

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt

From: Ellen Theisen [ellen@votersunite.org]  
Sent: Monday, February 09, 2009 11:47 AM  
To: mmasterson@eac.gov  
Cc: bhancock@eac.gov; Bill.Huennekens@kingcounty.gov; Murphy, Patty;  
jgideon@votersunite.org; jlayson@eac.gov  
Subject: Re: Question about the Accuracy Testing of the Premier  
Assure System

Mr. Masterson,

Thank you for your response. I see that decisions have been made regarding reusing some of Systest's testing of the Premier system. I will continue to watch the page you pointed to for information regarding the reuse of Systest's accuracy testing of the Premier system.

Regards,

Ellen Theisen  
Co-Director

www.VotersUnite.Org

----- Original Message -----

From: mmasterson@eac.gov  
To: ellen@votersunite.org  
Cc: bhancock@eac.gov ; Bill.Huennekens@kingcounty.gov ;  
pmurphy@secstate.wa.gov ;  
jgideon@votersunite.org ; jlayson@eac.gov  
Sent: Thursday, February 05, 2009 8:37 AM  
Subject: Re: Question about the Accuracy Testing of the Premier Assure  
System

Ms. Theisen:

Thank you for your email and questions regarding the Premier Assure 1.2 testing engagement. The EAC is currently working with iBeta to analyze the prior testing done by SysTest on the Premier Assure 1.2 voting system and possible reuse of any of that testing. The EAC's instructions regarding the reuse of prior testing for this test campaign can be found here. As you can see iBeta is currently examining the accuracy testing for possible reuse. Once the EAC receives iBeta's recommendation it will issue a decision on the reuse of that testing. All decisions regarding reuse of testing will continue to be posted on this page.

Thank you again for your question and patience in receiving a response.

Matthew V. Masterson, Esq.  
Testing and Certification Program Analyst  
U.S. Election Assistance Commission  
1225 New York Ave. NW, Washington, D.C.  
(202)566-2365

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt

"Ellen Theisen" <ellen@votersunite.org>

01/26/2009 02:08 PM

To

mmasterson@eac.gov, bhancock@eac.gov, rrodriguez@eac.gov,

gbeach@eac.gov

cc

"Huennekens, Bill" <Bill.Huennekens@kingcounty.gov>, "Murphy,

Patty" <pmurphy@secstate.wa.gov>, "John Gideon"

<jgideon@votersunite.org>, JNilius@Systest.com, "John Washburn"

<john@washburnresearch.org>

Subjec

t

Question about the Accuracy Testing of the Premier Assure System

Matt, Brian, and Commissioners,

On August 15, 2008, I sent an email to you regarding the SysTest plan for testing the

accuracy of the Premier Assure system. I explained why it would be

impossible for the

SysTest plan to actually test the accuracy of the system. Specifically, I

stated the following

and then gave details proving this fact:

"In SysTest's plan, between 95% and 98% of the candidates – even in the same contest –

received the same number of votes. It is therefore impossible to know if a machine

assigned votes to the correct candidate or to a different candidate who had the same total.

Thus, even if the machines yielded the expected results, this plan cannot assure that the

system assigned votes correctly."

I see that a revised, draft test plan was submitted on October 20, 2008.

[http://www.eac.gov/program-areas/voting-systems/docs/premier-assure-1-2-rev-11-test-](http://www.eac.gov/program-areas/voting-systems/docs/premier-assure-1-2-rev-11-test-plan.pdf/attachment_download/file)

[plan.pdf/attachment\\_download/file](http://www.eac.gov/program-areas/voting-systems/docs/premier-assure-1-2-rev-11-test-plan.pdf/attachment_download/file).

Page 35 in this test plan says that accuracy tests will be re-run, yet the same, wholly

inadequate test is proposed.

