2008 NH Primary

Reliability of Vote Counting:
Machine v. People

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New Hampshire's vote counting machines violate federal accuracy standards. New Hampshire's machines experienced an error rate approximately 163 times greater than the error rate allowed under federal Election Law. In addition, the number of machine counts that were in error by more than 2 votes was 9.81 times greater than the number of hand counts that were off by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 3.37 times greater than the number of hand counts that were off by more than 1 vote.

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INTRODUCTION

Some years ago, the State of New Hampshire certified an optical scanning machine for counting votes cast in special, primary and general elections. The individual Towns and Cities decide whether to count by hand or to purchase that machine. Those who decided to purchase the machine have entered into a service and maintenance contract with a single private company (LHS) who programs the machines' memory cards, using proprietary software. Under the contract LHS also trains the municipal employees, supplies the users with a programmed memory card before each voting period, and responds to calls from local election officials for assistance if a machine fails during a voting period.

There are 324 precincts in New Hampshire. One hundred seventy seven (54.7%) of the precincts use the state certified machine to count the votes. One hundred forty seven (45.3%) count the votes by hand. However, approximately 80% of all ballots (votes) cast during a statewide Primary or General Election are counted by machine. The balance are counted by hand.

New Hampshire held a Presidential Primary on January 8, 2008. There were twenty one Republican candidates and twenty Democrat candidates on the ballot. All voters were given a paper ballot on which the voter hand-marked his choice for President by filling in an oval next to the candidate's name.

Within days following the Primary, Democrat candidate Denis Kucinich requested a recount of the Democrat votes and Republican candidate Albert Howard requested a recount of the Republican votes. The Democrat recount was terminated by Kucinich after all the ballots cast in Hillsborough County and approximately half the ballots cast in Rockingham County were recounted by hand (only about 40 percent of the Democrat ballots cast in the State were recounted). The Republican recount ended in mid-February after 100% of all ballots cast by Republicans were recounted by hand.

With an interest in defending the individual's constitutionally guaranteed Right to have and to *know* that his vote is being accurately counted, this Foundation determined the New Hampshire recount offered an excellent, real-world opportunity to independently assess the statistical performance of optical scan, electronic vote counting machines relative to hand counting of ballots.

SUMMARY OF FINDINGS

Of the 347, 905 total ballots processed during the recount 305,207 (87.7%) came from towns and cities that use machines to count the votes, and 42,619 (12.3%) came from towns that use People to count the votes.

New Hampshire's vote counting machines violate federal accuracy standards. New Hampshire's machines experienced an error rate approximately 163 times greater than the error rate allowed under federal Election Law. In addition, the number of machine counts that were in error by more than 2 votes was 9.81 times greater than the number of hand counts that were off by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 3.37 times greater than the number of hand counts that were off by more than 1 vote.

The probability that an individual's vote was accurately counted during the Primary was much greater if his vote was counted by hand than by machine.

Table 1 shows the results of the comparison of the performance of the machines and the People who counted all the Republican ballots cast statewide and all the Democrat ballots cast in Hillsborough County and a large part of the ballots cast in Rockingham County. The number of machine counts that were in error by more than 2 votes was 9.81 times greater than the number of hand counts that were off by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 3.37 times greater than the number of hand counts that were off by more than 1 vote.

Table 2 compares the performance of the machines and the People who counted only the Republican ballots cast statewide. The number of machine counts that were in error by more than 2 votes was 6.93 times greater than the number of hand counts that were off by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 3.13 times greater than the number of hand counts that were off by more than 1 vote.

Table 3 compares the performance of the machines and the People who counted only the Democrat ballots cast in Hillsborough County and a large part of Rockingham County. The number of machine counts that were in error by more than 2 votes was 11.09 times greater than the number of hand counts that were off

by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 2.7 times greater than the number of hand counts that were off by more than 1 vote.

We identified 38 instances of apparent fraud where votes were being hand counted.

