Voting System Qualification Test Report
Clear Ballot Group

ClearAudit™ 1.0.6

November 2014

Florida Department of State
Division of Elections
R. A. Gray Building, Room 316
500 S. Bronough Street
Tallahassee, FL 32399-0250

Contents

Executive Summary

On September 17, 2014, Clear Ballot Group submitted to the Florida Division of Elections' Bureau of Voting Systems Certification a request for approval of ClearAudit™ 1.0.6, an automated independent voting and audit system. Version 1.0.6 is an upgrade of the ClearAudit™ 1.0.3, which has interim approval.

The objective of this examination was to verify whether the enhancements made in ClearAudit™ 1.0.6 met the requirements of Section 101.591, F.S., and Rule 1S-5.026 for approval to use in Florida. Additionally the Bureau of Voting Systems Certification focused its examination on the ClearAudit™ 1.0.6 system's ability to audit a voting system that has an election coded both by precinct and ballot styles as occurs in Broward County and to report, if the percentage threshold triggered, a discrepancy report using the rule's Form DS-DE 106A. For this reason, the Bureau solely examined ClearAudit™ 1.0.6 for approval for use with the Election Systems and Software (ES&S) Unity voting system. This examination did not include the voting systems for ES&S EVS, ES&S GEMS, Dominion Democracy Suite, Dominion Sequoia WinEDS, or Dominion GEMS, since these systems are coded by precinct identification and were already reviewed during the ClearAudit™ 1.0.3 examination which has remained unchanged in ClearAudit™ 1.0.6.

Like its predecessor, ClearAudit™ 1.0.6 does not have the capability for use independent of vendor support. However, the automated independent audit system for use independent of the vendor is not mandated by rule until January 1, 2016.

The Clear Ballot Group's audit system includes commercial-off-the-shelf (COTS) optical scanners, desktop and laptop computers, as well as the ClearAudit™ application, which captures ballot images via digital scanning for tabulation, and independently verifies the results by comparison to the county's primary voting system results.

The Bureau of Voting Systems Certification conducted the qualification test in three phases. For Phase I, Clear Ballot Group created election definitions using Broward County's election ballot PDFs from the 2014 Primary Election for the purpose of using ClearAudit™. In Phase II, the Bureau conducted a simulated election for early voting (EV), Election Day (ED), and absentee voting (AV) using the Broward County's 2014 Primary Election. The Bureau marked the ballot test decks for precinct identification and ballot styles, ballot casting and production of election results report by ballot type (*i.e.*, group) and precinct. In Phase III, the Bureau installed ClearAudit™ in accordance with the Technical Data Package (TDP), scanned the test ballot decks, and verified ClearAudit system's capability with enhancements represented in the TDP. Phase III was a publicly noticed event, which took place in the Bureau's test laboratory in Tallahassee, Florida, on October 7th and 8th, 2014.

The qualification test results for ClearAudit™ 1.0.6 met the applicable requirements of Florida Statutes and Rule, subject to the limitations contained in this Test Report. Therefore, the Florida Division of Elections, Bureau of Voting Systems Certification, recommends interim approval of the referenced audit system through December 31, 2015, for use with elections using ES&S Unity coded by ballot style or coded in combination with precinct identification, or elections coded by precinct using ES&S Unity, ES&S EVS, Dominion Democracy Suite, and ES&S or Dominion GEMS voting system. Any use of this system in an election as the official means of conducting a post-election voting system audit on or after January 1, 2016 will need to be submitted for re- review and approval prior to use.

Introduction

Clear Ballot Group (CBG) submitted to the Bureau of Voting Systems Certification (BVSC) a request for approval of ClearAudit™ 1.0.6 automated independent audit system for voting systems. This version represents an upgrade to the interim approved ClearAudit™ 1.0.3.

The objective of the examination was to verify that the various enhancements in ClearAudit™ 1.0.6 meets the requirements in §101.591, Florida Statutes, and Rule 1S-5.026 (Post-Election Certification Voting System Audit). The examination also focused on whether the audit system provides a methodology for auditing ballots coded for an election by both ballot styles and by precinct identification as is currently done in Broward County, and is able to report discrepancies of ½ of 1% or more when comparing the automated tally and the official totals in a contest.

BVSC examined ClearAudit™ 1.0.6 for use with ES&S Unity voting system that can use ballots with precinct identification and ballot styles in one election. This examination did not include ES&S EVS voting system, Dominion Democracy Suite voting system, Dominion Sequoia WinEDS voting system, and ES&S and Dominion GEMS voting systems, since these systems as used are coded by precinct identification and were reviewed and accepted during the ClearAudit™ 1.0.3 examination, and remain unaffected by the enhancements in ClearAudit™ 1.0.6.

Background

BVSC previously examined ClearAudit™ 1.0.3 from May through July 2014 during which time CBG submitted four reiterations. BVSC's recommendation for interim approval was granted on August 18, 2014. *See* Voting System Qualification Test Report, Clear Ballot Group, ClearAudit™ 1.0.3, August 2014.

On July 21, 2014, CBG submitted ClearAudit™ 1.0.4, a subsequent reiteration to ClearAudit™ 1.0.3. ClearAudit™ 1.0.4 was to add the capability to report discrepancies using Form DS-DE 106A (Discrepancy Report for Automated Independent Audit) as required in Rule 1S-5.026, Florida Administrative Code, to make minor software changes, and to allow use of the system with a county that has an election coded by ballot style and precinct identification. The examination was suspended pending other priority election duties for the 2014 Primary Election.