In addition to the other comments I made about SysTest's plan – comments that are

contained in the email below – I would like to emphasize, yet again, that the ballots

proposed for the test are completely unrealistic. No ballot in a real election will ever have 30

races with 66 candidates in each race. Furthermore, even if the ballots used

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt  
in the test are  
double-sided, with four columns of contests on each side, with one ballot  
position every 1/8"  
vertically (thus, unrealistically saturated with bubbles), the ballot sheet  
would have to be  
more than 2.5 feet long or contain 3 or more ballot sheets.

If we are to trust the accuracy of the system, the accuracy testing should  
be realistic, and it  
absolutely must test the accuracy.

The EAC website suggests that this test plan has not yet been approved. My  
question is this:  
Do you intend to have the newly assigned lab revise the accuracy test to be  
realistic  
and effective, or will you approve a plan to run the same, wholly inadequate

"accuracy" test?  
Thank you in advance for your response.

Note: I am cc'ing Patty Murphy and Bill Huennekens (election officials from  
the Washington  
State SoS office and King County) on this email, since King County is  
relying on the  
effectiveness of the federal accuracy testing in order to acquire emergency  
certification for  
this system in the state. Please include them in your response.

Ellen Theisen  
Co-Director  
www.VotersUnite.Org

----- Original Message -----  
From: Ellen Theisen  
To: mmasterson@eac.gov  
Cc: bhancock@eac.gov ; lotero@eac.gov ; rrodriguez@eac.gov ;  
jgideon@votersunite.org ;  
ro95@mbco.com ; John Washburn ; JNilius@Systest.com  
Sent: Friday, August 15, 2008 9:00 AM  
Subject: Re: Questions from VotersUnite! regarding SysTest

Dear Matt,

Thank you for passing on the explanation from SysTest, which shows, without  
question, that the  
proposed plan CANNOT test the accuracy of the machines. I am shocked that a  
professional  
test lab would not know (or would fail to implement) a basic premise of  
accuracy testing that is  
both known and implemented by the Washington Secretary of State, who has no  
background in  
software testing.

In SysTest's plan, many candidates – even in the same contest – will receive  
the same number  
of votes. It is therefore impossible to know if a machine has assigned votes  
to the correct

candidate or to a different candidate who has the same total. Thus, even if the machines yield the expected results, this plan cannot assure that the system has assigned votes correctly.

To explain, I will use the touch screen test details. In testing the touch screens, only 792 ballots are used. SysTest failed to say whether all the contests are "vote for one" races or "vote for more." To simplify the explanation, I will assume they are all "vote for one" (the defect in the plan is equally severe if some or all contests are multi-vote contests).

If all contests are "vote for one":

?? ?? Each ballot will have at most 30 votes since overvotes are not allowed; the other ballot positions will be blank.

?? ?? 66 ballots are required for each position to be tested once, with each position having one vote.

?? ?? If those 66 are arranged optimally, 726 ballots remain to allow some positions to receive more than one vote.

?? ?? However, it would take an additional 2,145 ballots to ensure that each ballot position for a particular contest has a unique number of votes within that contest. A unique total for each ballot position is necessary for accuracy testing. For example, if two positions both receive 2 votes, it is impossible to know that the votes were not switched as they were being recorded.

?? ?? With SysTest's design, a minimum of 26 ballot positions in each contest will have the same number of votes, and there will be no way to determine if those positions received the votes intended for them or the votes intended for some other position. The vote-counting accuracy will NOT have been tested.

?? ?? But the design of SysTest's test deck is even worse than the above facts indicate. Unfortunately, in real elections, we have seen votes from one contest given to another contest, and it is essential to ensure that does not happen. Even the 2,211 ballots required to ensure that each ballot position has a unique total within a given contest are not sufficient to ensure that votes for one contest are not being switched with votes for another contest.

This fact was expressed in no uncertain terms in the pre-election testing guidelines developed by

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt

John Washburn, a certified software test engineer. He said, "In every complete test deck, each candidate and issue response must receive a unique number of votes to ensure that votes from one are not being switched to another." I encourage SysTest engineers to read Mr. Washburn's guidelines.

