

**From:** Dr. Charles E. Corry [mailto:ccorry@ejfi.org]  
**Sent:** Sunday, January 06, 2008 9:29 AM  
**To:** Al Kolwicz  
**Subject:** Outline of testimony at Thursday's hearing on 2008 election

Al,

Below is the outline of my testimony on voting machines, part of which i got in to the record Thursday. I was cutoff without an opportunity to present problems with mail ballot elections. I got the impression that they really didn't want to hear expert opinion or details of problems.

Here is some feedback as on my testimony:

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To: <ccorry@ejfi.org>  
Subject: Electronic Voting issues  
Date: Thu, 3 Jan 2008 17:54:17 -0700

I spoke early at the hearing this morning, trying to make a case that no amount of reviews, tests and certifications can insure against falsifications of vote results, because there are entire broad categories of approaches in equipment and software to defeat protections.

But, although there was a lot of good input, there was little testimony on non-obvious internal matters. Rather, the focus was more typically confined to guarding machines and ballots, scanner misreadings, and so on. If only things were so easily rectified.

Luckily you, if not unique at least best, spoke to things more technical, not lying so near the surface, not easily served merely by testing and certification. So thank you.

We are preaching to the choir in Sen Gordon, but I worry greatly that, broadly speaking, despite all, lawmakers and officials will never well perceive the issues that I tried to present and which you did present.

Even Sen Ron Tupa, who is out front on the topic, asked you, what about the listings of the programs which are to have been filed? Argh. One could paper his house with true copies of such things and still find various ways to fake results. So, I handed him a copy of my paper, marking the paragraph to that effect. Most folks would have no way of understanding such things any more than I understand cooking, but it is scary that so many decisions seem to be made in absence of a semblance of awareness of the potential problems.

At least the hearing seemed to converge on the need for verified voting and a paper trail, so that is progress.

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As noted, I was also questioned by Sen. Ron Tupa (D-Boulder) on how fraud could be detected or prevented by examining source code. I was questioned about proprietary information.

Bob Balink testified after me and spoke against a mandated statewide mail ballot election in 2008. He is also conducting a study on hand counting ballots, which I just learned about on Wednesday. I don't know how far he is with that study.

Paul Hutlin, the lead attorney in the Conroy v Dennis 2006 lawsuit that led to the decertification, spoke after Balink. He reinforced the fact that all information about voting machines is proprietary. He also pointed out that Colorado election law is not being followed (and isn't that a big surprise). Sen. Ron Tupa expressed great frustration with that fact as it statutes that he initiated that are not being followed.

Rep. Kent Lambert, who was on the panel, commented that his mail ballot had been lost at one point, and a Navy captain he worked with had also had his mail ballot lost. A number of citizens testified their mail ballots had been lost or that they had never received them.

The consensus seemed to me that paper ballots must be used except for handicapped voters. But the handicapped representative didn't like DREs anymore than the rest of us.

Many spoke in favor of hand counting paper ballots at the precincts but the county clerks seem to have forgotten how to count, plus they've spent a lot of money on electronic voting machines that they seem quite attached to even though they have no idea how, or whether they work. My guess is that the likes of Sen. Ken Gordon will introduce legislation to allow those counties who want to conduct an all mail ballot election in 2008 as a one-time stopgap measure. The fact that the optical scanners that must be used to count ballots are no more reliable or accurate than the virtually universally condemned DREs will probably be swept under the table as just another inconvenient fact only understood by weird academics who don't appreciate the "realities" of elections.

Chuck Corry

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# Legislative Task Force - Voting System Testimony

January 3, 2008

## Introduction

- Dr. Charles Corry, President of the Equal Justice Foundation in Colorado Springs - I've provided my résumé. My doctorate is in geophysics, a field that uses a large fraction of all computers. Minors in computer science and electrical engineering.
- I began working with electronics in 1957 in the Marines and with computers in 1960 while doing preflight testing and failure analysis on Atlas and Centaur missiles, including all the Project Mercury birds.
- Among other positions I've been a research manager for a Fortune 500 company and the international coordinator for the largest oceanographic program ever undertaken with 30+ countries.
- I began research on electronic voting machines in 2000 and have been a member of the Inst. of Electrical and Electronic Engineers (IEEE) voting equipment standards committee since its inception in 2001 attempting to develop national standards for electronic voting machines.
- For ten years now I've been listed in such publications as Who's Who in Engineering and Science, Who's Who in America, and Who's Who in the World. Allard, Salazar, and Ritter don't rise to that level.
- I was also a professor so please forgive me if I tend to lecture.

## Electronic voting machines cannot be made trustworthy and secure

I have provided you a memorandum written three years ago to the federal Election Assistance Commission based on my experience up to that date. In it I note that it I find it fundamentally impossible to develop secure, trustworthy and cost-effective electronic machines to count ballots and that conclusion is unchanged.

Virtually every qualified engineer and computer scientist I've dealt with finds the current voting equipment insecure and unreliable. And throwing billions of dollars at the machine vendors hasn't produced usable results.

### **There are three basic problems:**

**Transparency** - There is no way for citizens, election judges, or poll watchers to verify how the machines actually count their votes. How can anyone trust something they can't see or verify?

The specious claim is made that fraud has never been proven with electronic voting machines. However, when fraud is suspected the companies claim the hardware and software is proprietary and no experts have ever been able to examine the machines post-election. Therefore it is impossible to prove fraud but that does not prove fraud doesn't exist.

