IN THE

United States House of Representatives

CHRISTINE JENNINGS,

Contestant,

V.

VERN BUCHANAN,

Contestee.

MEMORANDUM RESPONDING TO THE HONORABLE CHARLES A. GONZALEZ'S APRIL 3, 2007 LETTER REGARDING THE INVESTIGATION OF THE ELECTION FOR REPRESENTATIVE IN THE ONE HUNDRED TENTH CONGRESS FROM FLORIDA'S THIRTEENTH CONGRESSIONAL DISTRICT

Contest Filed Under the Federal Contested Elections Act on December 20, 2006

KENDALL COFFEY
COFFEY BURLINGTON
2699 So. Bayshore Drive, PH1
Miami, FL 33133
(305) 858-2900

MARK HERRON
MESSER, CAPARELLO & SELF, P.A.
2618 Centennial Place
Tallahassee, Florida 32308
(850) 222-0720

DONALD B. VERRILLI, JR.
SAM HIRSCH
JESSICA RING AMUNSON
JENNER & BLOCK LLP
601 Thirteenth Street, N.W.
Washington, DC 20005
(202) 639-6000

April 13, 2007

TABLE OF CONTENTS

EXPLANATION OF APPENDICES, EXHIBITS, AND SUPPORTING MATERIALS

Ms. Jennings has lodged with the Clerk and with the Panel six volumes of supporting materials with this Memorandum. These materials consist of the following:

SUPPORTING MATERIAL	CITATION FORM
Appendix to Emergency Petition for a Writ of Certiorari. This two-volume appendix was lodged with Florida's First District Court of Appeal on January 3, 2007, in connection with Ms. Jennings's appeal from the state trial court's order denying her requests for discovery. The appendix consists entirely of filings and transcripts from the trial-court proceedings. The table of contents to this two-volume appendix appears at Exhibit F to this Memorandum.	**A-xx**
Supplemental Appendix. This two-volume appendix has been prepared for the Panel. It consists primarily of more recent filings in the First District Court of Appeal, as well as additional materials not originally included in the Appendix to Emergency Petition for a Writ of Certiorari. The table of contents to this two-volume appendix appears at Exhibit F to this Memorandum.	**SA-xx**
Documentation of Voting Machine Malfunction. This two-volume appendix has been prepared for the Panel. It consists of sworn affidavits submitted by voters to the Jennings campaign concerning the failure of Sarasota County's electronic voting machines, as well as a sampling of Election Day "Zone Tech Log Sheets" completed by Sarasota County technicians; Sarasota County Supervisor of Elections Incident Report Forms; Jennings campaign Incident Report Forms; e-mails from voters; and Poll Watcher Incident Report Forms. The table of contents to this two-volume appendix appears at Exhibit F to this	**By Volume**

Memorandum.

In addition to these six volumes, Ms. Jennings has attached the following exhibits directly to this Memorandum.

Exhibits

Professor Dan S. Wallach and Professor David L. Dill, *Stones Unturned: Gaps in the Investigation of Sarasota's Disputed Congressional Election* (April 13, 2007)	**Ex. A**
Letter from ES&S to Florida Users of iVotronic Voting Machines (August 15, 2006)	**Ex. B**
Voter Affidavits	**Ex. C-xx**
List of Proposed Items for Panel Subpoenas	**Ex. D**
Proposed Protective Order and Nondisclosure Agreement	**Ex. E**
Tables of Contents to Appendices	**Ex. F**

INTRODUCTION AND SUMMARY OF ARGUMENT

On November 7, 2006, Christine Jennings and Vern Buchanan competed in the general election to represent Florida's Thirteenth Congressional District in the House of Representatives. The official vote totals showed Mr. Buchanan prevailing by 369 votes, but nearly 18,000 ballots cast on the paperless electronic touchscreen voting system in Sarasota County, Ms. Jennings's home base, turned up blank for the congressional race.

Although Ms. Jennings filed an election contest within hours after the certified election results were announced, five months later her case is still languishing in the state courts. Not only have the courts failed to resolve the question of what caused these 18,000 undervotes; but to date, they have refused even to provide Ms. Jennings with access to the most fundamental evidence in the case — the hardware and software (including the source code) for Sarasota County's "iVotronic" electronic voting machines manufactured by Election Systems & Software, Inc. ("ES&S").

The task of getting to the bottom of what happened to these 18,000 electronic ballots is long overdue. And because the Florida state courts have proved themselves unwilling or unable to accomplish that task, the House must now take up its constitutional duty to investigate this matter and to reach a prompt,

but fair, conclusion about which candidate is entitled to sit as the Representative in the 110th Congress from Florida's Thirteenth District.

There are powerful reasons to believe that Christine Jennings is that candidate. Although the state-court litigation has gotten thoroughly bogged down with bogus claims of trade secrecy preventing access to the iVotronic hardware and software, it has accomplished one thing: The political-science and statistical experts for both sides have reached a consensus that the great bulk of Sarasota County's 18,000 undervotes were unintended and that, had those voters' intended votes been properly counted, Ms. Jennings would have beaten Mr. Buchanan by about 3,000 votes.

Those facts alone should resolve this case. After all, the whole point of an election contest — whether litigated in state court under state law or in the House of Representatives under the Federal Contested Elections Act (FCEA), 2 U.S.C. §§ 381-396 — is to effectuate the will of the electorate. *See Roush v. Chambers,* H.R. Rep. No. 87-513, at 22 (1961); *Boardman v. Esteva*, 323 So. 2d 259, 269 (Fla. 1975). As every expert to have studied this election to date has concluded, Christine Jennings, not Vern Buchanan, was the candidate preferred by the majority of the electorate. She therefore is entitled to the seat.

The nearly 700,000 residents of Florida's Thirteenth District — and especially the 18,000 Sarasota County voters whose congressional ballots were

recorded as blank — deserve to know why they are not being represented by the candidate of their choice. And the people of the entire Nation — forty percent of whom also vote on paperless electronic voting machines, many of which were built and programmed by the same manufacturer, ES&S — deserve to know how they can safeguard their right to vote and ensure that they never fall victim to a debacle like Sarasota County's. For our democratic system to function properly, Americans must have confidence that their votes will be cast as they were intended and will be counted as they were cast.

Properly investigating what went wrong with Sarasota County's touchscreen voting system inevitably will lead to one of two conclusions: either, as Ms. Jennings contends, the voting machines malfunctioned or, as Mr. Buchanan contends, the voters malfunctioned. Ms. Jennings alleges that votes cast for one candidate or the other were rejected by the machines and misrecorded as undervotes, probably due to a software "bug" not unlike the programming glitches people routinely encounter on their home or office computers. Mr. Buchanan alleges that voters, particularly Sarasota's senior citizens, never actually cast their intended congressional votes, as allegedly poor ballot design led them simply to overlook Ms. Jennings's and Mr. Buchanan's names on the electronic touchscreens, and then overlook the race again when they got to the summary

screen at the end of the ballot, and then miss the warning, in bright red letters, saying "No Selection Made."

Promptly resolving this dispute is very much in the public interest. It is only a matter of time until similar or identical malfunctions in electronic voting machines corrupt yet another election. And the next botched election could determine control of a congressional chamber or even the presidency. Decisive resolution of this dispute will serve our Nation well.

Therefore, it is imperative that this Panel commence the investigation that the Florida state courts have stymied. Under the Constitution and the FCEA, the Panel has not only the authority, but also the responsibility to do so, and to do so expeditiously.

Part I of this Memorandum addresses the Panel's question of whether potential state remedies give the Panel "compelling reasons . . . not to proceed with an investigation at this time." The answer is a resounding No. The Florida courts have proved incapable of giving this case the expedited treatment it deserves, as an election contest for an office whose term is only 24 months long. Remarkably, when Chairwoman Millender-McDonald took the initiative, in the very first week that she chaired the Committee on House Administration, to send the Florida court a letter urging the full and speedy development of the factual record, the court took just six days to inform her that it would pay no attention to the Committee's

request, refusing even to enter the Chairwoman's letter on the court's docket. Ninety-nine days later, there is still no ruling from the court on the most basic issue of Ms. Jennings's access to the evidence needed to develop the factual record, and certainly no hope that such development will be speedy.

Furthermore, the defendants in the litigation have ceased to take their state-court discovery obligations seriously. That fact came into stark relief when it was recently revealed that three sets of defendants who repeatedly have vouched for the iVotronic system's "100% accuracy" — the state election officials, the county election supervisor, and the voting-machine manufacturer ES&S — all had concealed from Ms. Jennings and from the trial court contemporaneous documents proving that they were aware of serious problems with the electronic touchscreens back in August 2006, ***three months before Election Day***. These documents fell squarely within Ms. Jennings's and her co-plaintiffs' discovery and public-records requests, yet none of these defendants produced them. The futility of resolving this election contest in Florida's state courts has become unmistakably clear.

Part II of this Memorandum addresses the Panel's question of whether it can "rely and if so, to what extent, on the tests conducted by Florida authorities and their experts." The answer once again is a resounding No. The Florida election authorities not only have concealed evidence, but have undertaken an extended public campaign to exonerate themselves, as they are of course the same officials

who previously certified the defective iVotronic system for use throughout Florida. Since the 2006 election, these officials have purported to conduct extensive "tests" absolving the iVotronic system, but those tests do not even begin to address the core problems that plagued Sarasota County's voting machines. As explained in detail below, even before the results of the Jennings-Buchanan election were known — indeed, during the two-week early-voting period that preceded Election Day — reports of malfunctioning touchscreens began to pour in to the county election supervisor's office and the Jennings and Buchanan campaigns. Even Mr. Buchanan's wife reported difficulty voting for her husband, apparently pressing the "Vote" button three times before her vote would register. And these hundreds of eyewitness accounts of touchscreen malfunction are now bolstered by the expert statistical analyses of the election returns, on a machine-by-machine basis, which show that the undervote problem was worst on touchscreens that were set up and "calibrated" on days when the county election staff was busiest. Yet the State deliberately structured its post-election "testing" regime to avoid confronting these very issues. It allowed only 5 of the County's more than 1,500 touchscreens to be tested in a "mock" election and did not allow ***any*** of the 1,500 touchscreens to be inspected by the special panel of computer scientists that the State assembled to "study" the undervote's causes. The mismatch between what the State tested for and what the voters complained about is striking.

By contrast, a serious investigation of Sarasota County's iVotronic system would place both the hardware (a sizeable sample of the 1,500 machines) and the software (including both the system's generic "source code" and the "ballot definition files" that Sarasota County election staffers programmed for the November 2006 election) in the hands of computer scientists and engineers who work in tandem with one another, so that bugs involving the ***interaction*** between the hardware and the software would not easily escape detection. In outlining the contours of a proper investigation, Part II of this Memorandum also answers the Panel's question about the "need for [and nature of] additional testing."

Part III of the Memorandum then answers the Panel's question about what discovery should be authorized under the FCEA, setting forth a specific, step-by-step program by which this Panel could oversee a serious, comprehensive, and timely investigation. The proposed program would rely heavily on the two parties' experts, who would be asked to analyze the key evidence and produce reports (and counter-reports), under oath, all within 45 days. But the program also would give the Panel itself the means to assess those expert reports and, if necessary, to conduct its own specific, targeted investigations into particular aspects of the hardware and software. The first step in this program would be for the Panel to subpoena the relevant hardware, software (including source code), and documentation from the county and state election officials and the voting-machine

vendor, ES&S. As explained below, federal law and House election-contest precedents provide ample authority for such subpoenas.

Finally, Part IV of the Memorandum answers the Panel's question about how it can "protect the proprietary interests of the voting machine vendor/ manufacturer, should discovery entail an examination of trade secrets." It puts to rest the concerns about trade secrecy that have served, in the state-court litigation, primarily to shield the defendants from a full and fair investigation of what really happened in Sarasota County. As in state court, to expedite the process and to avoid lengthy battles over what is or is not a trade secret, Ms. Jennings is perfectly willing to have her experts sign nondisclosure agreements and abide by a protective order prohibiting them from disclosing any proprietary information. Violations of that protective order of course would be punishable as criminal contempt of Congress. Although the vendor's (and the vendor's codefendants') cries of "trade secrecy" ring hollow, Ms. Jennings's willingness to subject her experts to stringent protective measures should be more than enough to allay any legitimate concerns about the vendor being injured unfairly by its business competitors.

I. THERE IS NO COMPELLING REASON FOR THE PANEL TO POSTPONE ITS INVESTIGATION.

More than five months after the election for Representative in Congress from Florida's Thirteenth District, the district's voters are still unrepresented by

the candidate of their choice. And voters across the country are looking to Florida's Thirteenth District and wondering about the security of the votes they have cast on paperless electronic voting machines, such as the ES&S iVotronic system used in Sarasota County. Contestant Christine Jennings has used every tool at her disposal to resolve the issues before this Panel as quickly and fairly as possible in litigation filed in state court under Florida's election-contest statute. But she has been thwarted at every turn by the defendants in that action and by the Florida courts.

Given the tremendous public interest in ensuring that the voters of Florida's Thirteenth District are actually represented by the person they elected, the time has come for the House of Representatives to fulfill its constitutional and statutory responsibilities to investigate this matter. As then-Judge Scalia stated: "The pressing legislative demands of contemporary government have if anything increased the need for quick, decisive resolution of election controversies." *Morgan v. United States*, 801 F.2d 445, 450 (D.C. Cir. 1986). That is what is needed from this Panel.

A. The House Has the Constitutional and Statutory Responsibility to Proceed with This Investigation.

Under Article I, Section 5 of the United States Constitution, "[e]ach House shall be the Judge of the Elections, Returns and Qualifications of its own Members." U.S. Const. art. I, § 5. The House of Representatives therefore bears

the ultimate constitutional responsibility to judge the disputed election in Florida's Thirteenth Congressional District. The House generally employs the procedures outlined in the FCEA, 2 U.S.C. §§ 381-396, to discharge its constitutional responsibilities. Although the House has sometimes deferred to state-court proceedings, it has done so only when there is a compelling constitutional reason for deference, such as permitting a state recount to run its course, allowing a state criminal investigation to conclude, or waiting to see how a state court applies state election laws. Moreover, in cases in which the Committee has waited for state proceedings to conclude, they have concluded much more quickly than the proceeding at issue here.

1. The House Has the Constitutional Responsibility to Judge This Election.

When it comes to judging elections for Members of Congress, the Constitution provides not just that "each House 'may judge' these matters, but that each House 'shall be ***the*** Judge.'" *Morgan*, 801 F.2d at 447 (emphasis in the original). Under the House Rules, this responsibility to act as the judge is delegated in the first instance to the Committee on House Administration, which "pursuant to the House's constitutional authority under Article I, Section 5, clause 1, has broad power and authority to conduct an examination of an election, election procedures, and ballots in a contested election case, and to establish uniform standards and guidelines for the counting of ballots to determin[e] voters'

intentions. This authority is independent of . . . any proceedings under the FCEA." Jack Maskell & L. Paige Whitaker, American Law Division, Congressional Research Service, *Procedures for Contested Election Cases in the House of Representatives*, at 14-15 (Jan. 4, 2007) [hereinafter "CRS Report on Contested Elections"]. Further, the Committee's "constitutional responsibility to fairly judge the elections and returns of members is not limited by state law or state judicial decision." *Anderson v. Rose*, H.R. Rep. No. 104-852, at 17 (1996).

Because the Constitution also vests responsibility in the States to prescribe the "Times, Places and Manner of holding Elections for Senators and Representatives," U.S. Const. art. I, § 4, the Committee on House Administration has sometimes deferred undertaking an investigation into a federal contested election until after state proceedings have concluded. It has done so, however, only when constitutional deference to the State's authority to regulate the "Times, Places and Manner of holding Elections" is appropriate. There are three main instances in which the Committee defers. ***First***, the Committee typically waits until the State's statutory procedures for canvassing and recounts have been concluded. *See, e.g.*, *Carter v. LeCompte*, H.R. Rep. No. 85-1626, at 3-4 (1958) (taking jurisdiction of contest only after concluding there was no provision for a recount under state law). ***Second***, the Committee might defer involvement when a state court is considering a novel application of its own state election laws to a

dispute. *See, e.g.*, *Federal Contested Elections Act*, H.R. Rep. No. 91-569, at 2 (1969) (noting that "where the highest court of a State has interpreted the State law, the House has concluded that it should generally be governed by this interpretation but does not consider itself bound by such interpretation" (citations omitted)). ***Third***, and consistent with principles of federalism, the Committee typically defers when the State is conducting a criminal investigation into violations of state election laws. *See, e.g.*, *Wilson v. Leach*, H.R. Rep. No. 96-784, at 2 (1980) (delaying the task force's consideration of a contest action "[i]n order not to interfere with the ongoing criminal proceedings" in which contestee was indicted by a grand jury for vote buying but eventually acquitted).

None of these reasons for constitutional deference is present here. ***First***, all of Florida's canvassing and recount procedures have been exhausted. In this case, recounting the iVotronic votes was a meaningless exercise because there was no voter-verifiable paper trail. Thus, all that could be "recounted" were electronic "ballot-image logs," which reflect only what the computer program says the voter did, as the individual voters had no opportunity to verify those logs before leaving the polling place. Not surprisingly, "recounting" these machine logs reproduced precisely the enormous undervote caused by machine malfunction. ***Second***, there are no issues regarding novel applications of state election law. Rather, the only issue currently pending before the state courts is Ms. Jennings's access to the

iVotronic hardware and software she needs to prove her case. This does not require the Panel to interpret or apply any state election laws, nor even to apply state discovery laws or procedures, since the Panel has its own constitutional and statutory power to conduct discovery. ***Third***, there is no criminal investigation underway and therefore no need to delay action on this account.

In sum, there is simply no compelling reason that the House should not take up its constitutional responsibility now. Even if the Florida courts were to determine tomorrow (consistent with every expert who has analyzed the election) that Ms. Jennings was the rightful winner of the election in Florida's Thirteenth District, the House would still have the constitutional responsibility to judge this election. "The House is not only 'Judge' but also final arbiter." *McIntyre v. Fallahay*, 766 F.2d 1078, 1081 (7th Cir. 1985). The House is perfectly able to carry out its constitutional responsibilities while a state proceeding is still ongoing, and it has done so in the past, as discussed below.

2. The FCEA Calls for Expedited Review of Election Contests.

As the legislative history of the Federal Contested Elections Act demonstrates, the FCEA was designed to "provide efficient, expeditious processing of the cases and a full opportunity for both parties to be heard." *Federal Contested Elections Act*, H.R. Rep. No. 91-569, at 3 (1969). The Act was passed with the recognition that "[e]lection contests affect both the integrity of the elected process

and of the legislative process" and it is therefore "essential that such contests be determined by the House under modern procedures." *Id.* Significantly, the House will not "penalize contestants who cannot fully support their credible allegations because the proof of their claims is in the hands or minds of those who have committed the errors or violations at issue." *Anderson v. Rose*, H.R. Rep. No. 104-852, at 6-7 (1996).

When a candidate files a notice of contest, "[j]urisdiction over contested elections is given to the Committee on House Administration by the House rules; and the responsibility for hearing contested election cases falls on the Committee on House Administration." 2 LEWIS DESCHLER, DESCHLER'S PRECEDENTS ch. 9 § 5 (1976) [hereinafter "DESCHLER"]. The Committee may not escape this responsibility by delegating it to state courts or state fact-finding processes. It is entirely reasonable for a contestant to seek the materials she needs to prove her case by proceeding along parallel tracks in state and federal contest actions. *See, e.g., Young v. Mikva*, H.R. Rep. No. 95-244, at 9 (1977) (dissenting view of Rep. Stockman) ("The contestant should be allowed the opportunity to have access to the materials he needs to present his case ***either through action of the courts or this committee pursuant to the Federal Contested Elections Act***.") (emphasis added). And history shows that the Committee has not hesitated to move forward with a parallel investigation while state proceedings are ongoing.

For example, a contest action brought against Representative Mikva in the 95th Congress was in a similar procedural posture as Ms. Jennings's case now when the Committee took up the case. *See Young v. Mikva*, H.R. Rep. No. 95-244, at 3 (1977). The contestant in that case had filed in Illinois state court a contest action, which was dismissed by the trial court. The contestant then petitioned for the Supreme Court of Illinois to take the appeal from the trial court directly and to hear it on an expedited basis. The Supreme Court granted that motion and scheduled oral argument. However, nine days before the scheduled oral argument in the Illinois Supreme Court, the House Committee held its own hearing on the federal election contest. Just over a month later, the Committee resolved the federal contest. In its report, the Committee noted that "[a]s of this date, there has been no decision rendered by the Illinois Supreme Court." *Id.* The fact that an appellate decision was pending did not keep the Committee from intervening and even resolving the case. Here, all that Ms. Jennings asks is that the Panel intervene to begin its investigation.

More recently, in a contest action brought against Representative Charlie Rose in the 104th Congress, the House Committee investigated and resolved the federal contest despite the fact that a state action was still pending in North Carolina. *See Anderson v. Rose*, H. R. Rep. No. 104-852, at 17 (1996) (finding that "neither the [State Bureau of Investigations] or the [State Board of Elections]

nor any state court has issued a formal review of the results of the election at this time"). In that case, the Committee found that because the contestant filed his state complaint a month before his federal notice of contest was submitted and the state investigation "was not completed until long after the deadline for filing a contest under the FCEA," the contestant "properly chose to proceed along two tracks." *Id.* Moreover, the Committee stated that while it is "generally willing to defer to state electoral rules and investigations," it does not accord this deference when the state "fail[s] to take several important investigatory steps" because this "cast[s] serious doubt on the conclusiveness of the [State's] report." *Id.* at 12. Here, just as in *Anderson*, no deference is necessary to a state investigation that has failed to take so many important investigatory steps, as discussed *infra* in Part II.

