LOGIC AND ACCURACY TESTING
ExpressVote (BMD) & DS200
DC BOARD OF ELECTIONS
DUAN JONES
LOGIC AND ACCURACY TESTING

AGENDA

❑ Overview of the Logic and Accuracy Testing Process
❑ Review the Observer Protocol Rules
❑ Review the Testing Guidelines and Regulations
❑ Discuss the equipment requirements
❑ Discuss the scripts and testing for the ExpressVote & DS200 Tabulator
❑ Highlight the safety and security of the equipment, results and documentation
❑ Summarize the Logic and Accuracy Testing Process
OVERVIEW OF LOGIC AND ACCURACY TESTING

- The DC Board of Election (DCBOE) Logic and Accuracy (L&A) process was designed to verify the ballot counting program, prepare voting equipment, and certify that the voting equipment properly reads and tabulates votes before each election. Setting up an election requires the use of DS200 scanners, ExpressVote Ballot Marking Devices (BMDs), and their respective USB memory sticks with the election definition loaded.

- L&A Testing is a collection of pre-election procedures that ensure the equipment properly displays ballots, collects votes, and tabulates results.

- Logic and Accuracy testing of DS200 scanners and ExpressVote units being used for Early Voting must be completed before Election Day.

- Tests are conducted prior to every election and may be observed by members of the public.
L & A Observers must adhere to the following:

▪ Sign the Observer roster when entering the warehouse

▪ Remain in the designated area within the warehouse for observing the L & A process

▪ Maintain a professional manner while observing the process

▪ Observe the L & A process

▪ Ask questions of the supervisor on duty

The L & A Observer may not:

▪ Touch any election material (official records, test ballots, voting equipment or L & A forms)

▪ Interfere in any way with the L & A process

▪ Talk to, question or interrupt the L & A technicians while they are conducting the L & A process

▪ Obstruct the L & A process

▪ Use any video, or still cameras inside the warehouse and in the L & A area while the process is being conducted
TESTING REGULATIONS

Testing is pursuant to regulations that require:

a. Complete testing of the automatic tabulation system

b. Public testing of every unit of voting equipment

c. Verification of the conditions required of the voting equipment

d. Testing by recording test votes from a predetermined script that includes valid votes, overvotes and blank votes. Also, confirming that each candidate and ballot questions can be selected on all voting equipment.
LOGIC AND ACCURACY TESTING

TESTING REGULATIONS

Equipment shall not be approved unless it:

1. Produces the exact count of the predetermined script
2. Rejects all improper votes
3. Meets all test criteria
Testing is performed by a team of approximately 20 testers. Testing each machine can take between 10 and 15 minutes, depending on the number of candidates on the ballot.
EQUIPMENT TESTING

Each technician will test a single polling location at a time. The technician will start with the ExpressVote before moving on to the DS200 scanner. The DS200 will be tested using ExpressVote ballots as well as regular preprinted ballots (test deck).
The following equipment is tested prior to each election:

a. ExpressVote (Ballot Marking Device)
   ➢ Ballot Code Scanner
   ➢ Key Pad
   ➢ Headphones

b. DS200 (Scanner and Vote Tabulator)
ExpressVote (Ballot Marking Device)

The ExpressVote handles the entire marking process, eliminating unclear marks and the need for voter mark interpretation. Voters utilize the touch screen to mark their vote selections, receiving a verifiable paper vote record upon completion. The ExpressVotes are used during Early Voting and Election Day. The voting units are also available to every eligible voter, including those with special needs.

DS200 SCANNER/TABULATOR

The DS200 Scanner is a portable electronic voting system that uses an optical scanner to read marked paper ballots and tally the results. The DS200 also alerts you of any voting errors.
VOTING EQUIPMENT CONFIGURATION

The voting equipment configuration tested during the L&A testing period is the same configuration used during the Early Voting period and on Election Day.
LOGIC AND ACCURACY TESTING

PRE-DETERMINED SCRIPTS

❑ Each unit of voting equipment is tested by recording test votes from a predetermined script, verifying that it is possible to vote for each candidate or each answer to a question on the ballot, and that these votes are tabulated correctly.

❑ The script is created by the DCBOE staff and provided to the technicians for the ExpressVotes.

