

## Computerised voting results compromised -- an anticipated outcome

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### Computerised Voting -- why bother voting!

Battle for independent election investigation rages in rural Republican county, pitting renegade Election Board against County Commission, giant E-Vote firm ES&S...



#### **Remote Access**

According to the Initial Report from a landmark independent forensic audit of the Venango County, PA, touch-screen voting system --- the same system used in dozens of counties across the state and country --- someone used a computer that was not a part of county's election network to remotely access the central election tabulator computer, illegally, "on multiple occasions." Despite the disturbing report, as obtained by The BRAD BLOG and posted in full below, we may never get to learn who did it or why, if Venango's County Commissioners, a local judge, and the nation's largest e-voting company have their way. And that's not all we won't get to find out about.

The battle for election integrity continues in Venango, with the County Commissioners teaming up with e-voting vendor Election Systems & Software, Inc. (ES&S) on one side, and the county's renegade interim Republican-majority Board of Elections on the other. The Commissioners and ES&S have been working to spike the independent scientific forensic audit of the county's failed electronic voting machines that was commissioned by the interim Board of Elections. Making matters worse, the Board has now been removed from power by a county judge, a decision they are attempting to appeal as the three-person board and their supporters continue to fight the entrenched establishment for transparency and accountability in the rural Western Pennsylvania county.

The extraordinary battle began when the interim Board was appointed by a county judge to oversee elections in the Republican-leaning PA county last spring. Normally the County Commissioners serve as the Board of Elections. But when they themselves are up for election, as they were this year, the county court judge names a specially appointed Board to cover the election and serve until the end of the year, or until they are dismissed by the same court.

When the interim Board of Elections --- comprising two Republicans and one Democrat --- took power this year in Venango, they unanimously set about commissioning the landmark, independent forensic audit of the county's 100% unverifiable ES&S iVotronic touch-screen voting systems, on the heels of sworn testimony from voters about several failed elections over recent years, beginning in 2008.

After months of legal wrangling, with County Commissioners in opposition, the special Election Board's independent study of the County's ES&S iVotronic voting system finally got under way in late September. At that time, a hard drive clone of the computer which runs the ES&S central tabulator system (known as the "Unity Election Reporting Manager") was created and given, along with other data, to two Carnegie Mellon computer science professors who had volunteered to carry out the analysis on behalf of the Board. The Board also announced that the November election this year would be carried out on an optically-scanned paper ballot system, also made by the county's vendor, ES&S, while the reported anomalies from their May 2011 primary election, run on the unverifiable touch-screen systems, were being examined by the scientists.

But now, as documents and letters obtained by The BRAD BLOG reveal, the voting machine company, Omaha-based ES&S, which had issued no objections prior to the start of the study, but changed its mind quickly after it began (as we detailed in an Exclusive report in late October) has now hardened their position, sending threatening legal letters to both the county and the two computer scientists. The e-voting firm has warned them they are likely to face a lawsuit if they do not agree to complete confidentiality and if results of their analysis are released publicly without their prior review and approval.

Shortly after ES&S' legal threats were issued last month, a county judge released the interim Board from their duties (a move now being appealed by the Board) and the County Commissioners, who had fought tooth and nail against the analysis even being undertaken in the first place, are now back at the helm. According to members of the interim Board, the County Commissioners seem likely to "white wash" and/or quash the entire analysis and a plan for continuing the investigation before it can be completed or even see the light of day.

The BRAD BLOG, however, has obtained a copy of the Initial Draft of one of the forensic studies by the Carnegie Mellon computer scientists. Findings from the report [linked in full below, along with ES&S' threat letters], include a number of disturbing, and so-far unexplained revelations that should raise alarm bells for voters in virtually every corner of the nation as we head into another Presidential election year.

Among those findings: details on unexplained, out-of-sequence activity log entries in the computer tabulation system, indications that the system was mounted several times with a "USB 'flash drive'" device, and, perhaps most troubling, evidence that the system was repeatedly accessed by an unidentified remote computer, for lengthy periods of time, on "multiple occasions."

