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# TEST REPORT

## QUALIFICATION TESTING OF THE ACCUVOTE-TS R6 DRE PRECINCT COUNTER (FIRMWARE RELEASE 4.0.11)

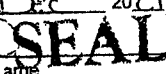
For  
 Global Election Systems  
 1611 Wilmeth Road  
 McKinney, Texas 75069

STATE OF ALABAMA }  
 COUNTY OF MADISON } AL Professional Eng. Reg. No. 16011

Joseph T. Hazeltine, P.E., being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted testing and is to the best of his knowledge true and correct in all respects.

Joseph T. Hazeltine  
 \_\_\_\_\_  
 J. T. Hazeltine, Sr. Dir. Eastern Test Operations

SUBSCRIBED and sworn to before me this 11 day of Dec, 2001  
[Signature]  
 Notary Public in and for the State of Alabama at Large  
 My Commission expires April 6, 2002



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TESTED BY: [Signature] 12-11-01  
 J. R. Dearman, Project Engineer Date

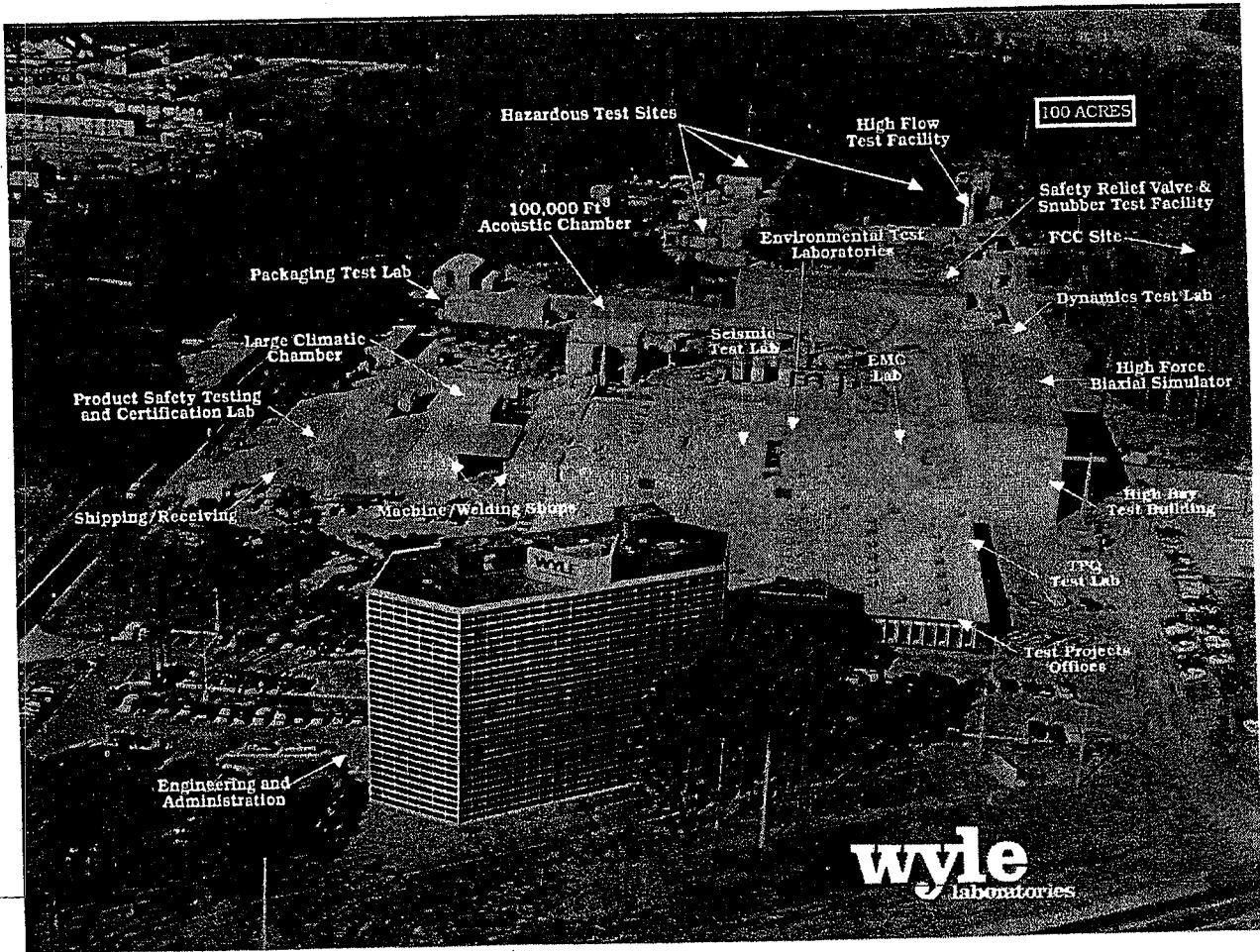
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 J. T. Hazeltine, Sr. Dir. Eastern Test Operations Date

WYLE Q.A.: Brenda Meadows 12/11/01  
 Brenda Meadows, Q.A. Manager Date

(dsc)



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AERIAL VIEW OF WYLE/HUNTSVILLE

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## 1.0 INTRODUCTION

### 1.1 Scope

This report presents the test results for Qualification Testing of the Global Elections Systems AccuVote-TS R6 Direct Record Electronic (DRE) Precinct Counter.

### 1.2 Objective

The objective of this test program was to ensure that the AccuVote-TS R6 (AVTS-R6) DRE Voting Machine and Voting Machine Firmware, Release 4.0.11, complied with the requirements of Global Election Systems design specifications and with the guidelines of the Federal Election Commission (FEC) National Voting System Standards, January 1990.

### 1.3 Summary

Qualification testing includes: the selective in-depth examination of firmware; the inspection and evaluation of system documentation; tests of hardware under conditions simulating the intended storage, operation, transportation, and maintenance environments; and operational tests verifying system performance and function under normal and abnormal conditions. Qualification testing was limited to precinct-level hardware and resident machine firmware. It should be noted that the term firmware as used within the context of this report is in reference to the embedded software which remains resident within the AVTS-R6 hardware and required for its operation.

The Global Election Systems AVTS-R6 and associated Machine Firmware, Release 4.0.11, was subjected to Reliability and Functional/System-Level Tests. It was demonstrated that the AVTS-R6 and associated Machine Firmware successfully met the qualification test requirements of the Federal Election Commission Standards for Punchcard, Marksense, and Direct Recording Electronic Voting Systems, January 1990. Qualification testing (in-depth source code review and functional tests) was limited to the firmware and hardware used at the precinct level and did not include any election management software, which typically resides on a personal computer and is used for ballot definition, absentee, and report canvassing activities. Testing of the election management software is required and would be tested and documented under separate contract.