When the Committee has waited for state proceedings to conclude before conducting its own hearings and investigations, those proceedings typically have moved much more quickly than the one at issue here. In *McCuen v. Dickey*, H.R. Rep. No. 103-109 (1993), the contestant filed a complaint in Arkansas state court three days after the canvass showed he had lost the November 1992 election by 8,266 votes. *See id.* at 3. He sought a protective order for the voting machines, which he alleged had malfunctioned during the election. The judge immediately entered a protective order, and followed this with an order three weeks later permitting the parties and their experts to open and inspect 35 voting machines.

After the contestant filed a notice of contest with the House, the state judge dismissed the complaint, claiming a lack of jurisdiction over a contested House election. All of this was completed by December 14, 1992 — within six weeks of the election. The House Committee then took up the federal contest action on February 4, 1993, and was able to use the findings from the parties' inspection of the voting machines to resolve the federal contest. *See id.*

As Chairwoman Millender-McDonald's January 4, 2007 letter to the Florida appellate court makes clear, "state proceedings ordinarily enhance the ability of the House to evaluate the merits of any pending election contest." SA-1. Unfortunately, that has not been the case here. Had the trial judge here done what the trial judge in *McCuen v. Dickey* did and permitted the parties to inspect the voting machines, the need for this election contest might have been avoided entirely. Instead, Ms. Jennings is coming to the Panel more than five months after the election with little to show, through no fault of her own, for the time she has spent in state court.

In the Florida state-court action, the defendants have maintained, and the trial judge has accepted, the premise that Ms. Jennings must prove her case of machine malfunction ***before*** being given access to the evidence she needs in order to prove her case of machine malfunction. To quote the Republican Members of the Committee on House Administration in the 95th Congress: "The only

adjective which aptly describes the process whereby a person is denied an opportunity to prove his case on the ground that he has not already done so is 'bizarre.'" *Paul v. Gammage*, H.R. Rep. No. 95-243, at 2 (1977) (dissenting views). Ms. Jennings therefore requests that this Panel rectify the bizarre situation in which she finds herself.

B. The Panel Can Expeditiously Resolve the Discovery Issues that Have Held Up the State-Court Litigation.

Although Ms. Jennings has used every tool at her disposal to expedite the state-court litigation, she has been thwarted at every turn by the defendants and the Florida courts. On every possible occasion, Ms. Jennings has sought to advance the litigation as quickly as possible. And on each of those occasions, she has been met with nothing but recalcitrance and resistance. As the timeline below demonstrates, Ms. Jennings has made every attempt to resolve this matter expeditiously.

1. Chronology of State-Court Litigation.

- ***November 20, 2006: Ms. Jennings Files Her Complaint to Contest the Election.***[1] Under Florida law (Section 102.168, Florida Statutes), a candidate may not file an election-contest proceeding until after the election has been certified by the State. Ms. Jennings filed her complaint to contest the election in state court on November 20, 2006,

[1] Ms. Jennings's complaint was later consolidated with a second election-contest action brought by a bipartisan group of eleven individual voters. *See* A-204.

within hours of the State's certification. She named the state and county election officials as defendants and further named Mr. Buchanan, as the statute required. As this Panel is well aware, the grounds for Ms. Jennings's complaint to contest the election was the massive and unexplainable undervote on Sarasota County's iVotronic machines manufactured by ES&S. *See* A-1.

- ***November 20, 2006: Ms. Jennings Files a Motion for Expedited Discovery.*** Along with her complaint, Ms. Jennings moved for expedited discovery and requested access to the ES&S hardware and software (including the source code) in the possession of the State and County. Ms. Jennings requested an immediate hearing on her motion, citing the contest statute, Section 102.168(7), Florida Statutes ("Any candidate, qualified elector, or taxpayer presenting such a contest to a circuit judge is entitled to an immediate hearing."). *See* A-122.

- ***November 21, 2006: The Trial Judge Denies Ms. Jennings's Motion for Expedited Discovery.*** Florida Circuit Court Judge William L. Gary held a brief hearing on November 21, 2006, at which he largely denied Ms. Jennings's request for expedited discovery and instead granted the state and county defendants 15 days to respond. *See* A-178. Judge Gary also stated that ES&S, the manufacturer of

the iVotronic system, must be given "an opportunity to be heard" before he would consider granting any request for access to the system's source code (despite the fact that the source code was in the State's possession). *See* A-174.

- ***November 30, 2006: Ms. Jennings Files an Amended Complaint to Contest the Election.*** In accordance with Judge Gary's request to give ES&S an opportunity to be heard, Ms. Jennings amended her complaint on November 30, 2006, to add ES&S as a defendant. *See* A-206. That same day, she served ES&S with the discovery requests previously served on the state and county defendants. *See* A-114.

- ***November 30, 2006: Ms. Jennings Files a Motion to Compel Production of the Source Code from the State Defendants.*** Along with her amended complaint, Ms. Jennings filed a motion to compel production of the source code from the State, reiterating that although ES&S may have an interest in the litigation, the discovery she sought was in the State's possession. *See* A-232. To expedite matters, Ms. Jennings took two unusual steps. First, she conceded for purposes of her motion that the materials she had requested were trade secrets, thereby relieving ES&S of the burden of proving that the broad range of materials for which it claimed the privilege were actually trade

secrets.[2] Second, she proposed that she and her experts would be bound by a stringent protective order that would accommodate any interest ES&S might have in protecting its proprietary information, while ensuring that Ms. Jennings could access the evidence she needed to prove the allegations of her complaint. *See* A-241.

- ***December 5-6, 2006. All Defendants Refuse to Permit Discovery.*** Predictably, the state and county defendants used the full 15 days granted them by Judge Gary before responding to Ms. Jennings's discovery requests. The state and county defendants objected to producing the vast majority of the materials requested by Ms. Jennings (including all of her requests for hardware, software, and source code), claiming that these were trade secrets belonging to ES&S. *See* A-254, 260. ES&S asked for an additional 15 days to respond to Ms. Jennings's requests for production and requested an evidentiary hearing on Ms. Jennings's need for discovery. *See* A-271.

[2] ES&S claimed the trade-secret privilege over virtually everything Ms. Jennings requested, including even manuals and training materials disseminated to poll workers. *See* A-486-87. It is highly unlikely that ES&S would actually be able to prove the applicability of the trade-secrets privilege to much of the material for which it claimed the privilege, were Ms. Jennings to put ES&S to the test.

- ***December 6, 2006: Ms. Jennings Files a Motion to Compel Production of Hardware and Software from the County.*** Anticipating that the defendants would refuse discovery on the basis of an alleged trade-secrets privilege, Ms. Jennings immediately filed a motion to compel access to the iVotronic hardware and software. *See* A-299. She also opposed ES&S's baseless request for an additional 15 days to respond to her discovery requests, pointing out that ES&S had received the same amount of time afforded all other defendants to respond. *See* A-352.

- ***December 7, 2006: Ms. Jennings Requests a Case-Management Conference and Priority Status.*** Given that a month had passed since the election and Judge Gary had shown little inclination to expedite proceedings despite the express provisions in the Florida election-contest statute calling for speed, Ms. Jennings moved for a case-management conference, requested the prompt entry of a scheduling order, and asked that the case be given priority status in accordance with the Florida Rules of Judicial Administration. Ms. Jennings proposed an expedited schedule whereby responses to all discovery requests would be due within seven days of the request, fact discovery would close by January 5, 2007, expert depositions would be taken

between January 8 and 12, 2007, and trial would commence by late January 2007. Ms. Jennings conferred with the defendants, who agreed with some aspects of the schedule, but proposed a trial date in mid-February 2007. *See* A-403.

- ***December 8, 2006: The Trial Judge Denies Ms. Jennings's Requests.*** In response to Ms. Jennings's request for a case-management conference, priority status, and entry of a scheduling order, Judge Gary simply stated "we don't do that." A-417. As of this date, the trial court has never held a case-management conference, never entered a scheduling order, and never considered whether this case should be given priority status under the Florida Rules of Judicial Administration.

- ***December 8, 2006: The Trial Judge Grants ES&S's Requests.*** Judge Gary granted ES&S's request for an evidentiary hearing to determine Ms. Jennings's need for the hardware, software, and source code that she had requested through discovery. *See* A-484. ES&S joined the other defendants in asserting that these materials were protected by the Florida trade-secrets privilege, Section 90.506,

Florida Statutes.[3] *See* A-486. ES&S correctly stated that the test for determining whether trade secrets should be disclosed is "whether the information is sufficiently relevant and necessary to the Plaintiff's case to outweigh the harm disclosure would cause to the person from whom he is seeking the information." A-490.

- ***December 19-20, 2006: The Trial Judge Holds an Evidentiary Hearing.*** On December 19 and 20, the trial court held an evidentiary hearing to consider the applicability of Florida's trade-secrets privilege to the iVotronic system materials requested by Ms. Jennings. Ms. Jennings presented one expert on undervotes and statistical analysis of election data — Professor Charles Stewart III, the chair of the Political Science Department at the Massachusetts Institute of Technology (MIT) — and one expert on electronic voting technology — Professor Dan S. Wallach of the Computer Science Department at Rice University. Neither Mr. Buchanan nor the governmental defendants who were the targets of Ms. Jennings's motion to compel presented any witnesses. ES&S presented one expert on elections and

[3] Section 90.506, Florida Statutes, states: "A person has a privilege to refuse to disclose, and to prevent other persons from disclosing, a trade secret owned by that person if the allowance of the privilege will not conceal fraud or otherwise work injustice. When the court directs disclosure, it shall take the protective measures that the interests of the holder of the privilege, the interests of the parties, and the furtherance of justice require. The privilege may be claimed by the person or the person's agent or employee."

voting patterns — Professor Michael C. Herron of the Government Department at Dartmouth College.

Professor Stewart testified that the undervote rate in Sarasota County was not normal, that Ms. Jennings would have won the election had the undervote rate been normal, and that machine malfunction had likely altered the outcome of this election. *See* A-531-41. Professor Wallach testified that machine malfunction was the likely cause of the undervote rate and described an investigation of the hardware and software that would be necessary to prove or disprove that machine malfunction was the cause of the undervote. *See* A-558-64. Professor Herron testified — without ever having examined the hardware or software, and with no computer expertise whatsoever — that poor ballot design was the sole cause of the elevated undervote. *See* A-620-21; 630-31. Professor Herron agreed with Professor Stewart that Ms. Jennings would have won the election had the undervote rate been normal. *See* A-623; *see also* Michael C. Herron *et al.*, Ballot Formats, Touchscreens, and Undervotes, at i, *available at* http://www.dartmouth.edu/~herron/cd13.pdf (accessed Apr. 12, 2007) (concluding that "there is essentially a 100 percent chance the 13th

Congressional District election result would have been reversed in the absence of the large Sarasota County undervote").

ES&S also introduced into evidence a Parallel Test Summary Report, which the state defendants produced on the eve of the evidentiary hearing. *See* A-652. The report described a test of ten iVotronic machines conducted by the State following the election (five of the machines had not even been used during the election). The report concluded that the "parallel tests were successful in demonstrating 100% accuracy in recording the vote selections as indicated on the review screens." A-659. The report was introduced over Ms. Jennings's objection that it was hearsay and that she should be allowed the opportunity to cross-examine its author.

- ***December 29, 2006: The Trial Judge Denies Ms. Jennings's Discovery Requests.*** On December 29, 2006, Judge Gary issued an order denying Ms. Jennings's requests for access to the hardware, software, and source code for the iVotronic system. The court stated that granting Ms. Jennings's motions to compel "would require [it] to find that it is reasonably necessary for the Plaintiffs to have access to the trade secrets of [ES&S] based on nothing more than conjecture

and would result in destroying or at least gutting the protections afforded those who own the trade secrets." A-808.

- ***January 3, 2007: Ms. Jennings Files an Emergency Petition for Certiorari and a Motion to Expedite.*** Working through the holiday weekend, Ms. Jennings filed an immediate appeal of the trial court's ruling via an emergency petition for a writ of certiorari in Florida's First District Court of Appeal. *See* SA-6. Ms. Jennings also filed a motion to expedite, asking the appellate court to accelerate its consideration of the emergency petition. *See* SA-67. On January 4, 2007, the appellate court ordered the defendants to show cause within 20 days why Ms. Jennings's petition should not be granted. *See* SA-75.

- ***January 5, 2007: ES&S Files Motion to Strike.*** Despite the fact that the appellate court had already ordered ES&S to show cause why Ms. Jennings's petition should not be granted, ES&S filed a frivolous motion to strike her petition on January 5, 2007. *See* SA-76. ES&S filed this motion knowing that it would toll the clock for filing its response to Ms. Jennings's petition.

- ***January 9, 2007: The Appellate Court Rejects Chairwoman Millender-McDonald's Correspondence.*** On January 4, 2007, Chairwoman Millender-McDonald sent a letter to the appellate court expressing concern that the "lower court had declined to order the requested access to the hardware and software (including the source code) needed to test [Ms. Jennings's] central claim [of] voting machine malfunction" because "state proceedings ordinarily enhance the ability of the House to evaluate the merits of any pending election contest." SA-1-2. The Chairwoman noted that "Florida law will facilitate the evaluation of the election contest pending before the House to the extent that it provides access to relevant and critical evidence." *Id.* On January 10, 2007, the Clerk notified the Chairwoman and the parties that the Chairwoman's correspondence would not be docketed or considered by the panel of judges deciding the case. *See* SA-90.

- ***January 24, 2007: The Appellate Court Grants Ms. Jennings's Motion to Expedite and Denies ES&S's Motion to Strike.*** Almost three weeks later, the appellate court granted Ms. Jennings's motion to expedite the petition and denied ES&S's frivolous motion to strike it.

This finally restarted the original 20-day clock for the defendants to respond to Ms. Jennings's petition. *See* SA-92.

- ***February 20, 2007: The Appellate Briefing Is Finally Completed.*** Predictably, ES&S waited until the eleventh hour to file its response to Ms. Jennings's petition for a writ of certiorari. *See* SA-93. Although the appellate court had granted Ms. Jennings a full 15 days to file reply briefs to each of the defendants' responses (*see* SA-93, 153, 191), Ms. Jennings filed just one brief and did so nearly a week ahead of the deadline. *See* SA-211.

- ***Awaiting Ruling.*** Despite the fact that the appellate court granted Ms. Jennings's motion to expedite consideration of the petition, and despite the fact that the petition has been fully briefed by all parties for nearly two months, the court has not yet issued any ruling nor indicated any date by which such a ruling may be forthcoming.

2. Withholding of Evidence.

As the foregoing chronology demonstrates, the defendants have repeatedly attempted to stall the litigation process, presumably hoping that the longer this proceeding drags on, the less willing Ms. Jennings will be to pursue it. The defendants' stonewalling is not limited to procedural maneuvers, however. They

have also withheld substantive evidence from Ms. Jennings that casts serious doubt on the claims they made before the trial court that the iVotronic machines "performed as they were designed and accurately recorded the votes which were input into them." A-763.

Just recently, Ms. Jennings learned of a letter sent by ES&S in August 2006 to Florida election officials, including Sarasota County's Supervisor of Elections Kathy Dent and State Chief of the Bureau of Voting Systems Certification David Drury, that warned of a flaw in the software of the iVotronic machines and stated that ES&S would seek certification from the State to fix the problem before the November 2006 general election. That letter is attached hereto as Exhibit B. The letter noted that iVotronics of the same make and model used in Sarasota County were experiencing a "delayed response time" as a result of a "smoothing filter" that had been added to the software. *Id.* ES&S admitted that the malfunction "may vary from terminal to terminal and also may not occur every single time a terminal is used." *Id.* The letter recommended that "to avoid any potential issues at the polls" during the primary election, the County should train its poll workers and inform its voters to "expect this slightly delayed response time for their highlighted selections." *Id.*

When this letter first came to light, Supervisor Dent reacted by claiming that it "wasn't any big deal." *See* SA-238. And indeed, her actions demonstrate that

she treated it as no big deal. She completely ignored ES&S's warning that she should train poll workers and educate voters to expect a delayed response time. And she failed to follow up with ES&S about the problem despite ES&S's promise that it would have a fix certified in time for the November 2006 election. *See* Ex. B. Apparently neither Supervisor Dent nor the State questioned ES&S about the status of the problem despite ES&S's promise to keep them posted on its developments as it worked through the necessary phases of implementing the fix. *See id.* Supervisor Dent's reaction to the letter is in stark contrast with the reaction of then Pasco County Supervisor of Elections and now Secretary of State Kurt Browning, who identified the defective iVotronic machines and refused to use them on Election Day. *See* SA-238. As of this date, the iVotronics in Sarasota County have never been fixed.

The letter was indeed a "big deal," contrary to Supervisor Dent's contention, and an equally "big deal" was that this issue never came to light despite Ms. Jennings's and her co-plaintiffs' repeated public-records and discovery requests to the State, County, and ES&S for information regarding any potential malfunction with the iVotronic system. For example, on November 8, 2006, Ms. Jennings sent a public-records request to Supervisor Dent asking for "[a]ny and all documents including, but not limited to, correspondence, e-mails, notes, reports, memoranda, and/or all other similar documents received in your office and/or generated by or

within your office (including, but not limited to, internal documents), from January 1, 2006 to the date of production, evidencing complaints or concerns about actual or alleged problems with the electronic voting equipment and its components." *See* SA-242. Supervisor Dent produced some materials in response to this request, but neither the ES&S letter nor any reference to it was included in these materials. Also, Ms. Jennings's co-plaintiffs requested from ES&S reports of any voting-system malfunction and all correspondence between or among ES&S and election officials regarding any reported voting-system malfunction. *See* SA-248-49. ES&S responded by stating that it had "no documents showing that the voting system did not record or may not have accurately recorded a voter's vote, that the voting system exhibited anomalous or unexpected behavior, or that the voting system failed to properly perform any function for which it was certified under state or federal law." *See* SA-258.

As is now evident, the claims of the State, County, and ES&S that the machines worked perfectly and that there was no evidence of any malfunction were inaccurate and untrue. These parties were aware of a malfunction and chose not to share that information with Ms. Jennings or her co-plaintiffs. Supervisor Dent now claims that the information was not provided because she had "misfiled" ES&S's letter. *See* SA-261. The State first claimed that it had received the letter, then later reversed itself. *See* SA-265, 267. And ES&S claimed that Ms.

Jennings's discovery requests had not been specific enough for it to provide the letter.

All of these parties touted the supposed "100% accuracy" of the iVotronics by citing the parallel-test report in the state-court action despite knowing that there was a malfunction with the iVotronics that may not have manifested in parallel testing given that ES&S described the malfunction as varying from terminal-to-terminal and occurring only intermittently. *See* Ex. B. Based on this withholding of evidence, the trial court has been asked to reconsider its order denying the plaintiffs access to the hardware and software necessary to test for the malfunction. *See* SA-269. Today, the trial judge issued an order summarily denying that motion, even though the defendants had not even bothered to respond to it.

C. The Voters Are the Ultimate Party in Interest.

The right of voters to cast their votes effectively has long been "rank[ed] among our most precious freedoms." *Williams v. Rhodes*, 393 U.S. 23, 30 (1968). As the Supreme Court has explained: "No right is more precious in a free country than that of having a voice in the election of those who make the laws under which, as good citizens, we must live. Other rights, even the most basic, are illusory if the right to vote is undermined." *Wesberry v. Sanders,* 376 U.S. 1, 17 (1964). The Florida Supreme Court is in accord, noting that there is "no doubt that the purpose of the statutes permitting election contests is to prevent the thwarting of the will of

the electors either by fraud or by common mistakes honestly made." *Barber v. Moody*, 229 So. 2d 284, 286 (Fla. 1969). Yet five months after the election, not only hasn't this case been resolved to the satisfaction of the voters, the parties are still at a standstill as to the threshold issue of access to the evidence necessary to determine how the will of the voters was thwarted.

Even if the Florida intermediate appellate court were to issue a ruling tomorrow granting Ms. Jennings access to the evidence she seeks, the state-court action would still be months away from resolution. The intermediate appellate court's ruling would no doubt be appealed by the defendants to the Florida Supreme Court, which then would remand the case back down the ladder until it eventually returned to the trial court. And further proceedings in the trial court will be fraught with the same difficulties Ms. Jennings has encountered thus far — a trial judge who is unwilling to hold a case-management conference, issue a scheduling order, or accord the case priority status, and defendants who appear hell-bent on preventing Ms. Jennings from accessing the hardware and software she seeks, even by withholding evidence. Given these issues, there is no guarantee whatsoever that this state-court proceeding would be resolved before the term of office expires for the 110th Congress. That certainly is not in keeping with the Committee's call for "efficient, expeditious processing of [election contest] cases and a full opportunity for both parties to be heard." *Federal Contested Elections*

Act, H.R. Rep. No. 91-569, at 3 (1969). The voters of Florida's Thirteenth District deserve answers to their questions, and this Panel is in the position to provide those answers. It should begin the process now.

II. THE PANEL CANNOT RELY ON THE TESTS CONDUCTED BY THE STATE AND SHOULD ALLOW MS. JENNINGS AND MR. BUCHANAN TO PERFORM THEIR OWN TESTS.

Following the massive undervote in the congressional race, the State of Florida announced that it would be conducting an audit of Sarasota County's voting system and attendant procedures. This audit had three parts: (1) a "parallel test" conducted on ten iVotronic machines on November 28 and December 1, 2006; (2) a "software review and security analysis" of the ES&S iVotronic software; and (3) an examination of Sarasota County's election conduct, procedures, and results. All three parts of the audit were conducted or overseen by the State Division of Elections. Ms. Jennings's experts were permitted to observe, though not to participate in, the first part of the audit — the parallel tests. Ms. Jennings and her experts were excluded from the second and third parts of the audit.

A. The State's Self-Interest Renders All of Its Testing Suspect.

It is critical to note that all aspects of the audit were conducted or overseen by a self-interested actor that is a defendant in the state-court litigation — the Florida Division of Elections. Florida does not rely on federal standards to certify

its voting systems. Rather, Florida has its own voting-system standards and the Florida Division of Elections is responsible for certifying that voting equipment used in every Florida county complies with these standards. Thus, the very same people who originally certified that the equipment in Sarasota County met the required standards of achieving the "maximum degree of correctness, impartiality, and efficiency . . . [in] counting, tabulating, and recording votes" (Section 101.015(3), Florida Statutes), were charged with investigating whether the equipment had malfunctioned.

