VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

The New York State Board of Elections (referred to herein as NYSBOE) was awarded a grant from the US Election Assistance Commission (referred to herein as EAC), for the purpose of assessing innovative methodologies for the conduct of pre-election logic and accuracy testing. The right of the voting public, candidates and other stakeholders to have faith in the elections in which they participate, and the goal of all election administrators to ensure that level of confidence is as high as possible, can only be met through the convergence of many tasks associated with the creation of a ballot and the configuration of the voting system which will count that ballot.

The concept of pre-election testing is not new in the State of New York, as this requirement has been a key component of voting system regulations which were adopted in the mid-1980s. At that time, regulations were adopted to initially address punch card voting systems and ballots. The regulations were later amended to address the implementation of optical scan voting systems when those systems became certified for use as central count systems in New York. At present, only optical scan voting systems are certified for use as both precinct-based and central count voting systems however, the pre-election testing protocols to be presented in this report are easily adapted to touch screen and other types of voting systems.

New York's experience with pre-election testing is extensive. This report intends to discuss the value of conducting robust pre-election testing, and the changes that can be made to processes to make them more effective and less burdensome to implement. In the interest of full disclosure, our experience with pre-election testing, while extensive, does come with some unfortunate experiences which have taught county election administrators in New York (who have vested in them the responsibility to conduct elections), that thoroughness and attention to detail will help avoid Election Day disasters. It is also fair to point out that the term 'disaster' is not excessive when it comes to describing failures in the actual voting process, and further, that when there is such a failure associated with an inaccurate election, that outcome is not one from which recovery is easy or in some instances, even possible. New York's regulations which address voting system maintenance and operations can be found in Appendix 1.

The intent of this research effort and the information it produces, is to demonstrate that adopting and exercising a robust, pre-election testing protocol, in tandem with the thorough confirmation of ballot creation and voting system configuration tasks and a post-election audit, will do much to ensure faith and confidence in the election process. We hope to achieve that goal in this report.

INTRODUCTION

Pre-election testing should consist of any and every protocol election administrators in their respective jurisdictions are required to or opt to implement, to ensure that voting systems and ballot marking devices are properly configured and are in ready-to-deploy working order. From a practical perspective, readiness tasks include making sure voting systems have sufficient paper rolls for reporting results, ensuring printers are working properly, programmable memory cards have sufficient space available to capture all Election Day activity, etc. In New York, pre-election testing includes the validation of certified voting system software, called 'hash-checking', and the implementation of test decks, which together will help to further ensure that voting system logic and accuracy is intact. While hash checking is not the only option available to jurisdictions when opting to validate software in pre-election testing, it is the method preferred in New York, and is discussed later in this report. The more complicated of these two tasks is the test deck, and it is this subject with which we begin our report.

Essential to pre-election testing is the test deck, which is defined as a voted and pre-audited group of ballots prepared for each ballot style included in the election to be conducted.

The test ballots are voted with a pre-determined number of valid votes for each candidate and each voting option on every proposal, as well as each write-in position, that appears on a particular ballot style. The test deck is required to include one or more ballots that have been improperly voted, or which are voted in excess of the number allowed for a particular contest, and one or more ballots on which no votes are cast, in order to test the ability of the system to recognize and/or notify the voter of an under-vote or over-vote. In New York, because of our unique ballot requirements, a test deck also includes one or more ballots on which two or more votes are cast for a candidate whose name appears on the ballot more than once for the same office, which

serves to test the ability of the system to count only the first of such votes cast on a ballot for the candidate selected, again as provided for in New York's Election Law. If there is more than one ballot style for an election, a separate test deck is created for each ballot style. New York's test deck procedures may be found in Appendix 2 of this report.

Ballot Integrity

The accuracy of any election and the nexus of a successful pre-election logic and accuracy test begin with the creation of a ballot. While some election/ballot errors experienced in New York were the result of inaccurate or inconsistent test deck implementations, deficiencies in the critical area of ballot preparation have led to problematic elections wherein contests did not appear on ballots, valid candidates did not appear on ballots, the number of persons to be elected was misstated, etc. - all of which speaks to a lack of professionalism and a disregard for the accuracy of ballot content. The following list reflects recommended steps to take prior to creating a ballot. Election administrators must be sure that:

- staff has a complete listing of public offices and political party positions to be filled at the election (in New York, municipal and county clerks must file public office information with election administrators eight months prior to the general election and for party positions, such information is filed by party leaders}, as well as the text for any proposals or questions which will appear on the ballot;
- each contest so listed is accurately defined, including the number of persons to be elected to each position, district numbers or other political subdivision data when applicable, the term for which such person is to be elected (unexpired terms should be so indicated when a contest for the same position but for other than a full term is required to appear on a ballot}, etc.;
- staff is made aware of any ongoing litigation that either removes or restores a candidate or question to a ballot;
- candidates are appropriately linked to their respective political party endorsement(s}; and
- candidate names are spelled correctly.

In this preliminary ballot creation process, the draft versions of ballot styles should be proofread not only by the persons who created the drafts, but also by persons not involved in the ballot creation process, to ensure an additional and independent review for accuracy.

Ballot Logic

Ballot logic is tested via electronic interfaces, to establish how the voting system software verifies votes cast. The test deck procedure:

- validates the ability of the logic to register a vote for each candidate in each contest and for combinations of candidates for multiple vote-for contests;
- verifies the proper operation of the public and protective counters;
- verifies the functionality of all electronic interfaces;
- verifies the functionality of all tactile interfaces;
- validates the ability to cast votes through all switch closure interfaces including the pneumatic switch interface, where the jurisdiction requires and the voting system accommodates;
- verifies the ability to independently operate the voter interfaces through the final step of casting a ballot without assistance;
- validates via the ballot definition process how the ballot definition coding integrates with the audio ballot - this aspect of testing is performed to verify the functionality of the feature;
- validates the system's ability to provide audio voting through the audio voting features of the voting system;
- verifies that once the ballot is cast the system will confirm to the voter that the action has occurred and that the process of voting is complete; and
- verifies that a system generates a record of votes cast.

Election Verification

Election verification is a manual process that every jurisdiction should perform before each election. All election configurations must be verified before the use of a test deck is initiated. One basic component of this verification process involves comparing the ballot itself to the definitions that are set in the Election Management Software (EMS}. A second component is the testing of every voting position on the ballot to ensure that marked ballots are being properly recognized by the voting system. Each ballot style will have a unique election configuration associated with it that must be manually checked for accuracy. All ballot styles in every language must be verified to ensure that:

- the proper audio is present, including alternate languages in those jurisdictions required to provide same;
- the correct art work is displayed;
- that the ballots contain correct
    - offices to be elected
    - candidates
    - political party endorsements, and cross endorsements, where applicable
    - ballot proposals, and
    - that ballots for all political subdivisions reflect their correct respective contests, candidates and proposals.

Ballot Configuration

Ballot Configuration (Ballot Layout} is a term that represents the positioning on and/or linkage within the ballot of all political party names and corresponding emblems (if any}, names and emblems of all independent bodies (if any}, office titles, ballot proposals, candidate names, and spaces for write-in candidates, in accordance with the jurisdiction's requirements or policies as to contest and party order.

Election Configuration

Election Configuration is the term used to represent the file or files created by the EMS including but not limited to the following data used to program precinct-based and central count voting systems:

- the definition of jurisdictional information (e.g., county name, local legislative, congressional or senatorial district, precinct, etc.);
- electronic and paper ballot content and artwork (e.g., ballot text, voting positions, party emblems, if any, etc.);
- definition of contests such as office titles, candidate names, number permitted to be voted for, propositions, or other types of data that control voting in all contests on the ballot;
- definition of voter groups (e.g., by political party, absentee, non-absentee, etc.), ballot styles, linkage of candidates to their respective parties and contests;
- linkage of contests to their respective political subdivisions;
- linkage of ballot text to database labels to produce results reports; and
- the allocation of trans-district vote tallies to their constituent districts for reporting purposes.

Test Deck Theory

For the purposes of this report, we will use an optical scan voting system as the basis of our conversation. Preparing a robust test deck will serve to test the logic and accuracy of the voting system software and when the results of such pre-election tests match a predetermined set of expected outcomes, a successful, fair and accurate election is attainable. In New York State, county boards of elections (CBOE) are responsible for preparing and maintaining test decks for all elections over which they have jurisdiction. Each county board prepares test decks to verify:

- voting system election configuration;
- ballot configuration;
- that the voting system will accurately recognize and cast votes, and
- that the voting system will accurately count votes within each individual ballot style.

Any pre-election test must take into consideration the many types of scenarios that can occur during an election, and test same to ensure voting system logic and accuracy. Any effective logic and accuracy testing protocols consider both the recording as well as the tabulation functionalities of the voting system to be tested. Once a test deck has been prepared for every ballot style, it must be verified by running the ballots against the appropriate election ballot software program or configuration. Inasmuch as test ballots are hand-marked by elections staff members, errors may occur during this process, therefore this verification is necessary, and is commonly called a 'dry run'. All errors should be corrected and the test deck re-run until all pre-determined vote totals by style are verified.

The term 'robust' can never be over-used when discussing any pre-election testing requirements or protocols, especially when creating a pre-election test process that results in a high level of confidence in the ability of a voting system to recognize and tabulate voted ballots accurately. A two-level test deck approach will create just such a robust pre-election test. Election administrators should consider that for each ballot style configured for an election, a **comprehensive test deck** is created and run on at least one voting system that will use that ballot configuration (definition} in that election. For each ballot style configured with more than one precinct (referred to as election districts in New York State}, **a standard test deck** is created and run on every additional voting system that will use that ballot configuration. This theory and its practice will help to exercise each piece of voting equipment to be deployed on Election Day. While no one can anticipate what sort of functional issues might arise from the actual physical task of moving and positioning voting systems to and within poll sites, the initial effort is not only a best practice, but an excellent investment in ensuring the trouble-free outcome of an election. The two-tiered test deck approach also takes into consideration the best use of staff, time and fiscal resources. New York's test deck calculator can be found in Appendix 6.

A **comprehensive test deck** is made up of several sub-decks, each with a specific purpose which will test for specific vote mark-up scenarios and will ensure confidence that the system can tabulate votes correctly. Sub-deck types can include:

- Election Verification sub-deck: used to test every voting position on the ballot to ensure that votes cast are being recognized by the optical scanner. Ballots should be manually marked just as they would be on Election Day, and should follow a format prescribed by the jurisdiction's election officials, with pre-determined vote counts recorded and preserved, to be used when the test is actually run. Pattern voting format within this sub-deck test will change for each election {prima.ry and general}. Pattern voting will provide test results which net unique results for each candidate in a given contest, demonstrating and proving the logic and accuracy of voting system's software.

- Cross Endorsement sub-deck: New York State Election Law permits the appearance of candidate names in more than one voting position for the same contest, in direct correspondence to the number of political parties successfully filing that candidate's ballot access documentation, called a cross endorsement. This unique ballot provision requires that the corresponding ballot logic be validated via the use of a unique sub-deck. This sub-deck is voted following a specific pattern, and ensures that in those instances where a candidate does appear on more than one political party line for the same contest, a vote for that candidate is not counted more than once. The cross endorsement sub-deck will check every combination associated with candidates appearing on multiple party lines. The result of this sub deck pattern is that the first occurrence has been compared and voted for, along with the second occurrence of the candidate, and so on.

- Print Validation sub-deck: Ballot Marking Devices {BMDs} are used to help meet the voting system and voter access requirements of the Help America Vote Act {HAVA}. The functionality and accuracy of BMDs should be included in any pre-election testing protocols. Ballots for this particular sub-deck are created by marking them during the initial BMD set-up and the ensuing pre-election functional testing which requires that votes are placed on ballots using the

various devices which may be available to voters with disabilities for use on election day, including audio voting features, tactile discernible controls, and pneumatic switch attachments which can be operated orally or by vacuum pressure (sip-and-puff). Additionally, this sub-deck will verify that the scanner will recognize when a contest is over-voted, and will verify the scanner's ability to read BMD-marked voting positions.

- Blank Ballot sub-deck: serves to verify that the optical scanner recognizes the ballot's imprinted timing marks, thus identifying the ballot style for the scanner. Timing marks contain encrypted ballot style data including inter alia, precinct, contest, and political party data. This sub-deck also verifies that the scanner displays the proper corresponding warning message to the voter, that the vote tallies are not incremented in such instances, and serves to confirm that no stray marks appearing on the ballot are recognized by the scanner as valid votes.

- Random vote sub-deck: is conducted to demonstrate that votes made randomly are properly recognized by the scanner, serving to demonstrate for election officials, candidates and other stakeholders present for pre-election testing, that the system recognizes all voted positions accurately, and not just those ballots which have been pre-marked pursuant to a specific vote pattern.

As mentioned above, pre-election testing protocols should include steps that validate the creation of a voted ballot using each of the voting system's features which allow voters with disabilities to vote independently:

- audio features
- touch- screens
- push-buttons
- paddles
- key pad and/or pneumatic switches

Additionally, any pre-election testing protocol should include the confirmation of a voting system's capability to accurately display ballots and voter messages in alternate languages, when so required within a jurisdiction or political subdivision.
The **standard test deck,** as mentioned earlier, is composed of the following three ballots:

Ballot #1 - Blank ballot, which will

- verify that the optical scanner recognizes the ballot's informational timing marks (the correct precinct or political subdivision, for example};
- verify that the optical scanner displays the appropriate message to the voter (blank ballot therefore indicating an entirely under-voted ballot};
- verify that the vote tallies are not incremented in such circumstance; and
- confirm that no stray marks are recognized by the voting system as votes.

Ballot #2- Multiple scenarios ballot, which will

- be marked with as many scenarios on one ballot as possible, as follows:
    - over-vote
    - undervote
    - write-In
    - and in New York State, cross endorsement
    - proposition/ proposal

Ballot #3 - BMD ballot

- Vote a ballot using the Ballot Marking Device (BMD} to verify:
    - audio functionality
    - touch-screen, push-button, or other electronic mechanism functionalities
    - key pad and/or pneumatic switch functionalities for voters with disabilities
    - accurate alternate language displays

- overvotes
- undervotes
- and in New York State, cross endorsements

Test Deck Preparation

Prior to any election in which an optical scan voting system is to be utilized to electronically tabulate ballots, the following steps, which should already be a part of a jurisdiction's written and adopted procedures, should be followed:

- A sufficient number of extra ballots should be ordered as test ballots for each ballot style required for the election.
- All ballots to be used as test ballots should have the word "TEST" printed or hand-stamped on the face of each ballot, to distinguish pre-election ballots and tasks from live, Election Day or absentee/provisional ballots.
- Each test memory card should be clearly labeled, ensuring it corresponds to the pre-election test being conducted.

The steps which define how to create a test deck will work for any ballot orientation, the most common of which is a portrait-style ballot. New York State's jurisdictions are permitted to utilize a portrait or landscape-style ballot. In the step-by-step process this report will present, a landscape ballot orientation will be used however the concepts will work for any ballot style. In a landscape style ballot, contests appear horizontally, across the top of the ballot with the political parties and independent bodies appearing vertically, down the left side of the ballot. Samples of the ballot orientations and styles used in New York appear in APPENDIX 3 of this report.

Creation of sub-decks

Once the election configuration tasks are complete, the next step is to determine the number of sub-decks needed for the comprehensive test deck. This number of required sub-decks is determined by whether the type of election being conducted is a general election or a primary election. The following chart displays the types of comprehensive sub-decks needed for each election.

General Election	Primary Election
Election Verification Vote (to be tested on Optical Scanner)	Election Verification Vote (to be tested on Optical Scanner)
Pattern Vote (to be tested on Optical Scanner)	Pattern Vote (to be tested on Optical Scanner)
Cross Endorsement Vote (to be tested on Optical Scanner)	Print Validation Ballot (to be tested on BMD and Optical Scanner)
Print Validation Ballot (to be tested on BMD and Optical Scanner)	Blank Ballot (to be tested on Optical Scanner)
Blank Ballot (to be tested on Optical Scanner)	Random Ballot (to be tested on BMD)
Random Ballot (to be tested on BMD)	

Note: At the option of the jurisdiction, randomly marked ballots may be part of any test deck. However, election officials may find it helpful to permit candidate requests for additional ballots to be randomly marked during the 'run for record', keeping in mind that they must be added to the comprehensive test deck and ballot totals.

Test Deck Implementation

Once a test deck has been validated, test decks are scanned by a team of election officials or voting system operators, on each voting system for which that particular ballot style is valid. (In New York, it is required that teams conducting pre-election testing tasks are bi-partisan teams.) While it is acceptable for maintenance testing purposes that the voting system is in test mode, it is not acceptable that it remain in that test mode when conducting pre-election logic and accuracy tests - voting systems must be in live, Election Day operation mode for any and all pre-election tests. This phase of testing is called the 'run for record'. The testing staff should include the scanning of at least one ballot from each sub-deck using each feature intended to provide voting system access for persons with disabilities, and also scan at least one ballot from each sub-deck using each language required to be presented to voters using the system. While one team member casts votes for the test, the other team member monitors that votes are cast correctly.

The test should be documented by the testing team on a log created specifically for this purpose. The team should compare the results reported by the voting system to the expected results articulated in the pre-election test plan, confirm the accuracy of or discrepancies in the results, and determine if the system has passed or failed the test. Any discrepancies indicating a failure must be investigated, resolved, and the system must then be re-tested.

If a test deck is run and the pre-determined vote count does not successfully compare to the voting system's tabulated results, the test team should document the problem, and then compare the unique ballot script pattern (test plan) with the test deck pattern to ensure that the test deck was made correctly and that all ballots were scanned. Any corrections to the test deck itself, or to the casting of the test deck, should be made and it is recommended that the test deck be re-run until two error-free test results are produced. If the tested voting system fails to produce two error-free results, the system should not be used in any election until the problem is resolved and a new round of pre-election testing is successfully completed.

The pre-election test results reports should be signed by the test team, and placed in secure storage for any record retention periods the jurisdiction may require. After all voting systems for which a particular ballot style is valid have been tested the test deck should be similarly stored with all corresponding reports, audit trails and log sheets.

New York's successful experiences with test decks are many, however we would be remiss if we did not point out that in some cases, errors have occurred in the way ballots have been tabulated, owing to mistakes made by elections personnel. In certain instances, local election administrators who opted to take short cuts in the creation and/or implementation of test deck procedures were required to explain how ballots could have been mis-counted and why election results were flawed. A majority of the instances where test decks were not prepared properly revealed errors related to how local officials created and executed voting patterns reflecting the uniquely New York scenarios in which multiple appearances of candidates for the same contest, are permitted by statute.

No voting system or its accompanying processes is without issues, however the lesson learned from experience is that election administrators should ensure that their own regulations and procedures are fully implemented. Any abbreviation in pre-election procedures potentially jeopardizes the performance of voting systems and the accuracy of the election.

HASH CHECK OVERVIEW

As mentioned in the introduction of this report, in New York State, a key component to successful pre-election testing protocols is the validation of the voting system software resident on each scanner and ballot marking device, more commonly known as hash checking. Via this grant opportunity, we have reviewed pre-election logic and accuracy testing options and considered the processes other jurisdictions follow for same. We have determined that as part of pre-election testing, the validation of software serves an essential role in confirming any voting system's logic and accuracy. Hash checking is not the only process which can be employed for the purpose of validating software, however after much review and discussion, it is the process which New York has incorporated into its regulations, and one which is comfortably recommended to other jurisdictions looking to create or amplify pre-election logic and accuracy testing processes. A copy of New York's procedure for this aspect of pre-election testing appears in Appendix 4 of this report.

Jurisdictions opting to include this step in their own pre-election logic and accuracy testing processes should perform a hash check on each voting system to ensure that the firmware/software that was certified by that jurisdiction is the same as that which is currently installed on the system and that no other unauthorized software/firmware is present.

When a jurisdiction includes software/firmware validation via hash checking, hash values or numerical values are derived by the use of an algorithm which is run against the voting system's software. The 'hash value' is generated by a formula in such a way that makes it is extremely unlikely that some other software will produce the same hash value. A hash value is used to determine if there were any changes in the certified version of software. When the hash value is compared against the referenced value (such a value is obtained from the jurisdiction's testing lab) and a match is found, there is now a high level of confidence that the software has not been disaffected in any way.

Anecdotally, subsequent to the required hash check step of all pre-election logic and accuracy testing, New York has added the additional requirement of conducting hash checking whenever the chain of custody for a voting system unit has been broken, for example:

- when tamper-evident seals on voting systems are missing or damaged;
- when the voting system is returned to the elec;tion officials after having been serviced at a vendor service facility; and
- when voting system firmware upgrades are performed.

New York's experiences in the arena of preventative maintenance and pre-election testing have helped establish updated policies which provide that hash-checking need not be performed as part of the testing protocols provided the voting system has remained in the secure custody of election officials, the tamper-evident seal numbers match seal numbers logged for that unit, and that the seals remain intact.

Model and version information for the voting systems currently certified in New York can be found in Appendix 5.

CONCLUSION

It is not easy for any election administrator to meld limited resources, a modest pre-election window of opportunity, and any number of unique jurisdictional issues - all in an effort to take every step possible to ensure an accurate and trouble-free election. Nonetheless, each of the steps described in this report, and indeed every step an election administrator can take along the path to that same end, is worth taking. The aggregate result of all such steps taken - and taken successfully - will do much to instill the highest degree of confidence in any election, demonstrating for all participants and stakeholders that the election has been carefully planned for, properly configured, and for which a robust pre-election logic and accuracy test has been implemented.

The tools this project helped to create, and in some cases revise, will serve election administrators well. These tools, including a test deck calculator, procedures and sample forms appear in this report's Appendices. This report is accompanied by a training DVD, which will help to ensure that election staff members assigned to this task are well-trained in the preparation, creation and implementation of pre-election logic and accuracy testing. Further, because that task is a cyclical one, refresher training is invaluable. The DVD demonstrates clearly how a test deck comes together, and can be reviewed at the user's convenience as often as necessary.

This initiative afforded us an opportunity to consider changes to our own processes, and the result for New York State - and those who wish to take these recommendations and processes to heart - is a renewed acknowledgement that the highest degree of confidence in voting system performance and election outcomes means so much to so many, and it is the responsibility of each of us to ensure. We encourage election administrators across the nation to explore all opportunities which will help restore the public's faith in all aspects of the voting process.

NOTE: Samples of ballots and forms provided in this report have been reduced for ease of publication. If you would like to obtain full-size samples of any of the forms or ballots referenced in this report, or a copy of the DVD mentioned herein, please contact the Election Operations Unit at the New York State Board of Elections.

ACKNOWLEDGEMENTS

New York State Board of Elections

40 North Pearl Street, Suite 5
Albany, New York 12207
Phone 518-473-5086

Anna E. Svizzero, Director of Election Operations
Joseph C. Burns, Deputy Director of Election Operations
Robert Warren, Voting System Certification Manager
John Ferri, Senior Voting Equipment Specialist
Phil Jorczak, Voting Equipment Specialist

New York State Technology Enterprise Corporation (NYSTEC)

540 Broadway, 3rd floor
Albany, New York 12207
Phone 518-431-7020

Robert Groncznіak, PMP - Senior Project Manager
Thomas Wood, Technology Implementation Consultant

New York Network Video Services

State University of New York - Empire State Plaza
PO Box 2058
Albany, New York 12220 - 0058
Phone 518-443-5333

Monroe County Board of Elections

Thomas Ferrarese and Peter Quinn, Commissioners
39 Main Street West
Rochester, New York 14614
Phone 585-753-1550

Saratoga County Board of Elections

William Fruci and Roger Schiera, Commissioners
50 West High Street
Saratoga Springs, New York 12020
Phone 518-885-2249

Schenectady County Board of Elections

Brian Quail and Art Brassard, Commissioners
388 Broadway, Suite E
Schenectady, New York 12305
Phone 518-377-2469

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

New York State

Board of Elections

Voting System Testing and Operational Regulations

APPENDIX 1

OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK

TITLE 9. EXECUTIVE DEPARTMENT

SUBTITLE V. STATE BOARD OF ELECTIONS

PART 6210. ROUTINE MAINTENANCE AND TESTING OF VOTING SYSTEMS, OPERATIONAL PROCEDURES, AND STANDARDS FOR DETERMINING VALID VOTES

Current through January 31, 2013

Section 6210.1. Definitions.

Except to the extent set forth below, the definitions contained in section 6209 of this Title shall apply in this section

(a) Pre-qualification test is a test prescribed by the State Board, conducted immediately prior to the voting systems' use in an election in which a predetermined set of votes are cast which will ensure that all voting positions for each ballot configuration are tested. Such votes shall be entered into the voting system in the same manner as they will be entered by voters during an election. If a voting system offers several methods for votes to be entered, such as touch-screen, push-button, or other electronic mechanism, a key pad and/or pneumatic switch for voters with disabilities, or alternate language displays, then a pre-determined set of votes shall be entered separately using each method and language display. The results of the casting of said votes and all voting system logs shall be extracted from the system as though during normal use in an election, and the results and logs shall be compared to the predetermined results of the test votes and vote totals prepared pursuant to regulations and procedures of the State Board.

(b) Printout means either the printed copy of zero totals, candidate names and offices and other information produced by the voting equipment prior to the official opening of the polls or the printed tabulation report of votes cast for each candidate and question, the names of candidates and the offices for each candidate and other information provided after the official closing of the polls.

(c) Election mode. An operational setting and/or functional level of a voting system that would allow the user, under the required conditions stated by law, to make selections, and/or cast a ballot, and which also uniquely provides the potential to have a marked ballot officially accepted for counting at the time of a defined election. Note: This mode of operation may also be synonymous with the term "live vote mode" or similar. This mode may also be run at any time, either for the running of realistic simulations for testing, and/or after various maintenance activities. This mode is specifically required to be run in the conduct of an official election.

(d) Test mode. An operational setting and/or functional level of a voting system that would allow the user to specify/select, access, and/or test various levels/areas of the device, either, for example, during

possible upgrades, diagnostic testing, and/or specific maintenance activities that may not require full functional simulation, or capabilities at that time. Note: This mode of operation is a separate option from election mode, and is prohibited from being run in the conduct of an official election.

{e) Closed network. A closed network is a stand-alone server that is used for a specific purpose, such as an election management system {EMS), and to which access is restricted to specific workstations and users and not connected to any other internal or external network.

Section 6210.2. Routine maintenance and testing of voting systems.

(a) Testing of all voting systems shall be conducted by the county board before the use of the system in any election and at such other times of the year as prescribed by these regulations. Testing procedures shall be approved by the State Board. The voting system shall be tested to determine that the. system is functioning correctly and that all system equipment, including but not limited to hardware, memory, and report printers, are properly integrated with the system and are capable of properly performing in an election. Testing, other than pre-qualification testing, shall be conducted by casting manual votes and may include the casting of simulated votes.

{b) In addition to vendor-prescribed maintenance tasks and diagnostic tests, tests of voting equipment shall be conducted by the county board, on each piece of equipment owned by the county board. Such testing shall be administered periodically and be completed during the following periods during each year that the equipment is in use:

(1) January 15-April 15;

(2) April 16-July 15;

(3) July 16-September 15; or

(4) September 16-November 15.

Whenever a voting system is to be tested for pre-qualification purposes, such test must be conducted while the voting system is in election mode.. Votes cast for pre-qualification test purposes shall be manually cast using all of the devices available to voters on Election Day (i.e.: audio, key pads and or pneumatic switches, and/or alternate language displays).

(c) Testing shall include the comparison of software installed on the delivered system to certified software, via the use of a Secure Hash Signature Standard {SHS) Validation Program, as described in Federal Information Processing Standards Publication 180-2 issued by the National Institute Standards Technology (This publication is available electronically by accessing http:// csrc.nist.gov/publications/. Alternatively, copies of NIST computer security publications are available from: National Technical Information Service {NTIS), 5285 Port Royal Road, Springfield, VA 22161.)

Testing shall consist of the re-calibration of equipment, as appropriate, pursuant to recommendations made in vendor's maintenance documentation, and the casting of a test deck by voting the minimum

number of ballots, determined pursuant to the requirements of section 6210.8 of this Part, to ensure that all voting positions for each ballot configuration are tested. Votes cast for the purposes of this section shall be cumulative ballots cast on each piece of equipment during each of the prescribed periods outlined.

(1) If the system does not accurately count the votes from the test deck cast manually, simulated, or both, (aside from those that were deliberately designed to fail), or the calibration test, the cause or causes for the error or errors shall be ascertained and corrected. The voting system shall be re-tested until there are two consecutive error-free tests before the system is approved for use in the count of actual ballots. The commissioners of the county board or their designees shall certify that they have reviewed and verified the results of said testing. The summary results of all tests, including all inaccurate test results, their causes and the actions taken to correct them, as well as the results of all errorless counts, shall be entered upon the maintenance log. All documentation and/or test decks, simulation cartridges and any test data including but not limited to copies of ballot programming used for required maintenance tests shall be maintained in secure locked storage for two years after the election, pursuant to Election Law section 3-222.

(2) Maintenance logs are to be kept as a permanent record of the county board.

(d) During the period including July 16 - September 15 (and in years when a presidential primary is conducted, during the January 15 - April 15 period), the test ballot format for each piece of equipment shall consist of each primary ballot configuration as certified by the county board, if said equipment is to be utilized in a primary election. The voting system shall be cleared of all votes and a printed report shall be produced by the system, to verify the correct ballot configuration and election configuration, and to confirm that all voting positions are at zero. Ballots cast for the purposes of this test shall be manually cast and a printed tabulation report shall be produced. The system shall again be cleared of all votes and a printed report shall be produced by the system to confirm that all voting positions are at zero. Each officer or board charged with the duty of preparing voting machines for use in any election shall give written notice, by first class mail, to the State Board and to all candidates, except candidates for member of the county committee, who are lawfully entitled to have their names appear thereon, of the time when, and the place where, they may inspect the voting machines to be used for such election. The candidates or their designated representatives may appear at the time and place specified in such notice to inspect such machines, provided, however, that the time so specified shall be not less than two days prior to the date of the election.

(e) For the period between ballot certification and seven days before the general election, the test ballot format for each piece of equipment shall consist of each general election ballot configuration as certified by the county board. The voting system shall be cleared of all votes and a printed report shall be produced by the system, to verify the correct ballot configuration and election configuration, and to confirm that all voting positions are at zero. Ballots cast for the purposes of this test shall be manually cast and a printed tabulation report shall be produced. The system shall again be cleared of all votes and a printed report shall be produced by the system to confirm that all voting positions are at zero. Each

officer or board charged with the duty of preparing voting machines for use in any election shall give written notice pursuant to Election Law section 7-128 and section 7-207, by first class mail, to the State Board and to all candidates, except candidates for member of the county committee, who are lawfully entitled to have their names appear thereon, of the time when, and the place where, they may inspect the voting machines to be used for such election. The candidates or their designated representatives may appear at the time and place specified in such notice to inspect such machines, provided, however, that the time so specified shall be not less than two days prior to the date of the election.

(f) In addition to any vendor provided training, the State Board shall provide training on routine maintenance and testing of voting systems to county board personnel responsible for voting systems. The State Board shall provide sample tests to be utilized by each county board. The State Board may revise said testing format, based upon its audit and review.

(g) All results of each routine maintenance test and/or pre-qualification test, including the final errorless test, shall be certified as accurate by the county board commissioners or their designees, and such certification shall be entered upon the maintenance log for each such piece of equipment, together with any other information prescribed in said log by the State Board.

(h) The county board shall certify to the State Board, the completion of each routine maintenance test and/or pre-qualification test. All documentation and/or test decks, simulation cartridges and any test data including but not limited to copies of ballot programming used for required maintenance tests shall be maintained in secure locked storage for two years after the election, pursuant to Election Law section 3-222. Such certification shall be on a form prescribed and furnished by the State Board, and shall be accompanied by copies of each maintenance log.

(i) Each county shall keep a detailed log of maintenance performance and testing procedures. Such logs shall be in a format provided by the State Board and the same shall have been reviewed by the vendor.

(j) Such logs shall be provided quarterly to or as requested by the State Board, for their review and inspection, and shall be made available to the public.

(k) The State Board may, upon review of the maintenance logs, require further testing of any such piece of equipment or may remove a piece of equipment from use in an election until further examination and testing has been completed, or may rescind certification pursuant to section 6209.8 of the State Board regulations.

(1) The State Board may reinstate the certification if the equipment passes these further tests, and a review of the maintenance logs supports such reinstatement.

(2) County boards shall make the system or equipment available to the State Board for any such additional testing and shall provide such assistance as may be deemed necessary.

(l) During the initial time period in which such system or equipment is used, to include a primary election and a general election, the State Board shall assist in the routine maintenance, testing and the operation of the voting machines or systems. Such assistance shall include but not be limited to:

(1) election configuration and ballot configuration related to voting system testing and use;

(2) pre-qualification and post-election tests;

(3) election day support, via phone, email, facsimile or on-site, as necessary;

(4) post-election support, to include recanvass, challenges, and audit conducted pursuant to Election Law section 9-211;

(5) staff training;

(6) defining personnel requirements and tasks;

(7) defining procedures for pre-qualification, post-election, and maintenance tests; and

(8) defining procedures for canvassing and recanvassing votes cast in an election.

(m) During successive years, the State Board, whenever it deems necessary, or at the request of a county board, may assist in any or all aspects of the operation of the system.

Section 6210.3. Submission of procedures for unofficial tally of results of election.

County boards which adopt procedures pursuant to Election Law section 9-126(3) shall file such procedures with the State Board of Elections.

Section 6210.4. Demonstration models.

(a) During the first five years after purchase, any county which purchases voting equipment systems shall provide a model, diagram, video or other electronic instruction (example CD ROM) of such voting system's equipment for each polling place in its jurisdiction.

(b) Any such model, diagram, video or other electronic instruction must be approved by the State Board and must meet the following specifications:

(1) May not contain the name of any party or independent body which has been continuously used in New York State.

(2) Display a ballot layout which shall consist of at least two party rows and eight voting positions including at least one multiple-candidate office (vote for two).

(3) Demonstrate how a voter can:

(i) Vote for a candidate, question or proposition.

(ii) Verify in a private and independent manner the votes selected by the voter on the ballot before the ballot is cast and counted.

(iii) In a private and independent manner change the ballot or correct any error before the ballot is cast and counted, including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct any error.

(iv) Cast a write-in ballot.

(v) Cast the ballot.

(vi) Be notified on the effect of the voter casting multiple votes for an office or proposal in excess of the number permitted.

(vii) Be notified on the effects of an undervote.

(viii) Utilize the accept ballot/reject ballot feature, if any is available on such voting machine or system.

(c) If a model is used, each model must:

(1) be no less than 11 inches by 14 inches; and

(2) be operated by electricity and/or a battery power source.

(d) If a diagram is used it shall be no smaller than 11 inches by 17 inches.

Section 6210.5. Voting system operations.

(a) All voting systems used in New York State shall be used in a manner consistent with Election Law, these regulations and the United States Election Assistance Commission's 2005 Voluntary Voting System Guidelines and any conditions specified in the State Board's certification of the voting system for use in New York elections.

(b) Only the county board shall have care, custody and control over all resources for the purposes of conducting elections, including but not limited to vote counting, preparation and custody of ballots, system maintenance and all testing. If it becomes necessary to transfer control of any equipment to a vendor for repairs, or to other political subdivisions for use by them in their elections, such voting systems and/or equipment shall not be used in a live election by the county board until such time as such equipment is returned to the care, custody and control of the county board and acceptance testing

of each such system or equipment is performed pursuant to section 6209.10 of the State Board Regulations.

Section 6210.6. Personnel.

It is the responsibility of the county board to provide sufficient and appropriate staff to perform the functions required for successful use of the voting system. All tasks shall be defined in written procedures, and personnel assigned shall be thoroughly trained to carry out their responsibilities.

Section 6210.7. Ballots.

(a) For the production of paper ballots or ballot faces for DRE voting systems, the county board shall contract with a printer or use in-house print services that have the requisite expertise, staff, and equipment for printing ballots of the complexity and in the volume required for the conduct of elections in that county, and that ensures delivery of finished ballots in time to comply with the relevant provisions of the Election Law and the election calendar.

(b) Detailed specifications for production of ballots shall be supplied to the county board by the voting system vendor. These shall include but not be limited to particulars of the system's ballot such as weight, grain and color of stock; dimensions of ballot faces, ballots and ballot cards; corner cuts; perforations, both for ballot boundaries and for stub boundaries, when appropriate; ballot positions, sensitive areas and voting targets; pre-marks for imprinting of ballot configuration information; printing registration and tolerances; ink; use of drying powder; and packaging of printed ballots for shipment and for storage until time of use. The county board shall transmit these specifications to the printer chosen to produce its ballots.

(c) In the first year that the voting system is in use, a copy of the final form and arrangement of each ballot configuration shall be filed with the State Board.

(d) Ballots shall be identified by ballot configuration, using marks which are machine readable and human readable text.

(e) Ballots to be used with poll site optical scan voting systems, shall be in a form consistent with Election Law section 7-106. Each ballot shall have a numbered stub which can be separated from it along a perforated boundary. Such ballot shall be detached from the numbered stub prior to the election inspector giving the ballot to the voter and be retained by the county board in a manner consistent with election-related document retention requirements.

(1) The ballot stubs shall be sequentially numbered, and shall include the date of the election, the political subdivision in which the ballot is valid, and in a primary election, the name of the party conducting the primary, and further, stubs may be color coded, to correspond to same.

(2) Ballot stubs shall include spaces for inspectors to indicate with their initials, whether the ballot was used for affidavit or emergency purposes.

(3) Ballots shall be bound in booklets of 100, or in such other increments as a county board may, by written procedure, deem appropriate. Binding shall be by staples, to help ensure ballot accountability.

(4) Ballot booklets shall have a cover, on which shall be printed the date of the election, the political subdivision in which the ballot booklet shall be valid, the range of sequential ballot stub numbers contained therein, and such other administrative information as the county board may deem necessary. In primary elections, booklet covers shall include the name of the party conducting a primary, and may be color coded, to correspond to same.

(5) When more than one ballot booklet is to be used in any election district, a transmittal sheet shall accompany the booklets, which shall specify how many booklets are included in the inspector supply bag, the complete range of sequential ballot stub numbers for that district, and shall further provide a space or spaces for inspectors to confirm receipt of all ballots.

(6) Ballot booklet(s) and any transmittal sheet, shall be delivered to inspectors with other election day supplies, in a separate, secure, sealed and labeled envelope or pouch.

(7) Only one ballot booklet at a time should be on the inspector table, and the remaining booklets shall be kept in their secure envelope or pouch, in the inspector supply case.

(8) When all ballots in a booklet have been used, leaving only the cover and the stapled pad of stubs, such booklet shall be returned to the ballot booklet envelope/pouch and the next appropriately numbered ballot booklet shall be removed for use.

(9) After the close of polls, the transmittal sheet shall be completed by the inspectors, indicating which booklets were completely used, partially used, or not used. The ballot booklet envelope/pouch shall be sealed and returned to the county board with all other election day supplies.

(f) The county board shall cause its respective printer(s) to certify to the county board, upon delivery of ballots ordered:

(1) the actual number of ballots printed;

(2) the number of ballots delivered; and

(3) that all other ballots printed have been destroyed.

The county board shall inventory all ballots and ensure the security of any and all ballots while they are in the possession of the county board.

(g) For central count paper-based voting systems, ballots printed for absentee voting, and those printed for emergency, special and affidavit purposes shall be tabulated by batch, and be subject to all

appropriate provisions of these regulations. The county board shall provide a means by which affidavit, emergency, and special ballots shall be distinguished from absentee ballots.

Section 6210.8. Test deck procedures.

Each county board shall prepare a test deck to be used to verify that the voting system's election configuration and ballot configuration is correct and that the voting system will accurately cast and count votes within each individual ballot configuration.

(a) The ballots shall be voted with a pre-determined number of valid votes for each candidate, each write-in position, and each voting option on every proposal that appears on the ballot as certified by the county board in order to verify that the vote system is programmed to correctly count the ballots. The deck includes one or more ballots that are intended to fail, have been improperly voted, or which are voted in excess of the number allowed by law, and one or more ballots on which no votes are cast, in order to test the ability of the system to recognize and/or notify of an under or over vote. If there is more than one ballot configuration for an election, a separate test deck is created for each ballot configuration. In election districts that will utilize a single voting system for two or more ballot configurations, required testing shall consist of a different test deck for each ballot configuration to be utilized on such voting system, to ensure that the addition of multiple ballot configurations has not affected the accurate casting and counting of votes within individual ballot configurations.

(b) Test decks which include sub-decks are created once election configuration and ballot configuration tasks have been completed, and ballot configurations have been verified, utilizing detailed procedures for preparation of a test deck prescribed to the county board by the State Board. Using a tool or tools, (ie Excel) make a test script for each specific ballot within the test deck, such that when all test ballots within the test deck are completely cast it will accurately test all positions, undervotes, overvotes, write-in positions, propositions and ballots that are deliberately designed to fail.

(1) To create a test deck on an optical scan voting system, test ballots must be marked, following the pattern determined to sufficiently test the ballot programming, logic, and accuracy.

(i) For optical scan voting systems, the test deck includes one or more ballots on which two or more votes are cast for a candidate whose name appears on the ballot more than once for the same office in order to test the ability of the system to count only the first of such votes for the candidate.

(2) To create a test deck for DRE systems, the creation of a test script is required, so that the pattern of votes can be followed, to facilitate the manual casting of same.

(i) For DRE systems, the test deck includes one or more ballots in which an attempt is made to cast two or more votes for a candidate whose name appears on the ballot more than once for the same office in order to test the ability of the system to accurately cast the voter's choice(s) for such office.

(3) Assign each ballot in the script a unique ballot number.

(4) Calculate the number of ballots required to conduct each test. This calculation is the minimum number of ballots that must be cast on each voting machine or system where such ballot configuration is programmed, pursuant to section 6210.2 (c) of this Part.

(c) Upon creation of a test deck and prior to use in pre-qualification testing, the test deck must be validated by casting the ballots in the test deck on a voting machine or system, printing out the tabulation report and comparing same to the predetermined expected results for that test deck to ensure accuracy. Any corrections to the test deck must be made prior to its use in pre-qualification testing.

(d) Once a test deck has been validated, test decks are run by a bi-partisan team on each voting system for which that particular ballot configuration is valid. The team shall enter at least one ballot from each sub-deck using each feature intended for people with disabilities, and enter at least one ballot from each sub-deck using each language provided on the unit. While one team member casts votes for the test, the other member shall monitor that votes are cast correctly.

(1) The test shall be documented by the bi-partisan team, on a log to be prescribed by the State Board, and the team shall affix their signatures to the log. The log shall include but not be limited to:

(i) The date the test was executed.

(ii) The names of the persons who performed the test and recorded the results.

(iii) The serial number of the machine on which the test was executed.

(iv) The protective counter number of the machine on which the test was executed as it appeared both at the beginning and conclusion of testing.

(v) The name or description of the test performed.

(vi) The version number of the software under test.

(vii) The test result, either pass if the results match the expected results exactly, or fail if there is even one discrepancy.

(e) The bi-partisan team shall compare the accuracy of the results reported by the voting system to the expected results and determine if the machine passed or failed. Any discrepancies indicate a failure and must be investigated.

(1) If a test deck is run on a DRE, and the pre-determined vote count does not compare to the results reported by the voting system, the bi-partisan team shall document the problem, and then compare the paper audit trail transactions to the unique test ballot scripts, to be sure votes were cast correctly. Any

corrections to the test deck itself, or to the casting of the test deck shall be made, and the test deck shall be re-run until two error-free test results are produced, pursuant to section 6210.2(c)(l) of this Part.

(2) If a test deck is run on an optical scan voting system, and the pre-determined vote count does not match the computer generated tabulation, then the bi-partisan team shall document the problem and compare the unique ballot script pattern with the test deck pattern to ensure that the test deck was made correctly and that all ballots were run. Any corrections to the test deck itself, or to the casting of the test deck, shall be made and the test deck shall be re-run until two error-free test results are produced, pursuant to section 6210.2(c)(l) of this Part.

(3) If the test deck and voting system fail to produce two consecutive error-free results, the system shall not be used until such time as the problem is resolved in a manner consistent with vendor documentation and State Board procedure.

(f) For DRE systems, the paper audit trail records with the accumulation report shall be signed by the testing team, then bound and placed in secure storage. For optical scan voting systems, the results report shall be signed by the bi-partisan team, and placed in secure storage. After all voting systems upon which a particular ballot configuration is valid have been tested, the test deck shall be stored with all corresponding reports, audit trails, log sheets and system logs required to be produced and reviewed pursuant to paragraph (e)(3) of this section.

(g) For central count paper-based systems, after entering all election ballot codes and creating header cards, if required by the software, the following verification procedures shall be performed:

(1) Place one ballot from the appropriate ballot configuration behind each header card.

(2) Process the complete set of header cards containing the single ballots against the absentee counting system and ballot counting program.

(3) If the software rejects a header or ballot card, the cause of the error shall be ascertained and corrected.

(4) Re-process all cards which generated errors to verify correction.

(5) At the discretion of and mutual agreement of a county board's commissioners, a resolution may be adopted for a specific election, which may provide that ballots be canvassed manually, rather than by using the central count paper-based voting system. Such resolution shall be filed with the county board's official minutes, and notice of the resolution and decision shall be provided in writing, to the State Board and to all party chairs and candidates, whose names appear on the ballots to be counted manually. The county board shall give written notice, by first class mail, to the State Board and to all party chairs and candidates who are lawfully entitled to have their names appear on the ballots, of such resolution.

Section 6210.9. Vote tabulation.

(a) Preparation of ballots for tabulation by central count paper-based systems.

(1) Ballots shall be reviewed pursuant to the provisions of section 6210.13 of this Part, to determine if the ballot is machine-readable or if the ballot requires that it be manually counted, then recorded in the official canvass of the votes for the election.

(2) Ballots shall be assembled in separate batches by election district unless otherwise directed by the county board to preserve the secrecy of the ballot.

(i) Each batch shall be identified by a header card and at the end of all batches there shall be an end- or trailer- card, if required by the software. Header and trailer cards shall be visually distinct from ballots. Such distinction may be made, for example, by using a different color card stock, or different edge marking, or by other appropriate means.

(ii) The bi-partisan team of county board personnel shall place header cards, in order that the votes recorded on each ballot shall be attributed to the correct election district. When placing header cards, as each is placed by one person, the other person shall verify that the header card is the correct one for the batch of ballots which follows it and that it is correctly oriented in the batch.

(3) Ballots shall then be fed into the central count paper-based voting system. Following the counting of all ballots, a tabulation report shall be printed. Two back-up copies of the tabulation report shall be locked in secure storage.

(4) Where the number of ballots to be canvassed is small, the county board may provide for canvassing of the ballots by larger units of representation.

(b) Testing during ballot tabulation by central count paper-based systems. The system shall be so designed and constructed that, at the discretion of the county board, it shall be possible to halt the ballot tabulation at a point when a portion of the election districts have been counted, and run the test deck to demonstrate, as in the tests listed in section 6210.2 of this Part, the accuracy and dependability of the count without interrupting or affecting any official tabulation of results that may be on the equipment at that time.

(c) Testing following the machine tabulation of ballots by central count systems. Immediately following the machine tabulation of the ballots from all the election districts and the production of the county-wide totals of votes, the pre-count tests listed in section 6210.2 of this Part, shall be run so as to demonstrate the accuracy and dependability of the count.

Section 6210.10. Ballot accounting.

(a) Following the counting of all votes in an election, a full accounting of paper ballots shall be made, and shall be reported on a form to be provided by the State Board, which shall include:

(1) For each entire election and for each ballot configuration used in it, the number of paper ballots shall equal the sum of paper ballots issued to voters and paper ballots not issued to voters, returned but not sent for tabulation because the voter voted at the polls, ballots spoiled, and paper ballots not returned. In each category of ballots issued, the report shall specify how many, if any, and in what category any emergency or affidavit ballots were used.

(2) For each entire election and for each ballot configuration used in it, the number of paper ballots not issued to voters shall equal the sum of the number of paper ballots used for testing/sample purposes and paper ballots remaining unissued and unused.

(b) The ballot accounting report shall be attested to by the county board commissioners and shall be retained in accordance with Election Law section 3- 222.

Section 6210.11. Voting systems security.

County board election officials shall take all steps necessary to ensure that the voting systems and election processes entrusted to them are protected against errors, accidents and malicious or fraudulent manipulation, consistent with voting system security procedures developed by the State Board.

(a) The county board shall establish procedures and policies which protect the voting system facility itself, the voting systems stored therein, and servers and computer systems used therein. The county board shall also ensure that any security features or processes recommended by the vendor, such as virus protections, shall be implemented. The county board shall further provide within the facility, locked, secure storage for all ballots, system test materials, copies of software, copies of ballot programming, programming devices, memory devices, disability access devices, voting system keys, key cards, and all ancillary devices or voting system components and materials.

(b) County boards shall adopt security procedures which restrict and document all access to voting systems, computer systems, software, firmware, system components, programming, test materials and any other ballot creation, counting or other system components. All programming, maintenance testing, pre-qualification and post-election testing and canvassing/recanvassing, shall be conducted by bi-partisan teams and be performed in secure, restricted-access space, and logs shall be maintained indicating task/staff assignments, time in and out, security password change dates and other such pertinent data.

(c) Internal security procedures shall require the frequent changing of passwords at established intervals, including prior to setup for use in any election.

(1) If at any time the county board discovers that any password has been lost, shared or otherwise compromised, all passwords shall be changed.

(2) If persons with administrative passwords are assisting in the performance of election tasks not related to the administration of the voting system, they shall perform such work using their staff password, and not their administrative password.

(d) The county board shall maintain a log, in a manner prescribed by the State Board, which clearly tracks a chain of custody for each voting system.

(1) A log shall be maintained for each voting system, identifying the placement of and serial number on each tamper-evident seal used to secure the voting system and its devices while in the custody of the county board, used to secure the device for delivery to poll sites, and for the securing and return of same, after the close of polls.

(i) At any stage of the administration, programming or conduct of an election, if a tamper-evident seal is found to have been compromised, or if serial numbers as logged do not match those on the device, the matter shall be immediately documented and investigated.

(ii) The county board shall adopt procedures which direct their actions in such investigations, and which identify methods for the resolution or amelioration of such breaches of security.

(2) A copy of county board security procedures and policies shall be filed with the State Board upon adoption.

(e) The voting system supporting software, the election management software (EMS) and the specific election configuration and ballot configuration for each election shall be maintained under control of the county board and placed in secure locked storage at all times when not in use. Master copies of all election configuration and ballot configuration shall be retained in secured locked storage as designated by the county commissioners and separate from the location of working copies, from the time of completion of pre-qualification demonstration testing and for as long after the election as required by law, these regulations, as ordered by a court, or as directed by the State Board.

(f) The county board shall enforce the provisions of the Election Law which relate to canvassing and recanvassing of votes cast in an election, as well as these regulations and directives of the State Board.

(g) The voting system and any computers or other peripheral devices shall be dedicated solely to election configuration, ballot configuration (layout) and vote counting functions, including tests listed in section 6210.2 of this Part pre-qualification and post-election testing. The system components used specifically for voting, such as any scanner, DRE or ballot marking device, shall not be capable of being networked: no modem, telecommunications nor wireless communications devices may be components of a voting system. Other components that are not physically or electronically connected to a scanner, DRE, ballot marking device or other component used specifically for voting may be configured as a closed network which cannot be connected to any other internal or external network. Such closed

network may be used for the preparation of ballot configuration (layout) and vote counting functions. Any EMS system configured as a closed network requires prior approval and testing by the State Board of Elections. No unapproved software or hardware may be installed or run at any time on any part of the voting system.

(h) Audit records shall be prepared for all phases of election configuration and ballot configuration using devices under the care, custody and control of the county board. Such audit records shall address the election configuration and ballot configuration phase, pre-qualification tests, and voting and ballot-counting operations. The voting system supporting software shall log and report audit data such that:

(1) Systems shall provide the capability to create and maintain a real-time audit record to record and provide the operator or election inspector with continuous updates on voting system status.

(2) All systems shall include a real-time clock as part of the system's hardware. The system shall maintain an absolute record of the time and date or a record relative to some event whose time and data are known and recorded.

(3) All audit record entries shall include the time-and-date stamp.

(4) The generation of audit record entries shall not be able to be terminated or altered by program control, hardware control or by the intervention of any person. The physical security and integrity of the record shall be maintained at all times.

(5) The system shall be capable of printing a copy of the audit record.

(6) Any and all reports produced by the printer shall be retained by the county board in accordance with Election Law and these regulations.

(i) All vote counting programs, including the voting system supporting software and the specific election configuration and ballot configuration coding for each election, shall be available for inspection by the State Board.

(j) The county board shall adopt a contingency plan, which addresses how an election shall be configured, tested, conducted, and tabulated, in the event of an unanticipated or unavoidable event. Such plan shall, at a minimum, identify an alternate site within the county, from which election management, administrative or canvassing tasks can be conducted, in the event their own facility is unavailable to them or otherwise compromised.

(k) Following voting and ballot accounting, the ballots as originally secured at the close of polls on Election Day, shall be reassembled, packaged, sealed and labeled.

(1) The county board shall develop a written plan for the retention and storage of the foregoing, and any other data processing materials related to the vote counting, and of all documentation of the election.

(2) All such ballots, materials and documents shall be placed in locked storage in a secure location and shall remain there until the expiration of the period for challenging elections and for as long as required by law, State Board regulations, or unless a court orders their release.

(l) Voting systems and election management systems shall be implemented such that the county board's voting system will only accept election configuration and ballot configuration from that board's election management system and an election management system will only accept results from that board's voting systems, unless two or more county boards enter into a mutually-acceptable written agreement to share election configuration and ballot configuration programming services. A copy of such written agreement shall be filed with the State Board.

Section 6210.12. Procedures.

The county board shall adopt written procedures to further implement those provisions of the Election Law, the State Board regulations and the United States Election Assistance Commission's 2005 Voluntary Voting System Guidelines and any conditions specified in the State Board's certification of the voting system for use in New York elections. Such procedures shall include, but not be limited to, ballot security, ballot distribution and counting, the challenge process and systems evaluation. Such procedures shall also include security provisions covering the physical protection of facilities, data and communications access control, internal procedural security, contingency plans, and standards for programming, acceptance testing, audit trails and documentation. The State Board shall develop guidelines for the development of security procedures. All procedures shall be submitted to and approved by the State Board prior to the first use of these systems in an election.

Section 6210.13. Standards for determining valid votes.

The State Board hereby adopts the following regulations to provide for uniform, non discriminatory standards for establishing what constitutes a vote and what shall be counted as a vote for all categories of voting systems and voting procedures used in New York.

The following standards shall apply in determining whether a ballot has been properly voted and whether a vote should be counted for any office or ballot question.

(a) The following general standards shall apply in the counting of all ballots and votes, regardless of the voting system used:

(1) A ballot that is marked or signed by the voter in such a way that it can be identified from other ballots must be voided and none of its votes counted. Examples of such markings include, but are not limited to: voter signature, initials, voter name and address, voter identification number, messages or

text, or unusual markings not related to indication of the vote choice for a contest. If there are distinctly identifiable markings on one page of a multiple-page ballot, the entire ballot must be voided.

(2) A vote for any candidate or ballot measure shall not be rejected solely because the voter failed to follow instructions for marking the ballot. If, for any reason, it is impossible to determine the choice of the voter for any candidate or ballot question, the vote for that candidate or ballot question shall be considered void.

(3) A mark is considered valid when it is clear that it represents the voter's choice and is the technique consistently used by the voter to indicate his or her selections. Such marks may include, but are not limited to, properly filled in voting position targets, cross mark **"X", a** checkmark **"X",** circles, completed open arrow"<--", or any other clear indication of the voter's choice.

(i) A mark crossed out by the voter, an erasure, or words such as no next to a candidate's name or a voting position target area for a ballot question shall not be considered to be a valid vote but will, instead, be deemed an indication that the voter did not choose to cast a vote for that candidate or measure and the vote for that candidate or proposition shall be considered void.

(4) In determining the validity of a partially filled-in voting position target area, the consistency of a voter's marks on the entire ballot shall be taken into consideration. A hesitation mark such as a dot in the voting position target area shall not be considered a valid mark unless it is demonstrated that the voter consistently marked his or her ballot in such a manner.

(5) Overvote. If a contest is marked with a greater number of choices of different candidates or ballot questions than the number for which he or she is lawfully entitled to vote, the vote shall not be counted for that contest, but shall be counted in all other contests in which there are no overvotes and the voter's choice can be clearly determined.

(6) Undervote. If a contest is marked with a lesser number of choices of candidates or ballot questions than the number for which he or she is lawfully entitled to vote, the votes cast for all otherwise properly marked candidates or ballot questions shall be counted.

(7) If a ballot is marked in each of two or more target areas or sensitive areas for a candidate whose name appears on the ballot more than once for the same office, and the total number of votes cast for such race for different candidates does not exceed the number for which he or she is lawfully entitled to vote, only the first vote for such candidate with multiple markings shall be counted for such candidate.

(8) Ballots that are damaged, torn by the Board of Elections or its agents, or otherwise non-machine processable as submitted by the voter, shall be manually counted by a bipartisan team of election inspectors and such vote totals shall be added to the canvass of such other valid ballots for the respective office(s) and ballot questions.

(9) Unintended machine marks placed on a ballot by the voting system that are not made at the direction of the voter shall not invalidate the ballot.

(10) If two or more persons are to be nominated or elected to the same office or position, a voter may vote for one or more persons whose names do appear on the ballot and one or more persons whose names do not appear on the ballot, provided that the total number of votes cast by the voter for that office or position does not exceed the number of persons to be elected or nominated to such office or position.

(11) Abandoned ballot.

(i) If a voter leaves the voting machine or system without casting their ballot, a bipartisan team of election inspectors shall cause the ballot to be cast as the voter left it, without examining the ballot.

(ii) If a voter leaves their paper ballot in a privacy booth and leaves the polling place without first casting that ballot on the voting device, such ballot shall be marked spoiled and retained by the election inspectors, accounted for in the statement of canvass, and returned in secure storage with such other spoiled ballots to the county board.

(12) Write-in votes are votes cast for a person or persons whose name(s) do not appear on the official ballot.

(i) Write-in votes for persons who names appear on the official ballot for that office or party position shall not be counted.

(ii) A write-in vote may be cast by the use of a name stamp.

(iii) A write-in vote must be cast in the appropriate place on the machine, or it shall be void and not counted.

(iv) A voter need not write in the first and last name of a candidate in every situation; the standard is whether the election inspectors can reasonably determine the intent of the voter when they cast their ballot.

(13) If a ballot is received that is a Federal write-in absentee ballot (pursuant to 42 USC section 1973ff-2), the county board shall canvass the ballot as follows:

(i) If the overseas voter designated a candidate by writing in the name of the candidate or writing in the name of a political party, the vote is counted for the candidate of that party.

(ii) If the overseas voter wrote in only the last name of a candidate whose name appears on the ballot, the vote is counted for that candidate.

(iii) If the voter wrote in the name of only a candidate for president or only a candidate for vice-president whose name appears on the ballot, the vote is counted for the electors of that candidate. The name is entered into the canvass as the official ballot name of the presidential candidate.

(iv) Abbreviations, misspellings or other minor variations in the form of the name of a candidate or political party shall be disregarded if the intention of the voter can be ascertained. The name is entered into the canvass so that its spelling matches the spelling of the candidate's official ballot name. If it is impossible to determine the voter's choice of a candidate or candidates for an office upon the official ballot, such vote shall not be counted, but shall be returned as a blank vote.

Section 6210.14. Standards for determining valid votes on direct recording electronic (DRE) equipment.

(a) A vote cast on a DRE voting device shall be the choice made by a voter, not to exceed the maximum allowable votes per race or question than the number for which the voter is eligible to vote, by pressing the appropriate sensitive area, or using an approved accessibility device to cast a vote on the DRE voting device in a manner to cause an "X", highlight or similar designation to display in the voting target position of the name of the candidate or ballot question for which the voter desires to vote, followed by the voter activating the cast vote indicator.