The following paragraphs address, in greater detail, the design methodology of the AVTS-R6 of which the Global Elections Systems Technical Data Package was the source for much of this information. Additionally, functional and physical characteristics of the AVTS-R6 and, the test results observed/recorded during qualification testing are also documented as well as those anomalies recorded during the course of the qualification program. Each anomaly was satisfactorily addressed by Global Elections personnel and was closed out upon test completion.

**Due to varying requirements of individual jurisdictions, it is recommended by the FEC Standards that local jurisdictions perform pre-election logic and accuracy tests on all systems prior to their use in an election within their jurisdiction.**

## 2.0 REFERENCES

- Global Election Systems Purchase Order No. PR2010519.
- Global Election Systems AccuVote-TS R6 System Hardware Specification, Document Revision 1.0, April 30, 2001.
- Global Election Systems AccuVote-TS Hardware Guide, Document Revision 1.0, April 30, 2001.
- Global Election Systems AccuVote-TS R6 FEC Compliance Overview, Document Revision 1.0, April 30, 2001.
- Global Election Systems AccuVote-TS User's Guide, Document Revision 1.0, April 30, 2001.
- Global Election Systems AccuVote-TS R6 System Software Specification, Document Revision 1.0, April 30, 2001.
- Performance and Test Standards For Punchcard, Marksense, and Direct Recording Electronic Voting Systems, Federal Election Commission, January, 1990.
- Wyle Laboratories' Quotation No. 545/010991/DB.
- Wyle Laboratories' Job No. 46058.
- Wyle Laboratories' Quality Assurance Program Manual, Revision 1
- MIL-STD-45662A, "Calibration System Requirements"
- ANSI/NCSL 2540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"

## 3.0 CUSTOMER

Global Elections Systems, Inc.  
1611 Wilmeth Road  
McKinney, TX  
75069



## 4.0 TEST HARDWARE/SOFTWARE DESCRIPTION

### 4.1 Hardware

#### 4.1.1 AccuVote-TS R6

The AccuVote-TS R6 Direct Record Electronic Voting Machine is a self contained voting device whose control is exercised either by touching a selection on the touch screen or inserting a smart card at specific control points during unit operation. Mechanical functionality is limited to:

- Raising and lowering the AVTS-R6 touch screen
- Opening and closing the election media and battery compartment doors
- Locking and unlocking the election media and battery compartment doors
- Inserting and removing a PCMCIA card from the PCMCIA slot
- Inserting and removing a smart card into the smart card reader
- Installing and removing a battery from the battery compartment
- Installing and removing a paper roll from the printer

The AVTS-R6 includes:

- 2 PCMCIA ports; 1 for Flash Memory, 1 for Modem/general use
- 15" TFT LCD – XGA: 1024x768
- Backlight for LCD
- 15" Touchscreen
- Real Time Clock
- Internal Printer, 24 columns wide, 2 ¼" wide paper roll
- Smart Card Reader
- Batter Backup
- PS/2 keyboard Connector

Components of the AVTS-R6 accessible to the operator are:

- Smart Card Reader
- Touch 'Screen
- Power Switch
- 2 PCMCIA Slots
- Thermal Printer
- Sealed Lead-Acid Battery
- Keyboard Connector

Power to the AccuVote-TS is supplied by a single 15V output power supply capable of up to 100W. The power supply located within the AVTS-R6 measures 6.25 by 3.74 by 1.50 inches with an input voltage of 88-264VAC or 120-375VDC capable of a max load of 6.8 amps. The AccuVote-TS includes a Sealed Lead Acid battery which measures 5.95" by 2.54" by 3.7", and has a power output of 12VDC, 7.2AH.

Voter's ballots are programmed to election media, and are retrieved upon voter card insertion into the AccuVote-TS smart card reader. The voter proceeds to touch the voting area adjacent to the each candidate, response or write-in candidate selection, entering write-in candidates by means of an electronic, touch-sensitive keyboard.

## 4.0 TEST HARDWARE/SOFTWARE DESCRIPTION

### 4.1 Hardware

#### 4.1.1 AccuVote-TS R6

Candidate selections are changed either by touching the original candidate selection again, then touching the desired candidate, or immediately touching the desired candidate, depending on how the election has been programmed.

As ballots may be contained over more than one page in order to display all races, candidates and test information, the voter may advance forward or backward by touching the corresponding control buttons. Once the entire ballot has been voted, the voter may review the ballot and change any existing selections before continuing to cast the ballot.

Election results stored on the AVTS-R6 may be reported in printed form or consolidated either to a polling location AVTS-R6 Accumulator unit or a host computer running election management utility software.

### 4.2 Firmware

#### 4.2.1 AVTS-R6 Firmware

The AVTS-R6 resident firmware is based upon C++ and Microsoft MFC objects. In depth discussion of the Software System Concepts are documented in the Global Election Systems AVTS-R6 System Software Specification.

## 5.0 PRE-QUALIFICATION TESTS

### 5.1 Pre-Qualification Test Activities

At the time of submittal for ITA Qualification testing, Global Election Systems had reported that the AVTS-R6 had been subjected to extensive in-house testing.

## 6.0 MATERIALS REQUIRED FOR TESTING

### 6.1 Software

Global Election Systems provided the latest version of the AVTS-R6 Firmware at the time of ITA Qualification Testing commencement, which was Release 4.0.3. Revisions were made to the firmware during the course of the Qualification Test Program, bringing the version up to Release 4.0.11 upon program completion.

### 6.2 Equipment

Global Election Systems provided a sufficient number of AVTS-R6 system components to ensure that parallel testing, where feasible, could be performed.

## 6.0 MATERIALS REQUIRED FOR TESTING (Continued)

### 6.3 Test Materials

Global Election Systems provided all ancillary support material required during the course of ITA Qualification Testing.

### 6.4 Deliverable Materials

Global Election Systems provided the latest versions of all hardware and software specifications and poll-worker hardware and software user/maintenance manuals.

## 7.0 TEST SPECIFICATIONS

Qualification testing and a documentation review were performed to ensure that the precinct-level AVTS-R6 DRE Voting Machine and associated machine resident firmware were in compliance with the design and functional requirements contained within the following paragraphs.

The AVTS-R6 was functionally tested, as it would be configured for use in an election precinct.

### 7.1 Environmental Subsystem

#### 7.1.1 Shelter Requirements

The AVTS-R6 is capable of being operated and stored in any enclosed and habitable facility ordinarily used as a storage area or polling place.

#### 7.1.2 Space Requirements

The AVTS-R6 can be set up on a jurisdiction-supplied table. The layout of the AVTS-R6 should neither impede the polling place officials from performing their assigned duties, nor will it disturb the orderly flow of voters through the polling place. Alternately, the AVTS-R6 can be placed within a fold-out privacy voting booth equipped with collapsible legs for storage (Global Voting Booth M/N 0001).