The entire affair has left members of the interim Board --- which includes the Chair and Treasurer of the local Republican Party, as well as the former Chair of the Democratic Party --- hopping mad. They're asking questions about motivations of both the County Commissioners and ES&S and describing their actions as a "cover up," even as they take legal action to try and complete the work they had begun months ago, after first hearing sworn testimony from voters, describing major failures with e-voting machines at the polling place in recent elections...

'They know there's something wrong'

When the Director of Venango's then Board of Elections, Republican Craig Adams (who also serves as Treasurer of the county's Republican Party) announced the start of the county's landmark analysis in late September, he asked rhetorically at a press conference, in response to queries about the cost of the analysis: "What is a vote worth?" He then answered himself: "If the vote is counted it is priceless. If it is not counted, I don't care what it costs. Let's get it right."

Whatever the costs to the county, it would not be in exchange for the services of Carnegie Mellon scientists David Eckhardt and Gregory Kesden. The pair volunteered to perform their audit for free, donating their time as contractual "agents" of the Board of Elections.

As the analysis finally began, Election Integrity advocate Marybeth Kuznik, founder of the non-partisan watchdog organization VotePA.us explained that the Board was calling for the investigation after the county had experienced "numerous reports of vote-flipping, candidates missing from screens, write-ins missing, and high undervote rates in their May 17 Primary."

While reporting on the Venango Board's efforts to get their analysis under way during one of our regular fill-in stints as guest host for the nationally syndicated Mike Malloy Show in late October, we received an unexpected call from Adams to offer more details on why his Board had sought the forensic audit.

"It started with an election in 2008 when the machines were basically showing a large number of undervotes," he explained. "And then there were candidates for positions in the county and they had zero votes, but there was like 250 or 260 undervotes."

"Wait a minute, there were people who had zero votes on the ballot? Is that normal?" we interrupted to ask.

"No. No, it is not normal," he responded directly, describing the anomaly as "a red flag." When pressed to explain why he believed the the County Commissioners and their legal representatives had been working so hard for months to keep the audit from happening, Adams told us bluntly: "They know there's something wrong."

The same type of 100% unverifiable ES&S iVotronic touch-screen systems that Adams is fighting to audit in Venango, and ones similar to them, are still used by some 50 counties in Pennsylvania, according to Kuznik. Around the nation, the iVotronics, which have a storied history of failure in election after election over the years (see the section entitled "A brief history of systemic ES&S voting system failure" here) will be used in nearly a dozen states during the 2012 Presidential election. As we reported at Salon in late September, according Sean Flaherty, a policy analyst for e-voting watchdog VerifiedVoting.org, nationally "about one-third of registered voters live where the only way to vote on Election Day is to use" one of ES&S' touch-screen systems, or others very similar to it, made by private companies like Diebold, Sequoia, or Hart-Intercivic.

All told, that means some 20 to 30% of voters will cast 100% unverifiable votes on Election Day in 2012, on systems identical or nearly identical to the ones which are reported to have failed in Venango.

Unexplained remote access, out-of-order log entries

In the course of seeking a Motion For Reconsideration [PDF] from President Judge Oliver J. Lobaugh in the Court of Common Pleas of Venango County, in response to the judge's dismissal of the specially appointed interim Election Board, their special counsel Charles Pascal, Jr., included the Initial Report from forensic analyst Eckhardt as "Exhibit A" in his pleading.

Thus, despite the objections and legal threats from ES&S, a copy of the auditor's initial draft report from his forensic analysis has, at least, made it onto the public record. The BRAD BLOG has obtained a copy of that report [PDF], and it offers some troubling findings.

Eckhardt, now in a precarious legal position, as you'll read, declined comment for this story. But his Initial Report describes how both he and Kesden, his Carnegie Mellon colleague, faced serious time constraints for their analysis, as well as a lack of access to key components of the electronic voting system. With the interim Board of Elections statutorily able to continue serving no later than the end of the year --- or earlier, if dismissed at the discretion of Judge Lobaugh --- the scientists' work window was severely constrained by the time they were finally able to begin their study in late September. Equally as limiting was their lack of access to voting machines and the programmable flash memory cards used in them. They were allowed no access to those as they attempted to answer the concerns raised during sworn testimony from voters earlier in the year.