(b) To select a candidate or vote on a ballot question, the voter shall:

(1) press the appropriate sensitive area on the touch-screen, press the button, target area, or use an approved accessibility device to choose a candidate or vote on a ballot question for which the voter desires to vote;

(2) type on the touch-screen, or use the scrolling device to select on the screen, the letters for the name of a write-in candidate in accordance with the instructions for voting on the DRE voting system and press the appropriate place on the touch-screen or press the button to record the write-in vote in the designated write-in space;

(3) press the appropriate place on the official ballot to designate a write-in candidate and write the name of a candidate on the paper provided in the write-in candidate window; or

(4) use an approved accessibility device on an accessible voting unit to signify the voter's selection of a particular candidate or to vote on a ballot question for which the voter desires to vote.

(c) To verify selections the county board shall allow the voter in a private and independent manner to review and verify the votes selected by the voter on the ballot before the ballot is cast and counted, including the opportunity to change the ballot or correct any error before the ballot is cast and counted, including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct the error.

(d) To cast a ballot, the voter shall:

(1) press the place on the touch-screen or press the button to activate the cast ballot indicator; or

(2) use an approved accessibility device for the accessible voting unit to signify the voter's desire to cast the ballot.

Section 6210.15. Standards for determining valid votes on optical scan voting systems and/or paper ballots.

(a) Standards indicating a valid vote. A vote cast on a paper ballot shall be the choice made by a voter, not to exceed the maximum allowable votes per race or question than the number for which the voter is eligible to vote, by: (the examples below in this section apply to all types of voting position target areas on ballots, regardless of what form they may take e.g. rectangle, oval, circle, square, open arrow):

(1) voter indicates vote choice by consistently filling inside the entire voting position target;

(2) voter indicates choice by consistently filling in less than the entire voting position target for all vote choices on the ballot and the ballot is processed in a manner consistent with the use procedures provided and approved for the voting system;

(3) voter indicates vote choice by consistently placing a distinctive mark, such as properly filled in voting position targets, a cross mark "X", a checkmark "X", a circle, or complete an open arrow "<--" inside the associated voting position target area for a candidate choice or ballot question;

(4) voter marks vote choices by circling the entire voting position target area for a candidate or ballot question;

(5) voter writes in or stamps the name of a candidate in the designated write-in space for that race, even if the write-in square, oval or arrow is not marked;

(6) a write-in vote in addition to a vote for another candidate for the office, with a greater number of choices of different candidates than the number for which he or she is lawfully entitled to vote, the vote shall not be counted for that contest, but shall be counted in all other contests in which there are not overvotes and the voter's choices can be clearly determined;

(7) any ballot which has any other mark or marks in the target area or sensitive area including circling the target area and/or candidate's name or making a mark through the target area, provided that the votes do not exceed the maximum allowable votes per race or question than the number for which the voter is eligible to vote, shall be counted as a vote for such candidate(s) or ballot question(s);

(8) any ballot which has a mark or marks in the target area or sensitive area for one candidate, which extended partially into one or more other target areas or sensitive areas, shall be counted as a vote for the candidate so marked only if it is readily apparent that at least 3/4th of the mark is in that candidate's area or target area, and no other candidate is similarly marked;

(9) any ballot which has a mark that is clearly next to (either before or after) a candidate's name, or across the name, shall be recognized as a mark and shall be counted as a vote for the candidate or question so marked; or

(10) writings or remarks which appear to be ranking the candidates (e.g. letters, numbers <f::=/-) shall not be considered valid marks unless the number of such marks does not exceed the maximum allowable votes per race than the number for which the voter is eligible to vote.

(b) Standards indicating an invalid vote. A voter's choice shall be considered an invalid vote, if the:

(1) Voter uses random markings and there is no distinctive .and consistent voting pattern to clearly indicate voter choice(s).

(2) A mark that is between or across more than one candidate's name, target areas or sensitive areas shall not be recognized as a mark and no vote shall becounted.

(c) Whenever paper ballots are to be counted manually, the county board of elections shall use the accompanying "Ballots Examples for Counting Paper Ballots" as guidance for such counts.

Section 6210.17. Standards for determining valid votes on lever type voting machine.

A vote cast on a lever-type voting machine, as specified by the legally valid ballot instructions, shall be the choice made by a voter, not to exceed the maximum allowable votes per race or question than the number for which the voter is eligible to vote, by either operating the lever adjacent to the name of the candidate or ballot question or by writing or stamping the name of a write-in candidate whose name does not otherwise appear on the ballot for that office, in or upon the proper receptacle or device provided, followed by the voter activating the cast vote mechanism.

Section 6210.18. Three-percent audit.

(a) As required by NYS Election Law, section 9-211, the Board of Elections or a bipartisan team appointed by such board shall manually count all votes of the voter verifiable paper audit trail (VVPAT) from no less than three percent of each type of voting machine or system used within the county, provided, however, that there shall be a manual count of at least one of each type of voting machine or system used therein for each public office and any questions or proposals appearing on the ballot. The conduct of such random audit shall be in a manner consistent with procedures prescribed by the State Board of Elections.

(b) The voting machines or systems to be audited to meet the county-wide minimum requirement set forth in subdivision (a) of this section shall be selected by lot through a transparent, random, manual process where all selections of machines or systems used in the county are equally probable. The voting

machines or systems to be audited to meet the requirements for a specific contest set forth in subdivision (a) of this section shall be selected by lot through a transparent, random, manual process where all selections of machines or systems used in the contest within each county are equally probable. The county boards shall adopt one of the random, manual selection methods prescribed by the State Board of Elections or such county board may submit for approval by the State Board a proposed alternative random, manual selection method. County board adoption of the prescribed random, manual selection method shall take place not later than 45 days after the purchase of a voting system and notice by the county board of the adoption of such random, manual selection method shall be filed with the State Board.

(1) As required by NYS Election Law, section 9-211, not less than five days prior to the time fixed for the random selection process, the Board of Elections shall send notice by first class mail to each candidate, political party and independent body entitled to have had watchers present at the polls in any election district in such board's jurisdiction and to the State Board. Such notice shall state the time and place fixed for such random selection process. Such random selection process shall not occur until after election day. Each candidate, political party or independent body entitled to appoint watchers to attend at a polling place shall be entitled to appoint such number of watchers to observe the random selection process and the subsequent audit.

(2) Such notice shall also announce the date, time, and location that the audit shall commence, information on the number of audit teams which will conduct such audit, and such other information that the county board deems necessary.

(3) The county board shall at a single session randomly select from all machines and systems used within the county in the election so that no further drawings are required if anomalies are encountered during the manual audit. The audit shall commence on the same day as the random, manual selection process.

(4) Prior to auditing the audit records, the county board shall distribute to those in attendance at the audit session, copies of the list showing the number of machines and systems needed to meet the audit requirement and the unofficial vote results per voting machine or system selected for audit.

(c) For each voting machine or system subject to be audited, the manual audit shall consist of a manual tabulation of the voter verifiable paper audit trail records and a comparison of such count, with respect to all candidates and any questions or proposals appearing on the ballot, with the electronic vote tabulation reported for such election district.

(1) A reconciliation report, on a form prescribed by the State Board of Elections, that reports and compares the manual and electronic vote tabulations for each audited candidate for each contest and any question or proposal from each machine or system subject to the audit by election district, including tallies of overvotes, undervotes, blank ballots, spoiled ballots and rejections recorded on the VVPAT, along with any discrepancies, shall be prepared by the board of elections or a bipartisan team appointed by such board and signed by such members of the audit team.

(2) Any discrepancies between the corresponding audit results and initial electronic vote counts shall be duly noted, along with a description of the actions taken by the county board of elections for resolution of discrepancies. The number and type of any damaged or missing paper records shall be duly noted.

(3) If any unresolved discrepancy is detected between the manual count described in this subdivision and the machine or system electronic count, even an unresolved discrepancy of a single vote, the manual count shall be conducted a second time on such machine or system to confirm the discrepancy.

(d) The reconciliation report required in subdivision (c) of this section shall be transmitted to the county board commissioners or their designees upon completion of the initial phase of the audit for determination on the expansion of the audit conducted pursuant to subdivisions (e) through (g) of this section.

(e) The county board shall aggregate the audit results reported pursuant to paragraph (c)(2) of this section that are applicable to any contests, questions or proposals. The aggregated results for each contest, question or proposal shall be used to determine whether further auditing is required as follows:

(1) For any contest, question or proposal, an expanded audit will be required if either or both of the following criteria apply to the aggregated audit results:

(i) any one or more discrepancies between the confirming manual counts described in paragraph (c)(3) of this section and the original machine or system electronic counts, which taken together, would alter the vote share of any candidate, question or proposal by 0.1 percent or more of the hand counted votes for respective contests, questions or proposals in the entire sample; or

(ii) if discrepancies of any amount are detected between the confirming manual count described in paragraph (c)(3) of this section and the original machine or system electronic count from at least 10 percent of the machines or systems initially audited then the board or bipartisan team appointed by such board shall manually count the votes recorded on all the voter verifiable paper audit trail records from no less than an additional five percent of each type of the same type of voting machine or system which contains any such discrepancy or discrepancies;

(iii) when determining whether discrepancies warrant expanding the audit, the percentage-based thresholds in this section shall be rounded down by truncating the decimal portion (with a minimum of one).

(f) A further expansion of the audit will be required if either or both of the following criteria apply to the audit results:

(1) For each contest, question or proposal, the county board shall aggregate the results from the initial audit as required in subdivision (a) of this section and the expanded five percent audit. If, such aggregated results of unresolved discrepancies satisfy the criteria in subparagraph (e)(I)(i) of this section, a further expansion of the audit will be required.

(2) For each contest, question or proposal, the county board shall take the results of the five percent expanded audit under subdivision (e) of this section, and, if such results of unresolved discrepancies satisfy the criteria in subparagraph (e)(I)(ii) of this section, a further expansion of the audit will be required.

(3) When an expanded audit is required for a contest pursuant to this section, each county board or bipartisan team appointed by such board shall manually count all voter verifiable paper audit trail records from no less than an additional 12 percent of each type of the same type of voting machine or system which contains any such discrepancy or discrepancies.

(4) When determining whether discrepancies warrant expanding the audit, all percentage-based thresholds in this section shall be rounded down by truncating the decimal portion (with a minimum of one).

(g) A further expansion of the audit will be required if either or both of the following criteria apply to the audit results:

(1) For each contest, question or proposal, the county board shall aggregate the results from the jnitial audit as required in subdivision (a) of this section and the expanded audit as required in subdivisions (e) and (f) of this section. If, such aggregated results of unresolved discrepancies satisfy the criteria in subparagraph (e)(I)(i) of this section, a further expansion of the audit will be required.

(2) For each contest, question or proposal, the county board shall take the results of the 12 percent expanded audit under subdivision (f) of this section, and, if such results of unresolved discrepancies satisfy the criteria in subparagraph (e)(I)(ii) of this section, a further expansion of the audit will be required.

(3) When an expanded audit is required for a contest pursuant to this section, each county board shall manually count all voter verifiable paper audit trail records from all the remaining unaudited machines and systems where the contest appeared on the ballot.

(4) When determining whether discrepancies warrant expanding the audit, all percentage-based thresholds in this section shall be rounded down by truncating the decimal portion (with a minimum of one).

(h) The standards set forth in subdivisions (a)-(g) of this section are not intended to describe the only circumstances for a partial or full manual count of the voter verifiable paper audit record, but instead are designed to set a uniform statewide standard under which such hand counts must be performed. The county boards of elections, as well as the courts, retain the authority to order manual counts of those records in whole or in part under such other and additional circumstances as they deem warranted. In doing so, they should take into consideration:

(1) whether the discrepancies were exclusively or predominantly found on one type of voting machine or system;

(2) the size of the discrepancies;

(3) the number of discrepancies;

(4) the percentage of machines or systems with discrepancies;

(5) the number and distribution of unusable voter-verified paper audit trail records as described in subdivision (j) of this section;

(6) the number of cancellations recorded on the voter-verified paper audit trail records reported pursuant to paragraph (c)(l) of this section; and

(7) whether, when projected to a full audit, the discrepancies detected (no matter how small) might alter the outcome of the contest, question or proposal result.

(i) If the audit officials are unable to reconcile the manual count with the electronic vote tabulation on a voting machine or system, then the Board of Elections shall conduct such further investigation of the discrepancies as may be necessary for the purpose of determining whether or not to certify the election results, expand the audit, or prohibit that voting machine or system's use in such jurisdiction.

(j) If a complete audit is conducted, the results of such audit shall be used by the canvassing board in making the statement of canvass and determinations of persons elected and propositions approved or rejected. The results of a partial audit shall not be used in lieu of voting machine or system tabulations, unless a voting machine or system is found to have failed to record votes in a manner indicating an operational failure. When such operational failure is found, the board of county canvassers shall use the voter verifiable audit records to determine the votes cast on such machine or system, provided such records were not also impaired by the operational failure of the voting machine or system. If the voter verified paper audit trail records in any machine or system selected for an audit are found to be unusable for an audit for any reason whatsoever, another machine or system used in the same contest shall be selected at random by the county board to replace the original machine or system in the audit sample. All such selections shall be made randomly in the presence of those observing the audit. The county board shall inquire in an effort to determine the reason the voter verified paper audit trail records were compromised and unusable and such inquiry shall begin as soon as practicable. The results of the inquiry shall be made public upon completion.

(k) Any anomaly in the manual audit shall be reported to and be on a form prescribed by the State Board and shall accompany the certified election results.

Section 6210.19. Minimum number of voting machines.

(a) The purpose of these determinations is to establish the minimum number of required voting machines and privacy booths needed for each polling place based upon the type of voting system and

the number of registered voters (excluding voters in inactive status) assigned to use that specific voting device in accordance with NYS Election Law, sections 7-200 and 7-203.

(b) Determinations by type of voting system.

(1) Direct recording electronic voting systems.

(i) There shall be at least one direct recording electronic voting device for every 550 registered voters (excluding voters in inactive status) at the polling place.

(2) Precinct based optical scan voting systems.

(i) There shall be at least one scanning device for every 4,000 registered voters (excluding voters in inactive status) .at the polling place.

(ii) Privacy booths:

(a) there shall be at least one privacy booth for every 300 registered voters (excluding voters in inactive status), except that in a general election for governor, or at elections at which electors for President of the United States are selected there shall be at least one privacy booth for every 250 registered voters (excluding voters in inactive status);

(b) at polling places that accommodate more than 6,000 registered voters (excluding voters in inactive status), there shall be one privacy booth for every 350 registered voters (excluding voters in inactive status) in a general election for governor, or at elections at which electors for President of the United States shall be selected; and one privacy booth for every 400 active voters in all other elections; and

(c) a sufficient number of the privacy booths must be accessible to voters with disabilities.

(c) Obligations of the county boards of elections.

(1) County boards shall deploy sufficient voting equipment, election workers and other resources so that voter waiting time at a poll site does not exceed 30 minutes. Each county board of elections may increase in a non-discriminatory manner, the number of voting devices used in any specific polling place.

(2) The inspectors in each election district shall record the number of persons using audio, tactile or pneumatic switch ballot devices. The county board of elections shall furnish additional voting machines equipped with audio, tactile or pneumatic switch ballot devices when it appears that the number of persons historically using such devices warrant additional devices.

(d) The State Board of Elections may authorize a reduction in the number of voting devices provided in these regulations upon application of a county board of elections which demonstrates that such a reduction will not create excessive waiting time by voters.

Maintenance Certification Form

PURPOSE:

This form shall certify to the New York State Board of Elections, the completion of each routine maintenance test and/or pre-qualification test. All documentation and/or test decks, and any test data including but not limited to copies of ballot programming used for required maintenance test shall be maintained in secure locked storage for two years after the election, pursuant to NYS Election Law Section§ 3-222.

Check the appropriate b9,x;for desii ditquaHerl

Maintenance Quarter	Routine Maintenance	Pre-Qualification Test
January 15 – April 15	☐	☐
April 16 – July 15	☐	☐
July 16 – September 15	☐	☐
September 16 – November 15	☐	☐

If a Pre-Qualification quarter is checked, provide the name and date of the election in the space provided below (e.g. General Election 11-3-2009).

County Name: _____

Commissioner Print Name	Commissioner Sign Name	Date
Commissioner Print Name	Commissioner Sign Name	Date

Test Deck Log

Date of Test:	
Name (Team Member)	Printed:
	Signature:
Role (Circle One)	Preformed Test/ Recorded Results
Name (Team Member)	Printed:
	Signature:
Role (Circle One)	Preformed Test/ Recorded Results
System Make	
System Model	
System Serial Number	
Test Performed	
Protective Counter Start	
Protective Counter Finish	
Test Result (Circle One)	PASS / FAIL

Dominion ImageCast Maintenance Checklist

Non-Election Quarter ☐ Pre-Qualification Standard ☐ Pre-Qualification Comprehensive ☐

County Name & Number

Date

Master Serial #

County Serial #

Poll Site Location
(Pre-Qualification Only)

Ballot Styles(s)
(Pre-Qualification Only)

		Non-Election ✔ if applicable		Dry Run ✔ if applicable		Run for Record ✔ if applicable
Security Seal Verification						
1	• CF Card Security Seal Intact					
2	• BMD Printer CF Card Security Seal Intact					
Inventory						
3	• Ballot Box Compartment Keys					
4	• Security Keys (iButtons)					
5	• ImageCast Precinct Ballot Coun er Keys					
6	• Compact Flash (CF) memory ca ds					
7	• Printer paper (loaded in scanner)					
8	• Privacy Sleeve					
9	**Verify the following BMD items if applicable – if not skip**					
10	• Plastic bag containing ATI, ATI connector cable, headset					
11	• Sip & Puff Device					
12	• ADA Paddle					
13	• Ink Cartridges					
Inspection						
14	• Inspect ImageCast Precinct unit for physical damage					
15	• Inspect the ballot box for physical damage & check that wheels rotate & lock					
16	• Inspect all items contained within the ballot box for damage					
17	• Inspect external power cord					
18	• Inspect all locks and verify that each one functions properly					
19	• Inspect the display screen physical damage – i.e. cracks, dents or scratches					
20	**Verify the following BMD items if applicable – if not skip**					
21	• Inspect UPS and verify cables					
22	• Inspect ballot printer unit for physical damage (dents, etc.)					
23	• Inspect monitor adjustable swivel arm for damage					

Inspection Continued
Describe Damage:

		Non-Election ✔ if applicable		Dry Run ✔ if applicable		Run for Record ✔ if applicable
Firmware Verification / Hash Check						
24	• Pass Firmware Verification					
Functional Verification						
25	• Insert Programmed CF Card with Ballot Definition(s)					
26	• Insert Blank Memory Card					
27	• Verify the display screen on the UPS to ensure it is in working order *(BMD ONLY)*					
28	• Once the unit has fully booted up, the Administration Menu will appear on the Operator Screen. Verify Screen					
29	• Verify that the green indicator light on the printer is flashing on and off *(BMD ONLY)*					
30	• Perform Complete System Diagnostics (follow prompts)					
31	• Print Diagnostics Report and place with log					
32	• Open Poll: press the "LONG" button to print a Zeros Tape					
33	• Inspect the printed tape and verify that the *master serial number* on the tape matches the serial number located on the optical scanner and the results are zero					
34	• Verify the public counter on the O erator Screen					
35	• Locate the software version number on the tape and record here:					
36	• Locate the protective counter number on the tape and record here:					
37	• Remove the printout and place with log					
38	• Unplug power cord and verify that the scanner continues to operate on battery power (lu scanner back in once verified)					
39	• Verify "Paper Return Button" functions properly (BMD ONLY)					
40	• Cast ballots based on type oftest:					
41	• *Maintenance Test Deck*					
42	• *Standard Test Deck*					
43	• *Comprehensive Test Deck*					
44	• Print close polls report (for each ED being tested)					
45	• Locate the protective counter number on the tape and record here:					
46	• Remove test deck ballots from ballot box					
47	• Verify vote totals					
48	• Verify battery is charged					

Dominion ImageCast Maintenance Checklist

		Non-Election		Dry Run		Run for Record
Functional Verification Continued		✔ if applicable		✔ if applicable		✔ if applicable
49	EMS Reporting (Optional)					
50	• Read results into EMS					
51	• Tally results					
52	• Verify vote totals correct (EMS & Close poll report tape)					
53	• Copy files for 24 month storage retention					
54	• Commissioners sign tabulation report					
Prepare Voting Systems for Storage / Shipment						
55	• Insert Programmed CF Card with Ballot Definition(s)					
56	• Insert Blank Memory Card					
57	• Re-zero CF Cards					
58	• Power down ImageCast					
59	• Confirm all com onents from *Inventory Section* are acked					
60	• Record Top OS Cover **(OS only system)**					
61	• Record CF Card Door Security Seal #1					
62	• Record CF Card Door Security Seal #2					
63	• Record Ballot Box Shield Gap Security Seal					
64	• Record OS BMD Access Door Security Seal					
65	• Record Thermal Printer Security Seal					
66	• Record Ballot Box Security Seal					
67	• Record Emergency Ballot Box Security Seal					
68	• Record BMD Printer CF Card Security Seal **(BMD/0S system)**					
69	• Record Security Pack Security Seal					
70	• Record Secure Ballot Storage Container Security Seal					

Official Signoff			
Tech Print Name		**Date**	
Tech Print Name		**Date**	

ES&S DS200 Maintenance Checklist

Non-Election Quarter _____ Pre-Qualification Standard _____ Pre-Qualification Comprehensive _____

County Name & Number _____ **Date** _____

Master Serial # _____ **County Serial #** _____

Poll Site Location (Pre-Qualification Only) _____ **Ballot Styles(s)** (Pre-Qualification Only) _____

		Non-Election ✔ if applicable	Dry Run ✔ if applicable	Run for Record ✔ if applicable
Security Seal Verification				
1	• Verify Security Seals			
Inventory				
2	• 1 Case & DS200 Optical Scanner			
3	• 1 Ballot Box			
4	• 1 Set of DS200 Scanner Keys (DS200, Ballot Box & Case)			
5	• 1 DS200 Power Cord			
6	• 1 Spool of3" thermal paper			
7	• 2 USB flash drives (Election Definition & Redundant)			
Inspection				
8	• Inspect power cord for damage			
9	• Inspect unit for signs of damage			
10	○ Case			
11	○ DS200			
12	○ Ballot box			
13	• Veri the followin com onents move ro erl			
14	○ DS200 Screen			
15	○ Printer door			
16	○ All locks with associated keys			
17	Ballot slot lock on ballot box			
18	• lace			
19	• Verify thermal printer paper is loaded			
20	• Verify Ink Stamp is in place			
21	• Verify contact image sensors are clean (scanner)			

Describe Damage:

CBOE

ES&S DS200 Maintenance Checklist

		Non-Election		Dry Run		Run for Record
Firmware Verification / Hash Check		✔ if applicable		✔ if applicable		✔ if applicable
22	• Pass Firmware Verification					
Functional Verification						
23	• Verify external battery charger indicator- **Green/ Flashing Amber/ Red**					
24	• Initialize DS200 for election configuration (EQC stick)					
25	• Insert 2 USB flash drives (Poll Media Stick & Redundant Stick)					
26	• Tum on scanner and load election definition					
27	• Verify information on the Configuration Report: o Date o Time o Precinct name o ED o Firmware version					
28	• Verify scanner is in "Admin Mode"					
29	• Perform Hardware Diagnostics					
30	• Verify System Setting o Calibrate scanner touch screen o Set date and time					
31	• Verify AC plug icon is present on the screen (upper right)					
32	• Unplug wall power adapter cord and verify that the scanner continues to operate while displaying the battery status icon (plug scanner back in once verified)					
33	• Open polls					
34	• Print the following tapes and verify: o Ballot Status Accounting Report • Date • Time • Firmware Version o Zero Totals Report • Date ▪ Time ▪ Candidate Names ▪ Vote Totals are Zero (0)					
35	• Record Protective Counter:					
36	• Cast ballots based on type oftest:					
37	• *Maintenance Test Deck*					
38	• *Standard Test Deck*					
39	• *Comprehensive Test Deck*					
40	• Close Polls					
41	• Print close polls report					
42	• Remove test deck ballots from ballot box					
43	• Verify vote totals					

ES&S DS200 Maintenance Checklist

		Non-Election ✔ if applicable		Dry Run ✔ if applicable		Run for Record ✔ if applicable
44	• Record Protective Counter					
45	• Verify four (4) USB ports are functioning					
46	• Verify battery is charged					
47	EMS Reporting (Optional)					
48	• Read results into EMS					
49	• Tally results					
50	• Verify vote totals correct (EMS & Close poll report tape)					
51	• Copy files for 24 month storage retention					
52	• Commissioners sign tabulation report					
Prepare Voting Systems for Storage / Shipment to Poll Site						
53	• Insert Programmed USB Stick with Ballot Definition(s)					
54	• Insert Blank USB Stick					
55	• Re-zero USB Sticks					
56	• Close Lid					
57	• Confirm all components from *Inventory Section* are packed					
	Ballot Box					
58	• Record External Top Lid Security Seal (Plastic #1)					
59	• Record Side Security Seals (Plastic #2A & #2B)					
60	• Record Hinged Access Door Security Seal (Plastic #3 / Steel #**1**)					
61	• Record Ballot Box Door Security Seal(s) (Plastic #4 / Steel #2A & #2B)					
62	• Record Emergency Ballot Box Security Seal (Plastic #5 / Steel #3)					
63	Optical Scanner					
64	• Record USE/Printer Compartment Security Seal (Steel **#1)**					
65	• Record USB - Election Definition Security Seal (Plastic **#1** / Steel #2)					
66	• Record USB - Redundant Memory Security Seal (Plastic #2 / Steel #3)					
67	Peripherals					
68	• Record Security Pack Security Seal #1					
69	• Record Secure Ballot Stor e Container Securi Seal #2					

Tech Print Name		**Date**	
Tech Print Name		**Date**	

ES&S AutoMARK Maintenance Checklist

Non-Election Quarter ☐ Pre-Qualification Standard ☐ Pre-Qualification Comprehensive ☐

County Name & Number _____ **Date** _____

Master Serial# _____ **County Serial #** _____

Poll Site Location (Pre-Qualification Only) _____ **Ballot Styles(s)** (Pre-Qualification Only) _____

		Non-Election ✔ if applicable		Dry Run ✔ if applicable		Run for Record ✔ if applicable
Security Seal Verification						
1	• Compact Flash (CF) Card Door Security Seal Intact					
2	• Printer Compartment USB Port Security Seal Intact					
Inventory						
3	• 2 CF Door Keys					
4	• 2 AutoMARK O eration Keys					
5	• 1 Compact Flash Card					
6	• 1 Ink Cartridge					
7	• 1 ADA Paddle					
8	• 1 Sip-n-puffDevices					
9	• 1 Headphones					
10	• 1 Power Cord					
11	• 1 Privacy Sleeve					
Inspection						
12	• Inspect unit for signs of damage					
13	• Verify all housing screws are securely in place					
14	• Verify the access door to the CF memory card is in place					
15	• Verify the rear access door is in lace					
16	• . Verify to and rear clean-out trays are installed					
17	• Verify the followin com onents mover ro erly:					
18	o Top cover latches					
19	o Top cover					
20	o LCD touch screen (up and down positions – viewing angles)					
21	o Pa er feed tray					
22	o All locks with associated keys					
23	• Inspect power cord for evidence of physical damage					

Inspection Continued								
Describe Damage:								
		Non-Election		**Dry Run**		**Run for Record**		
Firmware Verification / Hash Check		✔ if applicable		✔ if applicable		✔ if applicable		
24	• Pass Firmware Verification							
Functional Verification								
25	• Verify AutoMARK setup according to vendor documentation and training							
26	• Verify battery charger indicator lights up							
27	• Verify LED indicator is on							
28	• Verify AutoMARK powers up							
29	• Verify touch screen calibration							
30	• Verify setting date and time							
31	• Verify a er tray roller are in the correct orientation based on ballot size							
32	• Verify Test Ballot Print							
33	• Unplug power cord and verify that AutoMARK continues to operate on battery power (plug AutoMARK back in once verified)							
34	• Cast ballots based on type of test:							
35	• *Maintenance Test Deck*							
36	• *Standard Test Deck*							
37	• *Comprehensive Test Deck*							
38	• Verify Ballot Marking							
39	• Verify battery is charged							
40	• Power down AutoMARK							
41	• Copy files for 24 month storage retention							
Prepare Voting Systems for Storage / Shipment to Poll Site								
42	• Confirm all components from *Inventory Section* are packed							
43	• Record CF Card Door Security Seal							
44	• Record Printer Compartment – USB Port Security Seal							

Official Signoff			
Tech Print Name		**Date**	
Tech Print Name		**Date**	

ESS DS200 Security Seals/Tags

Election Date:____/____/20____

County

Town/City/AD

Election District

Voting Machine ID

Polls Open Report

Plastic Ballot Box and AutoMARK

Polls Close Report

Seal/Tag Location	County Board Installed Seal/Tag Number	Opening Seal/Tag Number	Inspector-Installed Daytime Replacement (if any) Seal/Tag Number	Poll Closed Seal/Tag Number
Plastic Ballot Box				
#1 External Top Lid				#1
#2A Side Seal Right				#2A
#2B Side Seal Left				#2B
#3 Hinged Access Door			#3	#3
#4 Ballot Box Door			#4	#4
#5 Emergency Ballot Box Door			#5	#5
Optical Scanner				
#1 USB - Election Definition				#1
#2 USB - Redundant Memory				#2
AutoMARK BMD				
#1 Compact Flash (CF) Card Door				#1
#2 Printer Compartment - USB Port				#2
Peripherals				
#1 Security Pack				#1
#2 Secure Ballot Storage Container				#2

Inspector Signature - at least two (2) - one from each party

Inspector Initial - at least two (2) - one from each party

Inspector Signature - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

ESS DS200 Security Seals/Tags

Election Date:___/___/20___

County

Town/City/AD

Election District

Voting Machine ID

Polls Open Report

Steel Ballot Box and AutoMARK

Polls Close Report

Seal/Tag Location	County Board Installed Seal/Tag Number	Opening Seal/Tag Number	Inspector-Installed Daytime Replacement (if any) Seal/Tag Number	Poll Closed Seal/Tag Number
Steel Ballot Box				
#1 Hinged Access Door				#1
#2A Ballot Box Door #1 Right			#2A	#2A
#2B Ballot Box Door #2 Left			#2B	#2B
#3 Emergency Ballot Box Door			#3	#3
Optical Scanner				
#1 USB / Printer Compartment			#1	#1
#2 USB - Election Definition				#2
#3 USB - Redundant Memory				#3
AutoMARK BMD				
#1 Compact Flash (CF) Card Door				#1
#2 Printer Compartment - USB Port				#2
Peripherals				
#1 Security Pack				#1
#2 Secure Ballot Storage Container				#2

Inspector Signature - at least two (2) - one from each party

Inspector Initial - at least two (2) - one from each party

Inspector Signature - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Dominion ImageCast BMD Security Seals/Tags

Election Date: ___/___/20__

County
Town/City/AD
Election District
Voting Machine ID:

Polls Open Report

Seal/Tag Location	County Board Installed Seal/Tag Number	Opening Seal/Tag Number	Inspector-Installed Daytime Replacement (if any) Seal/Tag Number
#1A CF Card Door #1			
#1B CF Card Door #2			
#2 Ballot Box Shield Gap			
#3 OS BMD Access Door			
#4 BMD Printer CF Card			
#5 Thermal Printer			#5
#6 Ballot Box			#6
#7 Emergency Ballot Box			
Peripherals			
#1 Security Pack			
#2 Secure Ballot Storage Container			

Inspector Signature - at least two (2) - one from each party

Inspector Initial - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Polls Close Report

	Poll Closed Seal/Tag Number
#1A	
#1B	
#2	
#3	
#4	
#5	
#6	
#7	
#1	
#2	

Inspector Signature - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Dominion ImageCast OS Security Seals/Tags

Election Date: ___/___/20__

County
Town/City/AD
Election District
Voting Machine ID:

Polls Open Report

Seal/Tag Location	County Board Installed Seal/Tag Number	Opening Seal/Tag Number	Inspector- Installed Daytime Replacement (if any) Seal/Tag Number
#1 Top OS Cover			
#2A CF Card Door #1			
#2B CF Card Door #2			
#3 Ballot Box Shield Gap			
#4 OS BMD Access Door			
#5 Thermal Printer			#5
#6 Ballot Box			#6
#7 Emergency Ballot Box			
Peripherals			
#1 Security Pack			
#2 Secure Ballot Storage Container			

Inspector Signature - at least two (2) - one from each party

Inspector Initial - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

Polls Close Report

	Poll Closed Seal/Tag Number
#1	
#2A	
#2B	
#3	
#4	
#5	
#6	
#7	
#1	
#2	

Inspector Signature - at least two (2) - one from each party

Print Name (a) Date Signature (a)

Print Name (b) Date Signature (b)

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

New York State

Board of Elections

TEST DECK PROCEDURE

APPENDIX 2

1. INTRODUCTION

1.1 Background:

The New York State Board of Elections (NYSBOE) and its' Independent Testing Authority (ITA) have conducted comprehensive tests according to New York State Election Law, New York State Regulations and the 2005 Voluntary Voting System Guidelines (VVSG). A voting system must pass all requirements set forth by New York State to become certified for use within the State. During the certification process, a hash code is generated from the final software build that will identify the certified software version. When the voting systems are being prepared for use in elections, the first test conducted on each voting system will be the software verification test (hash check). A hash code will be generated on each voting system being tested using the software verification procedure provided by the voting system vendor. The voting system software will be checked against the hash code value that was generated during the final software build. These two values must be identical or the voting system will fail the pre-qualification test. Any change to the software/firmware will result in a hash code value that is not the same as the hash code value that was generated during the final build.

Confirmed software verification demonstrates that the system in use is the same as the system that was certified by the NYSBOE and the logic and accuracy that was rigorously tested during certification testing is intact. The NYSBOE has designated specific sub-decks that must be created and verified, making up the test deck. Each sub-deck has a specific purpose in verifying the logic and accuracy of the voting system i.e. hardware and software. The number of ballots and votes needed to be run for the pre-qualification test, acceptance test or maintenance test is calculated per ballot style, pursuant to this procedure (described later in this document) may be modified by NYSBOE, based upon user experience, system functionality and other factors. The votes represented on each ballot within each sub-deck have been randomly selected during the test deck script creation. This random selection of votes used in the predefined sub-deck categories will help reduce the risk of 'voting predictability'.

The purpose of this guide is to provide county boards of elections with detailed instructions for preparing test decks. The preparation of test decks is a required part of pre-qualification testing performed prior to General and Primary elections, as well as for periodic maintenance testing, and acceptance testing.

The following guide presents an overview to electronic voting systems test deck preparation and implementation. This guide is based on best practices from throughout the election community. This guide provides a general overview on test deck definitions, test deck components, ballot logic, test deck validation and implementation.

This guide will outline the steps necessary to create a test deck for General and Primary elections. The test deck is divided into sub-decks. Each sub-deck section will be divided into an overview section which provides general information about what is being tested followed by detailed instruction steps for actually preparing a test deck.

2. TEST DECK OVERVIEW

2.1 Definitions

Test Deck means a pre-audited group of ballots prepared for each election. The ballots are voted with a pre-determined number of valid votes for each candidate, each write-in position, and each voting option on every proposal that appears on the ballot as certified by the county board. The deck includes one or more ballots that have been improperly voted, or which are voted in excess of the number allowed by law, and one or more ballots on which no votes are cast, in order to test the ability of the system to recognize and/or notify of an under or over-vote. It also includes one or more ballots on which two or more votes are cast for a candidate whose name appears on the ballot more than once for the same office in order to test the ability of the system to count only the first of such votes for the candidate. If there is more than one ballot style for an election, a separate test deck is created for each ballot style. (Subtitle V of Title 9 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Part 6209 Voting System Standards)

2.2 Theory

A test deck must be prepared in order to test the logic and accuracy of the voting system software to ensure that the tested results match a predetermined set of expected results. County Boards of Election (CBOE) are responsible for preparing and maintaining test decks for all elections over which they have jurisdiction. Each county board shall prepare a test deck to verify:

- voting system election configuration,
- ballot configuration,
- voting system will accurately cast votes, and
- voting system will accurately count votes within each individual ballot style.

A test deck is implemented by casting votes via a paper ballot. The test voting must account for the many types of scenarios that can occur during an election. These scenarios test the logic and accuracy of the voting system. The logic and accuracy testing of the voting system includes both the recording and tabulation functionality of the voting system to be tested. Once a test deck has been prepared for every ballot style, it should be verified by running the ballots against the appropriate election ballot software program. This verification is commonly called a 'dry run'. All errors should be corrected and the test deck rerun until all pre-determined vote totals by style are verified.

The ballots shall be voted with a pre-determined number of valid votes for each candidate, each write-in position, and each voting option on every proposal that appears on the ballot as certified by the county board in order to verify that the vote tabulating system is programmed to correctly count the ballots. The deck includes one or more ballots that are intended to fail, have been improperly voted, or which are voted in excess of the number allowed by law, and one or more ballots on which no votes are cast, in order to test the ability of the system to recognize and/or notify of an under- or over-vote. During a general election, the test deck shall include one or more ballots on which two or more votes are cast for a candidate whose name appears on the ballot more than once for the same office in order to test the ability of the system to count only the first of such votes for the candidate (cross endorsement).

2.3 Test Deck Implementation

Once a test deck has been validated, test decks are run by a bi-partisan team on each voting system for which that particular ballot style is valid. This phase of testing is called the 'run for record'. The bi-partisan team shall enter at least one ballot from each sub-deck using each feature intended to provide

voting system access for people with disabilities, and shall enter at least one ballot from each sub-deck using each language required to be presented to voters using the system. While one team member casts votes for the test, the other member shall monitor that votes are cast correctly.

The test shall be documented by the bi-partisan team, on a log to be prescribed by the State Board, and the team shall affix their signatures to the log. The bi-partisan team shall compare the accuracy of the results reported by the voting system to the expected results and determine if the machine passed or failed. Any discrepancies indicate a failure and must be investigated.

If a test deck is run and the pre-determined vote count does not compare to the computer-generated tabulation, the bi-partisan team shall document the problem, and then compare the unique ballot script pattern with the test deck pattern to ensure that the test deck was made correctly and that all ballots were run. Any corrections to the test deck itself, or to the casting of the test deck, shall be made and the test deck shall be re-run until two error-free test results are produced, pursuant to 6210.2 (C)(l) ofNYS Regulations.

If the test deck and voting system fail to produce two error-free results, the system shall not be used until such time as the problem is resolved.

The results report shall be signed by the bi-partisan team, and placed in secure storage. After all voting systems upon which a particular ballot style is valid have been tested, the test deck shall be stored with all corresponding reports, audit trails and log sheets.

2.4 Ballot Logic

Ballot logic shall be tested via electronic interfaces to establish how the voting system software verifies the votes. The test deck procedure shall:

- Validate the ability of the logic to register a vote for each candidate in each office and for combinations of candidates for multiple vote-for offices.
- Verify the proper operation of the public and protective counters.
- Verify the functionality of all electronic interfaces.
- Verify the functionality of all tactile interfaces.
- Validate the ability to cast votes through all switch closure interfaces including the pneumatic switch interface as required by statute.
- Verify the ability to independently operate the voter interfaces through the final step of casting a ballot without assistance.
- Validate via the ballot definition process how the ballot definition coding integrates with the audio ballot and testing shall be performed to verify the functionality of the feature.
- Validate the systems ability to provide audio voting through the audio voting feature.
- Verify that once the ballot is cast the system will confirm to the voter that the action has occurred and that the process of voting is complete.
- Verify that a system generates a record of votes cast.

2.5 Election Verification

Election verification is a manual process that every CBOE must perform before each election. All election configurations must be verified before the use of a test deck is initiated. One component of this verification process is comparing the ballot to the definitions that are set in the Election Management Software (EMS). A second component is the testing of every position on the ballot to ensure that marked ballots are being recognized by the voting system. Each ballot style will have a unique election

configuration associated with it that must been manually checked for accuracy. All ballot styles in every language must be verified to ensure:

- the proper audio is present, including alternate languages in those counties required to do so
- the correct art work is displayed
- that the ballots contain correct
    - offices to be elected
    - candidates
    - endorsements
    - ballot proposals, and
    - all political subdivisions reflect their correct respective offices, candidates and proposals.

2.5.1 Ballot Configuration

Ballot Configuration (Layout) means the positioning on and/or linkage within the ballot of all political party names and emblems, and names and emblems of all independent bodies, office titles, ballot proposals, and candidate names, and spaces for write-in candidates, in accordance with the requirements of the Election Law as to order and rotation.

2.5.2 Election Configuration

Election Configuration means the file or files created by the EMS but not limited to the following data used to program polling place and central count voting systems: definition of jurisdictional information (e.g., counties, local legislative, congressional or election districts), both electronic and paper ballot content and artwork (e.g., ballot text, voting positions), definition ofraces (e.g., elected offices, candidates, number to vote for, propositions, or other types that control voting in other races on the ballot, definition of voter groups (e.g., by party, absentee, non-absentee), ballot styles, linkage of candidates to their respective parties and races, linkage of races to their respective jurisdictions, linkage of ballot text to database labels to produce results reports, and allocation of trans-district vote tallies to their constituent districts for reporting purposes.

2.6 Creation of sub-decks

Once election configuration is complete, the next step is to determine the number of sub-decks needed for the comprehensive test deck. This is determined by the type of election being conducted: General Election vs. Primary Election. The following chart displays the types of comprehensive sub-decks needed for each election.

General Election	Primary Election
Election Verification Vote (Optical Scanner)	Election Verification Vote (Optical Scanner)
Pattern Vote (Optical Scanner)	Pattern Vote(Optical Scanner)
Cross Endorsement Vote (Optical Scanner)	Print Validation Ballot Ballot(BMD, 0 tical Scanner)
Print Validation Ballot (BMD, Optical Scanner)	Blank Ballot (Optical Scanner)
Blank Ballot (Optical Scanner)	Random Ballot (BMD)
Random Ballot (BMD)	

Note: At the option of the CBOE, randomly marked ballots may be part of any test deck. However, if any candidate requests additional ballots (maximum of 10) to be marked during the Run for Record, they must be added to the comprehensive test deck and ballot totals.

2.7 Test Deck Preparation Optical Scan

Prior to any election in which an optical scan voting system is to be utilized to electronically tabulate ballots, the following procedures are **mandatory.**

- A sufficient amount of extra paper ballots shall be ordered as test ballots for each ballot style required for the election.
- All ballots to be used as test ballots are required to have the word TEST printed or hand stamped on the face of each ballot.
- Each test memory card shall been labeled according to the test procedure being conducted

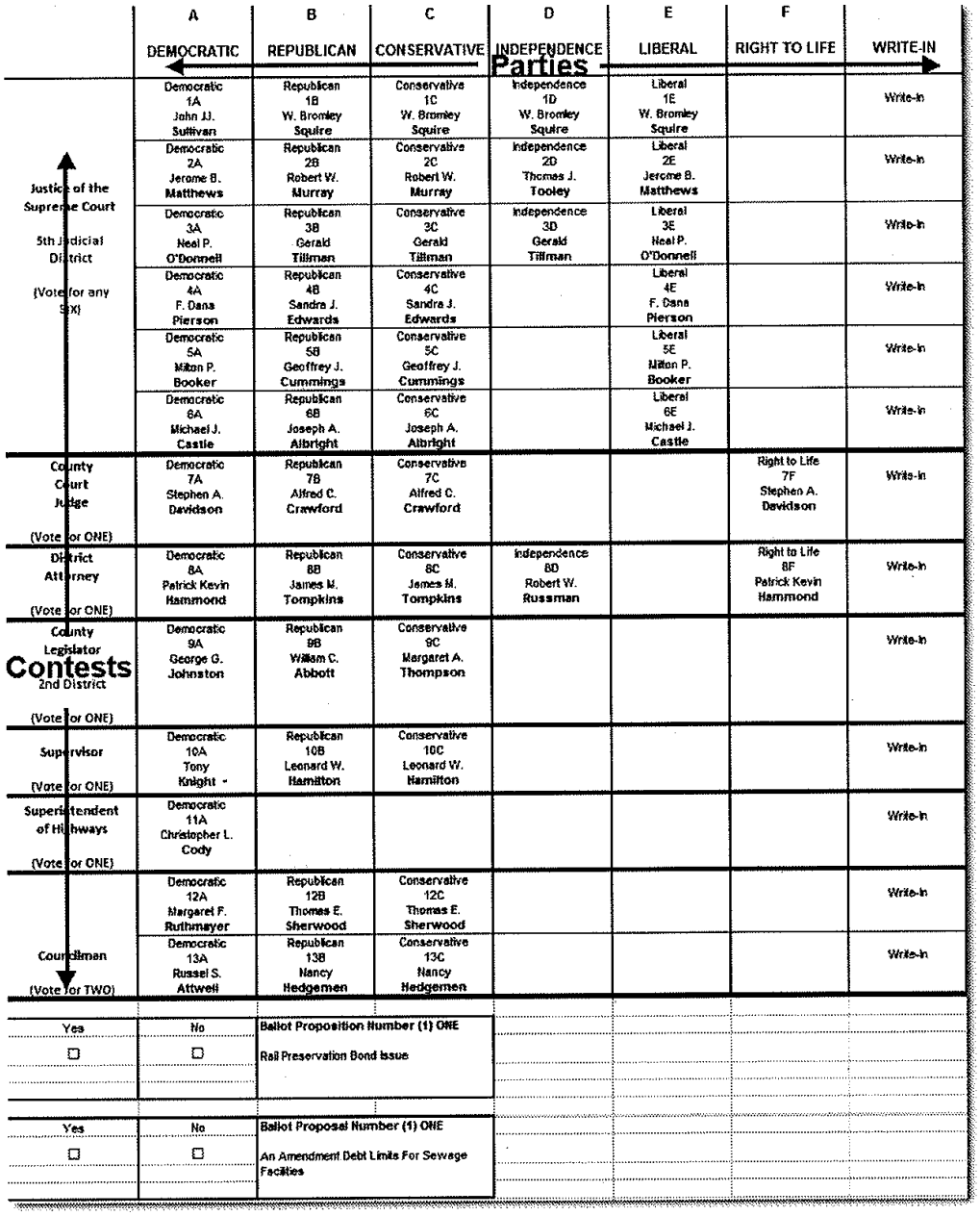
2.8 Ballot Orientation

The steps on how to create a test deck will work for both landscape and portrait style ballots. The examples in this procedure are based on landscape ballot orientation but the concepts will work for portrait style ballots. For landscape style ballots, the contests are listed across the top of the ballot with the parties listed down the left side, whereas the portrait style ballot has the parties listed across the top with the contests listed down the left side. Please see examples below.

Example #1 – Landscape

	Yes	No	Ballot Proposition Number (1) ONE Rail Preservation Bond Issue	Yes	No	Ballot Proposal Number (1) ONE An Amendment Debt Limits For Sewage Facilities						
	☐	☐		☐	☐							
	Contests											
	Justice of the Supreme Court 5th Judicial District (Vote for any SIX)						County Court Judge (Vote for ONE)	District Attorney (Vote for ONE)	County Legislator 2nd District (Vote for ONE)	Supervisor (Vote for ONE)	Super-intendent of Highways (Vote for ONE)	Councilman (Vote for any TWO)	
A DEMOCRATIC	Democratic 1A John JJ. Sullivan	Democratic 2A Jerome B. Matthews	Democratic 3A Neal P. O'Donnell	Democratic 4A F. Dana Pierson	Democratic 5A Milton P. Booker	Democratic 6A Michael J. Castle	Democratic 7A Stephen A. Davidson	Democratic 8A Patrick Kevin Hammond	Democratic 9A George G. Johnston	Democratic 10A Tony Knight	Democratic 11A Christopher L. Cody	Democratic 12A Margaret F. Ruthmayer	Democratic 13A Russel S. Attwell
B REPUBLICAN	Republican 1B W. Bromley Squire	Republican 2B Robert W. Murray	Republican 3B Gerald Tillman	Republican 4B Sandra J. Edwards	Republican 5B Geoffrey J. Cummings	Republican 6B Joseph A. Albright	Republican 7B Alfred C. Crawford	Republican 8B James M. Tompkins	Republican 9B William C. Abbott	Republican 10B Leonard W. Hamilton		Republican 12B Thomas E. Sherwood	Republican 13B Nancy Hedgemen
C CONSERVATIVE	Conservative 1C W. Bromley Squire	Conservative 2C Robert W. Murray	Conservative 3C Gerald Tillman	Conservative 4C Sandra J. Edwards	Conservative 5C Geoffrey J. Cummings	Conservative 6C Joseph A. Albright	Conservative 7C Alfred C. Crawford	Conservative 8C James M. Tompkins	Conservative 9C Margaret A. Thompson	Conservative 10C Leonard W. Hamilton		Conservative 12C Thomas E. Sherwood	Conservative 13C Nancy Hedgemen
D Parties INDEPENDENCE	Independence 1D W. Bromley Squire	Independence 2D Thomas J. Tooley	Independence 3D Gerald Tillman					Independence 8D Robert W. Russman					
E LIBERAL	Liberal 1E W. Bromley Squire	Liberal 2E Jerome B. Matthews	Liberal 3E Neal P. O'Donnell	Liberal 4E F. Dana Pierson	Liberal 5E Milton P. Booker	Liberal 6E Michael J. Castle							
F RIGHT TO LIFE							Right to Life 7F Stephen A. Davidson	Right to Life 8F Patrick Kevin Hammond					
WRITE-IN													

Example #2 – Portrait



	A DEMOCRATIC	B REPUBLICAN	C CONSERVATIVE	D INDEPENDENCE	E LIBERAL	F RIGHT TO LIFE	WRITE-IN
			Parties				
Justice of the Supreme Court 5th Judicial District (Vote for any SIX)	Democratic 1A John J. Sullivan	Republican 1B W. Bromley Squire	Conservative 1C W. Bromley Squire	Independence 1D W. Bromley Squire	Liberal 1E W. Bromley Squire		Write-In
	Democratic 2A Jerome B. Matthews	Republican 2B Robert W. Murray	Conservative 2C Robert W. Murray	Independence 2D Thomas J. Tooley	Liberal 2E Jerome B. Matthews		Write-In
	Democratic 3A Neal P. O'Donnell	Republican 3B Gerald Tillman	Conservative 3C Gerald Tillman	Independence 3D Gerald Tillman	Liberal 3E Neal P. O'Donnell		Write-In
	Democratic 4A F. Dana Pierson	Republican 4B Sandra J. Edwards	Conservative 4C Sandra J. Edwards		Liberal 4E F. Dana Pierson		Write-In
	Democratic 5A Milton P. Booker	Republican 5B Geoffrey J. Cummings	Conservative 5C Geoffrey J. Cummings		Liberal 5E Milton P. Booker		Write-In
	Democratic 6A Michael J. Castle	Republican 6B Joseph A. Albright	Conservative 6C Joseph A. Albright		Liberal 6E Michael J. Castle		Write-In
County Court Judge (Vote for ONE)	Democratic 7A Stephen A. Davidson	Republican 7B Alfred C. Crawford	Conservative 7C Alfred C. Crawford			Right to Life 7F Stephen A. Davidson	Write-In
District Attorney (Vote for ONE)	Democratic 8A Patrick Kevin Hammond	Republican 8B James M. Tompkins	Conservative 8C James M. Tompkins	Independence 8D Robert W. Russman		Right to Life 8F Patrick Kevin Hammond	Write-In
County Legislator 2nd District (Vote for ONE)	Democratic 9A George G. Johnston	Republican 9B William C. Abbott	Conservative 9C Margaret A. Thompson				Write-In
Supervisor (Vote for ONE)	Democratic 10A Tony Knight	Republican 10B Leonard W. Hamilton	Conservative 10C Leonard W. Hamilton				Write-In
Superintendent of Highways (Vote for ONE)	Democratic 11A Christopher L. Cody						Write-In
Councilman (Vote for TWO)	Democratic 12A Margaret F. Ruthmayer	Republican 12B Thomas E. Sherwood	Conservative 12C Thomas E. Sherwood				Write-In
	Democratic 13A Russel S. Attwell	Republican 13B Nancy Hedgemen	Conservative 13C Nancy Hedgemen				Write-In

Yes	No	Ballot Proposition Number (1) ONE
☐	☐	Rail Preservation Bond Issue

Yes	No	Ballot Proposal Number (1) ONE
☐	☐	An Amendment Debt Limits For Sewage Facilities

3. RE-QUALIFICATION GENERAL ELECTION TEST DECK-COMPREHENSIVE

For each Ballot Configuration (Ballot Style) programmed for the election, a comprehensive test deck must be created and run on at least **one** voting system that will use that ballot configuration (definition) in the election. For each Ballot Configuration (Ballot Style) programmed with more than one Election District(s) (EDs) for the election, a standard test deck must be created and run on every additional voting system that will use that definition. Marks in "Blue" represent marks (votes) on the ballot. Marks in "Yellow" represent additional marks to invoke cross endorsements and over-votes.

To determine the number of ballots required for each sub-deck, the CBOE may use the Manual Method or the General Election Ballot Calculator. Each method is described below in detail.

3.1 Election Verification Vote: Sub-deck One

3.1.1 Overview:

The Election Verification vote sub-deck is first to be created in the testing process. This sub-deck is used to **test every position on the ballot** to ensure that votes cast are being recognized by the optical scanner.

3.1.2 Manual Method - calculate the number of ballots needed for the election verification vote sub-deck

Step 1	Determine the number of rows on the ballot.
Step 2	Determine if propositions / proposals are present on the ballot (propositions / proposals are only present for General Elections). If propositions / proposals are present then they will be tested in the first two ballots of this sub-deck.
Step 3	The number of ballots required for this sub-deck is equal to the number of rows on the ballot.

3.1.3 Creating Test Deck Script: Election Verification Sub-deck

Step 1	Starting with the first row (Ballot 1), mark each valid selection in the row. If propositions/ proposals are present then mark 'Yes' for each one displayed on the ballot.
Step 2	Continuing with the second row (Ballot 2), mark each valid selection in the row. If propositions/ proposals are present then mark 'No' for each one displayed on the ballot.
Step 3	Continue with a new ballot for each row and mark each valid selection in the row until all rows have been completed.
Step 4	Tally the votes from each ballot once all ballots have been marked.

3.2 Pattern Vote: Sub-deck Two

3.2.1 Overview:

The pattern vote test deck shall be entered manually via prescribed State Board of Elections (SBOE) test format for each election (primary and general). Pattern voting will provide test results which net unique results for each candidate in a given race, demonstrating and proving the logic and accuracy of system software.

To test primary elections, the pattern test deck shall validate the means by which a desired party selection can be made by enabling a voter to cast a ballot containing votes for any and all candidates of his registered party, while preventing voting for a candidate of another party to which the voter is not entitled.

To test the general election, the pattern test deck shall validate the ability of a voter to select:

- any candidate for any office in the number allowed for the office;
- any proposition / proposal on the ballot.

Pattern test deck ballots will provide test results which will give unique results to every candidate in the race. Each vote-for-one race on all ballot styles will generate the following results: 1 vote for the first candidate, 2 votes for the second candidate, three votes for the third candidate, four votes for the fourth candidate, etc.

3.2.2 Manual Method- calculate the number of ballots needed for the pattern vote sub-deck

Formula **#1:** Ballots per row= the row number multiplied by number of candidates in the largest vote-for-any contest

Formula #2: Total number of ballots= the sum of all individual ballots per row

Step 1	Determine the largest vote-for-any contest for row one.
Step 2	Multiply the row number by the number of candidates in the largest vote-for-any contest in row one to determine the number of ballots for row one. (Note: If there are only vote-for-one contests for a given row then multiple the row by one to determine the number of ballots).
Step 3	Determine the largest vote-for-any contest for row two.
Step 4	Multiply the row number by the number of candidates in the largest vote-for-any contest in row two to determine the number of ballots for row two.
Step 5	Determine the largest vote-for-any contest for row three.
Step 6	Multiply the row number by the number of candidates in the largest vote-for-any contest in row three to determine the number of ballots for row three.
Step 7	Continue to determine the largest vote-for-any contest for the remaining rows on the ballot.

Step 8 Multiply the row number by the number of candidates in the largest vote-for-any contest for the remaining rows to determine the number of ballots for specific row.

Step 9 Add the number of ballots per row to calculate the total ballots required for the Pattern Test Deck.

3.2.3 Creating Test Deck Test Script: Pattern Vote Sub-deck

The pattern vote test script will be based on the number of ballots calculated in the above steps. Each row of the pattern test script has a designated number of ballots per row that must be completed for a comprehensive logic and accuracy test.

First Row, Column or Group Pattern

Vote this row, column or group one time for each candidate in the row, column, or group. The first row voting pattern per ballot will only be voted once. Each candidate in a multiple vote for contest will initiate a voting pattern that may cause the votes to be marked on additional rows within the contest.

Note: If propositions/proposals are present mark 'Yes' for each one on the first ballot and mark 'No' for each one on the second and third ballots of the pattern test deck.

Step 1 Starting with an individual ballot lot, take the first ballot and mark one vote for the first candidate in each of the vote-for-one contest in the first row. (If propositions / proposals are included on the ballot then mark one vote for each 'Yes' response).

Step 2 If you have contest(s) that require a vote for more than one, start with the first candidate in the multiple vote for contest(s) on the first ballot and vote the appropriate number to be elected.

Step 3 If you have a contest(s) from Step 2; start with the next candidate in the same row and vote one vote per candidate on a new ballot for the appropriate number to be elected. Voting pattern may cause the votes to be marked on additional rows within the contest. (If propositions / proposals are included on the ballot then mark one vote for each 'No' response on the second and third ballots of the test deck).

Step 4 Continue voting pattern from Step 3 until all candidates within a contest have initiated a voting pattern for their row.

Step 5 Each voting pattern per ballot will be repeated according to the candidate's row. For example, each voting pattern that starts in Row 3 will be repeated three (3) times in the test script before the next candidate will start their pattern.

Step 6 If you have multiple vote for contest(s), always start with the next candidate in the same row and vote one vote per candidate for the appropriate number to be elected. If there are not the appropriate number of candidates remaining to generate a valid vote, vote the allowable candidates in the row to the right of the candidate for the same contest.

Step 7 Tally the votes from each ballot once all ballots have been marked.

Example 1: **Vote-for-any six (two rows with six candidates per row)**
(vote-for-any-six contest the pattern vote would be as follows)

1st ballot - Row 1: candidates 1, 2, 3, 4, 5, 6 are voted.

2nd ballot- Row 1: candidates 2, 3, 4, 5, 6 are voted.
Row 2: candidate 7 is voted

3rd ballot - Row 1: candidates 3, 4, 5, 6 are voted.
Row 2: candidate 7, 8 are voted.

4th ballot - Row **1:** candidates 4, 5, 6 are voted.
Row 2: candidate 7, 8, 9 are voted.

5th ballot - Row 1: candidates 5, 6 are voted.
Row 2: candidate 7, 8, 9, 10 are voted.

6th ballot - Row 1: candidates 6 are voted.
Row 2: candidate 7, 8, 9, 10, 11 are voted.

This will complete the pattern vote for the first row, column or group.

Second Row, Column or Group Pattern
Vote this row, column or group pattern two (2) times for each candidate in the row, column or group. Take one ballot and give one vote to the second candidate in each of the vote-for-one contest. In the multiple vote-for contest start with the first candidate in the second row, column or group and vote the appropriate number to be elected, As an example, in a vote for any eleven contest the pattern vote would be as follows:

7th ballot - candidates 7, 8, 9, 10, 11, 12 are voted.
8th ballot - (same as 7th)

9th ballot- candidates 8, 9, 10, 11, 12 are voted.
10th ballot - (same as 9th)

11th ballot- candidates 9, 10, 11, 12 are voted.
12th ballot - (same as 11th)

13th ballot - candidates 10, 11, 12 are voted.
14th ballot- (same as 13th)

15th ballot - candidates 11, 12 are voted.
16th ballot- (same as 15th)

17th ballot - candidates 12 are voted.
18th ballot - (same as 17th)

This will complete the pattern vote for the second row, column or group.

This pattern voting by row, column or group continues through all rows, columns and groups of each ballot style until the last candidate in the last row or column of every contest has been voted. The number of ballots voted is an increment in conjunction with the row, column, and group starting that vote pattern i.e. in the vote-for-six contest with twelve candidates consisting of two groups; the twelfth candidate ends the test pattern for the contest with two ballots being voted for that candidate only.

3.3 Cross Endorsement Vote: Sub-deck Three

3.3.1 Overview:

Cross endorsement ballots are voted to ensure that instances where a candidate appears on more than one political party line for the same contest, a voter's vote for that candidate is not counted more than once. The cross endorsement vote will check several combinations associated with candidates appearing on multiple party lines. The result of this test pattern is that the first occurrence has been compared and voted for, along with the second occurrence of the candidate and so on.