On September 17, 2014, CBG requested another iteration to incorporate a coding change to Dominion Democracy Suite's ballot code channel checksum[1], and to allow automatic reclassification of ES&S header cards for use with absentee coded by ballot styles. Consequently ClearAudit 1.0.4 evolved into ClearAudit™ 1.0.6.

System Overview

The ClearAudit™ series is an automated, independent audit system which captures a ballot image utilizing COTS scanners listed in the Component List of this report. This audit system also includes COTS desktop and laptop computers in a server/client network. ClearAudit™ uses the scanned ballot images to independently tabulate votes and compares results against the voting system results from votes coded by ballot type and precinct. The system is also required to highlight discrepancies triggering the percentage

[1] Checksum is an arbitrary segment of digital data for the purpose of detecting errors.

threshold, and analyze the results to confirm the accuracy of the results. CBG uses its vote visualization software application in ClearAudit™ to resolve voter intent.

Component Version List

The component version list below describes in detail the components of the audit system:

- ScanServer
  - Laptop or PC desktop
    - Any Windows operating system
    - 4 core / 8 thread processor
    - 8+ Gb of RAM
    - 500-750+ Gb of disk space
    - Giga-bit LAN
- ScanStation Client for use with the scanner
  - Laptop
    - Windows 7 or 8 operating system
      - Windows 7 Profession v.6.1.7601 Service Pack 1 Build 7601
      - Windows 7 Home Premium v.6.1.7601 Service Pack 1 Build 7601
      - Windows 8 6.2.9200 Build 9200
      - Windows 8.1 Pro
    - 4 core / 8 thread processor
    - 4+ Gb of RAM (8+ is recommended)
    - 500+ Gb of disk space
    - Giga-bit LAN
    - USB 2.0 or higher
- Administration and Reporting Station
  - Laptop
    - Windows 7 or 8 operating system
    - 4 core / 8 thread processor
    - 4+ Gb of RAM
    - 500+ Gb of disk space
    - Giga-bit LAN
    - USB 2.0 or higher
- CBG Supported COTS Scanners:
  - Fujitsu fi-6800 v.10.10.710
  - Fujitsu fi-6670 v.9.21.1202
  - Fujitsu fi-6140z v.10.21.42
  - Fujitsu fi-5950 v.10.10.909
  - Fujitsu fi-7180 PaperStream IP v1.4.0
- Router - gigabit
- Ethernet Cables
  - Cat5 or better
- COTS Switch

Software

The software applications that comprise the audit system are:

- Software
  - ClearAudit™ 1.0.6
    - clearballot-1.0.6-2014-09-22-12-00.iso
  - Fujitsu ScandALL v.2.0.12
  - Browser from the list below:
    - Mozilla Firefox 26.0, 27.0
    - Google Chrome 24.0.1312.57m
    - Internet Explorer 11.0.9600.16438
    - Safari for iPad iOS 5.1.1
    - Safari 7.0.01
- Client software
    - Client MySQL ODBC Driver v.5.1
    - Client Fujitsu ScandAll PRO v.2.0.5
    - Client Fujitsu ScanALL v.2.0.12
    - Client Fujitsu TWAIN driver
- Scanners TWAIN drivers
  - Fujitsu fi-6800 v.10.10.710
  - Fujitsu fi-6670 v.9.21.1202
  - Fujitsu fi-6140z v.10.21.42
  - Fujitsu fi-5950 v.10.10.909
  - Fujitsu fi-7180 PaperStream IP v1.4.0

Documentation

The documentation of the audit system is listed below:

TDP Documents

• Supported Configurations ClearAudit™	October 23, 2014
• ClearAudit™ Election Administrator's Guide, Version 1.1.1	October 23, 2014
• ClearAudit™ Election Preparation and Installation Guide, Version 1.0	June 25, 2014
• ClearAudit™ Initial Ballot Adjudication	February 5, 2014
• Configuration Management Plan ClearAudit™	May 10, 2014
• TWAIN Driver, User's Guide, Version 9.19/9.21/10.10/10.21	December, 2013
• Fujitsu Image Scanner Operator's Guide fi-6670(A)/fi-6770(A)/fi-6750S Image Scanner	June, 2008
• Fujitsu fi-6800 Image Scanner Operator's Guide	November, 2009
• Fujitsu fi-5950 Image Scanner Operator's Guide	June 2010
• Fujitsu Image Scanner Operator's Guide fi-6130Z/fi-6230Z/fi-6140Z/fi-6240Z Image Scanner	June 2011
• Fujitsu Image Scanner Operator's Guide fi-7160/fi-7260/fi-7180/fi-7280 Image Scanner	July 2013

Conduct of Tests

Scope: The qualification examination encompassed a physical and functional audit of the components under review. BVSC conducted additional tests to verify compliance with standards and to examine one election that coded for both by precinct identification and by ballot styles as used in Broward County.