In describing the litany of issues reported by voters, both Republican and Democratic, following Venango's May 17, 2011 municipal primary election --- issues that, according to the report, include candidates allegedly missing on the ballot in several races, attempted screen selections switching from one candidate to another, and pre-election "zero tests" that could not be printed "because one or more iVotronic(s) already contained votes" on the morning of the election before polls even opened --- Eckhardt says most of those questions have "not been investigated to our complete satisfaction." He explains in his report that "further analysis could be conducted" to determine the cause of many of the complaints, as well to provide answers to a number of the findings discovered during his analysis.

Moreover, Eckhardt writes of his lack of ability to audit the code used in key software sequences of the ES&S iVotronic and the Unity tabulation system. ES&S has claimed that the software used in Venango's public elections is the private "proprietary" property of the firm and is off limits for review. The company makes the same claim wherever their systems are in use, as do most of the other private voting machine vendors.

"Auditing the operation of this code is difficult because the formats of the flash cards [which hold voter selections recorded by the iVotronic machines] and of Unity's internal database are both proprietary," Eckhardt explains in his report. "[S]ince no one of them can be audited without access to proprietary data, the behaviors of the three bodies of code, as a group, cannot readily be audited."

Nonetheless, Eckhardt offers a summary of "Observations" from his examination of the Unity computer's hard disk clone before explaining each observation in more detail.

These are among his summarized "Observations" from his examination of the clone of the Unity central tabulator's hard drive from the May 2011 primary:

It seems likely that the computer experienced a transient hardware failure in April.

The computer appears to have been connected via a network which was also connected to a machine which has at other times been connected to a different network.

It appears that remote-access software was installed on the computer after it was purchased. This software appears to have been used at least once for a non-trivial amount of time.

Various remote-access settings are configured in a way that is probably unwise.

We observed an anomaly related to a "log file" obtained from Unity.

In the case of two precincts, anomalies were observed that, at present, suggest reduced attestation of certain votes. Further investigation is warranted in these cases.

In describing the reported April failure, as referenced in the first item above, Eckhardt posits that

the problem most likely occurred during ballot preparation for the May election. He notes that it is "possible that ... there have been other errors that were not detected, in which case it is possible that some answers previously produced by the machine were wrong, or that things done by the machine presently or in the future will be wrong."

He recommends a series of tests for the system's memory chips which could, he says, be the cause of that particular hardware failure reported to have occurred in April, just prior to the election. If not attended to, he warns, it may cause future errors in the central tabulating system.

One of the even more alarming findings, however, has to do with the discovery that "The computer appears to have been connected via a network which was also connected to a machine which has at other times been connected to a different network," and that he has found evidence "that remote-access software was installed on the computer." If Eckhardt is correct, such access to the system would be in serious violation of the state Election Code.

Eckhardt offers these startling details on that finding, one which, according to attorney Pascal's Motion to Reconsider, the Board of Elections had otherwise hoped to investigate through interviews and depositions with county officials and programmers before they were summarily removed from their post:

#### Network connectivity

The computer appears to have been connected via a network which was also connected to a machine which has at other times been connected to a different network. In particular, the Windows operating system's printing component has stored a list of printing servers that it has previously contacted; the name of one of those print servers suggests it is not one of the machines in the Elections equipment room. Furthermore, one of the printers that the print server in question manages appears to be named after an organization that is not obviously part of the Venango County government.

#### Remote access software

Based on information from my colleague Gregory Kesden, a remote-access application was probably installed on November 2, 2009. Based on information from the Windows operating system's event log, this program was used on multiple occasions. The most recent significant usage is probably 80 minutes on November 1, 2010. Based on observing the behavior of the system while it is running, that application is configured to launch when the system boots. Given the information readily available to us, it is not possible to determine which other system accessed this system...

#### Settings which cause concern

The access-control settings of various remote-access applications appear to be excessively lenient.

As Pascal notes in his Motion to Reconsider filed with the Venango County judge, "remote access to the Unity [system] is not permitted by law, regulation, and directive of the Pennsylvania Secretary of State."

"As far as we can presently determine," Eckhardt writes later in his report, "insufficient data is available to conclusively list all machines or networks that the machine we studied has been connected to or to conclusively list all times that remote access to the machine occurred. However, there is substantive evidence that the machine we studied is configured, and has been connected to

networks, in such a way as to threaten, or at least cast doubt on, its integrity."