(<http://www.washburnresearch.org/archive/TestingGuidelines/GuidelinesForCreatingTestBallots.pdf>)

?? ? ? With 1,980 ballot positions on each ballot, a minimum of 1,961,190 ballots is required to ensure that each ballot position has a unique total on the ballot. First position has 1980 votes, second has 1979 votes, third has 1978 votes, and so on. [The calculation is  $1981 \times 1980 / 2$ ]

?? ? ? In SysTest's plan, with only 792 ballots, a maximum of 40 ballot positions can be unique numbers. ( $39 \times 40 / 2 = 780$  and  $40 \times 41 / 2 = 820$ ) That means, at least 98% (1940/1980) of the ballot positions will receive the exact same number of votes, and there will be no way of knowing if they have received the votes intended for them or the votes intended for another ballot position.

The fewer the ballot positions, the fewer the ballots required to ensure a unique total for each candidate. However, in what appears to be an effort to simplify the testing process – rather than make it robust enough to safeguard our elections – SysTest designed a ballot that causes a true accuracy test to be more difficult than it need be.

At the same time, SysTest is using unrealistic ballots for testing the accuracy of the equipment. It is difficult to imagine a real election in which each of 30 contests would have 66 candidates, like the ballots for SysTest's touch screen testing.

The design of the test deck for optical scanners is equally unrealistic and equally flawed. It CANNOT assure that the scanners are accurately counting votes. With 896 ballot positions on the optical scan ballots, 401,856 ballots would have to be cast to obtain unique totals for each ballot position. However, SysTest is only using 1,760 ballots – wholly insufficient to test the accuracy of the optical scanners in counting votes.

1,760 ballots only allow for 58 positions to have unique totals. So, at least 94% (838/896) of the ballot positions will receive the exact same number of votes.

The above discussion proves that SysTest's test decks will not test the accuracy of the system. But in addition, because they have ignored this basic, simple, yet essential

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt  
principle, it is quite  
likely that they have also ignored other essential principles of testing –  
as explained in John  
Washburn's guidelines.

For example, will they include ballots with every combination of two  
candidates in case the  
equipment cannot handle certain combinations? Will they test the  
straight-party feature that has  
caused so many problems in recent elections? Will the optical scanner  
ballots include overvotes?  
Will they include multi-vote contests (vote for more than one)?

Surely, the EAC does not intend to approve this plan.

Ellen Theisen  
Co-Director and Managing Editor  
www.VotersUnite.Org

----- Original Message -----  
From: mmasterson@eac.gov  
To: ellen@votersunite.org ; jgideon@votersunite.org  
Cc: bhancock@eac.gov ; lotero@eac.gov ; rrodriguez@eac.gov  
Sent: Thursday, August 14, 2008 7:03 AM  
Subject: Fw: Questions from VotersUnite!

Ellen,

See below for a response from SysTest regarding your questions. Thank you  
for your patience in this  
matter.

Matthew V. Masterson, Esq.  
Testing and Certification Program Analyst  
U.S. Election Assistance Commission  
1225 New York Ave. NW, Washington, D.C.  
(202)566-2365

----- Forwarded by Matthew Masterson/EAC/GOV on 08/14/2008 10:01 AM -----  
"Jim Nilius" <JNilius@Systest.com>  
08/14/2008 08:44 AM

To  
bhancock@eac.gov  
cc  
mmasterson@eac.gov, lotero@eac.gov  
Subject  
RE: Questions from VotersUnite!

Brian,

In response to the questions from VoterUnite! Is below. If you need anything additional, please let me know.

The Data Accuracy Test entails passing over 1.5 million vote positions (voted and not voted) through the device and voting system. Accuracy Tests for all but two devices used an election definition with 30 races and 66 candidates for each race. Each ballot contained 1,980 vote positions, and 792 ballots were cast during each of these tests.