#### 7.1.3 Electrical Supply Requirements

The AVTS-R6 can be powered via standard 115 VAC, 60 Hz facility power. Additionally, the AVTS-R6 can be operated from an internal Sealed-Lead Acid battery in the case of facility power loss. The battery is rated at 7.2 AH.

#### 7.1.4 Environmental Control

Through qualification testing, it was demonstrated that the AVTS-R6 is capable of storage and operation in temperatures from -15°F to 150°F and 40°F to 100°F, respectively. Such testing is discussed in greater detail in Paragraphs 16.0 & 17.0.

## 7.0 TEST SPECIFICATIONS (Continued)

### 7.2 Ballot Definition Subsystem

#### 7.2.1 Election Programming/Ballot Generation

The Election Preparation Subsystem used for Ballot Definition and Layout activities operates in a central environment separate from the AVTS-R6 precinct hardware. Note that this report addresses qualification testing, limited to the precinct level hardware (AVTS-R6 DRE) and machine resident firmware only.

#### 7.2.2 Ballot Installation

The AVTS-R6 is designed as a general-purpose voting device. The AVTS-R6 can be matched to any ballot type. The ballot definition and resulting ballot images as displayed by the AVTS-R6 are received as a group of data files downloaded from a programmed PCMCIA card.

#### 7.2.3 Programming and Software Installation

In the event that an updated release of firmware is issued by Global Election Systems, the executable firmware can be uploaded via a PCMCIA card into the voting hardware.

#### 7.2.4 Equipment System Readiness Tests

Diagnostics procedures exist that check for printer, card reader, and system component operability.

#### 7.2.5 Verification at the Polling Place

When the AVTS-R6 is powered on in Election Mode, a Zero Total report is printed, which lists all races and candidates valid at the polling location, with zero values for every candidate as well as the device number and polling location. The printing of the report as well as the voter card request display shown on the LCD indicate that the unit has passed all system diagnostics tests subsequent to being powered on.

#### 7.2.6 Opening the Polling Place

Opening of the polls is achieved by setting the AVTS-R6 into the Election Mode. The Results Reporting prompt will appear offering the opportunity to print a Zero Total report. Upon completion of the zero report printing, an Official Election screen will appear indicating that the AVTS-R6 is in Election Mode and ready for voters to vote.

## 7.0 TEST SPECIFICATIONS (Continued)

### 7.2 Ballot Definition Subsystem (Continued)

#### 7.2.7 Party Selection Ballot Subsetting

The AVTS-R6 provides for both open and closed primary voting depending on the ballot definition data that is loaded onto each machine. The Voter Smart Card can be programmed to limit the voter to a specific party affiliation or can be programmed to allow the voter to select the party affiliation prior to the actual ballot being displayed.

The AVTS-R6 supports ballot subsetting due to geographical boundaries or other criteria. The ballot subset information is part of the ballot definition data that is loaded onto each machine from the PCMCIA card.

#### 7.2.8 Enabling the Ballot

Once a voter's registration has been ascertained, the voter can proceed to any available Voter Terminal with a Voter Smart Card. The AVTS-R6 reads the card to determine which ballot is displayed for the voter.

The ballot is shown to the voter as a series of display pages. The voter moves between pages using the NEXT and BACK buttons. The firmware requires that each page of the ballot be scrolled through by the voter before the ballot can be cast.

#### 7.2.9 Candidate and Measure Selection

The ballot presented on the AVTS-R6's screen provides labeling indicating the race and name of every candidate and the titles of every measure, which can be voted. The casting of votes is performed by the voter using their finger to touch the candidate/measure to be selected. Proper selection is indicated by an 'x' appearing in the candidate's selection box. Additionally, if desired, the voter may deselect a candidate by pressing the button icon a second time and choosing a different candidate. Successful deselecting of a desired candidate is verified by the removal of the 'x' from the candidate's name.

#### 7.2.10 Write-In Voting

Write-in voting is accomplished by selecting the WRITE-IN button on the ballot, which in turn, displays an alphanumeric keyboard on the AVTS-R6's screen. The voter then has the opportunity to vote for a write-in candidate by typing in the candidate's name. If the voter later decides to deselect the write-in candidate, the voter may do so by deselecting the WRITE-IN button and selecting another candidate for that race or by replacing the write-in candidate with the name of another.

## 7.0 TEST SPECIFICATIONS (Continued)

### 7.2 Ballot Definition Subsystem (Continued)

#### 7.2.10 Write-In Voting (Continued)

Multiple write-ins can be provided for any office, so that the voter may enter as many write-in names as the office's 'vote-for' number. Each write-in on the machine-generated results report is tagged to allow the polling workers reviewing the machine reports at the end-of-day to identify if the same name was 'written-in' more than once for the same race. This applies only if the race allows for multiple write-ins.

#### 7.2.11 Casting a Ballot

When the voter has completed voting the ballot, the casting of the ballot is accomplished with the voter selecting the CAST BALLOT button located at the bottom right of the AVTS-R6 screen. The vote saving procedure includes saving the voter's ballot image, incrementing counters for each candidate/measure that the voter selected, and validating that the saves and increments were successful. It should be noted that before the voter is given the opportunity to cast their ballot, a ballot summary screen is presented which shows the voter all candidates and selections they made. Changes to the ballot may still be made at this point if a voter decides to do so.

#### 7.2.12 Public Counter

The AVTS-R6 is equipped with a Public Counter. This counter can only be set to zero as part of the System Reset procedure that is done after polls are closed. The Public Counter is incremented once each time a ballot is cast. The Public Counter value is printed on all Zero Proof and Results Reports, and is accessible for viewing by election officials at all times that the AVTS-R6 is powered.

#### 7.2.13 Protective Counter

The AVTS-R6 is equipped with a Protective Counter that cannot be reset. This counter is set to zero when each system is manufactured. The Protective Counter is incremented once each time a ballot is cast. The Protective Counter value is printed on all Zero Proof and Results Reports, and is accessible for viewing by election officials at all times that the AVTS-R6 is powered.

### 7.3 DRE Post-Voting Functions

#### 7.3.1 Closing the Polling Place

At the close of voting, the Poll Administrator inserts the Pollworker card into each AVTS-R6 at the polling location in order to electronically lock the units. A prompt will appear, requesting the operator to either close the election or power the unit off, the latter applying if the AVTS-R6 is being used in an early voting environment.

## 7.0 TEST SPECIFICATIONS (Continued)

### 7.3 DRE Post-Voting Functions (Continued)

#### 7.3.2 Obtaining Machine/Polling Place Reports

The machine level election totals are printed once the results reporting prompt is displayed if the polling administrator had previously selected the task of closing the election. Multiple reports may be printed including machine audit log reports. This report uses the same format as the zero proof report, and shows the following information:

- the election's identification
- the AVTS-R6 Terminal's serial number .
- the firmware release version
- a listing of all offices and measures, and their candidates and responses, with the vote counter value for each
- the public and machine count

### 7.4 Overall System Requirements

#### 7.4.1 Security

Access to the AVTS-R6 System is via supervisor functions menu. This menu requires an administrator's smart card and associated password for access to various system operations.

