/2007	Machine malfunction	CO	Diebold	Weld County. TSx voting machines displayed the wrong ballot in voting centers across the county. Poll workers distributed paper ballots until the problem was fixed around 9:15 am. Story Archive Story2 Archive2
11/6/2007	Machine malfunction	GA	Diebold	Fulton County. In the new city of Chattahoochee Hill Country, the TSx electronic voting machines malfunctioned, and after trying for about an hour, the city reverted to using paper ballots for the day's elections. By 8:30 the machines were fixed. Story Archive
11/6/2007	Voter intimidation	GA		"For the past two weeks the students of Georgia Southern University in Statesboro have been the victims of challenges to their registration, threats, intimidation, and have faced police officers stationed outside and inside early polling places all because they had the nerve to want to vote in local elections." Story
11/6/2007	Machine malfunction	IN	ESS	Marion County. Problems with some iVotronic touch screen machines cause "those polling places" to use paper ballots. Story Archive
				"At one time about 83 of the 529 touch screens weren't working. By noon, the number of defective machines had been reduced to 66 and by 4 p.m. all were operating again." Story Archive Story2
				Some of the problems were caused by batteries not being properly charged. Others were caused when the memory cards were inserted upside down. Story Archive Archive2
11/6/2007	Registration errors	IN		Marion County. "A mistake in the voter rolls has caused a problem affecting about 483 voters in 14 precincts, said GOP chairman Tom John and Democratic Party Chairman Michael O'Connor." Story Archive Story2 Archive2
11/6/2007	Vote suppression	IN		Tippecanoe County. Residents who registered through a registration drive were turned away. The person conducting the drive had not given the forms to the county. Story Archive
11/6/2007	Registration errors	MD		Montgomery County. "Thousands of voters in Rockville, who are choosing a new mayor and four City Council members today, were mistakenly identified as having already voted by absentee ballot when they arrived this morning at polling places throughout the city. The error, which raised concerns among candidates about double-voting, occurred after the State Board of Elections sent Rockville officials the wrong copy of a voter database." Story Story2 Archive2
				Another article tells more about the registration database bug: **"The state's list inadvertently marked as absentee the names of voters with a home address that begins with the number 5." Story Archive**
11/6/2007	Ballot display problems	MS	AVS	Hinds County. Poll workers called up the wrong electronic ballots for some voters in split precincts. Since the ballots were the same except for one race, many voters didn't notice. There could be a problem if the race is close. Story Archive Story2 Archive2

11/6/2007	Machine malfunction	MS	AVS	Hinds County. At least one voter claimed a machine flipped votes. Story Archive
11/6/2007	Machine malfunction	NJ	Sequoia	Mercer County. Seven of the county's 257 Sequoia Advantage machines broke down during the election. It is unknown whether votes were recorded on them before they broke down. If so, those votes were lost. Story Archive
11/6/2007	Machine malfunction	OH		Ashtabula County. Ballot programming error on the ES&S M100 prevented the tabulator machines assigned to those multiple-candidate races from accepting more than one name on the ballot. The ballots were counted by hand. Story Archive
11/6/2007	Machine malfunction	PA	Hart InterCivic	Bedford County. None of the eScan optical scanning machines were working at any of the polling places. "Election commissioner Peg Koenig planned to visit all 40 precincts in the county to reprogram machines." Story Archive
11/3/2007	Machine malfunction	FL	Diebold	Florida. Diebold memory cards -- used in precinct optical scanners -- fail at rates as high as 9.2% and 9.4% in some counties. Failures have caused vote losses in the past. Diebold will inspect all the machines in Florida, but only those in Florida if they do not receive complaints from other states. Story Archive
10/29/2007	Machine malfunction	NC	ESS	Guilford County. ES&S iVotronic voting machines fail in early voting. Affected voters had to choose whether to come back later or vote provisionally. "George Gilbert, director of the Guilford County Board of Elections confirms that due to a computer glitch, all five of the machines at Bur-Mil would not display the correct information to allow citizens from Summerfield, Oak Ridge, Whitsett, Pleasant Garden and Sedalia to vote. Gilbert says citizens who attempted to vote were urged to come back later, and were given a provisional absentee ballot so they could vote manually if they were unable to do so." Story Archive
10/29/2007	Machine malfunction	NC	ESS	Guilford County. iVotronics. "George Gilbert, director of the Guilford County Board of Elections confirms that due to a computer glitch, all five of the machines at Bur-Mil would not display the correct information to allow citizens from Summerfield, Oak Ridge, Whitsett, Pleasant Garden and Sedalia to vote." Story Archive
6/19/2007	Machine malfunction	PA	Hart InterCivic	Bedford County. "Peg Koenig, director of elections in Bedford County, said there was a memory card problem in voting machines on Election Day. Koenig said the Northern Bedford County School District had a massive write-in campaign that was much larger than expected. She said the memory cards in the e-scan voting machines became so full that the machines spit the ballots out." Commissioner Mike Shaffer lost the Republican primary by eight votes to Michael Herline. The entire Republican primary election results will be recounted. The article suggests that the ballots will be recounted by machine. Story Archive
5/30/2007	Machine malfunction	PA	Danaher	Monroe County. Malfunctions and possible fraud. At the Coolbaugh 3 polling place, one of the machines was unlocked when it was inspected at the start of election day but it was used anyway. Danaher e-voting machine displayed zeros for totals at the end of day, and a technician had to be called in. Two of the five machines were inoperable at some point. Story Archive
5/17/2007	Machine malfunction	TX	Diebold	Wise County. Two out of three Diebold touch screen machines malfunction. One of them lost 38 votes, which even Diebold cannot retrieve. Aurora city may have to hold a new election. Story Archive
5/16/2007	Late counting	PA	ESS	Beaver County. Complicated procedures with three activator devices. Poll worker didn't close the polls and votes from the iVotronics weren't included in the initial results. Story Archive

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