On an Optical Scan system, the cross endorsement sub-deck is conducted to ensure that when more than one vote is marked for the same candidate, the system will recognize and count only one vote for that candidate at their highest party line endorsement. This same process can be repeated to compare the cross endorsed votes for all occurrences of the same candidate. The cross endorsement sub-deck will be checking the voter's selection at the candidate level. Note: Cross-endorsements do not apply to primary elections.

3.3.2 Manual Method - calculate the number of ballots needed for the cross endorsement vote sub-deck

Step 1 Determine if a candidate appears on one or more political party lines for the same contest (view each contest on the ballot).

Step 2 Starting with the first cross-endorsed candidate in **every contest,** vote the first occurrence and the second occurrence where the cross-endorsed candidate name appears (not to exceed the allowable for the contest).

Step 3 In a contest where a candidate has multiple cross endorsements (3 or 4) or more than one candidate is cross-endorsed, vote a separate ballot for each combination until all combinations have been exhausted.

Step 4 Tally the votes from each ballot once all ballots have been marked.

Cross Endorsement Calculation Chart

No. of Times Endorsed		No. of Ballots Needed
5	5-1=4	4+3+2+1=10
4	4-1=3	3+2+1=6
3	3-1=2	2 +l **=3**
2	2-1=1	**1**

3.4 Print Validation Ballot: Sub-deck Four

3.4.1 Overview:

The print validation ballot will be marked during the Pre-Qualification testing and setup of BMDs.

- It will verify that the scanner will recognize when a contest is over-voted.
- If will verify the scanners ability to read BMD marked ovals.

AutoMARK

Generate a fully marked ballot by selecting "Test Ballot Print" in test mode. Scan this fully marked ballot in the DS200. All contests should be reported as over-voted on the results tape. The inclusion of this ballot will serve as the over-vote test.

ImageCAST

Hand mark a ballot choosing every oval position and then scan this ballot. All contests should be reported as over-voted on the results tape. The inclusion of this ballot will serve as the over-vote test.

3.5 Blank Ballot: Sub-deck Five - Five (5) Ballots

- Verify the optical scanner recognizes the timing marks (correct ED)
- Verify the optical scanner displays the proper message to the voter (blank ballot therefore indicating an entirely under-voted ballot)
- Verify the vote tallies are not incremented in such circumstance
- Confirm that no stray marks are recognized by the voting system as votes

3.6 BMD Random Ballot: Sub-deck Six - Three (3) Ballots

3.6.1 Overview

The random vote sub-deck is conducted to demonstrate that random voting patterns made are recognized and marked as valid votes by the BMD.

Vote a ballot to verify:

- audio
- touch- screen, push-button, or other electronic mechanisms
- key pad and/or pneumatic switch for voters with disabilities
- alternate language displays
- over-votes
- under-votes
- cross endorsements

4. PRE-QUALIFICATION STANDARD TEST DECK- GENERAL ELECTION

4.1 Overview

For each Ballot Configuration (Ballot Style) programmed for the election, a comprehensive test deck must be created and run on at least **one** voting system that will use that ballot configuration (definition) in the election. For each Ballot Configuration (Ballot Style) programmed with more than one Election District(s) (EDs) for the election, **a standard test deck** must be created and run on every additional voting system that will use that definition. Marks in "Blue" represent marks (votes) on the ballot. Marks in "Yellow" represent additional marks to invoke cross endorsements and over-votes. The pre-qualification general election standard test deck is designed to ensure that:

- Ballot definition was coded correctly in the EMS
- Printed ballots from the print vendor can be read by the optical scanner and BMD
- Logic and accuracy are functioning
- All ADA devices are functioning
- Expected vote tallies equal tally results on the printed tapes

The standard test deck is composed of the following 3 ballots:

4.1.1 Ballot #1 - Blank ballot

- Verify the optical scanner recognizes the timing marks (correct ED)
- Verify the optical scanner displays the proper message to the voter (blank ballot therefore indicating an entirely under-voted ballot)
- Verify the vote tallies are not incremented in such circumstance
- Confirm that no stray marks are recognized by the voting system as votes

4.1.2 Ballot #2 - Vote as many scenarios on one ballot as possible

- Over-vote
- Under-vote
- Write-In
- Cross Endorsement,
- Proposition / Proposal

4.1.3 Ballot #3

Vote a ballot using the Ballot Marking Device (BMD) to verify:

- audio
- touch- screen, push-button, or other electronic mechanisms
- key pad and/or pneumatic switch for voters with disabilities
- alternate language displays
- over-votes
- under-votes
- cross endorsements

5. PRE-QUALIFICATION PRIMARY ELECTION TEST DECK-COMPREHENSIVE

For each Ballot Configuration (Ballot Style) programmed for the election, a comprehensive test deck must be created and run on at least **one** voting system that will use that ballot configuration (definition) in the election. For each Ballot Configuration (Ballot Style) programmed with more than one Election District(s) (EDs) for the election, a standard test deck must be created and run on every additional voting system that will use that definition. Marks in "Blue" represent marks (votes) on the ballot. Marks in "Yellow" represent additional marks (votes) to invoke cross endorsements and over-votes.

To determine the number of ballots required for each sub-deck, the CBOE may use the Manual Method or the Primary Election Ballot Calculator. Each method is described below in detail.

5.1 Election Verification Vote: Sub-deck One

5.1.1 Overview

The election verification vote sub-deck is first to be created in the testing process. This sub-deck is used to **test every position on the ballot** to ensure that votes cast are being recognized by the optical scanner.

5.1.2 Manual Method - calculate the number of ballots needed for the election verification vote sub-deck

Step 1 Determine the number of candidates per contest (be sure to include write-in positions).

Step 2 Divide the number of candidates by the number of allowable selections ("Vote for ... ") per contest to obtain a total for each contest. **Note:** If the calculation results in a decimal, round up to the next existing whole number i.e. 7.2 would equal 8.

Step 3 The number of ballots required for this sub-deck is equal to the contest with the largest total.

5.1.3 Creating Test Deck Script: Election Verification Sub-deck

Step 1 Mark the first valid selection(s) for each contest across the ballot (do not exceed the allowable).

Step 2 Continue with a new ballot (Ballot 2) and mark the next valid selection(s) for each contest across the ballot (do not exceed the allowable).

Step 3 Continue with a new ballot and mark the next valid selection(s) for each contest across the ballot (do not exceed the allowable) until all positions have been voted.

Step 4 Tally the votes from each ballot once all ballots have been marked.

5.2 Pattern Vote: Sub-deck Two

5.2.1 Overview:

The pattern test deck shall be entered manually via prescribed State Board of Elections (SBOE) test format for each election (primary and general). Pattern voting will provide test results which net unique results for each candidate in a given race, demonstrating and proving the logic and accuracy of system software.

To test primary elections, the pattern test deck shall validate the means by which a desired party selection can be made by enabling a voter to cast a ballot containing votes for any and all candidates of his registered party, while preventing voting for a candidate of another party to which the voter is not entitled.

Pattern test deck ballots will provide test results which will give unique results to every candidate in the race. Each vote-for-one race on all ballot styles will generate the following results: 1 vote for the first candidate, 2 votes for the second candidate, three votes for the third candidate, four votes for the fourth candidate, etc.

5.2.2 Manual Method - calculate the number of ballots needed for the pattern vote sub-deck

Step 1	Determine the contest that has the largest number of candidates (**do not include write-ins).**
Step 2	Add the number of candidates together to determine the number of ballots required of the sub-deck.
	Example: Councilman race has 5 candidates
	Number of ballots= 1 + 2 + 3 + 4 + 5 = 15 Ballots

5.2.3 Creating Test Deck Script: Pattern Vote Sub-deck

Step 1	Determine the "Vote for... " (allowable) for each contest
Step 2	First Ballot - Starting with the first candidate in each contest, mark the allowable per contest.
Step 3	Second Ballot - Starting with the second candidate in each contest, mark the allowable per contest (if applicable).
Step 4	Third Ballot - Repeat step 3
Step 5	Fourth Ballot - Starting with the third candidate in each contest, mark the allowable per contest (if applicable).
Step 6	Fifth Ballot - Repeat step 5
Step 7	Sixth Ballot - Repeat step 5

Step 8	Seventh Ballot - Starting with fourth candidate in each contest, mark the allowable per contest (if applicable).
Step 9	Continue pattern.
Step 10	Tally the votes from each ballot once all ballots have been marked.

5.3 Print Validation Ballot: Sub-deck Three

5.3.1 Overview:

The print validation ballot will be marked during the Pre-Qualification testing and setup of BMDs.

- It will verify that the scanner will recognize when a contest is over-voted.
- If will verify the scanners ability to read BMD marked ovals.

AutoMARK

Generate a fully marked ballot by selecting "Test Ballot Print" in test mode. Scan this fully marked ballot in the DS200. All contests should be reported as over-voted on the results tape. The inclusion of this ballot will serve as the over-vote test.

ImageCAST

Hand mark a ballot choosing every oval position and then scan this ballot. All contests should be reported as over-voted on the results tape. The inclusion of this ballot will serve as the over-vote test.

5.4 Blank Ballot: Sub-deck Four - Five (5) Ballots

- Verify the optical scanner recognizes the timing marks (correct ED)
- Verify the optical scanner displays the proper message to the voter (blank ballot therefore indicating an entirely under-voted ballot)
- Verify the vote tallies are not incremented in such circumstance
- Confirm that no stray marks are recognized by the voting system as votes

5.5 BMD Random Ballot: Sub-deck Five - Three (3) Ballots

5.5.1 Overview

The random vote sub-deck is conducted to demonstrate that random voting patterns made are recognized and marked as valid votes by the BMD.

Vote a ballot to verify:

- audio
- touch- screen, push-button, or other electronic mechanisms
- key pad and/or pneumatic switch for voters with disabilities
- alternate language displays
- over-votes
- under-votes

6. PRE-QUALIFICATION PRIMARY ELECTION TEST DECK- STANDARD

6.1 Overview

For each Ballot Con.figuration (Ballot Style) programmed for the election, a comprehensive test deck must be created and run on at least **one** voting system that will use that ballot configuration (definition) in the election. For each Ballot Configuration (Ballot Style) programmed with more than one Election District(s) (EDs) for the election, a standard test deck must be created and run on every additional voting system that will use that definition. Marks in "Blue" represent marks (votes) on the ballot. Marks in "Yellow" represent additional marks to invoke cross endorsements and over-votes. The pre-qualification primary election standard test deck is designed to ensure that:

- Ballot definition was coded correctly in the EMS
- Printed ballots from the print vendor can be read by the optical scanner and BMD
- Logic and Accuracy
- All ADA devices are functioning
- Expected vote tallies equal tally results on the printed tapes

6.2 Details

The standard test deck is composed of the following 3 ballots:

6.2.1 Ballot #1 - Blank ballot

- Verify the optical scanner recognizes the timing marks (correct ED)
- Verify the optical scanner displays the proper message to the voter (blank ballot therefore indicating an entirely under-voted ballot)
- Verify the vote tallies are not incremented in such circumstance
- Confirm that no stray marks are recognized by the voting system as votes

6.2.2 Ballot #2 - Vote as many scenarios on one ballot as possible:

- Over-vote
- Under-vote
- Write-In

6.2.3 Ballot #3 - Vote a ballot using the Ballot Marking Device (BMD) to verify:

- audio
- touch- screen, push-button, or other electronic mechanisms
- key pad and/or pneumatic switch for voters with disabilities
- alternate language displays
- over-votes
- under-votes

7. QUARTERLY MAINTENANCE TEST DECK

7.1 Overview

The quarterly maintenance test deck .ballot configuration (definition) will be provided to CBOE by SBOE if the CBOE doesn't have an available ballot configuration. The quarterly maintenance test deck is designed to ensure that:

- Ballot definition was coded correctly in the EMS
- Printed ballots from the print vendor can be read by the optical scanner and BMD
- Logic and accuracy is functioning
- All ADA devices are functioning
- Expected vote tallies equal tally results on the printed tapes

7.2 Details

The standard test deck is composed of the following 3 ballots:

7.2.1 Ballot #1 - Blank ballot

- Verify the optical scanner recognizes the timing marks (correct ED)
- Verify the optical scanner displays the proper message to the voter (blank ballot therefore indicating an entirely under-voted ballot)
- Verify the vote tallies are not incremented in such circumstance
- Confirm that no stray marks are recognized by the voting system as votes

7.2.2 Ballot #2 - Vote as many scenarios on one ballot as possible:

- Over-vote
- Under-vote
- Write-In
- Cross Endorsement
- Proposition / Proposal

7.2.3 Ballot #3 - Vote a ballot using the Ballot Marking Device (BMD) to verify:

- audio
- touch- screen, push-button, or other electronic mechanisms
- key pad and/or pneumatic switch for voters with disabilities
- alternate language displays
- over-votes
- under-votes
- cross endorsements

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

New York State

Board of Elections

Sample Ballots

APPENDIX 3

See Instructions on the Other Side

Vea las Instrucciones en el Otro Lado

選舉說明 詳見背頁

★

OFFICIAL BALLOT FOR THE DEMOCRATIC PRIMARY ELECTION

City of New York, County of Kings September 13, 2012

PAPELETA OFICIAL PARA LA ELECCIÓN PRIMARIA DEMOCRÁTICA

Ciudad de Nueva York, Condado de Kings 13 de Septiembre del 2012

民主黨初選 正式選票

紐約市國王郡, 2012 年 9 月 13 日

Candidates for nomination for Public Office / Candidatos para nominación de Cargo Público

Member of the Assembly / Miembro de la Asamblea / 州眾議員

3	Rhoda S. Jacobs
4	Rodneyse Bichotte
	Write-in / Candidato por Escrito / 寫入本列名候選人

Candidates for Party Positions / Candidatos para Posiciones de Partido / 黨內職務候選人

Member of the State Committee (Male) / Miembro del Comité Estatal (Masculino) / 州委員會男性代表

5	Edward Powell
6	Victor A. Jordan
7	Josue Pierre
8	Anthony Alexis
	Write-in / Candidato por Escrito / 寫入本列名候選人

Member of the State Committee (Female) / Miembro del Comité Estatal (Femenino) / 州委員會女性代表

9	Rodneyse Bichotte
10	Mary L. Hobson
	Write-in / Candidato por Escrito / 寫入本列名候選人

Candidates for Party Positions / Candidatos para Posiciones de Partido / 黨內職務候選人

Delegates to the Judicial Convention — Vote for any Eight / Delegados ante la Convención Judicial — Vote por cualquier ocho / 司法大會代表 請任選八名

11	Mary L. Hobson
	Chaim M. Deutsch
	Michele Adolphe
	Robert B. Manago
	Joseph Stamm
12	Emmanuel C. Vaughan
	Ernest M. Skinner
	Sam I. Marlow
	Rita C. Joseph
	Mable Robertson
	Pierre J. Gideon
	Jean Claude Francique
	Nichola Pierre-Hamilton
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人

Alternate Delegates to the Judicial Convention — Vote for any Eight / Delegados Alternos ante la Convención Judicial — Vote por cualquier ocho / 司法大會候補代表 請任選八名

13	Timothy Hobson
14	Lori S. Marlow
	Clarence Robertson
	Jackson B. Rockmotter
	Melida I. Mason
	Philomena B. Nimley
	Edgar F. Lafond
	Janie Saxon
	Zayna O. Young
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人
	Write-in / Candidato por Escrito / 寫入本列名候選人

選舉說明 詳見背頁

Vea las Instrucciones en el Otro Lado

See Instructions on the Other Side

Style: 0008

Board of Elections - City of New York
COUNTY OF KINGS
Democratic
Primary Election - September 13, 2012

OFFICIAL BALLOTS

☐ BMD AFFIDAVIT ☐ VOID

No.

初選說明

(1) 僅可使用選舉局提供的書寫工具填寫。

(2) 要投票給一位名字在此選票上的候選人，請塗滿候選人名字上面或旁邊的橢圓。

(3) 要投票給一位名字不在此選票上的候選人，請在該職位所有候選人名字底部寫有"寫入未列名候選人"的空白處寫入其名字或蓋上其印章，並塗滿相鄰應的橢圓。

(4) 任何在投選用方塊或空間以外所做的記號、筆跡、或塗擦將會使整張選票作廢。

(5) 請勿超選。如果您所投選的候選人人數超過了該職位的空缺，則您所投選的這個公職或黨內職務失效。

(6) 如果您撕破、毀損或錯誤地填寫了選票，請退還該選票並重新經取一份。請勿試圖以塗改或對摺的方式更正。塗擦或對摺將致使您的選票全部或部分失效。在呈交選票之前，如果您在填寫選票過程中出錯或希望改變您的選擇，您可以獲取並填寫一份新的選票。您有權以交還原有選票來獲取一份新的選票。

(7) 填寫完您的選票之後，插入選票掃描機並等待您的選票被成功掃描的信息。如果沒有此信息出現，請尋求選舉監察員的幫助。

INSTRUCCIONES PARA LA ELECCIÓN PRIMARIA

(1) Marque solamente con un instrumento de escritura proporcionado por la Junta de Elecciones.

(2) Para votar por un candidato(a) cuyo nombre aparece en esta papeleta, llene el óvalo encima o al lado del nombre del candidato(a).

(3) Para votar por una persona cuyo nombre no aparece en esta papeleta, escriba o estampe el nombre en el espacio designado "Candidato por Escrito", que aparece debajo de los nombres de los candidatos para tal cargo público, y llene el óvalo correspondiente con el espacio en cual ha escrito un nombre.

(4) Cualquier otra marca, escritura, o borradura hecha en esta papeleta fuera de las casillas de votación o espacios en blanco proporcionados para votar anulará esta papeleta por completo.

(5) No vote de más. Si selecciona un mayor número de candidatos del número de posiciones por cubrir, su papeleta será anulada para ese cargo público o posición de partido.

(6) Si usted rompe, desfigura, o marca incorrectamente esta papeleta, devuélvala y obtenga otra. No intente corregir errores en la papeleta haciendo borraduras o rayadas. Borraduras o rayadas pueden invalidar toda o parte de su papeleta. Antes de entregar su papeleta, si usted hace un error completando la papeleta o si desea cambiar sus selecciones, usted puede obtener y completar una papeleta nueva. Tiene el derecho a una papeleta de reemplazo si devolver la papeleta original.

(7) Después de haber completado su papeleta, insertala en la máquina de escaneo y espere por el aviso que su papeleta ha sido escaneada con éxito. Si no aparece tal aviso, solicite la asistencia de un inspector electoral.

PRIMARY ELECTION INSTRUCTIONS

(1) Mark only with a writing instrument provided by the Board of Elections.

(2) To vote for a candidate whose name is printed on this ballot fill in the oval above or next to the name of the candidate.

(3) To vote for a person whose name is not printed on this ballot write or stamp his or her name in the space labeled "Write-in" that appears at the bottom of the candidates names for such office and fill in the oval corresponding with the write-in space in which you have written in a name.

(4) Any other mark or writing, or any erasure made on this ballot outside the voting squares or blank spaces provided for voting will void this entire ballot.

(5) Do not overvote. If you select a greater number of candidates than there are vacancies to be filled, your ballot will be void for that public office or party position.

(6) If you tear, or deface, or wrongly mark this ballot, return it and obtain another. Do not attempt to correct mistakes on the ballot by making erasures or cross outs. Erasures or cross outs may invalidate all or part of your ballot. Prior to submitting your ballot, if you make a mistake in completing the ballot or wish to change your ballot choices, you may obtain and complete a new ballot. You have a right to a replacement ballot upon return of the original ballot.

(7) After completing your ballot, insert it into the ballot scanner and wait for the notice that your ballot has been successfully scanned. If no such notice appears, seek the assistance of an election inspector.

Affidavit Stamp Here

OFFICIAL BALLOT

FOR THE
DEMOCRATIC
PRIMARY ELECTION

SEPTEMBER 13, 2012

CITY OF NEW YORK
COUNTY OF KINGS

Style: 0008
42nd Assembly District
E.D.s: 3, 16, 26, 28, 44, 57, 69

OFFICE	1 2 3 MEMBER OF ASSEMBLY 137th District (Vote for any ONE)			4 5 MEMBER OF STATE COMMITTEE 137th District (Male) (Vote for any ONE)		6 7 8 9 10 11 12 MEMBER OF COUNTY COMMITTEE LD 21 ED 19 (Vote for any FOUR different candidates even if in same column)						
Democratic A ★	Democratic 1A ○ David F **Gantt**	Democratic 2A ○ Jose A **Cruz**	Democratic 3A ○ John F **Lightfoot**	Democratic 4A ○ David F **Gantt**	Democratic 5A ○ Jose A **Cruz**	Democratic 6A ○ Courtney K **Lattimore**	Democratic 7A ○ Tonya N **Dickerson**	Democratic 8A ○ Jennifer M **Schaeffer**	Democratic 9A ○ India L **Washington**	Democratic 10A ○ Lamaya B **Austin**	Democratic 11A ○ Angelena **Singletary**	Democratic 12A ○ Rhumenia G **Singletary**
WRITE-IN	WRITE-IN			WRITE-IN		WRITE-IN	WRITE-IN	WRITE-IN	WRITE-IN			

MARKING INSTRUCTIONS:

Correct Mark: ●

OFFICIAL BALLOT FOR THE SEPTEMBER 13, 2012 PRIMARY ELECTION

(1) Mark in BLUE or BLACK pen or pencil.
(2) To vote for a candidate whose name is printed on this ballot, completely fill in the ○ above the name of the candidate.
(3) To vote for a person whose name is not printed on this ballot, write the name in the blank WRITE-IN space which appears at the bottom of the column under the title of Office.
(4)**To vote on a proposal located on the reverse side of this ballot,** completely fill in the "Yes" or "No" oval contained in the box setting forth such proposal.
(5)Any other mark or writing, or any erasure made on this ballot outside the voting boxes or blank spaces provided for write-in may void this entire ballot.

STATE OF NEW YORK, COUNTY OF MONROE

(6) Do not overvote. If you select a greater number of candidates than there are vacancies to be filled, your ballot will be void for that public office or party position.
(7) If you tear, or deface, or wrongly mark this ballot, ask for instructions on how to obtain a new ballot. Do not attempt to correct mistakes on the ballot by making erasures or cross outs. Erasures or cross outs may invalidate all or part of your ballot. Prior to submitting your ballot, if you make a mistake in completing the ballot or wish to change your ballot choices, you may obtain and complete a new ballot. You have a right to a replacement ballot upon return of the original ballot.

Ballot ID #: 6
Town/City of:
21
E.D.(s): 19

OFFICIAL BALLOT FOR THE GENERAL ELECTION - City of New York - County of Kings - November 6, 2012
See Instructions on the Other Side

Kings
Style: 0002

Papeleta Oficial para la Elección General - Ciudad de Nueva York - Condado de Kings - 6 de Noviembre del 2012
Vea las Instrucciones en el Otro Lado

正式選票 普選 － 紐約市 國王郡 2012年11月6日
選舉說明詳見背頁

Office	Democratic	Republican	Conservative	Working Families	Independence	Green	Socialism & Lib	Libertarian	Constitution	Write-in
Electors for President and Vice President of the United States / Electores para Presidente y Vice-Presidente de los Estados Unidos	Barack Obama and Joe Biden	Mitt Romney and Paul Ryan	Mitt Romney and Paul Ryan	Barack Obama and Joe Biden		Jill Stein and Cheri Honkala	Peta Lindsay and Yari Osorio	Gary Johnson and James P. Gray	Virgil Goode and Jim Clymer	Write-in
	Democratic	Republican	Conservative	Working Families	Independence	Green		Libertarian	Common Sense	
United States Senator / Senador de los Estados Unidos	Kirsten E. Gillibrand	Wendy Long	Wendy Long	Kirsten E. Gillibrand	Kirsten E. Gillibrand	Colia Clark		Chris Edes	John Mangelli	Write-in
Justices of the Supreme Court — Vote for any Three / Jueces de la Corte Suprema — Vote por cualquier tres	Cheryl E. Chambers	Cheryl E. Chambers	Cheryl E. Chambers	Arshad Majid						Write-in
	Barry M. Kamins	Barry M. Kamins	Barry M. Kamins	William A. Gerard						Write-in
	William Miller	William Miller	William Miller							Write-in
Judge of the Civil Court - County — Vote for any Two / Juez de la Corte Civil - Condado — Vote por cualquier dos	Craig S. Walker	Ross Brady	Ross Brady							Write-in
	Robin S. Garson	Vincent F. Martuscello	Vincent F. Martuscello							Write-in
Representative in Congress / Representante en el Congreso	Yvette D. Clarke	Daniel J. Cavanagh	Daniel J. Cavanagh	Yvette D. Clarke		Vivia M. Morgan				Write-in
	Democratic	Republican	Conservative	Working Families	Independence	Green	Tax Cuts Now	School Choice		
State Senator / Senador Estatal	Simcha Felder	David Storobin	Simcha Felder				Simcha Felder	Abraham Tischler		Write-in
Member of the Assembly / Miembro de la Asamblea	Helene E. Weinstein	Joseph Haydn	Joseph Haydn	Helene E. Weinstein	Joseph Haydn					Write-in

Board of Elections - City of New York
COUNTY OF KINGS
General Election - November 6, 2012

OFFICIAL BALLOTS
☐ BMD AFFIDAVIT ☐ VOID

No.

普選說明

(1) 僅可使用選舉局提供的書寫工具填寫。
(2) 要投票給一位名字在此選票上的候選人，請塗滿候選人名字上面或旁邊的橢圓。
(3) 要投選一位名字不在選票上的候選人，請在該公職所出現一行末端空白處寫入該候選人的姓名或蓋上其印章，並完全塗滿相對應的橢圓。
(4) 如果有提案，要對出現在選票背面的提案投"是"或"否"，請完全塗滿與您投選相對應的橢圓。
(5) 任何在投選用方塊或空間以外所做的記號、筆跡、或塗擦將會使整張選票作廢。
(6) 請勿超選。如果您所投選的候選人人數超過了該職位的空缺，則您所投選的這個公職、黨內職務、或提案將失效。
(7) 如果您撕破、塗損或錯誤地填寫了選票，請退還該選票並重新索取一份。請勿以擦拭或劃掉的方式更正。塗擦或劃掉將致使您的選票全部或部分失效。在呈交選票之前，如果您在填寫選票過程中出錯或希望改變您的選擇，您可以索取並填寫一份新的選票。您有權以交還原有選票來索取一份新的選票。
(8) 填寫完您的選票之後，插入選票掃描機並等待您的選票被成功掃描的信息。如果沒有此信息出現，請尋求選舉監察員的幫助。

GENERAL ELECTION INSTRUCTIONS

(1) Mark only with a writing instrument provided by the Board of Elections.
(2) To vote for a candidate whose name is printed on this ballot fill in the oval above or next to the name of the candidate.
(3) To vote for a person whose name is not printed on this ballot write or stamp his or her name in the space labeled "Write-in" that appears at the end of the row for such office and fill in the oval corresponding with the write-in space in which you have written in a name.
(4) To vote yes or no on a proposal, if any, that appears on the back of the ballot fill in the oval that corresponds to your vote.
(5) Any other mark or writing, or any erasure made on this ballot outside the voting squares or blank spaces provided for voting will void this entire ballot.
(6) Do not overvote. If you select a greater number of candidates than there are vacancies to be filled, your ballot will be void for that public office, party position or proposal.
(7) If you tear, or deface, or wrongly mark this ballot, return it and obtain another. Do not attempt to correct mistakes on the ballot by making erasures or cross outs. Erasures or cross outs may invalidate all or part of your ballot. Prior to submitting your ballot, if you make a mistake in completing the ballot or wish to change your ballot choices, you may obtain and complete a new ballot. You have a right to a replacement ballot upon return of the original ballot.
(8) After completing your ballot, insert it into the ballot scanner and wait for the notice that your ballot has been successfully scanned. If no such notice appears, seek the assistance of an election inspector.

INSTRUCCIONES PARA LA ELECCIÓN GENERAL

(1) Marque solamente con un instrumento de escritura proporcionado por la Junta de Elecciones.
(2) Para votar por un candidato(a) cuyo nombre aparece en esta papeleta, llene el óvalo encima o al lado del nombre del candidato(a).
(3) Para votar por una persona cuyo nombre no aparece en esta papeleta, escriba o estampe el nombre en el espacio designado "Candidato por Escrito", que aparece al final de la fila para tal cargo público, y llene el óvalo correspondiente con el espacio en cual ha escrito un nombre.
(4) Para votar sí o no por una propuesta, que aparece en la parte posterior de la papeleta, llene el óvalo que corresponde a su voto.
(5) Cualquier otra marca, escritura, o borradura hecha en esta papeleta fuera de las casillas de votación o espacios en blanco proporcionados para votar anulará esta papeleta por completo.
(6) No vote de más. Si selecciona un mayor número de candidatos del número de posiciones por cubrir, su papeleta será anulada para ese cargo público, posición de partido, o propuesta.
(7) Si usted rompe, desfigura, o marca incorrectamente esta papeleta, devuélvala y obtenga otra. No intente corregir errores en la papeleta haciendo borraduras o rayadas. Borraduras o rayadas pueden invalidar toda o parte de su papeleta. Antes de entregar su papeleta, si usted hace un error completando la papeleta o si desea cambiar sus selecciones, usted puede obtener y completar una papeleta nueva. Tiene el derecho a una papeleta de reemplazo al devolver la papeleta original.
(8) Después de haber completado su papeleta, insértela en la máquina de escaneo y espere por el aviso que su papeleta ha sido escaneada con éxito. Si no aparece tal aviso, solicite la asistencia de un inspector electoral.

Style: 0002
41st Assembly District
E.D.s: 2, 6, 8

OFFICIAL BALLOT

FOR THE
GENERAL ELECTION

NOVEMBER 6, 2012

CITY OF NEW YORK
COUNTY OF KINGS

Affidavit Stamp Here

Maria R. Guastella, *President*	Julie Dent
Frederic M. Umane, *Secretary*	Juan Carlos Polanco
Jose Miguel Araujo	Nancy Mottola-Schacher
Naomi Barrera	J. P. Sipp
	Gregory C. Soumas
	Judith D. Stupp

Commissioners of Elections

OFFICE	1 GOVERNOR AND LIEUTENANT GOVERNOR (VOTE ONCE)	2	3 COMPTROLLER (VOTE FOR ONE)	4 ATTORNEY GENERAL (VOTE FOR ONE)	5	6 UNITED STATES SENATE (VOTE FOR ONE)	7 UNITED STATES SENATE 2 YEAR UNEXPIRED TERM (VOTE FOR ONE)	8	9 STATE SUPREME COURT JUSTICE 3rd Judicial District (VOTE FOR FOUR)	10	11	12
DEMOCRATIC A ★	Democratic Andrew M. Cuomo For Governor and Robert J. Duffy For Lieutenant Governor 1A O		Democratic Thomas P. DiNapoli 3A O	Democratic Eric T. Schneiderman 4A O		Democratic Charles E. Schumer 6A O	Democratic Kirsten E. Gillibrand 7A O		Democratic Jon Gunther 9A O	Democratic Perry Hudson 10A O	Democratic Raquel Jones 11A O	Democratic Lisa Wong 12A O
REPUBLICAN B	Republican Carl P. Paladino For Governor and Gregory J. Edwards For Lieutenant Governor 1B O		Republican Harry Wilson 3B O	Republican Dan Donovan 4B O		Republican Jay Townsend 6B O	Republican Joseph J. DioGuardi 7B O		Republican Pamela Rogal 9B O	Republican Geoffrey Minsk 10B O	Republican Mandy Driskel 11B O	Republican Milton Laskey 12B O
INDEPENDENCE C	Independence Andrew M. Cuomo For Governor and Robert J. Duffy For Lieutenant Governor 1C O		Independence Harry Wilson 3C O	Independence Eric T. Schneiderman 4C O		Independence Charles E. Schumer 6C O	Independence Kirsten E. Gillibrand 7C O		Independence Carmen James 9C O	Independence Drake Carson 10C O	Independence Herbert Smith 11C O	Independence Doug Angstrom 12C O
CONSERVATIVE D	Conservative Carl P. Paladino For Governor and Gregory J. Edwards For Lieutenant Governor 1D O		Conservative Harry Wilson 3D O	Conservative Dan Donovan 4D O		Conservative Jay Townsend 6D O	Conservative/Taxpayers Joseph J. DioGuardi 7D O		Conservative Bill Michaels 9D O	Conservative Tara Johnson 10D O	Conservative Rachel O'Shea 11D O	Conservative Ursala Warren 12D O
WORKING FAMILIES E	Working Families Andrew M. Cuomo For Governor and Robert J. Duffy For Lieutenant Governor 1E O		Working Families Thomas P. DiNapoli 3E O	Working Families Eric T. Schneiderman 4E O		Working Families Charles E. Schumer 6E O	Working Families Kirsten E. Gillibrand 7E O		Working Families Daniel Gifford 9E O	Working Families Regina Howard 10E O	Working Families Felipe Nickerson 11E O	Working Families Laura Benson 12E O
GREEN F	Green Howie Hawkins For Governor and Gloria Mattera For Lieutenant Governor 1F O		Green Julia A. Willebrand 3F O			Green Colia Clark 6F O	Green Cecile A. Lawrence 7F O					
RENT IS 2 DAMN HIGH G RENT	Rent is 2 Damn High Jimmy McMillan For Governor 1G O						Rent is 2 Damn High Joseph Huff 7G O					
LIBERTARIAN H / FREEDOM H	Libertarian Warren Redlich For Governor and Alden Link For Lieutenant Governor 1H O	Freedom Charles Barron For Governor and Eva M. Doyle For Lieutenant Governor 2H O	Libertarian John Gaetani 3H O	Libertarian Carl E. Person 4H O	Freedom Ramon J. Jimenez 5H O	Libertarian/Anti Prohibition Randy A. Credico 6H O	Libertarian John Clifton 7H O					
TAX PAYERS I / ANTI PROHIBITION I	Taxpayers Carl P. Paladino For Governor and Gregory J. Edwards For Lieutenant Governor 1I O	Anti Prohibition Kristin M. Davis For Governor and Tanya Gendelman For Lieutenant Governor 2I O					Anti Prohibition Vivia Morgan 7I O	Tax Revolt Bruce Blakeman 8I O				
WRITE-IN		Write-In O	Write-In O		Write-In O	Write-In O		Write-In O	Write-In O	Write-In O	Write-In O	Write-In O

OFFICIAL BALLOT FOR THE GENERAL ELECTION NOVEMBER 2, 2010 County of Albany Albany ED 52

See instructions on the other side.

BALLOT PROPOSITION NUMBER (1) ONE
RAIL PRESERVATION BOND ISSUE

YES O NO O

BALLOT PROPOSAL NUMBER (1) ONE
AN AMENDMENT DEBT LIMITS FOR SEWAGE FACILITIES

YES O NO O

REFERENDUM NO, 1 INCREASE DMV REG. FEE
A REFERENDUM TO INCREASE DMV FEES.

YES O NO O

Instructions

1. Mark only with a writing instrument provided by the board of elections.

2. To vote for a candidate whose name is printed on this ballot, fill in the oval or square below or next to the name of the candidate.

3. To vote for a person whose name is not printed on this ballot, write or stamp his or her name in the space labeled 'write-in' that appears at the bottom of the column or the end of the row for such office and fill in the square or oval corresponding with the write-in space in which the voter has written in a name.

4. To vote on a proposal located on the reverse side of this ballot, fill in the ovall or square that corresponds to your "YES" or "NO" vote.

5. Any other mark or writing, or any erasure made on this ballot outside the voting squares or blank spaces provided for voting will void this entire ballot.

Instructions

6. Do not overvote. You may vote only for the maximum number of candidates for each office. The maximum number of candidates you may vote for in each office is listed at the top of the column for that office. Casting more votes than the maximum number allowed in any contest, will void your votes for that contest only.

7. If you tear, deface or wrongly mark this ballot, return it to a poll worker and obtain another. Do not attempt to correct mistakes on the ballot by making erasures or cross-outs. Erasures or cross-outs may invalidate all or part of your ballot. Prior to submitting your ballot, if you make a mistake in completing the ballot or wish to change your ballot choices, you may obtain and complete a new ballot. You have a right to a replacement ballot upon the return of the original ballot.

8. After completing your ballot, insert it into the ballot scanner and wait for the notice that your ballot has been successfully scanned. If no such notice appears, seek the assistance of an election inspector.

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices for Coordinating Quality and Cost-effective VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

New York State Board of Elections

Hash-Check Procedure

APPENDIX 4

DOMINION IMAGE CAST VOTING SYSTEM

Hash Check Process

OVERVIEW

Each County Board of Elections (CBOE) will perform a hash check on each voting system to ensure that the same firmware / software that was authorized by the ITA is currently installed and that no other unauthorized software / firmware is present. The hash check procedure will need to be performed during each Pre-Qualification Test and Maintenance Test. Each hash check option is described in detail below.

1. DOMINION IMAGECAST HASH CHECK PROCEDURE - OPTION 1

Hash Check Option 1 - Perform hash check on each individual voting system

CBOE will perform a hash check on each individual voting system. Refer to sections 3, 4 and 5 of this document for hash checking details. **Option 1 must be used:**

A. **When performing a hash check after receiving any device that has been out of the CBOE Secure Control**

Or

B. **When the security seals are found to have been broken, after receiving a device from the NYS State Board of Elections Acceptance Testing.**

Option 1 may also be used when performing a hash check during Quarterly Maintenance Testing and during Pre-Qualification testing.

2. DOMINION IMAGECAST HASH CHECK PROCEDURE - OPTION 2

Hash Check Option 2 - Perform Upgrade / Hash Check Combination

CBOE will perform an upgrade on each voting system using the current process (contact New York State Board of Elections (NYSBOE) regarding any upgrade questions). CBOE will then randomly select 5 percent of the upgraded voting systems to perform a hash check on. **Option 2 may only be used when performing a hash check during Quarterly Maintenance Testing or during Pre-Qualification Testing.**

Option 2 Details:

1. Verify the latest software/firmware version from NYSBOE
2. Verify the latest extraction program from NYSBOE
3. Verify the latest hash value from NYSBOE
4. Randomly select **one ImageCast** from county inventory
5. **Perform upgrade** using the software/firmware from step #1 above using the current process (contact NYSBOE regarding any upgrade questions)
6. Once the upgrade is complete, **perform the hash check** procedure as outlined in this document.
7. Verify the SHA-lvalue produced from HashCalc against certified hash value
8. **Perform upgrade on all ImageCast** optical scanners in county inventory
9. **Randomly select five percent (5%)** of the ImageCast optical scanners in county inventory
10. **Perform the hash check procedure** as outlined in this document on the 5% selected

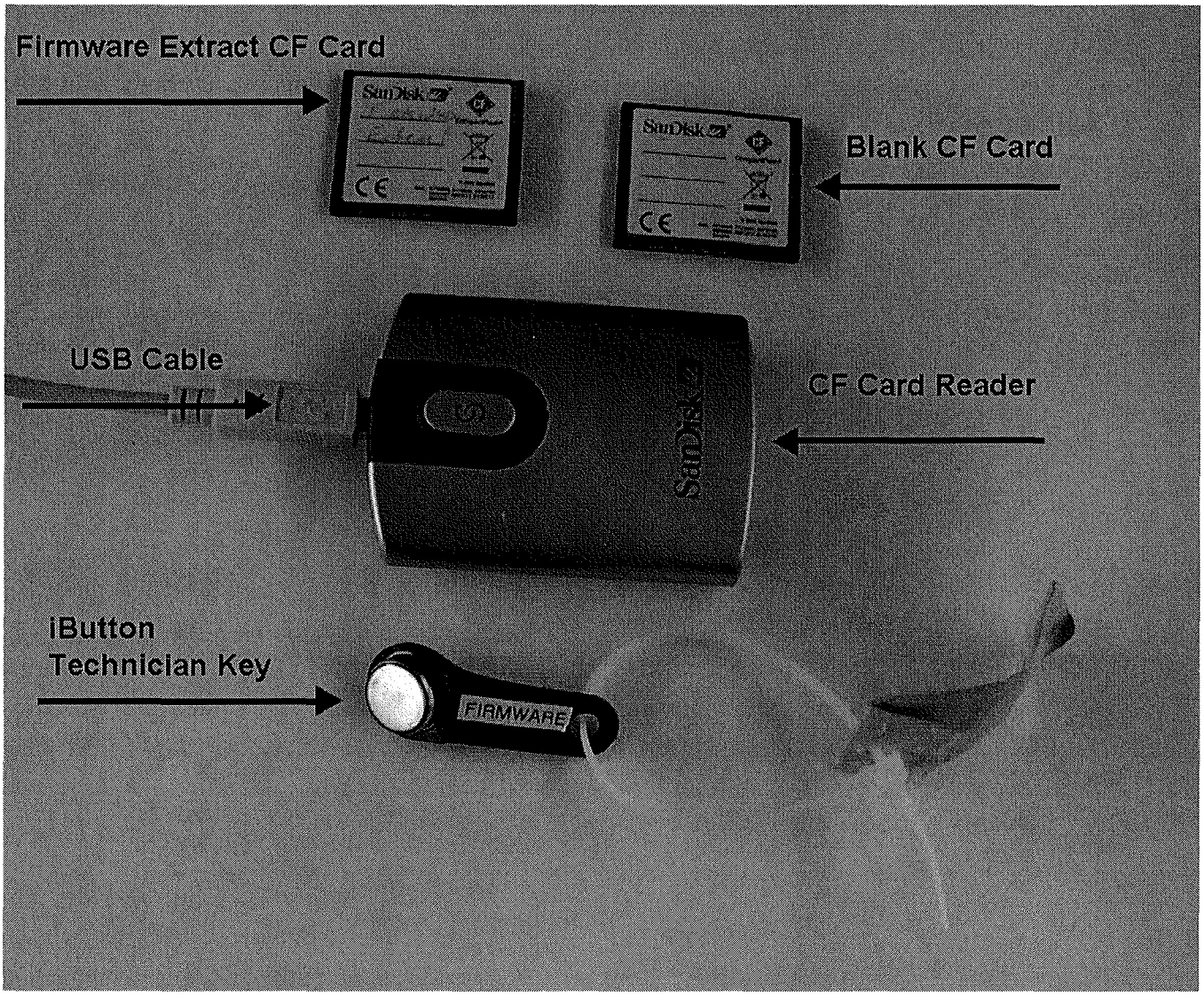
11. Verify that the SHA-1 value produced from HashCalc against certified hash value shows no differences for each of the 5% selected

3. GETTING STARTED

3.1 Supplies

The following supplies will be required in order to conduct a hash check on the ImageCast Optical Scanner (OS or OpScan).

- 1 Compact Flash (CF) Card with Firmware Extract application
- 1 Blank CF Card
- **1** CF Card Reader
- **1** USB Cable
- **1** iButton Technician Key Programmed for "Extraction" Only
- 1 PC with USB Port
- HashCalc Application file provided by the State Board of Elections (SBOE)
- 1 Security Seal



3.2 Security Seal

The following security seal is used by the SBOE when conducting a hash check on the ImageCast OpScan during acceptance testing.

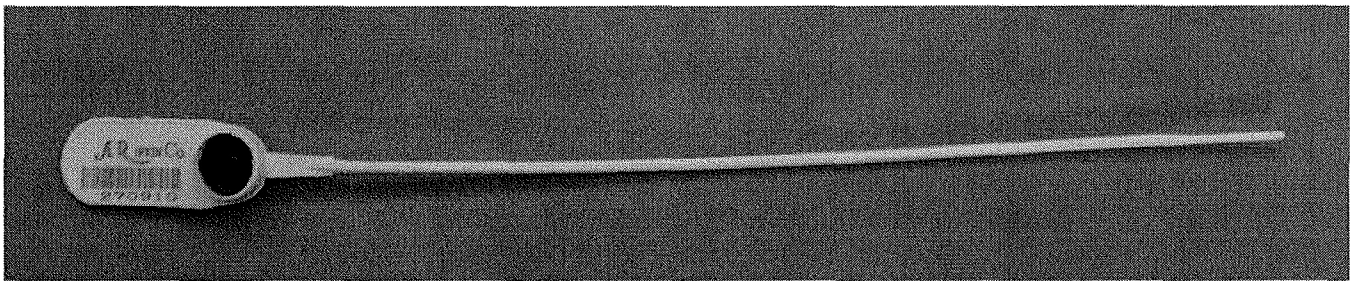
Company Name: A.Rifkin

Seal Type: Fortris Fast Seal 8" (plastic)

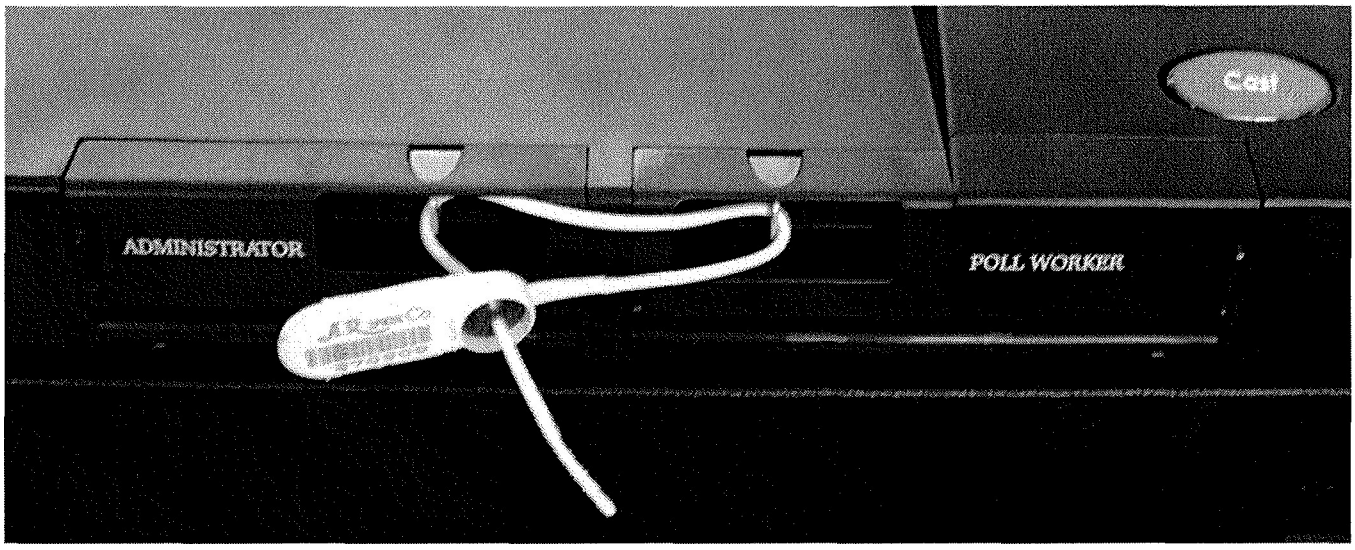
Color: White/Blue

Alpha: 0

A.Rifkin Fortris Fast Seal 8"

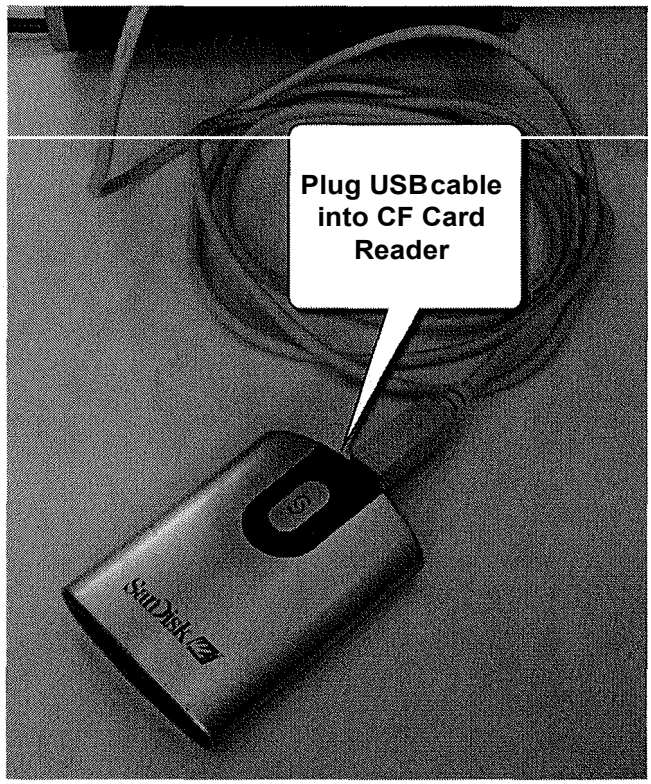


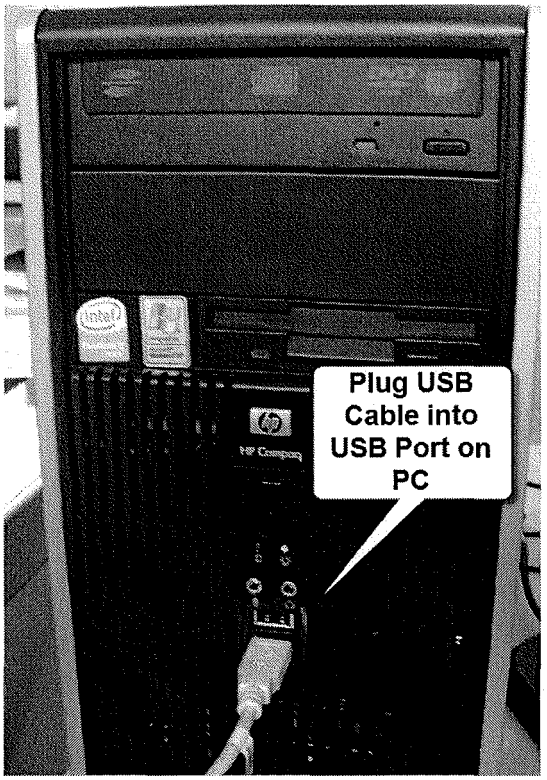
Seal attached after Hash Check

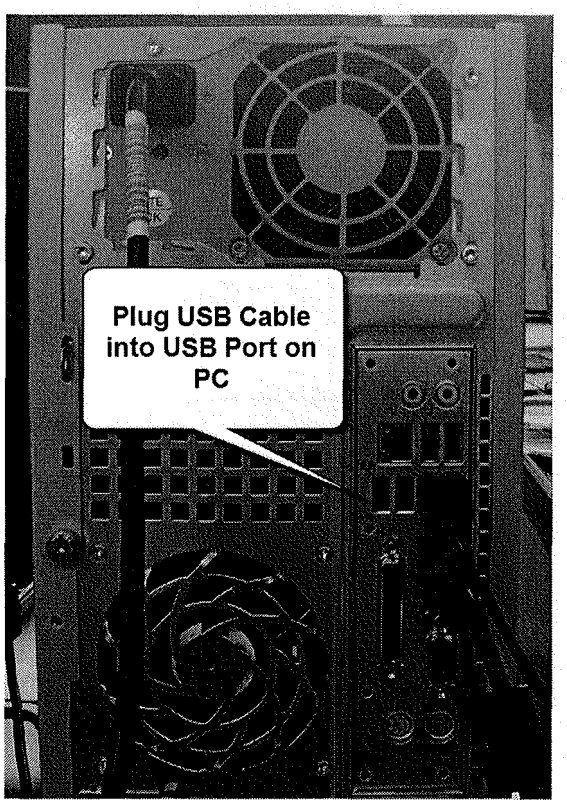


3.3 Set Up - Hardware

Connect the CF Card Reader to the PC using a USB cable. The USB port on the PC may be located **on the front OR on the back.** Plug the CF Card Reader into available USB port on PC. See screenshots.

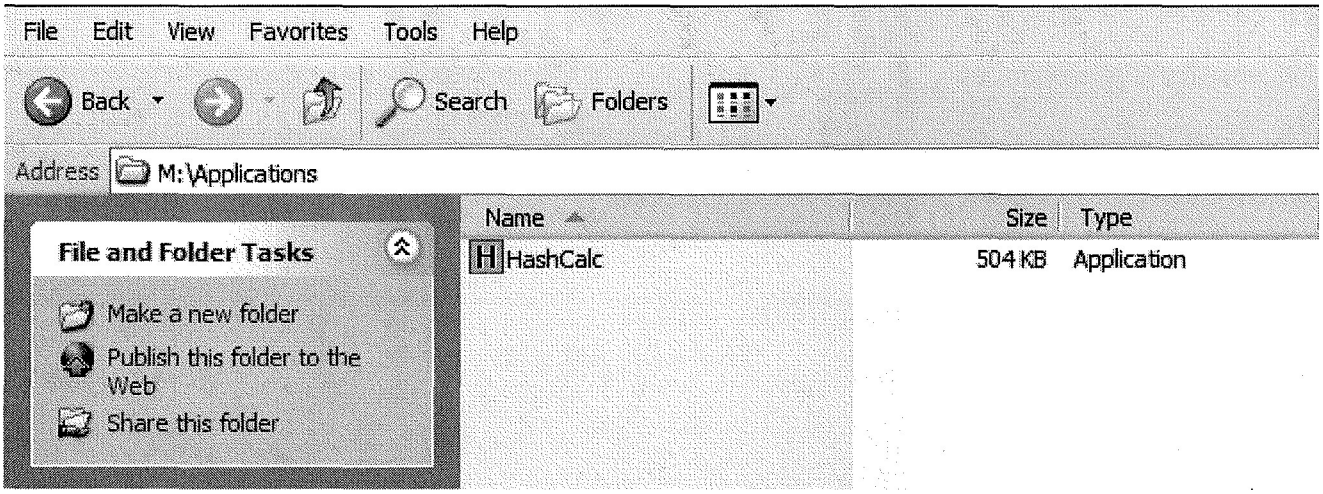






3.4 Set Up-Software

"Copy" the HashCalc application from the email provided by SBOE and "Paste" the HashCalc application into desired directory. If you have any questions, please contact SBOE at 518-485-5637.

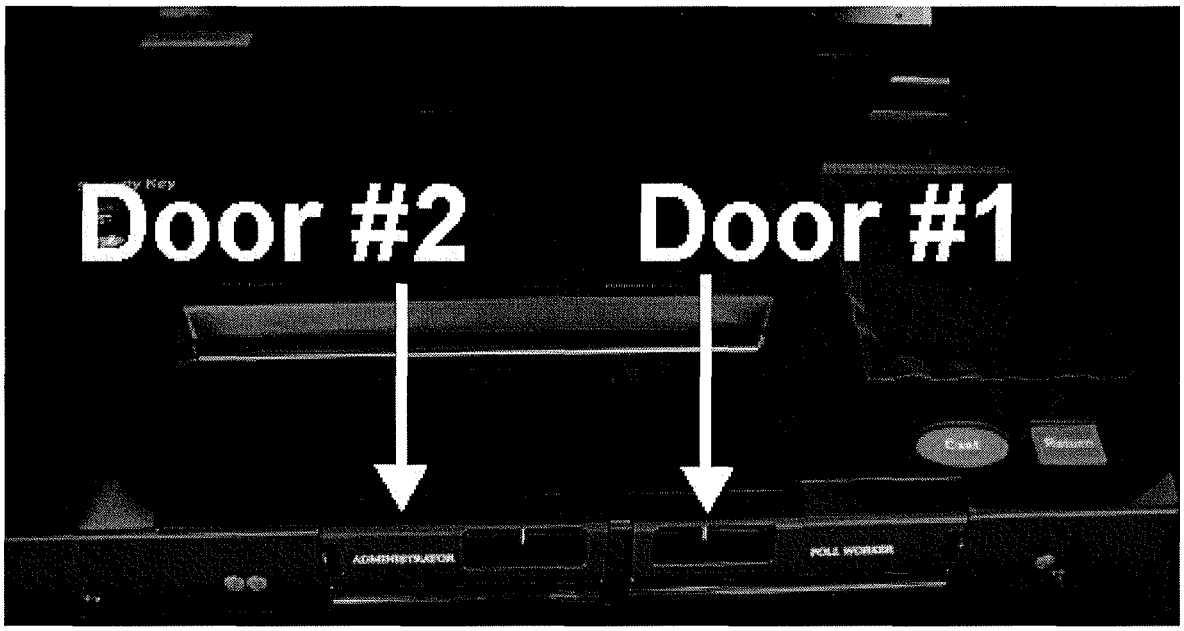


4. IMAGECAST OPTICAL SCANNER FILE EXTRACTION

Below are the steps for conducting the IrnageCast Optical Scanner Hash Check Procedure. If you have any questions or need assistance when performing procedure please call 518-485-5637.

1. Start with the Optical Scanner "OFF".

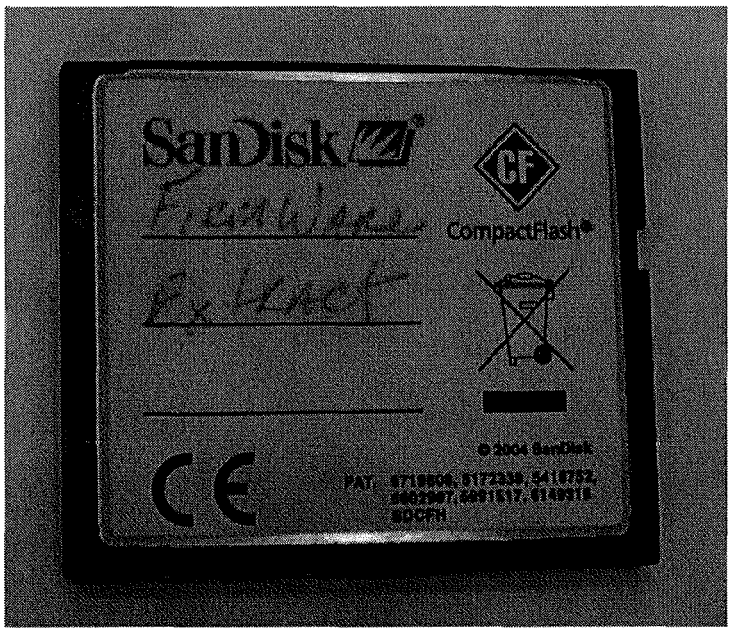
2. Open access doors on front of OpScan.