This is akin to permitting a defendant to be the judge in his own trial. For the reasons set forth below, each aspect of the audit conducted by the State was fatally flawed.

1. The Parallel Tests Were Flawed in Both Design and Execution.

As noted above in Part I of this Memorandum, when ruling against Ms. Jennings's discovery requests, the Florida court placed great emphasis on the so-called "parallel testing"[4] conducted by the state defendants. The parallel-test report was entered into evidence over Ms. Jennings's hearsay objection and without giving Ms. Jennings the opportunity to cross-examine its author. Had Ms. Jennings been given that opportunity, she could have exposed the numerous flaws

[4] A true "parallel test" occurs on Election Day using voting machines chosen at random that would otherwise have been used for the election. A better name for the testing conducted by the State is a "mock election."

in the testing that render the report's sweeping conclusions about the accuracy of the iVotronic system utterly unjustified.

Most importantly, the parallel tests were designed with the specific purpose of ***not*** recreating the undervote. As described by the State's report: "The parallel tests focused on the iVotronic touchscreen's ability to accurately record a voter's selections ***as presented to the voter on the touchscreen ballot review pages***." A-653 (emphasis added). Thus, the testing was meant only to ensure that the votes on the final ballot-review pages were the votes ultimately cast and counted. The State effectively redefined "accuracy" as a machine's ability to make a correct electronic copy of a review screen. Machines were deemed "accurate" when those machines displayed the wrong information on the review screen, so long as the machines faithfully copied the incorrect review screen to the machine's memory.

Moreover, this definition of "accuracy" ignores the most pervasive problem reported by hundreds of voters — that they voted for Ms. Jennings, but their votes did not appear on the ballot review page and they therefore had to go back to the page with the congressional race and attempt to record their votes again. *See generally* "Documentation of Voting Machine Malfunction Appendix." These voters generally reported that the second or third time around, the ballot review screen showed their votes for Ms. Jennings and they therefore cast their votes. *See id.* But likely thousands of people did not catch the malfunction of the iVotronic

system that resulted in a failure to record their intended votes on the review screen the first time. The State's report blatantly admitted that its tests were not designed to address the problems these voters reported in making their vote selections. As the State put it: "Although a number of these voters indicated a problem with their initial and final selection for the 13th Congressional District race, the primary focus of the parallel tests is the review screens." A-658; *see also* A-659 ("[T]he process of selecting one's choices is not a matter of the voting device's accuracy. Accuracy is relevant to the information presented to the voter on the review screens and ultimately captured as a ballot cast."). In other words, tough luck to those voters whose machines malfunctioned and caused their votes not to show up on the review screen.

While this major testing design flaw is enough to call into question the entirety of the State's parallel test, there were also several other defects with the way the testing was conducted, as outlined below.

- ***Unrepresentative "Mock Voters."*** The State used only Division of Elections employees as "mock voters" during the parallel tests. This was unacceptable for at least three reasons. ***First***, each of the testers had a conflict of interest as each was employed by, and accountable to, the very state agency that certified a defective voting system. ***Second***, the testers were hyper-sensitized to the high-profile issue of

touchscreen malfunction and therefore consciously or unconsciously inclined to try to cast their test ballots very, very carefully. ***Third***, the State did not try to ensure demographic balance, or representativeness, among the testers. Especially egregious was the State's failure to account for the high percentage of retirees in Sarasota County when choosing mock voters from among those employees who volunteered.

- ***Misplacement of the Touchscreens.*** On Election Day (and during early voting), the touchscreens in Sarasota County were horizontal. But during the parallel testing, they were vertical. Altering the screen angle is potentially a very significant alteration, as it largely, if not entirely, prevents a mock voter from accidentally touching two parts of the screen simultaneously and greatly reduces the chance that the voter touches the screen at a point slightly off-center from his or her intended target.

- ***Unnatural "Vote Patterns."*** The test scripts were derived from the actual votes cast on the machines, but used highly unnatural vote patterns that a real voter was extremely unlikely to have followed. Moreover, the mock voters made no attempt to execute vote patterns at varying speeds. As anyone who regularly uses a computer knows, the chance of a computer "freezing" or otherwise malfunctioning

often is related to the speed at which one uses the keyboard and mouse. The mock voters uniformly moved slowly and methodically through each screen. (And on the occasions when one of them did move faster, a video taken of the testing shows that her selections were not being properly registered, forcing her to go back and press the screen again repeatedly.)

- ***Too Few Machines.*** The State's parallel testing simply did not use enough machines to provide a reliable sample. It tested only five machines actually deployed on Election Day, and only four of those were tested using actual voter scripts derived from the machine's own ballot-image logs. These four machines combined recorded only 157 votes for Ms. Jennings or Mr. Buchanan. They thus represent ***less than one-sixth of one percent*** of all Jennings and Buchanan votes recorded by Sarasota County's iVotronic system. That is far too small a sample size for a thorough and exacting audit.

- ***No Touchscreen Calibration Testing.*** The State made no attempt to test touchscreen calibrations, despite numerous reports from voters that the touchscreens were not accepting their votes or required great pressure or an extended touch to record votes. Calibration issues are not even mentioned in the State's report.

Ms. Jennings noted many of these issues after her experts were permitted to observe the first day of parallel testing. She brought them to the State's attention in the hope that the State would correct these issues before the second day of parallel testing, which took place half a week later. *See* SA-352. Unfortunately, the State ignored the vast majority of Ms. Jennings's suggestions. *See* A-659-60.

In sum, the Parallel Test Summary Report relied upon by the Florida trial judge to deny Ms. Jennings's discovery requests cannot be relied upon by this Panel for at least three reasons. ***First***, the testing was designed only to ensure that a voting machine accurately captured the information on the ballot review screen, ignoring that hundreds of voters (including even Mr. Buchanan's wife, *see* SA-368) reported problems getting their votes for the congressional race to register and show up on the review screen. ***Second***, the testing used a statistically insignificant number of machines and was conducted in a manner that did not faithfully replicate actual Election Day conditions and voters. ***Third***, the testing was conducted by the very people who had a vested interest in proving that the machines they certified for use in Sarasota County performed "accurately." For all these reasons, the Panel and both parties' experts must conduct their own investigation into these issues and not rely on the State's flawed conclusions.

2. The Software Review and Security Analysis Was Woefully Inadequate.

The State also commissioned a group of academic computer scientists through Florida State University to analyze the source code to the ES&S iVotronic machines. *See* SA-369. The ostensible purpose of the analysis was to determine whether a software bug caused the undervote in Sarasota. Unfortunately, the analysis was woefully inadequate as the team commissioned by the State failed to perform the most basic test of all — a "dynamic" test that looked at how different parts of the source code and software manifested themselves on the iVotronic touchscreen machines actually used in Sarasota County. Rather, these academics performed a simple "static" analysis — reading the source code without ever seeing it executed on one of Sarasota County's iVotronic machines. *See* SA-371 (noting that the academics were "commissioned to conduct a static software code review").

Dr. Edward Felten, a renowned Professor of Computer Science at Princeton University, declined the State's invitation to participate in this static study when "it became clear [to him] that the study they wanted to commission was far from the complete, independent study [he] had initially thought they wanted." SA-436. As Felten noted: "The biggest limitation on the study is that [the State] is withholding information and resources needed for a complete study. Most notably, they are not providing access to voting machines. You don't have to be a rocket scientist to

realize that if you want to understand the behavior of voting machines, it helps to have a voting machine to examine." *Id.*

Even with just a static analysis, however, the State's experts found numerous serious problems with the iVotronic system. But the general public will never know the details of these problems as they were described in secret appendices released only to the State and ES&S. *See* SA-372. The State claims that none of these problems caused the undervote in the congressional race, but they provide no answer as to what did cause the undervote. The State simply requests that Ms. Jennings and the voters take the State's word for it that the "iVotronic firmware, including faults that we[re] identified, did not cause or contribute to the CD13 undervote." SA-371. It is difficult, however, to accept the State's word for it when the testing and report ignored or glossed over some of the most serious issues, as described below.

- ***Smoothing Filter.*** Florida State University Professor Alec Yasinsac, who led the team of academics studying the source code, recently stated that his "team looked into the slow response time after seeing a copy" of ES&S's August 15, 2006 letter regarding the smoothing-filter issue. SA-239. But the smoothing-filter issue was not even mentioned until page 48 of the State's report and was described only as an "allegation" that had been "floated on Internet news groups."

SA-416. The report never mentioned that ES&S had alerted Sarasota County to the smoothing-filter problem, nor that ES&S had promised it would have a fix to this problem by the November election, nor that ES&S had never delivered the fix. Indeed, the entire issue of smoothing filters and slow response times was disposed of in just four sentences with no explanation whatsoever of whether the team examined this issue in any detail or studied the source code for the smoothing filter. The report simply concluded that the filter could not have caused the undervote because the "touch screen filter does not act differently on different screens." *Id.* That conclusion blatantly ignores ES&S's own admission that the "delayed response to touch may vary from terminal to terminal and may not occur every single time a terminal is used." Ex. B. It is quite likely that the smoothing filter caused voters' genuine presses on the screen to be ignored, yet the report never even addressed this issue.

- ***Touchscreen Calibration Errors.*** As anyone who has ever used an ATM knows, calibration errors are a common problem with touchscreen machines. Yet the state report dismissed the possibility of calibration errors without even studying it. Instead, the State claimed that if this were the problem, it would have manifested itself

in the parallel tests. *See* SA-416. As discussed above, the parallel tests used only five Election Day machines, and calibration errors could not have been thoroughly analyzed from such a small sample. The State's failure to examine calibration issues is especially suspect given the strong statistical correlation MIT political-science Professor Charles Stewart found between a machine's undervote rate and the date that a machine was set up for the election. *See* Section II.B.2 *infra*. This set-up procedure typically included calibrating the touchscreens. Nowhere in its report did the State address Professor Stewart's findings.

- ***Source-Code Matching***. The team of academics never performed any tests to determine whether the source code it was examining corresponded to the object code actually running on the iVotronic system used in Sarasota County. Again, because the reviewers were prohibited from performing any "dynamic" testing on the machines actually used by voters in Sarasota County, they simply assumed that there was no error in translating the source code from its original, human-readable form to the machine-readable software actually running in Sarasota County.

These and other errors in the State's testing are more fully explored in a paper just released by Dan S. Wallach, Professor of Computer Science at Rice University, and David L. Dill, Professor of Computer Science at Stanford University. As Professors Wallach and Dill conclude: "Press reports and summaries of the State's findings have created a public perception that the investigation was thorough and that the voting machines have been exonerated of contributing to the undervote. Based on our evaluation of the investigation, this perception is not justified." Their report is appended hereto as Exhibit A.

Just as the Parallel Test Summary Report ignored the problems reported by hundreds of voters in getting their votes to register, so too the report by the Florida State University-commissioned computer scientists simply glossed over the most likely cause of the undervote — the interaction among the software, the hardware, and the voter. In particular, by performing only a "static" analysis of reading the source code and never even looking at the machines actually used in Sarasota County (much less performing a "dynamic" analysis by running tests on them), the State left a gaping hole in its supposed examination of the undervote in Sarasota County. It is no wonder that one of the country's most respected computer scientists refused to participate in this whitewash. For the reasons outlined here, as well as the reasons explored more fully in the report of Professors Wallach and Dill appended hereto as Exhibit A, this Panel cannot rely on the software review

and security analysis performed by the Florida State University-commissioned computer scientists.

3. The State's Examination of Sarasota County's Procedures Omits Major Issues.

The third part of the State's audit report was an examination of Sarasota County's election conduct, procedures, and results. *See* SA-437. There is little of note in what is included in the report. What is notable is what is missing. For example, the report discussed the State's examination of the iVotronic system in Sarasota County to ensure that all the equipment used by the County had been certified by the State. *See* SA-442-44. Yet, the report conveniently failed to mention that ES&S was seeking state-level certification as early as August 15, 2006 for a software "update" to fix the issue of slow response times due to the smoothing filter. Ex. B. The report also included a brief mention of the 455 incident reports received by Sarasota County Supervisor of Elections Kathy Dent regarding problems with the iVotronic machines. *See* SA-453. But the report conveniently failed to mention that Supervisor Dent was well aware of these problems with the iVotronic machines during the early-voting period and did nothing to fix them. *See* SA-480. In fact, Ms. Jennings wrote to Supervisor Dent on November 2, 2006, regarding the many reports she had received from voters who encountered difficulties with the iVotronics during early voting. Ms. Jennings presciently expressed her concern that "if we are already receiving this level of

complaints during the period of early voting from a majority of the designated polling places, there is the prospect that these issues will only be magnified on Election Day." SA-484.

Chronicling the many omissions in the report would take more time and space than we have here. Overall, the report is emblematic of the State's entire approach to the study of the undervote — blame the voters, not the machines. The report ends with a call for further study of "human factors in the voting process." SA-456. This is in keeping with the State's earlier inquiries into supposed "human factors." In interrogatories propounded to the individual voter plaintiffs who also brought a contest action in Florida state court, the State inquired of each:

> Do you wear glasses, contact lenses, or hearing aids? If so, who prescribed them, when were they prescribed, when were your eyes or ears last examined, and what is the name and address of the examiner?
>
> Did you consume any alcoholic beverages or take any drugs (prescribed or not) or medications within 12 hours before the time you voted in the November 2006 general election? If so, state the type and amount of alcoholic beverages, drugs (prescribed or not), or medication which were consumed, and when and where you consumed them.

SA-501. The State has consistently sought to obscure or ignore the real issues here — that hundreds of voters reported problems with the iVotronic machines, that the problems reported are consistent with the smoothing-filter issue identified by ES&S in its August 15, 2006 letter, and that this issue was not fixed by the State,

the County, or ES&S prior to the election, despite the fact that each was aware of it. Thus, the State's examinations and reports simply cannot be trusted.

B. None of the State's Testing Has Explained the Undervote.

Despite the State's supposedly rigorous analysis and its pages and pages of reports, it is more than five months after the election and we are still no closer to finding out what caused the undervote in Sarasota County. The experts who have analyzed this election, however, have agreed on certain things. ***First***, every expert has concluded that about 3,000 more voters in Florida's Thirteenth District intended to cast their ballots for congressional candidate Christine Jennings than for her opponent, Vern Buchanan. ***Second***, every expert agrees that the "undervote is abnormal and unexpected and that it cannot be explained solely by intentional voting." SA-375. ***Third***, the experts agree that something went very wrong in the interaction between the voters and the ES&S iVotronic touchscreen machines.

1. The Voters Cannot Be Ignored.

None of this expert analysis is a surprise to the voters of Sarasota County. What is a surprise to them is that the State, the County, Mr. Buchanan, and ES&S have concluded that it is they, the voters, and not the machines, that are to blame for the undervote. One need only to look through the materials Ms. Jennings has submitted with this Memorandum, however, to see that this is patently untrue. In the two-volume appendix that Ms. Jennings has provided entitled "Documentation

of Machine Malfunction," the Panel will see the hundreds of sworn affidavits from voters attesting to the pervasive difficulties they had in recording their votes for Ms. Jennings on the iVotronic machines. *See* Volume I of Documentation Appendix. The Panel will also see that hundreds of poll workers submitted incident reports to the Supervisor of Elections' Office documenting these problems. *See* Volume II of Appendix. Campaign workers also submitted incident reports showing that all was not well with the iVotronic machines on Election Day. *See id.* Sarasota County's own technicians reported ongoing difficulties with the machines. *See id.* And after the election, the Jennings campaign and the Sarasota County Supervisor of Elections were flooded with e-mails from voters saying, in effect, "I thought it was just me until I read about it in the paper." *See id.*

The State, the County, ES&S, and Mr. Buchanan discount these voluminous voter accounts as some form of mass hallucination. In an e-mail she sent early on Election Day, Supervisor Dent showed the esteem in which she held her county's voters by exclaiming to a former colleague that these were "voter errors!" and lamenting that ever since the local Sarasota paper had reported on the problems with the iVotronics in early voting, voters had "come out of the woodwork" to complain. SA-504. It is somewhat surprising that Mr. Buchanan has not taken these voter complaints more seriously given that his own wife had difficulty voting for him on the iVotronic touchscreen. *See* SA-368. It is less surprising that the

State seeks to minimize or ignore these voter reports since it certified the iVotronics for use throughout the State of Florida. And of course, ES&S answers only to those who hold the purse-strings, not to the voters themselves. But these voter eyewitness accounts should not be minimized, ignored, or scoffed at as they have been by the defendants in the state-court action. These accounts present a compelling case that it was the machines and not the voters that malfunctioned in the congressional election. Following, and appended to this Memorandum at Exhibit C are just some of these accounts:

- "I went through the ballot making my selections on the IVotronics touch screen voting machine and took my time making sure that I voted in every race. I am certain that I cast a vote for Christine Jennings. When I reviewed the ballot at the end of the voting process, I noted that the race for the 13th congressional district . . . indicated that I had made no selection. I double-touched the 13th Congressional District race and again cast my vote for Christine Jennings. . . . I have more than 15 years experience in selling computer systems, five of those years are in selling touch screen systems. Based on my experience, I believe there was a software bug in the voting machine software causing the software not to register the touch." Ex. C-160.

- "When I voted on the iVotronics machine I was being very methodical. When I voted in the Buchanan-Jennings race, I specifically voted for Christine Jennings and checked to make sure that the box was checked before I went to the next page. When I got to the review screen it reflected no vote was cast for the Congressional race, but both candidates' names were shown. All of my other selections were properly recorded. I touched where it said no vote had been cast and it took me back to the Buchanan-Jennings race. I then re-voted for Christine Jennings and carefully rechecked the review page three times. I then pushed the vote button. No report was made to the poll worker. Prior to voting, the poll worker recommended that I check the review page before casting my final ballot. I am a registered Republican and I believe these machines failed democracy." Ex. C-444.

- "I took a sample ballot, which I had previously filled out and my intention to vote in every race. I believed that I voted for Christine Jennings but I came to the review screen it said I had not cast a vote in the Congressional race. . . . I used the back arrow and it took me back to Congressional race and I recorded a vote for Christine Jennings." Ex. C-168.

- "When my husband and I voted on the iVotronics touch screen voting machines, I was told by a poll worker to be sure and check the District 13 Congressional race because several voters, even at that early hour, had complained that they had voted for Christine Jennings, but the summary page did not reflect their votes for Christine Jennings." Ex. C-169.

- "When I voted on the iVotronics touch screen voting machine I touched the screen for Christine Jennings and it showed I voted for Christine Jennings. But when I reviewed the summary page at the end of the ballot, it did not show a vote for Christine Jennings or anyone else." Ex. C-166.

- "There was no warning or mention of any problems however, I was aware there may be a problem with the Congressional vote based on various media reports. I went through the ballot and specifically remember voting for Christine Jennings. When I arrived at the review screen, there was no candidate selected for the Congressional vote. I called a poll worker over and explained the situation and she told me that I did not 'press hard enough' when selecting the vote and I then

returned to the vote screen and recast my ballot, I then confirmed it on the review screen." Ex. C-455.

- "When I voted on the touch screen voting machine I touched the screen voting for Christine Jennings and when I reached page 15, the summary page, it indicated that I had not voted for Ms. Jennings. I immediately called this to the attention of a poll worker who showed me how to go back and vote for Ms. Jennings. I followed her instructions and again voted for Ms. Jennings. It did appear on the summary screen this time and I hope was duly registered." Ex. C-467.

- "When I voted on the iVotronics touch screen voting machine I touched screen and voted for Christine Jennings for U.S. Congress Florida District 13. When I reviewed my ballot before hitting the red button and actually voting, I saw the review screen did not show a vote for Christine Jennings. I was afraid I would lose my other votes if I tried to go back and correct the problem, so I then went ahead and cast my ballot without confirming that the machine had registered my vote for Christine Jennings." Ex. C-484.

- "I attempted to vote for Christine Jennings in the District 13 race and experienced the following difficulties: I was well-aware of the difficulties in the early voting in District 13 race and so I carefully voted in each election on the ballot, including that race. When I got to the review page, my vote for Christine Jennings was not reflected. I called out to a poll worker to alert them that my vote in the District 13 race had not been recorded. The poll worker who came to assist me informed me that the same thing had happened to her when she had voted earlier. She guided me back to the District 13 page and I pressed the touch screen again to reflect my vote for Christine Jennings. The poll worker then guided me back to the review page where my vote in the District 13 race was reflected and I then pressed the vote button." Ex. C-90.

- "When I voted on the iVotronics touch screen voting machine, I went through the ballot to vote. I was being careful because I seemed to have to press hard for my votes to register. In addition, I knew to be careful because my wife had been to vote previously and had overheard some women who had a problem voting discussing their problems with the machines. They were different machines. A neighbor also told me that she had encountered six different people

who had a problem with the voting machines. When the review sheet came up it said that I had not voted in the Congressional race even though I knew I had voted for Christine Jennings. I went back and registered my vote again and this time it indicated that I had voted for Ms. Jennings on the review screen." Ex. C-89.

- "When I voted with the stylus on the iVotronics touch screen voting machine, I am absolutely sure the box for Christine Jennings showed the X. On the Review screen, however, Christine Jennings' name showed but the box beside her name was blank. I clicked on the review ballot and corrected my vote and it then showed an X beside her name. After that, I registered my vote with the Red button at the top of the screen. After voting, I asked my husband if anything unusual happened when he voted (on a different machine). He told me that when he reviewed his ballot, the box by Christine Jennings' name was blank and he had to correct it. At that time, I reported this to a poll worker named Charlie, who said he would report it." Ex. C-73.

- "I had heard prior to going to the poll that there were problems with the voting machines. When I went to vote, the poll worker also warned me that there had been problems with the machine registering

the Congressional race. When I voted on the iVotronics touch screen voting machine, I voted for Christine Jennings. The screen indicated I had voted. Yet when I got to the end, the review page indicated that I had not voted in the Congressional race. I went back and voted for Ms. Jennings. This time my vote did register on the voting page." Ex. C-447.