We were not able to determine if intentional or unintentional error was behind the more substantial discrepancies in machine counts. Nor were we able to determine the impact of the 21 machines that failed on Primary Day, or if other machine failures occurred but were not reported to the Secretary of State's office.

In brief, the analysis data supports the conclusion that not only are machine counts of votes much more likely to result in error, but the machine errors are of a significantly larger magnitude and variance than those observed for hand counting.

RECOUNT PROCEDURE

The recount was centralized at the State Archive Building located at 71 South Fruit Street in Concord, NH. This means all ballots were transported from each town and city hall to Concord.

The Secretary of State made the decision *not* to start the Republican recount until the Democrat recount had been completed. This meant as each Ballot Box was opened in the recount room, the Republican ballots had to be separated from the Democrat ballots. The Republican ballots, including the absentee ballots, were printed with a wide pink border at the top of the ballot. The Democrat ballots, including the absentee ballots, had a wide blue border at the top. During the Democrat recount, the Republican ballots were placed in boxes, resealed and stored for later count. Absentee Ballots were included in the recount.

The ballots to be counted were placed on one of eight tables. Taped on top of each table were the names of the individual presidential candidates. Two people hired by the State of NH as "Counters" sat on one side of each table. Ballots were first segregated by party. (Democrat ballots were not counted during the Republican recount process.) Ballots were then separated by candidate by the state "Counters" who allocated the votes cast for each candidate into separate piles. Anomalies or

questionable votes were placed in a separate pile. On the other side of the table sat one or more "Observers," who were representing either the candidate who called for the recount or any other candidate on the ballot.

The anomalies were reviewed by the Deputy Secretary of State, David Scanlon. He made a judgment call regarding the intent of the voter. If the observer agreed, the vote was counted. If the observer disagreed, the vote was not counted, but was registered as a "contested ballot," for later determination by the Ballot Law Commission, if necessary. There were approximately 25 contested ballots during the Republican recount.

Following resolution of anomalies, if any, the state Counters twice tallied the count for each stack of candidate ballots by counting each ballot by hand, twice.

The State's Counters entered the results of their count on Tally Sheets, certified the results with their signatures, and then walked to the front of the recount room where the Tally Sheets were handed to Karen Ladd, the NH Director of Elections. She entered the numbers in a master file – an Excel spreadsheet, for later posting on the State's website.

NOTE: This appeared to be a tedious, tiresome, demanding task, subject to high risk of "data entry error." Ms. Ladd was working alone, without any relief or any "verifier." If an incorrect number was entered into the master file, it could not be discovered absent another statewide recount.

Soon after the start of the Republican recount Secretary of State Bill Gardner agreed to provide a copy of each Tally Sheet to candidate Howard before the Tally Sheet was handed to Ms. Ladd. In addition, Mr. Gardner agreed that at any time, in response to any request by the candidate to do so, Ms. Ladd would copy the developing, official, master recount file onto a "thumb drive" or memory stick, dating each copy. This was done on four separate days during the Republican recount.

ORIGINAL AND RECOUNT VOTE TOTALS
<ins>RECEIVED FROM NH SECRETARY OF STATE</ins>

Table 4 was obtained from the State of New Hampshire's Secretary of State. It shows the number of votes received by each Republican Presidential candidate on Primary Day, as certified by elected officials from the 324 Precincts, under penalty of perjury. NOTE: The WTP Foundation added the column to the far left to identify with an "H" the precincts that hand count the votes.

Table 4 also shows the number of votes received by each Republican Presidential candidate, as certified by the State's Counters during the recount (subject to any data entry errors by Ms. Ladd).

Table 5 was also obtained from the State of New Hampshire's Secretary of State. It shows the votes received by each Democrat Presidential candidate both on Primary Day and at the recount, but only for Hillsborough County and that part of Rockingham County that was included in the recount before Rep. Kucinch stopped the Democrat recount. NOTE: The WTP Foundation added the column to the far left to identify with an "H" the precincts that hand count the votes.