So, why did the remote access occur and who did it, "on multiple occasions," most recently for "80 minutes" just prior to the 2010 election? At this point, we don't know. If the Board is not re-instated, Venango County voters may never even be allowed the chance to try and find out.

Pascal writes in his motion to Judge Lobaugh, pleading with him to reconsider his decision to dissolve the interim Board, that "It was the intention of the specially appointed members of the Board of Elections to investigate the circumstances, causes, and explanations for these findings by interviewing and causing depositions of various individuals to be conducted in order to find answers to these troubling questions, as well as to other issues raised by Dr. Eckhardt's report."

Another disturbing issue noted in the scientist's Initial Report concerns the "anomaly related to a 'log file' obtained from Unity," as Eckhardt describes it in his "Observations" summary.

That anomaly is the appearance of a number of lines in one of the activity log files that seem to appear out of nowhere or, at least, not in the chronological order that the audit logs are supposed to be written in. Such logs are one of the only ways that forensic analysts are able to try and piece together what may have happened during a questionable electronic election.

Eckhardt details the finding this way:

Unity "log file" anomaly

When requested, Unity will produce a file named EL68A.LST. The documentation describes this file as follows:

System Log: Generate a System Log report to list every action performed in your election system in chronological order.

However, some records appear not to be in chronological order. Here is an excerpt from the EL68A file found on the computer when we imaged it:

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05-13 01:34 pm DATABASE RESET
05-13 01:34 pm THERE ARE NO VOTING TERMINAL AUDIT DATA TO BE CLEARED
05-13 01:34 pm CLEARED CONSOLIDATED AUDIT DATA
05-13 01:34 pm EXITED ELECTION REPORTING MANAGER SYSTEM
05-13 01:35 pm EXITED ELECTION REPORTING MANAGER SYSTEM
07-09 12:05 am ENTERED ELECTION IN ELECTION REPORTING MANAGER
07-09 12:07 am ELECTION SUMMARY-GROUP DETAIL WAS PRINTED TO EL45A.LST
07-09 12:07 am EXITED ELECTION REPORTING MANAGER SYSTEM
07-09 12:11 am ENTERED ELECTION REPORTING MANAGER SYSTEM - REL 7.1.2.0^M
07-09 12:11 am PRECINCT REPORT-GROUP DETAIL WAS PRINTED TO EL30A.LST
07-09 12:12 am EXITED ELECTION REPORTING MANAGER SYSTEM
05-16 03:39 pm ENTERED ELECTION REPORTING MANAGER SYSTEM - REL 7.1.2.0^M
05-16 03:40 pm ELECTION SUMMARY-GROUP DETAIL WAS PRINTED TO EL45A.HTM
05-16 03:57 pm ELECTION SUMMARY-GROUP DETAIL WAS PRINTED TO EL45A.HTM
05-16 04:19 pm ENTERED ELECTION IN ELECTION REPORTING MANAGER
05-16 04:21 pm EXITED ELECTION REPORTING MANAGER SYSTEM
05-16 04:25 pm EXITED ELECTION REPORTING MANAGER SYSTEM
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You'll note in the above that activity log lines purporting to be from July [emphasis ours], at some time just after midnight, appear right in the middle of the May activity, instead of the chronological order in which they'd be expected to appear. Why? Eckhardt's report says he's unable to offer an explanation without further investigation, though Martha Breene, who serves as the chair of the Venango County Republican Party and is one of the members of the three-person Board of Elections --- the one currently released from its duty --- has grave concerns.

Breene writes in an email to The BRAD BLOG, that "The experts say there is no known reason" for the July 9 entries found between the April 13th and 19th log items. "It can be old election data popped up and in among new, it is all just numbers, that can have moved from elsewhere."

"Now, there is absolutely no assurance that can be given, regardless of self-agenda spin, that can assure vote numbers that look like they fit and belong, or even votes for a candidate, are not old numbers popped in from somewhere else, or numbers that moved where they did not belong, just exactly as the System Log file reports prove numbers, in this case dates, appeared from nowhere, and don't belong," says Breene.

