



ILLINOIS BALLOT INTEGRITY PROJECT

www.ballot-integrity.org

SEQUOIA VOTING SYSTEMS
SHOULD NOT BE CERTIFIED BY
THE ILLINOIS STATE BOARD OF
ELECTIONS

Sequoia Optech Insight Optical Scanners, AVC Edge Touch Screen Voting Machines, VeriVote Printers and WinEDS Software do not comply with HAVA, FEC 2002 Voting Systems and Standards or the Illinois State Election Code

October 16, 2005

For further information concerning this document, please contact:

Lawrence J. Quick
Chairperson
Illinois Ballot Integrity Project
PMB 191 – 2112 Galena Blvd
Aurora IL 60506
(630) 460-0857
quickinfo@qnc.us

Robert A. Wilson
Chairperson, Suburban Cook County Chapter
Illinois Ballot Integrity Project
635 Chicago Ave – Suite 127
Evanston IL 60202
(847) 644-2654
bob@protectthevote.us

SEQUOIA SYTEMS ARE NOT COMPLIANT WITH 2002 VOTING SYSTEMS AND STANDARDS

Introduction

On July 12, 2005, Suburban Cook County entered into a contract with Sequoia Voting Systems, based in Oakland, California, for the purchase of 2,450 Sequoia Insight Optical Scan units and 3,000 000 Sequoia AVC Edge Touch Screen units with VeriVote Printers and associated accessories, maintenance and warranty services. Similarly, on August 11, 2005, the City of Chicago executed a contract with Sequoia to purchase 2,950 each of the Optech Insight optical scanners and the Sequoia AVC Edge Direct Recording Electronic (DRE) voting machines with VeriVote printer, for use in its 2,709 precincts.

The County is seeking federal grants to purchase systems, including card activators, memory devices, workstations, servers, modems, routers tabulation and communications software and associated peripheral equipment from Sequoia for approximately \$23.8 million (including capital costs and maintenance/warranty agreements). The City of Chicago contract calls for the expenditure of some \$26.6 million under basically the same terms and conditions.

The contracts provide in pertinent part:

“Additionally, the Help America Vote Act of 2002 has established requirements that any election system must meet before it can be considered for purchase. Contract(or) *sic* warrants that any election equipment furnished pursuant to this Contract shall meet the provisions of HAVA.” (*Part III, Special Conditions, 1. Certification*)

As of October, 2005, **no** Sequoia systems have been certified by the National Association of State Election Directors (NASED) as compliant with the 2002 Voting System Standards as promulgated by the Federal Election Commission (FEC). A copy of the latest available NASED certifications regarding Sequoia equipment and system components is attached as Appendix A and is available online at: <http://www.nased.org/ITA%20Information/NASEDQualifiedVotingSystems12-03-9-05.pdf>

For this and other important reasons set forth below, the Illinois Ballot Integrity Project believes that certification by the Illinois State Board of Elections of any Sequoia Voting Systems hardware, software, operating systems, communications protocol or peripheral devices is both premature and contraindicated under existing Federal Statutes, Rules, Regulations and Policies.

Software Issues

When Diebold's source code was found on an Internet FTP (File Transfer Protocol) site, it was examined by a team of computer scientists who characterized it as “full of holes.” One such expert said that if one of his students had submitted this code as a project, “he would receive an F.” Sequoia has stated that “while Diebold relies on a Microsoft operating system that is well known and understood by computer hackers, Sequoia's AVC Edge runs on a proprietary operating system that is designed solely for the conduct of elections.” The Sequoia website, <http://www.sequoiavote.com> states, “Sequoia's software is proprietary, not sold off-the-shelf and available to anyone, making it much more secure.”

This statement ignores the fact that Sequoia's own computer code showed up on an unguarded FTP site on the Internet in 2004, and is now being studied by several experts. Jeremiah Akin, a Riverside County (California) computer scientist, has discovered a way of writing modifications into the WinEDS ballot management software in such a way that all trace of outside intervention vanishes automatically. “You can change the code, run it, save it and then, when you close down the system and you bring the system back up, all the modifications you made will be rewritten,” Akin said. “The system will set it back to the original code.” <http://www.lacitybeat.com/article.php?id=1013&IssueNum=55>

Further, these claims by Sequoia are at best misleading. Sequoia's statement omits the fact that its WinEDS vote-tallying software – as opposed to the vote-gathering part of the operation – runs on a

Microsoft operating system and uses a Microsoft database. WinEDS is written in a computer language called Visual Basic, which is notorious for its popularity with virus writers and hackers. Visual Basic is specifically prohibited under the Federal Electoral Commission's 2002 voting systems standards; WinEDS, like much of the software in use in computer voting machines in this country, is certified under the pre-Internet age 1990 FEC standards. This distinction is important, because it applies to **all** Sequoia voting system hardware and software, including the Optech Insight Optical Scanner and the central tabulation software as well as that which runs the Sequoia AVC Edge Touch Screen system.