OUR ASSUMPTIONS

A. Hand v. Machine Count Precincts

We began our analysis of the data from **Table 4 and Table 5,** (spreadsheets of the official results) by identifying those Precincts that relied on machines to count the votes on Primary Day and those that relied on People to do the counting. The Assistant Deputy of State, Anthony Stevens identified for us the towns that count votes by hand. We cross-referenced his list with a page from the State's website that lists the towns and cities that count by machine.

B. Write-Ins

Next, we eliminated the "write-ins." Many Republican voters wrote in the name of a Democrat as their choice for President, and many Democrat voters wrote in the name of a Republican as their choice for President.

NOTE: Republican candidate Howard paid for a state-wide recount of all votes cast for Republicans. The Republican recount did <u>not</u> include the write-in votes cast for Republicans by Democrats on the Democrat ballots. The Democrat recount

was terminated after the ballots from Hillsborough and part of Rockingham were counted (less than 40% of the Democrat ballots that were cast on Primary Day).

Therefore, with the exception of all of Hillsborough County and part of Rockingham County, we cannot know how many Democrat voters intended to have their votes included in the count for one of the Republican candidates.

However, a review of the Hillsborough and (partial) Rockingham County Democrat ballot data shows 1297 Democrats cast votes for Republicans. See **Table 6**. **Table 6** also reveals a very large discrepancy between those write-in votes as reported on Election night and those counted during the recount. When Secretary of State Bill Gardner was asked for his explanation of the discrepancies he said the election officials overseeing the vote in the precincts, "do not take the write- in votes very seriously."

C. Double-Zeros

Next, we eliminated the "double zeros" from our analysis. If there was no vote cast for a particular candidate on Primary Day (i.e., none was reported by the precinct officials and none was reported by the counters and observers at the recount), then no machine or people were called upon to count anything and therefore, there is no data to be analyzed. That is, only vote counts where either the original count or the recount contained a non-zero result were included in this analysis.

D. Machine Failures and LHS Service Reports

During the recount we asked the Secretary of State for reports of machine failures on Primary Day. We were told the Secretary of State learned on Primary Day that machines had failed, that on Primary Day he asked LHS for a report of the failures and that LHS had faxed twenty-one (21) Service Reports.

The Secretary of State could not admit or deny that those twenty-one LHS reports covered all the machine failures in New Hampshire on Primary Day.

We were told we could apply, under the State's Right to Know Law for copies of the LHS Reports that were received by the Secretary of State. We did so. A copy of our request and the State's reply, including copies of the twenty-one Service Reports is included as **Appendix A** hereto.

While the impact of the machine failures probably had a significant adverse impact on the vote counting performance of machines in NH during Primary Day (ballots

not counted, voters who left the polling station because they could not wait for the machine to be fixed, electronic counters being set back, memory cards "re-burned" or switched, machines swaps, etc.) we did not have any additional information beyond the limited information shown on the LHS Service Reports and, thus, we were not able to factor into our analysis the impact of any specific reported machine failure. It is quite possible that there were other machine failures that were not reported to the Secretary of State following the Primary.

E. Fraud

Next, we identified and removed from the analysis 38 hand counts with discrepancies that could reasonably and fairly characterized as the result of fraud. An example was the redistribution to candidate Tancredo of all five votes cast for candidate Fred Thompson in the Center Harbor Precinct in Carroll County. Another example was the failure of the counters to give Fred Thompson any of the votes he received in the Precinct of Effingham in the County of Carroll. Another example was the failure of the counters to give candidate Giuliani any of the ten votes he received in the Second College Precinct in Coos County.

We found we did not have enough information about any of the machine discrepancies to specifically attribute those discrepancies to unintentional or intentional (fraudulent) error. The machines, themselves, failed to count properly or election officials erred in handling and reporting the results of the machine counts. The source of the error and whether or not the error was intentional is not clear from the information at hand. Regardless, as the data indicate, machine counted precincts were far more likely to experience errors, and the magnitude of those machine errors was far greater than that observed for hand-counted precincts.