#### 7.4.2 Accuracy and Integrity

Data is backed up in redundant locations within the AVTS-R6 hardware and is subjected to CRC checks for accuracy in retention of data.

### 7.5 Hardware Standards

#### 7.5.1 Enclosure

The AVTS-R6 is intended to be used either on a tabletop or free standing. In the free-standing configuration, the AVTS-R6 uses a portable voting booth (Global M/N 0001) equipped with collapsible legs which ease in set up, teardown, and storage.

#### 7.5.2 Activity Indicator

The AVTS-R6 can be readied by the pollworker by the insertion of a smart card, or this can also be the function of the voter. Insertion of the voter card brings up the ballot. When voting has been completed and the ballot cast, the smart card is ejected and cannot be reused until reprogrammed by the pollworker.

**7.0 TEST SPECIFICATIONS (Continued)**

**7.5 Hardware Standards (Continued)**

**7.5.3 Recording Speed**

Voters may make selections and cast ballots as rapidly as they are prepared to do.

**7.5.4 Recording Reliability**

The AVTS-R6 adequately demonstrated its ability to sustain accuracy during the collection and retention of voting data. It was demonstrated during the Environmental Operating Test that the system was capable of collecting and retaining votes without error over a combined operational period of 163 hours.

**7.6 DRE Processing Subsystem**

**7.6.1 Processing Speed**

The AVTS-R6 demonstrated adequate response time to operate at speeds sufficient to respond to any operator and voter input without a perceptible delay.

**7.6.2 Processing Accuracy**

Processing of election data including audit log data was performed during qualification testing to ensure that the AVTS-R6 had the ability to process such data error free. The processing of summary reports and audit log data was limited to those reports as generated by the AVTS-R6 at the precinct level.

**7.6.3 Memory Stability**

Lithium batteries are used to power the system memory and real time clock and have a life expectancy of seven to eight years.

**7.7 Reporting Subsystem**

**7.7.1 Removable Storage Media**

The AVTS-R6 uses a PCMCIA card to allow for the downloading and transfer of ballot data to a central election management system where precinct reports may be combined. Additionally, the AVTS-R6 allows for the accumulation of votes among multiple machines within the same precinct.

**7.7.2 Printers**

The AVTS-R6 uses a Citizen MLT-288 printer for printing out zero and totals reports at the precinct level. This printer is capable of generating alphanumeric data to support all reports.



## 8.0 PHYSICAL CHARACTERISTICS

### 8.1 Size

The standard AVTS-R6 measures approximately 396 mm high with the display extended and 147 mm high with the display down by 410 mm wide by 472 mm deep by 3 mm thick, with a weight of approximately 12 kg. The AVTS-R6 is classified as Portable equipment (i.e., equipment typically installed and operated on a table or stand to which it is not permanently affixed).

### 8.2 Transport and Storage

The AVTS-R6 is self-contained can be transported either in a Global Voting Booth, M/N 0001, or in a Pelican hard-shell carrying case.

### 8.3 Physical Security

The AVTS-R6 is affixed with keyed compartments which must be accessed to operate the machine, i.e., insert PCMCIA memory cards, power the hardware, or to access the printer compartment.

### 8.4 Transportability

The AVTS-R6 is capable of being transported by road, rail, or air.

## 9.0 DESIGN, CONSTRUCTION, AND MAINTENANCE CHARACTERISTICS

### 9.1 Materials, Processes and Parts

The Global Election Systems technical data package contained a listing of those system elements that make up the AVTS-R6 as well as an assembly procedure.

### 9.2 Durability

The commercial construction standards observed to be associated with the AVTS-R6 suggest a continued life of at least eight years through normal election use.

### 9.3 Reliability

A Mean-Time Between Failure of a minimum of 163 hours was demonstrated during qualification testing as accumulated on three AVTS-R6 machines. This testing was performed during varying temperature and input voltage conditions, and is discussed in further detail within paragraph 16.0. There were no hardware failures observed which resulted in the loss or unacceptable degradation of one or more machine functions during this test.

**9.0 DESIGN, CONSTRUCTION, AND MAINTENANCE CHARACTERISTICS  
(Continued)**

**9.4 Maintainability**

The AVTS-R6 is designed with good layout practices for access to internal components. The AVTS-R6 provides a diagnostic capability as a standard part of its operating firmware. These diagnostics include power-up self-tests, and continuous tests in the background while operating.

**9.5 Electromagnetic Radiation**

The AVTS-R6 Voting Machine was subjected to electromagnetic emissions measurements to ensure that it meets the limits for a FCC Part 15, Class B, computing device.

Attachment M contains the emissions report.

**9.6 Product Marking**

Attachment B contains a typical Product Label affixed to each AVTS-R6.

**9.7 Workmanship**

Global states that workmanship on the AVTS-R6 has been designed with good workmanship practices. Inspection of the AVTS-R6's interior suggests that good workmanship practices were in use during its manufacture.

**9.8 Interchangeability**

The AVTS-R6 is designed as a group of subsystems, with well defined mechanical and electrical interfaces, maximizing interchangeability.

**9.9 Safety**

The AVTS-R6 was subjected to a product safety review to ensure compliance with UL 1950, Safety of Information Technology Equipment, including Electrical Business Equipment. The results of the product safety review are documented in Wyle Test report 46058-02 and contained in Attachment C.

## 9.0 DESIGN, CONSTRUCTION, AND MAINTENANCE CHARACTERISTICS (Continued)

### 9.10 Human Engineering

#### 9.10.1 Controls and Displays

All user operations follow a single path, from loading a ballot, through pre-election hardware checkout, accuracy testing, election day voting, and post-election functions.

User prompts are presented in an unambiguous manner.

All AVTS-R6 displays and controls are easily accessible.

The voter interacts with the AVTS-R6 only through the LCD touchscreen. Instructions, when needed, are provided on-screen.

Depending on the function, both the poll worker and voter interact with the AVTS-R6 through the main touchscreen.

All messages for the poll worker are shown on the AVTS-R6's touchscreen.

All displays are readable by persons with normal eyesight.

Significant machine operations, such as activating for a voter, casting a ballot, and error conditions, are announced by audible tones.