- "I voted on the iVotronics machine I took my time to be sure I did not make any errors. When I voted in the Buchanan-Jennings race, I specifically voted for Christine Jennings and checked to make sure the box was checked before I went to the next page. When I got to the review screen it reflected no vote was cast for the Congressional race. All of my other selections were properly recorded. I touched where it said no vote had been cast and it took me back to the Buchanan-Jennings race. I then re-voted for Christine Jennings and I then pushed the vote button." Ex. C-443.

- "When I voted on the iVotronics touch screen voting machine I touched the screen for Christine Jennings and it showed I voted for Christine Jennings. But when I reviewed the summary page at the end of the ballot, it not only failed to show a vote for Christine Jennings, but the only name to appear on the review page was Christine

Jennings, next to a blank box indicating no vote had been cast. I called a poll worker over and explained what had happened and the poll worker pulled back the page for the Congressional race. I revoted for Christine Jennings, and my vote appeared to register in my second review of the summary screen." Ex. C-126

- "I had heard earlier media reports and was aware that there were some problems with the machines. When I arrived, I specifically asked if there had been problems and I was told no issue or problems had arisen. I voted for Christine Jennings on a touch screen and when I arrived at the review page the Congressional vote was left blank. I called a poll worker over at that time and she showed me how to move back and I re-cast my vote for Christine Jennings. On the final review page, I confirmed my vote was cast. I approached a poll worker to complain about the situation and filled out a complaint card." Ex. C-589.

Ms. Jennings strongly encourages this Panel to study the appendix of affidavits, incident reports, technician log sheets, and e-mails that document the numerous problems with the iVotronic machines. As the Panel will see from examining these materials, none of the State's testing has yet been able to explain the

problems reported by these voters. This was not a mass hallucination. This was a failure of democracy.

2. The Statistics Cannot Be Ignored.

In addition to ignoring the voters, the State's testing also ignored the statistical evidence Ms. Jennings presented in the trial court pointing directly to a failure of the machines, not of the voters. Professor Stewart testified that the date when an iVotronic machine was "cleared and tested" by Sarasota County election workers or their contractors (as reflected by "Event Code 01" in the machine's audit log) correlated strongly with the machine's undervote rate: Machines prepared in the final days before the deadline for completing all such preparations exhibited the highest congressional undervote rates. A-540. And another strong correlation existed between the number of machines "cleared and tested" on a given date and the undervote rate: As the County's staff or consultants got busier, clearing and testing more machines on a single day, the congressional undervote rate climbed. *Id.* Both correlations were statistically significant and both provided "evidence that inattention" or sloppiness in preparing the touchscreen machines "may have driven up the undervote rate." A-541. Because this evidence "goes to the physical preparation of the machines," not to characteristics of the voters, Professor Stewart testified, "it's totally inconsistent with the notion that the high undervote rate is caused by voter confusion." A-541, 553. Thus, Professor

Stewart concluded that machine failure likely "altered the outcome of this election." *Id.* at 541, 554. None of the State's reports has even attempted to address Professor Stewart's findings.

C. Additional Testing Is Necessary.

The authors of the State's three reports should not be blamed for their failure to identify the cause of the undervote. They were set up to fail by the hyper-compartmentalized structure the State established for its "audit." In this three-part audit, those who had access to the hardware had no access to the software or source code; those who had access to the software and source code had no access to the hardware; and those who studied the processes and procedures did not look at the hardware, software, or source code. Perhaps most strikingly, no one in any of the three "audit" groups truly took account of the voters and the problems they reported. Apparently, the State never even bothered to interview a single voter about the problems he or she reported.

Ms. Jennings proposes to undertake additional testing with a far more integrated and dynamic approach. First and foremost, Ms. Jennings will do what the State has not done — test for the issues reported by voters, most commonly the issue of votes cast but not appearing on the review screen and votes that required great pressure or an extended touch to record. And Ms. Jennings will do this by ensuring that the experts who are studying the source code and other software are

working in tandem with the experts who are studying the hardware. This is an interactive process. When a piece of the source code looks questionable, an expert can use one of the iVotronic machines from Sarasota County to observe how that source-code command might manifest itself. And if an iVotronic machine exhibits anomalous behavior, an expert can look to the part of the source code where that behavior is coded to see what the problem might be.

Because much of the testing is a process of trial and error as the experts work through the various interactions among the voters, hardware and software, it is not possible to identify *a priori* exactly which tests Ms. Jennings's experts will perform. At a minimum, however, Ms. Jennings expects to test for the following issues:

- ***Real Parallel Testing.*** Several different kinds of tests would be used, including systematically testing every entry on the ballot and combinations of votes. There should also be random tests, and impromptu tests by individuals attempting to make the machines misbehave. Testers would explore factors affecting vote selection, including touching parts of the screen for various lengths of time to understand the delays imposed by the smoothing filter, noting whether those delays are consistent with any variations in voter demographics, voter behavior, ballot design, touchscreen calibration, or other related

factors. Special attention would be paid to whether, under any circumstances, delays in updating the displayed selections occur. Any unexpected events would be noted and investigated further by reinspecting the source code to explain any non-deterministic behavior.

- ***Touchscreen Calibration Testing.*** Examination of the source code is important for understanding how the calibration process works internally, and how finger-presses are converted to coordinates. Doing this examination properly would require analyzing the source code as well as instrumentation of the actual iVotronic machines used in Sarasota County to understand the stream of data events that are generated by touches on the screen, particularly with different parts of the finger and pressing at different angles.

- ***Smoothing-Filter Testing.*** Testing would occur on the problem identified by ES&S but never disclosed to Ms. Jennings regarding the smoothing filter. This testing would involve the hardware and software. One major question is if the smoothing filter is implemented purely in software, identical on every iVotronic, why would there be variation in its behavior from one iVotronic machine to the next, or from time to time, as ES&S indicated in its letter.

The testing proposed by Ms. Jennings could be accomplished by a relatively small number of experts in a few weeks' time provided that these experts are given full, unhampered access to the necessary hardware and software (including source code), as more fully detailed in Part III.

III. THE PANEL SHOULD AUTHORIZE DISCOVERY.

The Panel should authorize discovery narrowly focused on the issue of whether pervasive malfunctioning of Sarasota County's paperless iVotronic system caused the bizarrely high congressional undervote rate. To that end, the Panel should subpoena the key evidence (the iVotronic hardware and software, including the source code), divide the evidence among itself and the two parties' expert teams, ask the parties' experts promptly to analyze the evidence and submit reports under oath, assess those reports, and then resolve the case on an expedited basis. Ample House election-contest precedent supports precisely this approach.

A. Discovery Should Be Narrowly Focused to Address the Issues That Remain Genuinely Disputed in This Case.

The Panel should authorize discovery so that the House of Representatives, Ms. Jennings, Mr. Buchanan, and the citizens of Florida and of this Nation can learn, once and for all, what actually happened in Sarasota County in the 2006 congressional election. The key question to be answered by discovery in this case is not ***whether*** democracy failed the people of Florida's Thirteenth District, but ***why***. One side claims that the ballot format confused the voters, who therefore

failed to cast their intended congressional ballots. The other side claims that the voters cast their intended congressional ballots but the machines failed to record them correctly. The only way to resolve this dispute is to allow ***both*** parties to independently test the iVotronic system's hardware and software, including its source code.

B. A Specific Proposal for Resolving This Case.

Ms. Jennings proposes a specific process for resolving this case. Under this proposal, the Panel would subpoena the key evidence, divide it among itself and the two parties' expert teams, give the parties' experts a month and a half to analyze the evidence and submit reports and counter-reports under oath, assess the parties' expert reports, and then either recommend dismissing the case or continue with the case under the FCEA, preferably on an expedited basis. Here is a concise description of the seven stages of this process:

Step 1. The Panel would subpoena the iVotronic system hardware and software that is essential to expeditiously determining whether machine malfunction substantially contributed to the excess undervote in Sarasota County's 2006 congressional election. The items to be subpoenaed are listed, with specificity, at Exhibit D to this Memorandum.

The Panel would issue three subpoenas. ***First***, most of the hardware and some of the software would be subpoenaed from the Sarasota County Supervisor

of Elections' Office. Because the voters of Sarasota County have enacted a county charter amendment barring the County from using this equipment in 2008 and beyond, and because roughly half of the County's voting machines have remained under seal since the November 2006 election (and were not used in the March or April 2007 local elections), this equipment is readily available for discovery in this case. Indeed, almost all of it has been effectively "frozen" by a stipulated agreement that the Florida trial court entered on February 21, 2007. *See* SA-505. ***Second***, the source code and related materials would be subpoenaed from the State of Florida's Division of Elections, which is required by law to keep the source code in escrow. (The County does not have access to the source code.) ***Third***, some items needed to expedite the review would be subpoenaed directly from ES&S, such as the company's database for tracking "bugs" in the iVotronic system and its software version control repository. *See* Exhibit A (describing these items in detail). Having these items in hand will help all the experts quickly to identify possible leads for their investigations.

Step 2. The Panel would divide the subpoenaed materials into three equivalent sets for expert analysis — one set for Ms. Jennings's experts, a matching set for Mr. Buchanan's experts, and a third set that the Panel would hold in reserve in case it (or its experts or consultants) needs to independently verify or cross-check either party's expert findings. During the next 45 days, the Panel, at

its discretion, could retain experts or consultants to analyze the parties' expert reports and, if needed, to conduct its own independent investigation into any particular aspect of the hardware and software.

Step 3. Upon both parties' experts' receiving their full sets of subpoenaed materials, the parties would have 30 days to file and serve expert reports, under oath, analyzing whether and, if so, how Sarasota County's iVotronic system contributed to the excess undervote in the 2006 congressional election. *Cf.* 2 U.S.C. § 387(c) (permitting witnesses to testify by affidavit).

Step 4. Upon being served with the opposing party's expert report, each party would then have 15 days to file and serve an expert rebuttal report, under oath, analyzing and responding to the opposing party's expert report. *Cf. id.*

Step 5. The Panel would then assess the two expert reports and the two expert rebuttal reports. The Panel could ask its own experts or consultants, if any, to assist in assessing the reports and, if necessary, to check the findings of the parties' experts by independently examining any particular aspect of the hardware and software that was subpoenaed but not distributed to either party.

Step 6. The Panel then would promptly either (1) recommend that the full Committee dismiss Ms. Jennings's contest; or (2) order Mr. Buchanan to file within 10 days his answer to Ms. Jennings's December 20, 2006 notice of contest.[5]

Step 7. If the Panel orders Mr. Buchanan to file his answer, service of that answer will trigger the commencement of compelled discovery by the parties under the FCEA. *See* 2 U.S.C. §§ 386-391. If, as seems probable, the exchange and assessment of expert reports have sufficiently narrowed the remaining factual disputes, the scope of permissible compelled discovery could be dramatically limited. *See id.* § 386(b) (permitting discovery of only those matters "relevant" to the "pending" subject matter). Therefore, the Panel might significantly shorten the FCEA's time limits for compelled discovery and briefing. *See id.* § 386(c) (allowing up to 70 days for compelled discovery — 30 days for the contestant, 30 for the contestee, and 10 for contestant's rebuttal); *id.* § 392(d)-(f) (allowing up to 85 days for briefing — 45 days for contestant's initial brief, 30 for contestee's answer brief, and 10 for contestant's reply brief).

---

[5] At the same time, the Panel could either rule on Mr. Buchanan's January 19, 2007 motion to dismiss (which he filed in lieu of an answer) or further postpone the motion's disposition until it hears this case on the merits. *See* 2 U.S.C. § 383; SA-539 (Letter from Chairwoman Millender-McDonald to Ms. Jennings & Mr. Buchanan at 1-2 (Feb. 6, 2007) (postponing disposition of the motion until further notice)).

C. The Panel Has Clear Authority to Subpoena the iVotronic Hardware and Software, Including the Source Code.

There can be no doubt about this Panel's authority to issue the subpoenas described above. The FCEA's discovery provisions repeatedly refer to the production of "books, papers, documents, [and] other tangible things," terms broad enough to encompass the iVotronic hardware and software (including source code). 2 U.S.C. §§ 386(b), 388(e); *see also id.* §§ 390, 392(a). And as the Congressional Research Service (CRS) recently explained, the Panel may "conduct its own investigation, take depositions, ***and issue subpoenas***." CRS Report on Contested Elections, *supra*, at 21 (emphasis added). Specifically, CRS noted the Panel's authority to travel "to the site of an election" with counsel and GAO auditors and "to impound records, ballots, tally sheets, ballot stubs, poll books, ballot boxes, voting machines or other electronic voting systems, . . . as well as other related materials to investigate the contested election." *Id.* at 14-15.

Indeed, the Committee and its ad hoc election-contest panels have a long history, stretching back more than a century, of doing exactly that. Just to cite a few examples:

- In 1874, the House Committee on Elections subpoenaed a Louisiana election official to produce election-related documents that were in his possession but that he had refused to provide voluntarily. *See* 1 ASHER C. HINDS, HINDS' PRECEDENTS OF THE HOUSE OF

REPRESENTATIVES OF THE UNITED STATES § 710 (1907) [hereinafter "HINDS"].

- In an 1883 election contest from Alabama's Fourth District, after concluding that the statutory predecessor to the FCEA allowed too much time for the parties to engage in compelled discovery under the circumstances, the House empowered a special three-Member panel to travel to the district "without unnecessary delay" and then "send for persons and papers and administer oaths" in order to expeditiously complete its investigation. 1 HINDS § 714.

- In an 1896 election contest from Illinois' Sixteenth District, the contestant subpoenaed county clerks to produce the ballots, but the county clerks refused to produce them because a state court had enjoined the clerks from opening or removing the ballots. Rather than go to court to uphold the validity of the contestant's subpoenas, the House Committee simply issued its own subpoena for the ballots, so that it could then examine the ballots itself. *See* 2 HINDS § 1070.

- In a 1904 election contest from California's Fourth District, the House issued a subpoena to compel San Francisco's registrar of voters to testify before the Committee on Elections and to "bring with him all

the ballots and packages of ballots cast in every precinct," so that the House Committee could examine and count them. 1 HINDS § 731.

- The same year, in a case from Colorado's First District where the contestant alleged that ballot boxes had been stuffed, the Clerk of the House took custody of the ballots and poll books, and the House then hired a handwriting expert to "examine and report upon the handwriting upon all the ballots and in all the poll books." 1 HINDS § 733. The expert's findings led the contestee to "frankly acknowledg[e]" that "the contestant [was] entitled to his seat, from which . . . the contestee voluntarily retired without any action whatever by the committee." *Id.*

- In a 1906 election contest from Missouri's Twelfth District, the House authorized the Elections Committee to "send for all such persons and papers as it may find necessary" to investigate the integrity of the record. 1 HINDS § 715.

- In a 1959 election contest from Arkansas' Fifth District, the House authorized the Committee on House Administration "to send for persons and papers and examine witnesses on oath," and the Subcommittee on Elections traveled to Little Rock "to take physical

custody of the ballots and other materials." 2 DESCHLER, *supra*, ch. 9 §§ 5.9, 58.1.

Although these cases predate the FCEA (enacted in 1969), they postdate the FCEA's predecessor statute (enacted in 1851), which for relevant purposes was similar or identical to the FCEA. Therefore, the FCEA and applicable House precedents clearly establish this Panel's authority to pursue the approach proposed in this Memorandum, including issuing subpoenas to the county and state election officials and the voting machines' vendor.

IV. THE PANEL CAN ADEQUATELY PROTECT ANY PROPRIETARY INTERESTS OF ES&S THROUGH A PROTECTIVE ORDER AND NONDISCLOSURE AGREEMENT.

The Panel has asked the parties to address how it can "protect [ES&S's] proprietary interests" ***if*** "discovery entail[s] an examination of trade secrets." Letter from Chairman Gonzalez to Mr. Hirsch at 2 (Apr. 3, 2007). That is a big "if." Throughout this controversy, ES&S and its codefendants have hid behind the artifice of "trade secrecy" in order to frustrate the efficient discovery of the truth. Although it is conceivable that some aspects of the iVotronic system actually do fall within the parameters of Florida law's definition of a "trade secret," that point has never been tested, much less proved.

Since the inception of the state-court litigation in mid-November, Ms. Jennings has been willing to assume, for the limited purposes of expediting access

to this key evidence, that parts of ES&S's iVotronic system are subject to the trade-secret privilege. But ES&S, with the acquiescence of Mr. Buchanan and the other defendants, has offered up blanket claims of privilege that are so broad as to be, frankly, absurd. For example, they have claimed that allowing Ms. Jennings's experts to conduct a videotaped "mock" election on several of the County's machines would somehow invade trade secrets. Since a scientifically valid mock election, as described above, is designed to replicate as closely as possible an actual election, if ES&S's claim of privilege were valid, then every voter in Sarasota County would have invaded ES&S's "trade secrets." That argument is just plain silly.

Even as to the source code, ES&S's trade-secrecy claims are dubious. To sell iVotronic machines in North Carolina, for example, ES&S is required to make its source code available for inspection, merely upon request, to a wide group of potentially interested individuals, including the state chairs of every recognized political party and up to three persons designated by each party chair. *See* N.C. G.S. § 163-165.7(a)(6), (d)(9). That degree of transparency alone likely destroys the trade-secrecy privilege. *See Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1002 (1984).

Furthermore, trade secrecy is protected purely as a matter of state law. Congress, in fulfilling its federal constitutional and statutory duties, is under

absolutely no obligation to abide by state-law privileges. *See* Louis Fisher, American Law Division, Congressional Research Service, *Congressional Investigations: Subpoenas and Contempt Power*, at 7 (Apr. 2, 2003) (noting that "legislative needs" embodied in a congressional subpoena can override a private party's asserted "need to protect confidential trade secrets").

In any event, even if we assume for argument's sake that parts of the iVotronic system that the parties' experts will need to examine are trade secrets, that is no reason for denying access altogether. As the Supreme Court has noted, "orders forbidding ***any*** disclosure of trade secrets or confidential commercial information are rare. More commonly, the trial court will enter a protective order restricting disclosure to counsel or to the parties." *Federal Open Market Comm. of Fed. Reserve Sys. v. Merrill*, 443 U.S. 340, 362 n.24 (1979) (internal citations omitted; emphasis added).

Here, normal protective measures would be more than adequate. Neither the parties seeking access nor their experts are business competitors of the trade secrets' owner. So there is no risk of direct harm to ES&S. In an abundance of caution, the experts for Ms. Jennings are perfectly willing to sign nondisclosure agreements and to abide by any reasonable protective order that the Panel might impose. Ms. Jennings proposed to the state trial court a standard trade-secrecy protective order for use in cases involving computer software, which is reproduced

at Exhibit E of this Memorandum. Similar or identical measures could certainly be imposed by this Panel.

Furthermore, Ms. Jennings's lead computer-science expert, Rice University's Dan S. Wallach, has testified that he would obey and "comply to the letter with any protective order" entered, as he has done in past cases involving source code designated as a trade secret. A-558, A-564. And Professor Wallach has testified how, in a patent-infringement case, he was entrusted, without incident, with "Microsoft source code that is considered so sensitive that only a handful of employees within Microsoft are given access" to it. A-558. In this case, he and his team members would be subject to the House's power to hold persons in criminal contempt of Congress under 2 U.S.C. §§ 192, 194, making it all the more certain that ES&S's trade secrets, if any truly exist, would remain confidential and safely protected.

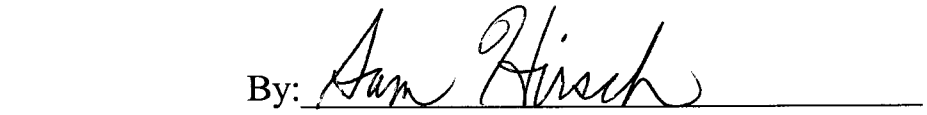
CONCLUSION

Ms. Jennings respectfully requests that this Panel, to fulfill its constitutional and statutory responsibility to investigate this contested election and to expeditiously report its findings and recommendation to the full Committee on House Administration, promptly proceed by authorizing discovery under the FCEA in accordance with the plan proposed in this Memorandum.

Respectfully submitted,

CHRISTINE JENNINGS

Date: April 13, 2007

By: 

DONALD B. VERRILLI, JR.
SAM HIRSCH
JESSICA RING AMUNSON
JENNER & BLOCK LLP
601 Thirteenth Street, N.W.
Washington, DC 20005
(202) 639-6000

KENDALL COFFEY
COFFEY BURLINGTON
2699 So. Bayshore Drive, PH1
Miami, FL 33133
(305) 858-2900

MARK HERRON
MESSER, CAPARELLO & SELF, P.A.
2618 Centennial Place
Tallahassee, Florida 32308
(850) 222-0720

ATTACHED EXHIBITS

Dan S. Wallach and David L. Dill, *Stones Unturned: Gaps in the Investigation of Sarasota's Disputed Congressional Election* (April 13, 2007)	**Ex. A**
Letter from ES&S to Florida Users of iVotronic Voting Machines (August 15, 2006)	**Ex. B**
Voter Affidavits (November 2006)	**Ex. C-xx**
List of Proposed Items for Panel Subpoenas	**Ex. D**
Proposed Protective Order and Nondisclosure Agreement	**Ex. E**
Table of Contents to Appendices	**Ex. F**

EXHIBIT A

STONES UNTURNED: GAPS IN THE INVESTIGATION OF SARASOTA'S DISPUTED CONGRESSIONAL ELECTION

David L. Dill
Dept. of Computer Science
Stanford University
dill@cs.stanford.edu

Dan S. Wallach
Dept. of Computer Science
Rice University
dwallach@cs.rice.edu

April 13, 2007

EXECUTIVE SUMMARY

The November 2006 race for Florida's 13th Congressional District resulted in a 369 vote margin of victory for the winning candidate with more than 18,000 undervotes recorded on the ES&S iVotronic touch-screen voting machines used in Sarasota County. Since then, the losing candidate and a coalition of local voters have filed suit against the state and local election officials (among other defendants), seeking a judicial order to rerun the election. A key question is whether a system malfunction may have induced the undervote rate. We evaluate the two major efforts previously undertaken by the State: a mock election, conducted by the State, and an analysis of the iVotronic source code, conducted by academic computer scientists under contract to the State. Press reports and summaries of the State's findings have created a public perception that the investigation was thorough and that the voting machines have been exonerated of contributing to the undervote. Based on our evaluation of the investigation, this perception is not justified.

