Office of the Inspector General

Miami-Dade County

Cover Memorandum & Summary

To: The Honorable Alex Penelas, Mayor
        Miami-Dade County   _____
                                                            Rec'd by   Date

        The Honorable Dr. Barbara Carey-Shuler, Chairperson   _____
        and Members of the Board of County Commissioners   Rec'd by   Date

From: Christopher Mazzella
        Inspector General

Date: May 20, 2003

Re: OIG Final Report of the Miami-Dade Voting Systems Contract RFP No. 326

Enclosed is the Office of the Inspector General's (OIG) final report concerning the above-captioned matter. This cover memorandum provides you with a summary of the OIG's conclusions and recommendations. However, before we address those matters, it is essential for you to consider the impact of ES&S' failure to receive state certification for its iVotronic firmware upgrade which was intended to quicken the poll opening process.

On the afternoon of May 7, 2003, the State of Florida, Bureau of Voting Systems Certification, sent written notification to Election Systems and Software, Inc. (ES&S) and Miami-Dade County Elections Department Officials that the iVotronic firmware upgrade Version 7.5, and its most recent modification 7.5.1, failed to receive state certification in its latest submission pursuant to the State's Voting Systems Standards. The OIG received the same written notification.

Qualification testing for Version 7.5 took place at ES&S headquarters in Omaha, Nebraska from April 28 – May 1, 2003. The focal goal of the upgrade was to quicken the time it takes to open the polls for voting. However, testing by the State revealed that Version 7.5, and modified Version 7.5.1, had numerous "anomalies and deficiencies" which prevented their certification. At this juncture, the touch screen voting equipment purchased by Miami-Dade County in conjunction with the tri-lingual ballot and supporting firmware used by the County is incapable of allowing the polling places to be set up and opened that same morning. In other words, the boot-up times remain unacceptably long. And unless the machines are set up and booted-up the night before, polls will not be ready for voting at 7:00 am. While the State has given ES&S sixty (60) days to cure the deficiencies and resubmit the product for

testing, the OIG cannot emphasize enough that County officials must face up to reality – that the County's voting system, as it stands today, requires major commitments of monetary and human resources in order to conduct countywide elections. The system has the same limitations as it did in the September and November 2002 elections.

With the benefit of hindsight, it is important to note that in preparation for the November 2002 General Election, it was the intent of the County Manager's Office to utilize the firmware Version 7.5, which was slated for an expedited certification process review in late September 2002. The OIG, in its September 20, 2002, report cautioned the County not to rely on any new upgrade and to instead plan the election around known limitations. This same sentiment was echoed by Special Elections Project Manager Carlos Alvarez and the command staff of the Miami-Dade Police Department. The decision made by Project Manager Alvarez to embrace the OIG's recommendation and forego waiting for the 7.5 miracle upgrade was right-on, despite the urging from County staff to plan the election around the anticipated certification of 7.5. We applaud the decision of Mayor Penelas to support the OIG's main recommendation of placing logistical command of the November 2002 election in the hands of Project Manager Alvarez. We know now, from the recent failure of Version 7.5 to attain its certification, that had it not been for the decision by Project Manager Alvarez to forego waiting for the certification, the November 2002 election would have resulted in another debacle.

Again, we urge the County, in light of the most recent certification failure and the experiences learned by Project Manager Alvarez during the November 2002 election, to act immediately without further delay. The 2003 fall elections must be planned around the same known limitations and waiting an additional sixty (60) days for a possible 7.5 (7.5.1) resubmission is unacceptable. Moreover, at this time, any reliance on ES&S's marketed firmware Version 8.0 is not only unwise but foolhardy.

The following provides you with a summation of our final conclusions and recommendations.

1. The structure of the County's performance bond was tied to three absolute milestones of acceptance testing and the certification of the primary and general election results by the Department of State. Had the County structured the bond's duration and reduction schedule in line with the vendor's proposal, there would likely be a portion of the performance bond balance remaining. The County may have saved money by foregoing the premium costs of a longer performance bond, but it also sacrificed the added protections afforded by a more graduated bond reduction schedule.

2. County staff's negotiation efforts resulted in the inclusion of an express warranty for fitness. This particular warranty is tied to the system as a whole, "System(s) Warranties," and is based on the intended uses of the system and the business requirements of the County. The OIG believes that based, in part, on statements made

by the vendor which demonstrate that it was aware of the County's warehousing and deployment requirements, and by repeated assurances that tri-lingual capability would not require a CompactFlash card, the iVotronic System sold to the County is not fit to meet the intended use and elections based business requirements of Miami-Dade County.