Phases: The qualification test had three phases. In Phase I, CBG acquired election ballot PDFs from Broward County's 2014 Primary Election since that county codes by both precinct and ballot style. CBG then had to create two distinct election definitions, one for precinct and another for ballot style. However, because ClearAudit™ did not have the capability for auditing both ballots with precinct identification and ballot styles in one election definition, it resulted in two distinct audit data sets. In order to comply with the rule regarding the discrepancy report, the two audit results must be combined together to allow a review of any discrepancy with the voting system results in its entirety. In Phase II, BVSC conducted a simulated Broward County's Primary Election for early voting (EV) coded by precinct identification, and election day (ED) and absentee voting (AV) coded by ballot style. BVSC marked the ballot test decks, cast ballots, and produced the election results reported by group and precinct. BVSC used Broward County's Logic and Accuracy (L&A) test database for upload of the election results and produced the election precinct-level results reported in the XML file format using ES&S EXP software. CBG produced the Comparison Results Files (CRF) from the XML results file. In Phase III, BVSC installed the ClearAudit™ 1.0.6 in accordance with the TDP and scanned the test ballot decks. BVSC used a Fujitsu fi-6800 on loan from the Leon County Supervisor of Elections' Office to capture the ballot test deck images and upload this data into ClearAudit™ application.

Location: Clifton Building, 3rd Floor, 2661 Executive Center Circle, Tallahassee, Florida 32301.

Voting System under test: ES&S Unity release 4.0.0.3

Pass/Fail Criteria

The following areas were examined:

- Documented processes
- Ballot image scanning processes and images
- Whether ClearAudit™ 1.0.6 met CBG's stated representations in its technical data package and rule requirements, and included:
  - Verifying the correct ballot styles within ClearAudit™ election definitions,
  - Being able to produce one or more reports to replicate the required discrepancy data in Form DE-DS 106A incorporated by reference in Rule 1S-5.026, Florida Administrative Code.
  - Verifying the code fix to Dominion Democracy Suite's ballot code channel checksum.
  - Reviewing minor software changes.

Change List – ClearAudit™ 1.0.4 to 1.0.6

All of the changes in ClearAudit™ 1.0.6 do not affect the counting segment source code as contained in ClearAudit™ 1.0.3 and 1.0.4. The changes below were tested during ClearAudit™ 1.0.6 examination:

- A change to incorporate of the "Discrepancy Report for Automated Independent Audit," Form 106A used to detail all vote comparisons for any contest whose number of vote discrepancies meets or exceeds ½ of 1% of the Voting System's total vote count.

- A change to the handling of Target Cards for absentee that is coded by ballot style. This change allows the use of precinct encoded in a barcode on the Target Card that precedes the batch of absentee ballots for that precinct.
- A change to fix display of restored log records after a database is restored using a name other than the original election name.
- A change to each scanner's update scripts that is run once shortly after connecting the scanner hardware to the ScanStation, to increase the reliability of configuring the scanner's "Start Button", and which is used to initiate scanning of a batch (box) of ballots.
- A change to the ability to treat Precinct Header Cards as a "non-ballot" rather than as an "unreadable" ballot.

The changes below were examined solely through a desktop review:

- A minor change to improve the handling of very badly-scanned ballot images (containing large amounts of un-cropped black), so that such images are correctly reported as unreadable ballots, rather than non-ballots.
- A minor change to keep a ballot table when CRF is imported to avoid an exception when trying to check if it is empty on a subsequent attempt or when a partial import to re-import a different CRF that does not contain the same table.
- A change to the "Restore Election" web page to properly enable the "Restore" button when there are more than 10 elections listed.
- A change to three comparison reports to correct web links associated with some cells to handle the case when more than one precinct or CG is being filtered.
- A change to implement support for verifying the Dominion code channel by comparing to its internal checksum, to prevent false reads of code channel.

While not subject to review or necessary for meeting current rule requirements, BVSC strongly recommends that CBG consider making it a prerequisite to cross-check and test the ES&S ballot code channel with time mark intervals of 1/4" instead of the usual 1/3" intervals.

Desktop Review

BVSC performed a desktop review of the changes from ClearAudit™ 1.0.3 to 1.0.4 and from 1.04 to 1.0.6. Desktop review is an activity to review documents, codes and other matters, and analyze the updated items to reassure that they continue to satisfy the requirements and confirm that the updates do not need further examination. On October 13, 2014, BVSC completed the review of the change notes and verified that the solutions provided would not affect the counting segment. This desktop review cannot verify all the changes when some of these changes are not testable or has no impact with the audit results. This review can only allow BVSC to agree or disagree with CBG changes to ClearAudit™.

Findings:

BVSC found no issues that posed significant safety, security and/or operational risks with the changes. BVSC conferred with members of the Leon County Supervisor of Elections staff regarding Dominion's

ballot code channel.[2] Thus, BVSC does not disagree with the checksum method for verifying the code channel to prevent false reads.

Systems Setup & Configuration

BVSC set up the ClearAudit™ audit system as a client-server configuration that has the same configuration used for the ClearAudit™ 1.0.3 examination. BVSC used a Fujitsu fi-6800 scanner on loan from the Leon County Supervisor of Elections' Office. BVSC also set up a second client-server that included the Florida Division of Elections' Fujitsu fi-5570 scanner to examine further the audit system. The setup of the scanners was for 8-bit (256) grey-scale at 200 dots per inch (dpi) as per CBG's TDP. The images were in a compressed jpg file format.

