STATE OF NEW JERSEY
DIVISION OF ELECTIONS

**MANDATORY
PRE-ELECTION TESTING PROTOCOLS:
Avante Vote Trakker Voting Machines**

I.   Introduction

It is the legal obligation of each county Commissioner of Registration in the State of New Jersey to prepare all voting machines to be used in an election in a thorough manner that will assure that all votes cast at an election are accurately recorded. Accordingly, the Secretary of State, in her capacity as New Jersey's Chief Election Official, issues the following mandatory Avante Vote Trakker testing protocols.

II.   Technician Qualifications

Only those technicians who have received the seal-use protocol training under the auspices of the Division of Elections are permitted to perform the pre-election testing protocols on the county's voting machines. It is the obligation of the county commissioner of registration to ensure such compliance.

III.   Preventative Maintenance

A.   Requirement – The county Commissioner of Registration must ensure that preventative maintenance is performed on each voting machine every year. Preventative maintenance is a process that tests the voting machine's internal software and hardware and must also be performed in a time frame that does not interfere with the preparations of any upcoming election.

B.   Additional Requirements – In addition to the scheduled preventative maintenance, individual preventative maintenance must be performed following any repairs made to the voting machines during the calendar year. Pre-Election Validation, as more fully explained below, must be performed on the repaired voting machines prior to use in an election.

IV.   Pre-Election Testing Sequence
Ballot styles are tested to ensure that the Avante Vote Trakker's hardware and software will properly perform during an election. These tests will confirm that all critical components of the Avante Vote Trakker are operating properly prior to testing a specific election.

A. **Step One - Ballot Verification**

NOTE: **BALLOT VERIFICATION MUST BE COMPLETED ON EVERY BALLOT STYLE PRIOR TO USE IN EACH ELECTION.**

Ballot Verification is the process by which the technician will test each ballot style to be used in the current election.

1.) County Clerk

The County Clerk's office certifies that all ballot information is correct for the election, including the spelling of candidate names and/or public questions and the candidate order in each contest.

2.) Board of Election

A. **Visual Verification of Candidate Choices**

Using an All District ballot two technicians will manually open each ballot style used in the election and test each position to visually verify that the programming is operating properly.

B. **Step Two – Test Voting**

NOTE: **TEST VOTING MUST BE COMPLETED ON EVERY BALLOT STYLE PRIOR TO USE IN EACH ELECTION.**

Test voting provides for the testing and simulation of an election in the Logic and Accuracy Test mode using the same ballot control logic that will be used to conduct official election voting. Test voting patterns can be an ascending pattern, descending pattern or any combination, but must have each candidate and/or public question listed on the ballot receive at least one vote. No two candidates for the same office or public question options ("yes" or "no") can receive the same number of votes.

When any contest on the ballot contains the same number of candidates, or there is more than one public question on the ballot, a unique voting pattern must be used to allow an opportunity for vote total discrepancies arising from database programming problems to appear. The technician is required to perform "Manual Test Voting" which is further outlined on page 5 of this document.

1.) Illustration of the Two Alternate Test Voting Patterns by use of this following Mock Ballot:

CONTEST 1 (Vote for One)	President
Candidate 1	John Smith
Candidate 2	Peter Jones
Candidate 3	Sarah Edwards
Write-in	
CONTEST 2 (Vote for Two)	Freeholder
Candidate 1	Tim Johnson
Candidate 2	Todd Murphy
Candidate 3	Jane Adams
Candidate 4	Mary Larsen
Write-in	
Write-in	
CONTEST 3 (Vote for One)	Mayor
Candidate 1	William Harrison
Candidate 2	Donna Jackson
Candidate 3	Ronald Morgan
Write-in	
CONTEST 4	Proposal 1
Response	Yes
Response	No

Example # 1-Ascending Test Pattern

This test pattern is developed in the following order:

1. Determine the largest number of candidates in any one contest, including write-ins.

- Contest 1 has four candidates (including Write-ins)
- Contest 2 has six candidates (including Write-ins)
- Contest 3 has four candidates (including Write-ins)
- Contest 4 has two candidates ("Yes" and "No" for public questions or "Skip Choice" are to be treated as "candidates" therefore Contest 4 is considered to have two candidates)

   Result: Contest 2 has the largest number of candidates: six.