It does not appear that the software used to run the touch screen machines is "proprietary" and "not sold off-the-shelf." According to a 2001 report by Wylie Labs, an independent testing lab that analyzes voting software as part of the federal certification process, the AVC Edge machine has, "at its core," a commercially available operating system called pSOS. Note: Wylie Labs only qualifies the hardware. Either Ciber, Inc. or their counterpart, SysTest Labs, Inc. are the proper entities to qualify the election software. <http://www.nased.org/ITA%20Information/NASEDITAProcess.pdf>

Hardware Issues

Both the Optech Insight Optical Scanner and the AVC Edge DRE have many documented failures. In Palm Beach County, Florida, AVC EdgeTouch Screens froze up, registered incorrect votes. In Hillsborough County, Florida vote data could not be transferred from 24 of the 26 data cartridges to the readers that would transmit the totals to the central office to be tallied. Precinct totals were faxed over and entered by hand. In New Mexico's November, 2002 election, although about 48,000 people had voted early on 212 Sequoia-supplied touch-screen computers at six sites in Bernalillo county, the initial figures given to the commissioners indicated that no race, not even for governor, showed a total of more than about 36,000 votes. The error went undetected for 10 days, when it was noticed by an attorney who had been monitoring the election for one of the candidates. Sequoia admitted that the same error had been encountered in Clark County, Nevada, several weeks earlier, but Sequoia had not informed the election officials in Bernalillo County. And the list goes on and on. A list of documented Sequoia failures compiled by Voters Unite (<http://www.votersunite.org>) runs to some 23 pages and is available here: <http://www.votersunite.org/info/Sequoiainthenews.pdf> A list of more than three dozen news articles concerning failures specifically related to Sequoia systems is attached as Appendix B.

The Sequoia Edge DRE Paper Record Is Not Compliant With The Illinois Election Code

The Illinois Election Code requires a conveniently verifiable paper record of the voter's choice(s), and this is required of all ballots so that they can be "easily reviewed by the voter for completeness and accuracy." The paper record that is printed by the Sequoia AVC Edge touch-screen system includes a barcode which theoretically represents the voter's choices. However, the barcode cannot be "easily reviewed by the voter for completeness and accuracy," thus the current Sequoia AVC Edge configuration fails to comply with the Illinois Election Code (10 ILCS 24/C-2) (See Appendix B)

The Optech Insight Optical Scanner is Obsolete

The Sequoia Optech Insight optical scanning system is considered by some experts to be obsolete technology. The latest (and we believe best) optical scanners are those that produce a digital image of each and every ballot which can be more easily examined by auditors and the public to insure accuracy and transparency.

A digital image scanner creates a picture of the image, which it stores. Because so many of us use digital cameras, most of us understand what a digital image is. There is not a generally-agreed-upon term for the opposite -- a scanner which cannot make a picture, but instead interprets information directly off the ballot.

The new digital image scanners essentially create photocopies of each and every ballot. Older optical scan styles capture an array that is too sparse to form an image. Instead of capturing a picture, the older versions interpret patterns as the ballot feeds through the machine.

The key difference between the digital image scanner and the older optical scan machines is that the digital image scanner stores the raw data itself, in the form of a picture of the ballots, whereas the traditional optical scan machines do not retain any raw data, and cannot capture an image with sufficient precision to produce a picture.

Another advantage of digital image scanners is that they contribute to election process transparency. Digital images of each ballot - precise pictures of the ballot - can be obtained by news reporters, candidates, and ordinary citizens through public records. The public should be able to request the images on CD and examine precise, high-resolution images of each ballot on home computers with the use of open-source software.

Sequoia currently offers only the older, less technologically advanced ballot scanners. The Sequoia Optech Insight ballot scanner only captures an array of lines on the ballot, and interprets them as votes *if* they appear in the right places. The newer technology, certified digital imaging systems are made by Diebold and Hart Intercivic, and are currently in use in several election jurisdictions.

Of the more than \$50 million expenditure contemplated by Cook County and the City of Chicago, more than \$21 million is allocated for the purchase of obsolete technology represented by the 5,400 Optech Insight Optical Scanners.