"Suppose that same system log file was voter's votes, and each number represented a vote, but a number popped up from elsewhere, moved to the spot but not by the candidate it was supposed to be for," she vented, adding "This is just one of the many anomalies proving the only safety is in verifiable paper ballots that can be recounted, ballot by ballot, with teams that should include representation of each party who are beholden to no one but their voters."

Further findings from Eckhardt's report note that it "appears to be the case" that "extra software [was] installed on the [tabulator] machine" and, citing partner Kesden's findings, indications are that "USB 'flash drives' were mounted by the system on multiple occasions."

"Based on our understanding," Eckhardt observes, "many steps of the operation of iVotronic voting terminals are infeasible to audit by a third party after the fact. Some can be investigated by individuals with access to the proprietary program source code ... In the past, such investigations have required a large staff and multiple months, suggesting they are frequently not practical to carry out between an election with surprising results and when that election must be certified."

Citing the out-of-order log findings described above, as "Just one example of the hidden problems...in thousands of pages of data," Breene says: "There is just too much unpublished data, too complicated to study correctly without months and teams of Forensics Specialists studying different areas, and far too much that the Companies do not allow anyone to study or test in any brand of electronic voting machines, not just those in our county."

The complaints by both Eckhardt and Breene, about the difficulty, if not impossibility, of forensically auditing electronic elections, is one that we've heard many times over the years. The complaint usually comes from candidates attempting to challenge the results of their election. In most cases, they find they have neither the time to meet strict post-election deadlines for election contests, nor the financial and scientific resources to correctly audit such an election. Almost always they are stymied by the private voting machine companies who fight to keep them from access to the information they would need for an appropriate analysis.

We saw such a case recently in the 2010 Democratic primary for U.S. Senate in South Carolina, where the unknown Alvin Greene was inexplicably named the "winner" by the same 100% unverifiable ES&S iVotronic touch-screen systems used in Venango County. In that case, former circuit court judge and state legislator Vic Rawl mounted a challenge to inexplicable election results,

but his team of forensic analysts were not allowed access to the voting systems, memory cards, tabulator, or other "proprietary" property of ES&S which declared Greene, who'd done no campaigning at all in the entire state, to be the 2010 Democratic nominee for the U.S. Senate.

In Venango, Breene cut to the chase in an exasperated email: "System Log File Reports from the Forensic Investigation interim report demonstrates why the voting machines just cannot be trusted, compared to paper ballots."

'Of the most sensitive nature to ES&S'

In late October, we released a 10/13/11 letter from ES&S [PDF] sent to the Venango County Board of Elections, charging they had "inadvertently violate[d]...the terms of its Agreement...with ES&S," by allowing the Carnegie Mellon computer scientists to copy the Unity system hard drive for the independent forensic analysis. The letter from Timothy J. Hallet, the Associate General Counsel for the nation's largest voting machine company, claimed that "ES&S did not provide its consent for the ES&S Software to be copied and disseminated to the third party Computer Scientists" and that the county "was not authorized" to provide them with the software.

But weeks earlier, as we reported at the time, in a 9/22/11 letter [PDF] Hallet had offered tacit consent to the analysis, writing that the county was "free to conduct any such independent audits they deem necessary with respect to ES&S' voting system used by the County." He went on to write that "ES&S is confident that any well defined and independent audit conducted by the County and the Board will conclude that ES&S' voting systems are accurate, secure and reliable."

In response to the apparent flip-flop in the October missive, Chuck Pascal, attorney for Venango's then Board of Elections, produced a 10/19/11 Opinion Memorandum [PDF] noting both Hallet's earlier consent and that, in any case, the computer scientists Eckhardt and Kesden were contractually signed as "agents" of the Board, "not third parties," as the Board had "explicitly authorized them to act [on their behalf], using their special expertise in conducting a forensic audit of the election."

"The agents' temporary possession and use of software and election data for purposes specified by the principal [the Board of Elections] is legally tantamount to possession by the principal, the Board of Elections," Pascal argued. "Under the principles of agency law, their actions that are pursuant to actual authority are the actions of the principal."

