Miami Dade County Elections Department
Logic and Accuracy Test
August 31, 2004 Primary Election
August 13, 2004

Test Schedule (times are approximate)

7 a.m.   **Canvassing Board Convenes**
            Commissioner Katy Sorenson
            Supervisor of Elections Constance Kaplan
     Elections staff activates iVotronic units
     Zero tapes produced for each unit
     Protective counter numbers recorded

9 a.m.   **Scripted voting begins**

1 p.m.   **Unscripted voting begins**

2 p.m.   **iVotronic units are closed for voting**
     Results tapes produced for each unit
     PEBs, flash cards, and results tapes taken to Collection Center
     Results transmitted to Tabulation Room via modem
     Paper ballots scanned and counted in Tabulation Room
     Results verified and reconciled
     Canvassing Board certifies test results

August 14, 2004

9 a.m.   **Audit data retrieved**
     Data analyzed

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Overview

Logic and accuracy (L&A) testing, or pre-election testing, ensures the readiness of the voting machinery, from voting unit to tabulating center, before each election. Pre-election testing is just one of many tests voting equipment faces: All voting equipment is subject to acceptance tests when it is delivered to the county, and each upgrade to each model of voting machinery is approved by the state after testing by an independent testing authority to state and federal standards. Those other tests, however, test only the machinery, while the pre-election tests focus on the machinery as configured for one specific election. Pre-election testing asks not only if the voting machine accurately records every vote cast, but also if the machine correctly presents every candidate, race and issue on the ballot. In addition, these tests focus on the entire election system, from the voting machines that capture the vote through the machinery in the vote collection centers to the machinery in the tabulating center.

Miami-Dade County owns 7,200 iVotronic voting machines. All of these run the same software, but for the upcoming primary, there are 222 distinct ballot styles, each of which must be tested. Each voting machine supports at least three styles of ballots (Democratic, Republican, and Nonpartisan), in three languages (English, Spanish, and Creole). Early Voting iVotronics support every ballot style. For this test, with the assistance of Audit and Management Services (AMS), precincts were randomly selected from among those that have the same ballot styles, and within those precincts, machines to be tested were randomly selected. A total of 212 machines will be tested.

The testing consists of two components: Scripted voting, with a predetermined result, and unscripted voting, where the participants may enter anything they wish into the machines. The scripted voting meets the requirements of state law, which requires that each candidate in each race receive at least one vote, and exceeds state requirements in that numerous votes for candidates will be cast, more closely simulating Election Day conditions. The unscripted voting provides additional assurance, by allowing a random number of votes for some candidates. This adds realism to the process and helps ensure that votes in different races are not being switched.

Absentee ballots are also part of this test. Pre-voted absentee ballots will be used as the script in the scripted tests, and participants in the unscripted tests will first fill out an absentee ballot with their votes. That same ballot will then be cast on an iVotronic unit. At the end of the testing, the totals gathered from the iVotronic units will be compared with the totals from the absentee ballots to verify the entire process, and the totals from the scripted tests can be compared with

the results expected according to the script. As a follow-up, audit teams will select a random sampling of the tested precincts for more detailed inspection, comparing the ballots with the detailed event logs and ballot-image files collected from the iVotronics to verify that all of these are consistent with the test ballots.

The Test Protocol
In order to ensure accurate testing, each test ballot, for both the scripted and unscripted tests, will be prepared on paper before entry into an iVotronic voting machine. Errors in the entry of this test data into the voting system could create the false impression that the machinery itself had made an error. To prevent this, each tester will be accompanied by a scribe who will observe the tester's vote. The scribe will be the one to push the red "VOTE" button, once the scribe and tester agree that the votes from the paper ballot have been correctly entered.

Procedures – Scripted Test
1.   Each tester must register prior to participation in the L&A.
2.   Upon registering, tester will be given a pre-marked paper absentee ballot and directed to the iVotronic with corresponding ballot style.
3.   Scribe will accompany tester and will read votes for candidates from paper ballot as tester votes on unit.
4.   When finished, tester and scribe will switch positions to review screens. Tester will read from paper and scribe will check screens.
5.   If an error is made on iVotronic, it will be corrected on the screen so that the iVotronic vote exactly matches the pre-determined paper ballot selections.
6.   When both tester and scribe agree that machine and paper match, red "Vote" button will be pressed to record vote.
7.   Paper ballot is placed in envelope attached to side panel of machine.

Procedures – Unscripted
1.   Each tester must register prior to participation in L&A.
2.   Upon registering, tester will be given a blank absentee ballot and be allowed to mark it for any candidates and/or questions.
3.   Scribe and tester will take completed ballot to the iVotronic unit with corresponding ballot style.
4.   Scribe will accompany tester and will read votes for candidates from paper ballot as tester votes on unit.
5.   When finished, tester and scribe will switch positions to review screens. Tester will read from paper and scribe will check screens.
6.   If an error is made on iVotronic, it will be corrected on the screen so that the iVotronic vote exactly matches the paper ballot selections.
7. .   When both tester and scribe agree that machine and paper match, red "Vote" button will be pressed to record vote.
8.   Paper ballot is placed in envelope attached to side panel of machine.

The Flow of Votes During Pre-Election Testing

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┌─────────────┐              ┌─────────────┐
│ Unscripted  │              │ Scripted test│
│ test ballots│              │ ballots     │
│  (Blank)    │              │ (Pre-voted) │
└─────────────┘              └─────────────┘
       │                            │
       ▼                            │
   Mark Ballot                      │
       │                            │
        ╲                          ╱
         ╲                        ╱
          ▼                      ▼
             Vote Ballot
                 │
                 ▼
        ┏━━━━━━━━━━━━━┓
        ┃  iVotronic  ┃
        ┃   voting    ┃
        ┃   machine   ┃
        ┗━━━━━━━━━━━━━┛
                 │
                 ▼
            Close Polls
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┌─────────┐   ┌─────────┐        ┌─────────┐   ┌─────────┐
│  Voted  │   │   PEB   │        │ Compact │   │iVotronic│
│  test   │   │         │        │  Flash  │   │ internal│
│ ballots │   │         │        │  card   │   │ memory  │
└─────────┘   └─────────┘        └─────────┘   └─────────┘
     │          │      ╲              │             │
     │          ▼       ╲             │             ▼
Hand Deliver ┌──────┐    ▼            │         Serial Port
     │       │ Vote │ ┌────────┐      │             │
     │       │collec││ │Printout│      │             ▼
     │       │tion  │ │        │      │         ┌─────────┐
     │       │center│ └────────┘      │         │ Laptop  │
     │       └──────┘    │            │         │computer │
     │          │        │            │         └─────────┘
     │        Modem      │            │             │
     ▼          ▼        │            ▼             ▼
┌─────────┐ ┌─────────┐  │       ┌─────────┐   ┌─────────┐
│Tabulation│ │Tabulation│ │       │Tabulation│   │Tabulation│
│  room   │ │  room   │  │       │  room   │   │  room   │
└─────────┘ └─────────┘  ▼       └─────────┘   └─────────┘
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Verify Consistency   ... Saturday
(Canvassing Board)   (Post Election Audit)