There are many significant gaps in the tests conducted by Florida and its experts. The defined scope of the mock election specifically excluded examination of the vote selection process, which, based on voter complaints, should have been a major focus of the investigation. The tests were conducted in an artificial setting with the iVotronics mounted vertically, unlike their horizontal orientation in real elections. Furthermore, the State's report claims that there were no anomalies observed during the vote, yet video recordings of the test show occasional vote selections not registering on the machines.

The State's inspection of the iVotronic's software was also incomplete. The State's academic team read the source code but performed limited hands-on experimentation with demonstration machines. They made no attempt to examine whether the hardware functioned properly, nor did they examine iVotronic machines that were used in the actual election. The team performed no analysis based on compiling and executing the software, either on iVotronic hardware or in a "test harness." Such testing is commonly used to identify bugs that may manifest themselves only under obscure conditions. Likewise, the team did not review internal ES&S documents, such as their bug tracking systems or software repositories, which might contain important clues about the problem. For key issues, including how the iVotronic screen is calibrated and how its smoothing filter operates, the final report contained insufficient detail to determine how these issues may have impacted the undervote.

In total, the State's investigations have provided no persuasive explanation for Sarasota's undervotes. We recommend additional testing and analysis of both the software and hardware used in Sarasota. We also recommend analysis of ES&S's internal documents, including their bug tracking system and other versions (earlier and later) of their software. We estimate that this additional investigation could be conducted by an appropriate team of experts with about a month of work.

1 INTRODUCTION

In the November 2006 general election, in Florida's 13th Congressional District (hereafter, "CD13"), Vern Buchanan was the certified winner, defeating Christine Jennings with a 369-vote margin, but with over 18,000 "undervotes" (i.e., cast ballots with no selection in this particular race) in Sarasota County. The unusually high undervote rate led Jennings, as well as a coalition of non-partisan organizations, to mount legal challenges to the election results.[1]

	Total Votes	%	Election Day	Early Voting	Absentee	Provisional
Vern Buchanan	58,632	47.24	36,619	10,890	11,065	58
Christine Jennings	65,487	52.76	39,930	14,509	10,981	67
Over Votes	1		0	0	1	0
Under Votes	18,412		12,378	5,433	566	35

Table 1: Official election results from Sarasota County.

This congressional district spans five counties; the controversy centers on Sarasota County and its use of the ES&S iVotronic paperless electronic voting system. Table 1 describes the election-day results published by Sarasota County. 12.9% of the votes cast in Sarasota County for the CD13 were undervoted, in contrast with other races that have much lower undervote rates (e.g., 1.14% in the Senate race, 1.28% in the Governor race, 4.36% in the Attorney General race, and 4.43% for the Chief Financial Officer race). Vote tallies from the surrounding counties in CD13 likewise had low undervote rates.

If the iVotronic votes in Sarasota County are considered alone, the CD13 undervote rate was 14.9%. This contrasts with a Sarasota County CD13 undervote rate of 2.5% on absentee ballots (i.e., centrally tabulated optical scan ballots). Without a doubt, the iVotronic votes in the Congressional race exhibit an anomalously high undervote rate. If a result like this had occurred with punch cards or with hand-marked ballots, the inquiry would certainly have focused on a flaw in the tabulating machinery and would have reexamined the original ballots. Unfortunately, the iVotronic does not produce a voter-verified paper record that can be reexamined, so an investigation must follow other avenues.

The subsequent sections of the paper first describe what would be reasonable priorities for investigation of the Sarasota's undervote rate (Section 2), followed by a discussion of the the actual investigation, focusing on the testing performed by the State of Florida (Section 3), and the source code analysis performed by several academic computer scientists under contract to the State (Section 4), with consideration of where both fell short. We finish with conclusions and recommendations for future investigation (Section 5).

2 PRIORITIES FOR INVESTIGATION

We feel strongly that the CD13 undervote merits more extensive investigation, with many obvious questions remaining open. It may not be possible to answer every question, but until relatively simple and straightforward steps are taken to try to answer the open questions, there will continue to be doubt about whether the outcome of the race represents the will of the electorate, and the same problems may arise in the future because we failed to understand and correct the problems that caused the CD13 undercount. The goal of this paper is to discuss where limited resources for investigation could be best employed to maximize the likelihood of gaining more insight into the causes of the CD13 undervote.

For the sake of this discussion, we operate under the hypothesis that the CD13 undervote is most probably the consequence of an accidental problem associated with the iVotronic voting system. We do not

[1] Dill and Wallach are both expert witnesses for plaintiffs in the *Jennings v. Buchanan*-related lawsuits. This document represents our best efforts to present an unbiased consideration of the facts in this case.

propose to investigate whether the CD13 undervote is the result of malicious software or tampering with the votes stored electronically in the iVotronics. While we have no evidence that the latter conjectures are untrue, we also have no evidence in favor of them. Furthermore, if someone had the ability to unduly influence the election outcome, they would be unlikely to choose to create an obviously high undervote rate, rather than making other changes that would be less likely to be noticed. And, most importantly, an effective investigation of malice or tampering would be exceptionally difficult to conduct with limited resources.

Our discussion is divided into two investigative strategies: testing and inspection. The first strategy focuses on the behavior of the systems and their interactions with the voters, while the second focuses on the design and implementation of the iVotronic voting systems. The State of Florida's investigation explored both perspectives, but did so incompletely.

Knowing where *not* to look can save effort. The cause of the undervote is most likely to be found somewhere between when the voters entered the voting booth and when the vote totals were reported by the voting machines. In particular, we consider it unlikely that any vote corruption was introduced through the county's centralized vote tabulation process, a conclusion we base on the success of Sarasota's recount. For each of the approximately 1500 iVotronics, a pair of election workers inserted a "personal electronic ballot" (PEB), to collect the vote totals from that machine. Once all of the machines in a precinct had their votes stored on a PEB, a hand-held thermal printer was connected to the serial port of the last iVotronic from the precinct and that machine was instructed to print the totals. These totals were brought up to a table where they were announced before various TV cameras and election observers.

The final totals, after the two-day recount exercise, were slightly different from the original totals, but the official results indicate that the changes resulted entirely from reconsidering the absentee votes (using optically scanned ballots) and including provisionally cast ballots. The results of the recount greatly reduce the probability that the high undervote rate resulted from some tampering with data after it left the iVotronics, either in transit or in the Unity election management system.[2] *Therefore, further investigation should focus on the voting machines and their interaction with the voters.*

2.1 Machine behavior and voter interaction

2.1.1 Complaints

An obvious source of clues about the cause of the undervote would be complaints by voters and poll worker incident reports during the election. There were hundreds of complaints, most which point to problems with the interaction between the voter and the voting machines [8]. Many voters complained during the election that their selections registered in the CD13 race screen, but failed to appear on the screen summarizing the voter's selections just before the vote is cast. Others complained that the CD13 race did not appear on the ballot at all. There were also many complaints that the machines were slow to respond, or that the touch-screens had to be pressed for an extended time before they would register a selection.

2.1.2 Smoothing filter

There has been significant press coverage focusing on the software-based "smoothing filter" used by the iVotronic to filter out stray clicks, finger bounces, and other transient effects. ES&S sent a memo in August 2006 to its Florida customers [1] stating:

> It has come to our attention after a number of inquiries from several of our iVotronic 12 inch screen users that some of your screens are exhibiting slow response times. After receiving some

[2] ES&S's Unity election management system runs on a general-purpose PC and performs several functions, including collecting data from individual machines, tabulating votes, and generating reports on the election results.

> of these terminals in our Omaha, NE facility we were able to replicate a slow response during testing.
>
> ...
>
> We have determined that the delayed response time is the result of a smoothing filter that was added to iVotronic firmware versions 8.x and higher. This smoothing filter waits for a series of consistent touchscreen reads before a candidate name is highlighted on the ballot. In some cases, the time lapse on these consistent reads is beyond the normal time a voter would expect to have their selection highlighted. This delayed responses to touch may vary from terminal to terminal and also may not occur every single time a terminal is used.

The memo then goes on to recommend poll workers be trained to help voters with this condition and describes ES&S's efforts to repair the bug. To the best of our knowledge, Sarasota's iVotronic machines were running the software version with the above-described problem and Sarasota's poll workers were not specifically trained to assist voters with this problem.

2.1.3 Touch-screen calibration

Another common worry about the accuracy of touch-screens over the years has been *calibration error*. On any touch-screen display device, the clear, touch-sensitive layer is separate from the part of the screen that displays the buttons. To ensure that every touchscreen press is accurately mapped to screen coordinates, a calibration step is necessary. This process, familiar to anyone who owns a PDA, involves the machine displaying a series of cross-hairs and asking the user to press on the center of each cross-hair. The machine can then compute the necessary correction to apply to screen presses.

Among other procedures, the technicians who prepared the voting machines in Sarasota County were responsible for calibrating their screens. The ES&S iVotronic is unusual in requiring twenty different calibration targets to be touched as part of this process. For comparison, Palm and Windows XP Tablet owners are asked to touch only four targets.

If calibration is inaccurate, voters' touches are less likely to be registered accurately (they may be missed, or even associated with the wrong candidate). There is some evidence to support the theory that machine miscalibration may have been an issue in Sarasota. Stewart, an expert for the Jennings legal team, found a significant correlation between the "clear and test" times for the voting machines and their undervote rate as well as a significant correlation between the number of machines cleared on a given day and their undervote rate [11, 12] (see also the discussion of screen calibration in Section 3.2). Perhaps, in the process of setting up over a thousand machines, technicians grew more careless with calibration as the days progressed.

A test for this, simple to perform, would be to deliberately miscalibrate iVotronic machines and to carefully observe the behavior of a variety of test voters using those machines with the standard Sarasota ballot. Likewise, a number of the iVotronic machines, still sequestered in a warehouse in Sarasota, could be tested to determine how accurately they were calibrated, and this could be compared with the actual undervote rates on those machines. If poorly calibrated machines were observed to correlate with a higher undervote rate, then calibration effects would warrant increased attention. (Jones [9] raises the possibility that calibration can be thrown off when a voter rests one hand on the screen while pressing it with the other hand. This theory could also be tested experimentally.)

2.1.4 Ballot design

Another theory about the CD13 undervote is that it resulted from the particular layout of the ballot, which put the two-candidate CD13 race at the top of the page, above a much longer list of candidates in the Governor's

race. The Governor's race also began with a prominent "State" heading that, it is hypothesized, distracted voters from the CD13 race (see, e.g., Frisina et al.[7]). This hypothesis has been vigorously debated, and we don't want to repeat the arguments on both sides here, except to note that there were many voter complaints of problems that were not consistent with this explanation. However, it would be *extremely difficult* to prove this hypothesis except by a large-scale user study involving hundreds of voters with different backgrounds, controlling for many different factors, including many of those above (e.g., calibration and user interface timing). Such a study would also need to carefully control for prior awareness by the users of the relevance of the experiment to the CD13 contest.

In addition to demonstrating ballot effects, such a study would have to show that they are of the same magnitude as the CD13 undervote. While such a study would yield valuable results for improving the accuracy of elections, we would only propose it as part of the CD13 investigation if ample resources were available. There are many other important questions that can be studied without requiring such a massive effort.

2.1.5 Surprising effects

Computer systems are so complex that the causes of a problem, when discovered, are often surprising. While investigations must be conducted with specific issues in mind, such as those raised in the voter affidavits, they must also be mindful of the possibility that important clues could come from anywhere, such as unexpected behavior that arises in response to a test. Likewise, weaknesses in the vendor's engineering processes may also lead to unexpected problems in practice. Investigators must be alert for such clues and be prepared to pursue them.

It has been recognized that an important quality of so-called real-time embedded systems is that they should behave *deterministically*, meaning that they should behave predictably in the same way in the same circumstances. The same property would be desirable for voting systems for the same reasons. Non-determinism leads to an explosion of different possible system behaviors, which, in turn, often lead to flaws in programs because the programmers don't anticipate all of the possibilities. Non-determinism also makes systems much harder to test and debug; if the system is deterministic, odd or erroneous behavior is easier to reproduce so that it can be investigated and repaired.

We don't know to what extent the iVotronic was designed to behave deterministically (although the SAIT report [14] mentions specific programming practices that may lead to non-deterministic behavior), but any observed non-determinism should be treated as an indication of the potential for other hidden problems. The discussion above has already mentioned one such case that is worthy of further investigation: the as-yet unexplained variable behavior of the smoothing filter (see Section 2.1.2).

2.1.6 Combined effects

It is quite possible that there was a system failure which resulted from the *combined effect* of voters and software or hardware that behaved in counter-intuitive ways – or contained outright errors. It's possible that unexpected machine behavior could have caused voters to take actions which caused their votes to be unintentionally lost. Historically, many system failures arise from the combined effects of poorly designed software and its interactions with users. It is not appropriate to dismiss such problems as user errors. The end result is a system failure, in this case, an inaccurate vote, and systems must be designed to minimize such failures. In particular, a machine failure or design flaw – such as a program bug that leads to unpredictable timing in the user interface – could lead to inaccurate voting because of the way that voters react to it.

Leveson [10] summarizes the general concept:

> ...human actions both prevent and contribute to accidents in high-technology systems. Accidents and incidents occur because of human error, machine failure, poor design, inadequate

> procedures, social or managerial inadequacies, and the interaction of all these factors. Assignment of blame to operator error alone ignores the multiple causality of accidents and the relationship between human actions and the context in which they occur. ... [A]scriptions of blame to humans for accidents in complex systems is often simplistic and may get in the way of reducing risk through improved engineering and management.

An excellent example to illustrate this point comes from a competing voting system from Diebold, which demonstrates how a software bug may manifest only as a result of the occasional idiosyncratic behavior of a few voters. The Diebold AccuVote-TSx voting system would crash on occasion, seemingly at random. The cause was eventually discovered. In rare instances, a voter would touch the "cast vote" button and then drag his or her finger to another part of the screen, outside the boundaries of the button. This action was interpreted as a "drag and drop" operation by the underlying Windows CE system and would cause the voting machine software to receive an unexpected signal, corrupting the machine's internal state and leading the machine to crash. Only some voters will experience such a problem, and the same voter may experience it some times and not others, without knowing how they caused it. Finding this problem required extensive test voting with a variety of test voters [3].

While this example pertains to a system not used in Sarasota, it represents a significant failure of electronic voting systems that is very difficult to discover with the type of carefully scripted testing performed in the State's investigation. To discover this type of problem, it is better to have a variety of people entering votes, who may do a variety of unexpected things, and to have people acting creatively to produce inputs that the machine's programmers may not have anticipated.

2.2 Inspecting the system design and implementation

The State's investigation included inspecting the "source code" for the system [14]. Source code is the human readable representation of a program that the programmers work with. Of course, there is a lot more to a computer voting system than the source code for the voting application.

To begin, the system doesn't execute source code. It executes binary files, which represent machine instructions as a sequence of numbers. Binary files, needless to say, are more difficult for humans to inspect. These binary files are "built" from the sources by running a series of software translation tools, including compilers and linkers. In a sense, investigating the system by reviewing source code is like investigating the collapse of a building by reviewing blueprints. The blueprints have valuable information but the actual building may differ in subtle but significant ways from its blueprints.

Furthermore, the voting application runs in a larger environment of software, firmware, and hardware that supports it. A malfunction in that environment, or a misunderstanding between the application program and the environment, can cause anomalous behavior. According to the SAIT report [14], the ES&S iVotronic contains several "off-the-shelf" items, including a microprocessor, various controller chips, and several software drivers that were not reviewed at all. Any of these components could have contributed to problems, especially since one of them is the software driver for the touch-screen itself.

Finally, the process by which the system was designed, maintained, and enhanced requires careful consideration. In particular, it is standard practice in industrial software development to maintain databases of reported problems with software and hardware, and to carefully track the design changes made to respond to them. Such logs include the date, time, and the names of those making the changes. Parts of the software that are badly designed or just especially hard to get right will have more bug reports and changes than other parts, as the same general types of problems often arise multiple times. Inspection of these reports and changes could yield valuable clues about the causes of problems.

Of particular note, Florida uses an older version of the iVotronic software than that used in many other states. Bugs have certainly been discovered and repaired by ES&S in their subsequent software releases.

Such bugs would clearly have been present in the systems used in the November 2006 Sarasota election. Obviously, these could be relevant to the CD13 undervote and, as such, the ES&S records should be made available for investigation. (See Section 4.6 for more on this topic.)

These two modes of investigation, testing and inspection, are most effective when they are done in tandem. When unexpected behavior of the system is observed in practice, the design and implementation should be inspected more closely to explain it. Similarly, inspection of the design will generate questions about the behavior of the system. These questions can then be answered by testing real machines to see how they behave in practice.

3 "PARALLEL" TESTING

One of the most important parts of the investigation was the so-called "parallel testing" performed by the State of Florida's Division of Elections. In truth, the State's parallel testing is a misnomer, and the testing would more accurately be termed a "mock election." [3]

The State conducted its two tests after the election. The first test was conducted with five spare machines, unused in the previous election, but configured as if they would be used for the general election. The second test was conducted using actual machines used during the election. The Jennings and Buchanan campaigns were allowed to specify two machines, each, based on their serial numbers. Jennings selected two machines with notably high undervote rates. Buchanan allowed the State to select two machines at random. A fifth machine was also selected for so-called *ad hoc* tests.

Test scripts were developed based on votes cast in the general election. In each of the two tests, four of the machines received these scripted test votes while a fifth was reserved for *ad hoc* testing, in which test voters followed no particular scripts. The test voters were all staff members of Florida's Secretary of State's Office. The whole process was recorded on video.

The summary report, produced by the State, claimed that no significant discrepancies were discovered in either test [5]. A few apparent discrepancies after testing were identified as errors by the people entering the test votes, based on reviewing the video recordings.

While the State's testing was time-consuming, it failed to address many of the most important questions about the undervote rate. Despite this, the State auditor's conclusions were quite broad:

> [Based on the parallel tests] the audit team concluded that the iVotronic direct recoding [*sic*] devices correctly captured the voters' selections and accurately recorded the votes cast as displayed to the voters on the review touch screens. ([6], page 2)

This conclusion is not justified, because the testing was not sufficiently thorough, as summarized below.

3.1 Narrow scope

The State's tests were not designed to discover defects in the voting machine that might be triggered by the variation in different voters' interactions with the voting system, even though this would be a seemingly obvious area to study. The mismatch between the reported problems and the investigation is evident in the State's final audit report:

[3] The principle of parallel testing, which has been used in California since 2004, is to simulate an election on machines that is so realistic that a machine cannot determine whether it is being tested, or whether it is being used by real voters in a real election. The defining characteristic of parallel testing is that it occurs on a set of voting machines, chosen at random immediately before the election, that would otherwise have been used for real voting. This aspect of parallel testing was intended to prevent potential malicious software in the machines from using the date and time as a cue to detect that they are being tested.

> Although a number of these voters indicated a problem with their initial and final selection for the 13th Congressional District race, the primary focus of the parallel tests is the review screens. ... [T]he primary question concerning the accuracy of the iVotronic touchscreen is whether the review screens as presented to the voter and ultimately verified and cast by the voter is in fact what was stored as the ballot image. ([6], Appendix C, page 7 – or page 38 of the PDF)

The State has effectively redefined "accuracy" in a voting system as making a correct electronic copy of a review screen. This is not an appropriate definition, since it deems as accurate machines that display arbitrarily wrong information on the summary screen, so long as the machines faithfully copy the incorrect summary screen to storage. A more common-sense definition of accuracy is included in the Federal Voluntary Voting Systems Guidelines, Volume 1, paragraph 2.1.2.c:

> Record each vote precisely as indicated by the voter and produce an accurate report of all votes cast.

As was pointed out in Section 2.1.6, interactions between users and a system can often lead to inaccurate results, and such interactions may well explain the the CD13 problem. But the State's report clearly indicates their lack of interest in such problems. For example, if the machine changed a vote and the voter failed to notice the error on the review screen, then the State does not it consider it an inaccuracy of the machine, even though the machine (in this hypothetical case) would clearly be at fault. For example, the iVotronic write-in bug mentioned in Section 4.6 does not fall within the scope of problems the State tested for, and would only have been caught during testing by accident, if it were caught at all.

Although the State's tests were not *designed* to find problems in the vote capture process, it is possible that some problems could have been caught serendipitously. We've only been able to identify two sentences in the final audit report directly stating conclusions about vote entry errors. Given this small amount of discussion, it appears that anomalies in behavior did not trigger much curiosity by the State's investigators.

> The parallel tests including a review of the parallel test videos did not reveal or identify any latent issues associated with vote selection or the accuracy of the touch screens' tabulation of the votes cast. ([6], page 5)
>
> ... In addition, attempts to replicate the published reports concerning voter difficulties in making or changing their vote selections did not materialize during this test. ([5], page 8)

There is no explanation of which "latent issues" were eliminated from consideration, nor even a detailed discussion of what anomalies may have been found and determined to be inconsequential.

We viewed several hours of test voting on videos taken by the State of their testing. During our observation we noted several instances of vote selections not registering the first time the screen was touched. It is difficult to judge from the videos, but it appears that the time required to touch the screen before a vote registers is not consistent, and it is clear that some of the test voters had more trouble getting their votes to register than other voters; this could have been due to differences in how the voters operated the machines, or it could have been due to differences in the machines, themselves. This was not mentioned as a "latent issue" in the State's final audit report.

3.2 Test procedure issues

There were several procedural problems with the State's testing, resulting in a constrained and artificial testing scenario. Insights into the causes of the CD13 undervote may have been missed as a result. Problems could have been missed because the tests failed to reproduce accurately the conditions under which the undervotes could occur.

