An Audit of the South Carolina 2012 Republican Presidential Preference Primary of January 21, 2012

(Interim Report 2/24/2012)

For the League of Women Voters of South Carolina

D. Buell, S. Smith

Executive Summary

We have obtained from the South Carolina State Election Commission (SCSEC) the posted audit data and files from the January 21, 2012 GOP presidential preference primary, and we have run our earlier audit programs (updated from the programs used in earlier audits) against that data.

Our initial findings show a marked improvement in the process by which this election was conducted compared to the summer 2010 primaries (for which we have admittedly limited data) and the fall 2010 general election. Although there are reasons to have concern and to maintain a watchful in many of the counties, we have not found audit trails that show that votes were not counted, as was seen in the November 2010 general election. Indeed, it would appear that all counties exercised substantial diligence in collecting the audit data (something that most certainly did not happen for the 2010 election).

Without going into great detail in looking at the possible problems, we nonetheless notice a continued problem in that multiple PEBs are used in precincts for opening and closing the iVotronics terminals. This occurred in at least 20 counties. The failure to include all the 2010 votes in the certified counts in Darlington, Horry, and Richland Counties was because multiple PEBs were used to open and close iVotronic terminals, but only the "official" PEB had its votes uploaded to the county's central count. The continued use of multiple PEBs for opening and closing should thus be a matter of concern. Either this is due to poll managers not following the official procedure (and we note that in Ward 21 in Richland County, where 355 votes were not counted in the November 2010 election due to this problem, it was again the case in the GOP primary that multiple PEBs were used), or it is the case that PEBs fail to function properly and must be replaced on Election Day, which is a different but equally concerning problem as the equipment ages past a reasonable life expectancy.

Dr. Duncan Buell is a professor in the Department of Computer Science and Engineering at the University of South Carolina. Mr. Skylar Smith is an undergraduate computer science major at US. Mr. Smith is funded as a Magellan Scholar conducting undergraduate research by the University of South Carolina.

An Analysis of the Statewide Data

The Data

The SCSEC apparently asked for the 30A, 45A, 68, 68A, 152, and 155 files from the 46 counties in South Carolina. Data from Clarendon County was very slow to appear, but the data from all counties does now appear to be on the www.scvotes.org website of the SCSEC.

It appears that 25 counties experienced few or no problems in the GOP primary. These were the counties of Abbeville, Allendale, Bamberg, Barnwell, Beaufort, Calhoun, Charleston, Cherokee, Chester, Chesterfield, Clarendon, Darlington, Dillon, Edgefield, Fairfield, Jasper, Laurens, Marion, McCormick, Oconee, Orangeburg, Saluda, Union, Williamsburg, and York.

This is not to say that there were no problems in these counties. Indeed, there are numerous instances, for example, of iVotronic terminals with no votes collected, or of terminals opened in December and closed on January 21, or of terminals opened and closed with different PEBs. In some cases this may indicate a problem in that the procedures laid down for conducting the election were not followed. In other cases, however, it may be the case, for example, that PEBs failed during Election Day and it was necessary to close the machines with a working PEB even if that was not the PEB that was intended to be the one used only for opening and closing.

We note that in contrast with the November 2010 election, memory card collection was usually timely. Two exceptions were a single memory card in Union County not collected until 2/2/2012 and two cards in Clarendon County not collected until 2/9/2012.

Specific problems

We note that some problems persist in counties that had problems in the November 2010 general election.

Colleton County, which had serious problems in November 2010, still had a number of PEB open/close problems. We would think this merits further scrutiny by the election officials in that county.

Horry County, which had serious problems with gathering data and with iVotronic terminals, continued to have problems. Among these were additional “chip vs chip crc error” messages.

Additionally, Greenville County had this error.

This is the error that one would expect if the internal memories were no longer consistent. This would be a serious problem, because it indicates that whatever data

is in the terminal can no longer be trusted to be correct. In such instances, all three internal memories are dumped to the flash memory and not just the first of the three (if all three are identical, as they are supposed to be, then there is no reason to dump more than one).

However, it also appears that this message can be thrown for completely different reasons. ES&S Technical Bulletin FYIIVT0021, dated June 6, 2006, suggests that this message can be thrown if the terminal is locked, and the PEB is inserted without holding down the VOTE button during PEB insertion, and then the PEB is removed before completing the UNLOCK sequence. This message could thus perhaps be the result of poorly written software throwing the wrong error message and misleading readers. However, subsequent commentary in the bulletin mentioned suggests that an additional sequence of messages (which we have not seen in our 152 files) follows when the message is thrown in error and then the system is properly reconfigured.

Lexington County included test votes in its 155 data in November 2010. It seems to have included two test votes in this 155 file as well.

In November 2010, 355 votes from Ward 21 were not included in the certified count because multiple PEBs were used in that precinct to open and close the terminals. We found that multiple PEBs were used to open and close in that precinct in the GOP primary, and we suggest that this merits further scrutiny by the county election officials.

Anomalies and Curiosities

We note a few curiosities that we think deserve additional attention.
Anderson County collected data on 1/20, one day before the primary itself.
McCormick County collected data on 1/19, two days before the primary itself, and Anderson County collected data on 1/20. Although we suspect that this was data from previous elections, it is nonetheless a matter of concern that what should be the "official" record that can be audited and that is used by the SCSEC for auditing purposes contains clearly irrelevant information.

In nearly all the counties, the PEB serial numbers appear in the 68A files and can thus be linked with the PEB numbers in the 152 file. This is not the case in Beaufort and Greenwood Counties, however.

We also find it curious that in a statewide system, that one might hope to be uniform across the state, there are differences in the reports from one county to the next. The anomalous lack of PEB serial numbers in the Beaufort and Greenwood 68A files, for example, indicates that the software is not uniformly configured across the state. Similarly, the 30A files that report results are not all of the same format. In some counties there are additional lines; in some counties there are more or fewer columns. We are at a loss to understand why the reports are different.