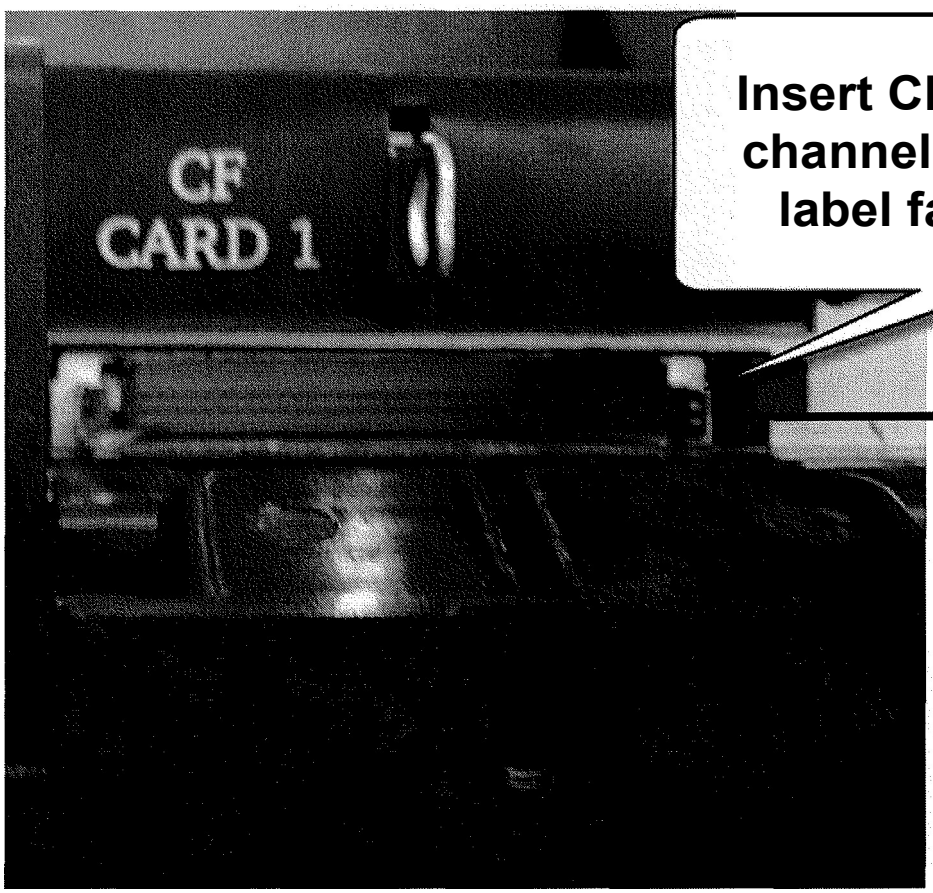


CF Access Doors Open

3. Carefully Insert Firmware Extract Compact Flash (CF) Card into slot #1

Firmware Extract
CF Card

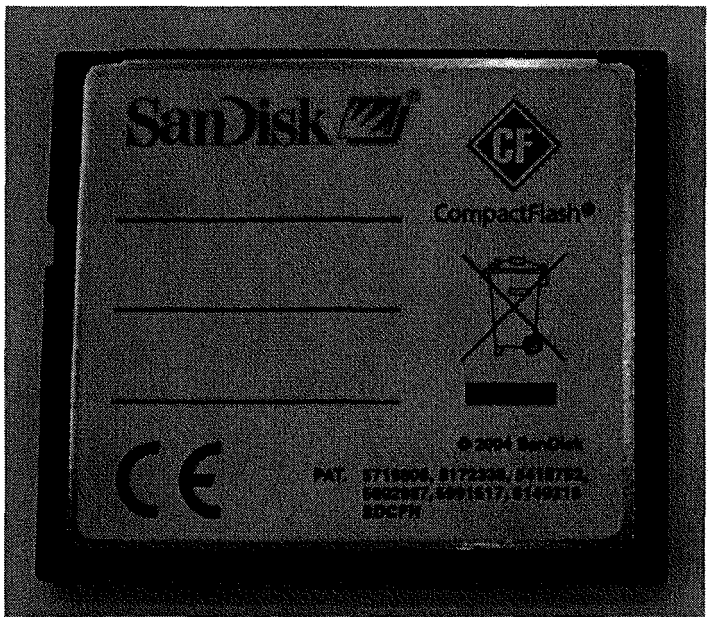


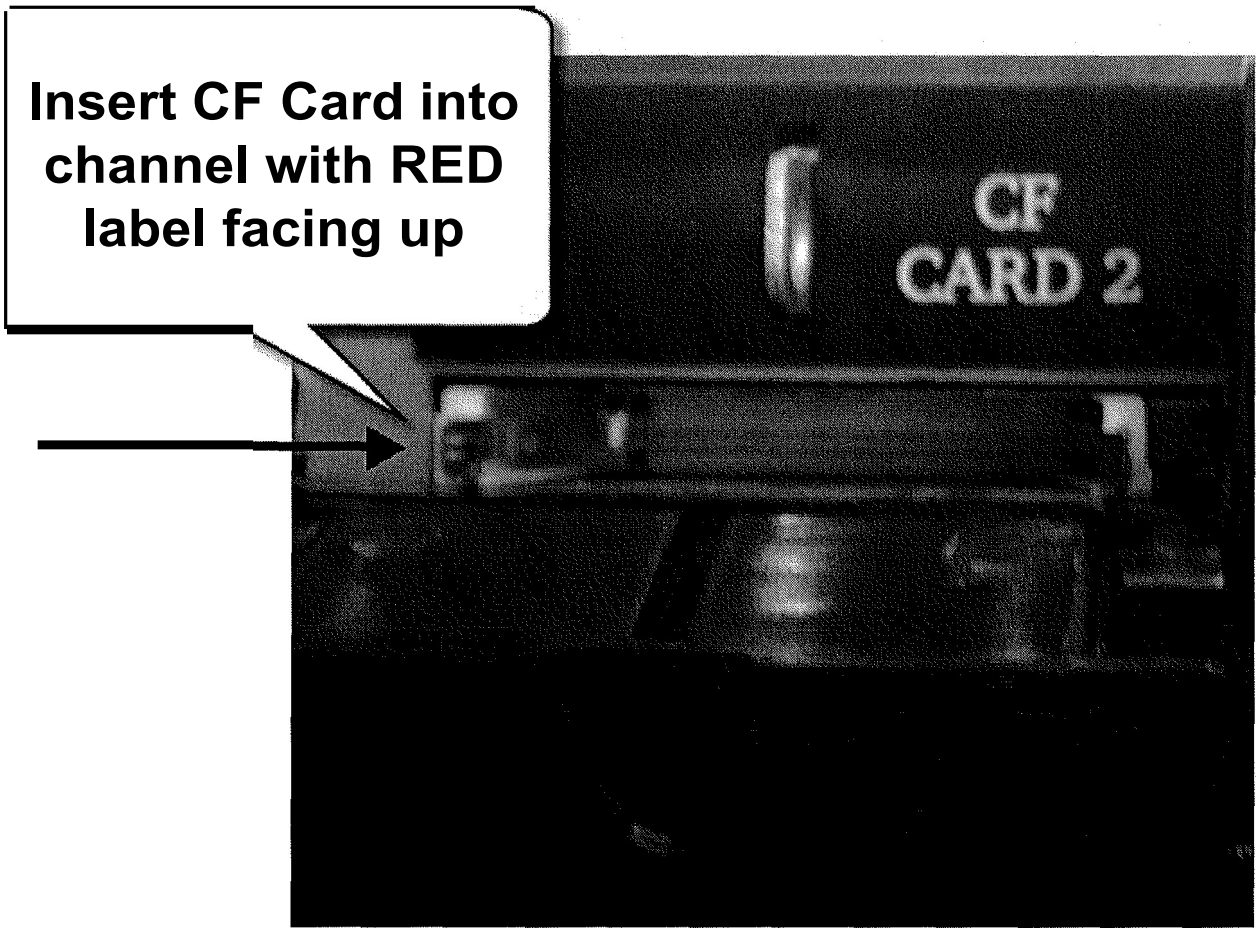


Insert CF card into channel with RED label facing up

4. Insert Blank CF Card into slot #2.

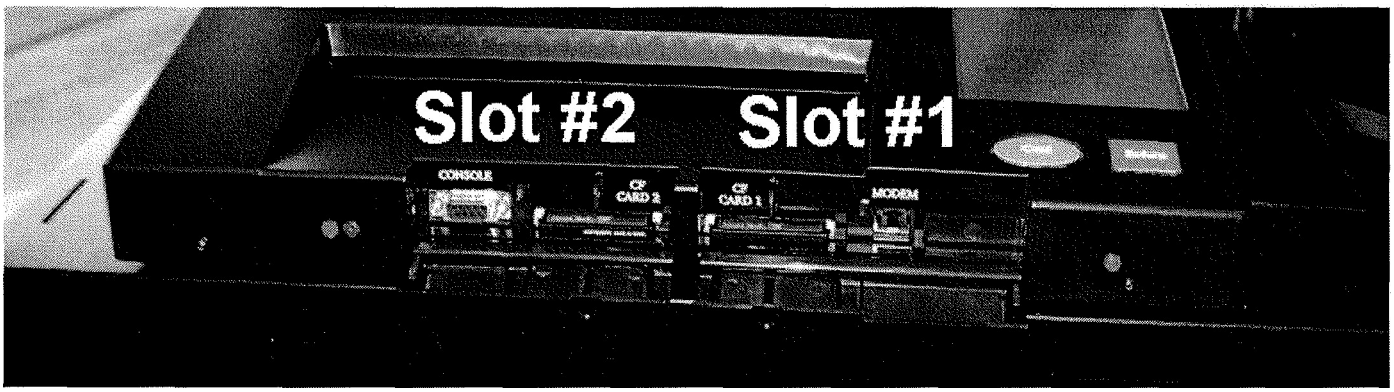
Blank CF Card

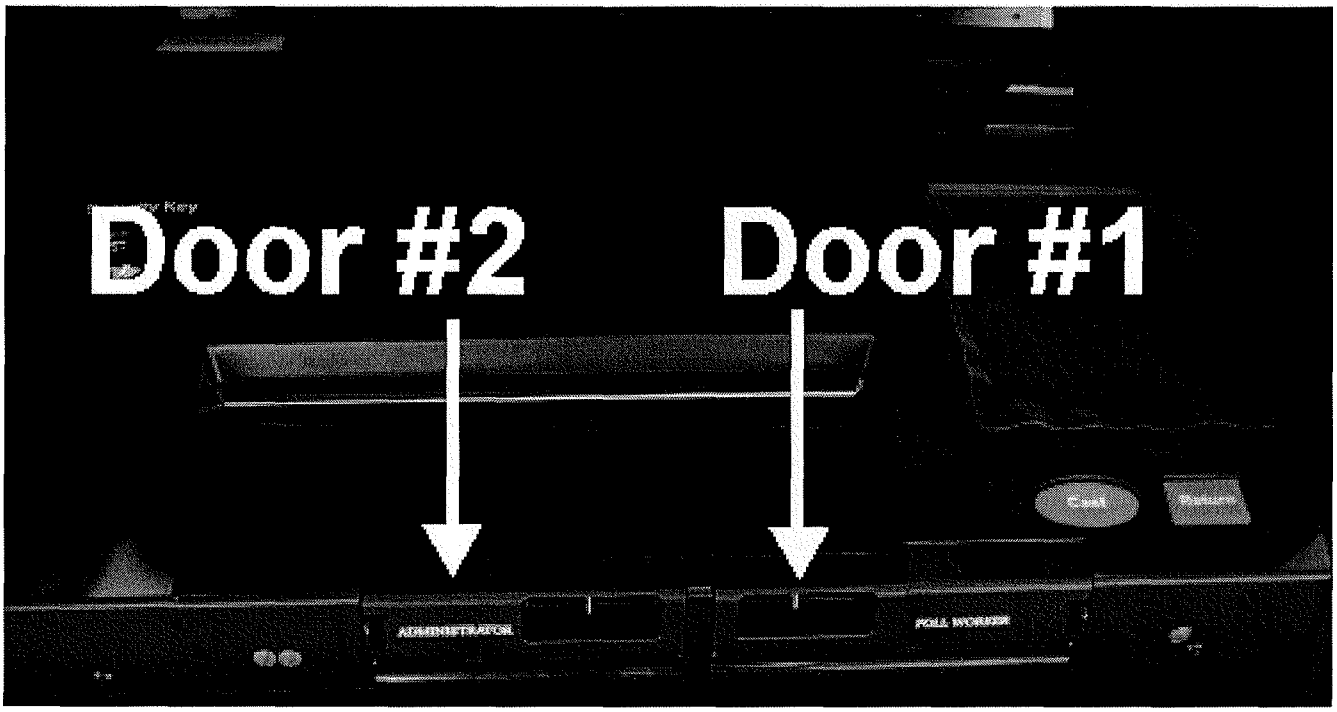



Insert CF Card into channel with RED label facing up
CF
CARD 2


CompactFlash
SanDisk
ultra
2.0
SanDisk

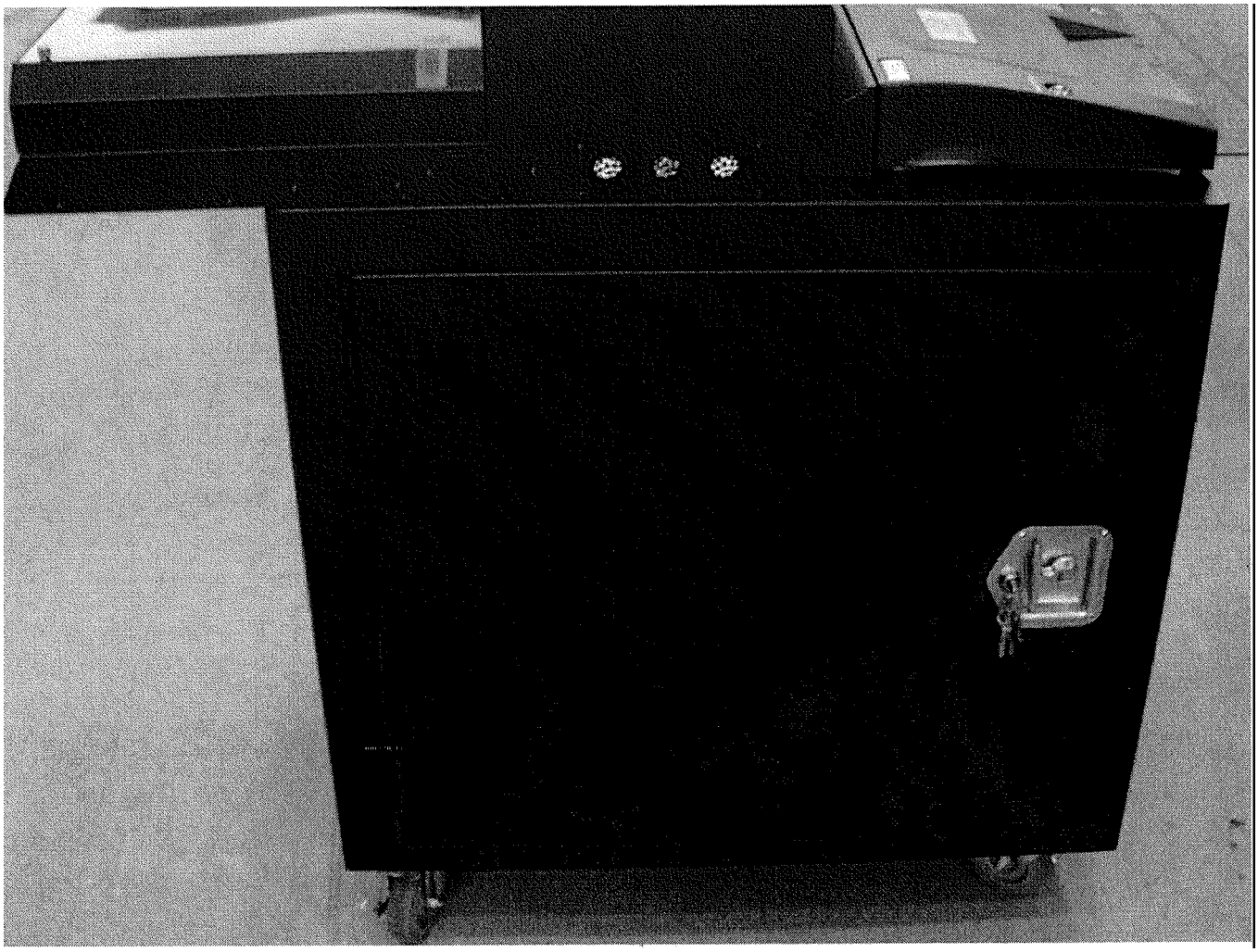
5. Close access doors on front of OpScan once CF Cards have been inserted.

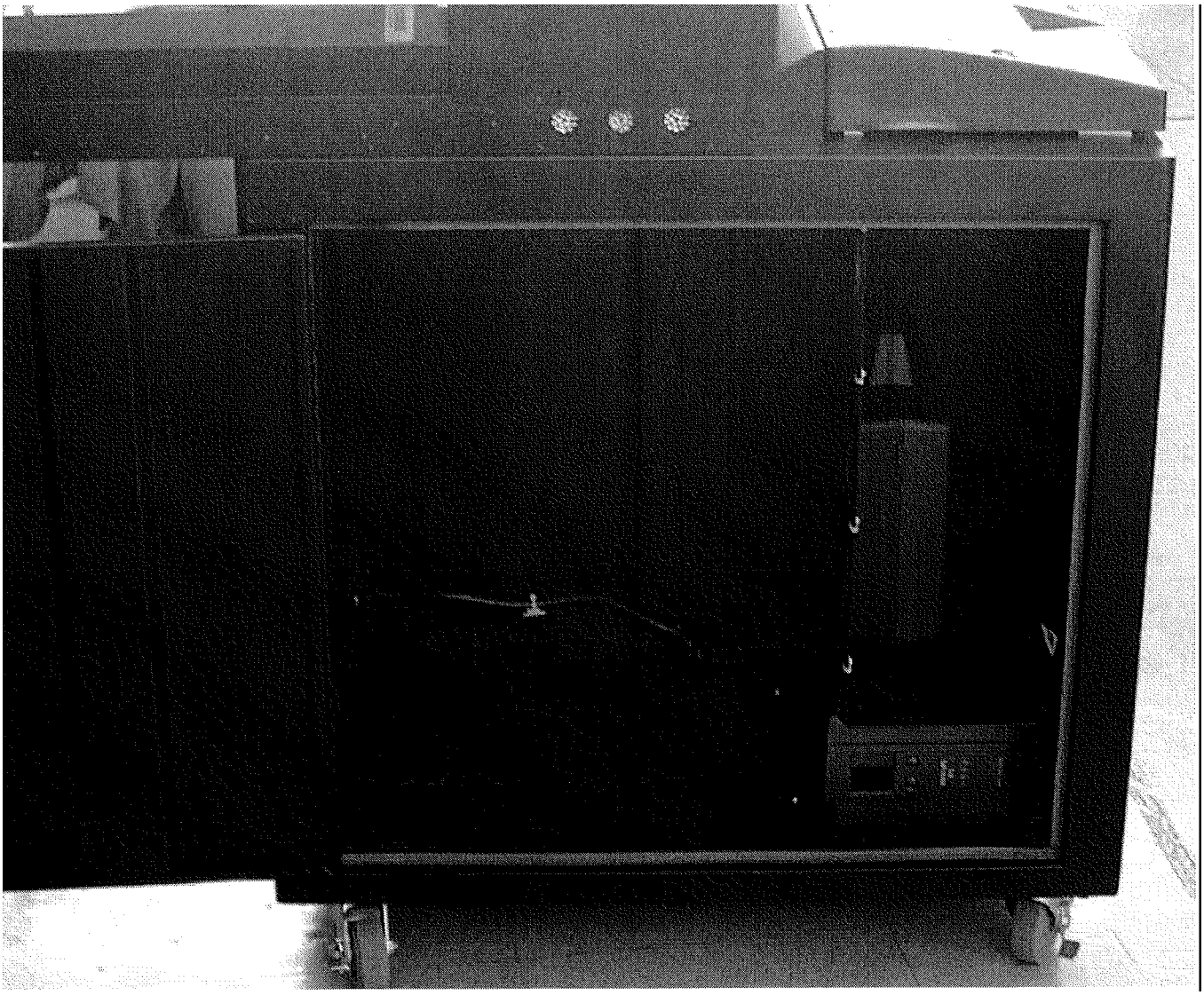


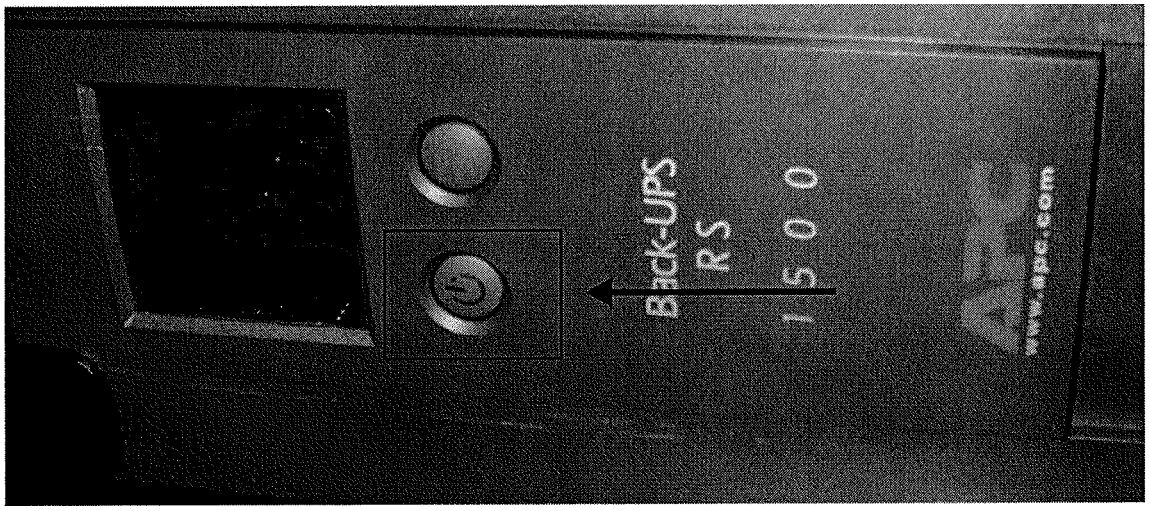


6. Turn on optical scanner.

***Note: If** unit is a BMD/Optical Scan system then open the ballot box door to gain access to the power button on the UPS. Start up the BMD by pressing the "ON" button as indicated below. Hold the button until you hear a loud beep.*

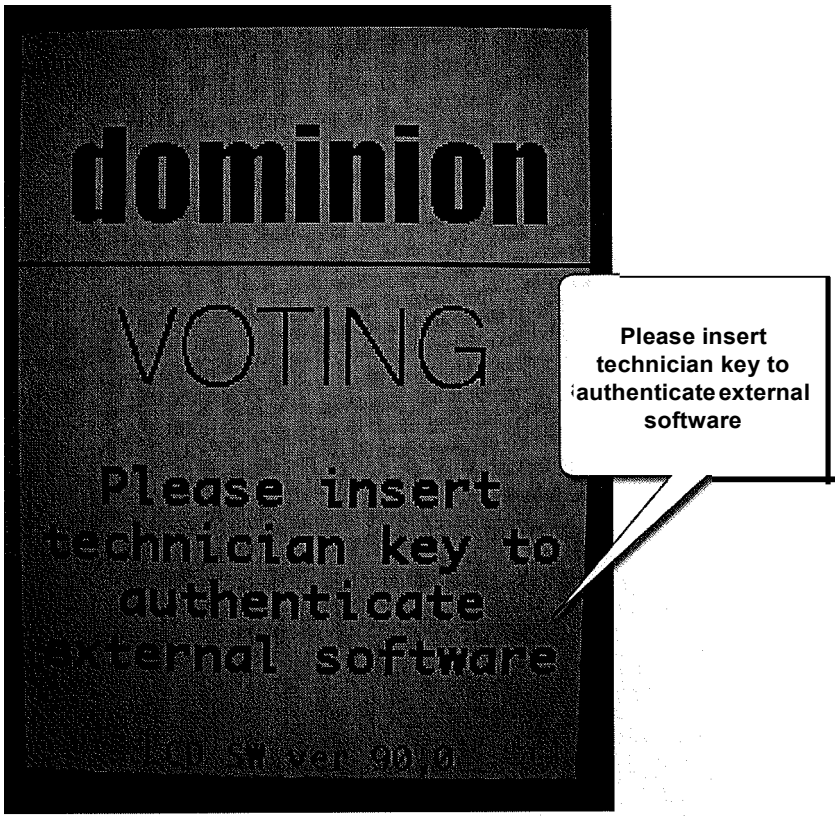




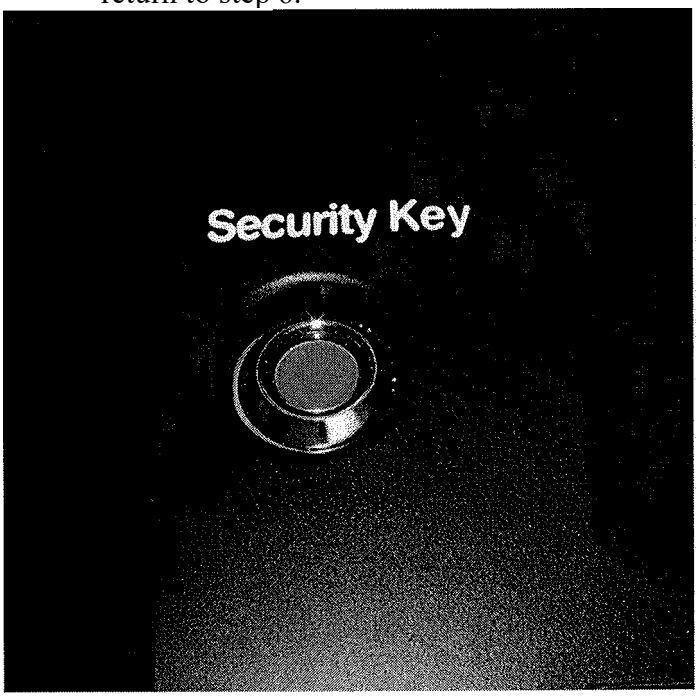


7. Let system boot-up (start-up)

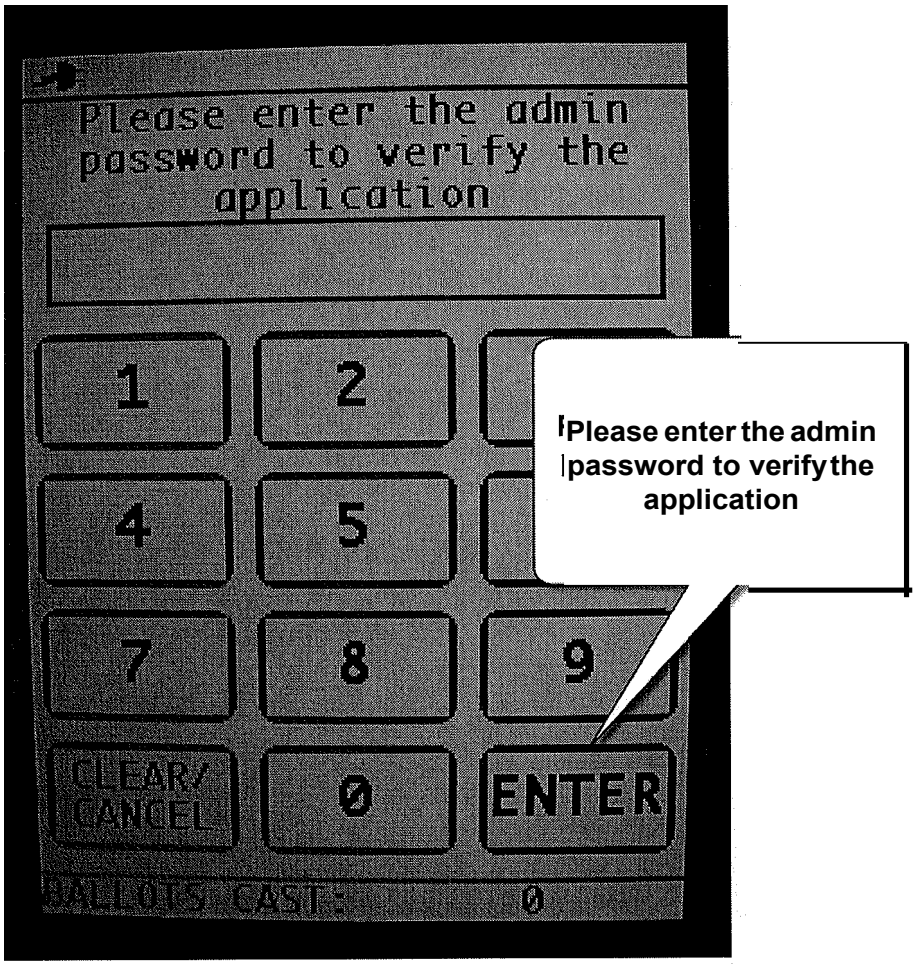
8. Please insert technician key (iButton) to authenticate external software screen will be displayed



9. Place key on security iButton receiver within 5 seconds of the system booting up and hold on receiver until system reads key. If a technician key is NOT placed on receiver, the system will continue to load and it will prompt "Please insert administrative key to authenticate elections files". If this message is displayed, power off the system by holding down the power button and return to step 6.

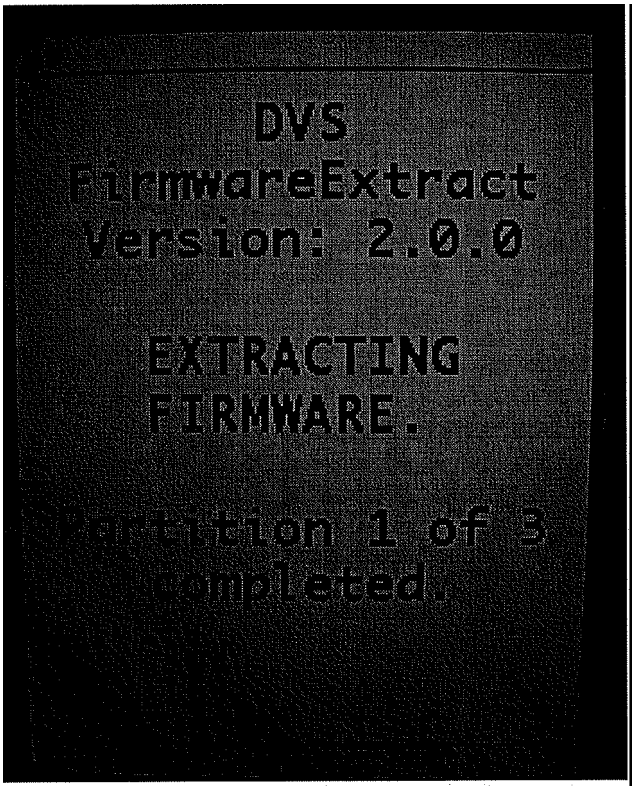


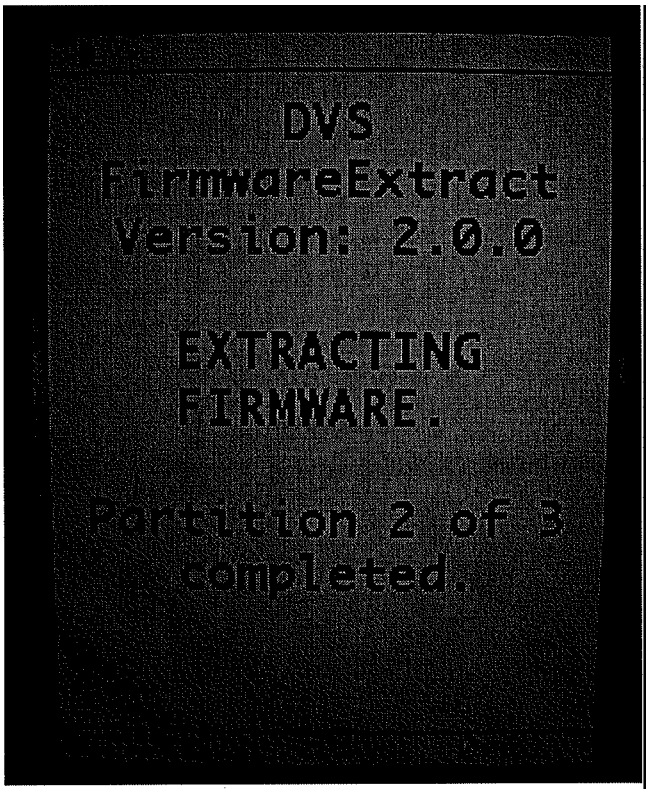
10. OpScan LCD will request password



11. Use keypad to type in password provided with iButton and press "ENTER"

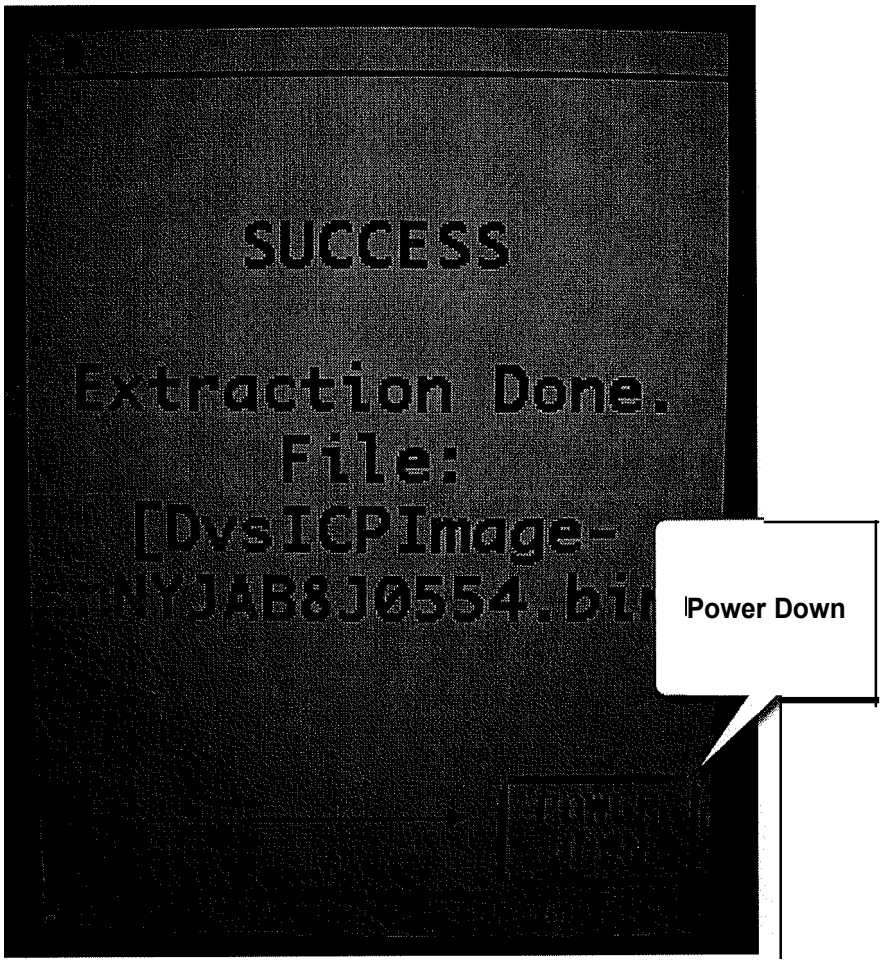
12. System will go through a series of 3 steps to extract the firmware onto the Firmware Extract CF Card that was inserted in slot #1.





13. Once completed, select "Power Down" from the screen and remove CF Cards once system is off.

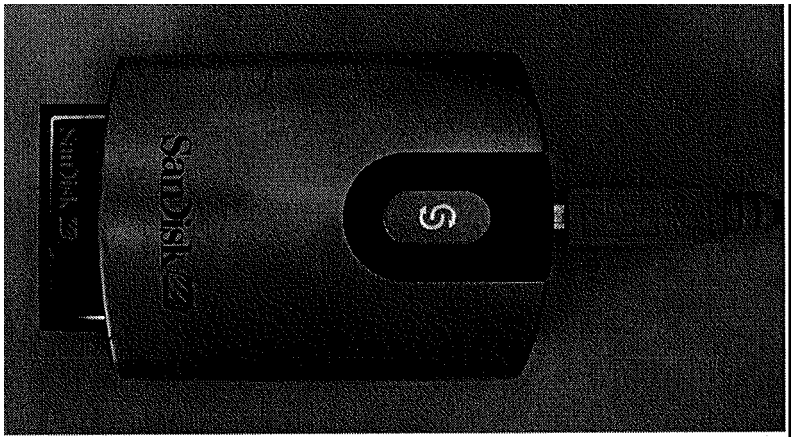
Note: *If unit is a BMD/Optical Scan system then press and hold down the power button on the UPS to power off the BMD and remove CF Cards from slots.*



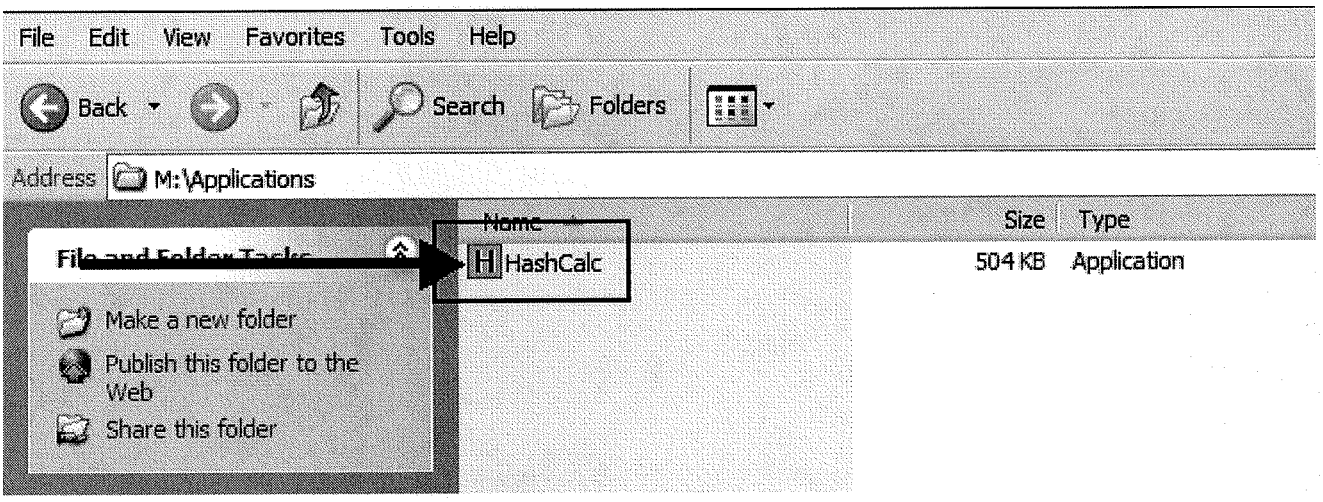
5. HASHCALC PROCESS

14. Insert Firmware Extract CF Card #1 into CF card reader attached to PC.

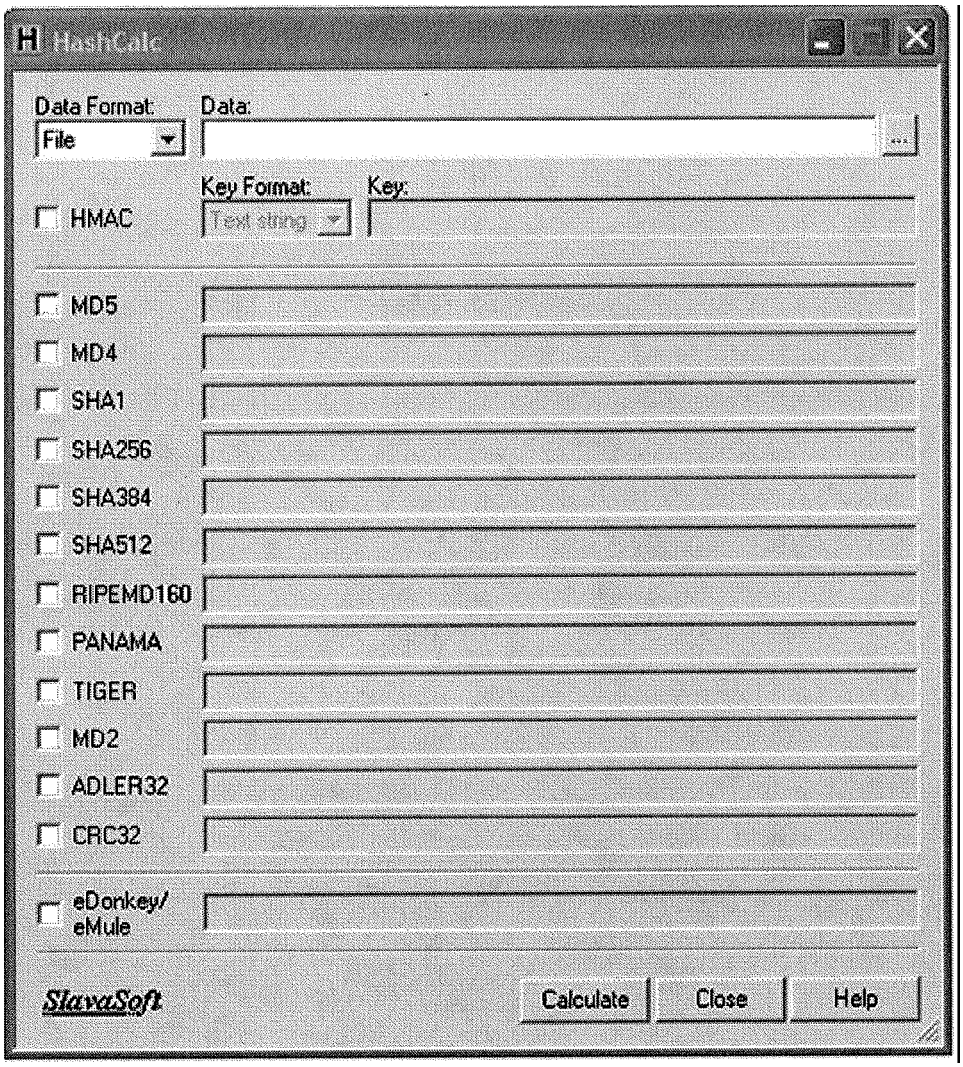
CF Card Reader



15. Open HashCalc application by "Doubling Clicking" the HashCalc icon

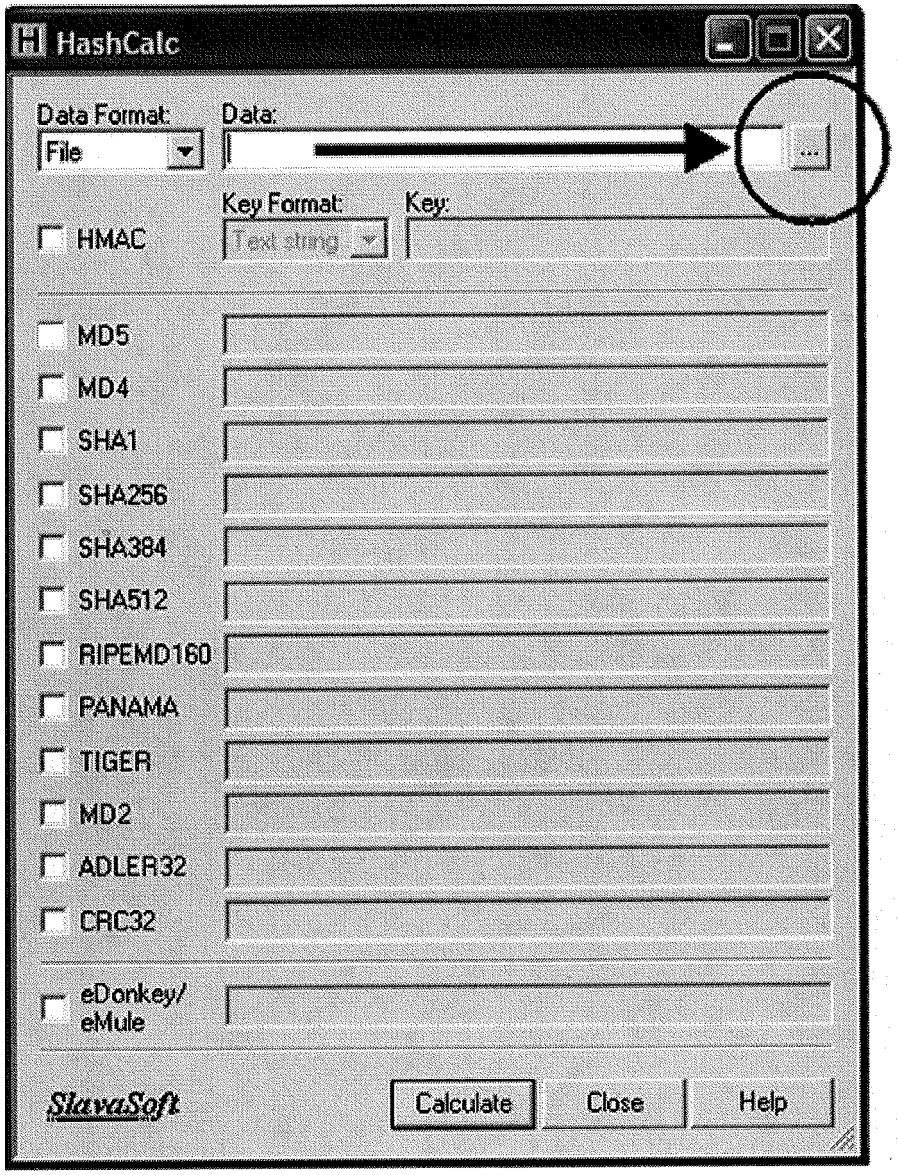


16. HashCalc application will launch and the following screen is displayed.

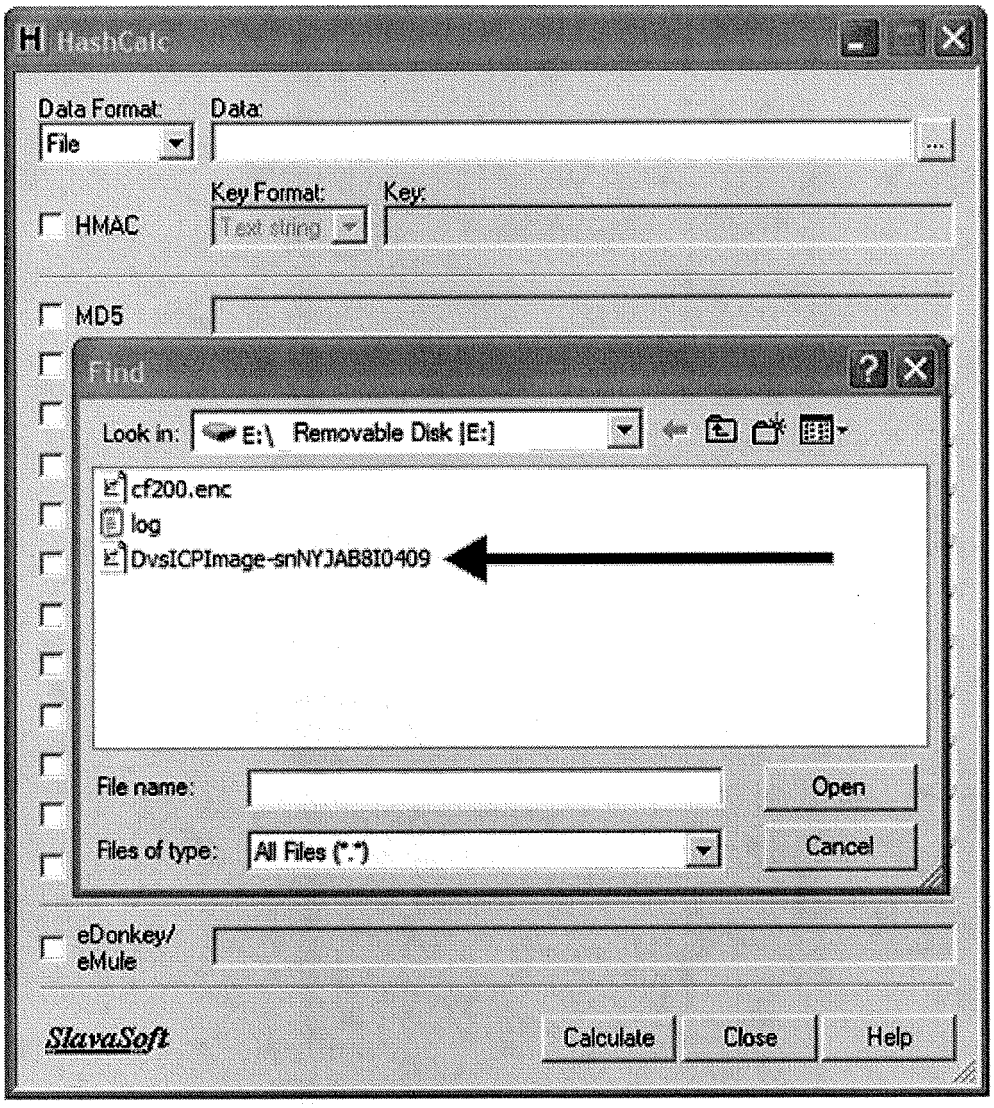


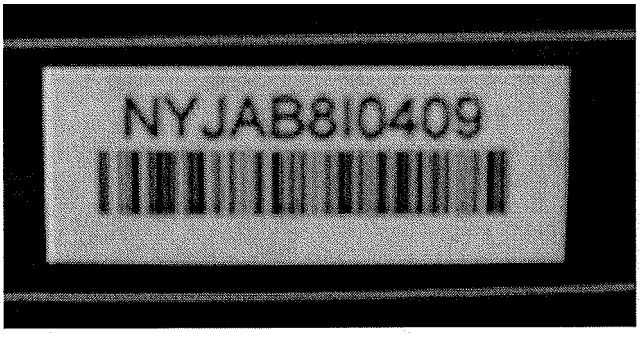
17. Browse and point- to the file that was generated on CF Card #1. This file will be located in Removable Disk (x:), where xis the letter assigned to the CF Card Reader.

"Click" to browse to desired file.



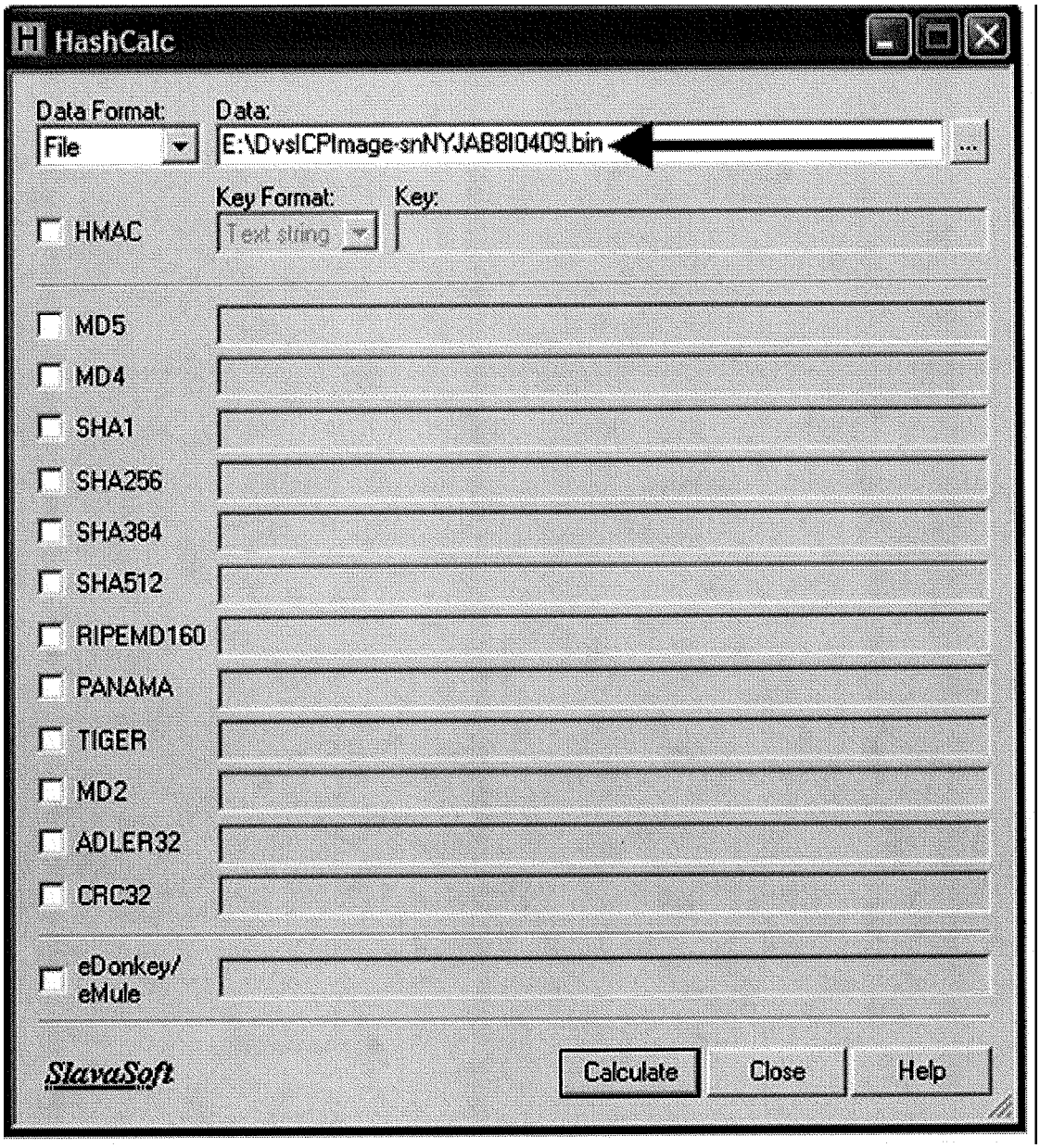
18. Select file based on the following naming convention: DvsICPimage-snxxxxxxxxxxx.bin where "x" = system serial number located on the OpScan. To select file, "Double Click" on the file name.



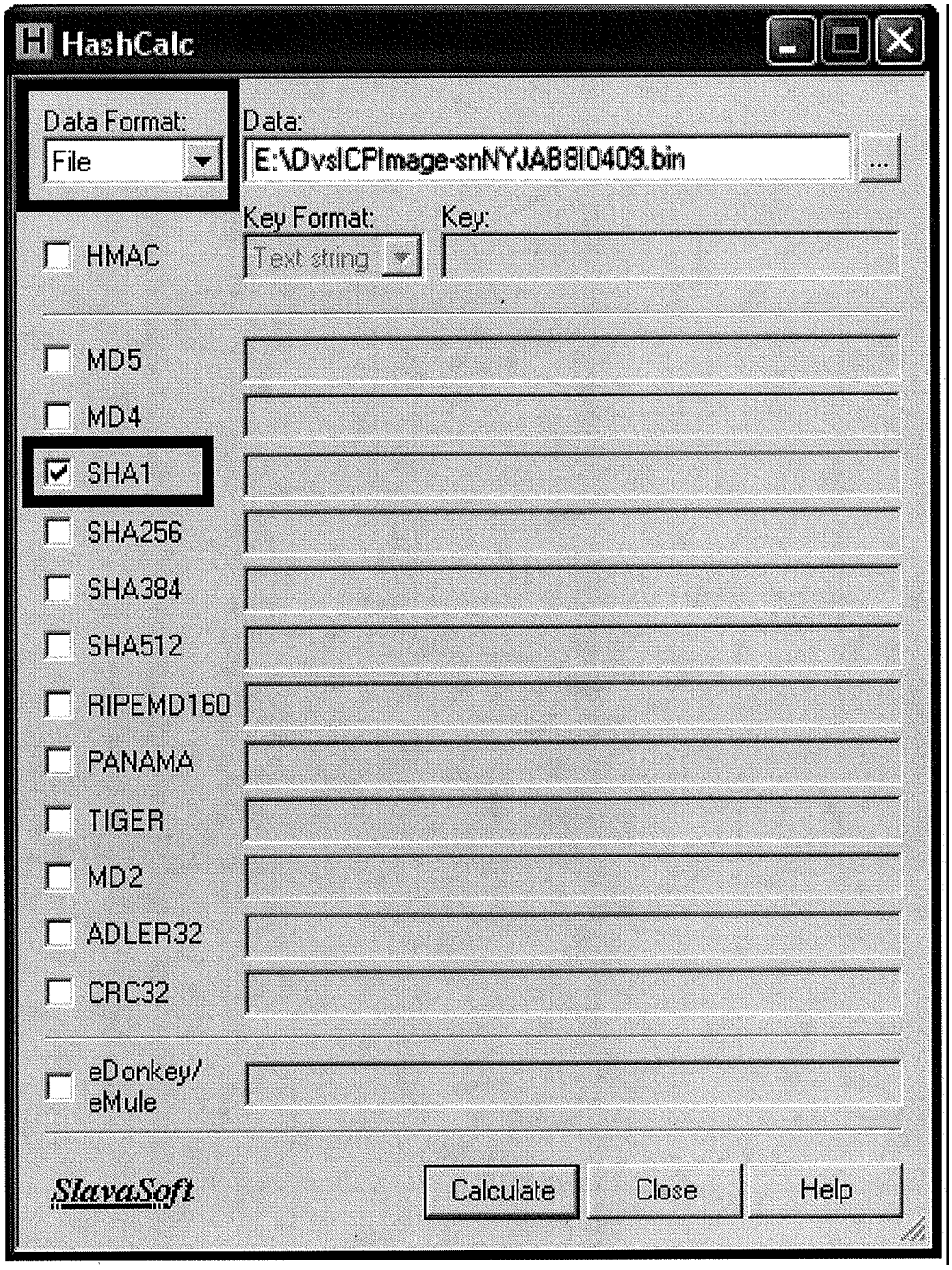


Example of Format

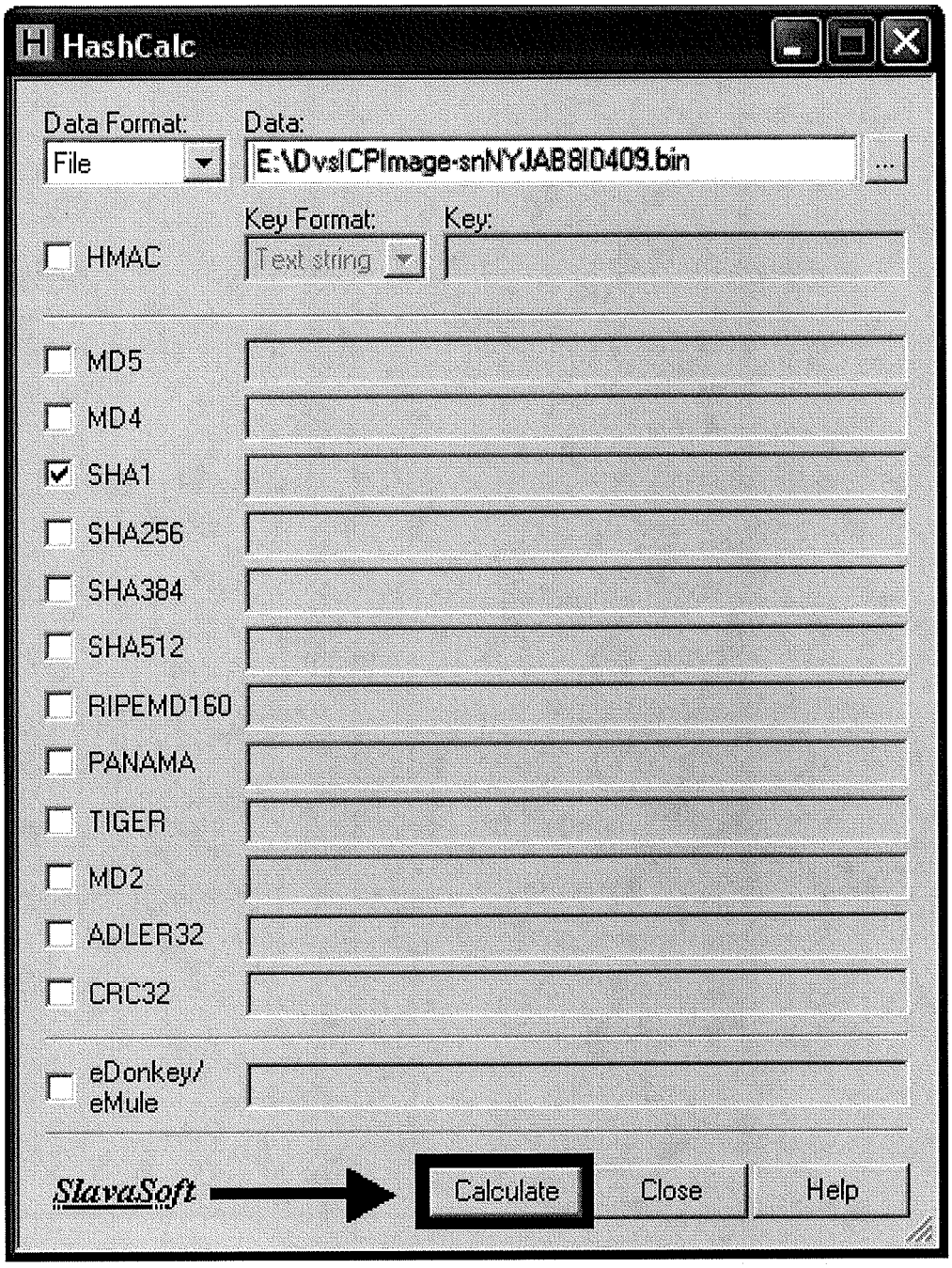
19. File is selected.



