



Summary

Elections: Results of GAO's Testing of Voting Systems Used in Sarasota County in Florida's 13th Congressional District
GAO-08-425T February 8, 2008

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In November 2006, about 18,000 undervotes were reported in Sarasota County in the race for Florida's 13th Congressional District (Florida-13). After the election results were contested in the House of Representatives, the task force unanimously voted to seek GAO's assistance in determining whether the voting systems contributed to the large undervote in Sarasota County. In October 2007, GAO presented its findings on the review of the voting systems and concluded that while prior tests and reviews provided some assurance that the voting systems performed correctly, they were not enough to provide reasonable assurance that the voting systems in Sarasota County did not contribute to the undervote. GAO proposed that a firmware verification test, a ballot test, and a calibration test be conducted. The task force requested that GAO proceed with the proposed additional tests. GAO also verified whether source code escrowed by Florida could be rebuilt into the firmware used in Sarasota County. To conduct its work, GAO conducted tests on a sample of voting systems used in Sarasota County during the 2006 general election. GAO witnessed the rebuild of the firmware from the escrowed source code at the manufacturer's development facility. GAO reviewed test documentation from Florida, Sarasota County, and the voting system manufacturer and met with election officials to prepare the test protocols and detailed test procedures.

GAO conducted three tests on the iVotronic Direct Recording Electronic (DRE) voting systems in Sarasota County and these tests did not identify any problems. Based on its testing, GAO obtained increased assurance that the iVotronic DREs used in Sarasota County during the 2006 general election did not contribute to the large undervote in the Florida-13 contest. Although the test results cannot be used to provide absolute assurance, GAO believes that these test results, combined with the other reviews that have been conducted by the State of Florida, GAO, and others, have significantly reduced the possibility that the iVotronic DREs were the cause of the undervote. GAO's firmware verification test showed that the firmware installed in a statistically selected sample of 115 machines used by Sarasota County during the 2006 general election matched the firmware certified by the Florida Division of Elections. The statistical approach used in selecting these machines lets GAO estimate with a 99 percent confidence level that no more than 60 of the 1,499 iVotronic DREs that recorded votes in the 2006 general election were using different firmware. Consequently, GAO is able to place more confidence in the results of other tests conducted on a small number of machines by GAO and by others, which indicated that the iVotronic DREs did not cause the undervote. GAO also confirmed that when the manufacturer rebuilt the iVotronic DRE firmware from the source code that was held in escrow by the Florida Division of Elections and previously reviewed by GAO and others, the resulting firmware matched the version certified by the Florida Division of Elections. For the ballot test, GAO cast predefined test ballots on 10 iVotronic DREs and confirmed that each ballot was displayed and recorded accurately. GAO conducted the calibration test by miscalibrating two iVotronic DREs and casting ballots on them to validate that the machines recorded the information that was displayed on the touch screen. Based on the results of the ballot and calibration tests, GAO found that (1) the machines properly displayed, recorded, and counted the selections for all test ballots cast during ballot testing involving 112 common ways a voter may have interacted with the system, and (2) the deliberately miscalibrated machines, though difficult to use, accurately recorded the ballot selections as displayed on screen. At this point, GAO believes that adequate testing has been performed on the voting machine software and does not recommend further testing in this area. Given the complex interaction of people, processes, and technology that must work effectively together to achieve a successful election, GAO acknowledges the possibility that the large undervote in Florida's 13th Congressional District race could have been caused by factors such as voters who intentionally undervoted, or voters who did not properly cast their ballots on the iVotronic DRE, potentially because of issues relating to interaction between voters and the ballot.

Subject Terms

Calibration
Elections
Electronic equipment
System vulnerabilities
Systems analysis
Systems evaluation
Systems management
Systems monitoring
Systems testing
Voting
Voting records
Florida