If the undervote was caused by an interaction between the voters and a machine problem, it may not have been detected during testing because the test voters were casting votes in abnormal ways in an abnormal environment. Likewise, if a system malfunction (such as lost votes in the CD13 race) could only be reproduced under a specific combination of inputs and other conditions, it would be unlikely that the State's tests would have generated that combination of conditions.

The **test scripts** were inappropriate, leading to extremely artificial inputs that bore little resemblance to real voting. The test script for each machine was derived from actual votes cast in the election. However, unnatural "vote patterns" were specified for the CD13 race; the vote patterns were originally specified in the Parallel Test Summary Report [5] and later corrected in the Final Audit Report [6]. There are two patterns for casting Buchanan votes, two patterns for casting undervotes in the CD13 race, and six patterns for casting Jennings votes. In each pattern, an initial selection was made for one of the candidates or no candidate, and then the test voter backed up (in one of two ways) to change the vote to the desired final value.

The actual scripts used to test 8 of the 10 machines are available on the Florida Division of Elections website ("Script and Review Screen Checklists"), but only the first two of the six Jennings patterns were used. In these scripts, *not one test vote started with an initial selection of Buchanan.* All votes, including the Buchanan votes, were cast by first selecting Jennings or by abstaining in the Congressional race. Although Buchanan was selected first in some cases on the *ad hoc* machines, [4] only a small number of tests could have been performed when Buchanan was selected first.

The **screen calibrations** were not examined. Problems stemming from calibration problems would only have been caught if the few machines tested were so grossly out of calibration that blatant errors happened to occur during test voting (see Section 2.1.3). *The State made no attempt to determine which machines were or were not properly calibrated.*

The **screen angle** was incorrect. ES&S iVotronic machines are unusual, relative to other touch-screen machines, in that the screen is typically mounted flat on a table, parallel to the floor, where other voting machines typically elevate the screen such that it is angled to face the voter more directly. During testing, the iVotronic machines were attached to a wall, hanging vertically. As a direct result, *any effects that may have resulted from the screen angle would not be observed.*

The **test volunteers** were a small group drawn from the staff of the Secretary of State's office. The voters were being video recorded and had a second person assisting and checking their work, so it is likely that they were much more careful in everything they did than real voters. In addition, the same people voted on the machines for many hours, and undoubtedly became practiced at tailoring their inputs to avoid any problems with the machines.

Unfortunately, the State's tests would be unlikely to detect a wide variety of problems. If a system bug was triggered only with a certain vote pattern, not included in the test scripts, it might not be detected. Likewise, if poor screen calibration interacts with the way a finger might touch or graze a horizontal screen, this effect would not manifest itself on a vertical screen. Voting tests must mimic the actual voting as closely as possible in order to maximize the chances of discovering problems.

[4] This fact was communicated to us by Dan McCrea of Miami, Florida, who viewed the DVDs for the testing of the *ad hoc* machines.

3.3 Recommendations for additional tests

Additional tests are needed for vote selection and vote capture issues, including the steps of voting that precede reviewing a summary screen. Most of these tests could be conducted with substantially less effort than has already been expended in the State's mock election, simply by directing effort to the most important questions. Since user interaction plays such an important role in many of the voter complaints and hypotheses for what went wrong, those issues should be explored much more thoroughly in the testing. Testing should be directed by specific complaints about the behavior of the voting machines, and observation and analysis of the tests should note any occurrences that might be related to vote selection or capture problems. Factors such as screen angles should duplicate the usage of the machines in the election as closely as possible.

With modest effort. a broader range of volunteers could be asked to enter votes, not for a full day as in the mock election, but for 30 minutes each, without long waits between the votes. These test voters could be asked to vote however they wish, and, after an initial few votes, given an opportunity to do whatever they can think of to try to "confuse" the machines. A wider range of volunteers would be more likely to provide more varied inputs to the machines, and to react to the machines in more varied ways (including reactions that could explain the undervoting). To find user interaction problems, all unexpected behavior, such as difficulty selecting candidates, selection of incorrect candidates, unexplained timing variation in the user interface, and so on, should be documented and investigated in more depth. Without the constraints of the artificial scripts and long delays in the mock election, much more thorough testing could occur with much less effort.

Experts should also test the systems. For this, all entries on the ballots and many different combinations of votes should be systematically tested. Testers should be able to follow up with new tests immediately if the machine reacts in an unexpected way to a previous test.

Machine calibration issues should be explored by direct inspection of the iVotronic systems. An operator, with a pointed stylus, could press at various points on the screen and photographs or video could be used to determine whether there are calibration errors.

Interface timing complaints should be tested much more systematically. Testers should explore factors affecting vote selection. Tests should include touching the buttons on the screen for various lengths of time to understand the delays imposed by the smoothing filter, noting whether those delays are consistent with any variations in voter demographics, voter behavior, ballot design, voting machine calibration, or other related factors. Special attention should be paid to whether, under any circumstances, delays in updating the displayed selections occur. Any unexpected events should be noted and investigated further, including reinspecting the source code to explain any non-deterministic behavior.

With more resources, an academic-quality user test could be performed as described in Section 2.1.4. Such a test would probably be more costly and time-consuming than everything else we have proposed in this report, but it may be the only route to a definite answer about the effects of ballot design on the CD13 undervote.

4 INSPECTING THE SYSTEM DESIGN AND IMPLEMENTATION

The State commissioned a group of academic computer scientists to perform an analysis of the source code to the ES&S iVotronic machine with the intent of determining whether a software bug may have contributed to Sarasota's high undervote rate [14] (hereafter, the "SAIT report"). The SAIT report found numerous serious problems, including a vulnerability that would allow for the creation of a voting machine virus that might be able to spread from one voting machine to another. Many details, along with many other "unrelated" bugs found, were reserved for appendices that were released neither to the general public nor to the plaintiffs. The SAIT report considered a number of different hypotheses as to how software flaws

may have led to the undervote rate and dismissed them all. The report contained numerous caveats that its analysis could well have overlooked subtle flaws, but the report is being treated by many as conclusively closing the door to further analysis.

In some ways, the analysis in SAIT report is very impressive. The analysis of security issues in the software is especially deep. However, as Section 2 points out, there is more to inspect than just the software's source code.

The primary deficiency in the State's software investigation is its defined scope, as was also the case in the State's parallel testing. There were many aspects of the system design and implementation that were not studied at all, as is clearly explained in the SAIT report. The authors spent very little time doing hands-on experimentation on actual iVotronics. The authors are very careful to be explicit about the scope of their work, and to state their many unverified assumptions. However, these caveats have been lost in the press reports, and, in some cases, even in the latter sections of their own report.

There were also gaps in the software analysis, usually stemming from failure to probe sufficiently deeply into specific areas of interest, or from failure to link the source-code analysis with other aspects of the investigation. Specifics are discussed below.

4.1 Build environment

The SAIT team was given source code for the system, and was able to experiment with iVotronic systems that were purported to be running executable code built from that source code. However, the SAIT team did not build the executables, themselves, from the source code.

> The Firmware Compilation Environment. We assume that the tools used to build the firmware from the source code:
>
> 1. Worked correctly;
> 2. Comply with the ANSI C programming language standard;
> 3. Do not have any bugs or unexpected behavior.
>
> We assume that the firmware image provided to us was compiled correctly from the source code provided to us. We also assume that the firmware image provided to us was the firmware image that was actually executed by the iVotronic machines on Election Day. These assumptions imply that the executable software executed by the iVotronic systems during the election matched the source code we examined. As our study focused *only* on the source code, we did not attempt to reconstruct the executable firmware image. Both ES&S and FLDoS told us that the firmware compilation environment worked correctly. (SAIT report, p. 18)

The lack of a build environment rendered the investigation unable to answer several important questions. First, was the binary executable that ran on the machines consistent with the source code? If not, the explanation for the CD13 undervote may lie in the discrepancy between the executable binary and the source code. Perhaps the source code, as held in escrow by the state, was inconsistent with the compiled binaries. The SAIT team had no way to verify this, further rendering them unable to determine if either malicious behavior or simple bugs might be in the binary executable that are not represented in the source code. (Turing laureate Ken Thompson famously demonstrated the feasibility of malicious attacks where the source code did not correspond to the compiled executable [13].)

More importantly, the inability to build and execute the software limits the ability of the source-code review team to perform a thorough examination. For example, a common analysis technique is to instrument the source program to print or log interesting events, thus improving the examiner's understanding of the

progression of events that occur as the code executes. Likewise, code can be instrumented to carefully study the interaction between the code and the hardware, possibly detecting flaws in the hardware itself. Furthermore, portions of the voting software could be extracted from the main application and executed in a "test harness" where their behavior could be systematically studied. Techniques such as these can identify subtle flaws in the voting system, whether from software or hardware, any of which could have been relevant to the Sarasota undervotes. The SAIT team was unable to utilize these analysis techniques.

4.2 Calibration error

Examination of the source code is important for understanding how the calibration process works internally, how finger-presses are converted to coordinates, and what consequences there might be if an iVotronic is poorly calibrated. Unfortunately, calibration issues were dismissed without a detailed analysis (SAIT report, p. 48). Doing this examination properly would require analysis of the source code as well as instrumentation of actual iVotronic machines to understand the stream of data events that are generated by touches on the screen, particularly with different parts of the finger and pressing at different angles. The SAIT team never attempted to instrument an iVotronic machine in this fashion. Such an effort would require building customized versions of the iVotronic software (see Section 4.1, above).

4.3 Smoothing filter

The quotation from the ES&S memo about the smoothing filter in Section 2 raises a number of questions. The memo claims that the effects of the smoothing filter will vary from machine to machine, yet if the smoothing filter is implemented purely in software, identical on every iVotronic, there should be no variation in its behavior from one iVotronic machine to the next, or from time to time. As we discussed in Section 2.1.5, non-determinism is a sign of potential bugs, and, in this case, inconsistent behavior may cause unpredictable problems for the voters. The SAIT report briefly addressed this issue:

> A smoothing filter is a mathematical procedure for damping transient touch screen effects such as the voter altering the position of her finger or changing the pressure exerted by the finger on the screen. The allegation has been floated on Internet newsgroups that the iVotronic touch screen filter could have caused the undervote. No explanation has been offered how the effect would confine itself to a single race on a single screen. The touch screen filter does not act differently on different screens. (SAIT report, p. 48)

The SAIT report does not contain a detailed analysis of the software that performs the smoothing filter, e.g., to see whether it might have bugs or otherwise might interact with other parts of the iVotronic software in an unexpected fashion; there is only the paragraph quoted above. Likewise, it's unclear how the smoothing filter interacted with Sarasota's voters. If the smoothing filter caused voters' genuine presses on the screen to be ignored and the voter went on without verifying their selection, then it is inappropriate to blame the voter when the machine's design is at fault (see Section 2.1.2).

4.4 Non-deterministic behavior

When computer software has latent bugs, these bugs often fail to manifest themselves during normal use and testing. Even when such bugs do manifest, they may not do so in a consistent fashion. Often referred to as "Heisenbugs," a pun on Heisenberg's Uncertainty Principle, it can be quite challenging to locate and repair these bugs. Common causes of Heisenbugs include the use of uninitialized memory, the overflowing of buffers (whether accidental or malicious), or the lack of anticipating some error or exceptional state. The

SAIT report has a redacted appendix that claims to detail a large number of bugs that are "unrelated" to Sarasota's undervotes, but they may in fact be relevant.

Of particular note is the unusual design of the iVotronic's software. In modern computer system design, an *operating system* runs on the hardware, handling the hardware devices' needs, including servicing interrupts and doing input/output operations. Then, *applications* run above the operating system, which provides applications with a simpler, more abstract view of the hardware. An application might then say "give me the next key press" without having to know anything about how that key press is acquired and interpreted. The iVotronic software is constructed in a fashion more consistent with DOS software from the early 1980's (see the SAIT report, Section 6.3). All operating system-like functionality is handled directly within the iVotronic software, which runs directly on the hardware. This means that error-prone and sensitive operations are happening within the main voting application.

Analyzing software built in this fashion for correctness requires significant effort. The SAIT report describes, for example, the way that global state must be correctly handled:

> We then attempted to verify that all such variables were declared as "volatile," so that the compiler would not perform unsafe optimizations (e.g., suppression of apparently-redundant load and store operations) on them. Most of the asynchronously updated global variables were not declared to be volatile, but we do not believe this mattered with the particular compiler used on the iVotronic software. That is, with there being so many cases, if the compiler performed optimizations of the kind that would be unsafe on these variables: (a) the results would probably have been detected in testing; (b) the probability of failure would have been uniform over time, affecting all races with equal probability; (c) the failures would be exhibited in ways other than just undervotes. (SAIT report, page 33)

It's insufficient to state that such problems "would probably have been detected in testing" when so many other problems were clearly not detected in testing. Likewise, there is no reason to assume that such failures would happen uniformly and in ways beyond causing undervotes. Doing this sort of analysis properly would require examination of the actual machine code, generated by the compiler, to see whether it does or does not operate in a safe fashion. Furthermore, the iVotronic software could be executed using debugging or simulation tools that could potentially detect when such problems occur (detailed above in Section 4.1).

The SAIT report then goes on to discuss the various kinds of global state variables in use in the program and the conditions under which they would be safe to use. In addition to examining the source code, it might be appropriate to add new code to the system that deliberately changes the same global variables, or systematically simulates interrupts occurring at various times. If such artificially induced failures lead to undervotes, that would then suggest that genuine failures could also have the same result. This technique is similar in philosophy to a powerful testing methodology called "fuzz testing," which involves feeding random inputs to a program and then running it to see how it fails. *The SAIT report explicitly disclaimed the use of analysis techniques such as fuzz testing and the use of debugging or simulation tools.*

Finally, it might be the case that there are hardware-dependent problems with iVotronic systems, which might well manifest themselves in a non-deterministic fashion. Felten discusses such issues with Diebold's system [4], where a design flaw related to the precise timing of electrical events on the motherboard ultimately led Diebold to replace the motherboards of 4700 Maryland voting machines. None of the analyses yet performed on Sarasota's iVotronic systems have considered the possibility of similar failures. Such problems are difficult to validate, although ES&S may have become aware of such issues in the past and upgraded their hardware designs to address the concern. To the best of our knowledge, the SAIT authors did not have access to internal ES&S documents that might have illuminated this issue, nor did they make any attempt to determine whether the iVotronic hardware, itself, may have suffered from intermittent faults.

4.5 Buffer overflows and viruses

The SAIT report describes how the software engineering practices used to create the iVotronic system leave it vulnerable to a variety of security attacks:

> [T]he iVotronic software copies a variable-length nul-terminated (C-style) string from the ballot definition file into a fixed-size stack-allocated buffer. If the string in the ballot definition is too long, this will overflow the bounds of the fixed-size buffer and overwrite other parts of memory. An attacker could use well-known techniques to exploit this bug, inject malicious code into the address space of the iVotronic machine, and cause the processor to begin executing that malicious code. At this point, the attacker has complete control over the iVotronic: the iVotronic is infected.
>
> We found numerous instances of this type of bug. Misplaced trust in the election definition file can be found throughout the iVotronic software. We found a number of buffer overruns of this type. The software also contains array out-of-bounds errors, integer overflow vulnerabilities, and other security holes. They all arise due to the fundamental architectural flaw of misplaced trust. (SAIT report, p. 57)

The report goes on to detail how a virus could be engineered to spread from one machine to the next via the PEBs (personal electronic ballots), normally used throughout the voting day to activate the machines for each voter. *The SAIT authors made no attempt to examine the actual iVotronic machines, PEBs, CompactFlash cards, or any other materials for evidence of such an attack.*

During the state's parallel tests (see Section 3), the state additionally selected a handful of machines, extracted the EEPROMs containing the iVotronic's software, and used standard commercial tools to compare these binary images to the binary images on file with the State. No discrepancies were found, although it would be reasonably straightforward for viruses to overwrite themselves to remove evidence of their presence. To the best of our knowledge, the state's examination did not look at PEBs or the CompactFlash cards used in the election. *While we have no other evidence to suggest that a virus-based attack may have occurred, neither the state's parallel tests nor the SAIT report made an effort sufficient to rule viruses out of consideration.*

Buffer overflows can occur even without the presence of malicious code. The damage caused by such buffer overflows, if and when they occur, could have a variety of ill effects on the voting system. A number of commercial tools have been developed to identify and repair buffer overflow issues. By using these tools, an examiner could detect if these problems manifested themselves during actual election conditions.

4.6 Bug tracking and version control

ES&S, like any modern software firm, can be presumed to use modern software development and management tools. Most notably, they must certainly use a *version control system* and a *bug tracking system.* Version control systems allow for all changes to the software to be tracked. If a developer introduces a change that caused problems, the change could be easily identified, undone, and repaired. In a sense, a version control system would allow an examiner to turn the clock forward and backward on ES&S's development efforts, observing changes made beforehand and afterward to the source code used in Florida. When such changes are made, it is also standard practice to annotate those changes to explain what happened (e.g., "fixed bug with calibration"). The code changes and the annotations would provide valuable insight into the processes used to develop the iVotronic system.

In a similar fashion, any modern software development process will include a system to track issues. Consider a hypothetical bug discovered by an ES&S customer and reported to the vendor. The report will

be stored in a database and assigned a tracking number. Subsequent reports may be assigned their own tracking number or may be merged with the original. Bugs are then typically assigned to developers who repair the software. Bug tracking systems often allow developers to discuss possible approaches toward repairing these bugs, retaining these discussions as a record of the developers' thought processes. Also, bug tracking numbers can then be referenced in the source code, inside comments that are read by developers but ignored by the compiler (e.g., "we're doing extra work here on the calibration step to address bug #345"). Bug tracking numbers may also be referenced in the version control system's annotations. All of this data would provide valuable insight into the development process. *The SAIT authors had no access to ES&S's bug tracking system or version control system.*

Given that Florida is running a relatively old version of the iVotronic software (version 8.0.1.2 versus North Carolina's version 9.1.2.0), it's entirely possible that bugs germane to the undervote rate in Florida may have been repaired in the newer version 9 variants of the iVotronic software. Appropriate access to ES&S's internal development processes would greatly assist an examiner in understanding whether such relevant bugs has already been discovered and repaired.

Consider, for example, a recently disclosed bug in the newer version of the iVotronic's software that is used in North Carolina and several other states. The problem occurs under unknown conditions, a small percentage of the time, and could fail to capture the intent of the voter by denying him or her the chance to cast a write-in vote. ES&S notified North Carolina of this serious software flaw in its version 9.1.2.0 iVotronic firmware (reproduced in full in Appendix A), stating:

> The item affecting the iVotronic voting system is a firmware issue which affects the way the iVotronic displays a write-in candidate. The firmware issue is limited to iVotronic version 9.1.2.0 and occurs two to three percent of the time when the iVotronic is being used. When the error is present, the iVotronic does not display a choice for a voter to write-in a candidate's name for a particular office. The display allows a voter to select from the list of predetermined candidates but occasionally may not include a line for a voter to write-in a candidate.

The same issue was discussed in Pennsylvania's amended certification for the iVotronic system [2].[5] This write-in bug, as stated, may not have caused the undervote rate observed in Sarasota. However, this bug may well be the tip of a larger iceberg. If this bug existed in the newer version of the iVotronic software, perhaps the same bug, or some variant on it, existed in the older iVotronic software used in Sarasota. Since ES&S was aware of this bug in their newer software, perhaps they were also aware of related bugs in the software used in Sarasota. An examination of ES&S's internal records would greatly aid the process of uncovering such problems. A thorough examination would look at the steps taken by ES&S to address the write-in bug, among other bugs, and would then examine whether these bugs had an effect in Sarasota.

5 CONCLUSIONS AND RECOMMENDATIONS

Without doubt, the undervote rate in Sarasota County's general election in November 2006 reflected a failure of the ES&S iVotronic systems to accurately capture the intent of many Sarasota voters. While Sarasota County, the State of Florida, and its academic computer science experts have performed certain analyses, we still have no conclusive evidence demonstrating the cause or causes of the unusual undervote rate.

We recommend additional expert analysis of the source code for these voting systems, including debugging and simulation tests which may be more likely to trigger latent flaws if they are present. We likewise

[5] Michael Shamos, one of the co-authors of the SAIT report, also does voting system analysis for the Commonwealth of Pennsylvania, so the SAIT authors were certainly aware of this issue, despite not raising it in their report.

recommend that experts be given unrestricted access to ES&S's internal bugs databases and software repository, where they may find additional evidence that could lead to the discovery of what software bugs, if any, contributed to Sarasota's undervote rate.

We also recommend further analysis of the iVotronic systems used in the election and still sequestered in a Sarasota warehouse. We recommend that a sampling of these machines be carefully examined for evidence of screen miscalibration and touch sensitivity.

These analyses could be performed by a relatively small number of experts in about a month's time. Should such analyses be able to conclusively determine a reproducible explanation for the undervotes, this would have significant ramifications, both for the ongoing legal battle between the two parties for control over Florida's 13th Congressional District seat, as well as for the broader discussion of how voting machines should be designed, tested, certified, and analyzed.

ACKNOWLEDGMENTS

The authors gratefully acknowledge feedback received from our colleagues who reviewed drafts of this report, including Peter Neumann and Dan McRae. We also thank Joyce McCloy of the North Carolina Coalition for Verified Voting for the documents she located.

REFERENCES

[1] L. Bennett. *ES&S letter to Florida users*, Aug. 2006. http://www.ncvoter.net/downloads/ESS_Aug_2006_iVotronic_FL_memo.pdf.

[2] P. A. Cortés. *Ammended Report of the Examination Results of the Election Systems & Software, Inc. iVotronic Touchscreen Voting System with Unity Software*. Commonwealth of Pennsylvania, Department of State, Apr. 2006. http://www.hava.state.pa.us/hava/lib/hava/votingsystemexamination/sec_final_rpt_-_es&sivotronicamended.pdf.

[3] E. Felten. *Diebold's Motherboard Flaw: Implications*. Princeton University, Feb. 2007. http://www.freedom-to-tinker.com/?p=1081#comment-179915.