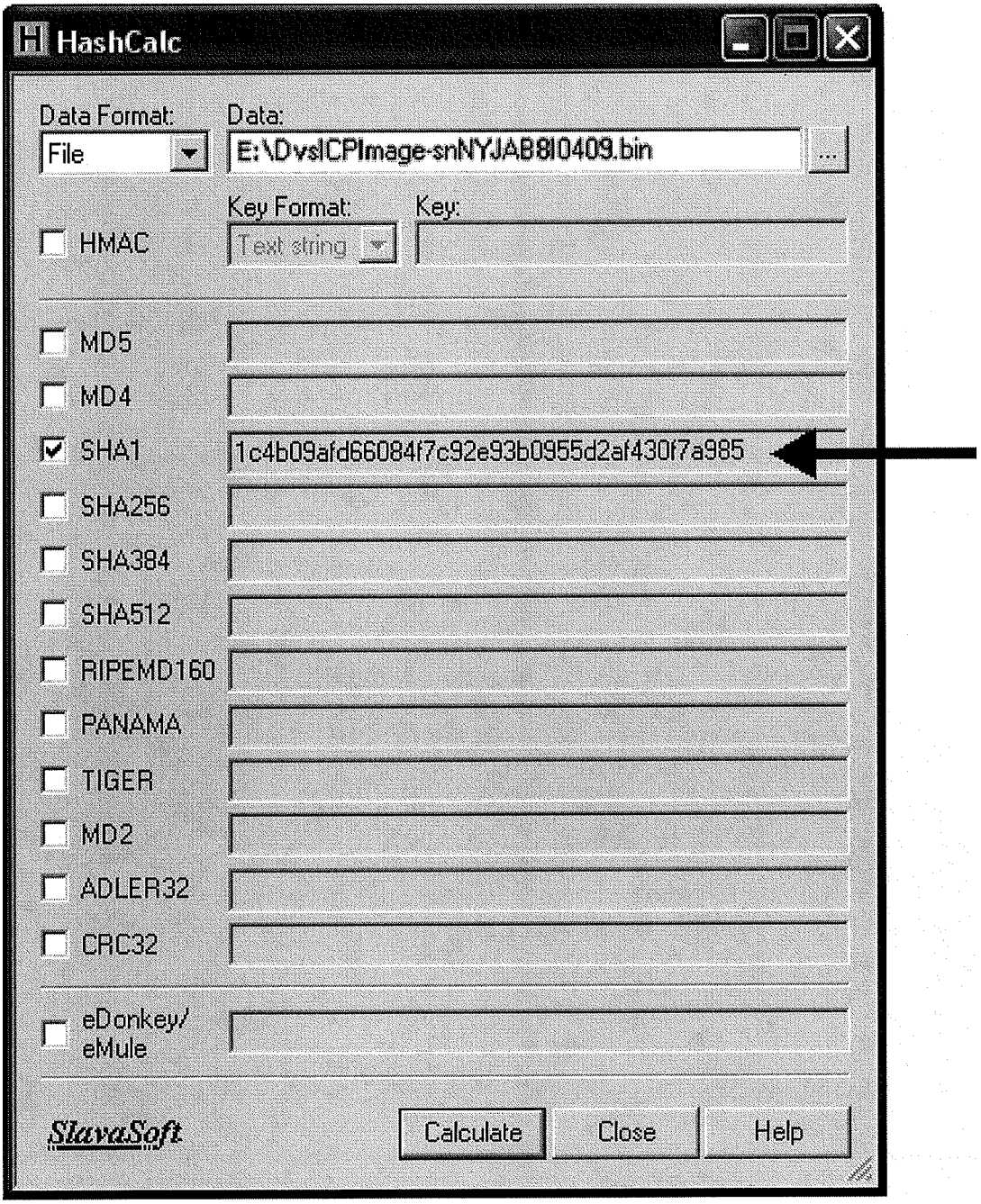
20. To generate the hash value make sure ONLY the following items are selected:
    a. Data Format= File
    b. SHAI is checked



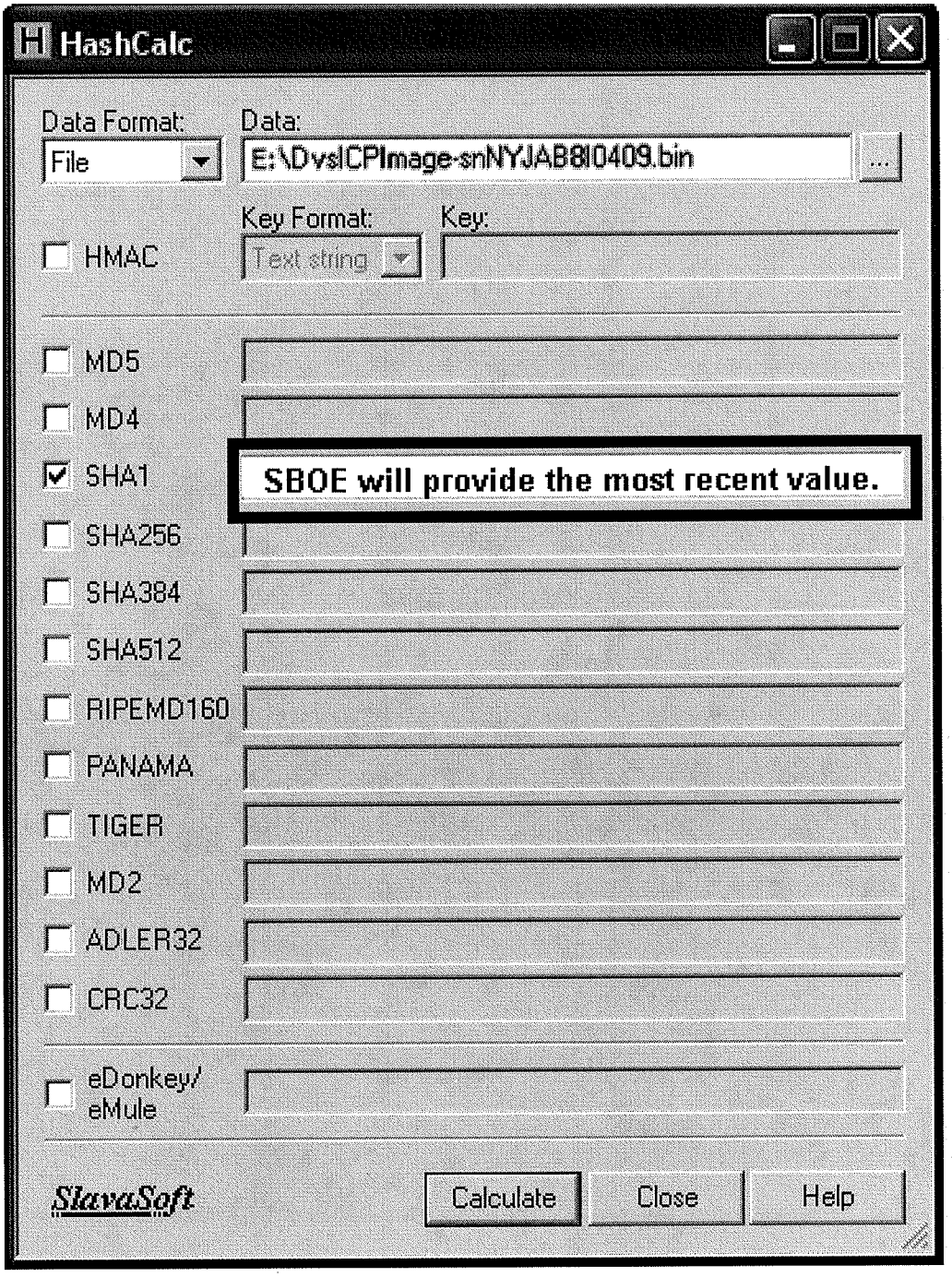
21. Click Calculate to generate hash value.



22. Hash value is generated by HashCalc.



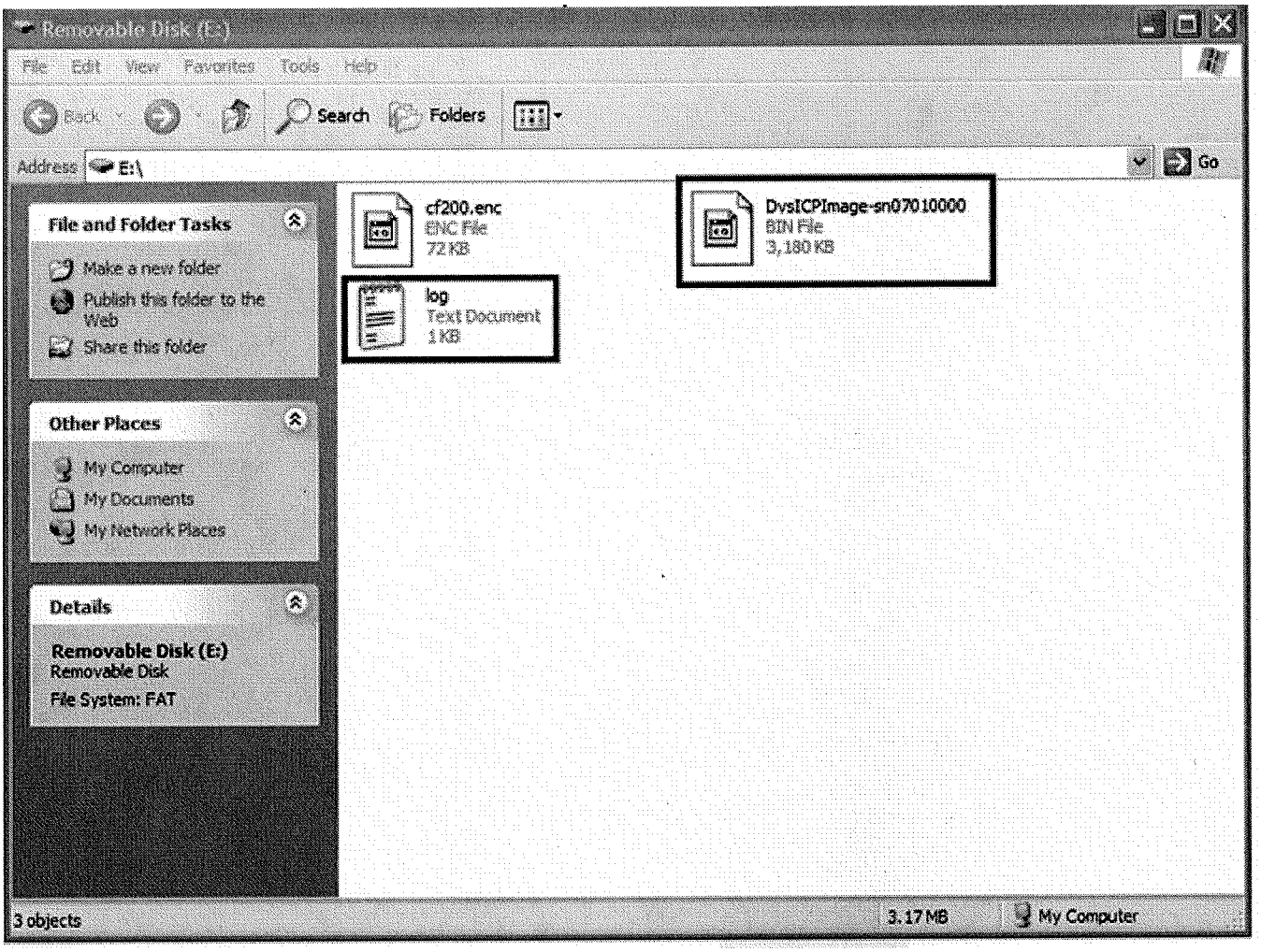
23. Compare hash calc SHAl value to SysTest provided SHAl hash value.



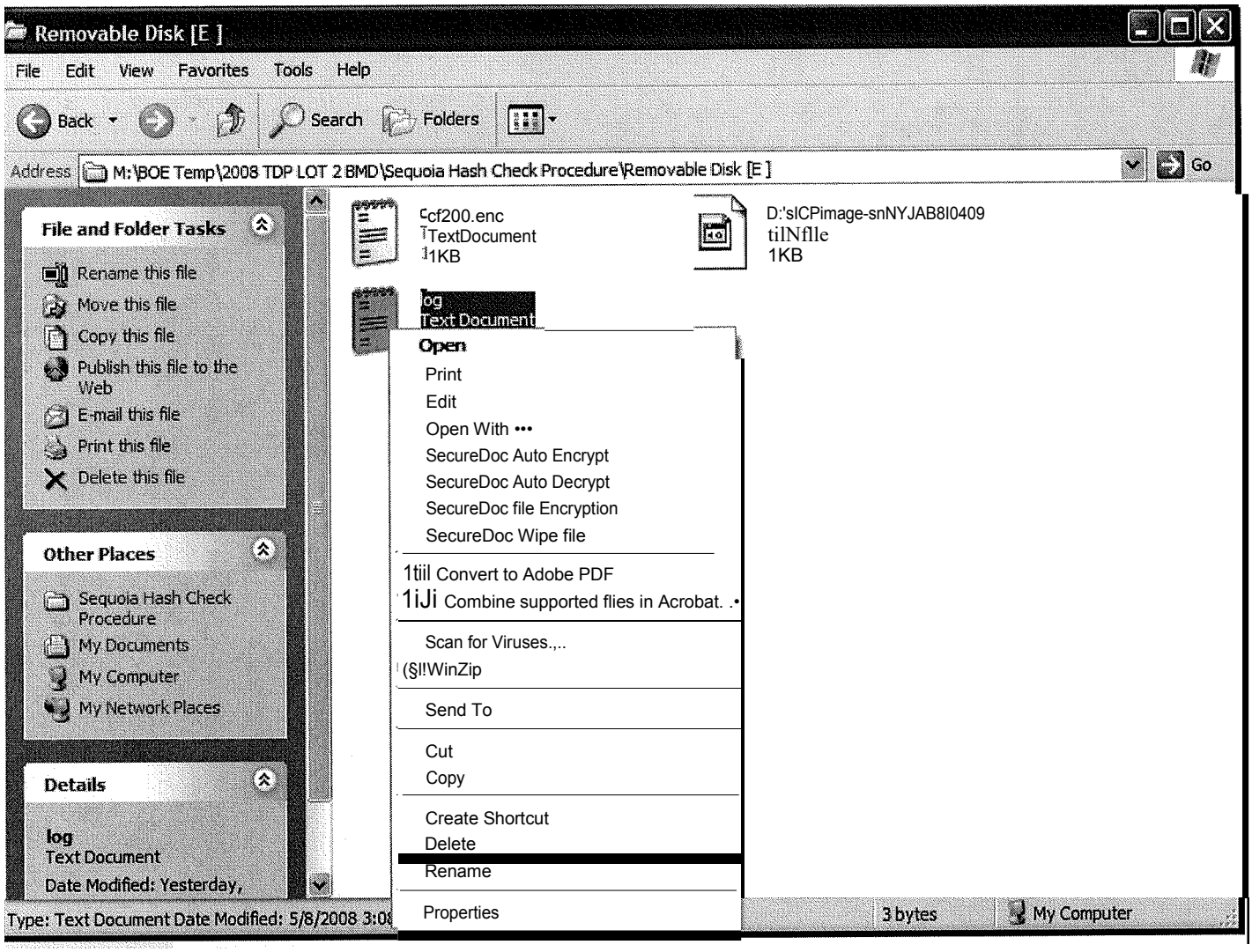
24. If values are the SAME then system PASSES.

25. If values are NOT THE SAME then call SBOE- 518-485-5637.

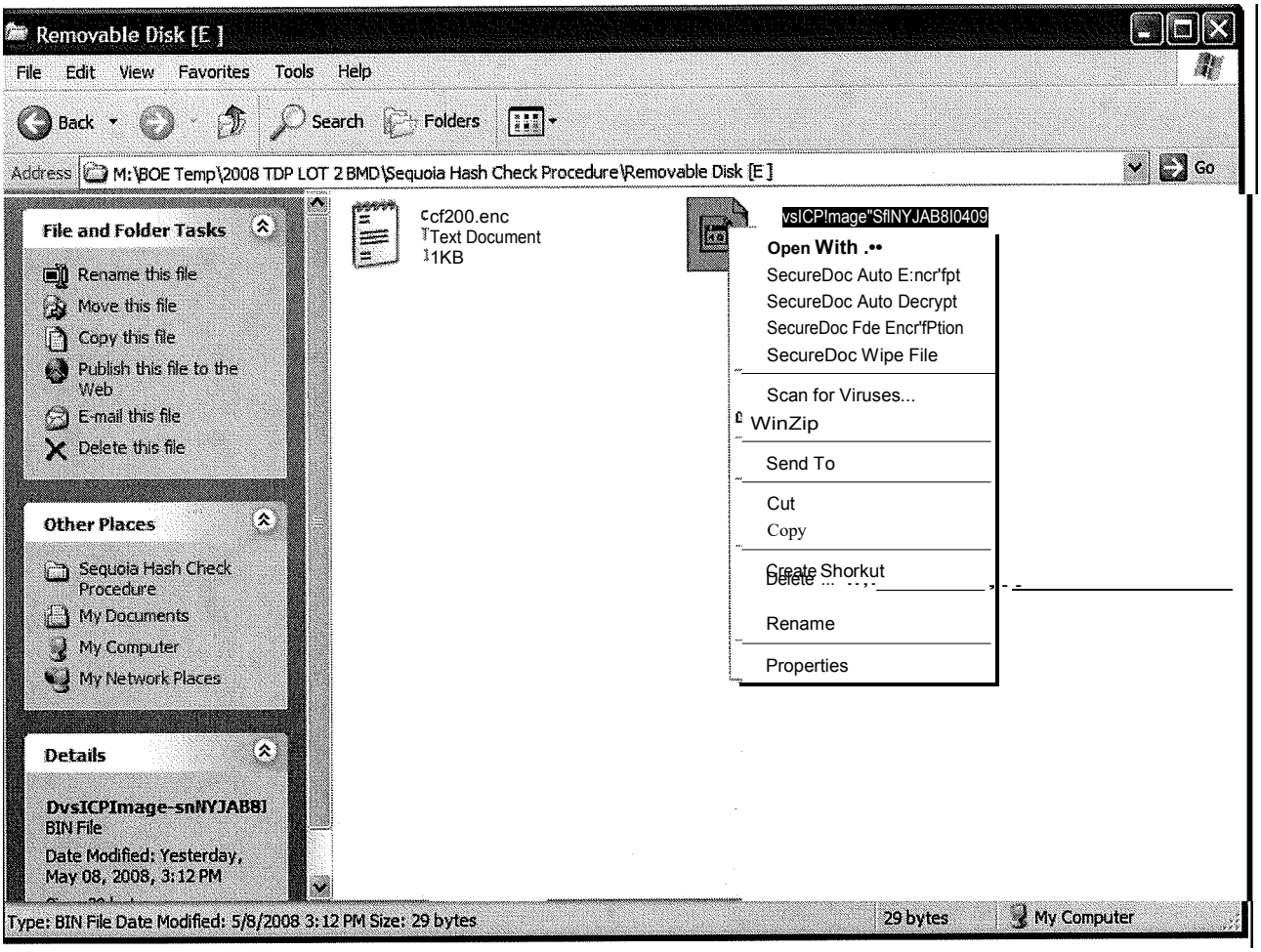
26. Delete the log file and the DvslCPimage-snxxxxxxxxxxx.bin file generated on CF Card **#1**. The files will be located in Removable Disk (x:), where xis the letter assigned to the CF Card Reader. **WARNING: DO NOT DELETE cf200.enc file.**



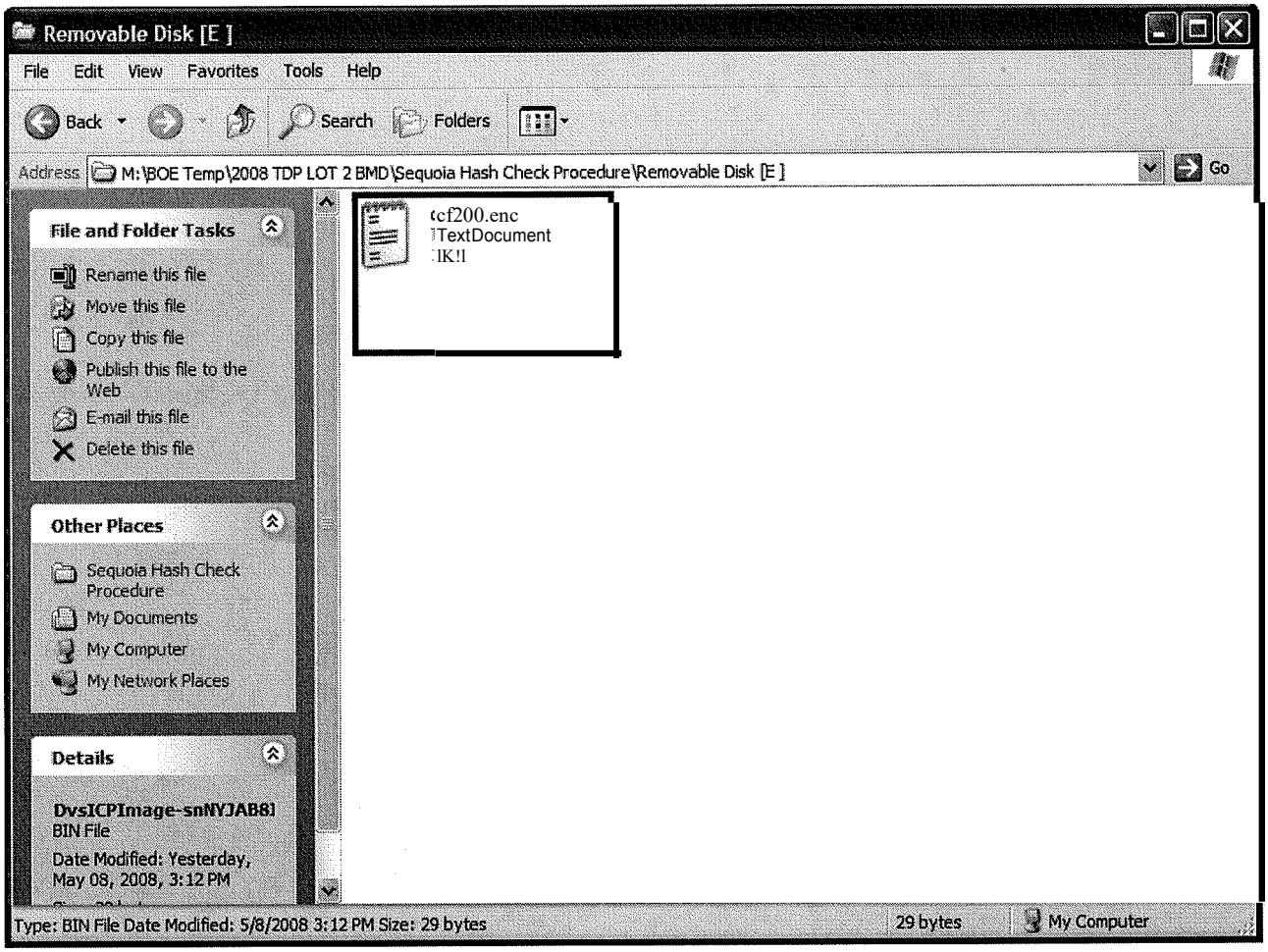
27. Place cursor over the log file and "click" press the right mouse button. Select delete from the menu and send it to the recycle bin.



28. Place cursor over the DvsICPimage-snxxxxxxxxxxx.bin file and "click" press the right mouse button. Select delete from the menu and send it to the recycle bin.

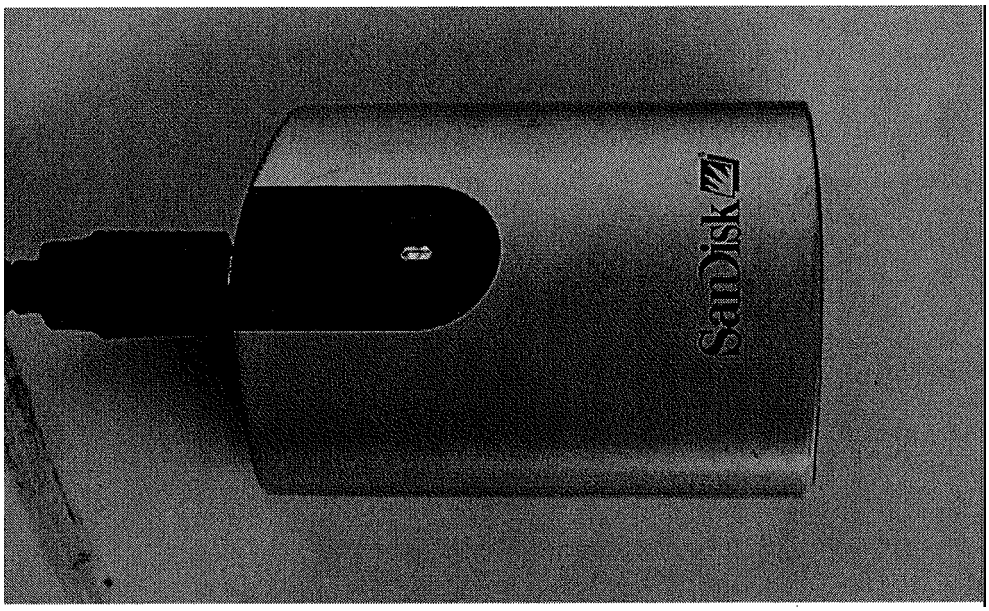


29. Verify only the cf200.enc file is left on the CF card.



30. Remove Firmware Extract CF Card #1 from CF Card Reader.

CF Card Reader



31. Insert Blank CF Card #2 into reader attached to PC and verify that there are no files present. If files are present, delete all files using process described above.

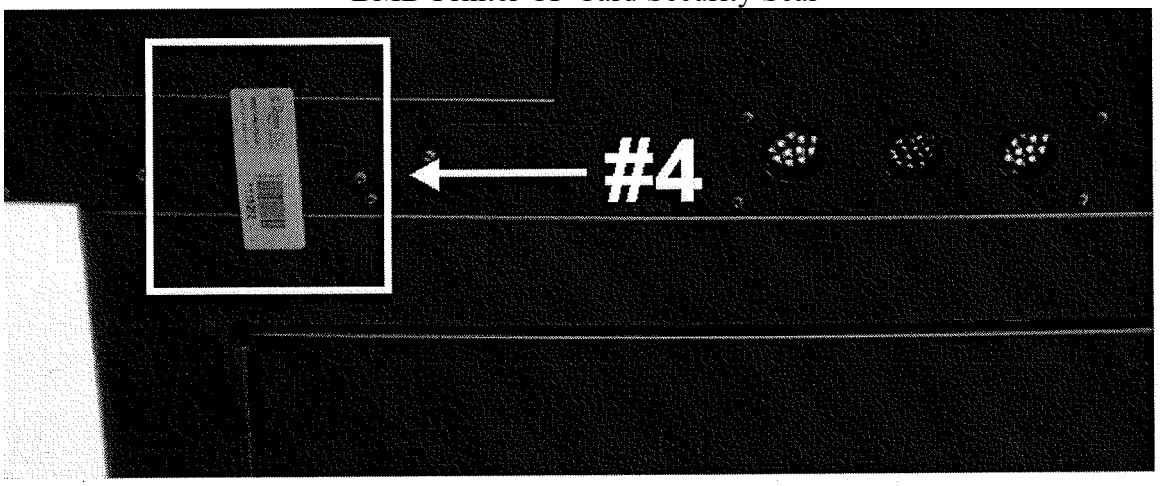
32. Place security seal on CF access doors when finished

33. Repeat process for each OpScan requiring a Hash Check.

6. BALLOT MARKING DEVICE HASH CHECK PROCEDURE

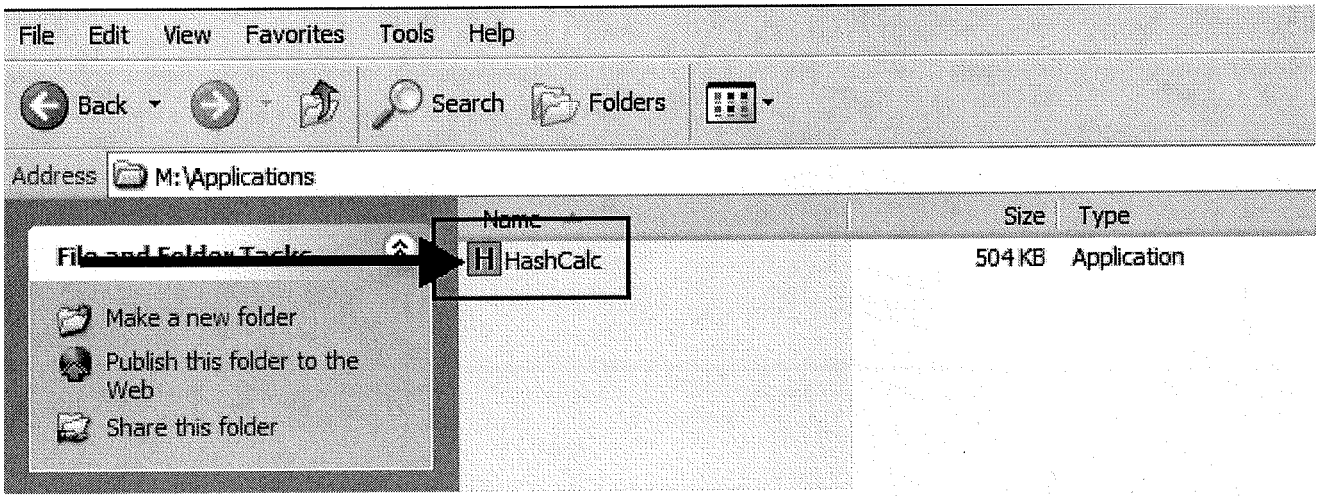
34. A hash check is required if SBOE notifies CBOE of a BMD software/firmware update **OR** the BMD Printer CF Card Security Seal has been compromised.

BMD Printer CF Card Security Seal

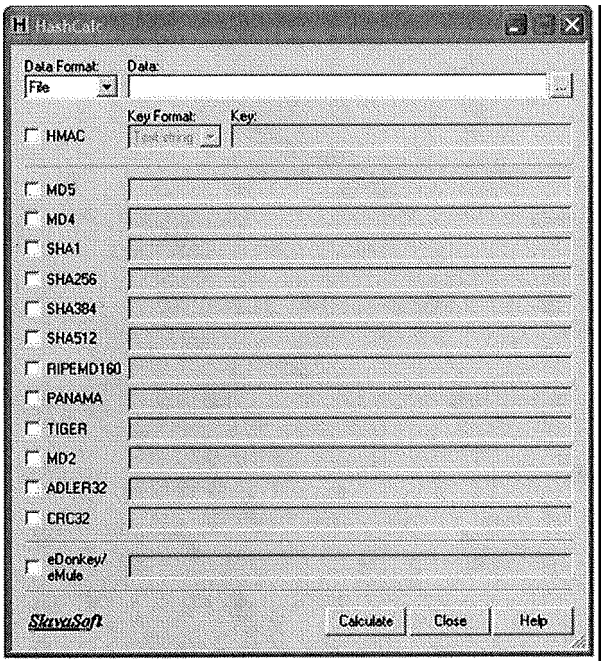


35. CBOE accesses SBOE secure FTP site to download authorized software/firmware image. If you have any questions, please contact SBOE at 518-485-5637.

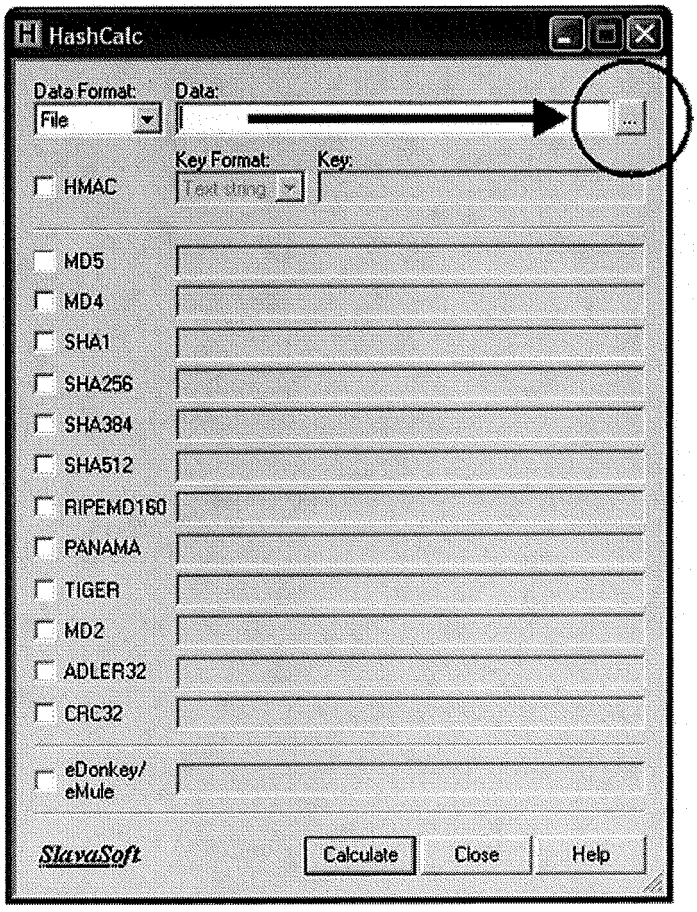
36. CBOE performs hash check on image to verify downloaded software/firmware image is valid. Open HashCalc application by "Doubling Clicking" the HashCalc icon.



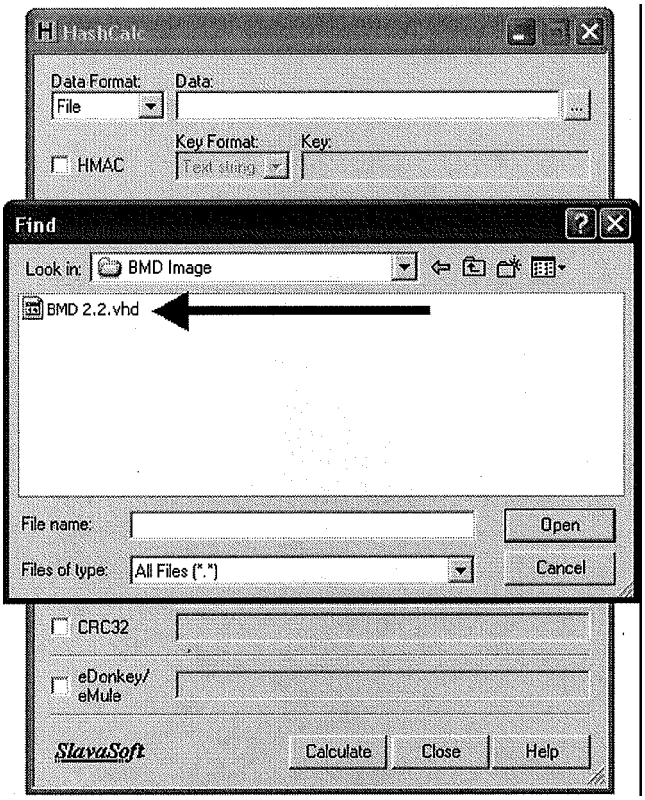
37. HashCale application will launch and the following screen is displayed.



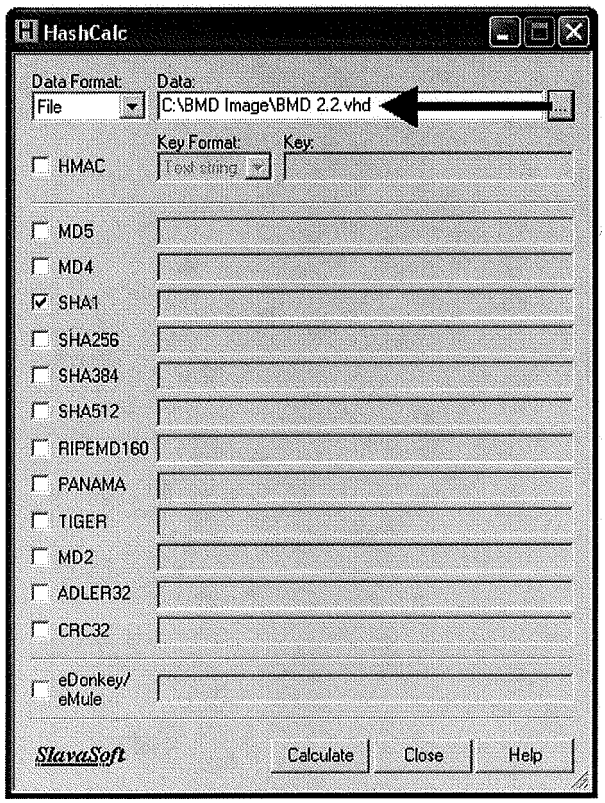
38. Browse and point to the authorized software/firmware image file that was downloaded from the SBOE secure FTP site. "Click" to browse to desired file.



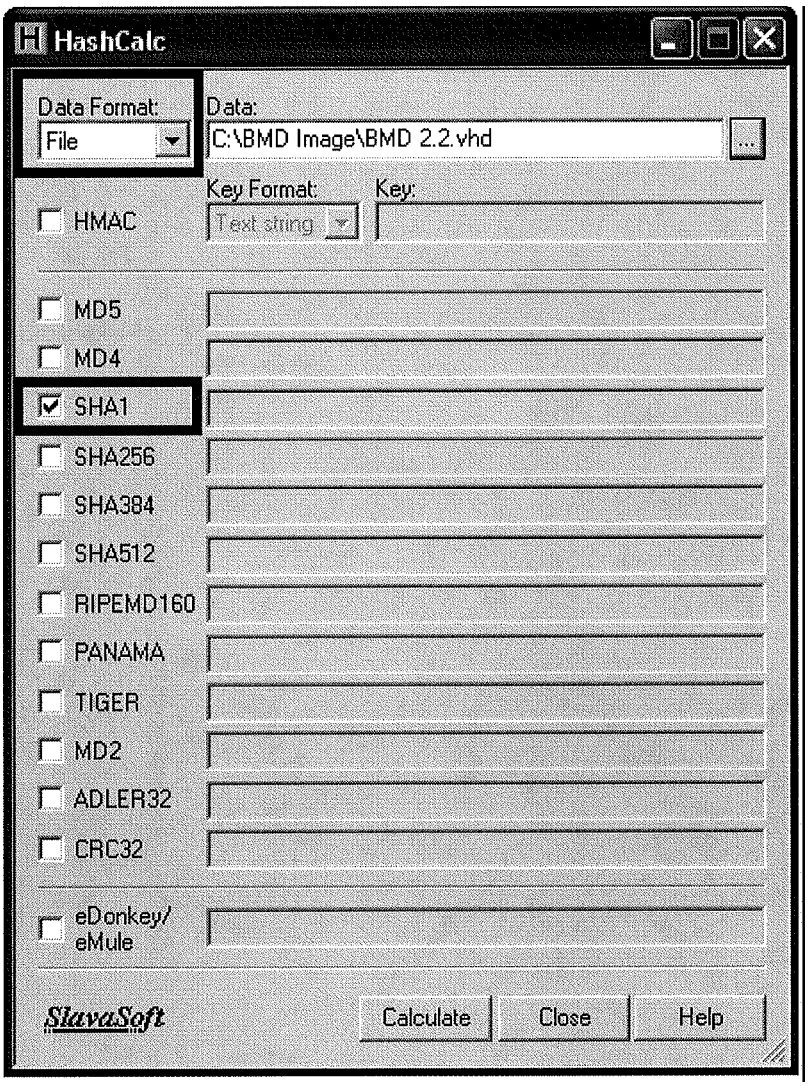
39. Select authorized software/firmware image file.



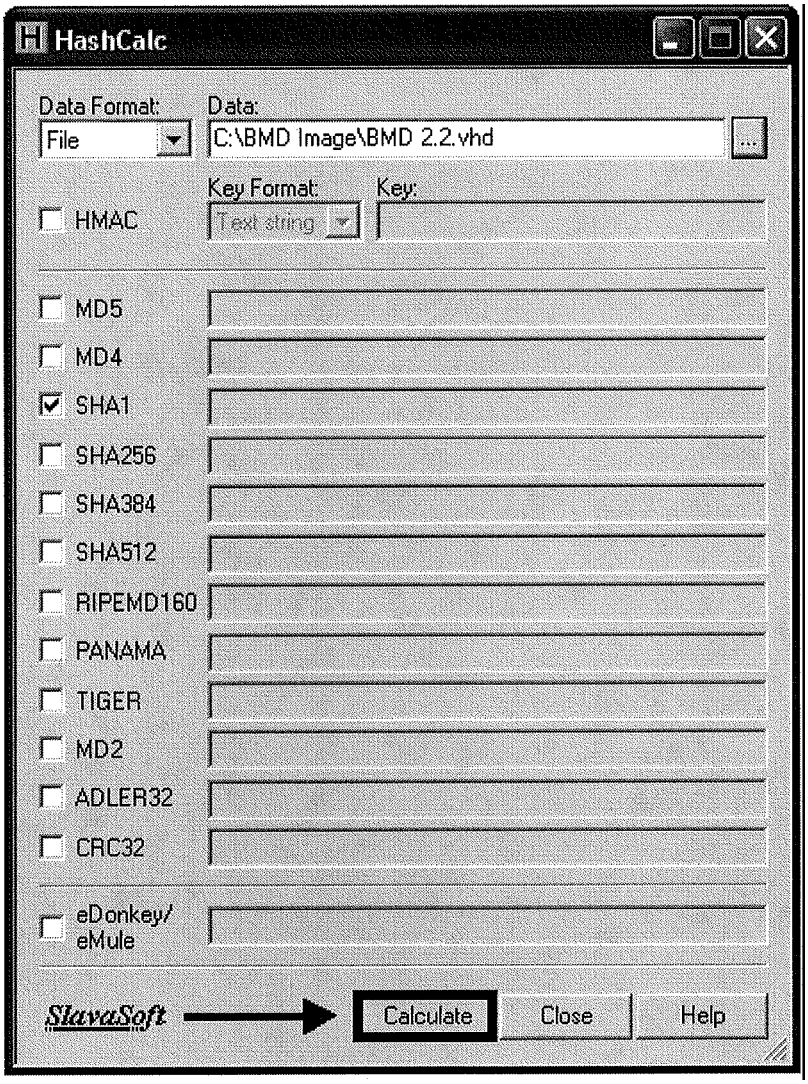
40. File is selected.



41. To generate the hash value make sure ONLY the following items are selected:
    a. Data Format= File
    b. SHAl is checked

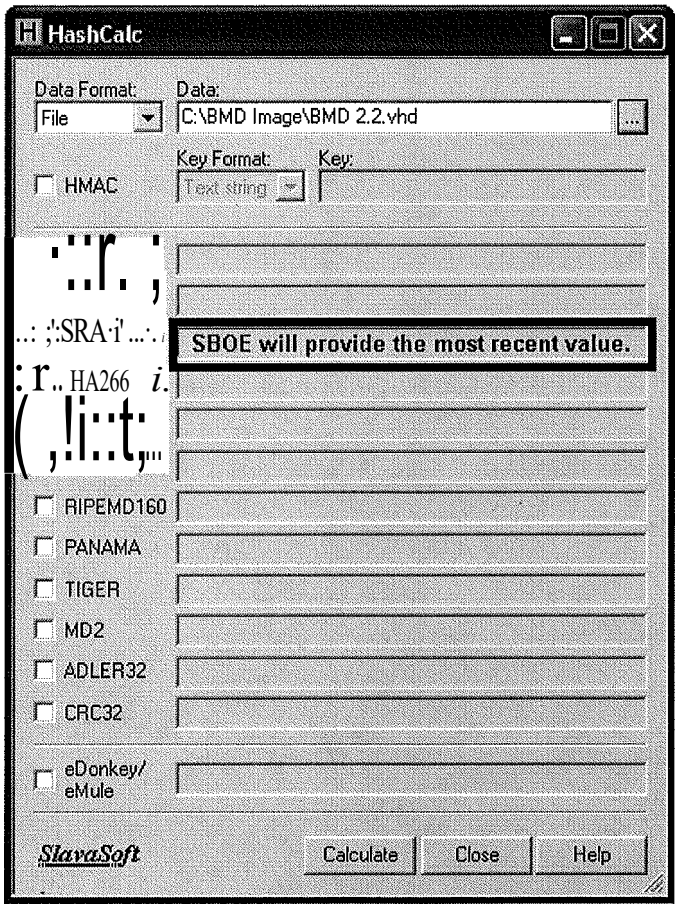


42. Click Calculate to generate hash value.



43. Hash value is generated by HashCalc.

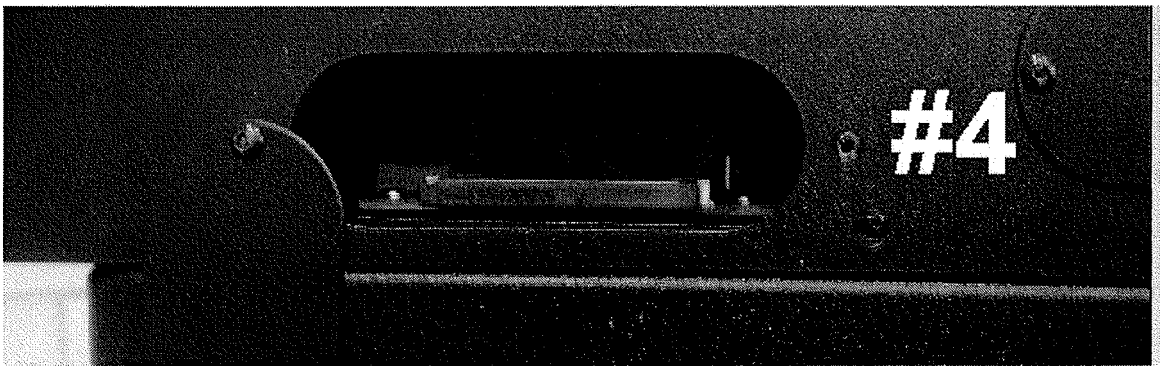
44. Compare hash calc SHAl value to SysTest provided SHAl hash value.



45. If values are the **SAME** then the authorized software/firmware image file that was downloaded from the SBOE secure FTP site **PASSES.**

46. If values are NOT THE SAME then call SBOE-518-485-5637.

47. If the values are the **SAME** then the CBOE will remove the BMD Printer CF Card security seal and will remove the BMD CF Card.

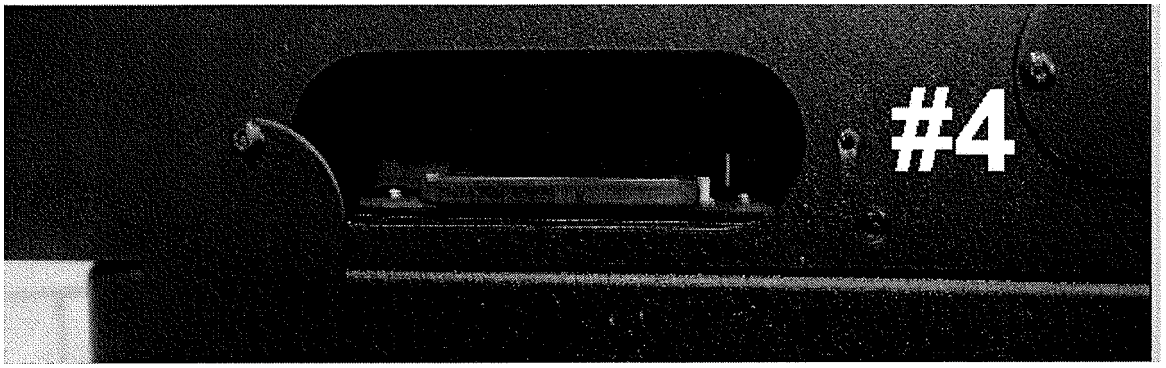


48. The CBOE will reimage the CF card using the authorized software/firmware image file that was:

a. downloaded from the SBOE secure FTP site
b. passed the hash check

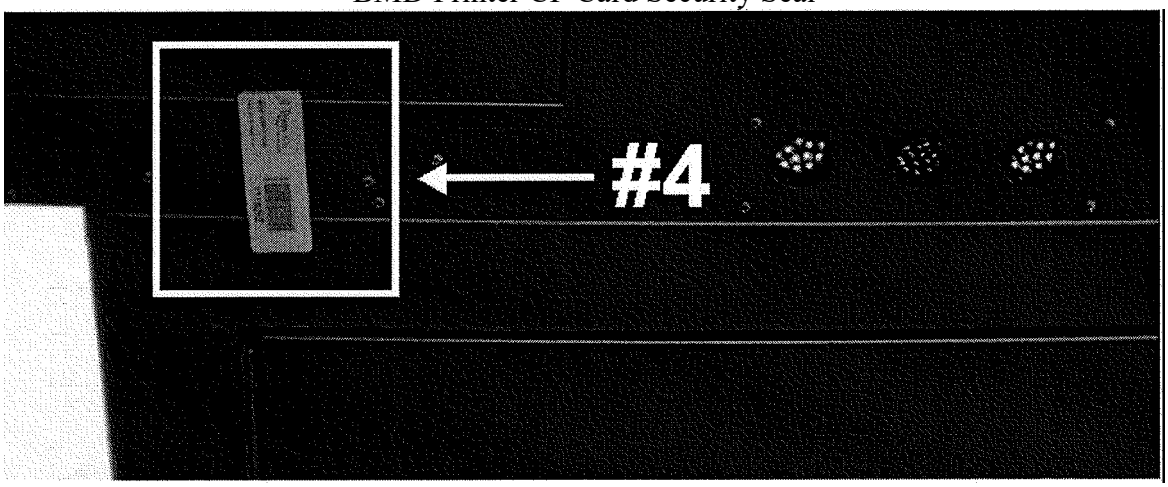
Note: Jfyou have any questions on how to reimage the CF Card please contact SBOE at 518-485-5637.

49. The CBOE will insert the reimaged CF card into BMD.



50. The CBOE will place a new security seal over access plate and will record the new seal serial number.

BMD Printer CF Card Security Seal



51. The CBOE will perform test to ensure that reimaging was successful.
    a. Tum on BMD/Optical Scanner *(See Step 6for details)*
    b. Verify all software/firmware loads (green light on BMD)
    c. Print a test ballot
    d. Tum off BMD/Scanner *(See Step 13 for details)*

52. NOTE: A hash check is required when SBOE notifies CBOE of a BMD software/firmware update OR the BMD Printer CF Card Security Seal has been compromised.

ELECTION SYSTEMS AND SOFTWARE {ES & S)

DS 200

VOTING SYSTEM

Hash Check Process

OVERVIEW

Each County Board of Elections (CBOE) will perform a hash check on each voting system to ensure that the same firmware / software that was authorized by the ITA is currently installed and that no other unauthorized software / firmware is present. The hash check procedure will need to be performed during each Pre-Qualification Test and Maintenance Test. Each hash check option is described in detail below.

1. ES&S DS200 HASH CHECK PROCEDURE - OPTION 1

Hash Check Option 1 - Perform hash check on each individual voting system

CBOE win perform a hash check on each individual voting system. Refer to sections 3, 4 and 5 of this document for hash checking details. **Option 1 must be used:**

A. When performing a hash check after receiving any device that has been out of the CBOE Secure Control

Or

B. When the security seals are found to have been broken, after receiving a device from the NYS State Board of Elections Acceptance Testing.

Option 1 may also be used when performing a hash check during Quarterly Maintenance Testing and during Pre-Qualification testing.

2. ES&S DS200 HASH CHECK PROCEDURE - OPTION 2

Hash Check Option 2 - Perform Upgrade/ Hash Check Combination

CBOE will perform an upgrade on each voting system using the current process (contact New York State Board of Elections (NYSBOE) regarding any upgrade questions). CBOE will then randomly select 5 percent of the upgraded voting systems to perform a hash check on. **Option 2 may only be used when performing a hash check during Quarterly Maintenance Testing or during Pre-Quaiification Testing.**

Option 2 Details:

1. Verify the latest software/firmware version from NYSBOE
2. Verify the latest Linux CD and Hashing Scripts from NYSBOE
3. Verify the latest Hash.txt file from NYSBOE
4. Randomly select one DS200 from county inventory
5. Perform upgrade using the software/firmware from step #1 above using the current process (contact NYSBOE regarding any upgrade questions)
6. Once the upgrade is complete, **perform the hash check** procedure as outlined in this document.

7. Verify that the **report.txt** file shows no differences
8. **Perform upgrade on all DS200** optical scanners in county inventory
9. **Randomly select five percent (5%)** of the DS200 optical scanners m county inventory
10. **Perform the hash check procedure** as outlined in this document on the 5% selected
11. Verify that the **report.txt** file shows no differences for each of the 5% selected

3. GETTING STARTED

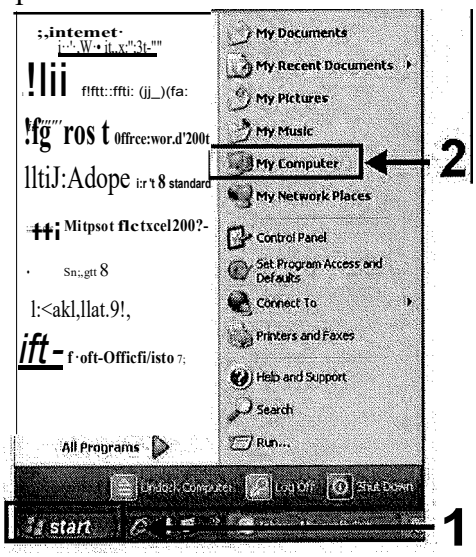
3.1. Supplies

The following supplies will be required in order to conduct a hash check on the ES&S DS200 Optical Scanner (OS or OpScan).

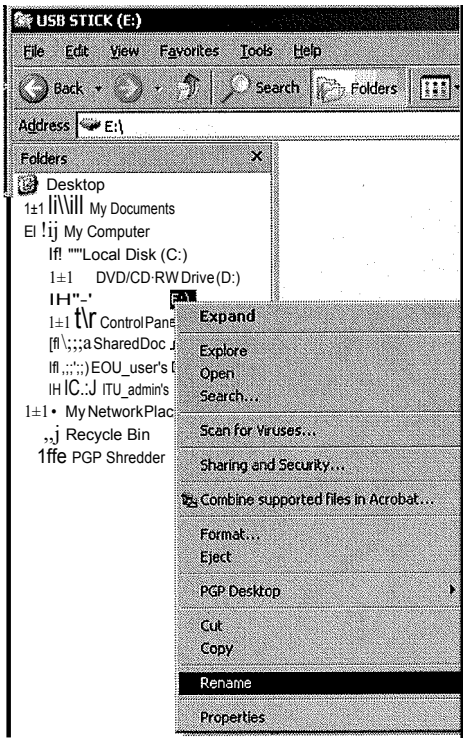
- 1 USB Stick with valid election definition
- **1** USB EXTRACT Stick ***(See section 3.1.1 to prepare USB EXTRACT Stick)***
- **1** USB HASH SCRIPT Stick ***(See section 3.1.2 and 3.13 to prepare USB HASH SCRIPT Stick)***

3.1.1. Preparing USB EXTRACT Stick

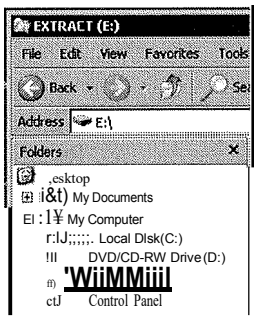
To prepare the **EXTRACT** USB Stick, perform the following steps:



1. Insert the USB stick into the Windows computer
2. Left-click the **Start** button on the desktop and select **My Computer**
3. Left-click on the USB Stick. The contents will be displayed on the right side pane. If the Stick is already labelled **EXTRACT,** then verify the stick is empty. If not, delete all the files and proceed to step **5.** If the label needs to be changed, proceed to step **4.**



4. With the USB Stick highlighted, right-click on the USB stick and select **Rename** from the flyout menu. The name of the USB will become editable, type **EXTRACT** and press the **Enter** key.



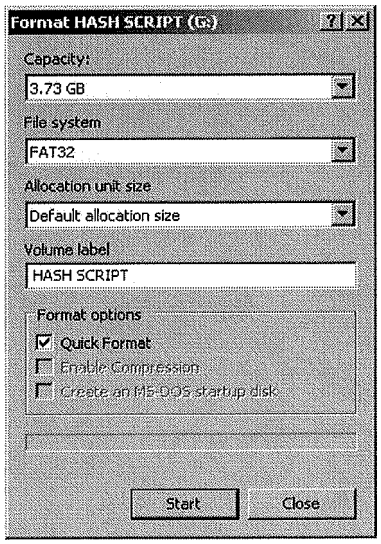
5. Remove the USB **EXTRACT** Stick and put aside.

Note When preparing the USB sticks for the Hash checking, the Names/Labels of the USB sticks are ***extremely*** important to the process. When the USB Stick with the Valid Election Definition is created in Electionware, the stick will be automatically given the name **POLL PLACE.** The **EXTRACT** and **HASH SCRIPT** sticks will have to be set manually through Windows. The labels **ARE** case sensitve.

3.1.2. Preparing USB HASH SCRIPT Stick

To prepare the **HASH SCRIPT** USB Stick, perform the following steps:

1. Insert the USB stick into the Windows computer
2. Left-click the **Start** button on the desktop and select **My Computer**
3. Left-click on the USB Stick. The contents will be displayed on the right side pane. Verify the stick is empty. If not, save any existing archive files to a safe location before performing step 4.
4. With the USB Stick highlighted, right-click on the USB stick and select **Format** from the flyout menu. A dialog to format the stick will open. Verify the following options:
   - Capacity: Approximate size of stick - 3.73GB for a 4GB stick OK
   - File System: **FAT 32**
   - Allocation Unit Size: **Default allocation size**
   - Volume Label: **HASH SCRIPT**
   - Format Options:
     - **Quick Format: Checked**
     - **Enable Compression:** Unchecked (disabled)
     - **Create an MS DOS Start Up disk:** Unchecked (disabled)

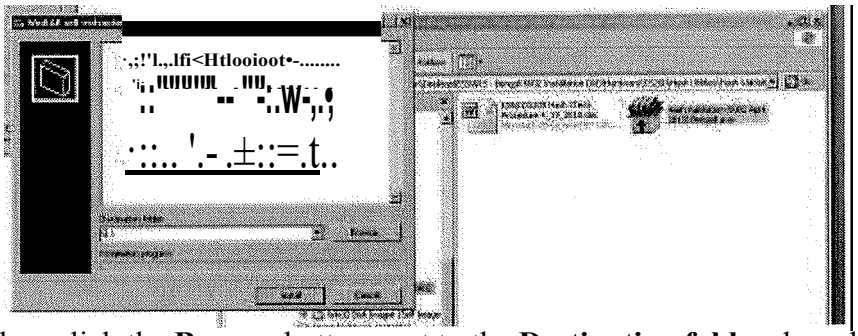


5. Click the **Start** button. Once completed, close the dialog and verify the USB is labelled **HASH SCRIPT** and is empty. Do not remove from Computer.

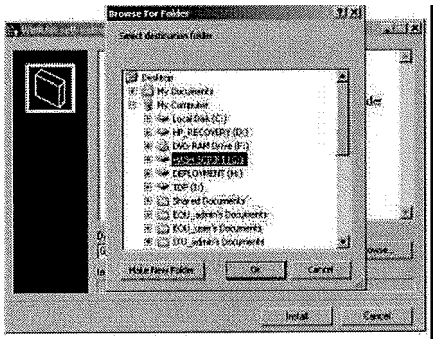
3.1.3. Placing the scripts on the HASH SCRIPT USB Stick

To prepare the **HASH SCRIPT** USB Stick, perform the following steps:

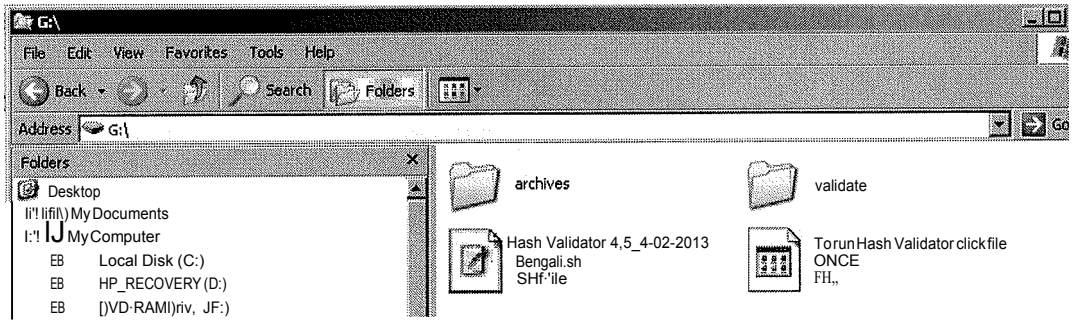
1. If not already done, load the DVD provided by NYSBOE which contains the **Hash Script Stick Creator.exe** and the **ES&S DS200 Hash Check Procedure.pdf** instructions.
2. Verify prepared USB **HASH SCRIPT** Stick is plugged into the computer.
3. Navigate to the folder containing the **Hash Script Stick Creator.exe** and double-click the **Hash Script Stick Creator.exe** icon. A dialog will open titled **"WinRAR Self Extracting Archive".**



4. In the dialog, click the **Browse** button next to the **Destination folder** drop down box. A **Browse for Folder** dialog will open



5. Click on the **HASH SCRIPT** stick and click the **OK** button. **Browse for Folder** dialog will close. Verify **HASH SCRIPT** is listed in the **Destination folder.**
6. Click the **Install** button. Once complete, the **WinRAR** dialog will close. Click on the **HASH SCRIPT** USB and verify **ONLY** the following are present on the USB stick.