## 10.0 SOFTWARE STANDARDS

### 10.1 Software Design and Coding

The precinct-level AVTS-R6 firmware was subjected to a source code review. The source code was reviewed to ensure it followed the recommended programming guidelines as contained in the FEC standards. This included a review for:

- **Simplicity:** the straightforwardness of the design, such as avoidance of complex structure and obscure algorithms.
- **Understandability:** the ease with which the intent and function of the code can be ascertained and verified.
- **Testability:** the construction of code so as to incorporate implicit or explicit points or features to the flow of data and control within modules and at module interfaces.
- **Robustness:** a property of software design that is enhanced by editing and range specification, by the incorporation of controls or traps for immediate detection of errors to prevent their propagation throughout the rest of the code, and by providing a means of recovery without loss of control or data.
- **Security:** the inclusion of provisions to prevent unauthorized access, or to detect and control it, should it be attempted.

## 10.0 SOFTWARE STANDARDS (Continued)

### 10.1 Software Design and Coding (Continued)

- **Usability:** the ability of the Voting Machine to be operated without recourse too excessive or obscure control procedures (e.g., text messages rather than numerical error codes which require the user to consult a table).
- **Installability:** the ease with which a Voting Machine can be made fully operational after delivery.
- **Maintainability:** the ease with which defects can be identified, corrected, and validated in the field.
- **Modifiability:** the ease with which new features can be incorporated into existing software.

The AVTS-R6 source reviewed during qualification testing commenced with Release 4.0.3. Revisions were made to the firmware during the course of the Qualification Test Program, bringing the version up to Release 4.0.11 upon program completion.

Each revision level submitted was the result of the source code being modified to add an improvement or to correct for a functional anomaly observed during qualification testing. Each level, when submitted, was subjected to a source code review to ensure the modifications were consistent with coding standards as set forth within the FEC guidelines.

A final report detailing the results of the source code reviews for each release submitted is included in Attachment D.

### 10.2 Configuration Management

The Global Elections Systems Technical Data Package included Global's Quality Control Manual documenting the procedures and processes associated with Global's configuration management practices.

### 10.3 Data Quality Assessment

The AVTS-R6 Software Technical Data Package addresses in depth the methodology by which the resident firmware has been built to perform real-time monitoring of system status and data quality.

### 10.4 Vote Recording Accuracy and Integrity

During testing, the AVTS-R6 was subjected to several test elections. During test, all votes were accurately recorded from each ballot cast and accurate summary reports were generated.

Attachment A contains a typical printout as generated from a test election.

## 10.0 SOFTWARE STANDARDS (Continued)

### 10.5 Data and Document Retention

The AVTS-R6 stores all vote data redundantly.

### 10.6 Ballot Interpretation Logic

Through simulated elections performed during qualification testing, the AVTS-R6 demonstrated proper ballot interpretation of the following:

1. Closed and open primary elections
2. Partisan and non-partisan offices
3. Straight party voting
4. Split precincts
5. Vote for N of M
6. Undervotes
7. Total blank ballots
8. Multi-Precinct Rotation
9. Write-In Voting

## 11.0 SYSTEM AUDIT

### 11.1 Operational Requirements

The AVTS-R6 provides an audit log for recording all significant system activities. Type of entries include:

Election day activities  
Post-election activities  
Report printing  
Operator induced errors  
System errors

### 11.2 Time, Sequence, and Preservation of Audit Records

The AVTS-R6 incorporates a real-time clock. All audit log entries are automatically stamped with the current date and time. It is not possible to interrupt or disable the logging of events to the Event Log.

Attachment A contains a representative example of the AVTS-R6 audit log report as generated by the AVTS-R6.

### 11.3 Error Messages

AVTS-R6 errors are reported as they occur and making an Event Log entry as a standard part of the error response.

When in an error condition, the AVTS-R6 is designed to limit allowable actions to only those that will recover from the error. No extraneous inputs are accepted.

## 11.0 SYSTEM AUDIT (Continued)

### 11.4 Status Messages

The AVTS-R6 reports status information to the user immediately in easily understood text. Significant changes in status, such as opening and closing polls, are logged to the Totals tape.

### 11.5 In-Process Audit Records

The AVTS-R6 is designed to capture all the events and activities normally encountered during in-process activities. Additionally, the in-process record includes each time a vote is cast.

### 11.6 Vote Tally Data

The Vote Tally Data on the AVTS-R6 includes the following separately accumulated items:

- number of ballots cast for each ballot style
- number of ballots cast within each precinct and/or party; candidate and measure totals for each contest
- write-in names that were entered, with tagging to which they were cast; and an associated ballot image record

The latter data is presented to ensure that in multiple vote-for contests, that voters do not attempt to cast multiple write-in votes for the same candidate. The write-in name data is stored in randomized order. The Ballot Image contains an exact record of each selection made for each voter stored in a randomized order. This detail provides the ability to account for all undervotes. Overvotes are not possible on the AVTS-R6.

## 12.0 SECURITY

### 12.1 Access Control Measures

Access is controlled by password operation.

### 12.2 Physical Security Measures

#### 12.2.1 Hardware

Secure storage of the AVTS-R6 will be a function of the user jurisdiction.

## 12.0 SECURITY

### 12.2 Physical Security Measures (Continued)

#### 12.2.2 Software

The AVTS-R6 contains only firmware. Each jurisdiction must safeguard the physical security of the AVTS-R6 system. The ballot definition data that is created for each election contains no executable code but consists of data structures, templates, and text. The AVTS-R6 does not contain any compiler or similar code. The AVTS-R6 does not contain any self-modifying code.

## 13.0 QUALITY ASSURANCE

### 13.1 Quality Control

Global Election Systems provided a copy of the AVTS-R6 Quality Assurance Procedures. The procedures describe the AVTS-R6 assembly and checkout processes as performed by the manufacturer prior to delivery.

### 13.2 User Documentation

During qualification testing, Global Election Systems provided copies of the AVTS-R6 Pollworker and Maintenance Manuals.

## 14.0 SOFTWARE SYSTEM FUNCTIONAL TESTS

### 14.1 Software System Functional Test Procedures

The AVTS-R6 was subjected to a series of functional Software System Tests to verify proper operation of the machine as dependent upon the proper performance of the machine's operating software. This included the tasks identified below.

- Test operations performed prior to, during, and after processing of ballots, which included:
  - (a) logic tests to verify interpretation of ballot styles to be processed
  - (b) accuracy tests to verify ballot reading accuracy
  - (c) status tests to verify equipment
  - (d) report generation to produce test output data
  - (e) report generation of product audit data records

## 14.0 SOFTWARE SYSTEM FUNCTIONAL TESTS (Continued)

### 14.1 Software System Functional Test Procedures (Continued)

- Procedures applicable to equipment used in the polling place for:
  - (a) opening the polling place and enabling the acceptance of ballots
  - (b) maintaining a count of processed ballots
  - (c) monitoring equipment status
  - (d) verifying equipment response to operator input commands
  - (e) generating real-time audit messages
  - (f) closing the polling place and disabling the acceptance of ballots
  - (g) generating election data reports.

### 14.2 Software System Functional Test Results

The AVTS-R6 Operating Firmware, Release 4.0.11, was successfully subjected to the above System Software Functional Tests.