Calibration Cards

BVSC used three calibration cards to assess the optical resolution of the scanner's cameras using the image of the target card: 1) USAF 1951 Resolution Test Chart [Figure 1][3], 2) ITU-T Test Chart No. 4[4] [Figure 2], and 3) CBG's calibration card. USAF 1951 Test Card was used during ClearAudit™ 1.0.3 examination and it is used with this ClearAudit™ 1.0.6 examination for traceability. The CBG calibration image is the same as the ITU-T Test Chart, but formatted at 11"x 8 ½" at 600 dpi for printing the image on the front and back of the card. Per CBG procedure, the audit team determines if the image has distorted, missing parts, or cropping that is not acceptable. BVSC examined the three digital images using the Fujitsu fi-6800 and the fi-5570 scanners. The USAF 1951 card provided by CBG was not an original and therefore, not of optimal sharpness. The ITU-T test card is an original chart that was provided from CBG and produced good sharpness. CBG's calibration card uploaded from CBG's webpage also produced good sharpness. BVSC reviewed the scan image of ITU-T Test Chart and the CBG calibration cart by reviewing the ITU standards.[5] BVSC looked for artifacts which sometimes interfere in a qualitative loss in the system's ability to scan and interpret the scanned ballots. Figures 1, 2, and 3 for each calibration chart follows the Findings below.

Findings:

Testing showed no evidence that the image artifacts had any effect on the audit system's ability to correctly interpret the scanned ballots. It appears that scanning at 200 dpi results in a resolution just under 150 dpi in the stored image in the USAF 1951 card and visually appears to be at 200 dpi using the ITU-T Tech Chart for scanning the Fujitsu fi-6800 scanner and the same results using CBG's calibration card

[2] Some vendors use a code channel on their ballots. The code channel identifies the ballot definition. The ballot definition has the location of the contests and vote targets. In the situation with Leon County, the Dominion's ballots had some printed marks that had fleck off in the code channel that caused ClearAudit to read different. There are several methods that can be used to verify the channel code is correct. Dominion has the checksum contained in the code channel. In this situation, one would check portions of the code channel to produce the checksum and compare it with that is provided in the code. BVSC does not disagree using this vendor's particular method, but CBG using this method might be considered to Dominion that it is proprietary.

[3] The USAF resolution test chart is a resolution test pattern card set by the United States Air Force in 1951 to test the resolution of optical imaging systems based on a series bar patterns of different sizes.

[4] International Telecommunication Union, Telecommunication Standardization Section Test chart No. 4, "Facsimile test chart" intended for the general evaluation of technical quality. ITU-T Chart No. 4 image is an 8 ½" x 11 7/8" printed chart at 600 dots per inch.

[5] ITU-T Recommendation T.22, Standards Test Charts for Document Facsimile Transmissions, March 1993.

on the Fujitsu fi-5570 scanner. BVSC found that CBG satisfied the calibration requirement in Rule 1S-5.026, Florida Administrative Code (Post-Election Certification Voting System Audit), based on the subjective review of the calibration images that show the image is not distorted, missing parts, and cropped. The images show the lines are sharp and straight at 150 to 200 dpi. It is highly recommended that CBG have or develop an objective rather than a subjective method to quantify that ClearAudit™'s scanned images meet an acceptable image resolution, particularly if there is any future intent to ultimately rely on the electronic image as the master record in accordance with the current minimum 300 dpi threshold for electronic records set out in Rule 1B-26.003.

