



★ VIRGINIA ★
DEPARTMENT *of* ELECTIONS

Commonwealth of Virginia Pre-Election Equipment Testing Guidelines

Voting Systems and Electronic Pollbooks

February 2020

Purpose

The purpose of this document is to establish uniform pre-election testing guidelines for voting systems and electronic pollbooks. These guidelines are provided to address the various components and processes involved in the administration of elections.

All voting systems and electronic pollbooks must be certified for use in the Commonwealth of Virginia. Once this system is certified, it can be purchased by the localities for use in elections.

1. Overview of Pre-Election Testing for Voting Systems

Pre-election testing involves testing every ballot style and all components of the voting systems prior to every election (**prior to distribution of any ballots to voters**). The pre-election testing audit trail is the foundation of each election and ensures that the election has been programmed correctly and validated through extensive testing of all components of the systems.

Key components of any test include:

1. Separation of duties
2. Chain of custody
3. Proofing
4. Dual signature sign-off at each level of the testing process.

Document all steps on audit sheets/checklists for recordkeeping.

The test levels are as follows:

1. Programming the election definition file
2. Setting up the voting equipment for each precinct (polling place), central count, and early voting locations
3. Loading the election definition file on each device
4. Opening the election
5. Printing a zero tape on each device
6. Casting a known pattern of votes on each ballot style
7. Closing the election
8. Printing the vote totals tape on each device
9. Comparing the printed vote totals to the expected outcome for each precinct
10. Uploading all totals from all devices to the tabulation reporting computer if you have a tabulator program
11. Printing all reports and comparing to the expected overall outcome for the election.

NOTE: Staffing limitations may require the use of a contractor to program the election definition file. It is recommended that a staff member be in charge of pre-election testing.

The individual(s) that programs the election should not be the only person that conducts the pre-election testing.

Pre-election audit trail should begin with a checklist audit sheet for each voting device, including election date, serial number, and date of test, followed by step-by-step instructions for the tester. Attach to this form the paper tape from the device which has the opening zeros to the printed vote totals at the end of the test.

It is recommended that you follow separation of duties best practices and assign a different person to proof the outcomes of the test to the expected outcome for each device. The individual conducting the test would initial and date each form; and likewise the individual proofing the outcome would do the same.

If you have a Tabulation Reporting Program, the next step of the pre-election test is to upload all of the media devices to the Tabulation Reporting Computer. Cumulative reports should be printed and proofed to the overall expected outcome. Again, the individual who is proofing the overall outcome should not be the same person that programmed the election and/or conducted the equipment test.

The final step is to clear the test election from all voting devices and the Tabulation Reporting Computer. (Some voting systems and tabulation reporting programs have a separate Logic and Accuracy (L&A) selection for this process. With this type of system there are no test election files to clear, but in the reporting program after L&A you must select the live Election and confirm "0" votes are in the live Election. Other systems will require you to upload the live Election after L&A and some will require you, after the L&A to clear the votes from the media device and install the media device in the voting device to be prepared for election day.)

Finally, secure all marked TEST ballots in a sealed container marked TEST BALLOTS. Secure and archive all audit documentation relating to the pre-election test.

All devices can then be locked and sealed with numbered seals ready to deliver to polling places.

The Registrar, or designee, shall complete and submit the electronic version of [ELECT-633/SBE-633, Voting Equipment Testing & Programming Certification](#) to the Virginia Department of Elections prior to every election.

1.1. Recommended Step-by-Step Procedures for Logic and Accuracy Testing

1. Assemble the ballot box and attach the scanner unit:
 - a. Plug the scanner into an AC outlet
 - b. Check the ballot bin to ensure it is cleared of any ballots or other materials

2. If a Test Deck is not provided, mark a predetermined number of ballots:
 - a. A 1-2-3 pattern may be used
 - i. For each office on the ballot, the first candidate receives one vote, the second candidate receives two votes, and the third candidate receives three votes, etc.
 - b. One or more blank ballots are scanned. Mark each of these ballots as "BLANK" in the header card area
 - c. One or more "under-voted" ballots are scanned. Mark each of these ballots as "UNDER-VOTE" in the header card area
 - d. One or more "over-voted" ballots are scanned. Mark each of these ballots as "OVER-VOTE" in the header card area
 - e. Mark ADA ballots (some systems have an automated system where you can choose your pattern Vote 1, Vote 1-2, Vote 1-2-3 and it automatically prints the ballots) voting the ADA manually, vote expectations must be written down i.e. Vote 1st position on each contest, vote for write-in, etc.