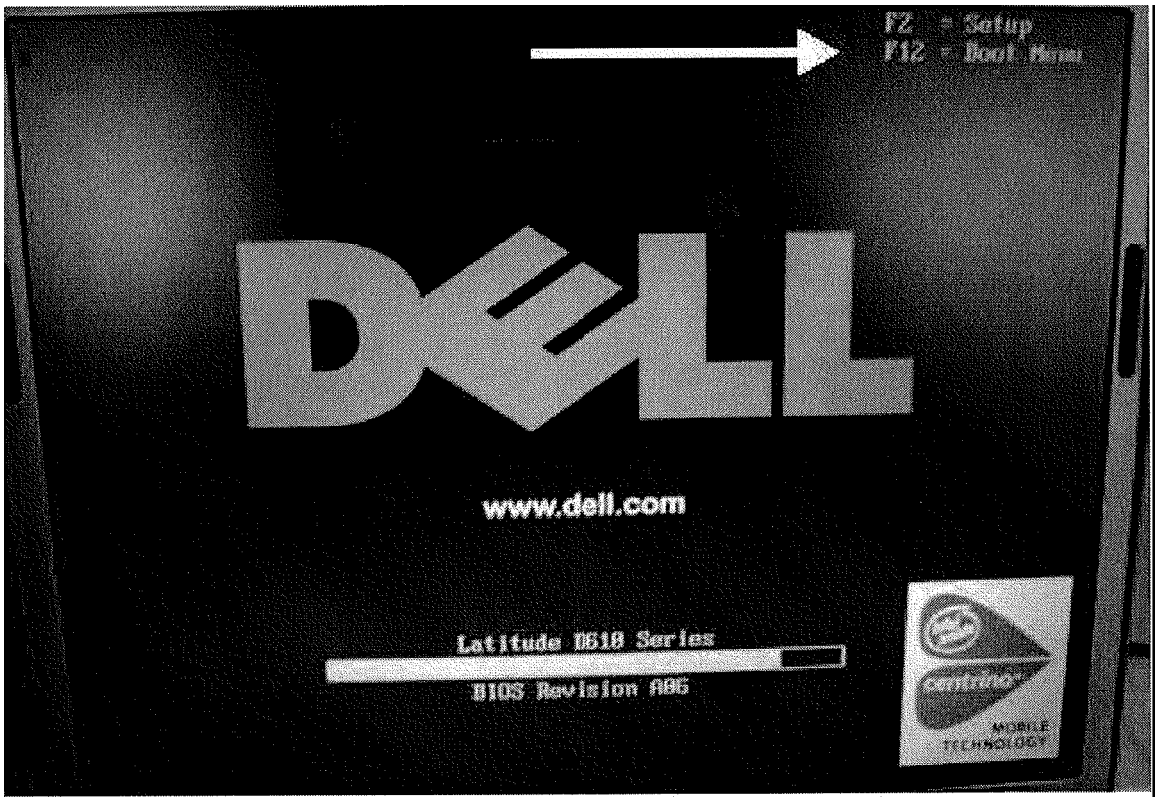
7. When the files are verified, remove the USB and set aside.

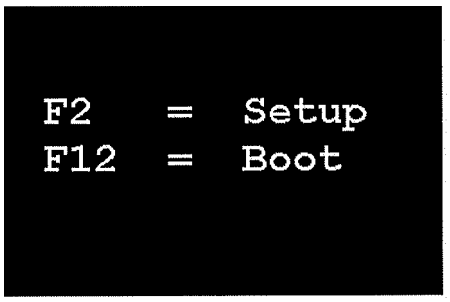
3.2. PC Set up

Note: some of the screens shown below may look different on your PC based on the System BIOS (basic input/output system). -

1. Start PC
2. Press the **F12** key on your keyboard

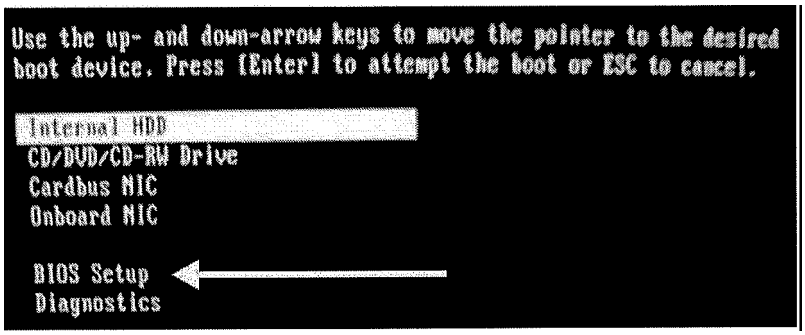
When the PC is starting up, press the **"F12"** key on the key board when the **F12** prompt is displayed on the screen. The prompt will only be displayed for a few seconds.

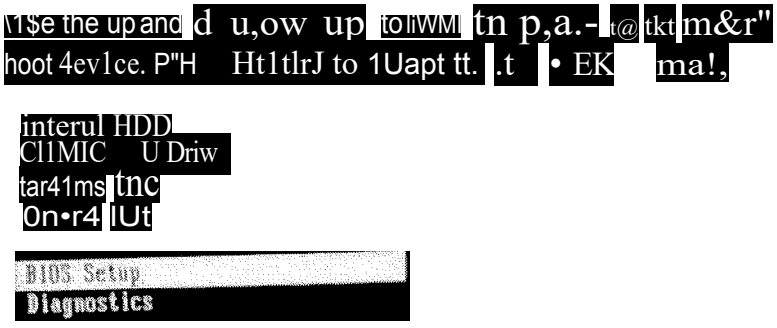




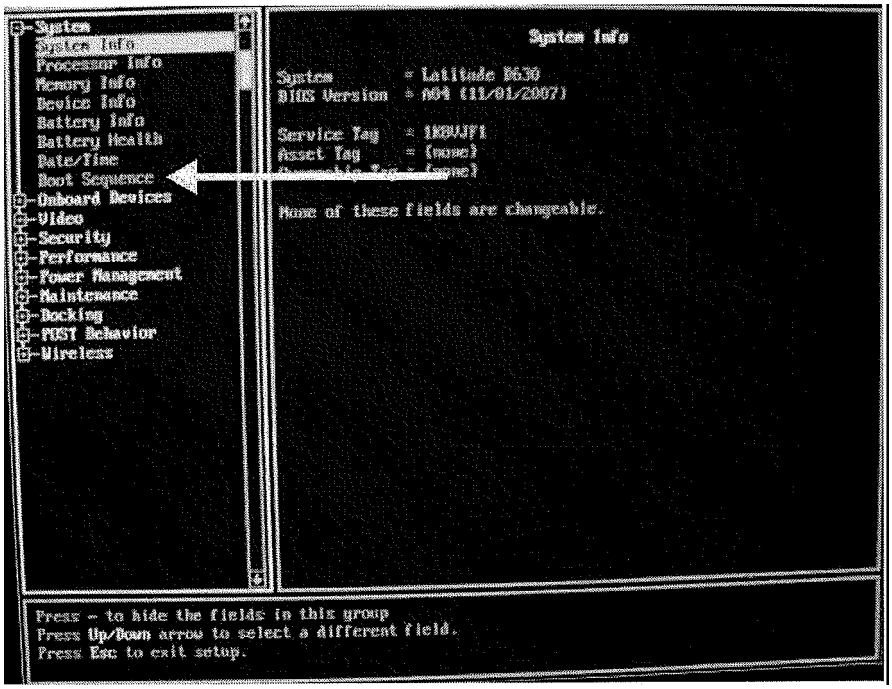
3. Navigate to BIOS Setup

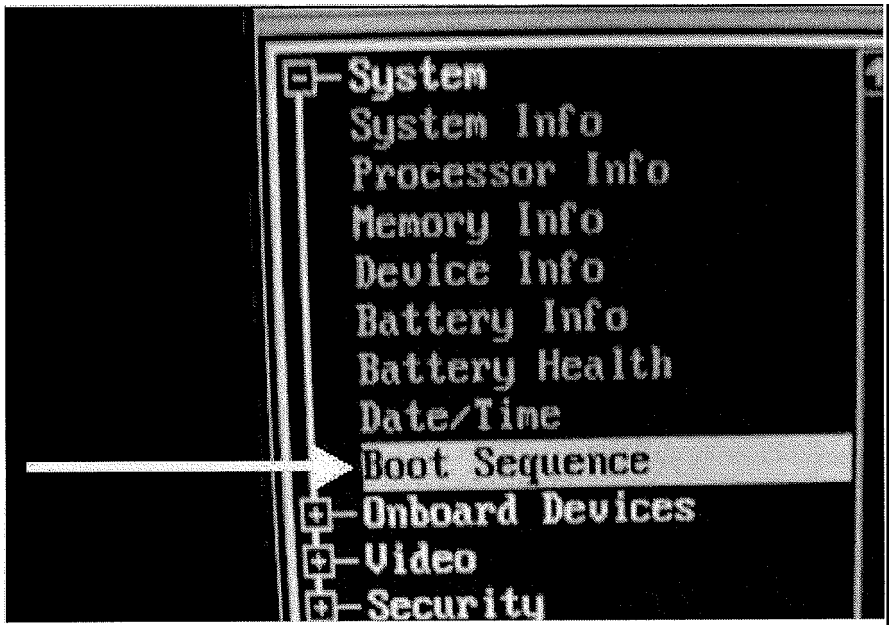
Use the **up** and **down-arrow** keys to move the highlight selection to **[BIOS Setup]** and **press[Enter].**



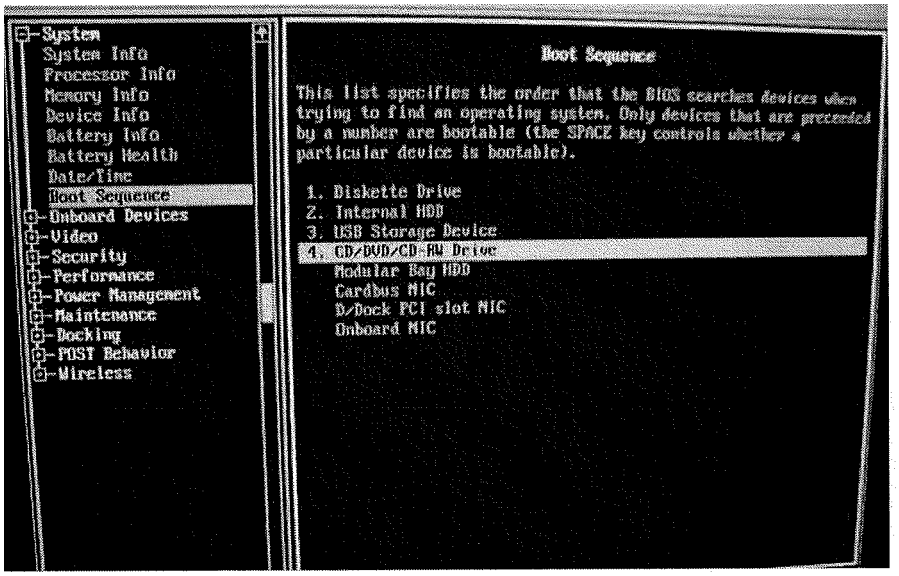


4. Navigate to **System> Boot Sequence**
Use the **Up/Down** arrow to select a different field.

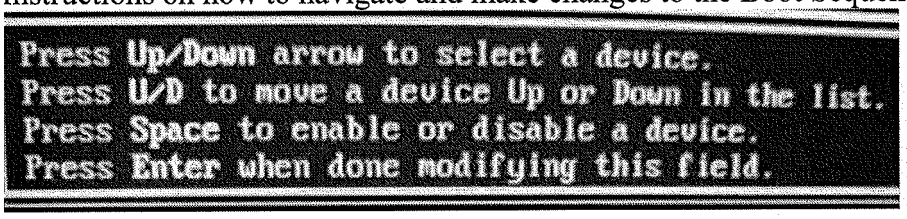




5. Determine if **CD/DVD/CD-RW Drive** is listed as the first Boot Sequence in the list.
   IF NOT, follow instructions at the bottom of the screen to make it the top item **(number 1)** in the list.



Instructions on how to navigate and make changes to the Boot Sequence Screen:



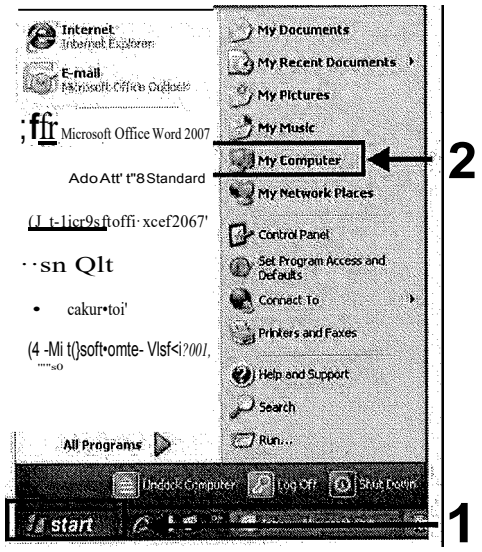
- Press the **'U'** key to move **CD/DVD/CD-RW Drive** to the top of the list.
- Press **'ENTER'** when finished moving the **CD/DVD/CD-RW Drive** to the top of the list.

6. Once completed, follow instructions below to exit the **BIOS Setup.**

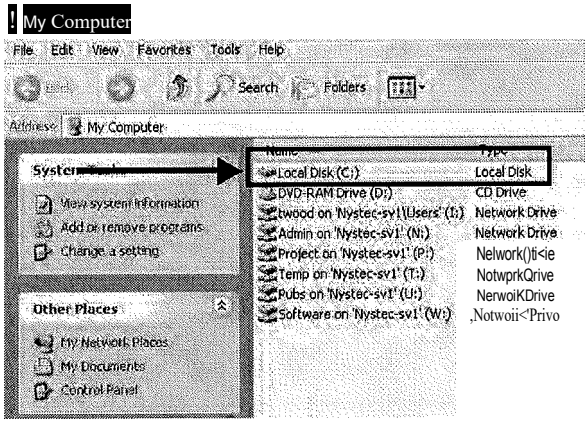
- Press the **'ESC'** key
- Select **'Save/Exit'** from the pop-up menu to exit **BIOS Setup.**

7. Confirm hard drive is named **'Local Disk'**

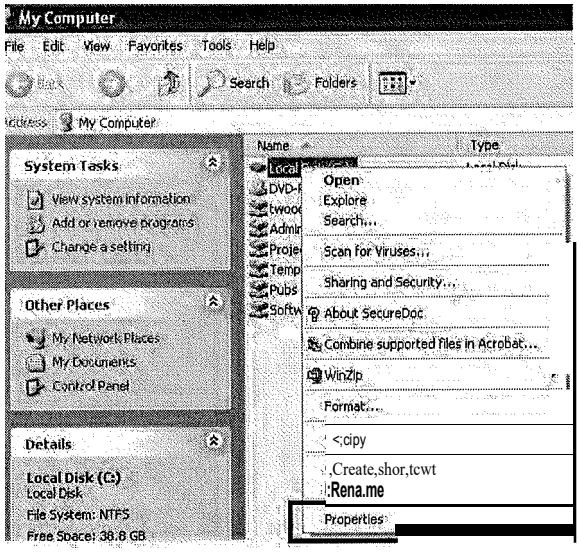
- Go to **'Start'** and select **'My Computer'**



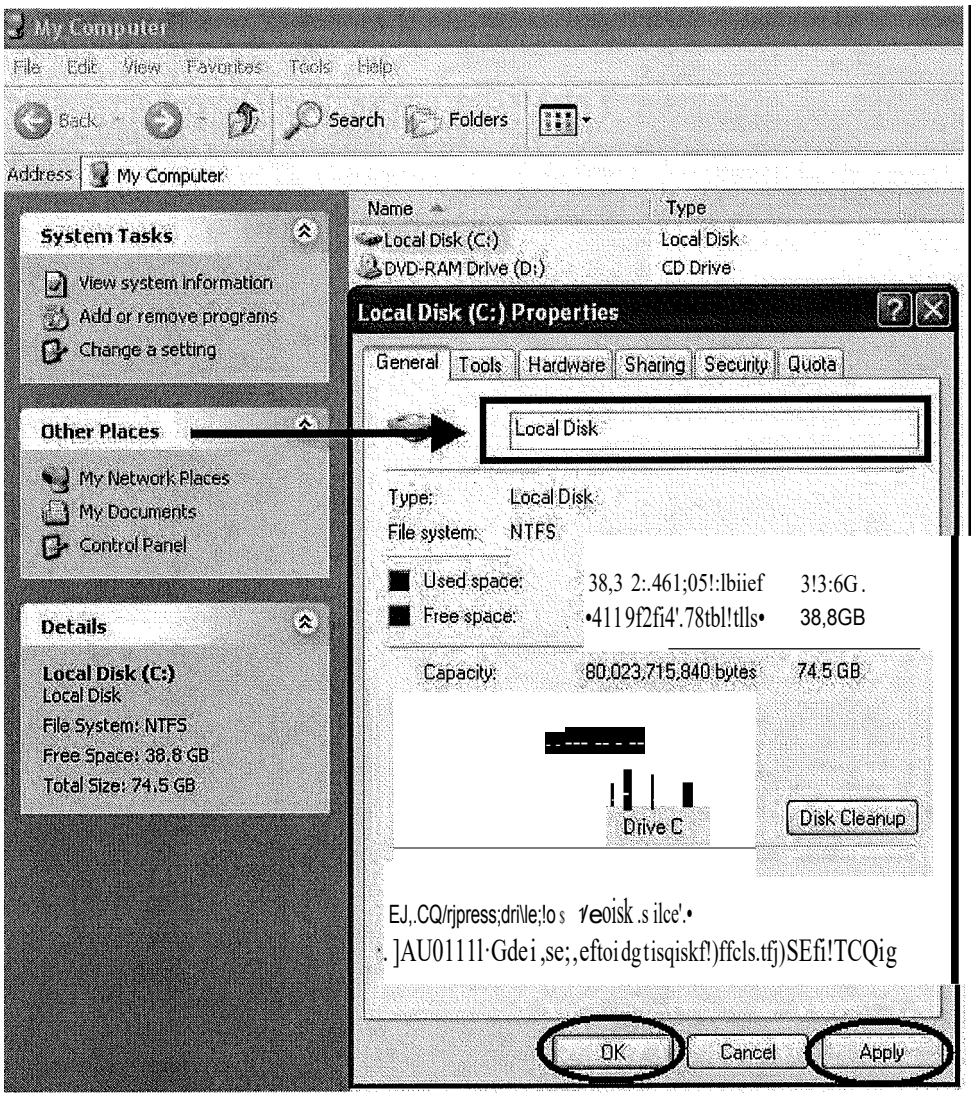
- Right click on **'Local Disk (C:)'**



- Select **'Properties'**


My Computer
File Edit View Favorites Tools Help
Search
Folders
My Computer
System Tasks
View system information
Add or remove programs
Change a setting
Other Places
My Network Places
My Documents
Control Panel
Details
Local Disk (C:)
Local Disk
File System: NTFS
Free Space: 38.8 GB
Name
Type
Open
Explore
Search...
Scan for Viruses...
Sharing and Security...
About SecureDoc
Combine supported files in Acrobat...
WinZip
Format...
<cipy
,Create,shor,tcwt
:Rena.me
Properties

- On the **'General'** tab, verify that the hard drive is labeled **'Local Disk'.** If the disk is not named **'Local Disk'** - click in the box and type **'Local Disk'.** Click the **'Apply'** button and then click **'OK'.**

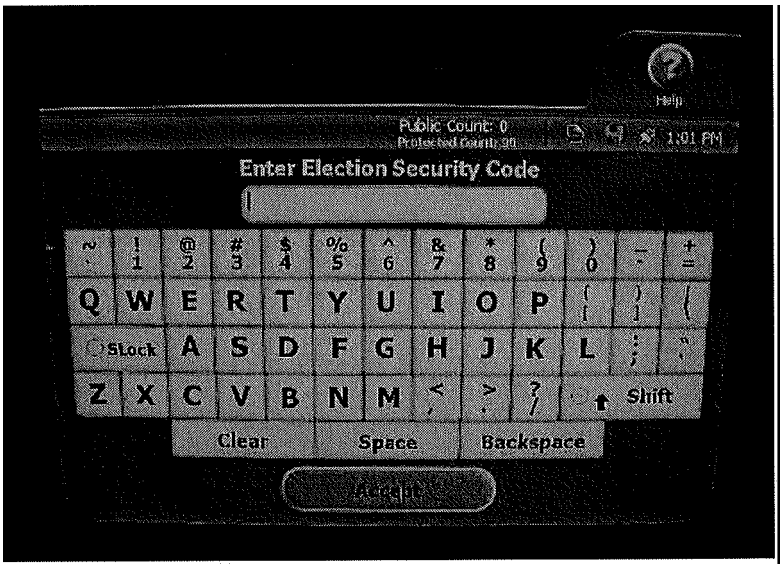


8. Once completed, proceed to **Section 4: Perform Hash Validation** for next steps to Boot-up in Linux environment.

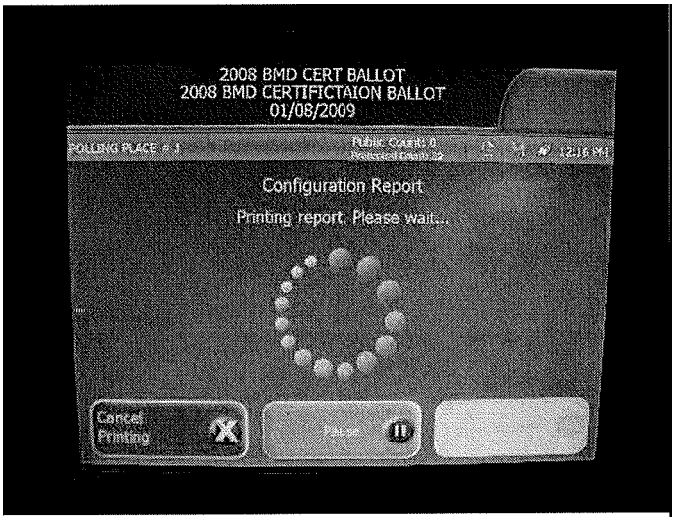
4. DS200 FILE EXTRACTION

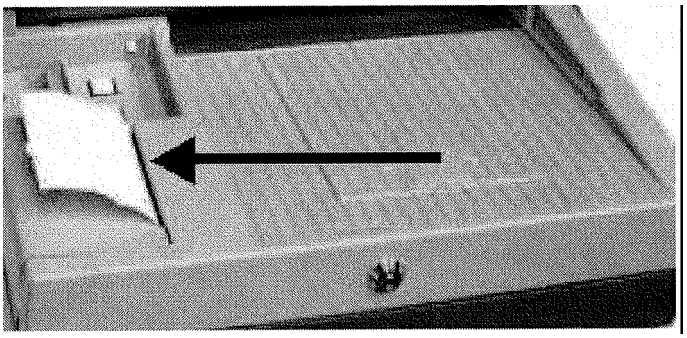
1. Start up DS 200 with a valid ballot definition

2. The Election Security Code screen will be displayed. Enter the Election Security Code and press the *Green* **"Accept"** button.

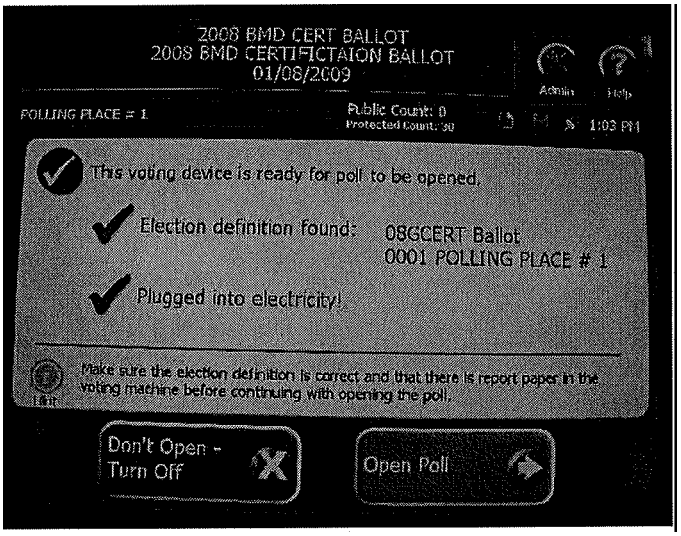


3. The scanner will continue to boot up and a Configuration Report will print. Verify the correct firmware version is printed on the report.

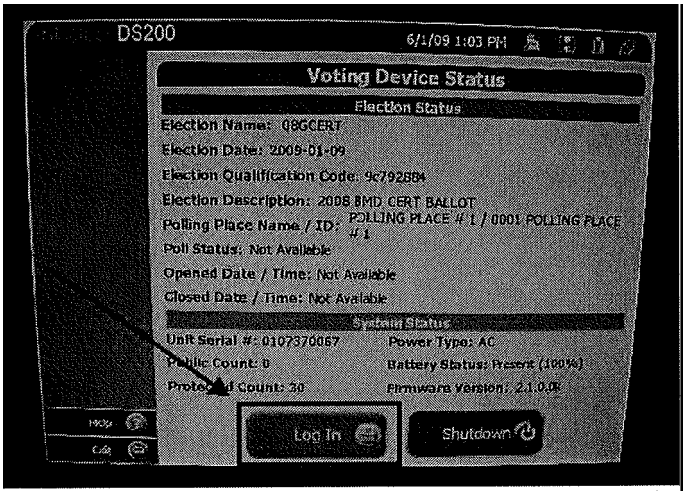




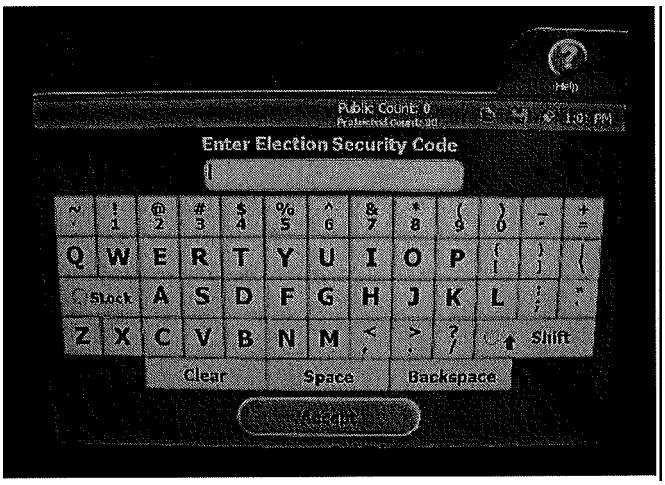
4. The following message is displayed: "This voting device is ready for poll to be opened". Press the **"Admin Icon"** located in the upper right comer of the display.



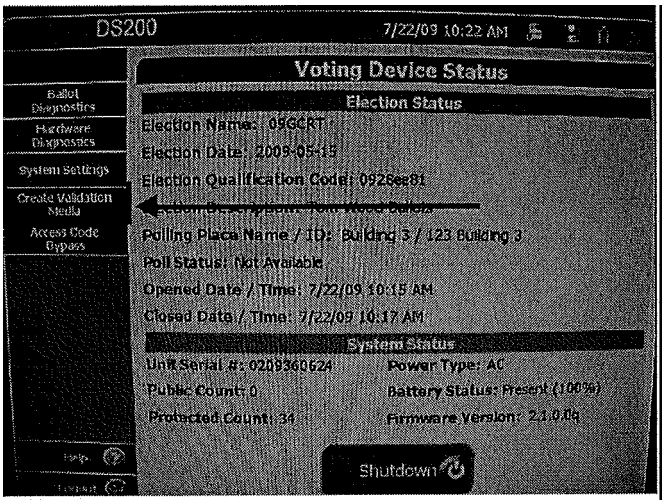
5. The Voting Device Status screen will be displayed. Press the **"Log In"** button.

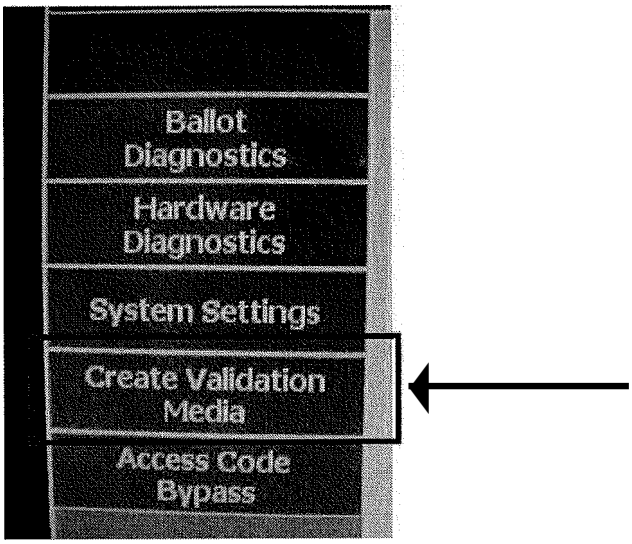


6. The Election Security Code screen will be displayed. Enter the Election Security Code and press the Green **"Accept"** button.

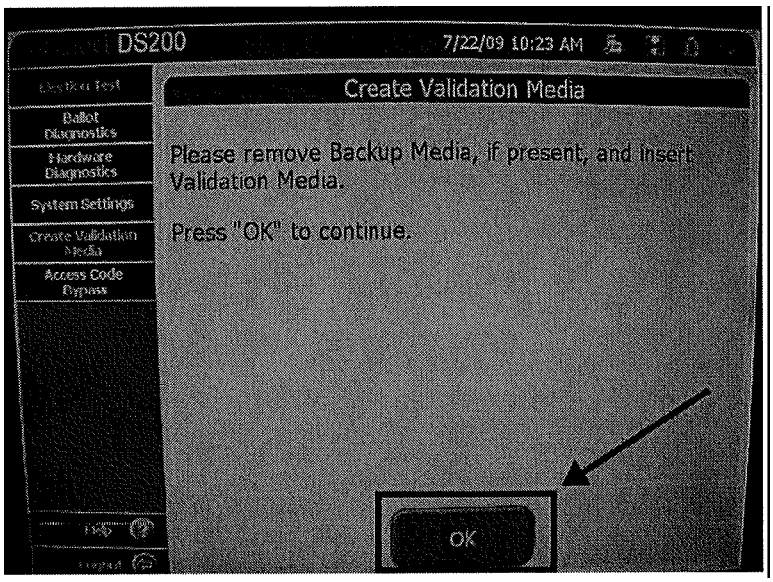


7. The Administration Menu is displayed. Press **"Create Validation Media".**



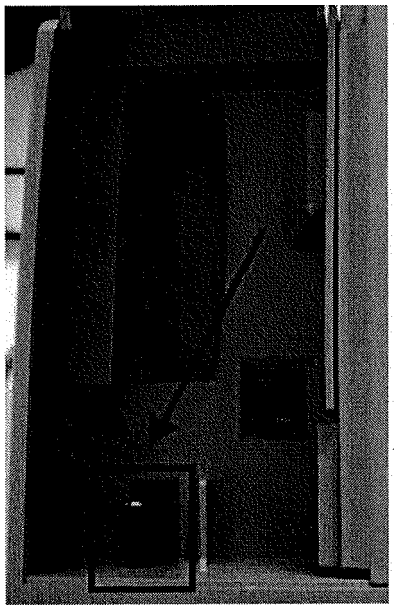


8. Press **"OK"** to continue.

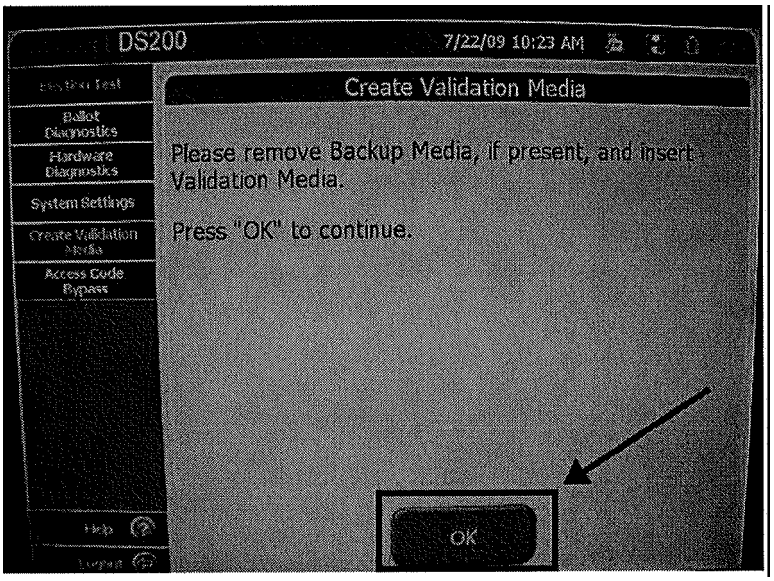


9. The following message will be displayed "Please remove backup media, if present, and insert validation media. Press "OK" to Continue".

Remove *Redundant Media* stick (if inserted) and insert a formatted (blank) *Validation Media* stick **(SBOE provided EXTRACT Stick)** into the Redundant Port.

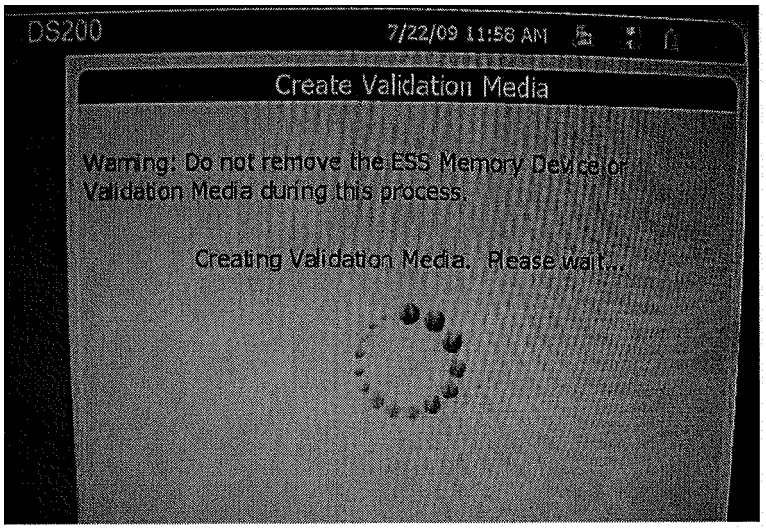


10. Press **"OK"** to continue.

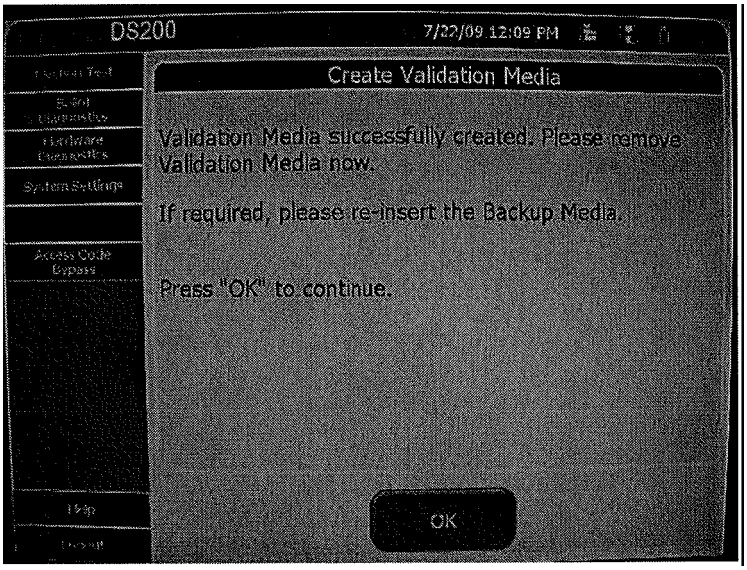


11. The following message is displayed "Create Validation Media - Warning: Do not remove the ES&S Memory Device or Validation Media during the process. Creating Validation Media. Please wait ... "

Note: This will take a few minutes.

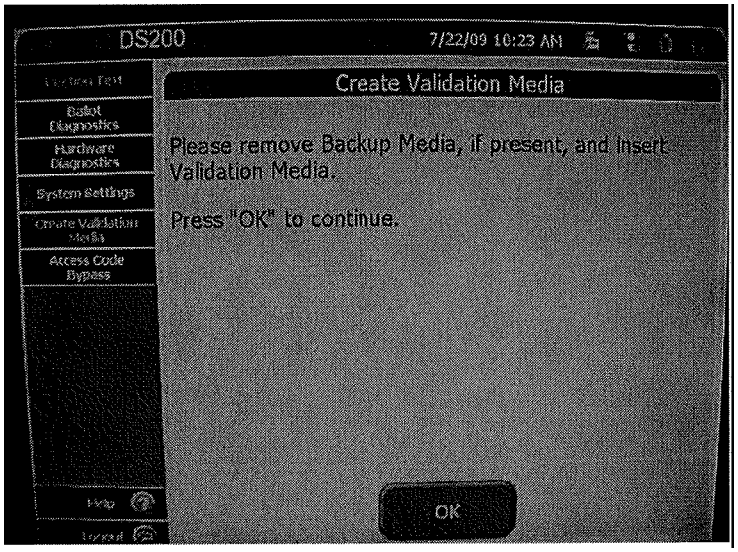


12. The following message is displayed "Validation Media successfully created. Please remove Validation Media now. If required, please re-insert the Backup Media. Press **"OK"** to continue." Remove the SBOE provided **EXTRACT** Stick and Press the **OK** button.

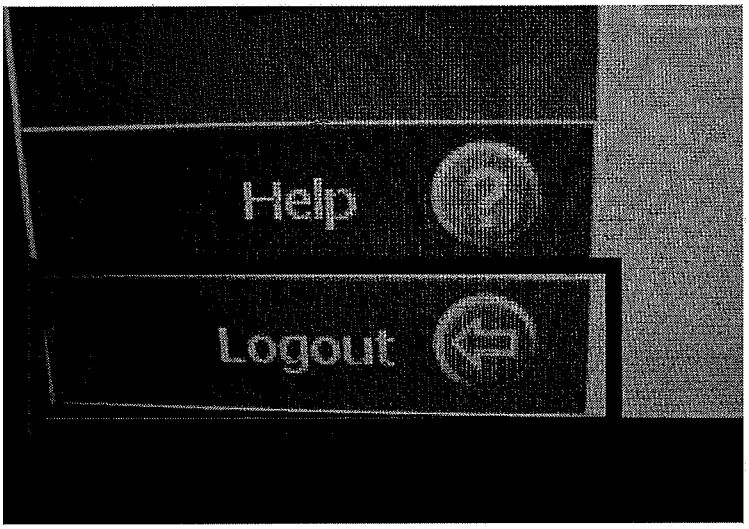


13. The following message will be displayed "Please remove backup media, if present, and insert validation media. Press **"OK"** to Continue".

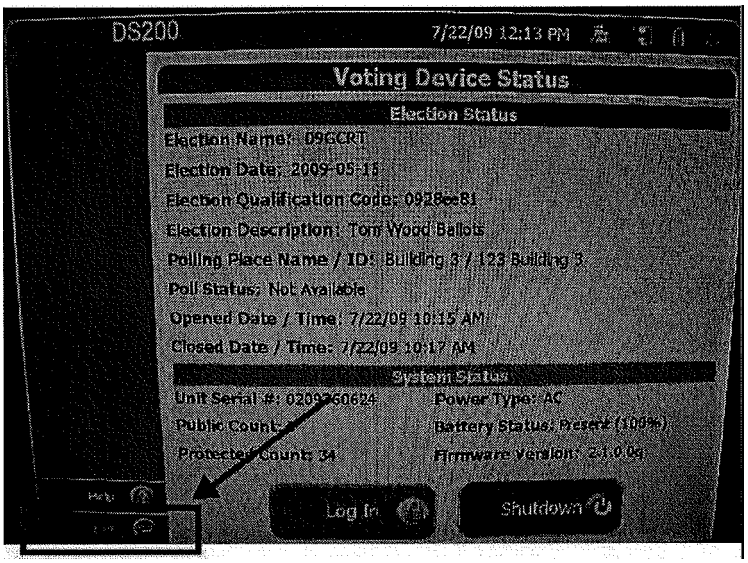
DO NOT PRESS THE "OK" BUTTON PRESS THE "LOGOUT" BUTTON.



14. Press "Logout"

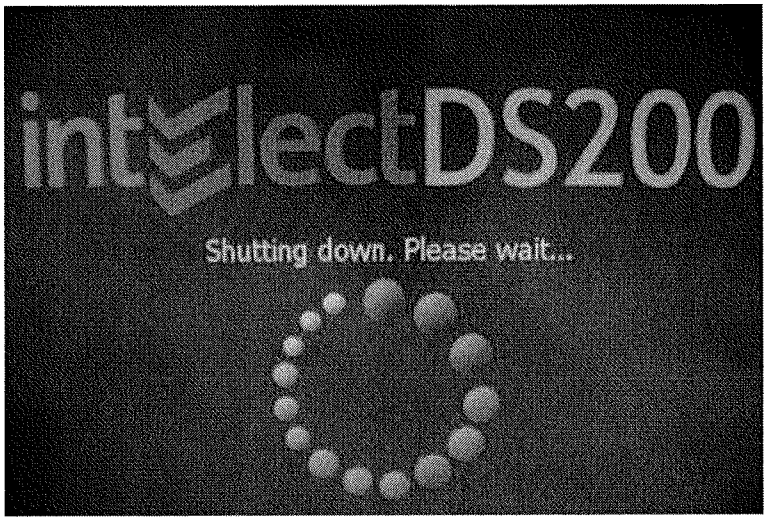


15. Press **"Exit"**



16. Press the *Red* ***"Turn Off"*** button to power down the optical scanner.

17. The DS200 Optical Scanner will shutdown.



5. PERFORM THE HASH VALIDATION

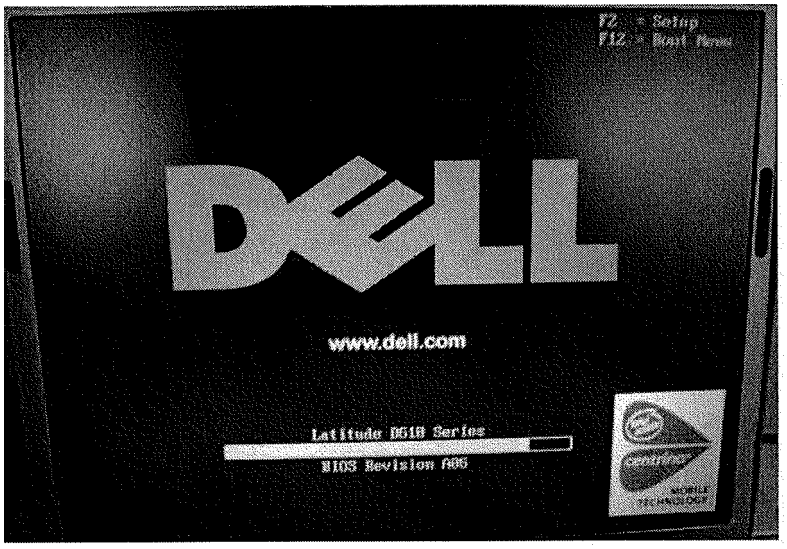
NOTE: Perform step I or 2 depending on current PC/Laptop Status:

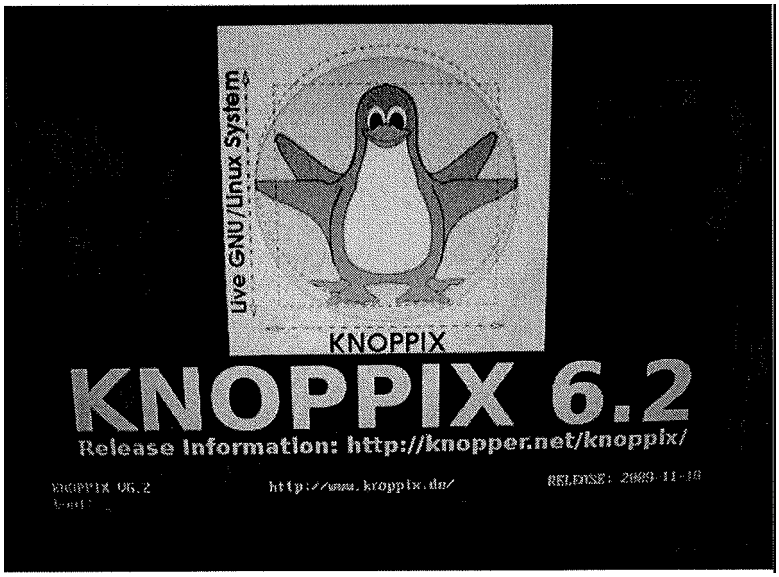
1. If your PC/Laptop is currently running then:

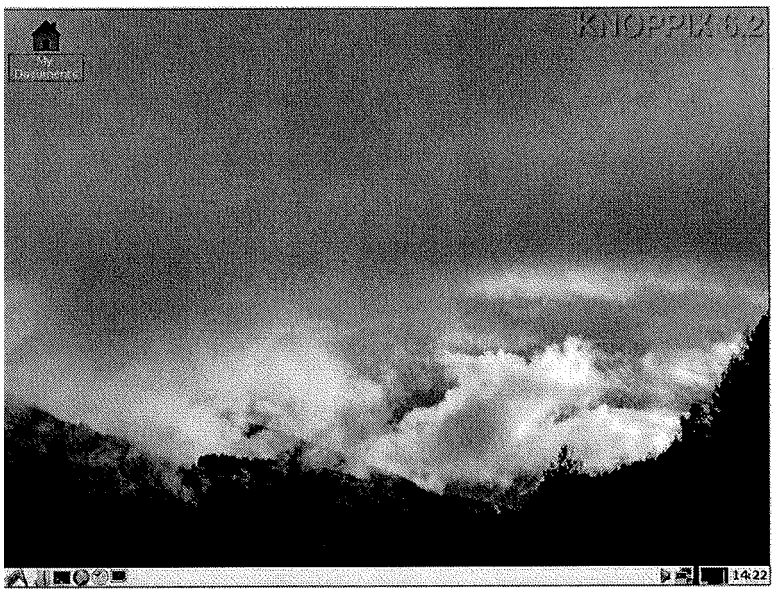
a. Insert Linux CD

b. Restart your PC/Laptop

c. PC/Laptop will now start using Linux Operating System







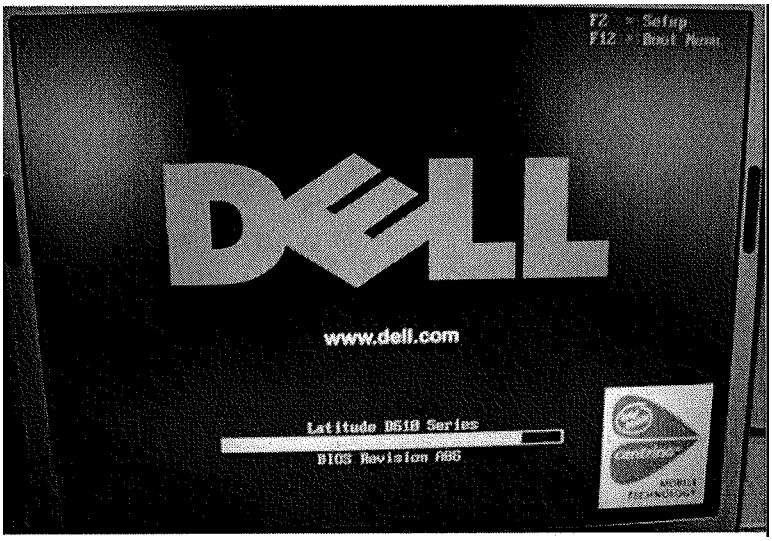
2. If your PC/Laptop is not running then:

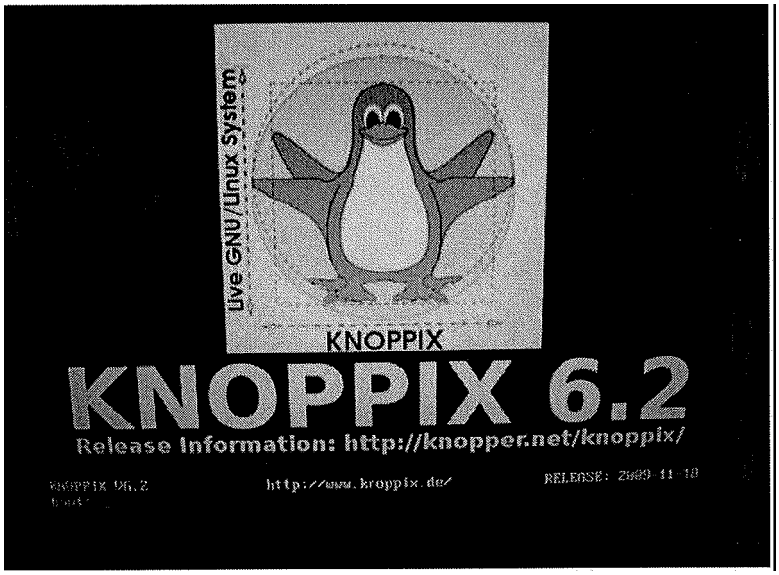
a. Turn on PC/Laptop

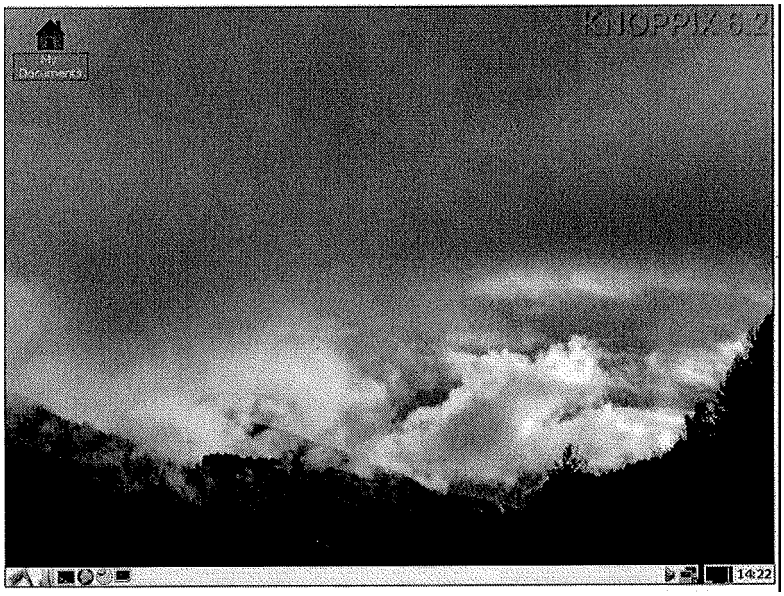
b. Insert Linux CD

c. Restart your PC/Laptop

d. PC/Laptop will now start using Linux Operating System

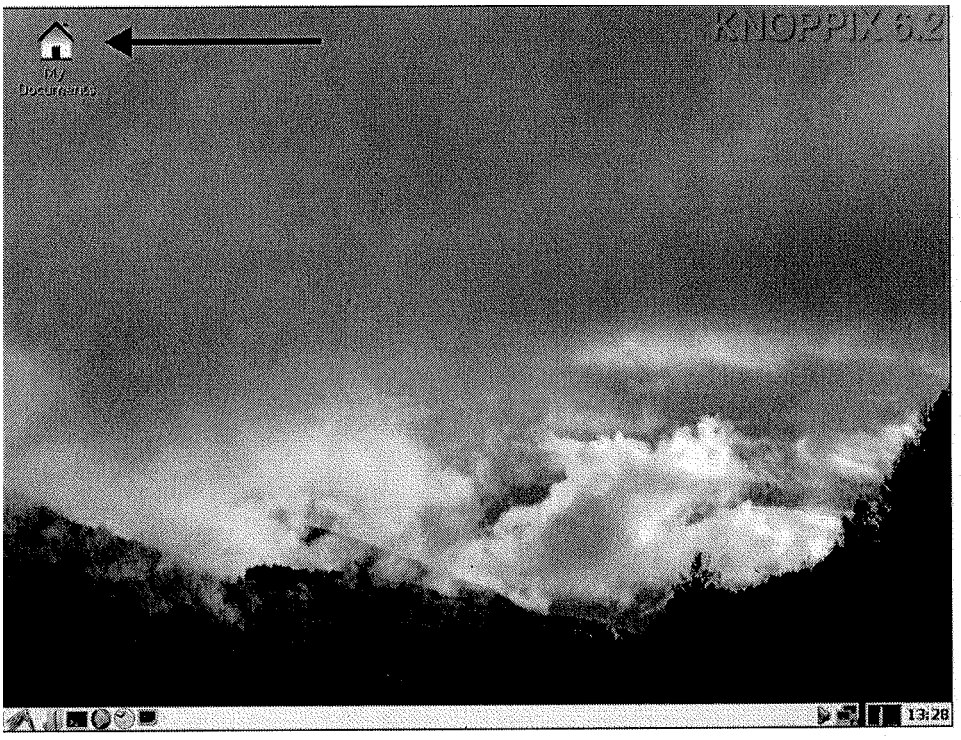






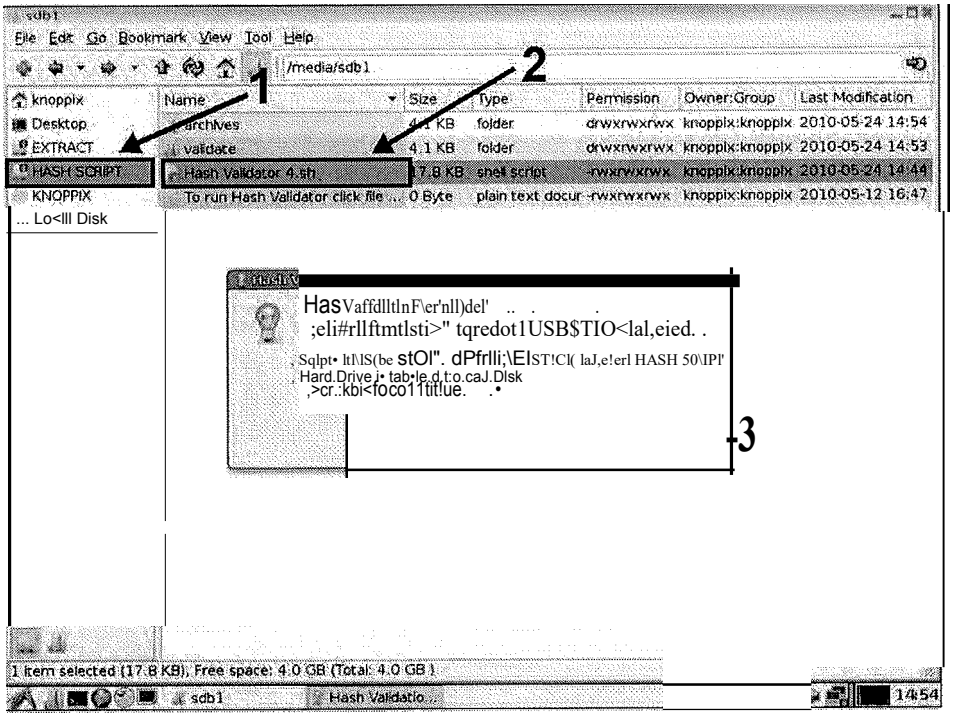
3. Insert **HASH SCRIPT** Media (USB) Stick

4. Single click on **"My Documents"**

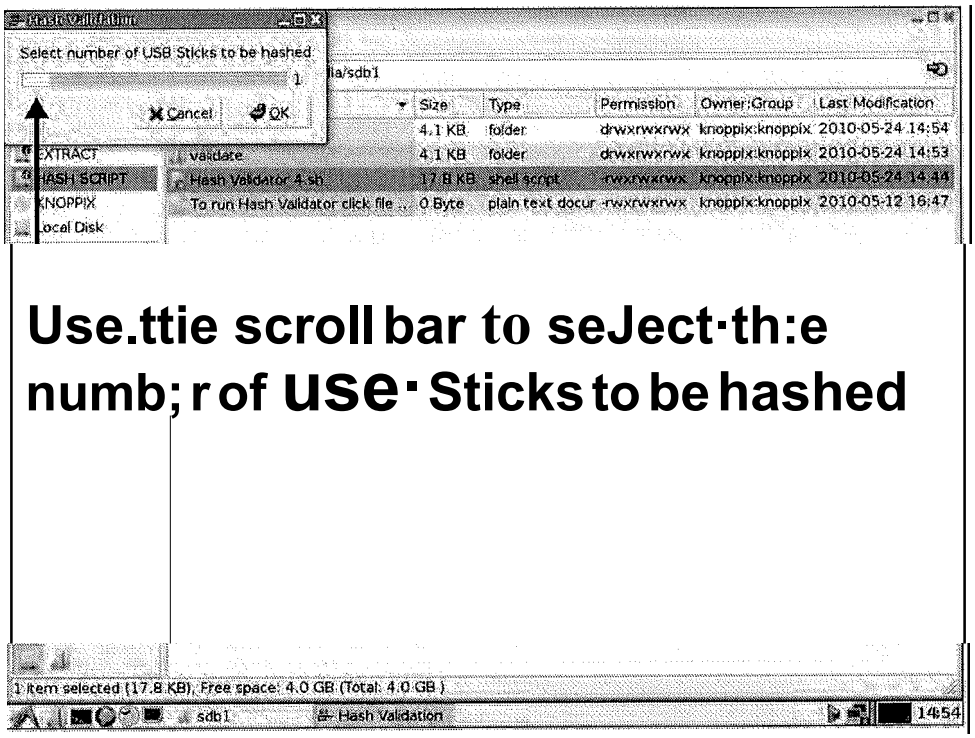


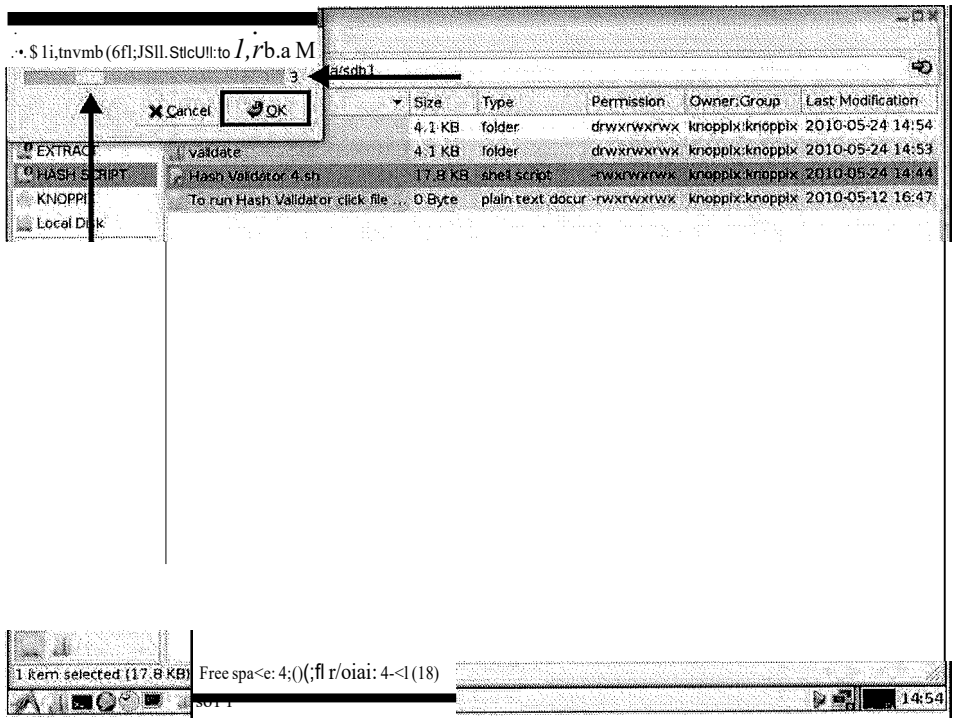
5. When **My Documents** opens, perform the following steps:

- Single click the **"HASH SCRIPT"** directory in the list.
- Single click **"Hash Validator4.sh".**
- Hash Validation Reminder will be displayed. Verify the information displayed in the reminder and click **"OK"** to continue.