The AVTS-R6 was subjected to several different test elections. The polls were opened and the machines were enabled for voting. Various votes were cast for each of the ballot styles defined. Following the completion of each test election, the polls were closed and election results (summary reports) and audit log trails were generated. The election results were compared against the predetermined votes cast to ensure that paper ballot logic and accuracy in recording the votes had been obtained.

The AVTS-R6 was additionally subjected to a high-volume-vote reliability/accuracy test.

## 15.0 SYSTEM LEVEL TESTS

### 15.1 Volume

During volume testing, one AVTS-R6 systemss was subjected to high volume ballot processing and vote recording. Specifically, the AVTS-R6 system was configured using an automated script to cast and record in excess of 297,589 ballot positions without error. To ensure the accurate retention of voting data in the unlikely event that a memory storage device fills to its maximum limit, tests were performed to verify the AVTS-R6 response. In each case, the AVTS-R6 disallowed the casting of a ballot when presented with a situation where the storage medium was at capacity and would not be able to successfully capture and store the ballot data.

### 15.2 Security Tests

As previously described, the AVTS-R6 election definition is secured within the machine by keyed compartments. Access to the supervisor functions are password protected.



## 15.0 SYSTEM LEVEL TESTS

### 15.3 Usability

Setup and subsequent operation of the AVTS-R6 was found to be relatively straightforward following training. Poll worker operation is straightforward, including the opening and closing of polls, all of which is performed through touchscreen entry/button actuation.

### 15.4 Recovery

The AVTS-R6 was successfully tested to verify its ability to recover from certain error-handling conditions. These included the purposeful insertion of incorrect smart cards, power loss, etc

### 15.5 Performance

As detailed in other sections of this report, the AVTS-R6 was successfully subjected to several simulated elections to verify poll opening, voting, and poll closing sequences as well as voter recording accuracy and correct ballot logic interpretation

## 16.0 OPERATING TEST

### 16.1 Operating, Environmental Test

To demonstrate a minimum acceptable Mean-Time-Between-Failure threshold of the AVTS-R6, three machines were placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to each of the AVTS-R6s were varied from 40°F to 100°F and from 105 VAC to 129 VAC. The environmental test profile and Chamber Thermal Circular Charts are presented in Attachment .

Three machines were used during the Operating Test to accumulate the time required to demonstrate a minimum Mean-Time-Between-Failure (MTBF) of 163 hours. By subjecting three machines to the Operating Test environment, the accumulated test time per machine was 55 hours. There were no machine hardware anomalies observed during the hardware reliability testing.

## 17.0 NON-OPERATING ENVIRONMENTAL TESTS

The AVTS-R6 was subjected to various Non-Operating Environmental Tests. Prior to and immediately following each test environment, the AVTS-R6 was powered and subjected to operability functionals to verify continued proper operation. The AVTS-R6 was not powered during the performance of any of the non-operating tests

## 17.0 NON-OPERATING ENVIRONMENTAL TESTS (Continued)

### 17.1 Transit Drop Test

The AVTS-R6 was subjected to a Transit Drop Test. It should be noted that the National Association of State Election Directors (NASED) has substituted Military Standard 810 for the FEC Voting Systems Standards' Drop Test included in the original Standards as published in 1990. The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. The AVTS-R6 was packaged in a Pelican hard-shell transit case. The AVTS-R6 and container, weighing less than 100 pounds with dimensions under 36 inches resulted in a drop height of 48 inches. The packaged AVTS-R6 was dropped on each face, edge, and corner for a total of 26 drops. Upon test completion, the AVTS-R6 was powered and failed to energize. Notice of Anomaly No. 1 documents the findings and final disposition.

Additionally, the AVTS-R6, while packaged in a Global Voting Booth, M/N 0001, was subjected to eight corner drops, each from a 12" inch drop height. Following the drop testing, the AVTS-R6 was removed from the voting booth, powered, and continued operation verified.

Attachment F contains a Drop Test Data Sheet.

### 17.2 Low Temperature Test

The AVTS-R6 was subjected to a Low Temperature Test.

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6 was placed in an environmental test chamber. The chamber temperature was lowered to -15°F and allowed to stabilize. Upon temperature stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding 10°F per minute. The AVTS-R6 was removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed. The AVTS-R6 was subjected to a post-test operability checkout continued operability verified.

Attachment G contains a Low Temperature Thermal Circular Chart.

### 17.3 High Temperature Test

The AVTS-R6 was subjected to a High Temperature Test.

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6 was placed in an environmental test chamber. The chamber temperature was raised to 150°F and allowed to stabilize. Upon stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding 10°F per minute. The AVTS-R6 was removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed.

## 17.0 NON-OPERATING ENVIRONMENTAL TESTS (Continued)

### 17.3 High Temperature Test (Continued)

The AVTS-R6 was subjected to a post-test operability checkout and the results were in agreement with those established during the baseline checkout.

Attachment G contains a High Temperature Thermal Circular Chart.

### 17.4 Vibration Test

The AVTS-R6 was subjected to Vibration Tests.

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6 was strapped to an electrodynamic shaker while stowed in its Pelican carrying case. One control accelerometer was affixed to the shaker table. Vibration and control was performed with an HP5427 Shock/Vibration Controller. The AVTS-R6 was subjected to the Basic Transportation, Common Carrier profile as depicted in Mil-Std-810D, Method 514.3, Category I. The AVTS-R6 was subjected to vibration for 30 minutes in each orthogonal axis. Upon test completion, the AVTS-R6 was removed from its carrying case and inspected for any obvious signs of degradation and/or damage. None were observed. The AVTS-R6 was subjected to a post-test operability checkout and the results were in agreement with those established during the baseline checkout.

Attachment H contains a Vibration Test Data Sheet and Data Plots.

### 17.5 Bench Handling Test

The AVTS-R6 was subjected to Bench Handling Tests.

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6 was configured as for normal operation or servicing. Using one edge (base of machine) as a pivot, the opposite edge was raised to a height of four inches above the surface and allowed to drop freely. This was performed an additional five times for a total of six drops. The same was repeated for the remaining three base edges for a total of 24 drops. Upon test completion, the AVTS-R6 was inspected for any obvious signs of degradation and/or damage. None were observed. The AVTS-R6 was successfully subjected to a post-test operability checkout.

Attachment I contains a Bench Handling Test Data Sheet.

**17.0 NON-OPERATING ENVIRONMENTAL TESTS (Continued)**

**17.6 Humidity Test**

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6, stowed in a Pelican hard-shell carrying case, was placed within a Thermotron Humidity Chamber. The AVTS-R6 was subjected to a 10-day humidity cycle in accordance with the procedures as found in MIL-STD-810D, Method 507.2, Procedure I -Natural Hot Humid. Upon test completion, the AVTS-R6 was removed from its storage container and inspected for any obvious signs of degradation and/or damage. None were observed. The AVTS-R6 was successfully subjected to a post-test operability checkout.