3. ES&S represented to the County that it would provide a system capable of running a tri-lingual ballot. The notion of having two separate systems, English/Spanish and English/Creole, was only considered as a back-up measure while ES&S' new certification was pending.

4. ES&S' oral sales presentation of the iVotronic tri-lingual system failed to disclose that the system must be designed as a graphics-based, bitmap-coded system. ES&S knew that to go beyond two languages required that the ballot design be produced in bitmaps. The bitmap requirement thus necessitates the use of an external CompactFlash card, which was also known to the vendor. During the oral presentations, ES&S affirmatively assured County officials that a tri-lingual system would not require additional data capacity (i.e. the flash cards). Contract language found in the liquidated damages provision also highlights ES&S' position that only going beyond three languages, English, Spanish, and Creole, would require adding additional data capacity. ES&S' own documentation from 2001 reveals the limitations of the machine's internal flash storage capacity and states that all image-data graphics files, except for a small pixel party representation, must be stored on an external CompactFlash card. In summation, ES&S knew that any third language had to be written in bitmap and that bitmap files had to reside on the CompactFlash card. ES&S knew that the County had to utilize CompactFlash cards, even in non-audio machines. This is contrary to what ES&S stated in its oral presentation.

5. The opening polls process, a.k.a. boot-up time, is directly related to the time it takes to boot-up each iVotronic machine. Because each machine is opened with a red-master PEB (Personal Electronic Ballot) and because there is only one master PEB per polling precinct and because under the currently utilized firmware (Version 7.4.5.0) the PEB must be kept in each iVotronic machine for the duration of the boot-up, the time it takes to open polling places in Miami-Dade County is extraordinarily lengthy and unacceptable. It is important to understand that the boot-up occurring on each machine election morning is not a process whereby information is being downloaded or copied from the external CompactFlash card to the internal parts of the machine. Rather, the boot-up process involves the machine checking and verifying that files necessary to perform the operation of voting are present (e.g., a self-diagnostic). The iVotronic contains an embedded Intel 386 EX processor. The speed of the processor – brain of the machine – impacts the speed of the checking and verification process. Like the State Certification Bureau pointed out below, the OIG also questions why the checking and verification process is so time consuming given the fact that this process only checks for the files necessary to enable the voting of a particular ballot, and not every file contained on the flashcard.

6.   ES&S recently submitted its iVotronic Firmware Version 7.5 (intended Release 4.3) to the State of Florida Bureau of Voting Systems Certification's Qualification Testing process. This took place in Omaha, Nebraska from April 28 – May 1, 2003. According to ES&S, Firmware Version 7.5 would speed up the poll opening process by allowing for the concurrent booting-up of each iVotronic machine, which allows the PEB to be removed from the machine prior to the boot-up completion. Apparently, the sequence and/or content of the self-diagnostic process was modified in order to allow the boot-up to continue without the presence of PEB. But while the PEB was able to be removed after a shorter interval, there was a significant sacrifice to the integrity of the system. This sacrifice involved disabling system check routines to cure design deficiencies. As a result, the shortened self-diagnostic process would not detect corrupted files during the morning boot-up process, and errors would not be detected until a voter attempted to vote for that candidate/measure. Testing by the State revealed that Version 7.5, and a modified 7.5.1, had numerous "anomalies and deficiencies" which prevented their certification.

7.   Most interesting is the State's comments contained on page 3, Section 3, of its report regarding the Boot/Checking Process (Exhibit I of Final Report). It states in full:

- "During examination of these issues it was discovered that the iVotronic has no way to detect if files have been corrupted. Additionally, it became clear that the routine to detect missing files only looks for files which are needed for the ballot style on the PEB."

- "Previously we have been told that the long boot times (for example with 7.4.5.0) because the iVotronic is checking every file and that the upcoming version 8.0.0 would speed up the process by only checking those files which it needs. Accordingly this leaves a very good question for ES&S on what is really happening to speed up the process in the next release."

- "An additional question is that, given the processor speed of the machine and the fact that the firmware is only checking for the presence of files and not their content, why does the routine which checks files take such a long time?"

8.   The OIG cautions throughout this report that the performance representations of the vendor must be independently assessed by the County's technical staff. Additionally, in this report the OIG strives to enlighten County officials that state certification does not verify the marketing representations of the vendor. With that being said, the OIG cautions the County of being overly reliant on the representations made about the anticipated upcoming firmware release 8.0. With relatively little to no written description of what 8.0 does, and in light of the Certification Bureau's above-cited

comments regarding what is left to be modified in 8.0 versus what 7.5 already does, the County should be doubly cautious of buying into the perceived panacea of 8.0 without independently assessing its value, i.e., let's have some other jurisdiction try it out first.