[4] E. Felten. *Sarasota: Could a Bug Have Lost Votes?* Princeton University, Feb. 2007. http://www.freedom-to-tinker.com/?p=1126.

[5] Florida Department of State, Division of Elections, Tallahassee, Florida. *Parallel Test Summary Report*, Dec. 2006. http://election.dos.state.fl.us/pdf/parallelTestSumReprt12-18-06.pdf.

[6] Florida Department of State, Division of Elections, Tallahassee, Florida. *Audit Report of the Election Systems and Software, Inc's, iVotronic Voting System in the 2006 General Election for Sarasota County, Florida*, Feb. 2007. http://election.dos.state.fl.us/pdf/auditReportSarasota.pdf.

[7] L. Frisina, M. C. Herron, J. Honaker, and J. B. Lewis. *Ballot Formats, Touchscreens, and Undervotes: A Study of the 2006 Midterm Elections in Florida*. Dartmouth College and The University of California at Los Angeles, Feb. 2007. http://www.dartmouth.edu/~herron/cd13.pdf.

[8] F. Gluck, H. Allen, and M. Saewitz. Most callers report voting problems. *Sarasota Herald-Tribune*, Nov. 19 2006.

[9] D. W. Jones. *Observations and Recommendations on Pre-election testing in Miami-Dade County*, Sept. 2004. http://www.cs.uiowa.edu/~jones/voting/miamitest.pdf.

[10] N. G. Leveson. *Safeware: System Safety and Computers*. Addison-Wesley Publishing Company, 1995.

[11] *Plaintiff Jennings Ex. 8.* (prepared by Prof. Charles Stewart III, Political Science Dep't, MIT, for Dec. 19, 2006 evidentiary hr'g), Jennings v. Elections Canvassing Comm'n of the State of Florida et al., No. 2006 CA 2973 (Circuit Ct. of the 2d Judicial Circuit, Leon County, Fla., filed Nov. 20, 2006), reproduced in 2 Appendix to Emergency Petition for a Writ of Certiorari A-579-80, Jennings v. Elections Canvassing Comm'n of the State of Florida et al., No. 1D07-11 (Fla. 1st Dist. Ct. of Appeal, filed Jan. 3, 2007).

[12] C. Stewart. *Declaration of Charles Stewart III on Excess Undervotes Cast in Sarasota County, Florida for the 13th Congressional District Race*, Dec. 2006. http://www.heraldtribune.com/assets/pdf/SH81421120.PDF.

[13] K. Thompson. Reflections on trusting trust. *Communications of the ACM*, 27(8):761–763, Aug. 1984. Also appears in *ACM Turing Award Lectures: The First Twenty Years 1965-1985*, Copyright 1987 by the ACM Press and *Computers Under Attack: Intruders, Worms, and Viruses Copyright*, Copyright 1990 by the ACM Press. http://www.acm.org/classics/sep95/.

[14] A. Yasinsac, D. Wagner, M. Bishop, T. Baker, B. de Medeiros, G. Tyson, M. Shamos, and M. Burmester. *Software Review and Security Analysis of the ES&S iVotronic 8.0.1.2 Voting Machine Firmware*. Security and Assurance in Information Technology Laboratory, Florida State University, Feb. 2007. http://election.dos.state.fl.us/pdf/FinalAudRepSAIT.pdf.

A ES&S LETTER TO NORTH CAROLINA

March 14, 2006

VIA ELECTRONIC MAIL
AND OVERNIGHT DELIVERY

Mr. Keith Long
NC State Voting Systems Project Manager
State Board of Elections
6400 Mail Service Center
Raleigh, NC 27699-6400

Dear Mr. Long:

Pursuant to Section 163-165.9A(4) of the North Carolina General Statutes, Election Systems & Software, Inc. ("ES&S") must provide the North Carolina State Board of Elections (the "Board") with notice of any relevant defect which has occurred in its voting system that will be used in the State of North Carolina (the "State"). In accordance with such notice requirements, ES&S is providing this letter to the State to notify it that ES&S has become aware of two items which could potentially affect the function of the ES&S Model 100 precinct tabulator ("Model 100") and the ES&S iVotronic touchscreen system ("iVotronic"). ES&S has addressed each item and has taken the necessary corrective measures to limit any affect the items may have on the State's ability to conduct its elections. The issues affecting the relevant voting systems and the corrective measures ES&S has taken are outlined below.

The item affecting the ES&S Model 100 is limited in scope to the PCMCIA cards used to load the election definition into the Model 100s. ES&S has identified a batch of PCMCIA cards which were not properly manufactured and as a result may cause the Model 100 battery to "drain" more rapidly than normal. ES&S has identified the customers who may have received the PCMCIA cards from the affected batch and are in the process of working with each customer to verify if the PCMCIA cards are working properly. As the State was one of the customers identified by ES&S as potentially receiving PCMCIA cards from the affected batch, ES&S has notified the State of the issue and has been working with officials from the State to ensure the PCMCIA cards delivered to the State work correctly. To date, ES&S has provided the State with one thousand (1,000) PCMCIA cards which currently reside at the State's warehouse. No PCMCIA cards have been delivered to counties within the State and ES&S has instructed its staff in the State not to send out any PCMCIA cards to any county until the cards have been thoroughly tested to ensure they are operating properly. ES&S will continue to work with the State to ensure that only proper functioning PCMCIA cards are delivered to the counties within the State.

The item affecting the iVotronic voting system is a firmware issue which affects the way the iVotronic displays a write-in candidate. The firmware issue is limited to iVotronic version 9.1.2.0 and occurs two to three percent of the time when the iVotronic is being used. When the error is present, the iVotronic does not display a choice for a voter to write-in a candidate's name for a particular office. The display allows a voter to select from the list of predetermined candidates but occasionally may not include a line for a voter

to write-in a candidate. ES&S has addressed this issue in its latest version of iVotronic firmware, version 9.1.4.0 that is included in Unity Release 3.0.1.0. Unity Release 3.0.1.0 has been successfully tested by an Independent Testing Authority ("ITA") and is awaiting National Association of State Election Directors approval.

It has recently been brought to ES&S' attention that there may be a number of counties in the State conducting local school board elections which will require the use of the write-in option on the iVotronic. Should the State wish to upgrade its Unity software to version 3.0.1.0 which includes the iVotronic write-in firmware enhancement, please advise at your earliest convenience and ES&S will begin the necessary steps to accomplish this upgrade in time for the May primary. ES&S has included a copy of the 3.0.1.0 ITA completion letter and the final full-text test report on CD to be delivered via overnight courier to your attention. Please note that the Model 100 Precinct Scanner and Model 650 Central Count Scanner firmware versions remain unchanged in 3.0.1.0. They are identical to the versions already certified for use in North Carolina.

If you have any questions or need additional information, please contact me directly.

Sincerely,

Timothy J. Hallett, Esq.

cc: Aldo Tesi - President and Chief Executive Officer, ES&S
Eric A. Anderson, Esq. - General Counsel, ES&S
Gary Crump - Chief Operating Officer, ES&S
Ken Carbullido - Senior Vice President, ES&S
Mac Beeson - Account Services Manager, ES&S
Steve Pearson - Vice President Certification, ES&S

EXHIBIT B

Election Systems & Software
11208 John Galt Boulevard · Omaha, NE 68137 USA
Phone: 402.593.0101 · Toll-Free: 1.877.377.8683 · Fax: 402.970.1285
[illegible]ate.com
[illegible]
[illegible] COUNTY FL

2006 AUG 22 A 8:52

August 15, 2006

FILED FOR RECORD
KATHY DENT

Dear FL Users:

It has come to our attention after a number of inquiries from several of our iVotronic 12 inch screen users that some of your screens are exhibiting slow response times. After receiving some of these terminals in our Omaha, NE facility we were able to replicate a slow response during our testing.

After further analysis of the issue it has been determined that touchscreens on units with previous versions of firmware did not exhibit this condition. Therefore, our Engineering and Development Teams reviewed the differences in firmware code for versions 8.0.1.2 and 7.4.5.0 to establish the possible cause of this condition.

We have determined that the delayed response time is a result of a smoothing filter that was added to iVotronic firmware versions 8.x and higher. This smoothing filter waits for a series of consistent touchscreen reads before a candidate name is highlighted on the ballot. In some cases, the time lapse on these consistent reads is beyond the normal time a voter would expect to have their selection highlighted. This delayed response to touch may vary from terminal to terminal and also may not occur every single time a terminal is used.

The improvement will require an update to the firmware, and state-level certification. We have already taken steps to make the necessary changes to the firmware. Our plans are to certify this in the state of Florida in time for use for the November, 2006 General Election. This firmware upgrade would not involve any Unity software changes or upgrades to any other component of your voting system. This firmware change is only necessary for the 12" size iVotronic screens.

In order to avoid any potential issues at the polls on September 5th , it is our recommendation that you train your poll workers and voters to expect this slightly delayed response time for their highlighted selections. We have included with this mailing a sample voting booth instruction sign for your review and use.

It is important to note that this delayed response time in no way affects the integrity or reliability of the iVotronic voting system. All votes will be recorded securely and accurately as they always have been. No other functionality within the iVotronic system is compromised or affected by this issue.

It is our goal and focus at ES&S to provide secure, accurate and reliable voting systems to all of our clients worldwide. On behalf of ES&S, I can assure you that we are working with the Florida Division of Elections to rectify this situation and to prevent it from being an issue in all other future elections.

We will keep you posted on our developments as we work through the necessary phases of implementing this firmware in our 12" iVotronic screen counties in Florida.

Thank you for continued support.

Sincerely,

Linda Bennett
Regional Account Manager

Cc: David R. Drury, Chief, Bureau of Voting Systems Certification

EXHIBIT C

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared Alisa Janette Behne who after being duly sworn, deposes, and says:

1. My name is Alisa Janette Behne and I have personal knowledge of the matters set forth herein.

2. My date of birth is August 17, 1963, and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 3500 Bayou Louise Lane, Sarasota, Florida 34242.

4. I voted at Precinct 136, New Life Worship Center, 2105 Worrington Street, Sarasota, Florida, on or about November 7, 2006 at about 9:30 a.m.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. I went through the ballot making my selections on the Ivotronics touch screen voting machine and took my time making sure that I voted in every race. I am certain that I cast a vote for Christine Jennings. When I reviewed the ballot at the end of the voting process, I noted that the race for the 13th Congressional District between Vern Buchanan and Christine Jennings indicated that I had made no selection. I double-touched the 13th Congressional District race and again cast my vote for Christine Jennings. I reviewed my ballot a second time and noted that my ballot indicated my selection for Christine Jennings. I then hit the "vote" button.

7. I have more than 15 years experience in selling computer systems, five of those years are in selling touch screen systems. Based on my experience, I believe there was a software "bug" in the voting machine software causing the software not to register the touch.

FURTHER AFFIANT SAYETH NOT.

Alisa Janette Behne

SWORN TO and SUBSCRIBED before me this 11th day of November, 2006, by Alisa Janette Behne who is personally known to me or who has produced FL Driver's License # 3500-010-63-797-1 expires 8/17/2010 as identification and who took an oath.

Deborah R. Woodson
Notary Public

Deborah R. Woodson
MY COMMISSION # DD156473 EXPIRES
November 27, 2006
BONDED THRU TROY FAIN INSURANCE, INC.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, LEON W GRZYMALA, JR. who after being duly sworn, deposes, and says:

1. My name is LEON W GRZYMALA, JR. and I have personal knowledge of the matters set forth herein.

2. My date of birth is 06-20-1948. I am over eighteen (18) years of age and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 1104 Twin Laurel Boulevard, Nokomis, FL 34275.

4. I voted at King's Gate at approximately 10:30 am on November 7, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the iVotronics machine I was being very methodical. When I voted in the Buchanan-Jennings race, I specifically voted for Christine Jennings and checked to make sure that the box was checked before I went to the next page. When I got to the review screen it reflected no vote was cast for the Congressional race, but both candidates' names were shown. All of my other selections were properly recorded. I touched where it said no vote had been cast and it took me back to the Buchanan-Jennings race. I then re-voted for Christine Jennings and carefully re-checked the review page three times. I then pushed the vote button. No report was made to the poll worker. Prior to voting, the poll worker recommended that I check the review page before casting my final ballot. I am a registered Republican and I believe these machines failed democracy.

FURTHER AFFIANT SAYETH NOT.

Leon W Grzymala Jr.
LEON W GRZYMALA, JR.

SWORN TO and SUBSCRIBED before me this 11 day of November, 2006, by LEON W GRZYMALA, JR. who is personally known to me or who has produced FL Drivers License G625-539-48-220-0 as identification and who took an oath.

Anne C. Beckmann
Notary Public

NOTARY PUBLIC STATE OF FLORIDA
ANNE C. BECKMANN
MY COMMISSION # DD 183967
EXPIRES: March 24, 2007
Bonded Thru Budget Notary Services

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Jane B. Archer who after being duly sworn, deposes, and says:

1. My name is Jane B. Archer and I have personal knowledge of the matters set forth herein.

2. My date of birth is May 30, 1937. I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 7724 Castleisland Drive, Sarasota, Florida 34240.

4. I voted at the Gulf Gate library Station in Sarasota, Florida. I voted before Nov. 7, 2006 in the early voting period.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. I took a sample ballot, which I had previously filled out to the polling place and my intention was to vote in every race. I believed that I voted for Christine Jennings, but when I came to the review screen it said I had not cast a vote in the Congressional race. I walked over to a poll worker and asked what to do. She got someone to come with her and I think she explained to use the back arrow. I used the back arrow and it took me back to Congressional race and I recorded a vote for Christine Jennings. I believe that after that the review screen came up again and indicated I had voted in each race.

I used my fingertip to vote.

FURTHER AFFIANT SAYETH NOT.

Jane B. Archer
Jane B. Archer [Name]

Jane B. Archer

SWORN TO and SUBSCRIBED before me this 11 day of November, 2006, by ~~[Name]~~ who is personally known to me or who has produced FL drivers license A626-442-37-690-0 as identification and who took an oath.

Notary Public

ANNE C. BECKMANN
MY COMMISSION # DD 183967
EXPIRES: March 24, 2007
Bonded Thru Budget Notary Services

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Elizabeth Allen. who after being duly sworn, deposes, and says:

1. My name is Elizabeth Allen and I have personal knowledge of the matters set forth herein.

2. My date of birth is 3-19-1955 and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 4053 Bay Shore Road, Sarasota, Florida 34234

4. I voted at Precinct 49 ,Bay Shore Mennonite Church., Sarasota,Florida, on November 7, 2006 at approximately 8:30 am.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When my husband and I voted on the iVotronics touch screen voting machines, I was told by a poll worker to be sure and check the District 13 Congressional Race because several voters, even at that early hour, had complained that they had voted for Christine Jennings, but the summary page did not reflect their votes for Christine Jennings. I went through the ballot carefully and made my selections, and when I reviewed my summary page, it showed a vote for Christine Jennings. However, I am not at all confident that my vote was actually counted once I pressed the "vote" button. In addition, my husband was not warned by a different poll worker to be careful with the race, or to check his summary page.

FURTHER AFFIANT SAYETH NOT.

Elizabeth Allen

SWORN TO and SUBSCRIBED before me this 12th day of November, 2006, by Elizabeth Allen. who is personally known to me or who has produced FL DL A450 225-55-599-0 as identification and who took an oath.

Sue J Townsend
Notary Public

SUE J. TOWNSEND
Notary Public - State of Florida
My Commission Expires Mar 24, 2009
Commission # DD 410773
Bonded By National Notary Assn.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Deward Dwaine Arney, who after being duly sworn, deposes, and says:

1. My name is Benjamin N. Dictor and I have personal knowledge of the matters set forth herein.

2. My date of birth is February 15, 1987. I am over eighteen (18) years of age and otherwise competent.

3. I am a qualified elector of the state of Florida residing at 4017 Arrow Ave.. Sarasota Fl 34232.

4. I voted at the Ascension Lutheran Church on or about November 7, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the ivotronics touch screen voting machine I touched the screen for Christine Jennings and it showed I voted for Christine Jennings. But when I reviewed the summary page at the end of the ballot, it did not show a vote for Christine Jennings or anyone else. I had to return to the selection page to re-vote after which the Summary Page reflected my vote for Christine Jennings.

FURTHER AFFIANT SAYETH NOT.

Benjamin N. Dictor

SWORN TO and SUBSCRIBED before me this 12th day of November, 2006, by Benjamin N. Dictor who is personally known to me or who has produced Florida Drivers # D236-074-87-055-0 as identification and who took an oath.

Notary Public

SUE J. TOWNSEND
Notary Public - State of Florida
My Commission Expires Mar 24, 2009
Commission # DD 410773
Bonded By National Notary Assn.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Reinhardt Christian Badow. who after being duly sworn, deposes, and says:

1. My name is Reinhardt Christian Badow. and I have personal knowledge of the matters set forth herein.

2. My date of birth is February 1, 1951. I am over eighteen (18) years of age and otherwise competent.

3. I am a qualified elector of the state of Florida residing at 2816 Michigan Street, Sarasota, Florida, 34237.

4. I voted at precinct 110 at the Suncoast Center for Independent Living on 2989 Fruitville Road in Sarasota on November 7, 2006 at approximately 3:30 p.m.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. The polling place was not busy when I arrived. There was no wait. A poll worker took me over to the machine and asked me if I needed any instructions. There was no warning or mention of any problems however, I was aware there may be a problem with the Congressional vote based on various media reports. I went through the ballot and specifically remember voting for Christine Jennings. When I arrived at the review screen, there was no candidate selected for the Congressional vote. I called a poll worker over and explained the situation she told me that I did not "press hard enough" when selecting the vote and I then returned to the vote screen and re-cast my ballot, I then confirmed it on the review screen.

FURTHER AFFIANT SAYETH NOT.

Reinhardt Christian Badow

SWORN TO and SUBSCRIBED before me this 13th day of November, 2006, by Reinhardt Christian Badow who is personally known to me or who has produced as identification and who took an oath.

DL # B300-723-51-041-0

Notary Public

JENNINGS - 00455

WALLACE H. KLEIN
MY COMMISSION # DD270457
EXPIRES: December 30, 2007

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Alan E. Bandler who after being duly sworn, deposes, and says:

1. My name is Alan E. Bandler and I have personal knowledge of the matters set forth herein.

2. My date of birth is July 4, 1930

3. I am a qualified elector of the state of Florida residing at 1241 Gulf of Mexico Drive Unit 407 Longboat Key Florida.

4. I voted early at downtown Sarasota Supervisor of elections on or about November 1st, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the touch screen voting machine I touched the screen voting for Christine Jennings and when I reached page 15, the summary page, it indicated that I had not voted for Jennings. I immediately called this to the attention of a poll worker who showed me how to go back and vote for Jennings. I followed her instructions and again voted for Jennings. It did appear on the summary screen this time and I hope was duly registered. Following my experience I sent an email to Kathy Dent and attach that e mail and her two replies

FURTHER AFFIANT SAYETH NOT.

[Name]

SWORN TO and SUBSCRIBED before me this 12 day of November, 2006, by [Name] who is personally known to me or who has produced _____ as identification and who took an oath.

B534-005-30-2440

Notary Public

VIRGINIA COLLINS BRAUNE
MY COMMISSION # DD517053
EXPIRES: May 10, 2010
(407) 398-0153 Florida Notary Service.com

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Ruth Mason Barger who after being duly sworn, deposes, and says:

1. My name is Ruth Mason Barger and I have personal knowledge of the matters set forth herein.

2. My date of birth is December 8, 1922, and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 565 Sanctuary Drive, B406, Longboat Key 34228.

4. I voted at the in Longboat Key Town Hall, 501 Bay Isles Rd., Longboat Key on or about Tuesday, November 7, 2006 at 7:15 am.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the ivotronics touch screen voting machine I touched the screen and voted for Christine Jennings for U.S. Congress Florida District 13. When I reviewed my ballot before hitting the red button and actually voting, I saw the review screen did not show a vote for Christine Jennings. I was afraid I would lose my other votes if I tried to go back and correct the problem, so I then went ahead and cast my ballot without confirming that the machine had registered my vote for Christine Jennings. It bothered me, and I thought I was mistaken until read the papers the next day.

FURTHER AFFIANT SAYETH NOT.

Ruth Mason Barger
Ruth Mason Barger

SWORN TO and SUBSCRIBED before me this 11th day of November, 2006, by Ruth Mason Barger who is personally known to me or who has produced FL Driver's License # B626-773-22-948-0 expires 12/8/2010 as identification and who took an oath.

Deborah R. Woodson
Notary Public

JENNINGS - 00484

Deborah R. Woodson
MY COMMISSION # DD156473 EXPIRES
November 27, 2006
BONDED THRU TROY FAIN INSURANCE, INC.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Anita Bartholomew, who after being duly sworn, deposes, and says:

1. My name is Anita Bartholomew and I have personal knowledge of the matters set forth herein.

2. I am older than 18 years of age and I am otherwise competent to make this affidavit.

3. I am a qualified elector of the state of Florida residing at 4237 Sarasota Avenue, Sarasota, FL 34234.

4. I voted on November 7, 2006 at Precinct 49 at my regular voting place at the Bay Shore Mennonite Church on Myrtle and Bay Shore.

5. I attempted to vote for Christine Jennings in the District 13 race and experienced the following difficulties: I was well-aware of the difficulties in the early voting in the District 13 race and so I carefully voted in each election on the ballot, including that race. When I got to the review page, my vote for Christine Jennings was not reflected. I called out to a poll worker to alert them that my vote in the District 13 race had not been recorded. The poll worker who came to assist me informed me that the same thing had happened to her when she had voted earlier. She guided me back to the District 13 page and I pressed the touch screen to again reflect my vote for Christine Jennings. The poll worker then guided me back to the review page where my vote in the District 13 race was reflected and I then pressed the vote button. At no time prior to my voting did any poll worker discuss with me the problems with page 2 of the ballot.

FURTHER AFFIANT SAYETH NOT.

