Electronic Voting Machine Information Sheet

Sequoia Voting Systems — AVC Advantage

Name / Model: AVC / Advantage[1]
Vendor: Sequoia Voting Systems, Inc.
Federally-Qualified Voter-Verified Paper Audit Trail Capability: None.



Brief Description: The AVC Advantage is a poll worker-activated full-face direct recording electronic voting system with a touch-sensitive matrix of switches that voters push to indicate their choices. Voting records are recorded internally to battery-powered RAM. Poll workers activate the machine using an operator panel on the side of the machine to choose the ballot style and voters make choices by touching a black arrow next to their choice. A record of the vote is then recorded internally to three sets of battery-powered RAM memory. When polls are closed, poll workers remove a cartridge of battery-powered RAM that contains the vote records from each machine. These cartridges are then either physically transported to a tabulation facility or their contents transmitted over modem.

Detailed Voting Process: The voter enters the precinct and is given a voting ticket after confirming that the voter is registered. The voting ticket is a colored piece of paper with two identical and unique numbers.[2] The voter hands their ticket to a poll worker operating an Advantage voting machine and then tears the voting ticket in half and hands one half back to the voter. The poll worker uses an operator's panel on the side of the machine to choose the ballot style appropriate for that voter depending on the color of their voting ticket.[3] The voter enters the curtains (see picture above) and verifies that their ballot is the right one by comparing the color of their ticket to a LCD screen in the lower-right corner

---

[1] http://www.sequoiavote.com/productguide.php?product=AVC%20Advantage&type=Introduction

[2] The two numbers on the ticket are not tied in anyway to the voter other than ballot style.

[3] The color of the voting ticket is used to specify the precinct or party (in a partisan primary) for which the voter is permitted to cast votes. For a particular ballot style, voters cannot vote for a race or party in which they are not allowed to vote (the choices for those races are disabled and cannot be selected).

of the front of the voting machine. Then the voter votes by pressing a black arrow next to each choice in each race on the ballot. Blinking lights above each race indicate that no choice has been made in that race. If the voter tries to choose more than one choice in a given race (over-voting), the machine will ignore the second choice. If the voter makes a mistake, they can press the black arrow by the incorrect choice to deselect it, then they can select the correct choice.

When done voting, the voter presses a "Cast Vote" button in the lower-right corner of the voting machine. It is very important that the voter does not push the vote-casting button until they are done voting; a vote inadvertently cast can likely not be redone.[4] The vote is recorded internally to three sets of battery-powered RAM, one of which is on a removable cartridge.[5] The vote records are stored in a manner similar to a ballot image.[6] When the polls close, poll workers remove cartridges of battery-powered RAM containing the vote records from each machine. At this point, depending on local election procedure and regulations, the cartridges can either be physically transported to a tabulation facility or they can be sent over a modem. At the tabulation facility, the votes from all cartridges and precincts are read into vote tabulation databases and combined to result in an aggregate vote tally. In order to send vote records over a modem, a cartridge reader must read out each cartridge and then a modem in the cartridge reader can be used to transmit the votes over telephone lines. The cartridge reader can also print out a results tape of all votes cast in a precinct. The total tape and cartridges can then become part of the official record of the election.[7]

Past Problems

May 2006: *New Jersey.* Questions about how many voters participated in the May 2 elections caused several candidates to question results regarding runoffs and vote counts. The Trenton City Clerk said he had contacted the vendor, Sequoia some two months prior but had not heard back.[8]

November 2004: *Louisiana.* State election officials received about 200 complaints of problems with machines, including two confirmed reports of Sequoia AVC Advantage voting machines in New Orleans Parish that were not working, according to Scott Madere, press secretary for the Louisiana Secretary of State.[9]

---

[4] This can depend on local election law, procedures and regulations.
[5] This is Random Access Memory (RAM) and needs electricity – from a battery – to keep votes in storage. An event log, maintenance log and audit log is also stored on the memory pack.
[6] Specifically, the AVC Advantage's interface is a switch matrix. That is, the screen can be thought of as a grid with rows and columns and it is the grid position of each choice that is recorded for each race. The votes are stored as strings (ASCII characters; for example, "A9,B2,…").
[7] Vote records can be re-read off of the redundant memory in the Advantage if a cartridge fails.
[8] Id.
[9] Id.

Electronic Voting Machine Information Sheet

November 2004: *New Mexico.* Presidential undervote rates (ballots without a vote for president) were greater for ballots cast on the Advantage than those cast on any other type of system used on Election Day. One in every 19 ballots cast on Advantage machines did not register a vote for president.[10]

June 2004: *New Jersey.* In Morris County, a glitch with the voting machines left the results of the election unknown. A back-up system also malfunctioned.[11]

March 1997: *Nevada.* In Clark County (Las Vegas), numerous problems occurred from "poll workers miscalculating the number of names on voting rosters, voters who said they accidentally pushed the wrong buttons, and … unrecorded voters who huffed away from polls without casting ballots."[12]

NASED Qualification Status:[13]
03/28/1997: AVC Advantage DRE Firmware version 7.00F
07/16/2004: AVC Advantage DRE Firmware version 8.00B
09/03/04: Sequoia AVC Advantage, Ver. 9.00G, Ver. 8.00B
10/20/04: Sequoia AVC Advantage, Ver. 9.00G, Ver. 8.00B

---

[10] Id.
[11] "Kinnelon results unknown as voting machine, computer fail." THE RECORD (BERGEN COUNTY, NJ). June 9, 2004.
[12] "Election glitches admitted." LAS VEGAS REVIEW-JOURNAL. March 5, 1997.
[13] Note: the AVC Advantage hardware has never been qualified against either the FEC's 1990 or 2001 Voting System Standards. The Advantage has been in use for many decades and its use has been "grandfathered" in the meantime. See: *NASED Qualified Voting Systems (11/18/05).* National Association of State Election Directors. See: http://www.nased.org/certification.htm.