Conclusion

- Sequoia Voting System components have a long and well-documented history of hardware, software and communications failures.
- Sequoia Voting System components, including hardware (particularly the AVC Edge Touch Screen unit and the Optech Insight Optical Scanner) and software (particularly WinEDS) do not comply with 2002 HAVA, FEC, NASED or EAC (Election Assistance Commission) Voting System Standards.
- Sequoia Voting System components, particularly the VeriVote printed output, fail to conform to the statutory requirements of the Illinois Election Code.
- The Sequoia Optech Optical scanning unit utilizes obsolete technology which fails to meet the stated objectives of ballot processing transparency and represents a potential large expenditure for outmoded, outdated voting equipment.

For these reasons, as more fully explicated above, the Illinois Board of Elections should, in the public interest, deny provisional and/or permanent certification of any and all Sequoia Voting Systems components.



NASED Qualified Voting Systems
12/05/03 - Current

Sequoia	AVC Advantage DRE		AVC Advantage DRE Firmware version 7.00F	N010201 (1990)	3/28/1997
Sequoia	WinEDS version 2.6 Build 220	WinEDS ver. 2.6 (220)	AVC Edge DRE Touchscreen Firmware version 4.0	N03070026220 (1990)	7/25/2002
Sequoia	EMS/AERO version 3.54	EMS/AERO version 3.54	Insight Optical Ballot Reader ver. HPX.K/K1.38, APX.K2.04 Eagle Optical Ballot Reader ver. HPS.D/H1.30 Optech 4C Central Office Ballot Counter ver. WinETP 1.02B	N03070000354 (1990)	10/31/2002



NASED Qualified Voting Systems
12/05/03 - Current

Sequoia	EMS/AERO version 3.54.1	EMS/AERO version 3.54.1 Optech Ballot Wizard version 1.0 (2002) Host version 1.04 MPR version 2.15	Optech 3P Eagle APS.H1.52.980428.1040 CPS.H1.08A.980428.1150 HPS.D/H1.30.980428.1130 Optech Insight APX K2.06.021108.1600 CPX.J/K1.12.020412.1100 HPX.K/K1.40.021030.1110 Optech 400-C Ballot Counter WinETP 1.10.5 (2002)	N-1-07-12-12-001 (1990)	2/1/2005
Sequoia	WinEDS version 3.0	Workstation Client Software .99 Database Server Software .99 Report Server Software 1.02 (2002)	Sequoia 400C Scanner/Tabulator, Firmware version 1.02b Sequoia Card Activator, Model 4.1 Sequoia Card Activator, Model 4.32 Sequoia Cartridge Reader/Writer AVC Edge DRE Touchscreen Model 3.1 Firmware version 4.1D	N-1-07-22-11-001 (1990)	8/18/2003
Sequoia	WinEDS version 3.0	Workstation Client Software .99 Database Server Software .99 Report Server Software 1.02 (2002)	AVC Edge DRE Touchscreen Firmware version 4.1J/K	N-1-07-22-11-002 (1990)	9/25/2003 10/23/2003
Sequoia	WinEDS version 3.0	Workstation Client Software .99 Database Server Software .99 Report Server Software 1.02 (2002)	AVC Edge DRE Touchscreen Firmware version 4.2	N-1-07-22-11-003 (1990)	10/9/2003



NASED Qualified Voting Systems
12/05/03 - Current

Sequoia	WinEDS version 3.0.132	WinEDS version 3.0.132 (2002)	Optech 400C Scanner/Tabulator version 1.02b Sequoia AVC Edge, Model I version 4.2 Sequoia AVC Edge, Model II version 4.2 Sequoia AVC Advantage, firmware 8.00B Sequoia Card Activators, Rev. E version 4.32 Sequoia Cartridge Reader/Writer	N-1-07-22-11-004 (1990)	7/16/2004
Sequoia	WinEDS version 3.0.134	WinEDS version 3.0.134 (2002)	Sequoia (Optech) 400C Scanner/Tabulator, Firmware version 1.02b Sequoia AVC Edge Model II version 4.2a Sequoia AVC Edge Model I version 4.10 Sequoia AVC Edge Model I version 4.2a Sequoia AVC Advantage, version 9.00G Sequoia AVC Advantage, version 8.00B	N-1-07-22-11-005 (1990)	9/3/2004



