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

Prepared for the
Secretary of State of Texas

James Sneeringer, Ph.D.
Designee of the Attorney General

This report conveys the opinions 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	June 9-10, 2014
Report Date	July 9, 2014

ES&S offers a complete line of products for every aspect of conducting an election, including election setup, ballot marking, optical scanning, tallying, reporting and auditing.

Components Examined	**Version**	**EAC/NAESED**
Unity Election System Software, which comprises the components below.	*3.4.1.0*	*ESSUnity3410*
Audit Manager	7.5.2.0	ESSUnity3410
AutoMARK Voter Assist Terminal	1.3.2907	ESSUnity3410
AutoMARK Information Management System	1.3.257	ESSUnity3410
DS200 Precinct Ballot Counter	1.7.0.0	ESSUnity3410
DS850 Central Count Tabulator	2.9.0.0	ESSUnity3410
Election Data Manager (EDM)	7.8.2.0	ESSUnity3410
Election Reporting Manger (ERM)	7.9.0.0	ESSUnity3410
ESS Manager (ESSIM)	7.7.2.0	ESSUnity3410
Hardware Program Manager (HPM)	5.9.0.0	ESSUnity3410
LogMonitor Service	1.1.0.0	ESSUnity3410
M100 Precinct Ballot Counter	5.4.4.5	ESSUnity3410
M650 Central Count Tabulator	2.2.2.0	ESSUnity3410
VAT Previewer	1.3.2907	ESSUnity3410

Overview of the Unity 3.4.1.0, as Tested

Election Setup	Either the Election Data Manager (EDM) or the AutoMARK Information Management System (AIMS) is used to create a database containing all the races, candidates, precincts, and other data required to conduct the election. This data can then be imported into the various ballot scanners and used to print ballots. If the election is created with the EDM, it can also be imported into AIMS.

Voting	All votes on the system we examined are recorded on paper ballots. Those paper ballots can be created using the AutoMARK Voter Assist Terminal. With the AutoMARK, the voter's choices are entered on a touch screen by the voter, just like a DRE. When the voter is done, the AutoMARK makes the necessary marks on the paper ballot, which the voter then places in a scanner or ballot box. The AutoMARK • prevents overvotes and warns of undervotes, just like a DRE, • does no tabulation, • supports straight-party and crossover voting, and • has ADA capability, including audio voting and sip and puff. We noted that the quality of the audio was poor, but understandable.
Tabulation	• Ballots may be tabulated using a precinct scanner (M100 or DS200) or a central count scanner (M650 or DS 850). • Results from the scanners are tabulated using the Election Data Manager (EDM). The EDM complies with Texas rules requiring o a real-time audit-log printer, and o that access to the Operating System must not be possible while tabulating.

Examination Procedures

This was a two-day examination. On the first day of the exam, the technical examiners along with Christina Adkins verified that the vendor's installation CDs matched official data obtained directly from the test lab. Then the vendor installed the software from the CDs. We also verified version numbers, observed the ADA testing by the Secretary of State's office, and had some questions and discussion about the technical aspects of the system.

On the second day, the entire group assembled. We received a presentation from ESS, ran a test deck of ballots to verify correct tabulation, observed how the system worked, asked questions, and tried out the equipment. Each examiner was assigned specific equipment to focus on, so we could be sure that each was examined in some depth. My assignment was the AutoMARK. Nevertheless, I personally observed the verification of the installation CDs on day one and saw every component in operation on day two.

Concerns

1. Use with older Unity equipment. Notably absent from the examination was the ESS line of DRE (Direct Recording Electronic) voting stations. This is surprising, because many Texas counties use ESS DRE equipment. Because of their significant investment in these machines, they will certainly want to use them for many years to come.

When asked about this, ESS said they planned to continue using these voting stations using the older, previously certified versions of the Unity Election Data Manager. The results from these stations would be tabulated using the old EDM versions, and the old EDM results then imported into 3.4.1.0, the current version we were examining.

This was a surprise to the examiners, because ESS did not bring any of the older equipment with them and could not demonstrate that the proposed procedure would work. Furthermore, Wyle Laboratories, which did the national certification testing for this product, was not asked to test this scenario. No evidence at all was presented that it would work.

***Conclusion*.** If Unity 3.4.1.0 is certified, it is my opinion it should be with the condition that it not be used in conjunction with any ESS components except the ones submitted for this examination and listed above, until ESS obtains certification from the State of Texas for this scenario.

2. Real-Time Audit-Log Printer. The Texas Administrative Code requires that a "part of an Election Management System that tabulates and/or consolidates the vote totals for multiple precincts/devices" must have a printer that records "significant election events" on a "continuous feed printer dedicated to a real-time audit log."

- The M100 and DS200 do not have such printers, and therefore in my opinion should only be used as precinct counters, not for tabulation or central counting.
- The real-time audit log printer on the Election Reporting Manger (ERM) does not record changes to printer status, and therefore does not technically meet the requirements in my opinion.

***Conclusion*.** Technically, in my opinion, the ERM does not meet the requirements of the Texas Administrative Code, and the M100 and DS200 meet the requirements only when used as precinct counters. In other words, it would technically violate the TAC to use the M100 or DS200 for central counting.

Note. During the examination ESS expressed surprise at this audit-log printer requirement on the M100 and DS200 and claimed they were not aware of it. However, this same discussion took place during the ESS examination on January 19, 2007. It was documented in Concern 7 (entitled "M100 for Central Count") of my examination report dated February 20, 2007. In my opinion ESS was aware of it, and they also knew that we would not approve of their plan to use new and old equipment together (my "Concern 1" above) if we became aware of it. I would prefer to deal with vendors who demonstrate greater integrity than is evidenced by these kinds of maneuvers.

Summary

The ESS Unity is a good election system that has proved reliable in the past, but the two concerns above should be taken into account when deciding whether to certify Unity 3.4.1.0 or not, especially concern number 1. In my opinion, it should be a condition of any certification that Unity 3.4.1.0 not be used in conjunction with any ESS components except the ones submitted for this examination.