CONFUSION AND FRUSTRATION: MISSING MEMORY CARDS, UNCAST BALLOTS, CHAIN OF CUSTODY AND VOTER REGISTRATION DATA

None of the machine memory cards were transported to Concord along with the ballots for the recount. When asked, the Secretary of State could he did not know what happened to the 177 memory cards associated with the machines used to count the votes in the 177 precincts that count by machine. He said they cost the towns about $250 each and could have been retained by the municipality or removed by LHS to be reprogrammed for the next election.

In addition, the Secretary of State refused to tell candidate Howard how many ballots were printed and how many were delivered to each municipality. When

asked if the State or municipalities were required to account for the "uncast ballots" he said, "No." When asked if the municipalities were required to include all uncast ballots with the cast ballots for transport to Concord he said, "No." When asked by candidate Howard to include a count of the uncast ballots during the recount, the Secretary of State refused to do so, saying the law required that he count only the cast ballots during a recount. When asked if he could explain the obvious discrepancies between the number of uncast ballots the towns indicated were included in the boxes and the number actually included, he said he could not.

Copies of the precinct poll books were not included with the material transported to Concord for the recount. Thus it was not possible to determine if the number of people who showed up and registered to vote on Primary Day matched the number of votes reported by the State as having been cast.

There was considerable concern on the part of People associated with candidate Howard and/or the recount about the lack of accountability of the machine memory cards, the uncast ballots and the poll books, especially in light of what was obviously a less than adequate chain of custody of the ballots between election night and the actual recount of those ballots in Concord.

Candidate Howard expressed deep concern that a scenario of fraud similar to the following had been made possible by the failure to fully account for un-cast ballots: First, a machine memory card(s) might have been programmed to take a set amount of votes (say, for example 50 votes) away from candidate A and to give them to candidate B. Upon the news of the recount, those responsible for using the rigged memory cards had to access the ballots to make them match the machine totals. 50 *uncast* ballots were then marked for candidate B and placed with the rest of the ballots cast in that town, while 50 votes for candidate A were removed from the box of ballots for that town.

OUR FINDINGS

A. NH Machine Errors Violate Federal Law By A Wide Margin

The federal Help America Vote Act, or HAVA, requires that states certify that their electronic voting systems to meet federal vote counting accuracy standards.

<u>New Hampshire's voting machines appear to violate federal accuracy standards by grossly unacceptable levels</u>.

Below are two excerpts from federal election law. The first citation makes clear that HAVA requires states to meet standards established by the Federal Election Commission. The second citation establishes the specific accuracy requirement.

Help America Vote Act of 2002, Public Law 107-252

SEC. 301. <<NOTE: 42 USC 15481.>> VOTING SYSTEMS STANDARDS

(a) Requirements.--Each voting system used in an election for
Federal office shall meet the following requirements:

[omitted]

(5) Error rates.--The error rate of the voting system in counting ballots (determined by taking into account only those errors which are attributable to the voting system and not attributable to an act of the voter) **shall comply with the error rate standards established under section 3.2.1 of the voting systems standards** issued by the Federal Election Commission.
[emphasis added]

2002 FEC Voting System Standards, Volume 1

3.2.1 ACCURACY REQUIREMENTS

Voting system accuracy addresses the accuracy of data for each of the individual ballot positions that could be selected by a voter, including the positions that are not selected. For a voting system, accuracy is defined as the ability of the system to capture, record, store, consolidate and report the specific selections and absence of selections, made by the voter for each ballot position without error. Required accuracy is defined in terms of an error rate that for testing purposes represents the maximum number of errors allowed while processing a specified volume of data. This rate is set at a sufficiently stringent level such that the likelihood of voting system errors affecting the outcome of an election is exceptionally remote even in the closest of elections.