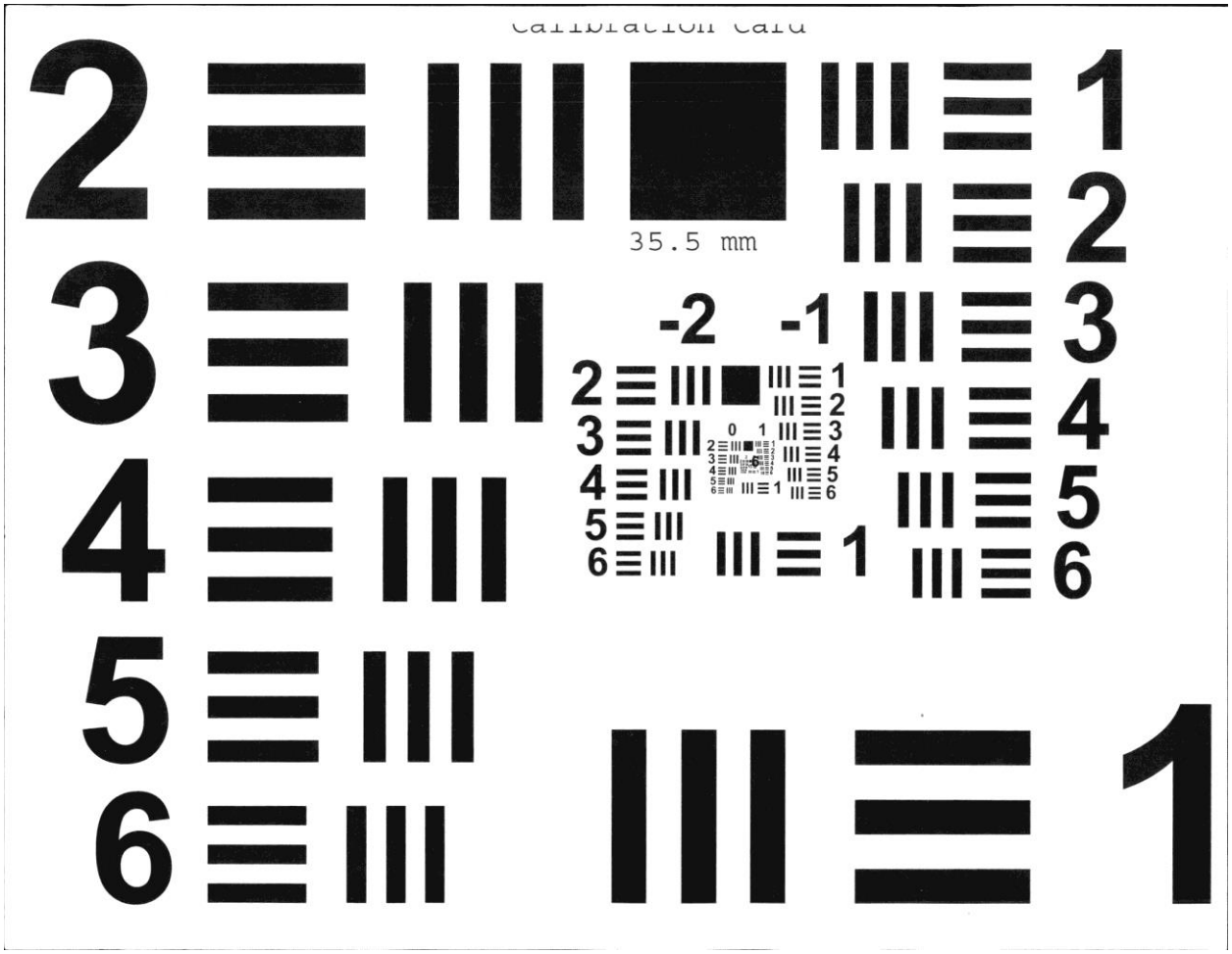

Figure 1 Copy of USAF 1951 Resolution Test Chart

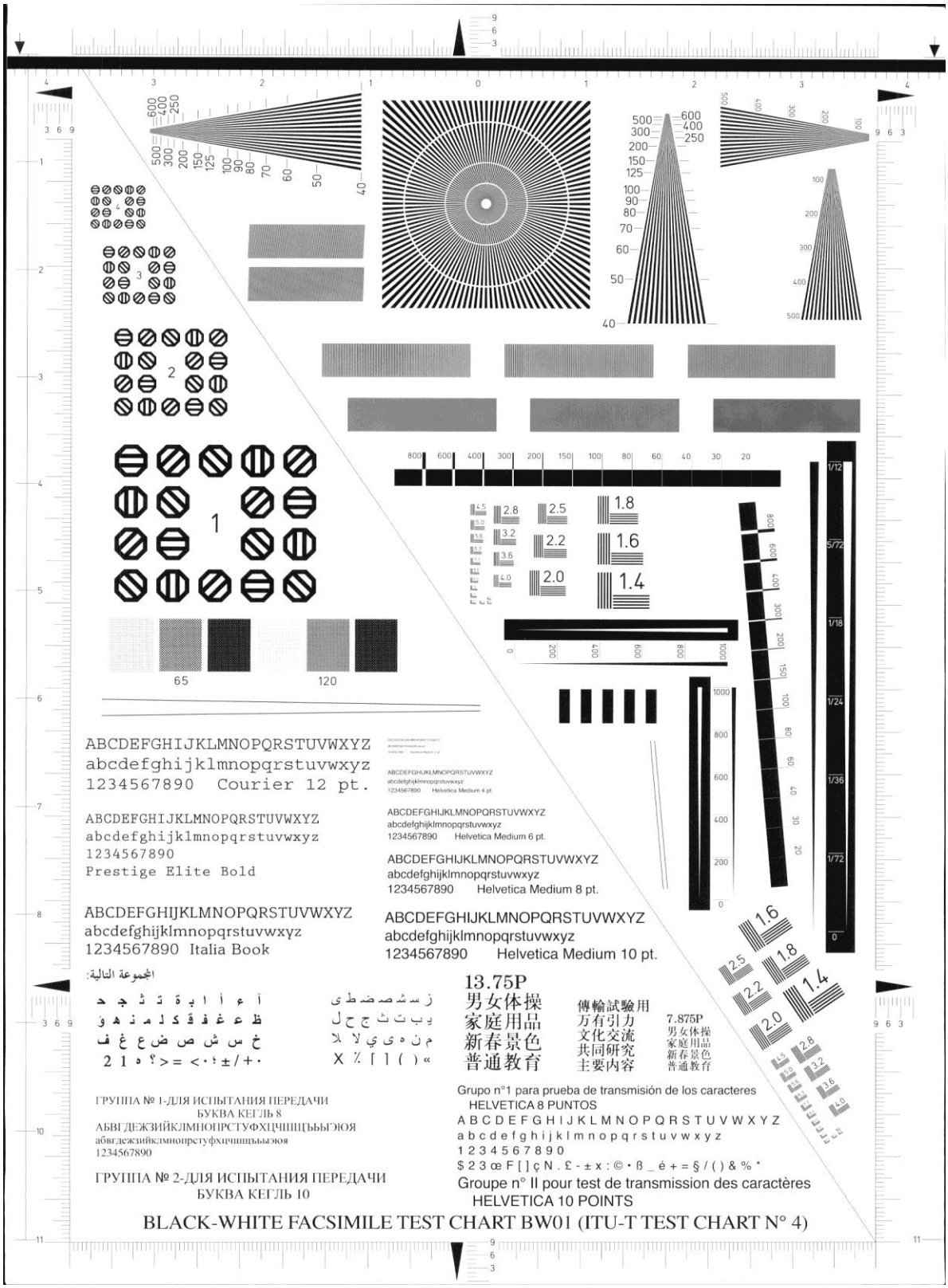

Figure 2 ITU-T Test Chart No. 4

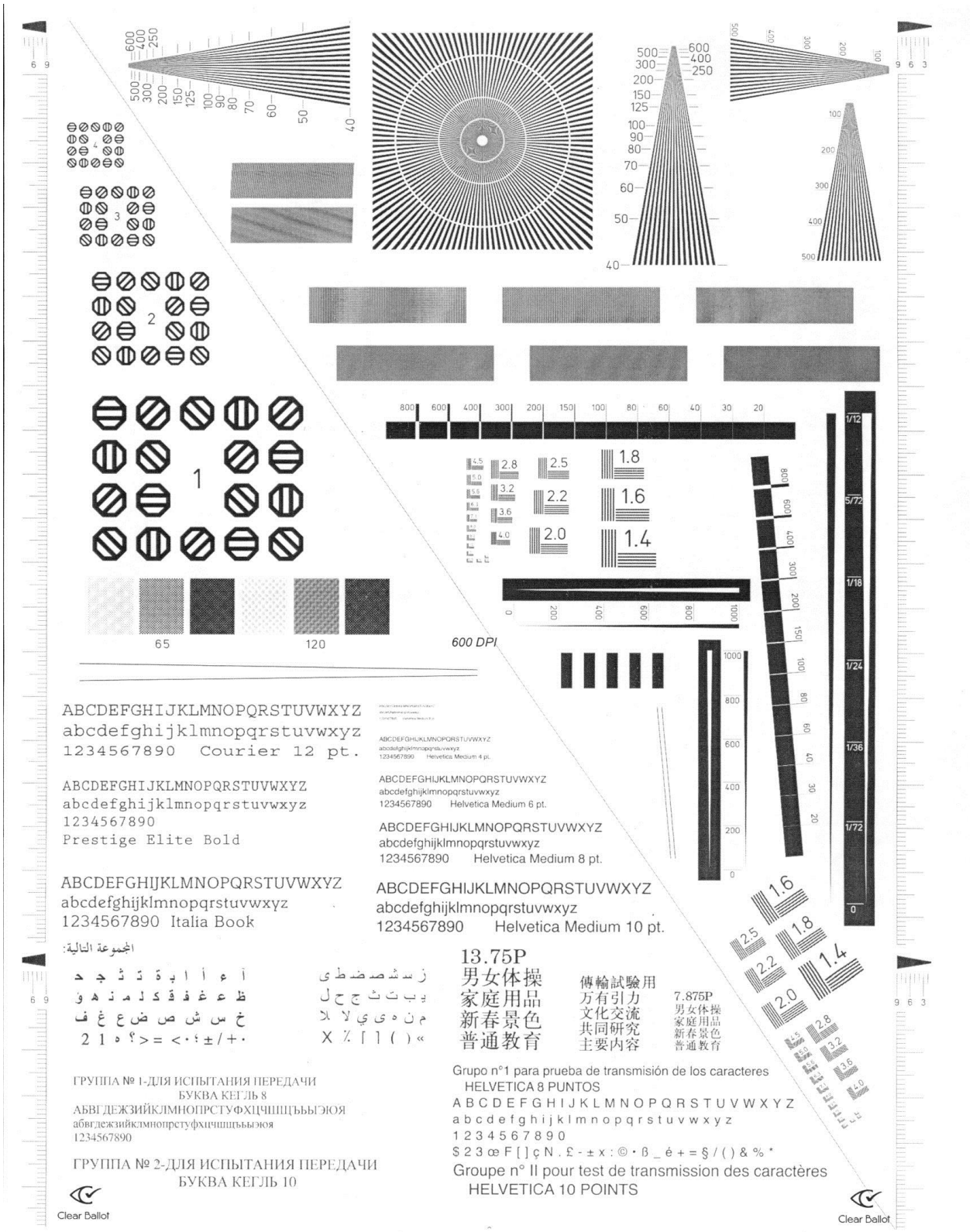

Figure 3 Clear Ballot Calibration Card

Physical Audit

BVSC conducted a physical audit to verify that the voting system under test matched the specifications described in the application and the TDP documentation. This audit system is the same setup that was used with ClearAudit™ 1.0.3.

Findings:

BVSC found no discrepancies with the setup of the ClearAudit™ 1.0.6 audit system.

Functional System Audit

BVSC conducted a functional system audit to verify the system operates as described in the TDP.

Findings:

During the examination, BVSC found that the Election Administrator's Guide provided in the CBG's TDP has an elementary discussion of Form DS-DE 106A (Discrepancy Report for Automated Independent Audit) and its use. Form DS-DE 106A envisioned reporting one set of audit results based on elections defined either as an election coded for ballot style or coded by precinct. The Guide therefore lacked any explanation on how to combine the audit results if the election was coded by two different ways, and how to report a discrepancy if the discrepancy threshold was triggered. CBG's solution was to use an internal system report called the "audit3 report" to put results into a comma-separated values (CSV) file format for uploading into a spreadsheet. Thus, the audit results from the two election definitions could then be imported into a single spreadsheet. Further manual adjustments within the spreadsheet, in its final form, would then produce essentially the DS-DE 106A report. This is an acceptable result under Rule 1S-5.026.

CBG has since updated the Guide to explain that the jurisdiction must provide the backup of the two audit results to CBG and CBG will produce the consolidated DS-DE 106A report. BVSC concurs with this method until January 1, 2016, after which the jurisdiction must be able to perform this activity independently through a more fully developed report program. While the updated Guide adequately addresses this process, it is based on the fact that the system at this time requires vendor support – a factor that will change for any audit system to be approved and in use on or after January 1, 2016.