Attachment J contains Humidity Circular Charts.

**17.7 Rain Test**

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. Upon completion, the AVTS-R6, was placed in the Global Voting Booth M/N 0001. The AVTS-R6 was then subjected to a rain test per MIL-STD-810D, Method 506.2, Procedure II - Drip. The unit, non-operating and in a transportable configuration was subjected to a waterfall rate of 7 gallons/sq.ft/hr. The water was delivered from a height of approximately 3 feet for a period of 15 minutes. At the conclusion of the 15 minute exposure, the voting booth was removed and the equipment inspected for any evidence of water intrusion. Minute traces were observed around the hinges of the booth. The R6 did not show any evidence of moisture penetration. The unit was powered and successfully subjected to a post-test operability checkout.

Attachment K contains the Rain Test Data Sheet.

**17.8 Dust Exposure**

The AVTS-R6 was subjected to a baseline operability checkout to verify system readiness. The unit, placed within the Global Voting Booth, M/N 0001, was subjected to a dust exposure per MIL-STD-810D, Section 11-1.1.1. Following test, the AVTS-R6 with voting booth was removed from the dust chamber and the accumulated dust brushed off. The AVTS-R6 and Voting Booth was inspected for any evidence of dust intrusion and damage. Very minute traces were observed and were limited to the area around the hinges of the booth. The unit was powered and successfully subjected to a post-test operability checkout.

Attachment L contains Dust Test Circular Charts.

## 18.0 TEST EQUIPMENT AND INSTRUMENTATION

All instrumentation, measuring, and test equipment used in the performance of this test program were calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL 2540-11 ISO 10012-11 and Military Specification MIL-STD-45662A. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST), by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

Attachment N contains Instrumentation Equipment Sheets.

## 19.0 WYLE QUALITY ASSURANCE

All work performed on this program was completed in accordance with Wyle Laboratories' Quality Assurance Program. 2

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).



<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>1</u> P.O. NUMBER: <u>46058</u> CONTRACT NO: <u>N/A</u>		
CUSTOMER: <u>Global Election Systems</u>		WYLE JOB NO: <u>46058</u>
NOTIFICATION MADE TO: <u>Larry Dix</u>		NOTIFICATION DATE: <u>8.17.01</u>
NOTIFICATION MADE BY: <u>Jim Dearman</u>		VIA: <u>Verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT		DATE OF ANOMALY: <u>8.17.01</u>
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>Transit Drop</u>	I.D. NO. <u>S/N 2009-019E</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90/Mil-Std-810D</u>	PARA. NO. <u>7.5.2</u>	
<b>REQUIREMENTS:</b>		
<p>The AVTS-R6 shall be packaged as for shipment and shall be dropped from a height of 48 inches on each face, edge and corner per Mil-Std-810D, Procedure IV, Transit Drop. Upon completion of the drop test, the unit shall be removed from its shipping container and continued operability verified.</p>		
<b>DESCRIPTION OF ANOMALY:</b>		
<p>Following the drop tests, the unit was powered but failed to energize.</p>		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
<p>The exterior of the unit was inspected for any signs of obvious degradation and/or damage. None was observed. The unit was disassembled and its interior inspected for any obvious signs of damage and/or degradation. None was observed. The unit was returned to Global Election Systems for failure analysis. The Global Election Systems technical personnel reported that further investigation of the unit revealed two connections had loosened from the video module. To prevent recurrence of this anomaly, upon assembly of future units, the backlight cable connector will be secured to the LCD board Rev 2.0 connector with an application of RTV. The touch screen connector mounting pads of the LCD board Rev 2.0 had previously been identified as a weakness in regards to reliability and a correction had already been implemented which was to secure the LCD connector body directly to the LCD board.</p>		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
VERIFICATION:	PROJECT ENGINEER: <u>J. Dearman</u>	
TEST WITNESS: <u>-</u>	PROJECT MANAGER: <u>D. Smith 11/28/01</u>	
REPRESENTING: <u>-</u>	INTERDEPARTMENTAL COORDINATION: _____	
QUALITY ASSURANCE: <u>[Signature]</u>	<u>11-29-01</u>	



<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>2</u> P.O. NUMBER: <u>46058</u> CONTRACT NO: <u>N/A</u>		
CUSTOMER: <u>Global Election Systems</u>		WYLE JOB NO: <u>46058</u>
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>		NOTIFICATION DATE: <u>9.10.01</u>
NOTIFICATION MADE BY: <u>Jim Dearman</u>		VIA: <u>Verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>9.10.01</u>	
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>In Process Audit Records</u>	I.D. NO. <u>S/N 2009-020</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>	PARA. NO. <u>4.8.2.3</u>	
<b>REQUIREMENTS:</b>		
<p>In-process audit records consist of data documenting precinct...system operation. Critical status messages other than informational messages displayed by the system during the course of normal operations include...the event (and time, if available) of enabling/casting each ballot (i.e., each voter's transaction as an event).</p>		
<b>DESCRIPTION OF ANOMALY:</b>		
<p>The audit trail did not include a critical status message reflecting the enabling/casting of each ballot.</p>		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
<p>The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.</p>		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
VERIFICATION:	PROJECT ENGINEER: <u>J. Dearman 11.29.01</u>	
TEST WITNESS: <u>Jeff Hallmark</u>	PROJECT MANAGER: <u>Don Smith 11/29/01</u> D. Smith	
REPRESENTING: <u>Global Election Systems</u>	INTERDEPARTMENTAL COORDINATION:	
QUALITY ASSURANCE: <u>J. Hallmark 11-29-01</u>		



<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>3</u>	P.O. NUMBER: <u>46058</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Global Election Systems</u>	WYLE JOB NO: <u>46058</u>	
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>	NOTIFICATION DATE: <u>9.10.01</u>	
NOTIFICATION MADE BY: <u>Jim Dearman</u>	VIA: <u>Verbal</u>	
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>9.10.01</u>	
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>Access Control Measures</u>	I.D. NO. <u>S/N 2009-020</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>	PARA. NO. <u>5.3.2</u>	
<b>REQUIREMENTS:</b>		
Access control measures shall be designed to permit access to system states in accordance with the access policy, and to prevent all other types of access.		
<b>DESCRIPTION OF ANOMALY:</b>		
The unit's operating system could easily be accessed by unauthorized personnel.		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
VERIFICATION:	PROJECT ENGINEER: <u>J. Dearman 11.29.01</u>	
TEST WITNESS: <u>Jeff Hallmark</u>	PROJECT MANAGER: <u>D. Smith 11/29/01</u>	
REPRESENTING: <u>Global Election Systems</u>	INTERDEPARTMENTAL COORDINATION:	
QUALITY ASSURANCE: <u>J. Hallmark 11-29-01</u>		