NOTE: All ADA machines must be tested for ballot styles, precincts, audio, visual, etc. all capabilities of the machine must be tested. We recommend that one set up the ADA units to accept all ballot styles in the locality since they are a marking device, not a tabulating device.

- f. Use a tally sheet to determine the votes for each candidate, write-in, over-vote and under-vote
3. Loading the Election Media:
 - a. Insert the election media and power up the tabulator as described in the vendor instructions
 - b. Verify and record the firmware version number on the audit sheet
 - c. Always run a calibration or diagnostics test on each scanner and/or touch screen prior to scanning ballots
4. Open the Polls and Scan Ballots
 - a. Open Poll (Select Logic & Accuracy Testing for systems with this choice)
 - i. The scanner will print a zero totals tape, keep that tape on the scanner until the end of testing
 - ii. Verify election and precinct information
 - iii. Verify date and time
 - iv. Confirm all contest votes are "0"
 - v. Verify number of signature lines
 - b. Insert the test deck of ballots into the scanner one at a time, including ADA marked ballots
 - i. Test different orientations (right side up, face down, head first, bottom first)
 - ii. Test query for over-vote, under-vote, blank ballot, multiple ballots

- iii. Monitor the public count to insure it increases by one for each ballot inserted
5. Close the Polls
 - a. Close Polls
 - i. The results total tape will print, then tear the tape from the scanner and attach it to the audit form
 - ii. The team member performing the test should initial the audit form
 - b. Check the date and time for accuracy and make any changes necessary
 - i. The results totals tape will print and after that tear the tape from the scanner and attached to the audit form
 - ii. The team member performing the test should initial the form
 6. Verification of scanner test
 - a. Verify results by comparing the test deck results to the expected results
 - i. If the results match, the team member verifying the results should initial the audit form.
 - ii. If the results do not match, review the test ballots for errors, count the ballots to make sure all ballots are accounted for from each scanner, if you cannot resolve the discrepancy then zero the totals from the scanner and repeat the test steps.
 - iii. If the results do not match after the second test, contact the person who programmed the election.

If you have a Tabulation Reporting Program follow the steps in section 7, if not proceed to section 8, 9 and 10:

7. Upload the media devices from the scanners into the Tabulation Reporting Computer
 - a. Print a "Zero Report" from the test election database in the Tabulation Reporting Center
 - b. Upload media devices from all scanner units to the Tabulation Reporting Computer
 - c. Verify the cumulative results for all races in all contests to the overall expected results
 - d. Confirm the number of undervotes and overvotes to the expected number
 - e. The team member verifying the cumulative results should not be the same person that programmed the election.
8. Securing Equipment after verified results
 - a. Close and lock each scanner
 - b. Remove all test ballots from the ballot box/container
 - c. Seal equipment with numbered seal
 - d. Record numbered seal on Logic and Accuracy Test Audit Form
 - e. Verify numbered seal at the precinct from the list provided by the GR
 - f. The sealed voting equipment and keys must remain in the custody of the electoral board pending delivery to the polling place

9. Deletion of pre-election test election once reset to zero
 - a. Verify the deletion of the test election file and results from all scanner devices. Confirm the deletion by initialing each audit sheet
 - b. Verify the deletion of the test election database in the Tabulation Reporting Computer (if you have a computer tabulation reporting program). Confirm the deletion by initialing the audit sheet
10. Audit Trail
 - a. Document test process on Logic and Accuracy Test Audit Form
 - b. Document results on tape
 - c. If a printed Test Deck is not used, on each official ballot used for testing:
 - i. Write **TEST** and initial on each ballot (in the header area)
 - ii. Strike through and initial the Electoral Board Seal on the back of the ballot

Save this documentation for the life cycle (period of time required to keep the records) of the election.

IMPORTANT: Store all audit forms for each component of the voting systems used in the election in a separate file folder.