2. Assign the number of votes each candidate must receive in each contest, as follows:

- The first candidate in each contest will receive one vote.
- The second candidate in each contest will receive two votes.
- The third candidate in each contest will receive three votes.
- The fourth candidate in each contest will receive four votes.

- The fifth candidate in each contest will receive five votes.
- The sixth candidate in each contest will receive six votes.

3. Make a table showing how each test voter must vote to execute the Test Vote plan.

CONTEST	VOTER													
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
President (Vote for One)														
John Smith	X													
Peter Jones		X	X											
Sarah Edwards				X	X	X								
Write-in							X	X	X	X				
Freeholder (Vote for Two)														
Tim Johnson	X													
Todd Murphy	X	X												
Jane Adams		X	X	X										
Mary Larsen			X	X	X	X								
Write-in					X	X	X	X	X					
Write-in							X	X	X	X	X	X		
Mayor (Vote for One)														
William Harrison	X													
Donna Jackson		X	X											
Ronald Morgan				X	X	X								
Write-in							X	X	X	X				
Proposal 1														
Yes	X													
No		X	X											

Example #2- Descending Test Pattern

This test pattern is developed in the following order:

1. Determine the largest number of candidates in any one contest, including Write-ins.

- Contest 1 has four candidates (including Write-ins)
- Contest 2 has six candidates (including Write-ins)
- Contest 3 has four candidates (including Write-ins)
- Contest 4 has two candidates ("Yes" and "No" for public questions or "Skip Choice" are to be treated as "candidates" therefore Contest 4 is considered to have two candidates)

Result: Contest 2 has the largest number of candidates: six.

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2. Assign the number of votes each candidate must receive in each contest as follows.

- The first candidate in each contest will receive six votes.
- The second candidate in each contest will receive five votes.
- The third candidate in each contest will receive four votes.
- The fourth candidate in each contest will receive three votes.
- The fifth candidate in each contest will receive two votes.
- The sixth candidate in each contest will receive one vote.

3. Make a table showing how each test voter must vote to execute the test vote plan.

CONTEST	VOTER																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
President (Vote for One)																		
John Smith	X	X	X	X	X	X												
Peter Jones							X	X	X	X	X							
Sarah Edwards												X	X	X	X			
Write-in																X	X	X
Freeholder (Vote for Two)																		
Tim Johnson	X	X	X	X	X	X												
Todd Murphy		X	X	X	X	X												
Jane Adams							X	X	X	X								
Mary Larsen									X	X	X							
Write-in											X	X						
Write-in												X						
Mayor (Vote for One)																		
William Harrison	X	X	X	X	X	X												
Donna Jackson							X	X	X	X	X							
Ronald Morgan												X	X	X	X			
Write-in																X	X	X
Proposal 1																		
Yes	X	X	X	X	X	X												
No							X	X	X	X	X							

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2.) Implementation of the Test Pattern

Test Voting begins, as follows:

- First, the Technician will run the L&A Testing from the Poll Worker screen.

- Second, a Tally Tape is printed to verify that the test voting is accurate as compared to the test pattern.

- All test results shall be reviewed and signed by the technician and the Administrator.

(a.) Troubleshooting

If the results do not match the test voting pattern the results report must be immediately taken to the supervisor for further review and appropriate action.

The supervisor must determine if the test voting pattern was followed correctly or if it is a hardware or programming issue.