<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>4</u>	P.O. NUMBER: <u>46058</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Global Election Systems</u>	WYLE JOB NO: <u>46058</u>	
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>	NOTIFICATION DATE: <u>9.10.01</u>	
NOTIFICATION MADE BY: <u>Jim Dearman</u>	VIA: <u>Verbal</u>	
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>9.10.01</u>	
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>Access Control Measures</u>	I.D. NO. <u>S/N 2009-020</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>	PARA. NO. <u>5.3.2</u>	
<b>REQUIREMENTS:</b>		
Access control measures shall be designed to permit access to system states in accordance with the access policy, and to prevent all other types of access.		
<b>DESCRIPTION OF ANOMALY:</b>		
The password to initiate downloading procedures was not x'd out during entry allowing unauthorized observers to access the password.		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
VERIFICATION:	PROJECT ENGINEER: <u>J. Dearman</u> 11/29/01	
TEST WITNESS: <u>Jeff Hallmark</u>	PROJECT MANAGER: <u>D. Smith</u> 11/29/01 D. Smith	
REPRESENTING: <u>Global Election Systems</u>	INTERDEPARTMENTAL COORDINATION:	
QUALITY ASSURANCE: <u>JPZ Hallmark 11-29-01</u>		

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<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>5</u>	P.O. NUMBER: <u>46058</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Global Election Systems</u>		WYLE JOB NO: <u>46058</u>
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>		NOTIFICATION DATE: <u>9.10.01</u>
NOTIFICATION MADE BY: <u>Jim Dearman</u>		VIA: <u>Verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT	DATE OF ANOMALY: <u>9.10.01</u>	
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>Functional Configuration Audit</u>	I.D. NO. <u>S/N 2009-020</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>	PARA. NO. <u>7.5.2</u>	
<b>REQUIREMENTS:</b>		
Functional Configuration Audit encompasses an examination...conduct of additional tests, to verify that the system hardware and software perform all the functions described in the vendor's documentation.		
<b>DESCRIPTION OF ANOMALY:</b>		
If the Administrator's Smart Card was left in the machine during power down procedures, the unit would lock up.		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
<b>VERIFICATION:</b>		
TEST WITNESS: <u>Jeff Hallmark</u>	PROJECT ENGINEER: <u>J. Dearman 11/28/01</u>	
	PROJECT MANAGER: <u>D. Smith 11/27/01</u>	
REPRESENTING: <u>Global Election Systems</u>	INTERDEPARTMENTAL COORDINATION:	
QUALITY ASSURANCE: <u>TC Hallmark 11-29-01</u>		



<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>6</u> P.O. NUMBER: <u>46058</u> CONTRACT NO: <u>N/A</u>		
CUSTOMER: <u>Global Election Systems</u>		WYLE JOB NO: <u>46058</u>
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>		NOTIFICATION DATE: <u>9.10.01</u>
NOTIFICATION MADE BY: <u>Jim Dearman</u>		VIA: <u>Verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN <input type="checkbox"/> PROCEDURE <input type="checkbox"/> TEST EQUIPMENT		DATE OF ANOMALY: <u>9.10.01</u>
PART NAME: <u>AccuVote-TS R6</u>		PART NO. <u>AVTS-R6</u>
TEST: <u>In Process Audit Records</u>		LD. NO. <u>S/N 2009-020</u>
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>		PARA. NO. <u>4.8.2.3</u>
<p><b>REQUIREMENTS:</b></p> <p>In-process audit records consist of data documenting precinct...system operation. System generated log of all normal process activity and system events that require operator intervention, so that each operator access can be monitored and access sequence can be constructed.</p>		
<p><b>DESCRIPTION OF ANOMALY:</b></p> <p>The audit trail did not include any record of accumulation activities between voting machines at the precinct level.</p>		
<p><b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b></p> <p>The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.</p>		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: <input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE		
VERIFICATION: TEST WITNESS: <u>Jeff Hallmark</u>		PROJECT ENGINEER: <u>J. Dearman</u> PROJECT MANAGER: <u>D. Smith</u> 11/29/01
REPRESENTING: <u>Global Election Systems</u>		INTERDEPARTMENTAL COORDINATION: _____
QUALITY ASSURANCE: <u>Jeff Hallmark</u> 11-29-01		

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<b>ORIGINAL NOTICE OF ANOMALY</b>		DATE: November 28, 2001
NOTICE NO: <u>7</u>	P.O. NUMBER: <u>46058</u>	CONTRACT NO: <u>N/A</u>
CUSTOMER: <u>Global Election Systems</u>		WYLE JOB NO: <u>46058</u>
NOTIFICATION MADE TO: <u>Jeff Hallmark</u>		NOTIFICATION DATE: <u>9.10.01</u>
NOTIFICATION MADE BY: <u>Jim Dearman</u>		VIA: <u>Verbal</u>
CATEGORY: <input checked="" type="checkbox"/> SPECIMEN	<input type="checkbox"/> PROCEDURE	<input type="checkbox"/> TEST EQUIPMENT
		DATE OF ANOMALY: <u>9.10.01</u>
PART NAME: <u>AccuVote-TS R6</u>	PART NO. <u>AVTS-R6</u>	
TEST: <u>Functional Configuration Audit</u>	LD. NO. <u>S/N 2009-020</u>	
SPECIFICATION: <u>FEC Performance and Test Standards, 1.90</u>	PARA. NO. <u>7.5.2</u>	
<b>REQUIREMENTS:</b>		
<p>Functional Configuration Audit encompasses an examination...conduct of additional tests, to verify that the system hardware and software perform all the functions described in the vendor's documentation.</p>		
<b>DESCRIPTION OF ANOMALY:</b>		
<p>During the printing of a machine level report from the unit, the paper ran out resulting in an abort/continue message to the operator. However, the unit was unresponsive to the selection of either.</p>		
<b>DISPOSITION - COMMENTS - RECOMMENDATIONS:</b>		
<p>The Global Election Systems technical representative was present and witnessed the anomaly. The anomaly was corrected in firmware revision Release 4.0.11, and successful implementation verified during subsequent testing.</p>		
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21:		<input checked="" type="checkbox"/> CUSTOMER <input type="checkbox"/> WYLE
<b>VERIFICATION:</b>	PROJECT ENGINEER: <u>J. Dearman</u>	<u>11-29-01</u>
TEST WITNESS: <u>Jeff Hallmark</u>	PROJECT MANAGER: <u>Don Smith</u>	<u>11/29/01</u>
REPRESENTING: <u>Global Election Systems</u>	INTERDEPARTMENTAL COORDINATION:	
QUALITY ASSURANCE: <u>[Signature]</u>		

**ATTACHMENT A**  
**AVTS-R6 TYPICAL PRECINCT**  
**LEVEL MACHINE REPORT**