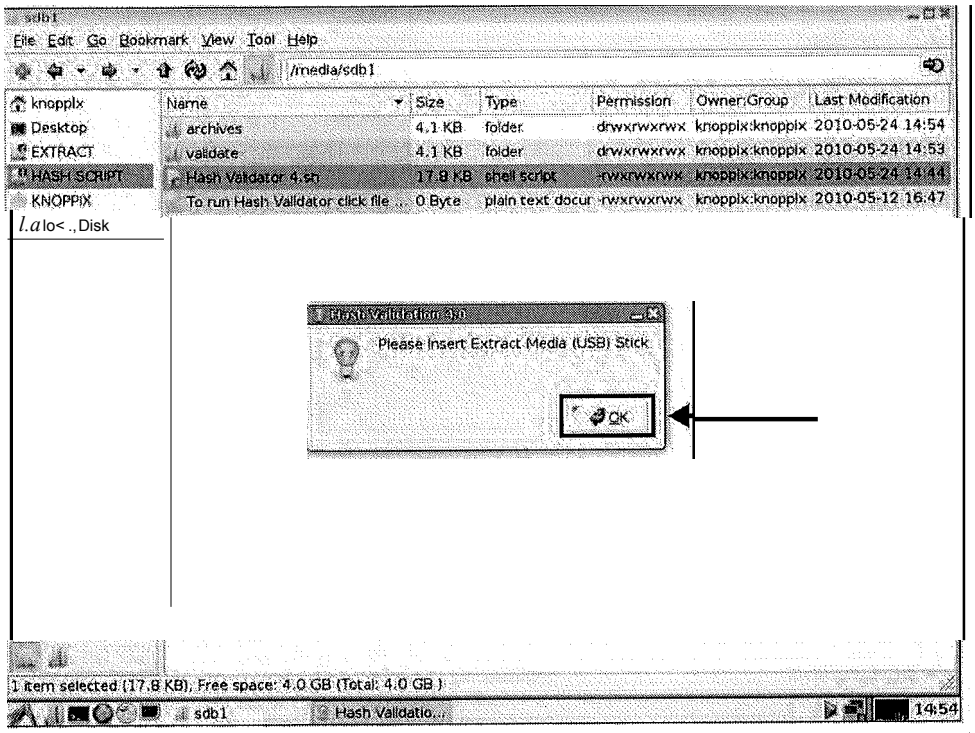

sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
... Lo<lll Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
validate
Hash Validator 4.sh
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx knoppix:knoppix 2010-05-12 16:47
1
2
3
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
1454

6. Select the number of USB sticks to be hashed (1 to 10). Use the scroll bar to increase the number of machines. Once the desired number is selected, press the **"OK"** button.

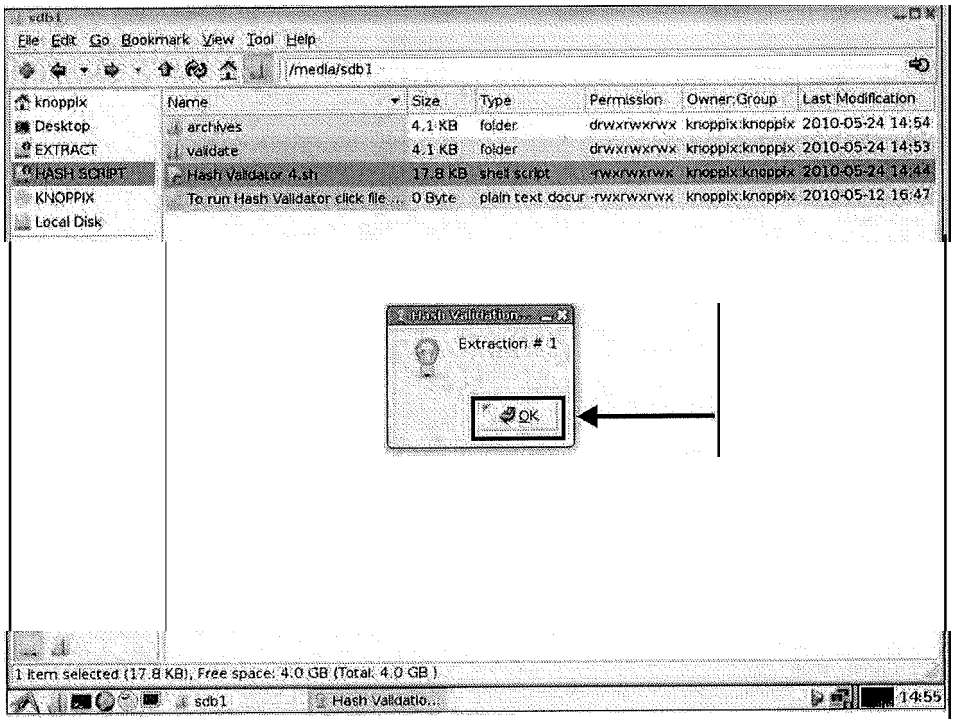




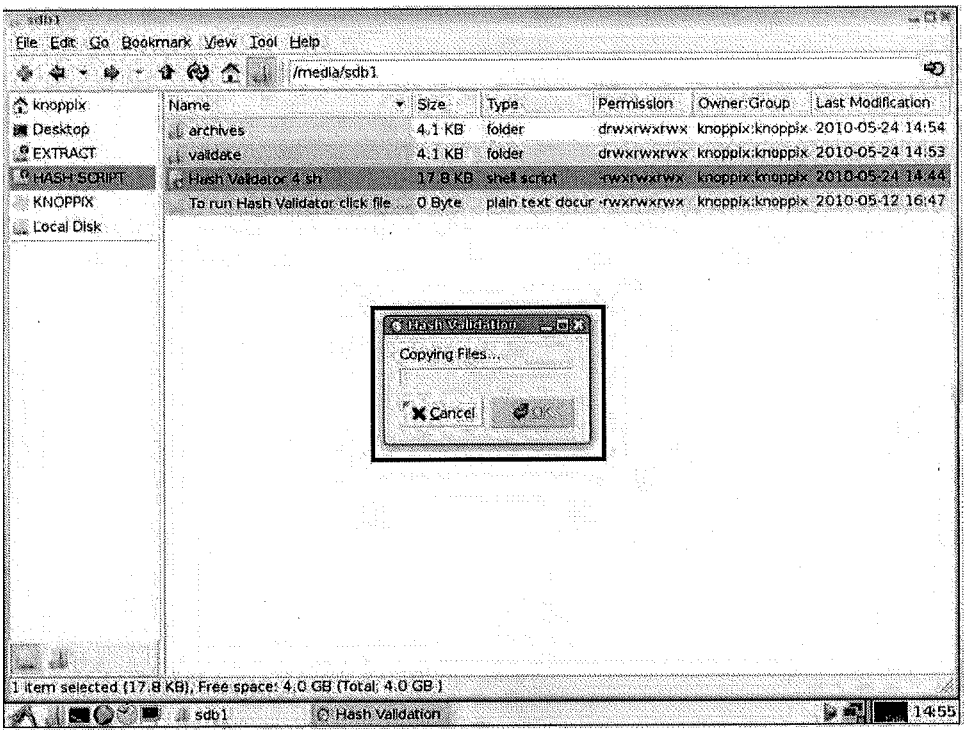
7. The Hash Validation application will prompt the user to insert the **"EXTRACT Media (USB) Stick".** Click **"OK"** once inserted.



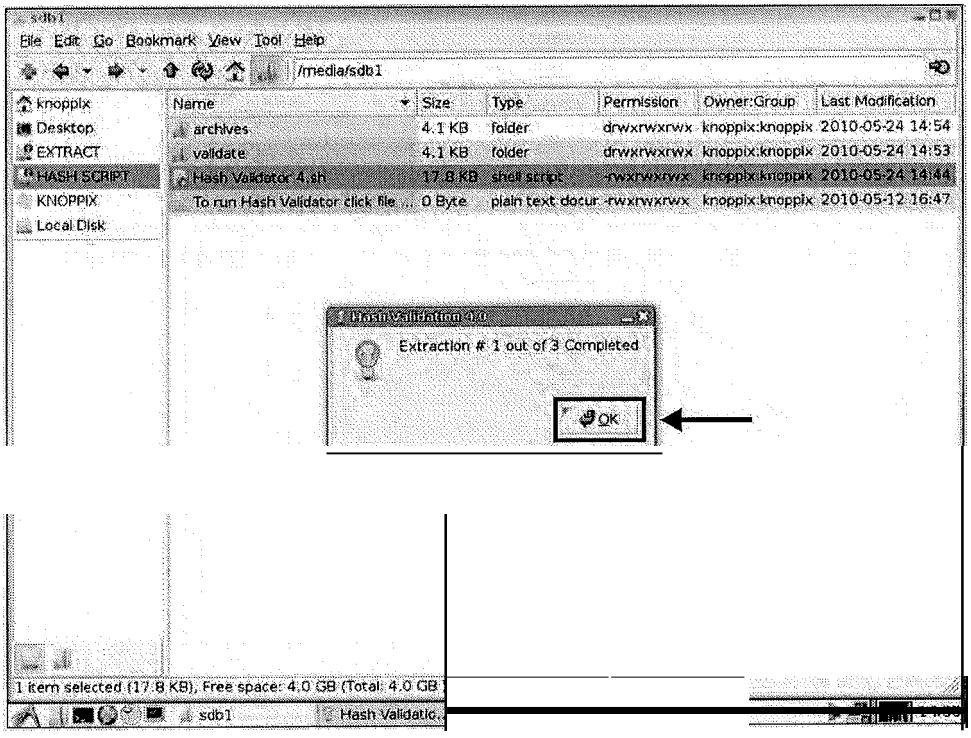
8. Extraction #1 - Data is ready for copying from the **EXTRACT** Media (USB) Stick. Click **"OK"** to start the copy process.



9. Hash Validation application starts copying files from the **EXTRACT** Media (USB) Stick.

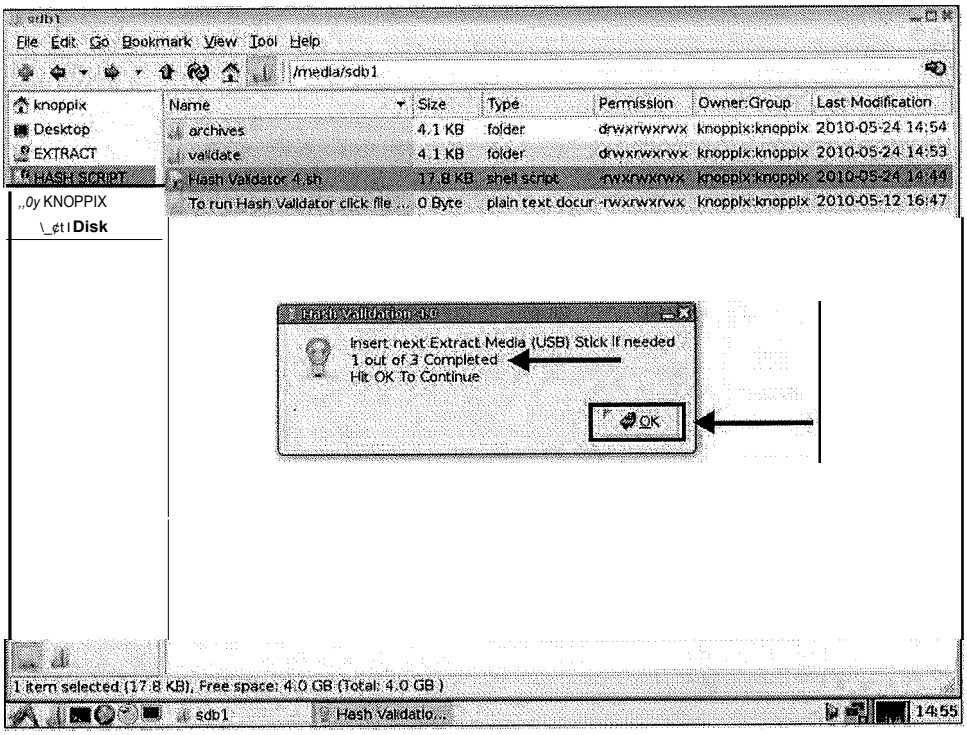


10. Hash Validation application notification message is displayed showing how many Extractions were completed.
Click **"OK"** to continue.

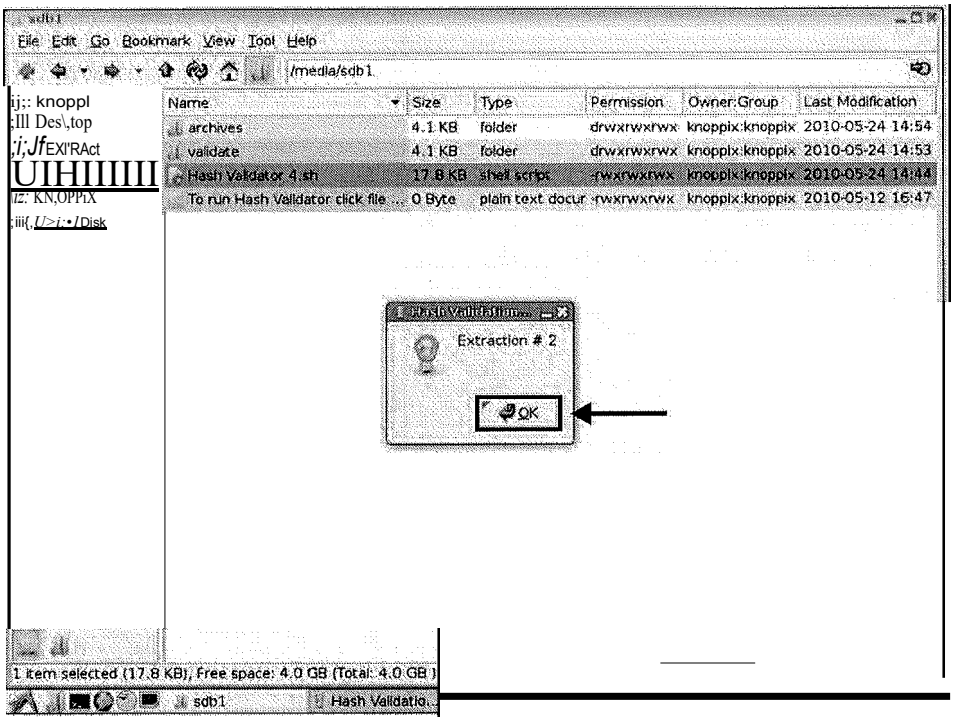


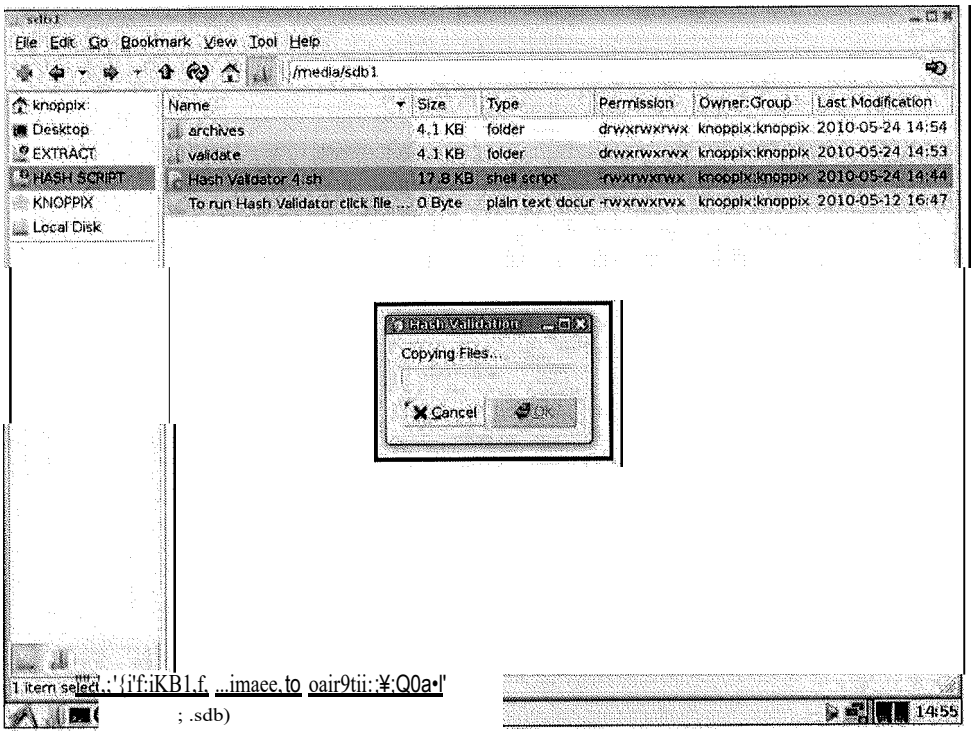
11. Insert the next **EXTRACT** Media (USB) Stick if needed.
Click **"OK"to** continue.

Note: The application can handle up to 10 extractions per session.

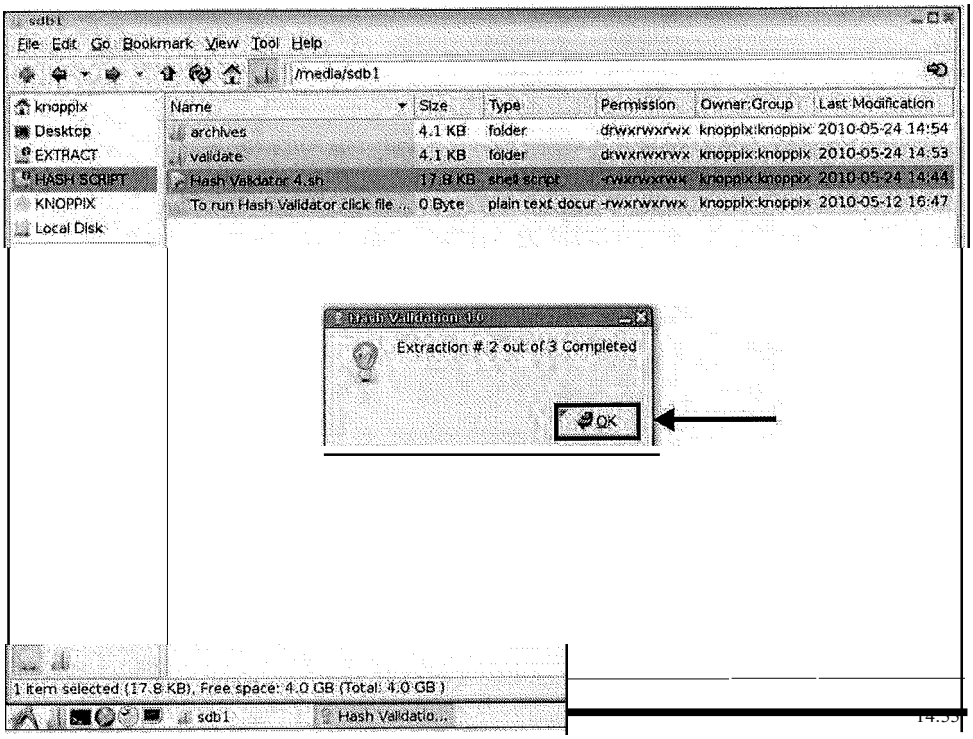


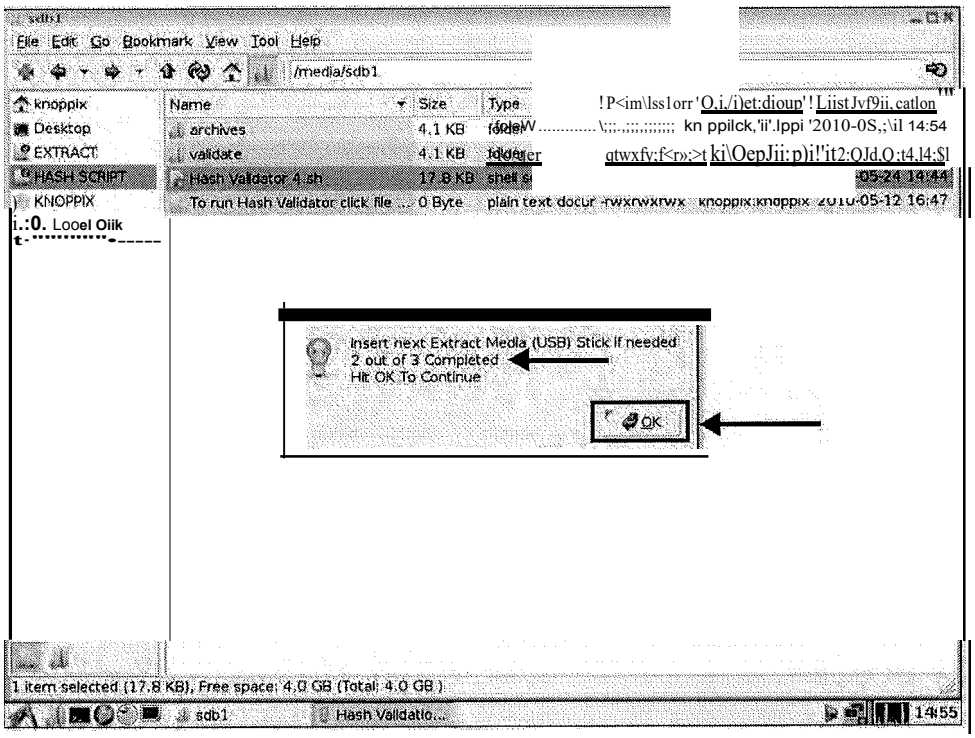
12. Repeat steps for each **EXTRACT** Media (USB) Stick.

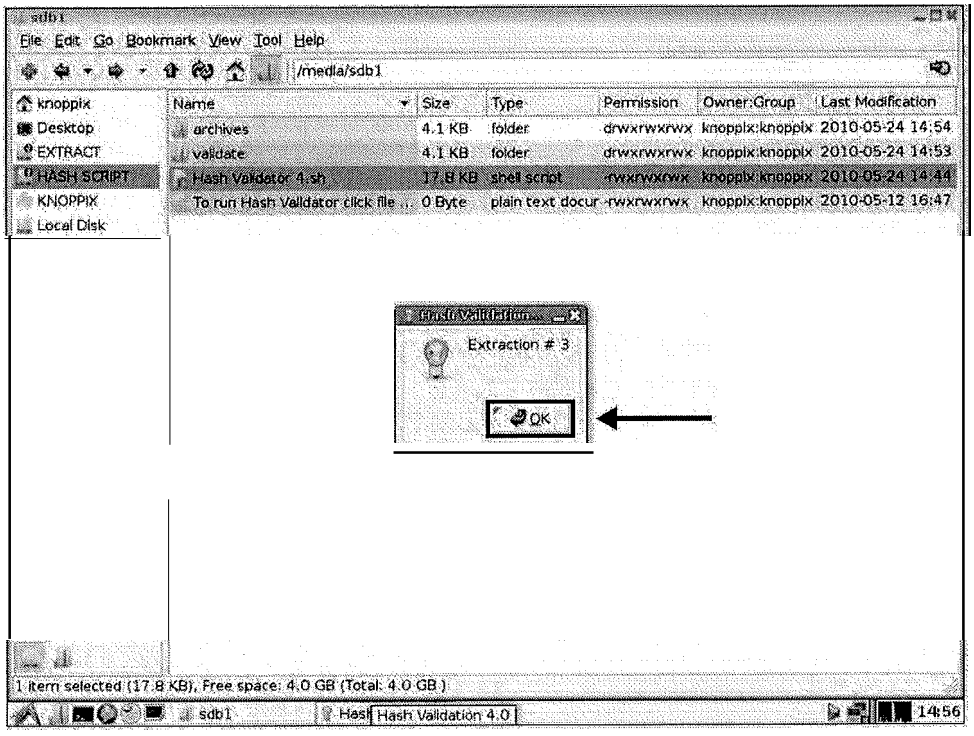

File Edit Go Bookmark View Tool Help
/media/sdb1
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:54
validate
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:53
Hash Validator 4.sh
17.8 KB
shell script
-rwxrwxrwx
knoppix:knoppix
2010-05-24 14:44
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx
knoppix:knoppix
2010-05-12 16:47
Extraction # 2
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Hash Validatio...

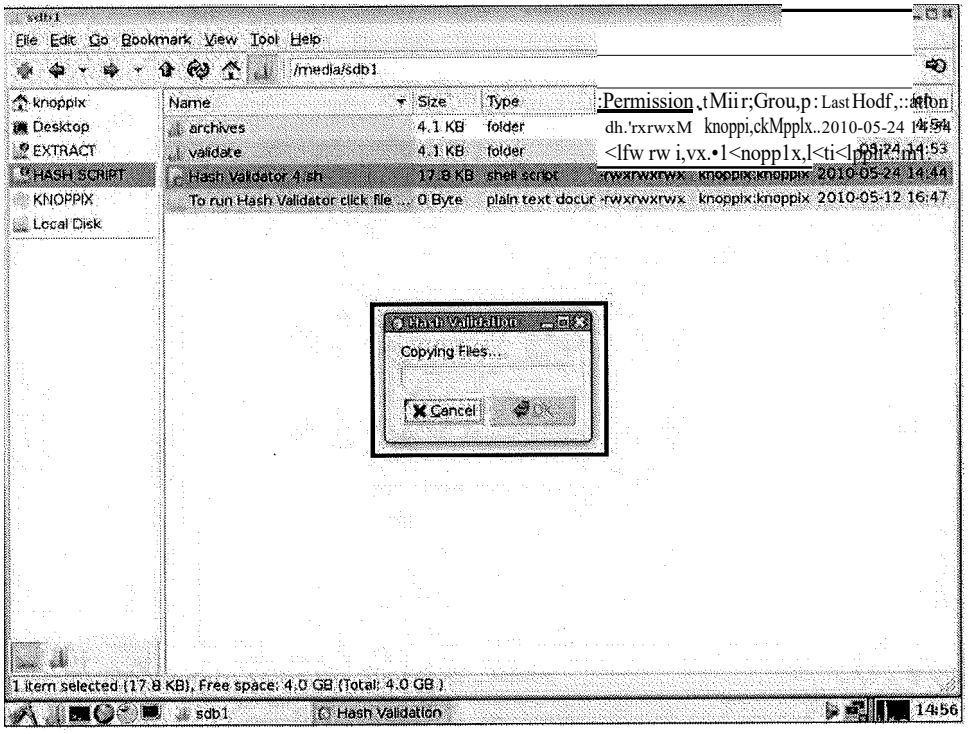

File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:54
validate
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:53
Hash Validator 4.sh
17.8 KB
shell script
-rwxrwxrwx
knoppix:knoppix
2010-05-24 14:44
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx
knoppix:knoppix
2010-05-12 16:47
Copying Files...
Cancel
OK
1 item select
14:55

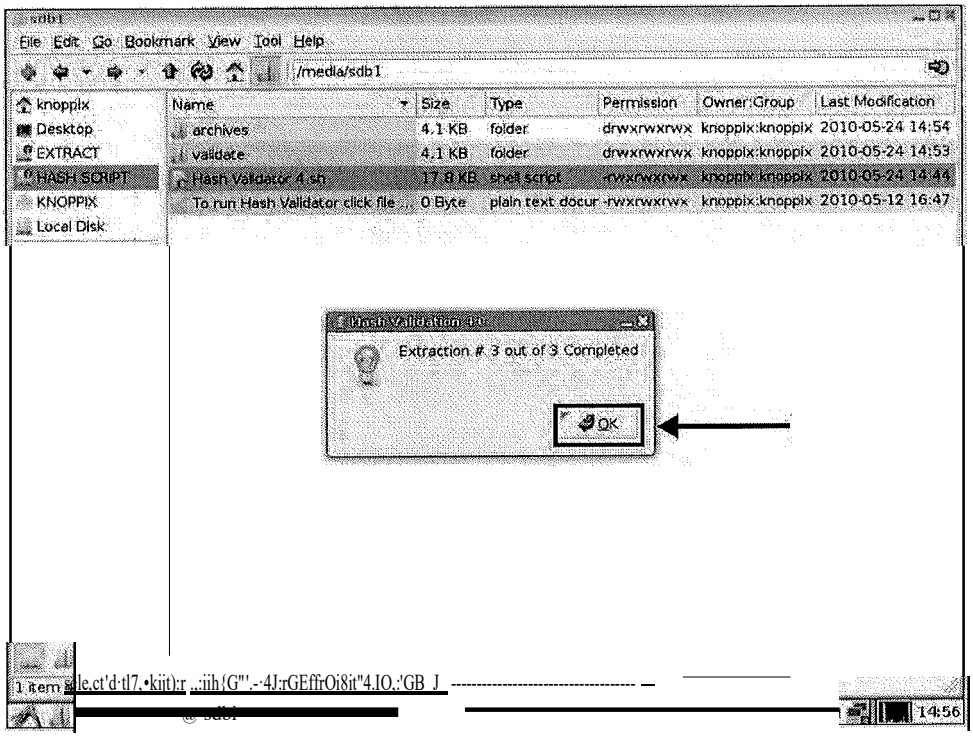
; .sdb)


File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:54
validate
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:53
Hash Validator 4.sh
17.8 KB
shell script
-rwxrwxrwx
knoppix:knoppix
2010-05-24 14:44
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx
knoppix:knoppix
2010-05-12 16:47
Extraction # 2 out of 3 Completed
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Hash Validatio...

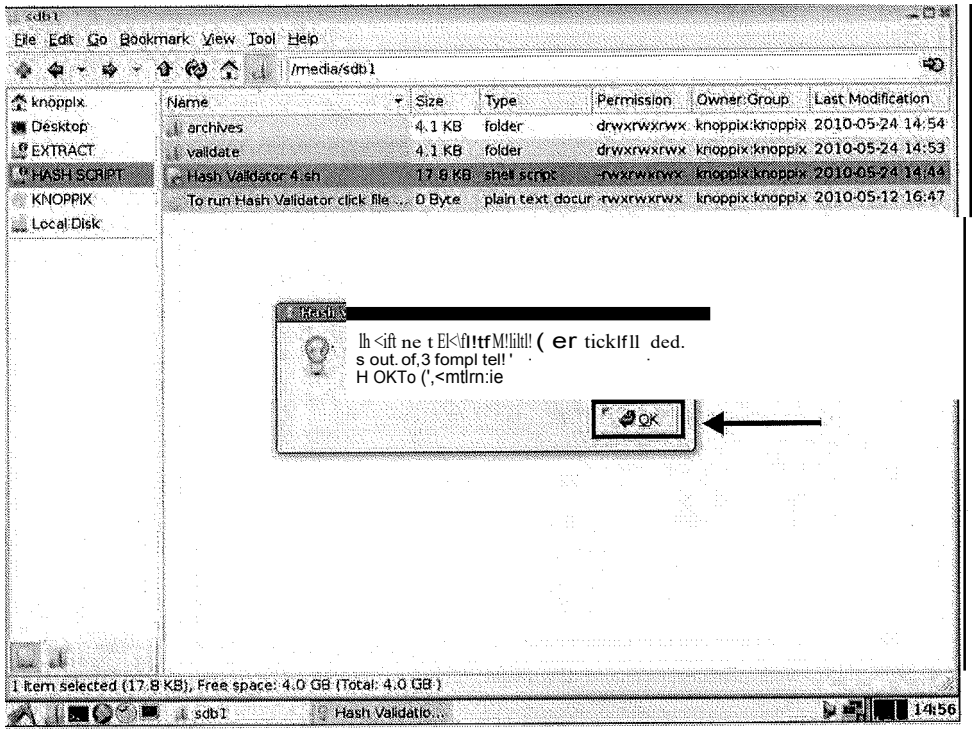

sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Name
Size
Type
archives
4.1 KB
validate
4.1 KB
Hash Validator 4.sh
17.8 KB
To run Hash Validator click file ...
0 Byte
plain text docur
knoppix:knoppix 2010-05-12 16:47
Insert next Extract Media (USB) Stick if needed
2 out of 3 Completed
Hit OK To Continue
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
14:55


sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix 2010-05-24 14:54
validate
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix 2010-05-24 14:53
Hash Validator 4.sh
17.8 KB
shell script
-rwxrwxrwx
knoppix:knoppix 2010-05-24 14:44
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx
knoppix:knoppix 2010-05-12 16:47
Extraction # 3
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Hash Validation 4.0
14:56

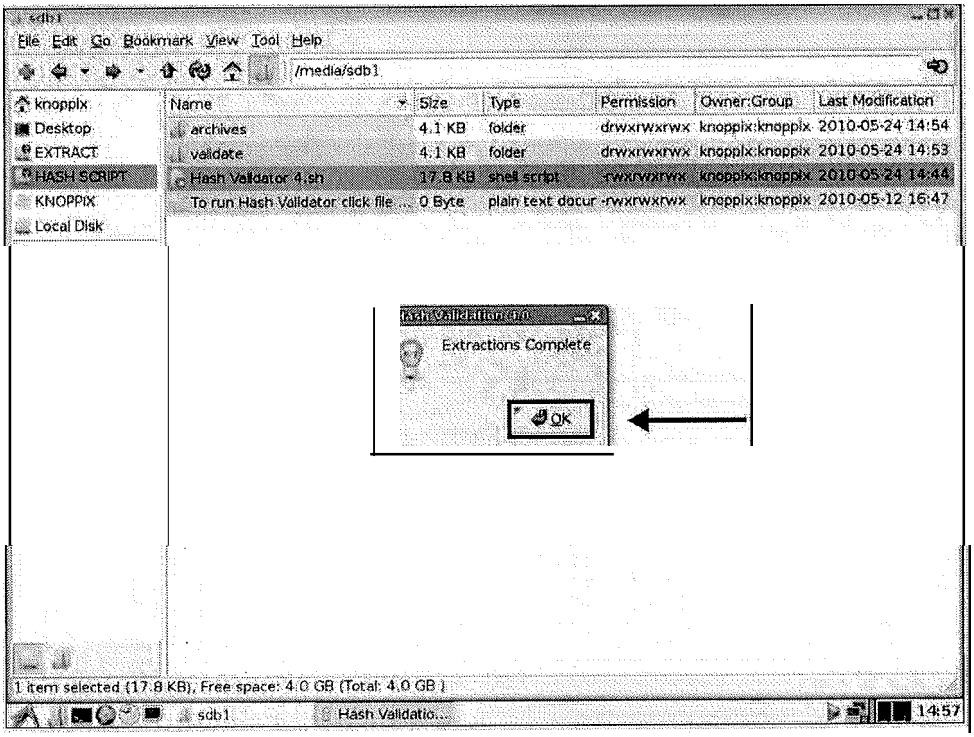

sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
archives
4.1 KB
folder
validate
4.1 KB
folder
Hash Validator 4.sh
17.8 KB
shell script
To run Hash Validator click file ...
0 Byte
plain text docur
Hash Validation
Copying Files...
Cancel
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Hash Validation
14:56


sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:54
validate
4.1 KB
folder
drwxrwxrwx
knoppix:knoppix
2010-05-24 14:53
Hash Validator 4.sh
17.8 KB
shell script
-rwxrwxrwx
knoppix:knoppix
2010-05-24 14:44
To run Hash Validator click file ...
0 Byte
plain text docur
-rwxrwxrwx
knoppix:knoppix
2010-05-12 16:47
Hash Validation done
Extraction # 3 out of 3 Completed
OK
14:56

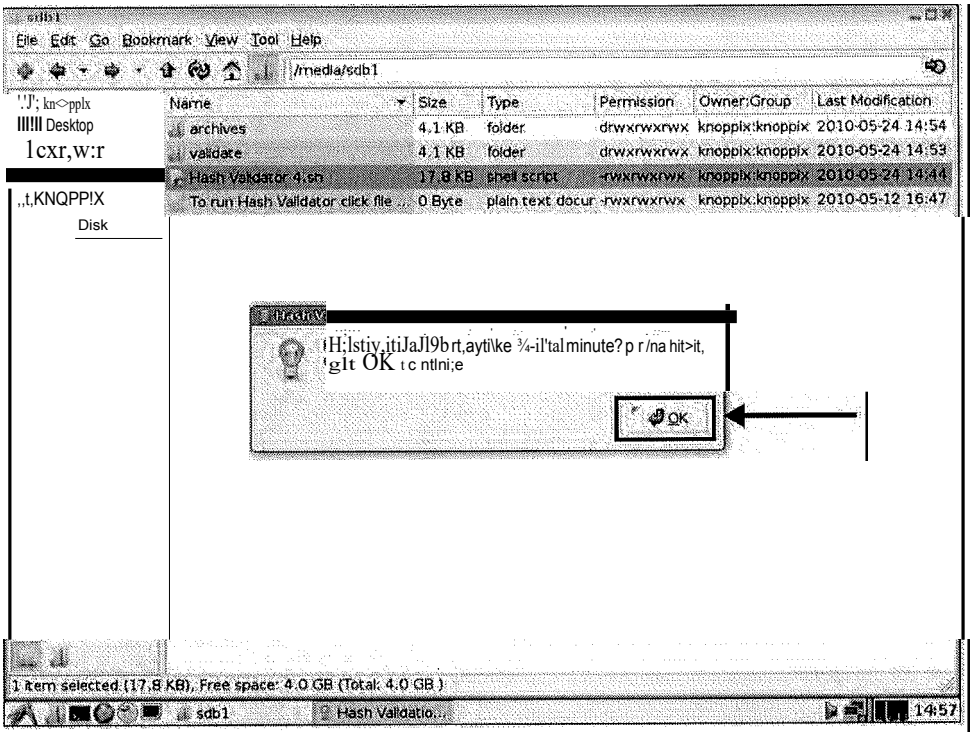
13. Hash Validation application displays..... Need to look at logic behind this.



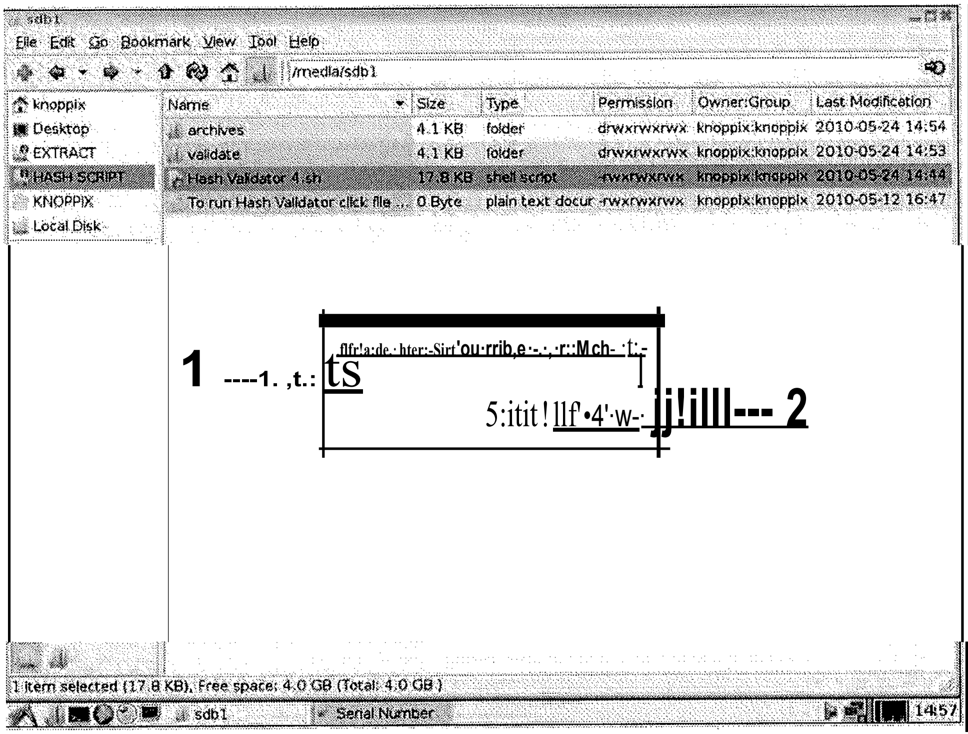
14. Once all **EXTRACT** Media (USB) Stick(s) have been copied, click **"OK"** to continue.

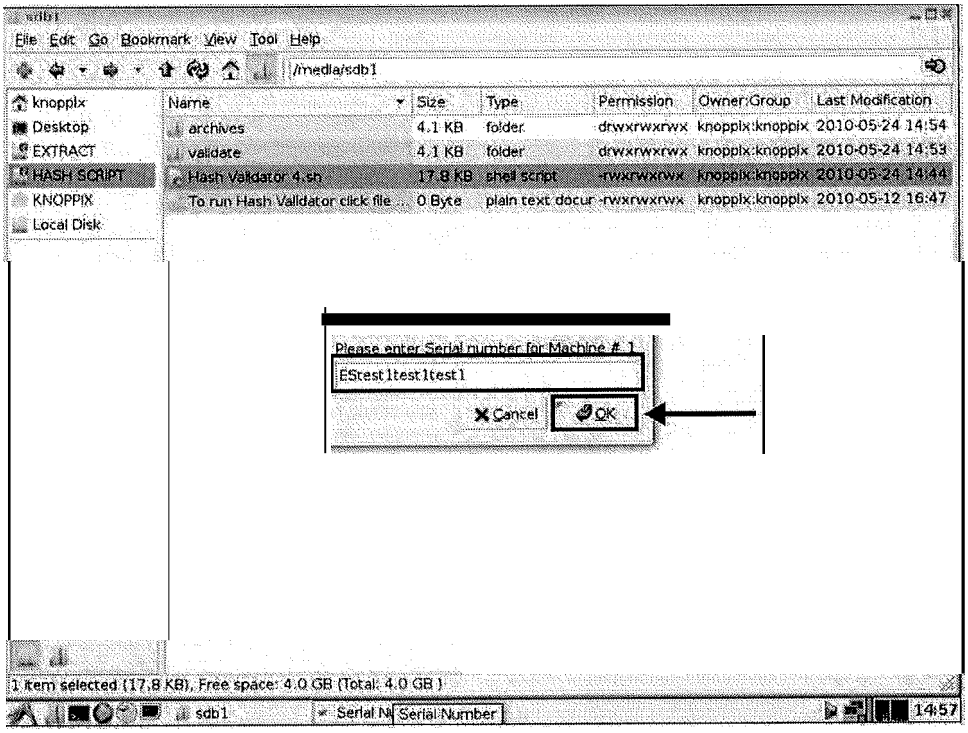


15. The Hash Validation application will generate hash values from the DS200 files and compare those values to the certified values. Click **"OK"** to continue.

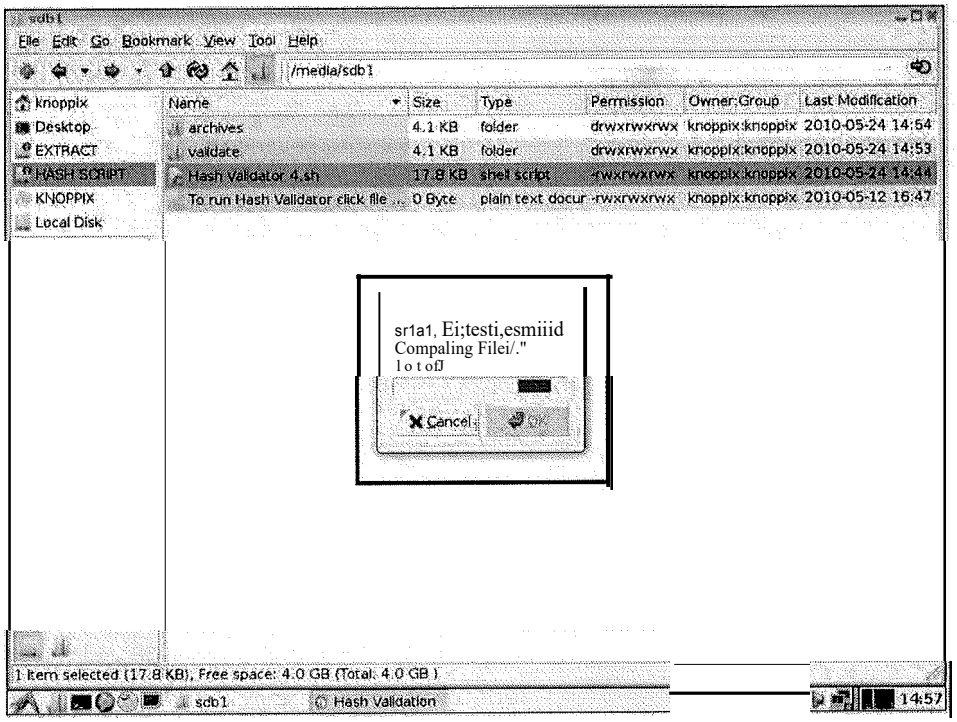


16. The Hash Validation application will prompt the user to enter the serial number for Machine #1. Enter the serial number and click **"OK"** to continue. Note - it is recommended to have a printed list of the serial numbers in the order that the files were copied.


sdb1
File Edit Go Bookmark View Tool Help
/media/sdb1
knoppix
Desktop
EXTRACT
HASH SCRIPT
KNOPPIX
Local Disk
Name
Size
Type
Permission
Owner:Group
Last Modification
archives 4.1 KB folder drwxrwxrwx knoppix:knoppix 2010-05-24 14:54
validate 4.1 KB folder drwxrwxrwx knoppix:knoppix 2010-05-24 14:53
Hash Validator 4.sh 17.8 KB shell script -rwxrwxrwx knoppix:knoppix 2010-05-24 14:44
To run Hash Validator click file ... 0 Byte plain text docur -rwxrwxrwx knoppix:knoppix 2010-05-12 16:47
1
2
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Serial Number
14:57

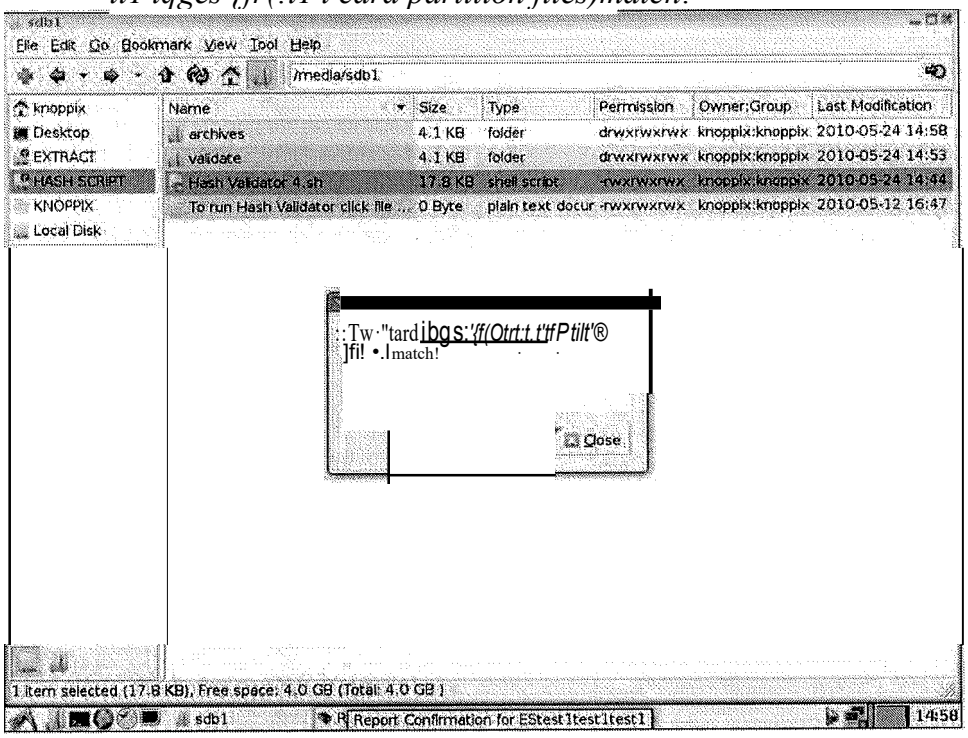


17. The Hash Validation application displays a system message displaying the progress of the hash validation.

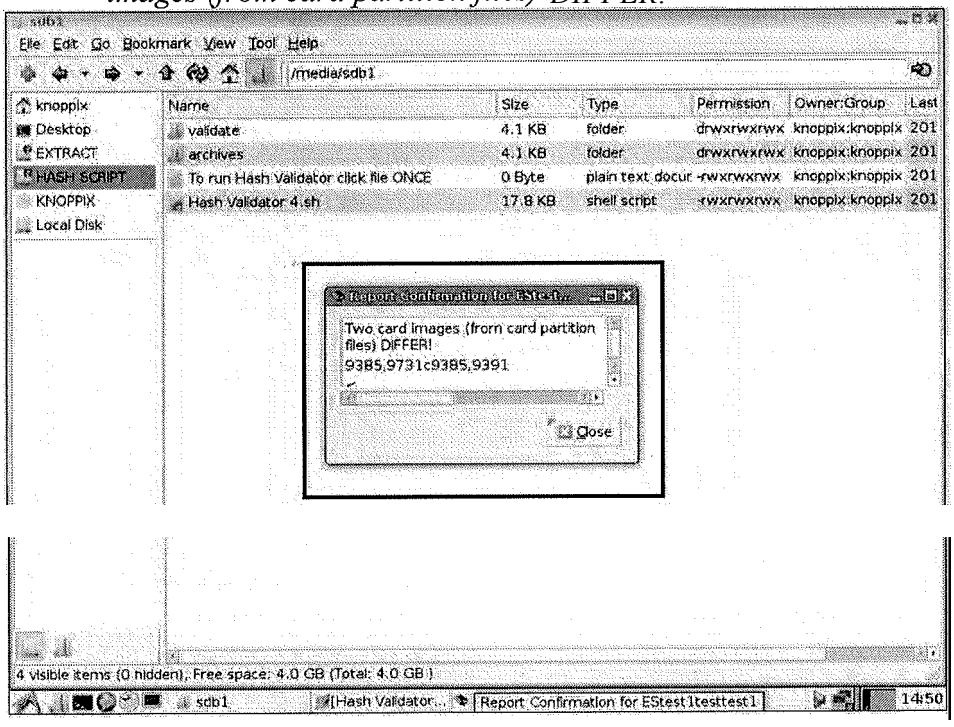


18. The Hash Validation application displays the Report Confirmation for the current validation.

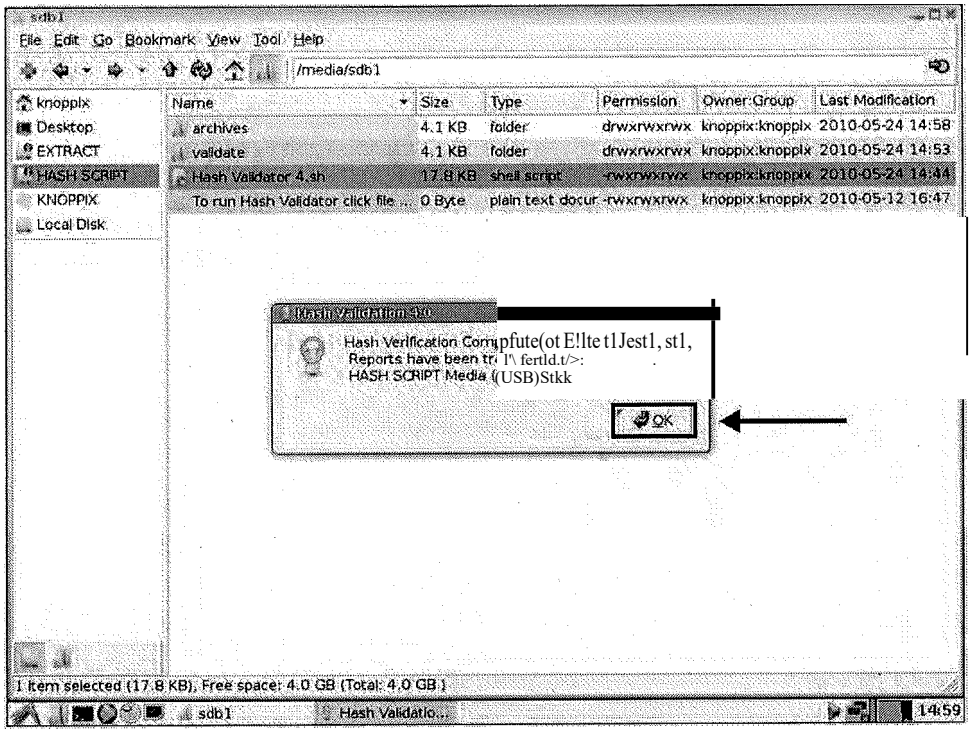
The following message will be displayed for a valid hash check **"PASS".** *"Two card il1'lqges {fr(!l1'l card partition files)match!"*



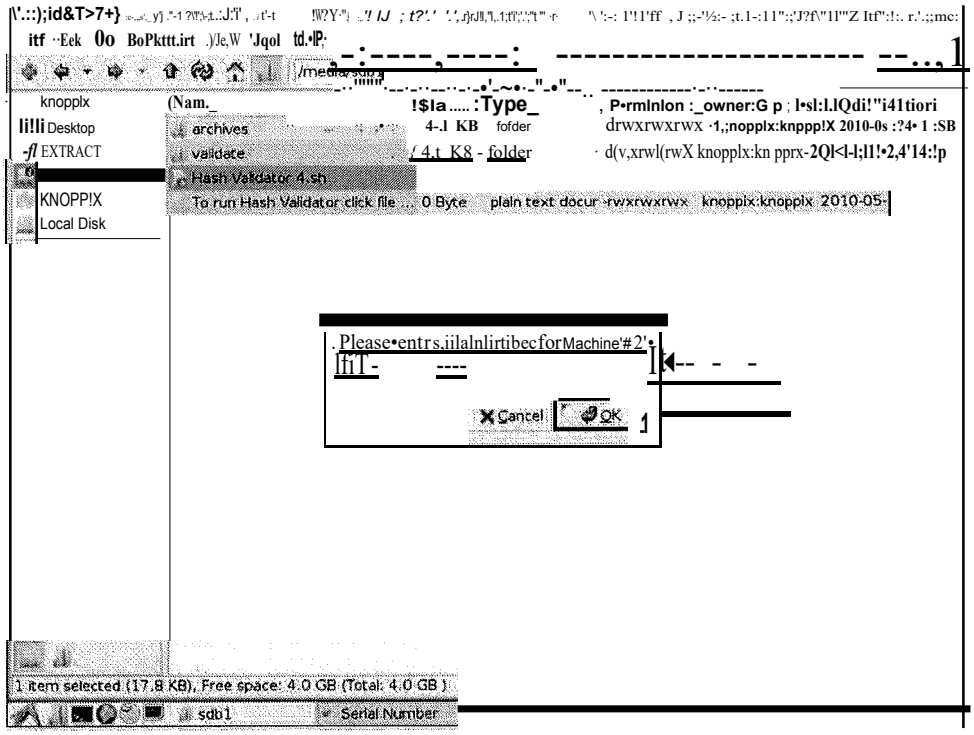
The following message will be displayed for an invalid hash check **"FAIL".** *"Two card images (from card partition files) DIFFER!"*



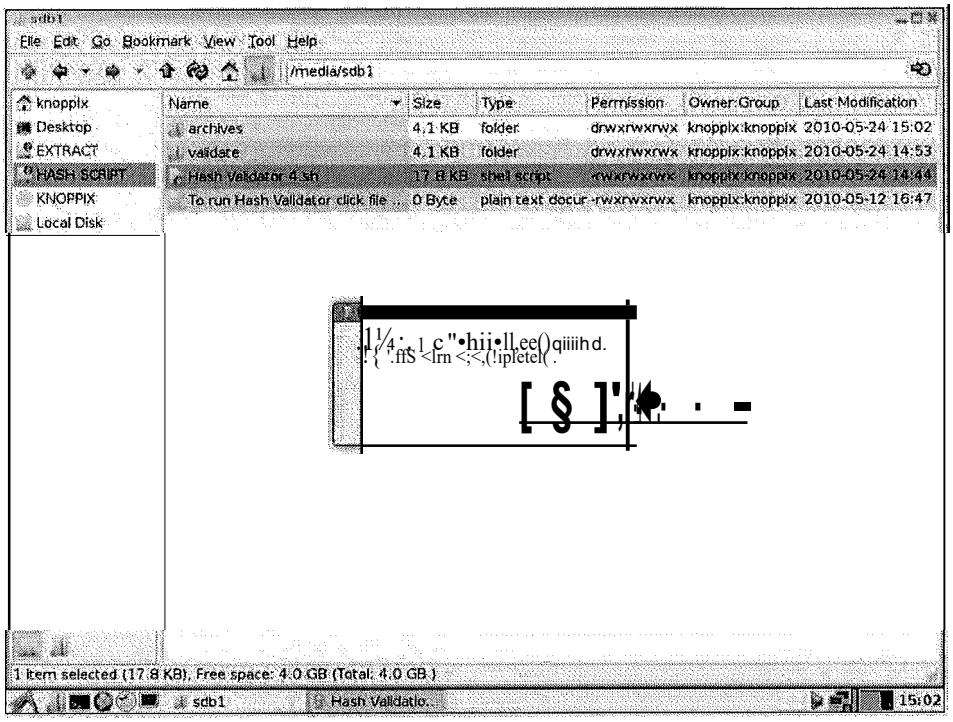
19. Hash Validation application displays the following system message. "Hash Verification Complete for **ES machine serial number.** Reports have been transferred to: **HASH SCRIPT Media (USB) Stick.** Click **"OK"** to continue.



20. If multiple machines are to be verified then the system will prompt the user for the next serial number. Enter the serial number and click **"OK"** to continue. Follow the on screen prompts.


knoppix
Desktop
EXTRACT
KNOPPIX
Local Disk
archives
validate
Hash Validator 4.sh
To run Hash Validator click file ... 0 Byte plain text docur -rwxrwxrwx knoppix:knoppix 2010-05-
Please•entrs,iilalnlirtibecforMachine'#2'•
Cancel
OK
1 item selected (17.8 KB), Free space: 4.0 GB (Total: 4.0 GB)
sdb1
Serial Number

21. Upon completion of the last machine, the Hash Validation application displays a system message indicating the total number of machines hashed. Click **"OK"** to exit application.



AUTOMARK

Hash Check Process

ES&S HASH CHECK PROCEDURE AUT0MARK

OVERVIEW

Each County Board of Elections (CBOE) will perform a hash check on each voting system to ensure that the same firmware / software that was authorized by the ITA is currently installed and that no other unauthorized software / firmware is present. A hash check is required if the New York State Board of Elections (NYSBOE) notifies CBOE of a BMD software/firmware update **OR** the security seals have been compromised.

1. GETTING STARTED

Below are the steps for conducting the ES&S Hash Check Procedure. If you have any questions or need assistance when performing this procedure please call 518-485-5637.

1.1 Required Supplies (Hardware and Software)

The following supplies will be required in order to conduct a hash check on the ES&S AutoMARK Ballot Marking Device (BMD).

- # 10 torx wrench
- 1 USB cable
- MS Excel
- MS DOS
- Application - AutoMARK Validater
- Application - File Checksum Integrity Verifier (FCIV)
- File - MS Excel Spreadsheet with Authorized Hash Check Values provided by SysTest

1.2 Security Seal

The following security seal is used by the SBOE when conducting a hash check on the ES&S AutoMARK BMD. SBOE recommends that each county order at a minimum, 10 security seals per BMD for initial order.