(1.) If the supervisor determines that the Test Voting should be redone, the following steps must be done:

1. Reload the Ballot.

2. Perform Test Voting.

(2.) If it is a hardware issue, the supervisor must:

1. Coordinate the repair or replacement of the hardware.

2. Perform Preventative Maintenance.

3. Perform Ballot Verification

4. Perform Test Voting.

(3.) If it is a ballot programming issue, the supervisor must:

1. Contact the Administrator and the County Clerk immediately to have the correction made.

2. Perform Pre-Election Validation.

3. Perform Test Voting.

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Manual Test Voting

If a ballot has more than one contest with the identical number of candidates, further testing is necessary to allow an opportunity for vote total discrepancies to appear. Technicians will open the Avante Vote Trakker in Test Mode and manually vote an ascending or descending pattern as demonstrated below:

Example # 1-Ascending Test Pattern
Contest #1

Candidate 1 – one vote
Candidate 2 – two votes
Candidate 3 – three votes
Write-in   – four votes

Contest #2

Candidate 1 – two votes
Candidate 2 – three votes
Candidate 3 – four votes
Write-in   – five votes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
President (Vote for One)														
John Smith	X													
Peter Jones		X	X											
Sarah Edwards				X	X	X								
Write-in							X	X	X	X				
Mayor (Vote for One)														
William Harrison	X	X												
Donna Jackson			X	X	X									
Ronald Morgan						X	X	X	X					
Write-in										X	X	X	X	X

Example # 2-Descending Test Pattern
Contest #1

Candidate 1 – four vote
Candidate 2 – three votes
Candidate 3 – two votes
Write-in   – one vote

Contest #2

Candidate 1 – five votes
Candidate 2 – four votes
Candidate 3 – three votes
Write-in   – two votes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
President (Vote for One)														
John Smith	X	X	X	X										
Peter Jones					X	X	X							
Sarah Edwards								X	X					
Write-in										X				
Mayor (Vote for One)														
William Harrison	X	X	X	X	X									
Donna Jackson						X	X	X	X					
Ronald Morgan										X	X	X		
Write-in													X	X

Implementation of the Manual Test Pattern

Once the test table is completed, Test Voting can begin, as follows:

- First, the votes from the test pattern must be cast on the machine.

- Second, a Tally Tape is printed to verify that the test voting is accurate as compared to the test pattern.

- All test results shall be reviewed and signed by the Administrator.

(a.) Troubleshooting

If the results do not match the test voting pattern the results report must be immediately brought to the supervisor for further review and appropriate action.

The supervisor must determine if the test voting pattern was followed correctly or if it is a hardware or programming issue.

(1.) If the supervisor determines that the Test Voting should be redone, the following steps must be done:

1. Reload the Ballot.

2. Perform Test Voting.

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(2.) If it is a hardware issue, the supervisor must:

1. Coordinate the repair or replacement of the hardware.

2. Perform Preventative Maintenance.

3. Perform Ballot Verification

4. Perform Test Voting.

(3.) If it is a ballot programming issue, the supervisor must:

1. Contact the Administrator and the County Clerk immediately to have the correction made.

2. Perform Ballot Verification

3. Perform Test Voting.

Completing the Pre-Election Testing

NOTE: PRE-ELECTION CALABRATION TEST MUST BE COMPLETED ON ALL VOTING MACHINES PRIOR TO USE IN EACH ELECTION.

Pre-Election Validation is the verification phase that evaluates the Avante Vote Trakker terminal settings and tests the touch screen calibration to ensure the voting machine will properly perform during an election. This is the last step in preparing the voting machines for an election as it verifies the calibration of the touchscreen and it records the protective count.

1.) Troubleshooting

If any issues arise during the pre-election calibration, the technician will resolve the issue and the technician will then repeat the pre-election testing again. If the issue continues, the voting machine must be set aside for further examination.

3.) Vote Simulation

Vote Simulation is a means by which a county commissioner of registration can partially automate the Logic and Accuracy testing of the Avante Vote Trakker. **The Vote Simulation process is faster than casting votes by hand and minimizes the potential for human error in the casting process.**