NASED Qualified Voting Systems
12/05/03 - Current

Sequoia	WinEDS version 3.0.134	WinEDS version 3.0.134 (2002)	Sequoia (Optech) 400C Scanner/Tabulator, Firmware version 1.02b Sequoia AVC Edge Model II version 4.2a, & 4.3.320 w. VeriVote Printer# Sequoia AVC Edge Model I version 4.10, 4.2a, & 4.3.307 Sequoia AVC Advantage, version 9.00G Sequoia AVC Advantage, version 8.00B	N-1-07-22-11-006 (1990)	10/20/2004
Sequoia	WinEDS version 3.0.134	WinEDS version 3.0.134 (2002)	Sequoia 400C /WinETP 1.10.5 Sequoia AVC Edge Model II version 4.3.320 w. VeriVote Printer# Sequoia AVC Edge Model I version 4.3.320	N-1-07-22-11-007 (1990)	5/19/2005

SEQUOIA VOTING SYSTEMS IN THE NEWS

Here is a partial listing of news articles detailing problems with **Sequoia** Hardware, Software and Communications:

Touch to Vote: More Americans to Vote on Electronic, Touch-Screen Systems in November. ABC News. July 18, 2004. http://www.abcnews.go.com/sections/WNT/Politics/e-voting_040718-2.html

Clark County's Vote: How Secure Is It? Nevada Journal. August, 1998. By Lois Gross. <http://nj.npri.org/nj98/08/democracy.htm>

Electronic voting's hidden perils. Mercury News. February 1, 2004. By Elise Ackerman. http://www.mercurynews.com/mld/mercurynews/news/special_packages/election2004/7849090.htm

Out of Touch: You press the screen. The machine tells you that your vote has been counted. But how can you be sure? New Times; April 24, 2003; By Wyatt Olson. <http://www.newtimesbpb.com/issues/2003-04-24/feature.html/2/index.html>

Out of Touch. <http://www.newtimesbpb.com/issues/2003-04-24/feature.html/3/index.html>

Exec's indictment hits Oakland vote firm. Ballotpaper.org. July 12, 2004. <http://www.ballotpaper.org/archives/000525.html>

Human goofs, not machines, drag vote tally into next day
The Palm Beach Post, 14 March 2002; reported in "Black Box Voting" Chapter 2 by Bev Harris
<http://www.blackboxvoting.org/>

Officials still searching for election glitch: The new system could not send the tabulations to the elections office. St. Petersburg Times; April 6, 2002; By Jeff Testerman, Times Staff Writer
http://www.sptimes.com/2002/04/06/Hillsborough/Officials_still_searc.shtml

Election results certified after software blamed. Albuquerque Tribune; November 19, 2002; By Frank Zoretich, Tribune Reporter
http://www.abqtrib.com/archives/news02/111902_news_vote.shtml

Elections Chief Sees Nearly Flawless Vote. St. Petersburg Times. March 5, 2003. By Kathryn Wexler, Staff Writer. <http://www.sequoiavote.com/article.php?id=43>

E-Vote Software Leaked Online. Wired News; October 29, 2003; By Kim Zetter. <http://www.wired.com/news/privacy/0,1848,61014,00.html>

County's voting troubles spur changes nationwide. Seattle Times. January 29, 2003 by Emily Heffter, Times Snohomish County bureau. Archived at <http://www.votersunite.org/article.asp?id=5276>

Blind voters rip e-machines: They say defects thwart goal of enfranchising sight-impaired
Mercury News; May 15, 2004; By Elise Ackerman. Archived at
<http://www.verifiedvotingfoundation.org/article.php?id=2102>

Lost E-Votes Could Flip Napa Race. Wired News; March 15, 2004; By Kim Zetter. <http://www.wired.com/news/evote/0,2645,62655,00.html>

20 E-Vote Snafu in California County. Wired News; March 18, 2004; By Kim Zetter. <http://www.wired.com/news/evote/0,2645,62721,00.html>

Company denies problem with voting program. Clovis News Journal. June 3, 2004. By Jack King: CNJ Staff Writer-<http://cnjonline.com/engine.pl?station=clovis&template=storyfull.html&id=6358>

Montville and Chatham mayors ousted. Star-Ledger. June 9, 2004. By Lawrence Ragonese and Kristen Alloway.
<http://www.nj.com/elections/ledger/index.ssf?/base/news-3/108676553355551.xml> (paid archives)

Lawmakers cut e-voting's paper trail: Manufacturers demonstrating new printers in Nevada were embarrassed when machine failed to recognize votes. Tri-Valley Herald. August 13, 2004. By Ian Hoffman, Staff Writer. Reproduced at: <http://www.votersunite.org/article.asp?id=2512>

