



## EAC Certified System Technical Advisory

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<b>EAC System(s) Affected:</b>	ES&S Unity 3.2.0.0, ES&S Unity 3.2.0.0 Rev. 1
<b>Component(s) Affected:</b>	DS200
<b>Version(s) Affected:</b>	DS200 firmware version 1.3.10.0 (Unity 3.2.0.0) and 1.4.5.0 (Unity 3.2.1.0). This may impact other DS200 firmware version (unconfirmed).
<b>Date:</b>	March 3, 2011
<b>Summary:</b>	During Federal certification testing a DS200 Ballot Scanner accepted a ballot into the ballot bin without counting the ballot.

### Advisory:

Counties and jurisdictions with this product should be aware that during Federal certification testing of the Election Systems & Software (ES&S) Unity 3.2.1.0 voting system, a DS200 accepted a voted ballot and deposited it in the ballot bin without recording the ballot in the public counter. ES&S determined this anomaly can occur in versions of the DS200 firmware Federally certified with Unity 3.2.0.0 and Unity 3.2.0.0 Rev. 1. Other versions of the DS200 firmware may also be affected; however, this has not been independently confirmed by ES&S. According to ES&S, this anomaly has an extremely low rate of occurrence.

### Overview:

During Reliability Testing on Unity 3.2.1.0, a DS200 accepted a ballot without incrementing the public counter and vote tally. ES&S informed the EAC that this anomaly exists in the EAC certified Unity 3.2.0.0 voting system, Unity 3.2.0.0 Rev. 1 and in the Unity 3.2.1.0 voting system currently undergoing Federal testing at Wyle Laboratories. Fielded DS200s with firmware versions 1.3.10.0, 1.4.5.0 and possibly others, have the capability of exhibiting this anomaly. ES&S submitted a proposed solution to this anomaly for incorporation in the Federal testing of the Unity 3.2.1.0 voting system.

### Anomaly Description:

During the Voting System Test Laboratory's (VSTL) Reliability Test, one of the DS200 units accepted a ballot without incrementing the public counter. Two ballots were in the ballot bin and only one ballot was counted by the DS200. Reports of the messages displayed by the DS200 when the anomaly occurs have differed. Two different messages are displayed in rapid succession. The

first message informs the voter that votes for more than one party were selected. This is followed by a message advising the voter to either accept or return the ballot. Upon reviewing the audit log, the event was originally recorded by the following message: "Ballot Removed During Scan (137)." To the EAC's knowledge, instructions are not displayed on the DS200 screen to assist a pollworker in resolving this uncounted ballot anomaly when it occurs. Please refer to the Recommended Procedures section of this Technical Advisory and ES&S Technical Bulletin #PRBDS2000010 dated February 11, 2011 if this anomaly is experienced.

#### Root cause:

Wyle Laboratories and ES&S conducted extensive research in order to identify the root cause of this anomaly. Wyle traced the anomaly through the voting system's source code and found that when certain ballot exceptions occur while processing a ballot, a function within the scanner can incorrectly make the DS200 believe the submitted ballot is twenty-eight (28) inches long. Therefore, when a standard ballot is fed into the scanner and this error condition occurs, the ballot is accepted into the ballot bin without incrementing the counter because the scanner is expecting a longer ballot. ES&S implemented improvements to the Unity 3.2.1.0 DS200 firmware in an attempt to resolve this anomaly. This updated firmware is part of the Unity 3.2.1.0 system currently under test.

#### Recommended Procedures:

Due to the fact that this anomaly exists in firmware versions 1.3.10.0 and 1.4.5.0 of the DS200, local election officials using this system should take care to reconcile the voter list with the public count on all DS200 machines. EAC recommends that local election officials make pollworkers aware of this anomaly via pollworker training and Election Day instruction materials. If this anomaly is witnessed, follow jurisdiction procedures which should include contacting the lead local election official in order to correctly conduct the reconciliation process.

ES&S *Technical Bulletin #PRBDS2000010* recommends the following resolution:

*"If you see any of the aforementioned error messages, poll workers should complete any necessary actions required by the error messages. In addition, the lead poll official should be notified that a potential ballot count issue has occurred and the public counter for the affected DS200 should be monitored for reoccurrence of the problem. You may also consider removing the unit from service if the situation were to re-occur."*

ES&S noted:

*"Any suspected ballot count issues can be validated after poll closing by comparison of the voter check-in log against the total public count from the DS200 results tapes. State procedures should be followed in the event of a discrepancy."*