A different ballot design was used for the AccuVote-OS Central Count and the Optical Scan Accumulator Adapter (OSAA). These devices used ballots with 28 contests and 32 candidates each due to their design. The break down of these races and candidates for each device are included in Appendix A of the Premier Assure 1.2 Certification Test Report located on the EAC web site. Each of these ballots contained 896 vote positions, and 1,760 ballots were cast during each of these tests.

Most tests involved several units of a type of device, to process the large amounts of ballots needed to process over 1.5 million vote positions. Separate Accuracy Tests were run for each type of touch screen, optical scanner, and ballot marking device. For example, several AccuVote-TSX units were tested simultaneously to process enough ballots to reach the required quantity of ballots and vote positions. Similar examples include the AccuVote-TS R6 touch screen units which had their own test and the AccuVote-OS Precinct Count units which had their own tests. The AutoMark Voter Assist Terminal (VAT) ballot marking devices had a test for the Model A300, and a combined test for the Models A100 and A200, also being tested for certification with the Premier Assure 1.2 system.

The number of people manually executing voting testing on touch screen and ballot marking devices ranged from two to 6 per test. The time required to execute these tests ranged from 7 to 10 days.

Video recording was not done as votes were being manually entered on the touch screen and ballot marking devices. To make testing more manageable, ballots are processed in batches with close observation of any variances introduced by the testers. All such variances were documented in the vote results.

Regards,

James M. Nilius  
Senior Director, VSTL  
SysTest Labs Incorporated

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt

From: bhancock@eac.gov [mailto:bhancock@eac.gov]

Sent: Wednesday, July 30, 2008 2:27 PM

To: Jim Nilius; Kevin Keelan

Cc: mmasterson@eac.gov; lotero@eac.gov

Subject: Questions from VotersUnite!

Jim, Kevin,

I am forwarding these questions we received from Ellen Theisen of Voters Unite! on your testing of the Premier Assure system. This is a follow-up to the questions they asked of you all awhile ago.

Thanks.

Brian

Thank you for forwarding the response from SysTest. We are having difficulty envisioning the testing they described, and we have a few questions that may help to clarify:

- It sounds like they are planning to enter ballots with a total of 1.5 million ballot lines manually on the DREs, another 1.5 million ballot lines on the ballot markers (is this the ImageCast?), and another 1.5 million ballot lines on the paper ballots. Did we understand correctly, or will the test include ballots with 1.5 million ballot lines total on all three types of machines together?

- If the latter is the case, how many will be entered on each type of equipment?

- How many ballot lines are on each ballot, and how many - on average - candidates in each race?

- How many people will be entering the ballots by hand on the touch screens, and how many man-days/weeks do they anticipate this will take?

- Do they plan to video the entry of ballots on the touch screen, so if a discrepancy occurs they can review the video to discover if it was an entry error or a machine error?

Brian Hancock

Director of Voting System Testing & Certification

U.S. Election Assistance Commission

1225 New York Avenue, NW, Ste. 1100

Washington, DC 20005

202-566-3100

www.eac.gov

CONFIDENTIALITY NOTICE: This email message and all attachments, if any, are intended solely for the

Re Question about the Accuracy Testing of the Premier Assure System (Voters Unite to EAC).txt  
use of the addressee and may contain legally privileged and confidential information. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or other use of this message is strictly prohibited. If you received this message in error, please notify the sender immediately by replying to this message and please delete it from your computer.

PLEASE NOTE:

This communication and the information contained or attached to this e-mail:

(a) is intended for the recipient(s) or organization(s) named and for no other person or organization and

(b) may be confidential, legally privileged and protected by law.

Unauthorized use, copying or disclosure of any of it may be unlawful. If you are not the intended recipient, please contact the sender immediately.

SysTest Labs has taken reasonable precautions to ensure that no viruses are transmitted to any third party, but accepts no responsibility for any loss or damage resulting directly or indirectly from the use of this E-Mail, its contents, or attachments.

Disclaimer added by CodeTwo Exchange Rules  
[www.codetwo.com](http://www.codetwo.com)