X _____
Anita Bartholomew

SWORN TO and SUBSCRIBED before me this _12__ day of November, 2006, by Anita Bartholomew who is personally known to me or who has produced a Florida Drivers License as identification and who took an oath. #

_____
Notary Public

LINDA J. CHASE
Notary Public - State of Florida
My Commission Expires Feb 9, 2010
Commission # DD 516773
Bonded By National Notary Assn.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Joseph J. Bedits who after being duly sworn, deposes, and says:

1. My name is Joseph J. Bedits and I have personal knowledge of the matters set forth herein.

2. My date of birth is January 9, 1943 and otherwise competent.

3. I am a qualified elector of the state of Florida residing at 2083 Wood Hollow Lane, Sarasota, FL 34235.

4. I voted at Precinct No. 116 on or about November 7, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the ivotronics touch screen voting machine, I went through the ballot to vote. I was being careful because I seemed to have to press hard for my votes to register. In addition, I knew to be careful because my wife had been to vote previously and had overheard some women who had a problem voting discussing their problems with the machines. They were different machines. A neighbor also told me that she had encountered six different people who had a problem with the voting machines. When the review sheet came up it said that I had not voted in the Congressional race even though I knew I had voted for Christine Jennings. I went back and registered my vote again and this time it indicated that I had voted for Ms. Jennings on the review screen.

FURTHER AFFIANT SAYETH NOT.

Joseph J. Bedits

SWORN TO and SUBSCRIBED before me this _____ day of November, 2006, by Joseph J. Bedits who is personally known to me or who has produced Fla Drivers License as identification and who took an oath.

332-490-43-009-0

Notary Public

William C. Strode
My Commission DD235324
Expires August 15, 2007

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Celia Catlett, who after being duly sworn, deposes, and says:

1. My name is Celia Catlett and I have personal knowledge of the matters set forth herein.

2. My date of birth is December 27, 1936 and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 3624 Country Place Lane, Sarasota, Florida 34233.

4. I voted early at Precinct 83, located at the North Sarasota Library, 2801 Newtown Boulevard, 34234, on October 24, 2006

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted with the stylus on the ivotronics touch screen voting machine, I am absolutely sure the box for Christine Jennings showed the X. On the Review screen however, Christine Jennings' name showed but the box beside her name was blank. I clicked on the review ballot and corrected my vote and it then showed an X beside her name. After that, I registered my vote with the Red Vote button at the top of the screen. After voting, I asked my husband if anything unusual happened when he voted (on a different machine). He told me that when he reviewed his ballot, the box by Christine Jennings' name was blank and he had to correct it. At that time, I reported this to a poll worker named Charlie, who said he would report it.

FURTHER AFFIANT SAYETH NOT.

Celia Catlett

Celia Catlett

SWORN TO and SUBSCRIBED before me this 11th day of November, 2006, by Celia Catlett who is personally known to me or who has produced a Florida Drivers License as identification and who took an oath. C343-110-36-967-0

Michael T. Burns

Notary Public

MICHAEL T BURNS
Comm# DD0255328
Expires 1/17/2008
Bonded thru (800)432-4254
Florida Notary Assn., Inc

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Patricia Jones Eatough who after being duly sworn, deposes, and says:

1. My name is Patricia Jones Eatough and I have personal knowledge of the matters set forth herein.

2. My date of birth is June 8, 1955 and otherwise competent.

3. I am a qualified elector of the state of Florida residing at 1827 East Leewynn, Sarasota, FL 34240.

4. I voted at Precinct 132 on or about November 7, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. I had heard prior to going to the poll that there were problem with the voting machines. When I went to vote, the poll worker also warned me that there had been problems with the machine registering the Congressional race. When I voted on the ivotronics touch screen voting machine, I voted for Christine Jennings. The screen indicated I had voted. Yet when I got to the end, the review page indicated I had not voted in the Congressional race. I went back and voted for Ms. Jennings. This time my vote did register on the voting page.

FURTHER AFFIANT SAYETH NOT.

X Patricia Eatough
Patricia Jones Eatough

SWORN TO and SUBSCRIBED before me this 12 day of November, 2006, by Patricia Jones Eatough who is personally known to me or who has produced Drivers License as identification and who took an oath.

E320-690-55-708-0

Linda Chase
Notary Public

LINDA J. CHASE
Notary Public - State of Florida
My Commission Expires Feb 9, 2010
Commission # DD 516773
Bonded By National Notary Assn.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, TERESA GRZYMALA who after being duly sworn, deposes, and says:

1. My name is TERESA GRZYMALA and I have personal knowledge of the matters set forth herein.

2. My date of birth is 04-20-1950. I am over eighteen (18) years of age and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 1104 Twin Laurel Boulevard, Nokomis, FL 34275.

4. I voted at King's Gate at approximately 10:30 am on November 7, 2006.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the iVotronics machine I took my time to be sure I did not make any errors. When I voted in the Buchanan-Jennings race, I specifically voted for Christine Jennings and checked to make sure that the box was checked before I went to the next page. When I got to the review screen it reflected no vote was cast for the Congressional race. All of my other selections were properly recorded. I touched where it said no vote had been cast and it took me back to the Buchanan-Jennings race. I then re-voted for Christine Jennings and I then pushed the vote button. No report was made to the poll worker.

FURTHER AFFIANT SAYETH NOT.

Teresa Grzymala
TERESA GRZYMALA

SWORN TO and SUBSCRIBED before me this 11 day of November, 2006, by TERESA GRZYMALA who is personally known to me or who has produced FL Drivers License #G625-800-50-622-0 as identification and who took an oath.

NOTARY PUBLIC STATE OF FLORIDA
ANNE C. BECKMANN
MY COMMISSION # DD 183967
EXPIRES: March 24, 2007
Bonded Thru Budget Notary Services

Anne C. Beckmann
Notary Public

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, PEDRO M. GALAN who after being duly sworn, deposes, and says:

1. My name is PEDRO M. GALAN and I have personal knowledge of the matters set forth herein.

2. My date of birth is January 5, 1945, and I am otherwise competent.

3. I am a qualified elector of the state of Florida residing at 1080 Peppertree Lane, Sarasota, Florida 34242.

4. I voted at Gulf Gate Library on October 31st, 2006. No poll worker issued instructions with regard to the Congressional race.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. When I voted on the ivotronics touch screen voting machine I touched the screen for Christine Jennings and it showed I voted for Christine Jennings. But when I reviewed the summary page at the end of the ballot, it not only failed to show a vote for Christine Jennings, but the only name to appear on the review page was Christine Jennings, next to a blank box indicating no vote had been cast. I called a poll worker over and explained what had happened, and the poll worker pulled back the page for the Congressional race. I revoted for Christine Jennings, and my vote appeared to register in my second review of the summary screen.

FURTHER AFFIANT SAYETH NOT.

Pedro M. Galan
PEDRO M. GALAN

SWORN TO and SUBSCRIBED before me this 11th day of November, 2006, by PEDRO M. GALAN, who is personally known to me or who has produced Florida Driver's License No. G450-673-45-0005-0 as identification and who took an oath.
expires 1/5/2012

Deborah R. Woodson
Notary Public

Deborah R. Woodson
MY COMMISSION # DD156473 EXPIRES
November 27, 2006
BONDED THRU TROY FAIN INSURANCE, INC.

AFFIDAVIT CONCERNING FAILURE OF VOTING MACHINE AND INTENT TO VOTE FOR CHRISTINE JENNINGS

STATE OF FLORIDA
COUNTY OF SARASOTA

Before me personally appeared, Joan Estelle Lowery who after being duly sworn, deposes, and says:

1. My name is Joan Estelle Lowery and I have personal knowledge of the matters set forth herein.

2. My date of birth is June 14, 1949. I am over eighteen (18) years of age and otherwise competent.

3. I am a qualified elector of the state of Florida residing 1315 Landings Drive, Sarasota, Florida 34231.

4. I voted at precinct 15, at Trinity United Methodist Church on Halley Ave, Sarasota, Florida, on November 7, 2006 at approximately 6:00 p.m.

5. My intent was to cast a ballot for Christine Jennings for United States Congress, Florida District 13.

6. It was not busy when I arrived at the voting location and there was no wait. I had heard earlier media reports and was aware there were some problems with the machines. When I arrived, I specifically asked if there had been problems and I was told no issue or problems had arisen. I voted for Christine Jennings on a touch screen and when I arrived at the review page the Congressional vote was left blank. I called a poll worker over at that time and she showed me how to move back and I re-cast my vote for Christine Jennings. On the final review page I confirmed my vote was cast. I approached a poll worker to complain about the situation and filled out a complaint card.

FURTHER AFFIANT SAYETH NOT.

Joan Estelle Lowery
Joan Estelle Lowery

SWORN TO and SUBSCRIBED before me this 13th day of November, 2006, by Joan Estelle Lowery who is personally known to me or who has produced as identification and who took an oath.

Joan Estelle Lowery

L600-485-49-714-0

Notary Public

WALLACE H. KLEIN
MY COMMISSION # DD270457
EXPIRES: December 30, 2007

EXHIBIT D

LIST OF PROPOSED ITEMS FOR PANEL SUBPOENAS

The following items are needed to conduct a comprehensive, balanced, and speedy investigation into this contested election. After each item, the entities that are believed to possess the item and therefore could be subpoenaed for the item are indicated in square brackets, using the following abbreviations: ***C*** for the Sarasota County Supervisor of Elections' Office in Sarasota, Florida; ***S*** for the Florida Department of State (and its Division of Elections) in Tallahassee, Florida; and ***E*** for Election Systems & Software, Inc. ("ES&S"), in Omaha, Nebraska. The numbers of items specified below would allow the subpoenaed materials to be divided into three equivalent sets and then distributed among the Panel, Ms. Jennings's expert team, and Mr. Buchanan's expert team.

1. Sixty (60) of the ES&S "iVotronic machines" used in the November 2006 election in Sarasota County and referred to in Paragraph 1-A of the Stipulation Agreement that Florida Circuit Judge William L. Gary approved on February 21, 2007 [hereinafter "the Stipulation Agreement"], along with the carrying cases, power adaptors, and other apparatus to set up the voting booths for these iVotronic machines. The Panel will select the 60 iVotronic machines, by serial number, from the list of iVotronic machines attached to the Stipulation Agreement as "Exhibit A." [C]

2. One hundred and twenty (120) of the ES&S personal electronic ballots ("PEBs") used in the November 2006 election in Sarasota County and referred to in Paragraphs 1-A and 1-D of the Stipulation Agreement. The Panel will select the 120 PEBs, by serial number, from the list of PEBs attached to the Stipulation Agreement as "Exhibit B." [C]

3. Sixty (60) of the ES&S Master PEBs and all twelve (12) ES&S Qualification PEBs used in the November 2006 election in Sarasota County. [C]

4. All "[compact] 'flash cards'" referred to in Paragraph 1-A of the Stipulation Agreement and used in the November 2006 election in Sarasota County in connection with the 60 iVotronic machines specified above, in Paragraph 1 of this list. [C]

5. Three full copies, delivered in electronic form on CD-ROMs, of all "software" referred to in Paragraph 1-A of the Stipulation Agreement and used in the November 2006 election in Sarasota County in connection with the 60 iVotronic machines specified above, in Paragraph 1 of this list. [C]

6. All "hard drives" referred to in Paragraph 1-C of the Stipulation Agreement (except for the "new hard drives for the March 2007 Election"), plus two complete bit-for-bit copies of each of those hard drives, along with the passwords and other information needed to read them. (The Panel could keep the original hard drives and distribute the copies to the two parties' expert teams.) [C]

7. Three complete bit-for-bit copies of the "back-up of all information on the server used to collect and store the votes" in the November 2006 election in Sarasota County, referred to in Paragraph 1-C of the Stipulation Agreement, along with the passwords and other information needed to read the backed-up information. [C]

8. Three standard ES&S Communications Packs (containing three thermal printers and all necessary cabling). [C]

9. Three PEB readers/serial port interfaces for transferring data from an ES&S PEB to a standard personal computer. [C]

10. Three full copies, in electronic form, of all files that were loaded onto any or all of the 60 iVotronic machines (specified above, in Paragraph 1 of this list) and/or onto any or all of the PEBs (specified above, in Paragraphs 2 and 3 of this list) as part of the "ballot programming" or "ballot definition" or "election generation" process, for early voting and/or for Election Day voting, including but not limited to ballot-definition files and audio files, for the November 2006 election in Sarasota County. [C, S]

11. Three full copies of all items (including but not limited to software and documentation) that were provided to the Florida State University-SAIT team to assist the team in producing the report entitled "Software Review and Security Analysis of the ES&S iVotronic 8.0.1.2 Voting Machine Firmware," issued by the Florida Department of State on February 23, 2007. [C, S, E]

12. Three full copies of the unredacted Appendices E, F, and G to the report entitled "Software Review and Security Analysis of the ES&S iVotronic 8.0.1.2 Voting Machine Firmware," issued by the Florida Department of State on February 23, 2007. [S]

13. Three full copies of all items (including but not limited to software and documentation) that were provided to the team that produced the report entitled "Audit Report of the Elections Systems and Software, Inc.'s iVotronic Voting System in the 2006 General Election for Sarasota County, Florida," issued by the Florida Department of State on February 23, 2007. [C, S, E]

14. Three full copies of all ES&S source code and binary software images to the iVotronic system, the PEBs, and the Unity election-management system, used in the November 2006 election in Sarasota County, in the same electronic form that ES&S's developers use. [S, E]

15. Three full copies, in electronic form, of all documentation and technical documents packages for the ES&S products and source code specified above, in Paragraph 14 of this list, including but not limited to all user manuals, operator manuals, training materials, and other documentation related to the use, operation, or maintenance of any part of ES&S's iVotronic system, ES&S's Unity system or any of its elements, and ES&S's PEBs, that were used in the November 2006 election in Sarasota County. [C, S, E]

16. Three full copies of all documentation and tools necessary to extract and read the "three redundant memories" contained within each ES&S iVotronic machine used in the November 2006 election in Sarasota County. [C, S, E]

17. Three computers loaded with the entire ES&S Unity system used in the November 2006 election in Sarasota County fully installed, along with the passwords and other information needed to operate the installed software. Each computer's hardware configuration (including memory and hard-disk size) should meet or exceed the specifications of the computer that the Sarasota County Supervisor of Elections' Office used in November 2006 to run the ES&S Unity system. [E]

18. Three computers loaded with the following software and data fully installed, along with the passwords and other information needed to operate them:

- full copies of all source code to "all software versions" (that is, ES&S's complete software version repository, regardless of whether the versions were used in Sarasota County or elsewhere) of ES&S's iVotronic and Unity systems since January 1, 2000 (whether or not they have been submitted to an "independent testing authority" and/or to the Florida Division of Elections' Bureau of Voting Systems Certification), and instructions for how to retrieve, and determine the date of, each of the software versions in this repository;

- full copies of the build environment actually used by ES&S's developers to create, debug, test, and ultimately ship distributions of all software versions of ES&S's iVotronic and Unity systems since January 1, 2000; and

- full copies of ES&S's bug-tracking or issue-tracking database for all software versions of ES&S's iVotronic and Unity systems since January 1, 2000. [E]

EXHIBIT E

IN THE CIRCUIT COURT FOR THE SECOND JUDICIAL CIRCUIT
IN AND FOR LEON COUNTY, FLORIDA
CIVIL DIVISION

CHRISTINE JENNINGS, nominee of the Democratic Party for Representative in Congress from the State of Florida's Thirteenth Congressional District,

Plaintiff, Case No.: 2006 CA 2973

vs.

ELECTIONS CANVASSING COMMISSION OF THE STATE OF FLORIDA; SARASOTA COUNTY CANVASSSING BOARD; KATHY DENT, as SARASOTA COUNTY SUPERVISOR OF ELECTIONS; SUE M. COBB, as SECRETARY OF STATE OF THE STATE OF FLORIDA; DAWN K. ROBERTS, as DIRECTOR OF THE DIVISION OF ELECTIONS OF THE STATE OF FLORIDA;VERN BUCHANAN, as nominee of the Republican Party for Representative in Congress from the State of Florida's Thirteenth Congressional District; and ELECTION SYSTEMS & SOFTWARE, INC.,

Defendants.
_____/

ELLEN FEDDER, LANCE JONES ERNEST LASCHE a/k/a MIKE LASCHE, BARBARA KLEIN, LOIS HARMES, JOHN MINDER, DOVIE MURRAY, JOHN MCBRIDE, SUSAN GAAR, GARY LAMER, CHARLES CLIFTON,

Plaintiffs Case No.: 2006 CA 2996

vs.

TOM GALLAGHER, CHIEF FINANCIAL OFFICER, *et al.*

Defendants.
_____/

[PROPOSED] PROTECTIVE ORDER

Good cause having been shown, and in order to facilitate necessary discovery in this case, IT IS HEREBY ORDERED that this Protective Order pursuant to Rule 1.280(c) be, and is hereby, entered.

1. This Protective Order shall be applicable to any trade secret owned by Defendant Election Systems & Software, Inc. ("ES&S"). A trade secret is defined by Florida's Uniform Trade Secrets Act, Section 688.002(4)(a), Florida Statutes, as "information, including a formula, pattern, compilation, program, device, method, technique, or process that: (a) [d]erives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and (b) [i]s the subject of efforts that are reasonable under the circumstances to maintain its secrecy."

2. Any trade secret produced by any party as part of discovery in this action may be designated as "Confidential" by such party and may be disclosed or otherwise communicated or made available in whole or in part only to the following persons:

a. Counsel of record in this litigation and in other proceedings related to the November 2006 general election, and staff and supporting personnel of such attorneys, such as paralegals, secretaries, stenographic and clerical employees and contractors, and outside copying imaging and presentation services, who are working under the direction of such attorneys;

b. The parties herein and the parties in other proceedings related to the November 2006 general election who are necessary for the furtherance of this litigation or such other proceedings;

c. Persons who are expressly retained or sought to be retained by a party or a party's counsel as consultants or testifying experts; provided that the disclosure of "Confidential"

material to any persons under this subparagraph shall only be to the extent necessary to perform their work on this litigation or other proceedings related to the November 2006 general election.

d. Any other persons who are designated to receive material designated "Confidential" by order of this Court after notice to the parties, or by written stipulation of the parties.

e. Any person of whom testimony is taken in this action or in other proceedings related to the November 2006 general election.

f. The Court and Court personnel, court reporters, interpreters and videographers employed in connection with this litigation or other proceedings related to the November 2006 general election.

3. Each person set forth in Paragraph 2 who is not (i) a party to this litigation or other proceedings related to the November 2006 general election, counsel for such parties, or staff and supporting personnel of such parties or attorneys; or (ii) the Court or Court personnel to whom material designated under this Protective Order is to be disclosed, shall, prior to receiving such material, be furnished with a copy of this Protective Order, and a copy of the Nondisclosure Agreement Pursuant to Protective Order (attached as Exhibit A), which the person shall read and sign.

4. The recipient of any material designated under this Protective Order shall use reasonable efforts under the circumstances to maintain the confidentiality of such information.

5. A party shall not be obligated to challenge the propriety of material designated under this Protective Order at the time the designation is made, and failure to do so shall not preclude a subsequent challenge thereto. In the event that any party to this litigation disagrees at any stage of these proceedings with such designation, such party may request that the

designating party modify or remove its designation or may request from the Court a hearing at the Court's earliest convenience. The burden of proving that information has been properly designated under this Protective Order is on the person or entity making such designation.

6. All counsel for the parties who have access to information or material designated under this Protective Order acknowledge they are bound by this Protective Order and submit to the jurisdiction of the Court for purposes of enforcing this Protective Order.

7. Within sixty (60) days after the final termination of litigation between the parties, including this action and all other proceedings related to the November 2006 general election, all material designated under this Protective Order and all copies thereof (including summaries and excerpts) shall be either returned to the party that produced it or destroyed and a certification of destruction supplied to the producing party; provided, however, that for each party, counsel who is entitled to access to such designated material may retain complete and unredacted copies of its work product that contains designated material as well as pleadings and papers filed with the Court or served on the other party. This Protective Order shall survive the final termination of this litigation with respect to any such retained confidential material.

SO ORDERED.

Date

The Honorable William L. Gary

EXHIBIT A

NONDISCLOSURE AGREEMENT PURSUANT TO PROTECTIVE ORDER

I, _____, certify that I have read the Protective Order (the "Order") entered in *Jennings v. Elections Canvassing Comm'n of the State of Florida*, Case No. 2006 CA 2973, Circuit Court for the Second Judicial Circuit in and for Leon County, Florida, and that I understand the terms, conditions, and restrictions it imposes on any person given access to Defendant ES&S's trade secrets. I recognize that I am bound by the terms of that Order, and I agree to comply with those terms. I will not disclose Defendant ES&S's trade secrets to anyone other than persons specifically authorized by the Order and agree to return all such materials that come into my possession to counsel from whom I received such materials. I consent to be subject to the personal jurisdiction of the Circuit Court for the Second Judicial Circuit in and for Leon County, Florida, with respect to any proceedings related to the enforcement of the Order, including any proceeding related to contempt of Court.

I declare under penalty of perjury that the foregoing is true and correct and that this undertaking is executed this _____ day of _____, 200___.

Signature:_____
Address:
Phone:
Facsimile:
E-mail:
Employer/Business:
Job Title/Description:

EXHIBIT F

PETITIONER'S APPENDIX

CONTESTANT JENNINGS'S SUPPLEMENTAL APPENDIX

CONTESTANT JENNINGS'S APPENDIX: DOCUMENTATION OF VOTING MACHINE MALFUNCTION

VOLUME I

1. Voters' Sworn Affidavits Concerning Failure of Voting Machines and Intent to Vote for Christine Jennings

VOLUME II

2. Sampling of Election Day "Zone Tech Log Sheets" Completed by Sarasota County Technicians

3. Sampling of Sarasota County Supervisor of Elections Incident Report Forms

4. Sampling of Jennings Campaign Incident Report Forms

5. Sampling of E-mails Received from Voters

6. Sampling of Poll Watcher Incident Report Forms