Wrong Time for an E-Vote Glitch. Wired News. August 12, 2004. By Kim Zetter.
http://www.wired.com/news/evote/0,2645,64569,00.html?tw=wn_tophead_2

245 Hillsborough primary votes go uncounted. St. Petersburg Times. September 18, 2004. By Jeff Testerman, Times Staff Writer.
http://www.sptimes.com/2004/09/18/Hillsborough/245_Hillsborough_prim.shtml

Reminder on Election Day - this is not a test. St Petersburg Times. September 21, 2004. By Howard Troxler, Times Columnist. http://www.sptimes.com/2004/09/21/Columns/Reminder_on_Election_.shtml

Software Glitch Delayed Release of Results. Eyewitness News. KLASTV. September 8. Colleen May, Anchor. <http://www.klas-tv.com/Global/story.asp?S=2276229&nav=168XQi9D>

E-voting vent: You can't tell if it worked. Seattle Times. September 20, 2004. By Paul Andrews.
http://seattletimes.nwsources.com/html/businesstechnology/2002040563_paul20.html

Voting mystery stirs call for paper trail. St. Petersburg Times. October 4, 2004. By Jeff Testerman, Times Staff Writer. http://www.sptimes.com/2004/10/04/Tampabay/Voting_mystery_stirs_.shtml

20 voting machines broke down. Everett Herald. October 6, 2004. By Jerry Cornfield, Herald Writer.
http://www.heraldnet.com/stories/04/10/06/loc_voting001.cfm

Glitches, lines hamper early voting. Palm Beach Post. October 19, 2004. By John Murawski, Palm Beach Post Staff Writer. <http://www.palmbeachpost.com/business/content/news/feeds/1019vote.html>

Early balloting continues in Palm Beach County, and so do voters' gripes. South Florida Sun-Sentinel. October 20, 2004. By Anthony Man.
<http://www.votersunite.org/article.asp?id=3298>; <http://www.sun-sentinel.com/news/local/palmbeach/sfl-pvoter20oct20,0,7789937.story?coll=sfla-news-palm>

Absentee ballots 'lost' at printer. Rocky Mountain News. October 20, 2004. By Gabrielle Crist.
http://rockymountainnews.com/drmn/election/article/0,1299,DRMN_36_3267080,00.html

Some Voters Say Machines Failed, Incorrect Choices Appear on Screens. Albuquerque Journal. October 22, 2004. By Jim Ludwick, Journal Staff Writer.
<http://www.abqjournal.com/elex/246845elex10-22-04.htm>

County clerk say phantom votes won't be a problem. KRQE Albuquerque. October 26, 2004.
http://www.krqe.com/expanded3.asp?RECORD_KEY%5BLargeHeadline%5D=ID&ID%5BLargeHeadline%5D=7425

Questions remain about touchscreen voting machines. Seattle Times. November 1, 2004. By Paul Andrews. http://seattletimes.nwsources.com/html/business/technology/2002078349_paul01.html

Voting machines check out perfectly. (Not) Cibola County Beacon Online. <http://www.cibolabeacon.com/articles/2004/10/30/news/news3.txt>

Concerns rise on early voting. The Rio Rancho Observer. October 26, 2004. By Eric Maddy, Observer staff writer. <http://www.observer-online.com/articles/2004/10/26/news/story2.txt>

Summary Report on New Mexico State Election Data. December 12, 2004. by Ellen Theisen and Warren Stewart. <http://www.votersunite.org/info/NewMexico2004ElectionDataReport-v2.pdf>

Scattered reports of voters being blocked and machine malfunctions. November 2, 2004. KING5 News. http://www.king5.com/topstories/stories/NW_110204ELBelectronicvotingproblemsLJ.1aac5fda.html

E-voting problems reported as election gets under way. IDG News Service. November 2, 2004. By Paul Roberts, IDG News Service, Boston Bureau. <http://www.itworld.com/Tech/2987/041102evoteprobs/>

'Lowdown tricks' sap poll-watcher's faith in fair U.S. voting. The Oregonian. November 23, 2004. By Margie Boulé. http://www.oregonlive.com/news/oregonian/margie_boule/index.ssf?/base/living/1101215142230890.xml

Missing votes found in machines. Elko Daily Free Press. December 8, 2004. By Dave Woodson, Staff Writer. <http://www.votersunite.org/article.asp?id=4147>