**Security** - It is impossible to make electronic voting machines secure.

**First**, there is no way to protect against an insider attack. After the November 2003 mail ballot election a school board candidate in Denver asked us to review the large undervote in her race. A month after our review the IT technician who ran the Sequoia optical scanner, and who

claimed everything was fine, was arrested for fraud. A few months later he committed suicide after pleading guilty.

Problems with clerks in at least Arapahoe, Garfield, Mesa, and Montrose counties in the past few years have also been documented. Denver has, of course, been a series of disasters.

**Second**, logistics typically requires voting machines be distributed days to a week or more before the election to polling places or election judges. This is referred to as "sleepovers." Obviously the voting machines are subject to possible tampering during "sleepovers" and the claim that seals or locks are adequate protection during sleepovers has not been proven accurate.

**Third**, the machines are built in foreign countries. For example, the motherboards for Diebold/Premier machines are built in China, whose interests are unquestionably inimical to ours and they are known to launch cyber attacks against the Dept. of Defense and other government agencies. An attack on voting machines might well be disguised as a self test, embedded in firmware, etc. on the motherboard.

**Accuracy** - Present logic and accuracy tests are a sham, as well as being time consuming and expensive.

Audits and recounts are expensive, rare, and counted by hand if they are to be trusted. A recount using voting machines is ridiculous. Depending on how close a race is, a hand count of between 20% and 90% is required to provide statistical confidence in the results. In a number of elections the Sec. of State's office has had to hand count all the ballots.

If hand counting is required to verify the machine count, why not simply hand count the ballots in the first place?

**There are no quick fixes** - Many of the problems referenced in the current certification process have been known for years to members of the IEEE voting standards committee, and all machine vendors were represented on that committee and the chair was Herb Deutsch from Diebold. Neil McClure represented Hart InterCivic, and CEO Bill Welsh represented ES&S. If the manufacturers were willing and able to fix these problems it is reasonable to assume they would have done so long ago. Any "patch" promised is simply a band-aid used to try and hide the underlying abomination.

Incidentally, no cost/benefit analysis has ever been done on electronic voting machines. Caltech/MIT estimated that electronic vote counting became cost effective if more than 25,000 ballots were to be counted at one location but no systematic analysis of the benefits or risks of doing that was ever done. Also that study found hand counting of paper ballots was the most accurate of all methods.

It is also worth noting that only a fraction of Colorado counties have more than 25,000 registered voters.

(THIS IS AS FAR AS I GOT BEFORE THE CHAIRMAN CUT ME OFF)

### **Mail ballot elections are not a solution**

**First**, and foremost, a mail ballot election is dependent on an accurate and reliable voter registration database. Colorado has a zero percent success rate with large databases and, from the progress reports I've seen, the SCORE II project to develop a statewide voter registration database is in trouble.

Apparently the technical manager has left, there is no test platform, hardware decisions are still pending, the contractor appears bogged down with emergency fix requests from the counties, time and money appears to have been spent mainly on management with minimal effort on database problems, and who knows what else.

**Second**, mail ballots must be counted with the self-same electronic voting machines that have been decertified by multiple states. And optical scanners have as many, and possibly more problems than touch screen (DRE) machines, including many that are unique to mail balloting, e.g. ink or toner transfer when ballots are folded, fold is read as a vote or over vote, wrong marking device used by voter and not read by machines, and on and on. For another example, in Maricopa County, Arizona, the FBI issued a warning about using white out on mail ballots as it affects the read heads in the optical scanner.

**Third**, many counties do not have the resources or technical skills to operate and conduct a computer-based mail ballot election and simply contract it out to one of the machine vendors. Thus, the county clerk, and through them the citizens, end up simply taking the word of the vendor as to the results of the election.

I, for one, am not willing to trust elections to a company with the well-deserved reputation for disasters of General/Diebold/Premier Election Systems, or whatever they may call themselves next. And other vendors are equally bad.

With mail ballots the vote counting is done in a back room essentially without citizen oversight. So we would have untrustworthy, error-prone machines being used to count our ballots in secret. Why multiply the dangers of electronic voting with a mail ballot election?

Mail ballot elections eliminate secret ballots, facilitate election fraud, revive vote buying and selling, promote electioneering, use backroom vote counts on untrustworthy machines with no public oversight, and eliminate such independent checks as exit polls.

### **Why would we want to do that?**

### **Recommendations**

- Stop experimenting with elections and return to what we know worked in the past! Enough with vote centers, Internet and email voting, electronic poll books, touchscreens (DREs), instant runoff voting, etc. Remember the ancient engineering principle known as KISS.
- Abandon electronic vote counting machines as just one more expensive and failed government experiment. From an engineering standpoint there is no way to salvage the current machines. There is a place for computers in elections but not counting ballots.
- Return to precinct voting insofar as possible with paper ballots that are hand marked and hand counted publicly at the precinct. That can be accomplished with minimal time and effort in both large and small counties. The reduced cost of printing ballots alone will nearly pay for the requisite election judges.
- Use "super precincts" where three or four precincts are combined at a single polling place in large counties but abandon vote centers as another failed experiment.
- Use ballot marking devices such as AutoMark to allow handicapped voters an unassisted means of voting as required by HAVA on a paper ballot. Only one marking device per

polling place is needed, or perhaps only a few per county at designated locations would suffice to keep costs down.

- It would also be worthwhile to find out where disabled voters are located and what sort of assistance they need in order to provide cost-effective assistance where needed.
- Reduce absentee ballots to a minimum by eliminating "no excuse" absentee voting. Whenever possible voters should pick up their absentee ballots in person and thereby use this as a substitute for early voting.
- Revoke permanent mail balloting as it is an invitation to voter fraud.
- County clerks should not be allowed to contract out elections to voting machine vendors.