# Three Major Problems with the LibertyVote DRE Voter Verified Paper Audit Trail

New York State requires that DRE style voting machines "produce and retain a voter verified permanent paper record which shall be presented to the voter." The LibertyVote DRE currently under consideration in New York State uses a Voter Verified Paper Audit Trail (VVPAT) which has three major usability flaws which make it effectively unusable by voters, and therefore unable to meet the requirements of New York State law.

Problem 1 – VVPAT Window is too Small
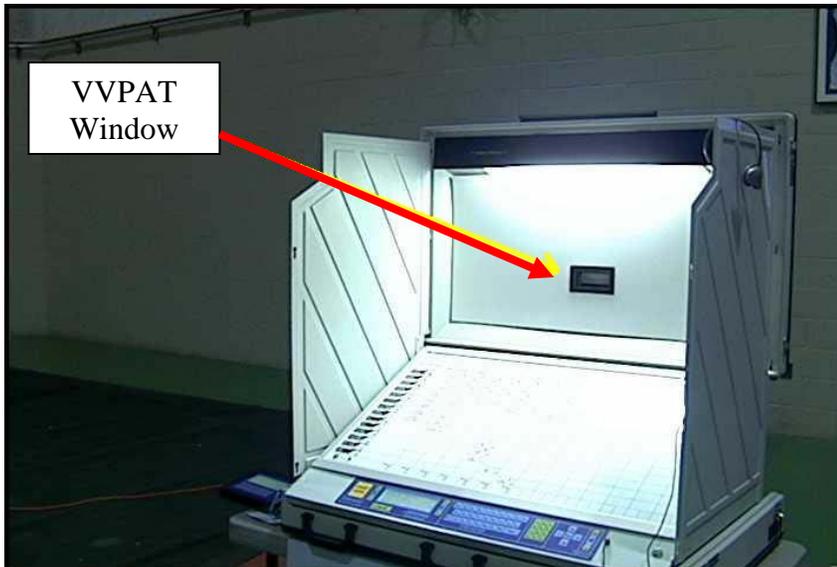
The LibertyVote DRE creates a paper audit trail displayed in a window approximately 3″ wide and 1″ tall.

The voter is unable to review the entire contents of the VVPAT at any time.

The VVPAT window, located on the rear surface of the DRE, displays only a single ballot choice as each selection or de-selection is made by the voter.

In addition, the extremely small size of the VVPAT window, and its distance from the voter, makes it extremely difficult to read.

This increases the probability that the paper audit trail will not be reviewed by the voter.

This by itself is a serious usability issue, but there are other, even more serious problems with the design of the LibertyVote VVPAT.

Photo showing size of the VVPAT window relative to a person.

LibertyVote DRE photos taken at Hudson Valley Community College, on 3/20/06

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Display After Voter Makes a Selection

The VVPAT window, located on the rear surface of the DRE, displays only a single ballot choice as each selection or de-selection is made by the voter.
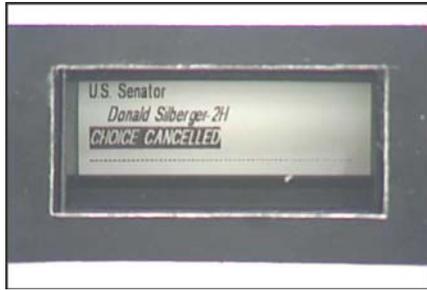
Display After Voter Cancels a Selection

If the voter changes his mind and deselects that choice, the name is displayed in italics with the words CHOICE CANCELLED printed below the name.

But since the voter can never see the entire VVPAT, there is no way to compare the single line item to other items that occurred earlier.

Display of only a single choice at a time is a serious usability issue. The lack of full context is confusing and the order that the voter's choices were selected and deselected is not clear.

This single item display leaves voters with no way to know what has already been printed on the VVPAT, and does not allow the voter to review and verify the full contents of the VVPAT.

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Problem 3 – VVPAT Review Screen is Unusable

IMAGE ID: 0000CAF0

------------- FINAL SUMMARY ---------------
2A,4A,5A,6A,7A,8A,9A,10A,11A,12A,
13A,14A,15A,16A,17A,18A,19A,20A,21A,22A,
23A,24A,25A,Q5Y,
Summary Checksum: c52c
------------- End of final summary -----------
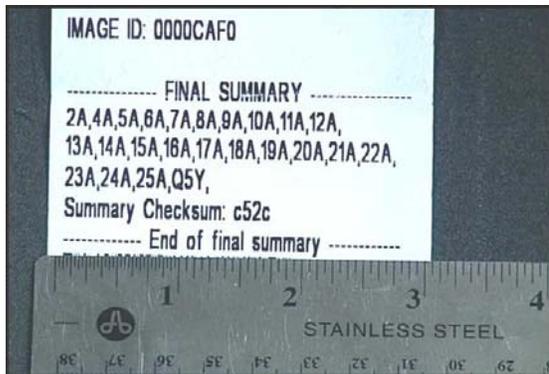
The tiny size of the LibertyVote VVPAT window does not allow voters to review the entire ballot at one time, so a method of allowing voters to review their choices must be provided.

To provide this essential function, the LibertyVote VVPAT displays a "Final Summary" an example of which is shown at the left.

Note that this 'review screen' does not contain any human-readable text, but only *a series of symbols that the voter must interpret* in order to know which choices it represents.

The symbols printed on the VVPAT summary screen correspond to a small symbol printed in each ballot position on the main display.

In this picture we see a LibertyVote DRE with over 200 ballot positions. Each square, or ballot position, has a small symbol printed in it. The positions in the first column are labeled, moving down: 1A, 1B, 1C, etc. The second column positions are labeled 2A, 2B, 2C, and so on.

In order to review the accuracy of the VVPAT "Final Summary", the voter must find the ballot position which corresponds to each symbol on the printout, noting which candidate is listed there.

Asking a voter to read a tiny printed symbol and then match it to another symbol among 200+ ballot positions is a nearly impossible task, and will lead to the vast majority of voters never reviewing the VVPAT – *it's just too hard to do.*