1.2. Summary

The voting system pre-election test is designed to:

1. Fully test the programming of each election
2. Validate that votes for each candidate on each ballot style are counted correctly
3. Ensure that final cumulative results are distributed and counted correctly for all candidates within all precincts and districts

In reality, it is a “simulated” election using all ballots in all precincts in a predetermined test pattern, using **all** equipment to be deployed in the election, and ending in a “simulated” election night scenario of uploading all media devices and printing cumulative reports.

The documentation from the pre-election test is considered as proof that the election has been programmed correctly and that all equipment has been tested prior to deployment.

REFERENCES:

- Virginia Department of Elections, the Handbook, Chapter 4, Voting Equipment, Section 4.5, June 2019
- Virginia Election Law Sections 24.2-632 and 24.2-633
- Examples of Logic & Accuracy Audit forms

2. Overview for Electronic Pollbooks

Pre-election testing for electronic pollbooks is a two-step process. The first step relates to the hardware device(s). The second step includes the download of voter registration files and/or ballot identification data and confirmation of its accuracy.

Key components of any test include:

1. Separation of duties
2. Chain of custody
3. Proofing
4. Dual signature sign-off at each level of the testing process.

Develop checklists and/or audit forms for all steps in preparing the pollbooks for use on Election Day; keep these audit forms for recordkeeping.

Examples of steps in the pre-election test are:

1. Confirmation of contents of Precinct Pollbook equipment cases
2. Review of pollbook device settings
3. Download of voter data
4. Merging of ballot identification data to voter precinct/split-precinct
5. Proofing of voter/ballot ID data
6. Confirmation of election-specific information
7. Confirmation by a person that the EPB has a “Zero” vote count
8. Sealing of equipment cases for delivery to polling places.

NOTE: Staffing limitations may require the use of a contractor to download voter data to the electronic pollbooks. It is recommended that a staff member be in charge of the pre-election testing. The individual(s) that download the voter data should not be the only person(s) that is responsible for verifying the accuracy of the data.

2.1. Recommended Step-by-Step Procedures for Pre-Election Testing

1. Organize equipment by precinct and number of devices
 - a. Confirm that precinct ID tags are correct
 - b. Verify supplies in each case, such as:
 - i. Power cords
 - ii. ID tray
 - iii. USB power adapter
 - iv. Stylus pens
 - v. Printer
 - vi. Printer power cord adapter

- vii. Printer power cord
 - viii. Printer paper roll
 - ix. Cleaning cloth for screen
2. Review device settings
 - a. Confirm software version number
 - b. Confirm pollbook device number
 - c. Confirm correct time
 - d. Confirm wi-fi is “not connected”
 - e. Confirm name of election and election date
 - f. Confirm polling location identifier
 - g. Confirm that camera setting is “on” (to scan ID barcode)
 3. Download of voter data
 - a. Confirm jurisdiction wide voter count via on the screen or through a report provided
 - b. Confirm number of voters in precinct via on the screen or through a report provided
 - c. Confirm when downloading the voter data that the check-in count = zero (0)
 4. Merging of ballot ID to voter data
 - a. Proof the ballot ID to precinct/split-precinct data prior to upload to pollbooks
 - b. Test a designated number of voter names in each precinct/split-precinct to validate correct ballot ID
 5. Preparation of equipment for delivery to polling place
 - a. Confirm battery life is 100%
 - b. Confirm voter check-in count is = zero (0)
 - c. Verify equipment is turned off
 - d. Clean screens
 - e. If applicable, seal the case and record seal number for that precinct

2.2. Summary

The electronic pollbook pre-election test provides audit documentation that each device is in operating order and all components have been packaged for delivery to polling places. If the voter data is provided through a contract vendor, after you download the files from VERIS, any reports or data provided should be proofed by a full-time staff member. Likewise, the ballot style identification to voter districts and precincts must be proofed by a full-time staff member. The signed testing audit forms becomes the office's validation that the voter data has been downloaded correctly and ballot style identification is correct and the equipment is prepared for deployment.

The signed testing audit forms for every pollbook deployed to each precinct becomes the office's validation that the voter data has been downloaded correctly and tested prior to deployment.

Save this documentation for the life cycle (period of time required to keep the records) of each election.

REFERENCES:

- Examples of Pollbook Pre-Election Testing Checklists