

Voting System Examination Election Systems & Software (ES&S)

Prepared for the
Secretary of State of Texas

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Designee of the Attorney General

This report is the findings of the Attorney General's designee from an examination of the equipment listed, pursuant to Title 9, Chapter 122 of the Texas Election Code, section 122.036(b).

Examination Date	January 8, 2004
Report Date	January 19, 2004

ES&S offers a complete line of products for every aspect of conducting an election, including election setup, DRE, optical scanning, punch-card reading, tallying and reporting.

Components Examined	Type	Version	
EDM- Election Data Manager – Election Setup	Part of Unity	7.2.1.0	
iVotronic Image Manager	Part of Unity	1.2.3.0	
ES&S Image Manager		7.2.0.0	
Optech Image Manager	Part of Unity	3.2.0.0	
HPM – Hardware Program Manager – Programs PEBS, EPROMS, etc from election definition	Part of Unity	5.0.2.0	
DAM – Data Acquisition Manager (Client)	Part of Unity	5.0.3.0	
DAM – Data Acquisition Manager (Host)	Part of Unity	5.0.3.0	
ERM – Election Reporting Manager	Part of Unity	6.4.2.0	
Audit Manager	Part of Unity	7.0.2.0	
iVotronic DRE Voting System	Voting	8.0.0.0	*
Model 650	Scanner	1.2.0.0	*
Model 100 OMR Precinct Counter	Scanner	5.0.0.0	*
Model 150/550	Scanner	2.1.0.0Q	
Eagle	Scanner	1.50 APS 1.28 HPS 1.02a CPS	*
IV-C	Scanner	1.06a	
Votronic	DRE	5.19	

* Unchanged from the last time it was examined

Voting: Characteristics of the Votronic and iVotronic DRE

Election Setup	Personalized Electronic Ballots (PEB) and separate flash memory cards are created with Unity software. Nothing is pre-programmed in the terminals; all the election information is in the PEB and flash memory. Anything that is precinct specific goes in the PEB. The flash memory is only required if the election is large or there are image or audio files.
Zero-total report	On the thermal printer in the communication pack.
Authorization to vote / Ballot selection	There are two modes: <ul style="list-style-type: none"> • Voter inserts a PEB, which is created at a Supervisor station using a supervisor PEB, both of which are red to distinguish them from voting stations and PEB's. The voter's PEB cannot be reused without re-activation. • Poll worker inserts a PEB, immediately removes it, and selects the appropriate ballot. The PEB is retained by the poll worker and is reusable without re-activation.
View / Vote	LCD display / touch screen
Vote Storage	Three redundant flash memories
Precinct Consolidation	Allowed using PEB's. An audit log of this is kept in memory and can be printed at the precinct.
Transfer Results	PEB transported or data transmitted by modem to Unity software (or a regional site from which data is sent to the Unity software at central counting). The data is protected by a Cyclical Redundancy Check (CRC).
Print precinct results	On the thermal printer in the communication pack.
Straight party / crossover	Yes. A straight-party vote cannot cancel crossover votes that have already been selected, which protects the voter against mistakenly canceling a crossover vote.
ADA	Yes. Because it is battery-powered, the iVotronic can be taken to the curbside for voting. However, this was not demonstrated, because the Secretary of State verifies ADA compliance.

Setup & Tabulation: Characteristics of the Unity System

Tamper Resistance	Cyclical Redundancy Check (CRC) on each record in the election files.
OS access	Not permitted during tabulation.
Real-Time Audit Log	Yes.
Data Integrity	There are no special transaction-processing features. However, according to ES&S, there is no need, because all the data is written in a single write statement, making it impossible for partial results to be entered into the database. Also, it is easy to recalculate everything if a problem is suspected, and everything is automatically re-calculated when you request a canvass report. Since a canvass report would always be requested, this is satisfactory. In short, it is nearly impossible to get an incorrect result and not know it.

Notes	<ul style="list-style-type: none"> • The Data Acquisition Manager is used in regional centers to collect precinct data for forwarding to central counting by modem or by carrying a PEB. • The Data Acquisition Manager does not need to know election-specific data or understand the results. It does not tabulate.
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Concerns

1.	<p>During testing, the optical scanners were found to sometimes read marks that bleed through from the other side of the ballot.</p> <p>Recommendation: The Secretary of State should consider regulations requiring that the areas that a voter marks on the two side of the ballot never align, so that any marks that bleed through will not be read on the other side. It might also be useful (but less important) to have regulations about the types of writing instruments to be used for marking optical ballots.</p> <p>Improving the scanners themselves is probably very difficult and not cost effective.</p>
2.	<p>During the exam, an election was incorrectly tabulated because the ballot layout did not correspond to the programming of the scanner. ES&S says that (a) this would not occur if the ballot were laid out using their software and (b) it would normally be caught by their procedures, such as logic and accuracy testing and proofing the ballots for candidate order.</p> <p>Recommendation: When preparing for an exam, ES&S should follow their own standard procedures. I do not see how this problem can be solved by changes in their system. Note that L&A test decks should not have the same number of votes for multiple candidates, since you then cannot detect errors in candidate ordering.</p>
3.	<p>It is my understanding that multiple provisional ballots can be assigned the same ID. If this were to happen, all ballots with the same ID would have to be counted or none would be counted.</p> <p>Recommendation: The ES&S system should reject a second provisional ballot with the same ID, and force the election workers to assign another, unique ID.</p> <p>Until this change is made, certification should carry the following conditions:</p> <ol style="list-style-type: none"> a) The follow procedure should be required: Labels should be preprinted with unique provisional ballot IDs. When such an ID is used, its label should be removed and placed on the documentation in the provisional envelope, thus preventing its accidental re-use. b) Certification should expire on January 1, 2005, unless the system is changed to reject duplicate use of the same provisional ballot ID.

ES&S has an excellent product line and it was a very successful exam.