The error rate is defined using a convention that recognizes differences in how vote data is processed by different types of voting systems. Paper-based and DRE systems have different processing steps. Some differences also exist between precinct count and central count systems. Therefore, the acceptable error rate applies separately and distinctly to each of the following functions:

a. For all paper-based systems:

1) Scanning ballot positions on paper ballots to detect selections for individual candidates and contests;

2) Conversion of selections detected on paper ballots into digital data;

[…omitted]

For testing purposes, the acceptable error rate is defined using two parameters: the desired error rate to be achieved, and the maximum error rate that should be accepted by the test process.

For each processing function indicated above, **the system shall achieve a target error rate of no more than one in 10,000,000 ballot positions, with a maximum acceptable error rate in the test process of one in 500,000 ballot positions**. [*emphasis added*]

In the 2008 NH Primary recount a total of **347,905** votes total were processed during the recount. This includes all Republican ballots from the entire state and Democrat ballots from just two of NH's counties.

Of the 347,905 total ballots counted during the recount **305,286** came from **machine-counted** precincts/towns, while 42,619 came from hand-counted precincts/towns.

To determine the number of ballot "positions" for the following accuracy compliance analysis, it was assumed that **21 "positions" (candidates) per paper ballot** existed. Multiplying 305,286 by 21 yields **6,411,006** possible ballot positions.

According to the HAVA/FEC standards cited above, the ***maximum*** machine error rate allowed by law is **(1) one error per <u>500,000</u> positions**.

To calculate the nominal number of errors that might have been allowed under federal law for the votes analyzed as part of the recount, we divided 6,411,006 by 500,000, resulting in a <u>maximum number of **12.8** machine count errors allowed by law</u>.

That is, **IF** the NH electronic voting machines met federal FEC accuracy standards, NH should not have detected **any more than (13) thirteen votes in error in the paper ballot population analyzed in the recount.**

Unfortunately, by comparing the officially certified machine-counted vote counts against the **hand-counts** performed as part of the recount process, the WTP analysis documented **2,090** separate, individual **machine-counted** voter ballots in error.

This means that for the 347,905 separate voter ballots analyzed as part of the 2008 Primary recount process, **New Hampshire experienced error rates for their machine-counted votes approximately 163 times greater than the machine count error rate allowed under U.S. election law** (2,090 machine errors found vs. 12.8 machine errors allowed = 163 times greater).

The WTP analysis further shows that even if every single, machine-counted error greater than one (1) vote in size was simply ignored (i.e., 1682 errors), New Hampshire's machine-count error rate **would still have been calculated at over 31 times the machine error rate allowed under federal law.** (408 ballot errors vs. 12.8 allowed by law)

This startling, but well documented finding should compel serious consideration toward decertifying New Hampshire's electronic vote counting machines.

B. Hand Counting Virtually Assures All Votes Will Be Accurately Counted

The probability that an individual's vote was accurately counted during the Primary was much greater if his vote was counted by hand than by machine.

The error rate of machine counts was more than one and one-half times greater than the error rate of hand counts. The number of machine counts that were in error by more than 2 votes **was 9.81 times greater** than the number of hand counts that were off by more than 2 votes. The number of machine counts that were in error by more than 1 vote was 3.37 times greater than the number of hand counts that were off by more than 1 vote. See Tables 1-3 and 7-10.

When the much higher frequency of machine-counted errors is coupled with the statistically disturbing magnitude of the machine errors, it is not unreasonable to conclude that the use of optical scan machines to count votes has robbed many citizens of New Hampshire of their Right to Vote and their Right to have their Vote counted accurately.

Our analysis of the state's data and election practices suggest that there are numerous steps that the government of New Hampshire can take to bolster the integrity of its election process - whether votes are counted by hand or by machine. Although hand-counting of votes is clearly not yet a perfected art, in keeping alive the practice of hand-counting, New Hampshire has served its citizens well. Beyond this, the state should not subject its People to further enduring electronic voting machines that grossly fail to meet even the minimal accuracy standards mandated by federal law.

We hope our analysis has provided some much needed light onto a matter that substantially affects the future of freedom in New Hampshire - and our entire Republic.

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