❑ Equipment shall not be approved unless it produces the exact count of the predetermined script, rejects all improper votes, and meets all other test criteria. If a unit of voting equipment fails L&A testing, it shall not be used in the election and shall be subject to review.
TESTING THE EXPRESSVOTES (BMD)

- Each technician is given the predetermined script, checklist, and security codes for the ExpressVotes and DS200 prior to testing.
- During testing, the checklist is used to ensure that the equipment is properly set up and functioning as expected.

The checklist includes items, but not limited to:
- Checking the AC Power
- Verifying the battery status
- Verifying the latest software version is loaded
- Ensuring the date, time and zones are accurate
TESTING THE EXPRESSVOTES (BMD)

- Technicians then load the Election Qualification Code (EQC) USB to remove the previous election and add the new election codes to the voting unit. This safeguards from any foreign ballots being submitted into the voting units.

- Loading the election definition USB which includes the new election.
After the election definition has been loaded, the predetermined scripts are executed on each machine to begin voting. At the end of the script, the technicians have created several ballots that will be used as a test deck for the DS200 L&A process. A test deck is a stack of sample ballots that are marked and scanned during testing.

As part of the testing, all required components of the voting equipment mandated by the American with Disability Act (“ADA”) are tested to ensure the keypad and headphones are fully functional.
CONCLUSION OF EXPRESSVOTE (BMD) TESTING

Once all ExpressVotes have been tested, the following functions are performed:

- The machines are powered down
- All security compartments are locked using a barrel key
- Tamper seals are applied to the front and side of each door
- The seal numbers are recorded on the checklist
- The checklist is signed and dated by the technician
- The ExpressVotes are moved in one central area under surveillance
Once all ExpressVotes have been completed, the DS200 units are tested.
During the testing, a separate checklist is utilized.

The checklist includes items, but not limited to:
✓ Checking the AC Power and physical damage
✓ Confirm the ballot box inside the unit is empty
✓ Ensure the unit has a backup memory USB

Technicians then load the Election Qualification Code (EQC) USB to remove the previous election and add the new election codes to the voting unit. This safeguards from any foreign ballots being submitted into the voting units.

Loading the election definition USB which includes the new election.

Verifying the information is accurate such as date, time, zone, public count, protected count, power type, battery status and the firmware version.
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TESTING THE DS200

- After confirming that the DS200 system settings are correct, we "OPEN THE POLLS" to begin testing the voting function.

- When the polls are opened, the machine will print out a Zero Totals Report. Before proceeding, the report should show that there are no cast ballots on the machine.

- When the Zero Totals Report is finished, the system will automatically enter "Voting Mode," which will display the Public Count on the screen.

- ExpressVotes test deck ballots, as well as regular paper test deck ballots, are inserted into the appropriate DS200 for each specific location.

- Testing is considered complete when all test decks have been run through the scanner.
CONCLUSION OF DS200 TESTING

Once all DS200 units have been tested and ballots have been cast, the following functions are performed:

- The polls are closed by the pressing the “CLOSE POLL” button on the front of the unit.
- The machines will generate a report with the results. When the report is finished printing, the message “BEGIN MODEM PROCESS” appears.
- The purpose of the modem process is to upload the results of each DS200 to our headquarters via our Certified Private Network.
- The machines are reset once BOE staff has verified the DS200 uploads and our results are approved.
- A zero report is printed to confirm that the count has been reset to zero (0).
CONCLUSION OF DS200 TESTING

➢ Remove all test deck ballots from each unit's bin
➢ All security compartments are locked with a barrel key
➢ Tamper-proof seals are applied to each compartment
➢ The seal numbers are recorded on the checklist
➢ The checklist is signed and dated by the technician
➢ The DS200 are stationed in a central area and are under surveillance cameras
Following the completion of all testing, all documentation is collected and stored in a secure room with restricted access.
SUMMARY

Logic and Accuracy testing is taken very seriously. It’s just one mechanism we use to ensure the integrity of each election.

In general testing includes...

a. Conducting a physical inspection of all equipment
b. Using memory sticks with qualification codes and election codes to setup an election
c. Utilizing pre-determined scripts
d. Testing of the DS200 and the ExpressVotes Units
e. Uploading testing results via our Certified Private Network
f. Securing and preparing the equipment for delivery
g. Storing our equipment under 24x7 surveillance cameras
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