An audit system has to be able to audit the same universe of contests and valid vote results as the voting system. BVSC also found that the ClearAudit™ current application captures all the ballot's votes regardless of the voting system's unreported invalid votes cast for the removed candidate or issue, thus making any comparison an incomplete reconciliation. When it becomes too late to reprint ballots or reprogram a system to *not* record votes cast for an issue, race or candidate that has been removed from the ballot by court-order or by voluntary withdrawal, a voting system will record those 'invalid' votes cast. However, the voting system can still be programmed to exclude those 'invalid' votes cast from the official results reported after the election. It is this version of the system's reported final official results that the ClearAudit™ system must be able to audit and verify.

CBG's solution is for the jurisdiction to request CBG to continue with creating the comparison results file (CRF) with the removal of the race or withdrawn candidate(s). This enables the results for that candidate or race to not show up in the comparison of votes cast (COVC)[6] reports. The removed or withdrawn issue,

[6] Comparison of Votes Cast (COVC) – This report shows the votes as tallied by ClearAudit compared to the votes as tabulated by the voting system. This report can be generated with or without precinct detail, and can be

race or candidate and the 'invalid' votes cast will still show up in the non-comparison reports, *e.g.*, Statement of Votes Cast (SOVC)[7]. BVSC concurs with this method until January 1, 2016, after which the jurisdiction must be able to perform this activity independently.

BVSC found that the Election Administrator's Guide lacked adequate description for the above-mentioned process. On October 23, 2014, CBG provided updated language in the Guide. While the updated Guide adequately addresses this process, it is based on the fact that the system at this time requires vendor support – a factor that will change for any audit system to be approved and in use on or after January 1, 2016.

Examination of ClearAudit™ 1.0.6

This examination focused on how ClearAudit™ 1.0.6 would audit a voting system that has an election coded by precinct identification and ballot styles. BVSC conducted a simulated Broward County 2014 Primary Election using ES&S Unity release 4.0.0.3 voting system to verify the audit system operates as expected for combined audit results where coded by precinct identification and by ballot style.

Findings:

For an election definition coded by ballot style, ClearAudit™ uses a precinct header card to identify the precinct before scanning the ballots for that precinct. If a ballot is scanned that is not assigned to that precinct, the ClearAudit™ scanner does not give an error and continues to scan the ballot as part of that precinct. The ClearAudit™ Statement of Votes Cast (SOVC) reports the ballot's selections for the correct races and assigns those votes to the precinct on the header card, even if the race is not associated with that precinct. If the Comparison of Votes Cast (COVC) report is not filtered by precinct, the ballot's selections are reported to the races that are contained on that ballot. If the COVC report is filtered by precinct, the report will only show the ballot selections for races in that precinct. This could lead to some confusion, since these votes are included in the overall COVC report, but not in the detailed reports. Although this scanning process does not preclude recommendation for approval, any approved system on or after January 1, 2016 will be required to verify independently that the scanned ballot is the correct ballot style for that precinct.

If ClearAudit™ reads a ballot coded by precinct into a ballot by style election, the ballot is rejected with the error message "Invalid BallotStyleID read from code channel (53)." This activity is consistent with the voting system tabulator's method for invalid ballots.

CBG indicated that ClearAudit™ 1.0.6 can read ES&S ballots at the timing marks at 1/3 inches (3 ovals per inch) and ¼ inches (4 ovals per inch). BVSC recommends that prior to using ClearAudit™ CBG should review all Florida voting systems' ballot design formats since some of voting systems have the capability

filtered on a variety of fields, including precinct, contest, group, etc. The data from the voting system is imported via a CRF file, which is created from the XML report generated by the voting system. Races or candidates not included in the CRF file will not be shown in the COVC reports. This inclusion might be necessary if a candidate withdraws, or a race is removed from an election, after the deadline for reprinting ballots has passed.

[7] Statement of Votes Cast (SOVC) – This report shows the votes as tallied by the ClearAudit system. It is a record of how ClearAudit interpreted the ballots scanned, and assigned the votes to candidates and precincts. This report can be generated with or without precinct detail, and can be filtered on a variety of fields, including precinct, contest, group, box, etc.

for different ballot formats such that that they may have different timing marks placed on them depending on the length of ballot and this is important for reading the ballot.

BVSC noted that the audit system performed consistently with what was indicated in the vendor's TDP, but the Election Administrator's Guide again lacked adequate description for how to create a combined voting system's header card with ClearAudit's target card. On October 23, 2014, CBG provided an updated Guide. While the updated Guide adequately addresses this process, it is based on the fact that the system at this time requires vendor support – a factor that will change for any audit system to be approved and in use on or after July 1, 2016.

Conclusion

BVSC concludes that the qualification test results affirm that the auditing system under test, ClearAudit™ 1.0.6, meets applicable requirements of the Florida Statutes and Rules, subject to the following:

1. Like its predecessor, ClearAudit™ 1.0.6 does not have the capability for use independent of vendor support. This functionality to use the audit system without outside manufacturer or vendor support is not a requirement until January 1, 2016. Therefore, until such time, the county Supervisor of Elections' staff will need outside manufacturer or vendor support to set up and administer the audit system, including creating audit election definitions, removing races or withdrawn candidates, producing Ballot Definition Files (BDF), and Comparison Results File (CRF) to produce the DS-DE 106A Discrepancy Report for Automated Independent Audit which is triggered when a discrepancy occurs in ½ of 1% or more of the votes in any contest being audited..
2. This version supports elections coded by precinct for all of the voting systems used in Florida, except for Dominion Sequoia WinEDS. This version has the same systems that are included in the interim approval for ClearAudit™ 1.0.3.
3. This version adds support of elections coded by ballot style or combination with precinct identification for ES&S Unity voting systems used in Florida.
4. On October 23, 2014, CBG provided an updated Election Administrator's Guide to better address: a) how to create a combined voting system's header card with ClearAudit's target card, b) how to combine elections with ballots coded by precinct and ballot style for the DS-DE 106A report, and c) how to mirror the voting system's official results that record but do not report invalid votes cast in circumstances in which a voluntary withdrawal or court-ordered removal of an issue or candidate occurs too late to remove the race, issue or candidate from the printed ballot and too reprogram the voting system. While the updated Guide adequately addresses these processes, it is based on the fact that the system at this time requires vendor support – a factor that will change for any audit system to be approved and in use on or after January 1, 2016. Any audit system submitted for review and approval for use on or after January 1, 2016, will need to provide more exacting detail in its documentation to allow for independent support and greater ease of use.

At this time, the Florida Division of Elections, Bureau of Voting Systems Certification recommends interim approval of ClearAudit™ 1.0.6. until January 1, 2016 for use solely with elections coded by precinct using ES&S EVS, Dominion Democracy Suite, and ES&S or Dominion GEMS voting system and ES&S Unity with election coded by ballot style and/or combination coded by precinct. Any use of this system in an election as the official means of conducting a post-election voting system audit on or after January 1, 2016 will need to be submitted for re- review and approval.

Although not required or determinative of recommendation for interim approval, BVSC restates these recommendations made earlier in the body of the report:

- Prior to using ClearAudit™ in any county, CBG should review all Florida voting systems' ballot design formats since some of voting systems have the capability for different ballot formats such that that they may have different timing marks placed on them depending on the length of ballot and this is important for reading the ballot. While not subject to review or necessary for meeting current rule requirements, CBG should require as part of its preparation process to include a cross-check and test of the ES&S ballot code channel with time mark intervals of 1/4" instead of the usual 1/3" intervals.

- CBG should develop or use an objective method (in lieu of a subjective method) to quantify that images scanned by ClearAudit™ meet an acceptable image resolution, particularly if there is any future intent to use this system to scan images in accordance with the current minimum 300 dpi requirement set out in Rule 1B-26.003, Florida Administrative Code, for the purpose of converting paper records into electronic records as the master record series.

Appendices

Test Precincts and Ballot Styles

BVSC printed the test ballots using the PDFs in Broward County's 2014 Primary Election Logic and Accuracy reporting. The ballots include 20 precincts with one split and at least 4 ballots for each DEM, REP and NON party in each precinct. BVSC created 2 test decks: one using the precinct sequence number and the other is using ballot style sequence.

Precinct Name and Precinct Number Sequence
and
Ballot Style Sequence by Party

	A001			C023			F004			T016			W016	
1			53			122			405			504		
	REP	1		REP	2, 4		REP	2		REP	20		REP	8
	DEM	22		DEM	28, 30		DEM	25		DEM	37		DEM	63
	NON	70		NON	70, 71		NON	70		NON	71		NON	74
	A003			C026			J010			T028			X020	
3			56			169			417			533		
	REP	2		REP	2		REP	4		REP	12		REP	19
	DEM	23		DEM	26		DEM	30		DEM	48		DEM	68
	NON	70		NON	70		NON	71		NON	78		NON	74
	C005			C036			R013			Q044			X031	
35			66			324			289			544		
	REP	2		REP	2		REP	3		REP	9		REP	19
	DEM	28		DEM	24		DEM	29		DEM	39		DEM	68
	NON	70		NON	70		NON	71		NON	75		NON	74
	C020			C038			R063			W013			Z004	
50			68			374			501			575		
	REP	1		REP	3		REP	6		REP	8		REP	21
	DEM	22		DEM	29		DEM	32		DEM	61		DEM	55
	NON	70		NON	71		NON	72		NON	74		NON	80

Table Cell Nomenclature contains:

Precinct name Precinct sequence number Republican ballot style sequence number Democratic ballot style sequence number Nonpartisan ballot style sequence number

Note that precinct C023 is a split precinct.

Acronyms

ADA	Americans with Disabilities Act
BDF	Ballot definition file
BVSC	Bureau of Voting Systems Certification (Florida Dept. of State, Division of Elections)
CBG	Clear Ballot Group
COTS	Commercial off-the-shelf
COVC	Comparison of Votes Cast
CRF	Comparison Results File
CVS	Comma-separated values
Democracy Suite	Dominion Voting System product
Dominion	Dominion Voting Systems, Inc.
DOE	Division of Elections (Florida Dept. of State)
DPI	Dots per inch
EMS	Election Management System
ERM	ES&S Unity's Election Reporting Manager
ES&S	Elections Systems and Software, LLC
EVS	ES&S Voting System product
EXP Utility	ES&S ERM Results Export Program
FVSS	Florida Voting Systems Standards
GEMS	Global Election Management System (ES&S and Dominion products)
GUI	Graphical User Interface
PDF	Portable Document Format
PPP	Presidential Preference Primary
PVS	Primary voting system
SOBC	Statement of Ballots Cast
SOVC	Statement of Votes Cast
SVCP	Statement of Votes Cast by Precinct
TDP	Technical Data Package
Unity	ES&S voting system EMS
UPC	Universal primary contest
USAF	United States Air Force

Figures Index

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