ES&S, however, was not dissuaded by Pascal's response, The BRAD BLOG has since learned. In a continuing attempt to put the kibosh on Venango's analysis, a threatening 11/18/11 letter [PDF] was sent directly to Eckhardt by Michael C. Cox of Koley Jessen, a law firm retained by ES&S.

The letter says the firm represented ES&S "with regard to the Venango County Audit of the May 2011 County election," and notified Eckhardt that he was "in possession of proprietary, confidential information of the most sensitive nature to ES&S, without permission or consent of ES&S."

The letter demanded that Eckhardt sign ES&S' "Confidentiality and Non-Disclosure Agreement." [PDF]

"Should you fail to execute the agreement immediately," Cox warned, "ES&S has authorized me to institute immediate legal action."

ES&S --- again, the nation's largest voting machine company, servicing some 50% or more of the



nation's elections --- has a well-earned, years-long reputation for thuggish behavior in states and counties from coast to coast. Their outlandish behavior in Venango has, to date, been no exception.

The extraordinary "Confidentiality and Non-Disclosure Agreement" that ES&S' attorney insisted Eckhardt execute immediately is so strict, as VotePA's Kuznik describes it, that it would have meant that the computer scientists "couldn't even tell anyone that ES&S has an office in Omaha. It's nuts."

"Furthermore," she says, Eckhardt and Kesden "don't have anything 'confidential' that the other employees and agents of the county don't already have. They have a copy of the county's hard disk, containing Unity, same as the chief clerk and the guy who programs the ballots --- and none of these people are forced to sign a crazy NDA or get sued!"

In total, ES&S' various requirements would have meant that only the Venango County Board of Elections could receive information from the forensic audit, and only if ES&S had the opportunity to review it before it was released anywhere, as they attempted to retain the rights to determine what would be confidential and what wouldn't, as to what happened in Venango's public elections.

A number of sources familiar with the proceedings described it to us as an attempted "white wash."

Eckhardt did not sign the agreement. But with the County Commissioners, who opposed the audit from the beginning, now serving once again as the official Board of Elections, the future of his analysis is clearly in doubt. Several calls placed to Dr. Tim Brooks, chair of the Venango County Commission, were not immediately returned.

In the pending motion filed with Judge Lobaugh, asking for him to reconsider his removal of the Board, Pascal pleads: "the specially appointed Board of Elections was in the process of investigating possible 'election frauds, irregularities and violations of [the PA Election Code]' when this Honorable Court terminated their appointments."

"Because the Board of Commissioners would, statutorily, assume the role of Board of Elections as a result of this Honorable Court's Order," Pascal explains in the motion, "and because the members of the Board of Commissioners were candidates in the election which is being investigated, this creates a situation where the members of the Board of Elections would now be expected to investigate an election in which they were candidates."

"The members of the specially appointed Board of Elections believes [sic] that it is necessary to continue their work in order to assure the voters of the County of Venango of the integrity of the election process in the county, and to assure that any possible violations of policy, protocol, best practices, or the law, or any directive of the Pennsylvania Secretary of State, are not repeated in future elections," Pascal argues on behalf of now-former Board of Elections members Craig E. Adams, Martha H. Breene and the one Democratic appointee, the county's former Democratic Party chair, Eleanora M. Miller.

The motion was filed on December 2nd. There has not yet been a response from the court. The judge may decline to entertain the motion entirely. Further investigation of the disturbing initial findings of the computer scientists, including plans, as referenced by Pascal in his motion, for interviews and depositions to help determine, among other things, who was accessing Venango County's election system, in apparent violation of Pennsylvania state law, may hang in the balance.

But whether Lobaugh --- a Republican judge, elected with the help of party chair Breene --- overturns his own decision or not, at this late date, may turn out to be a moot issue. Statutorily, the specially

appointed Board of Elections may only serve "until 11:59 PM on December 31, 2011," according to VotePA. Even if the Board were re-instated by the judge, Kuznik tells us, it may well be too late to issue subpoenas and carry out depositions and other investigative interviews before the clock runs out at the end of the year.

And we're reminded again of the exasperated comments of Breene, the now-former Venango County Board of Elections member and the local Republican Party chair, who remains furious about it all. The entire fine mess, once again, "demonstrates why the Voting Machines just cannot be trusted, compared to paper ballots."

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