9. Additional Recommendations: In addition to the initial recommendations made in the Draft Report, and re-stated in the Final Report, the OIG offers this series of final inter-related recommendations.

    A. The OIG recognizes that the County Manager's response includes fourteen (14) bulleted points attempting to demonstrate that it has met the OIG's initial recommendations. While the County may be encouraged that the Elections Department has successfully conducted nine (9) small municipal elections, the OIG is not convinced that the Department is prepared for upcoming major countywide elections this fall. The Elections Department states that it has trained its own staff to become Quality Assurance Managers and Verification Specialists and has, therefore, decreased its reliance on other County departments. However, the Elections Department, even with intended increased staffing, is not large enough to assume that its own staff will be able to endure the entire responsibilities and tasks required of a countywide election involving over 600 precincts. The OIG reiterates its original recommendations: Act now, identify and train additional County employees, and, most importantly, gain their commitment to assist in the upcoming elections.

    B. In our final assessment, the OIG concludes the iVotronic system sold to the County is not fit to meet the intended use and elections-based business requirements of Miami-Dade County. In future years, if this situation does not improve, the County should consider scrapping the current system for an elections system that will meet the County's needs and expectations. At present, the County has no viable alternative but to continue using the iVotronic with the tri-lingual bitmap ballot. In this regard, the OIG considered the option of reverting to a bi-lingual text-based system with separate iVotronic machines for English/Spanish and English/Creole. While ES&S' bi-lingual text based system has proven itself in other Florida counties, Miami-Dade's requirement of having voting systems available in three languages would necessitate having two sets of voting equipment present in those precincts required by County ordinance. (See Section 12-16(a) of the Code of Miami-Dade County.)

    It has been the OIG's position throughout its inquiry that the County must plan upcoming elections around known system limitations. The added logistical requirements of dual systems may introduce a whole new set of unknown variables that the County just cannot risk. Dual systems with two sets of PEBs (English/Spanish and English/Creole) could easily add to poll worker confusion, and unless English/Creole booths are delivered countywide, the ultimate goal of having tri-lingual capability countywide would be thwarted.

Unless the County chooses to return the current equipment and procure a new system, which the OIG realizes is not economically feasible, we must learn to make do with what we have. This does not mean we should be (or are) satisfied with the current system. The OIG encourages County officials to pursue all available legal remedies to offset its dissatisfaction and unforeseen incurred costs.

C.   Particularly in light of the transitional composition of the newly reorganized Elections Department and the subsequent replacement of senior experienced elections personnel, the OIG strongly urges the County Manager's Office and the Elections Department to proactively include former Project Manager Alvarez and his command staff in an advisory capacity for the planning, training and implementation requirements to ensure the success of future countywide elections. The OIG encourages elections officials to follow the blueprint established by Mr. Alvarez and his staff, which was the critical component in the success of the last major election. This blueprint takes into account the most basic dilemma the County faces, namely, that the iVotronic machines must be booted-up the night before. At present, there is no avoiding this fact of life. Hypothetically, even if the failed Version 7.5 had been certified, there would have been no guarantee that the night before set-up requirements of Version 7.4.5 would have been eliminated. And, as we all know, actual boot-up time is only one aspect of the multitude of pre-election preparations that must take place to ensure a successful election.

Enclosed, please find a copy of the OIG's <u>Final</u> Report on this matter. Attached and appended are the responses to the Draft Report received from the County Manager's Office, ES&S and the Florida Department of State. After thorough review and consideration of the responses, the OIG made some modifications to the report. These modifications are identified in the report as modifications from the draft to the final. The OIG's recommendations, including the one set forth above, are contained on the last page of the report. In drafting this report, we made a commitment to the citizens of Miami-Dade County that they would not have to endure reading a report that was cluttered with legal terms and computer jargon that could only be understood by some attorneys and the vendor. I am confident that this report meets those objectives – it is accurate, objective and intelligible.

cc: Mr. Steve Shiver, County Manager
       Mr. Robert A. Ginsburg, County Attorney
       Mr. Carlos Alvarez, Director, Miami-Dade Police Department
       Ms. Cathy Jackson, Director, Audit & Management Services Department
       Ms. Katherine Fernandez Rundle, State Attorney, Eleventh Judicial Circuit
       Ms. Glenda Hood, Secretary of State, Florida Department of State (via Fed Ex)
       Mr. Aldo Tesi, President and CEO, Election Systems & Software, Inc. (via Fed Ex)
       Clerk of the Board (copy filed)