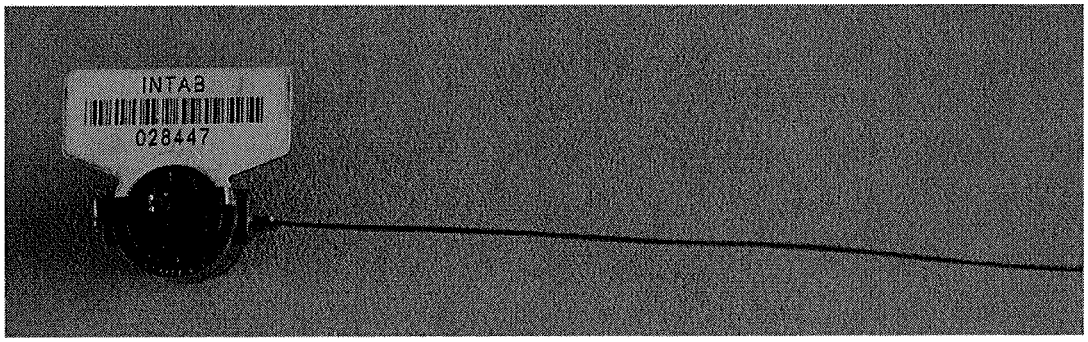
Company Name: Intab

Seal Type: Barcode Easy Twist Seal

Color: Red

Item Code: 03-1370-001

Security Seal



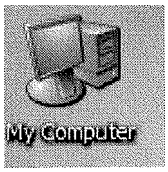
1.3 Create Directories (Folders)

The following two directories must be created on the C:\ Drive of the PC in order to conduct the hash check on the ES&S AutoMARK:

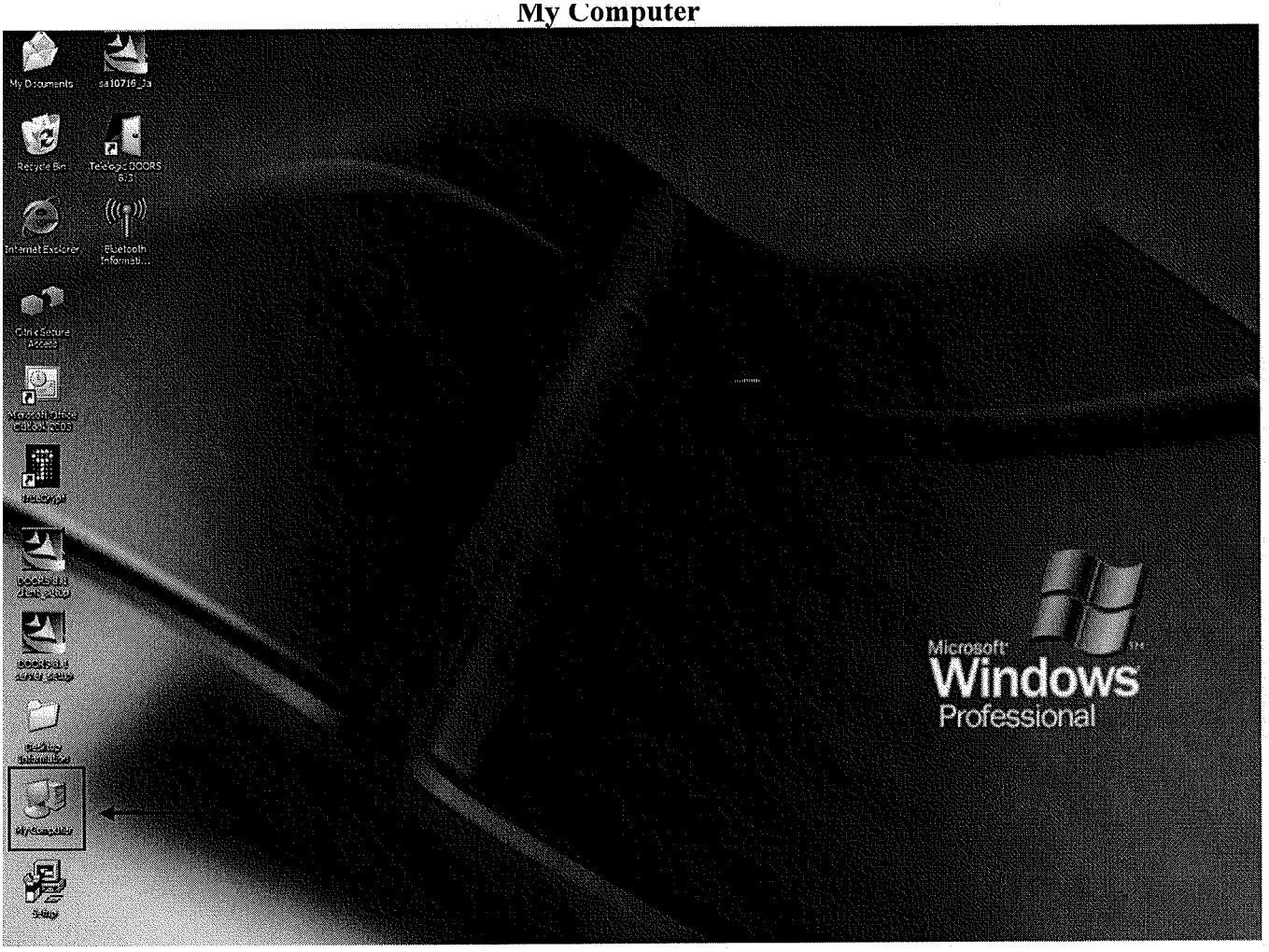
- automark
- hashcheck

NOTE: *The following screen shots were made with Microsoft XP Professional Operating System (OS). Depending on the OS being used, some screenshots may appear different.*

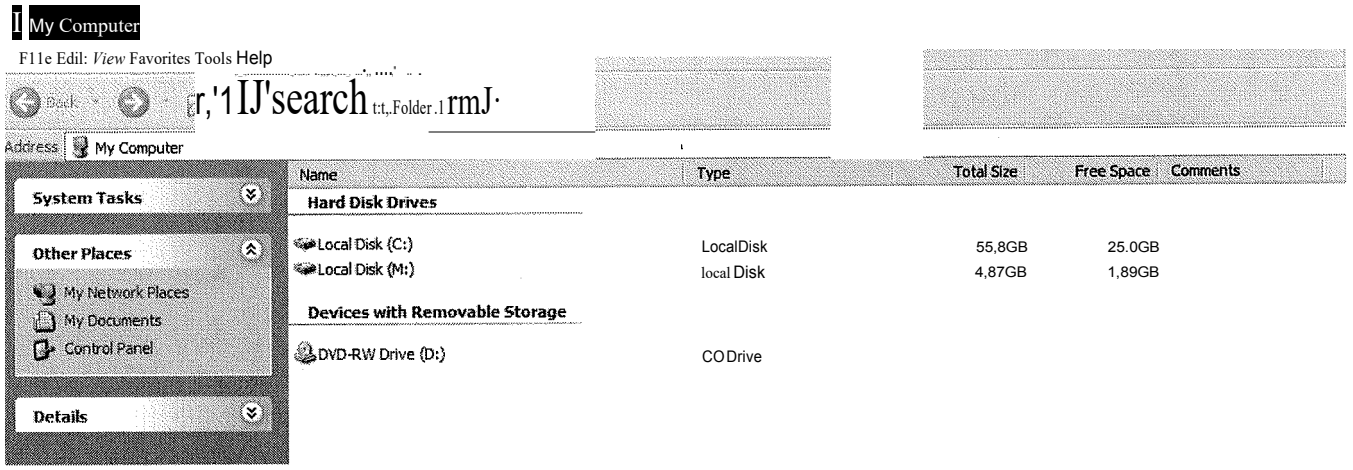
1. Start by navigating to "My Computer" by double clicking the "My Computer" icon located on the desktop.

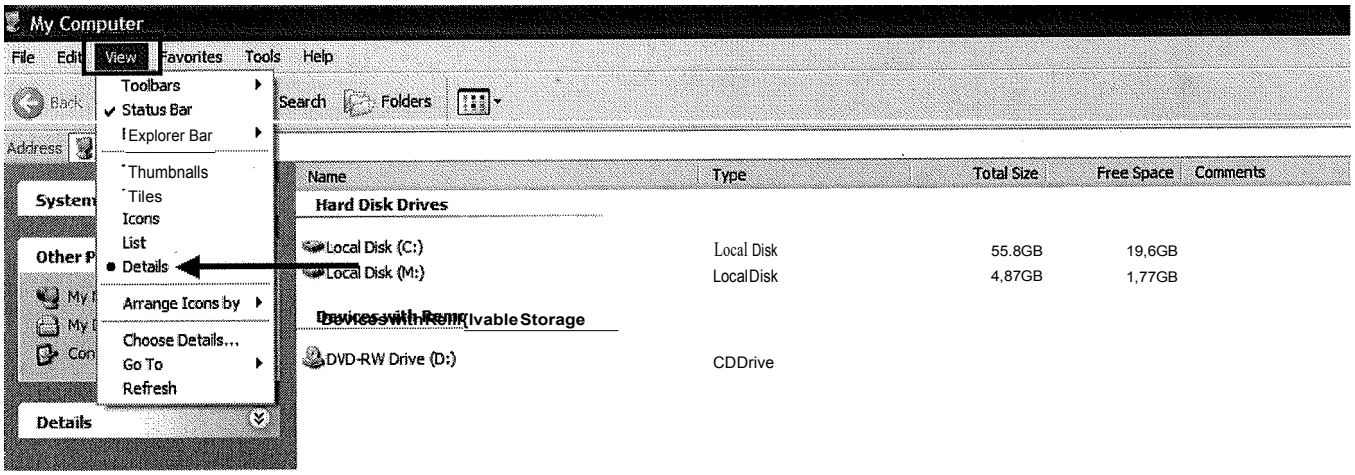


My Computer

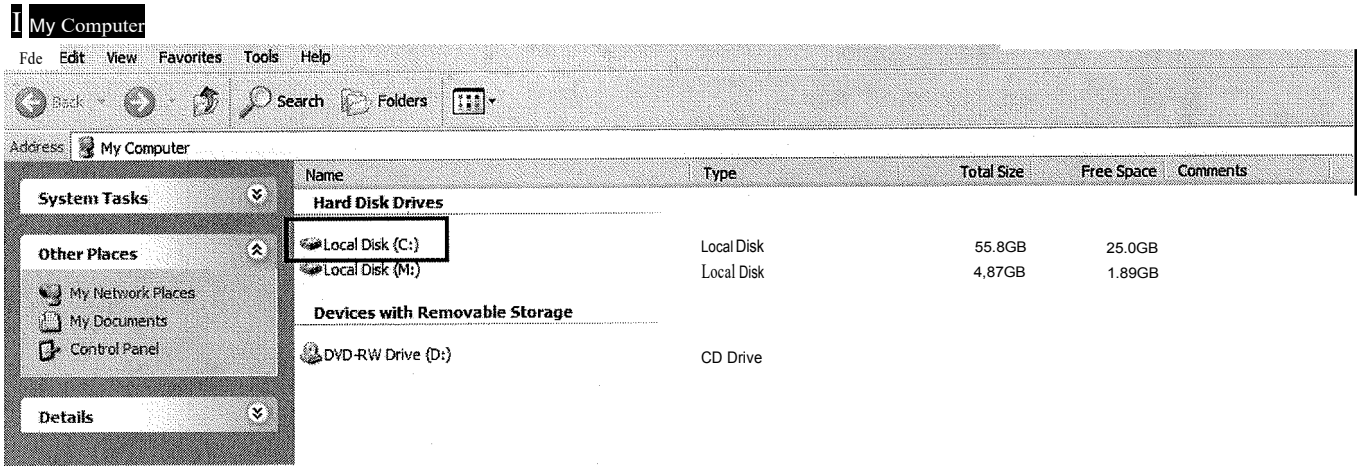


2. The following screen is launched in "Details" view - see second screenshot for this setting.

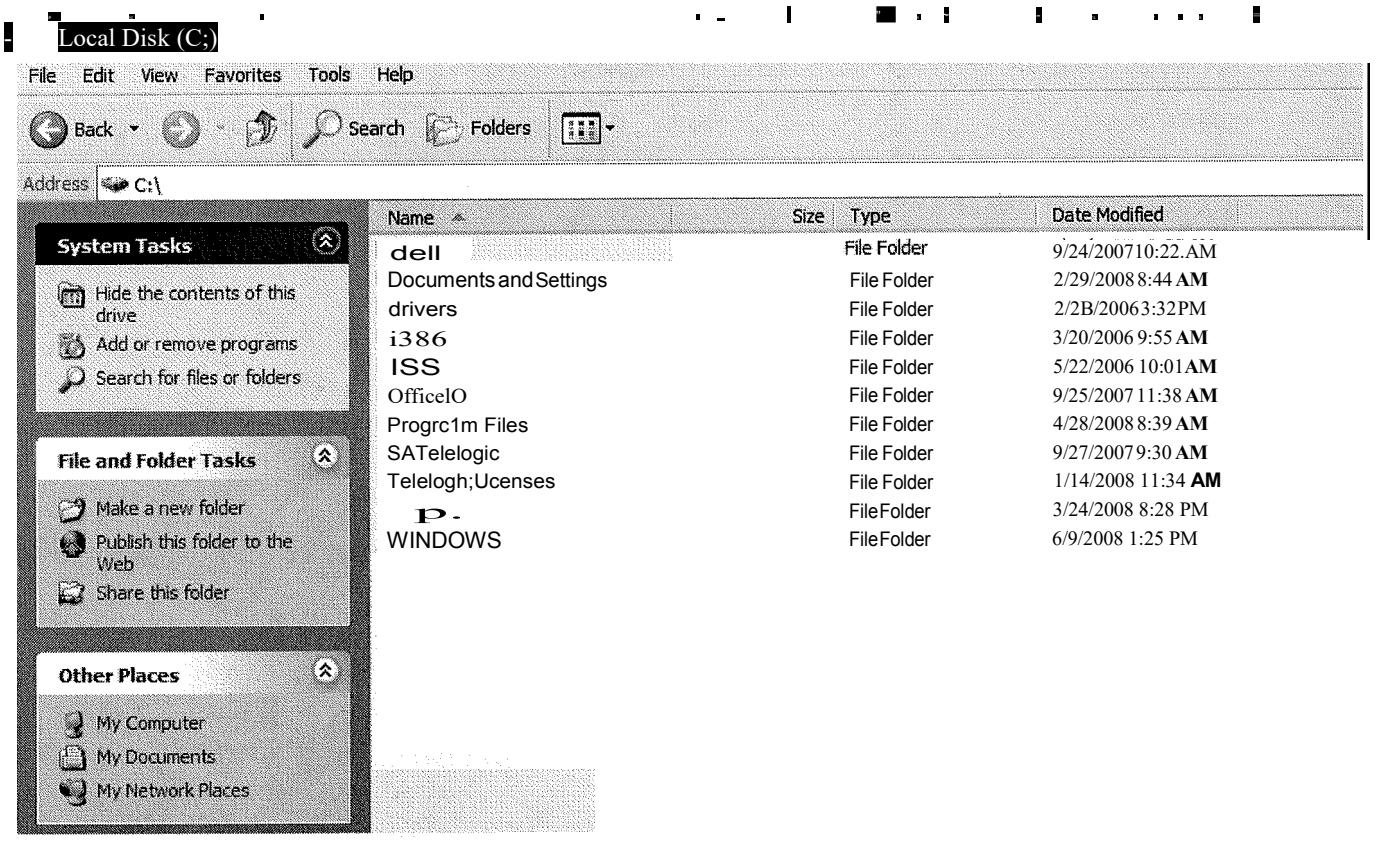




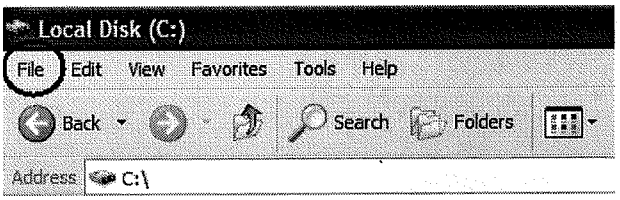
3. Double click on "Local Disk (C:)

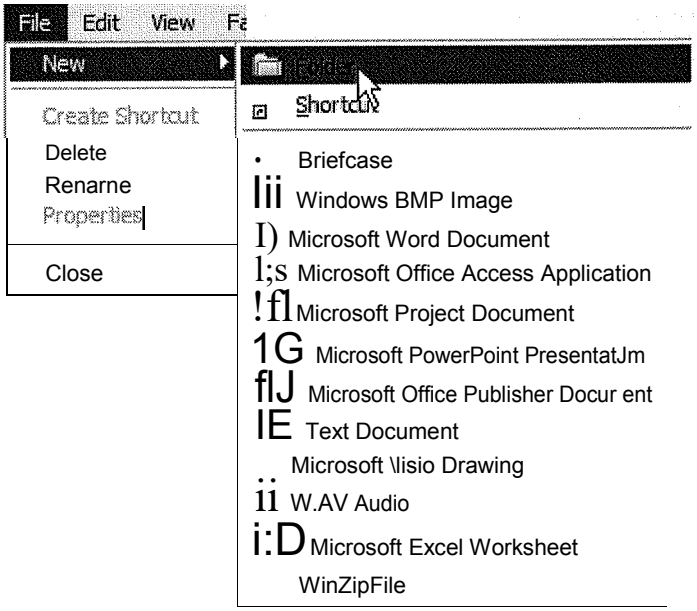


4. The following screen is launched:

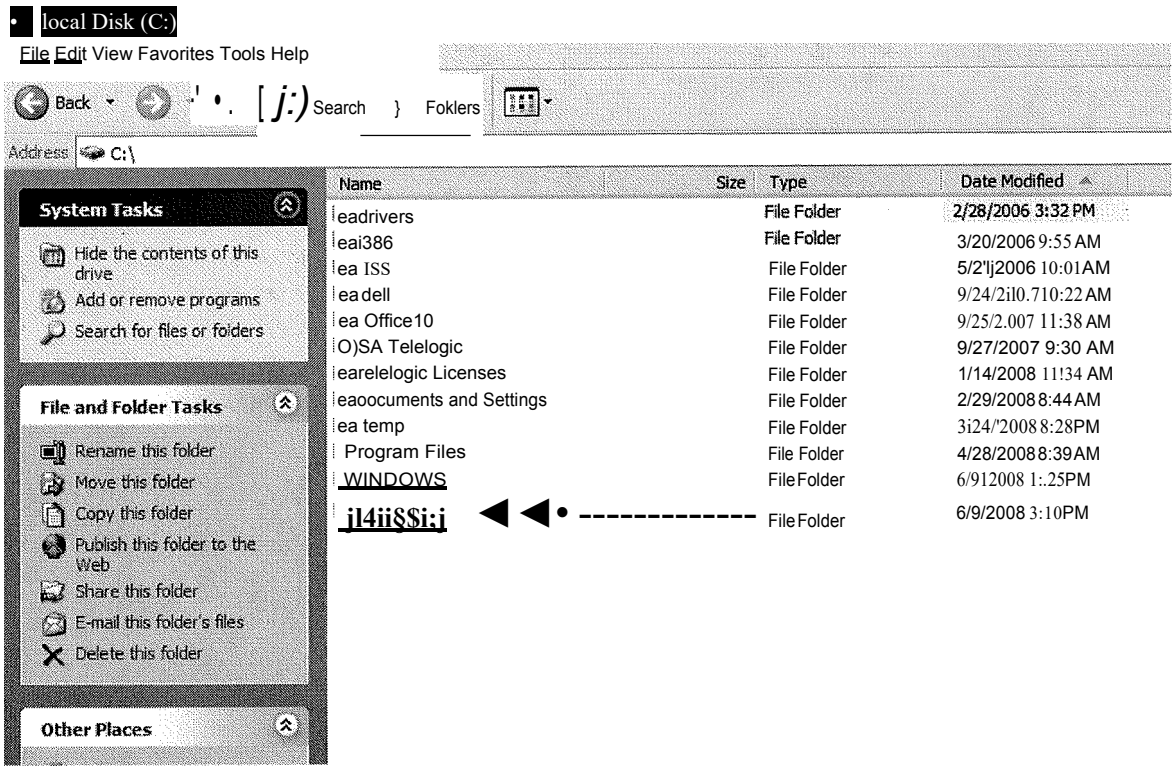


5. Select FILE> NEW> FOLDER

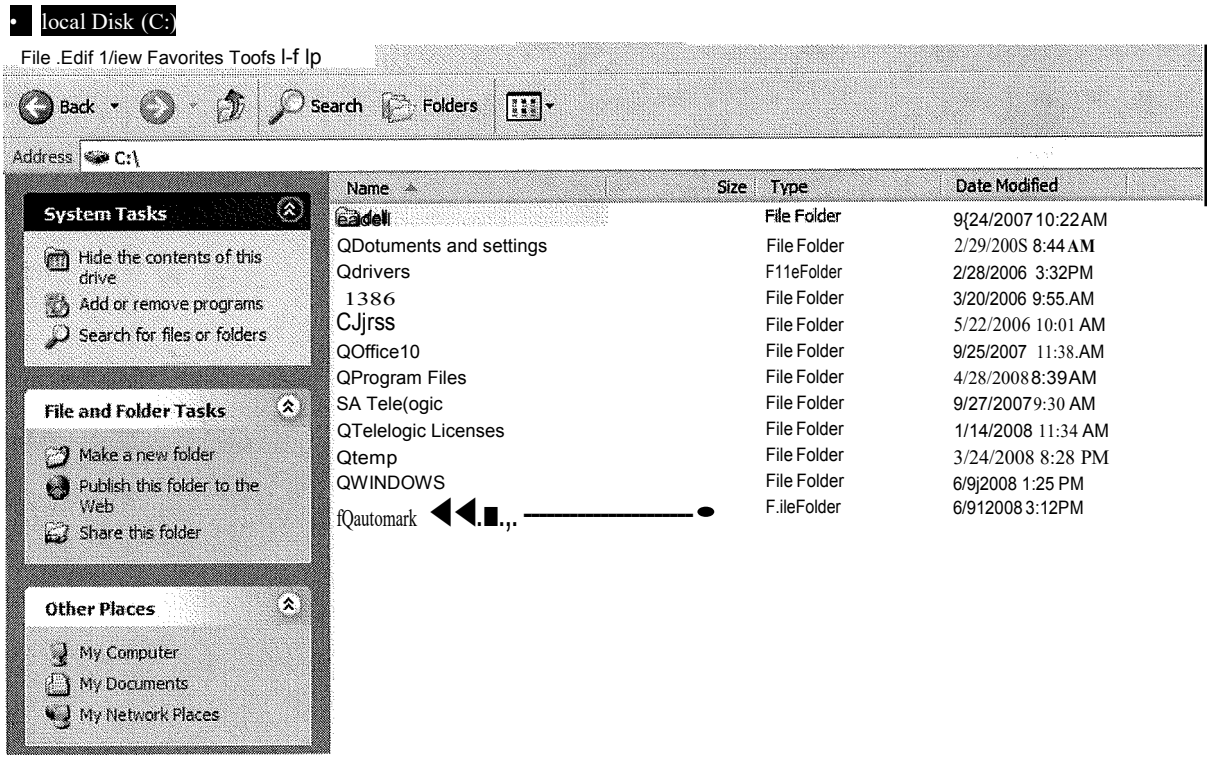




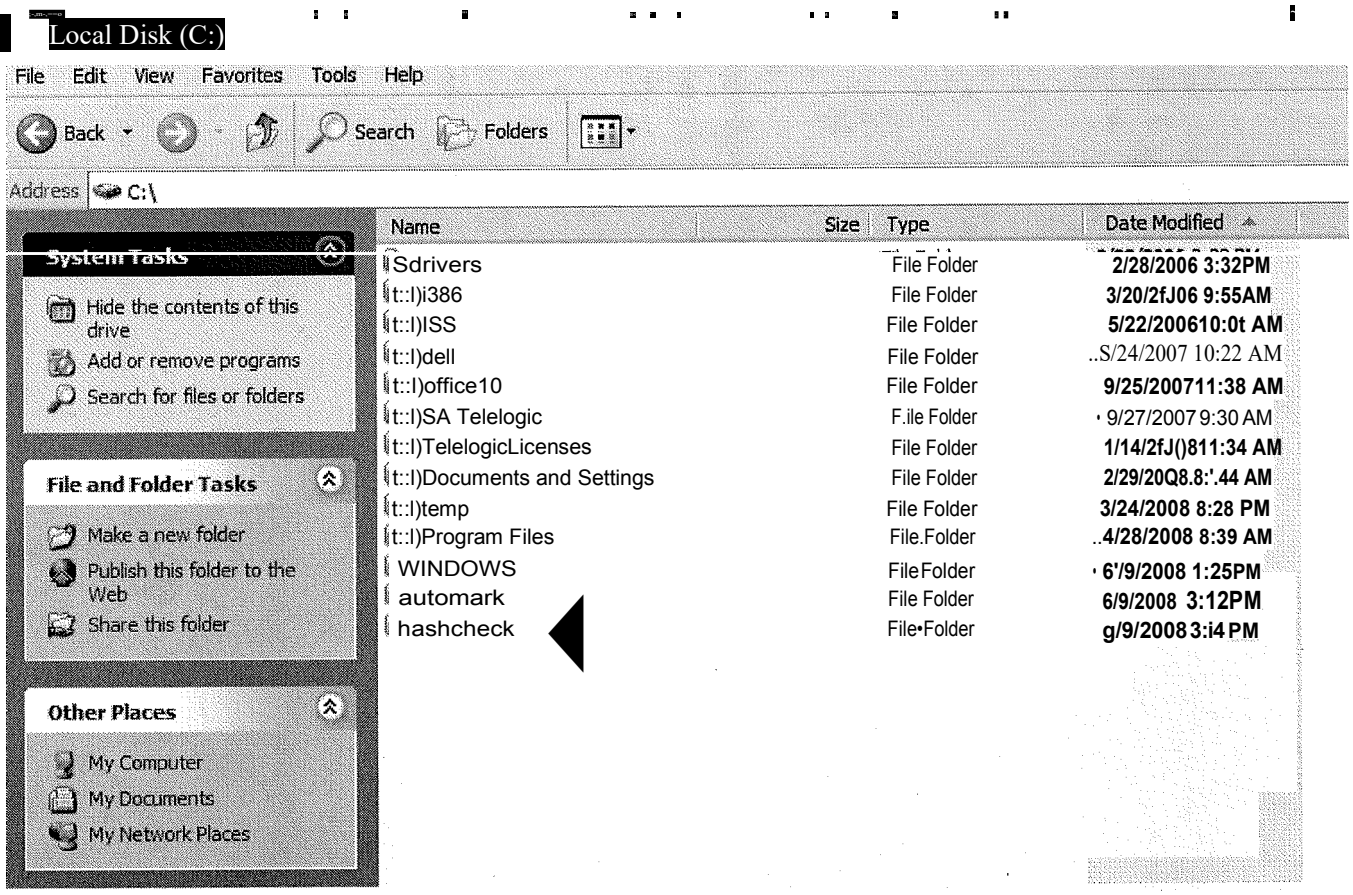
6. A "New Folder" is created



7. Type **"automark"** to name the new folder (i.e. Directory) and then press the "Enter" key

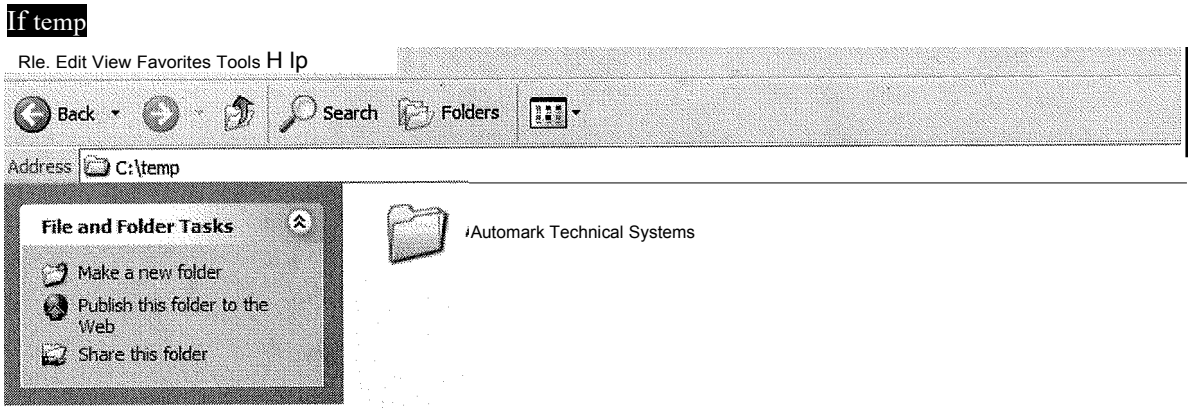


8. Repeat the process for Steps 5 through 7 to create a "New Folder" named **"hashcheck".**

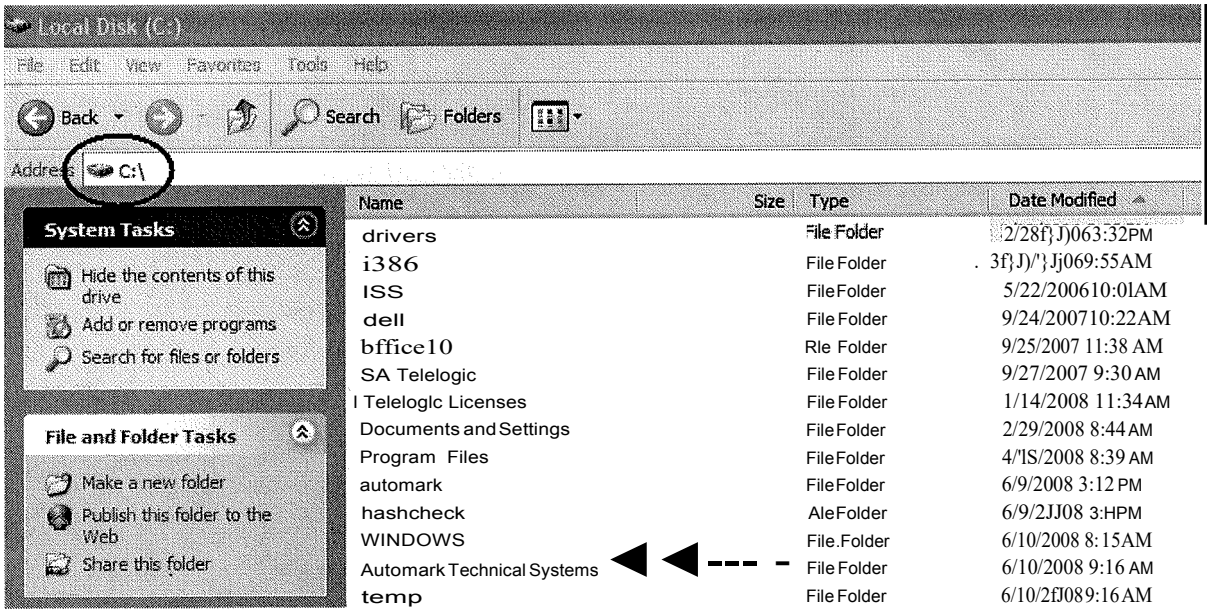


1.4 Install AutoMARK Validater

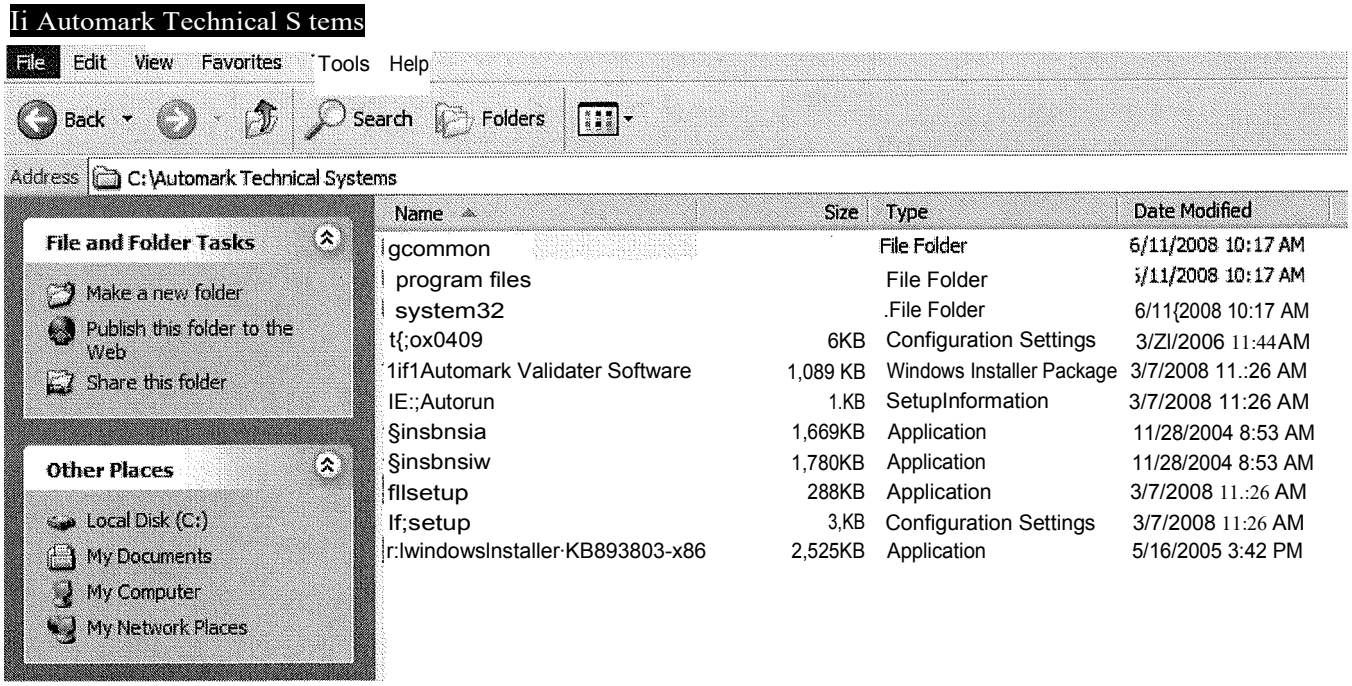
9. Install the AutoMARK Validater. This is done only once for each PC that will be used to conduct the hash check. The State Board of Elections (SBOE) will provide all the necessary files to install the AutoMARK Validater Application.



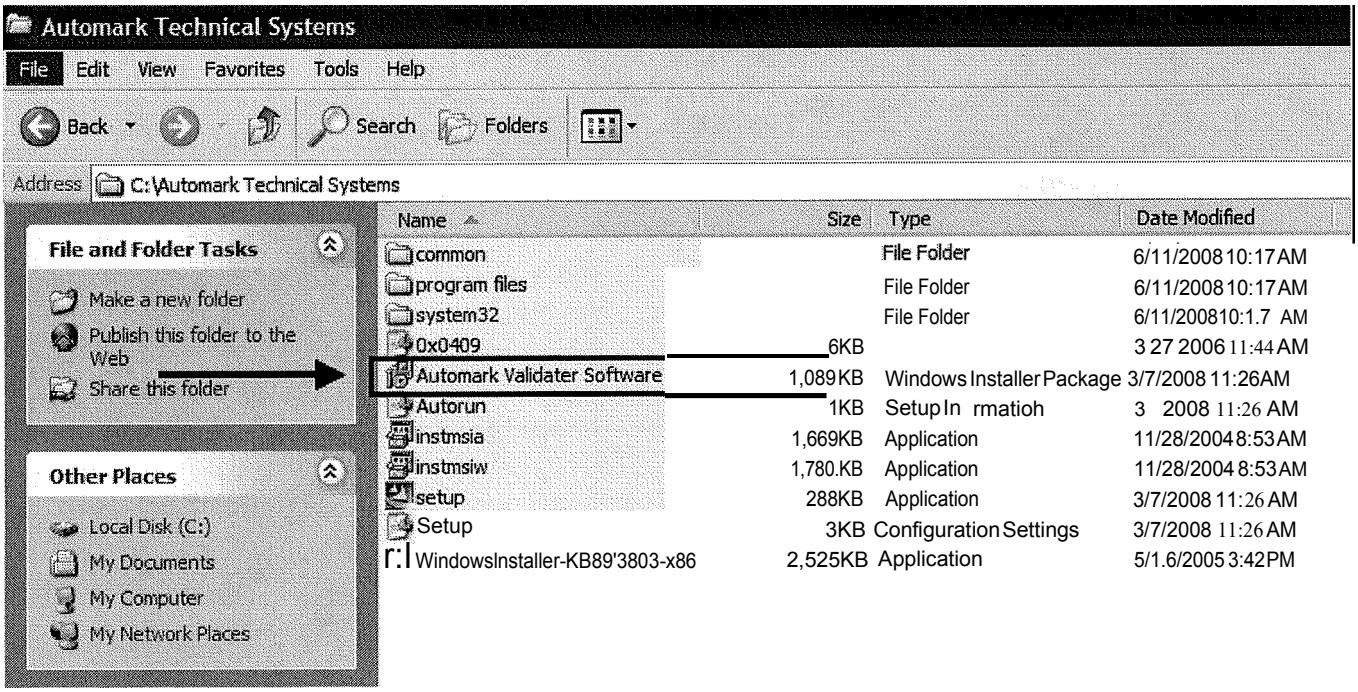
10. Copy the "Automark Technical Systems" folder provided by SBOE that contains all the necessary files to install the AutoMARK Validater Application to the C:\ Directory.



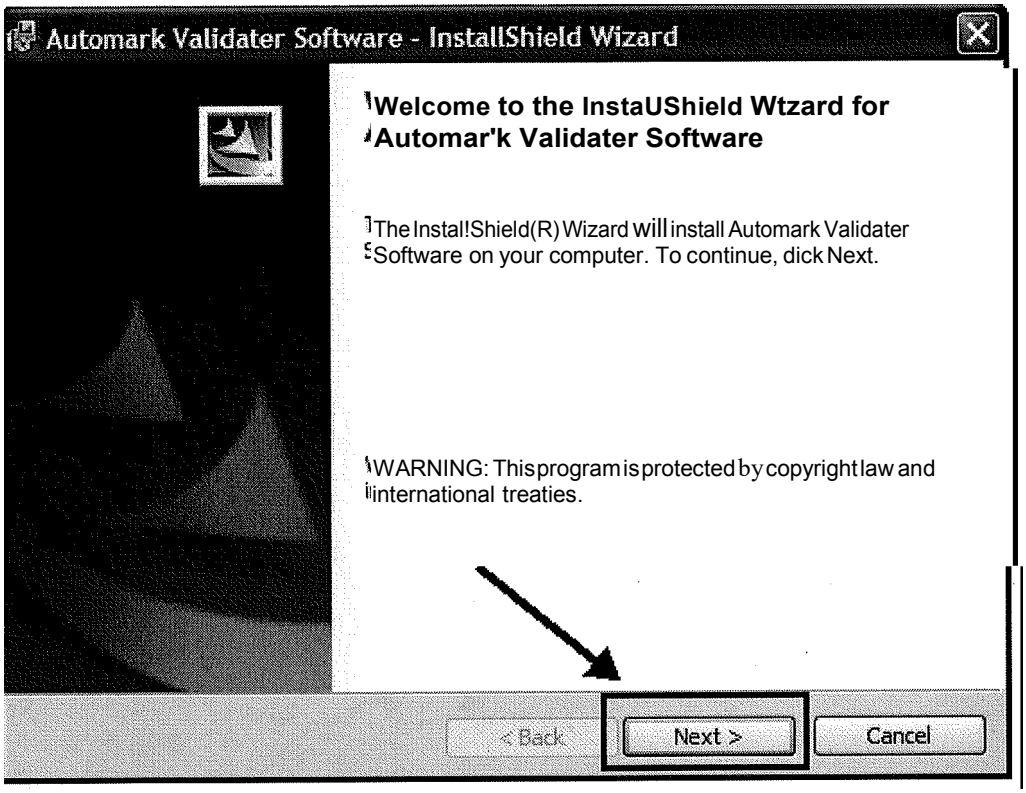
11. Open the "Automark Technical Systems" folder by double clicking it to display the contents of the folder.



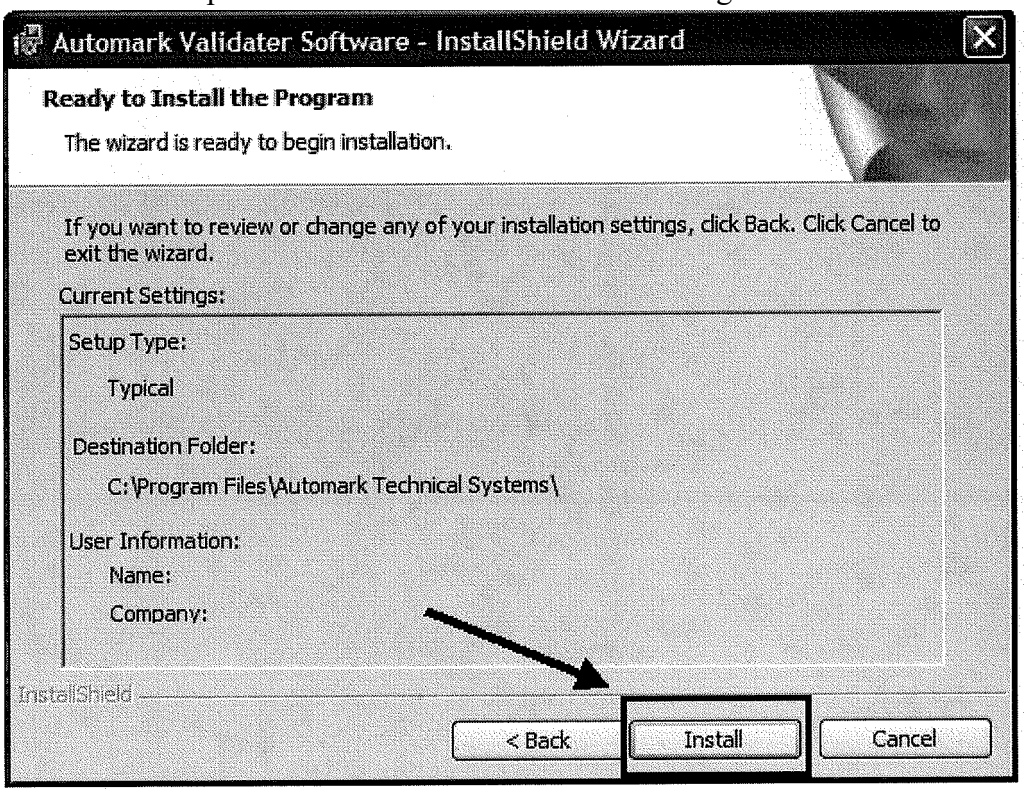
12. Locate the Automark Validater Software (Windows Installer Package) Icon. Double click this icon and follow steps provided by the Installation Wizard to install the "Validater" application on the PC.



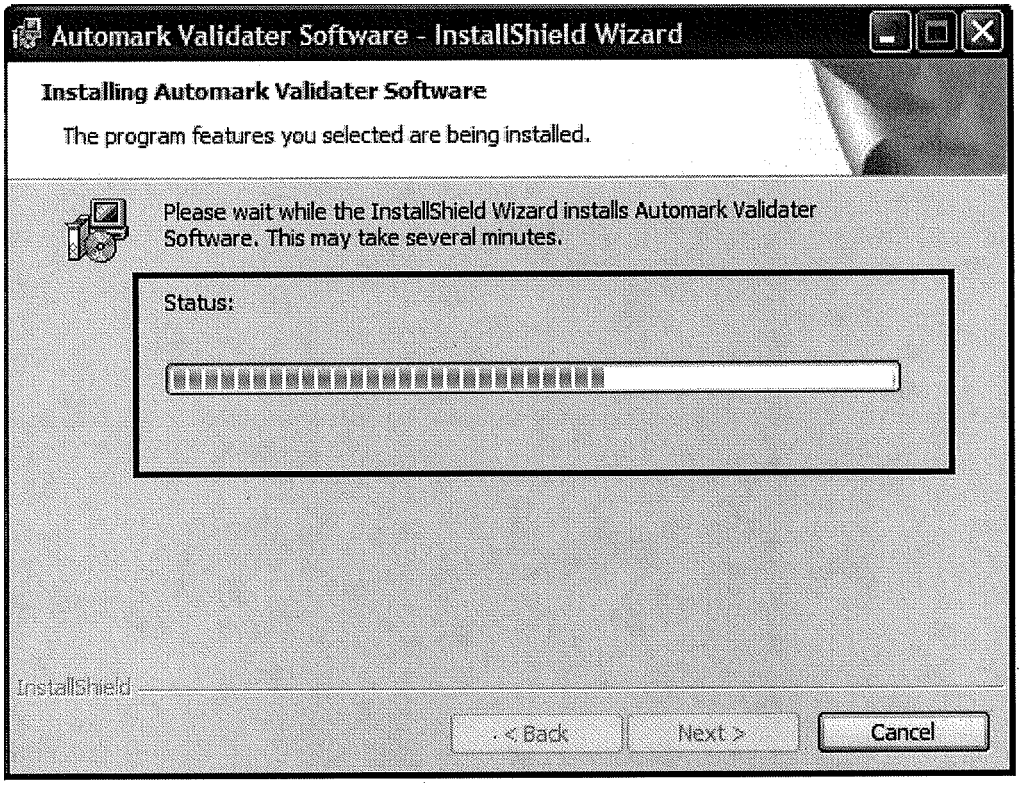
13. Installation Wizard Step **1** - Click "Next"



14. Installation Wizard Step 2- Click "Install" to use Current Settings.

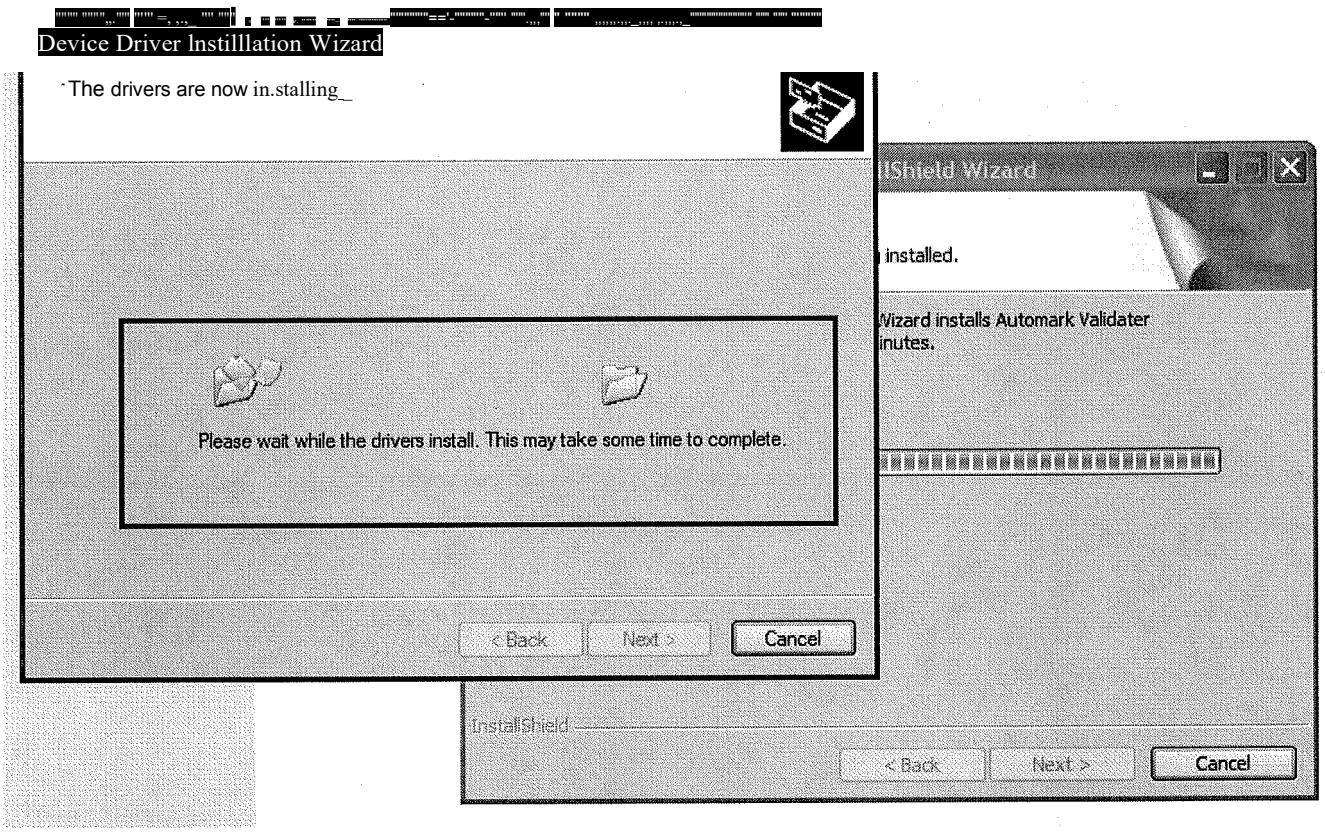


15. Installation Wizard Step 3 - Installation Status Bar showing progress of the install.

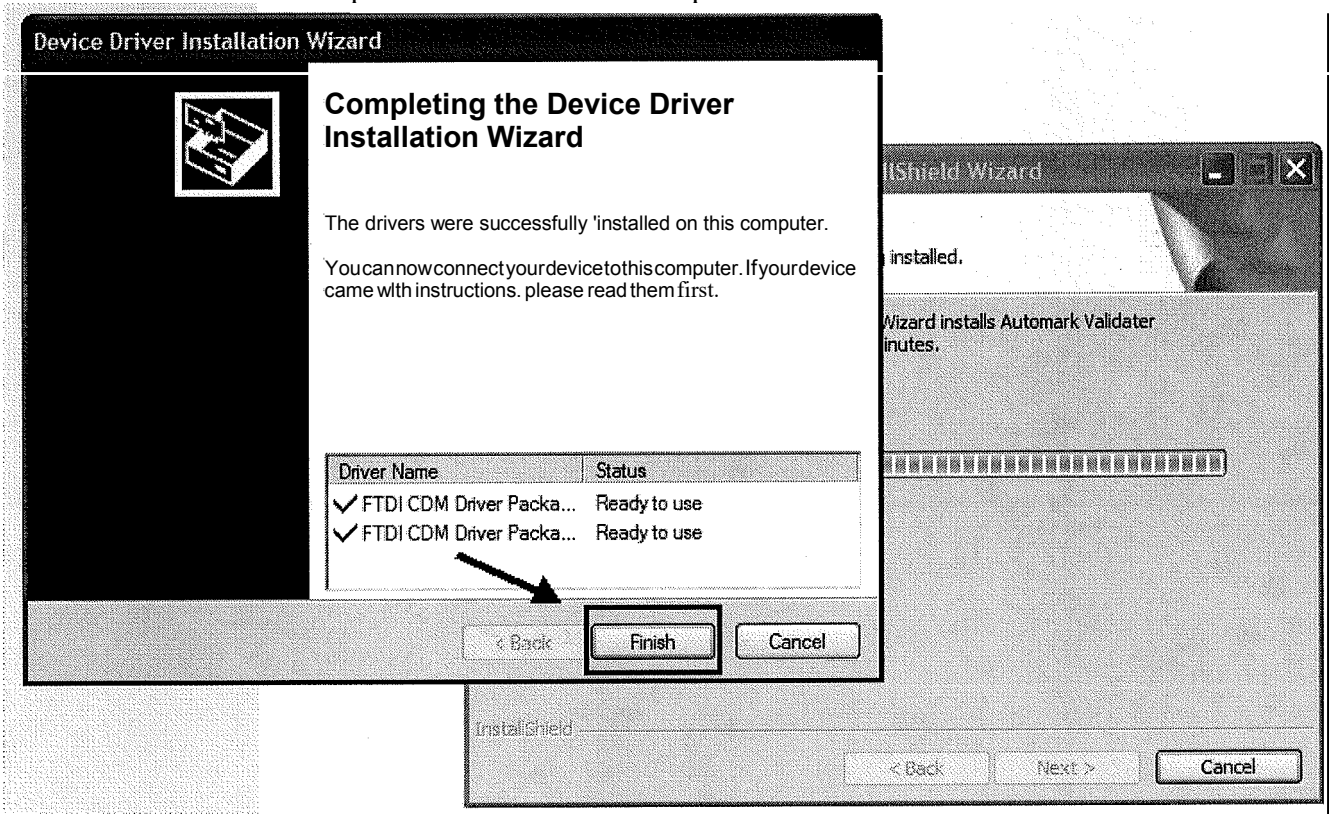


16. Installation Wizard Step 4 - click "Next"

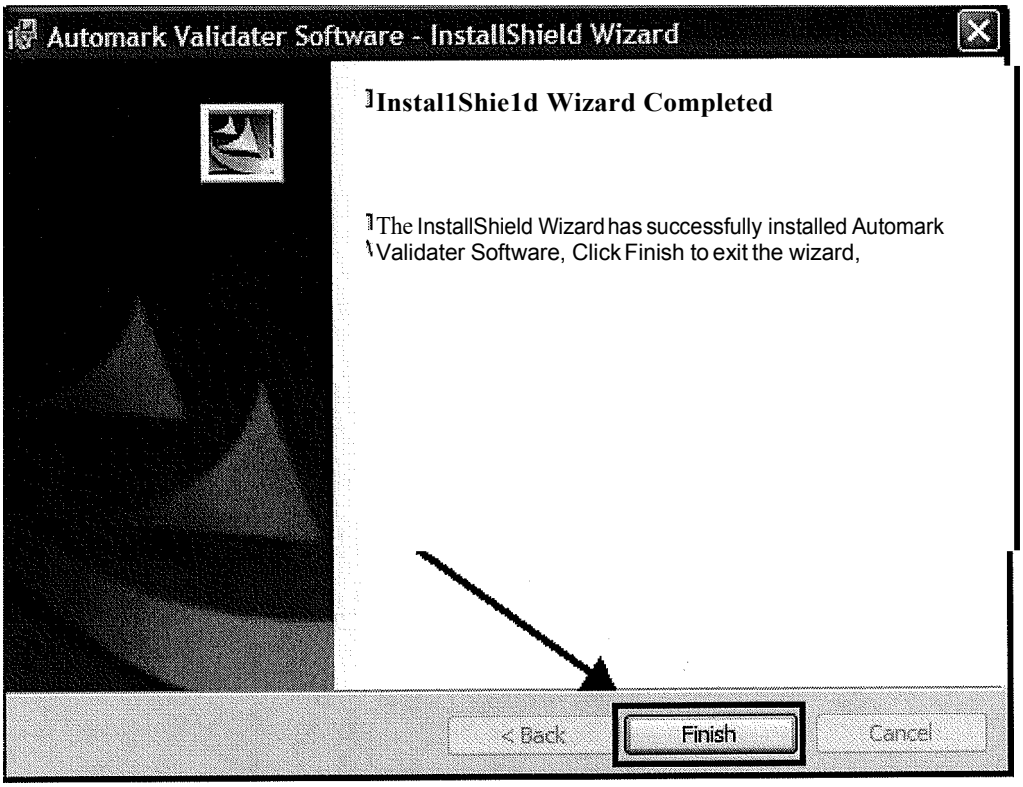
17. Installation Wizard Step 5 - Installation of the device drivers.



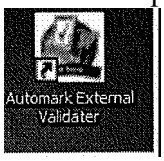
18. Installation Wizard Step 6 - click "Finish" to complete device driver installation.

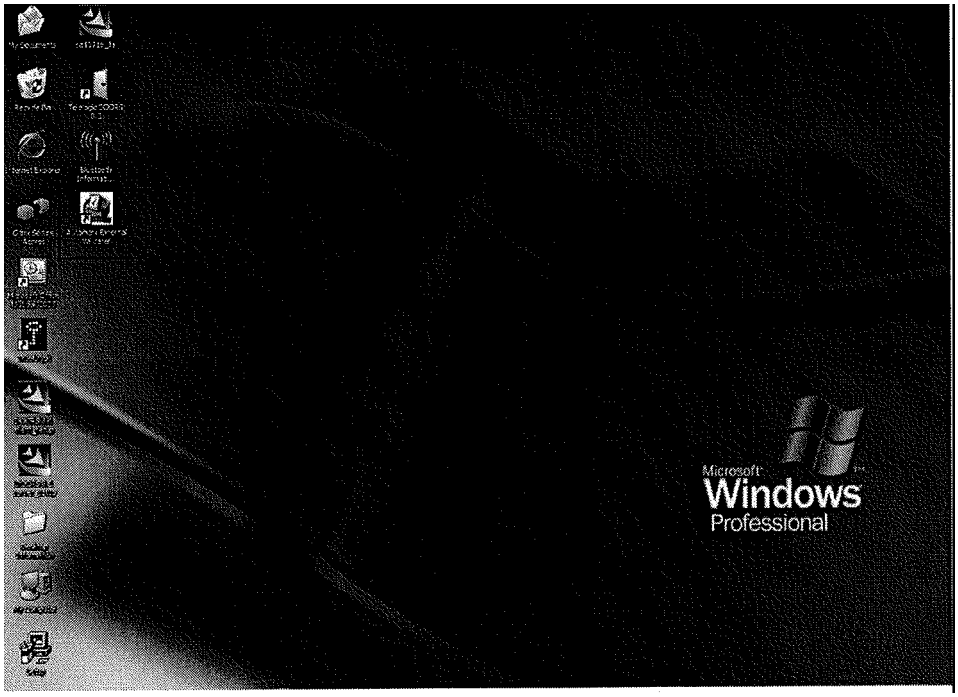


19. Installation Wizard Step 7 - click "Finish" to complete the Automark Validater Installation.



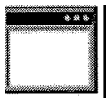
20. Verify that the Automark External Validater icon is present on the desktop.



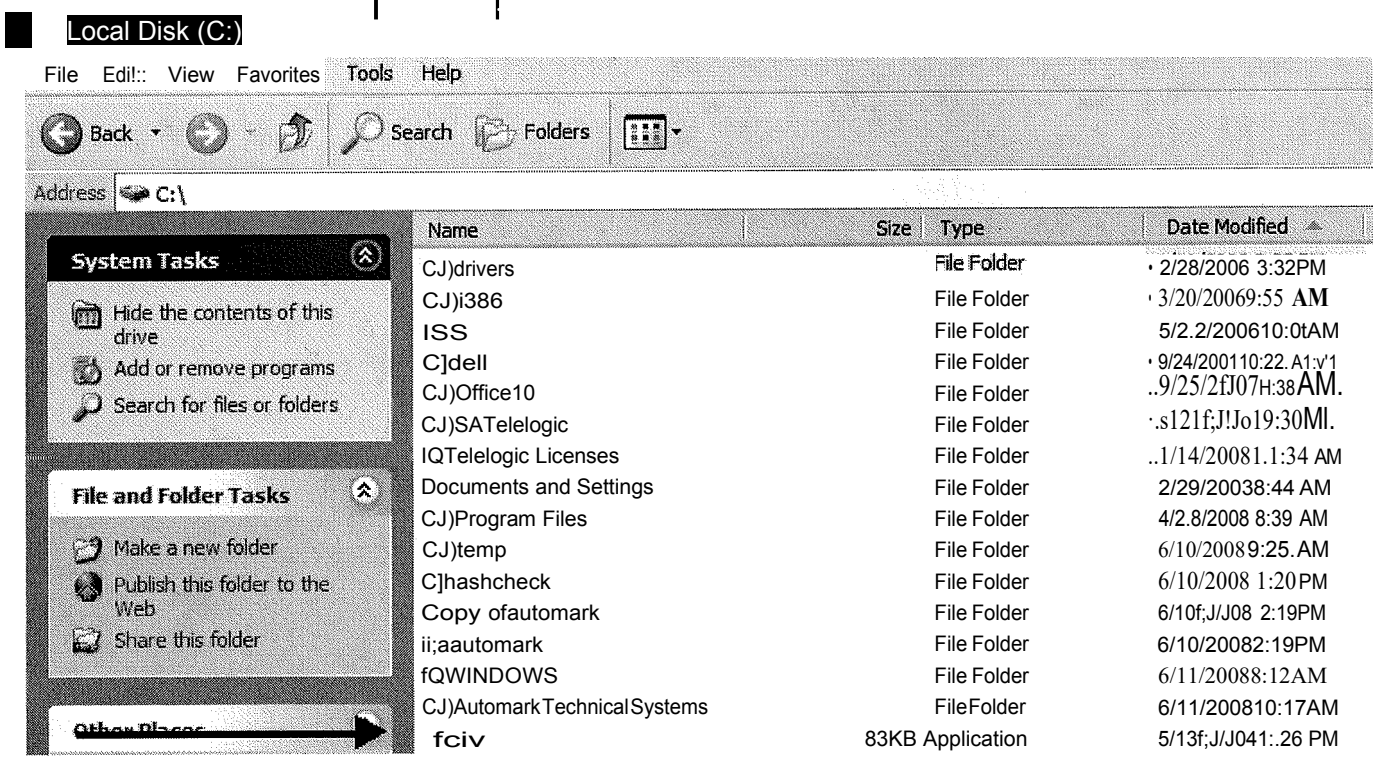


1.5 Install File Checksum Integrity Verifier (FCIV) Application

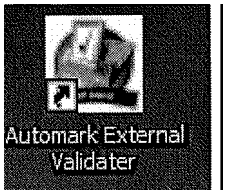
21. Install the FCIV on the C:\ Drive. This is done only once for each PC that will be used to conduct the hash check. The State Board of Elections (SBOE) will provide the application (executable).



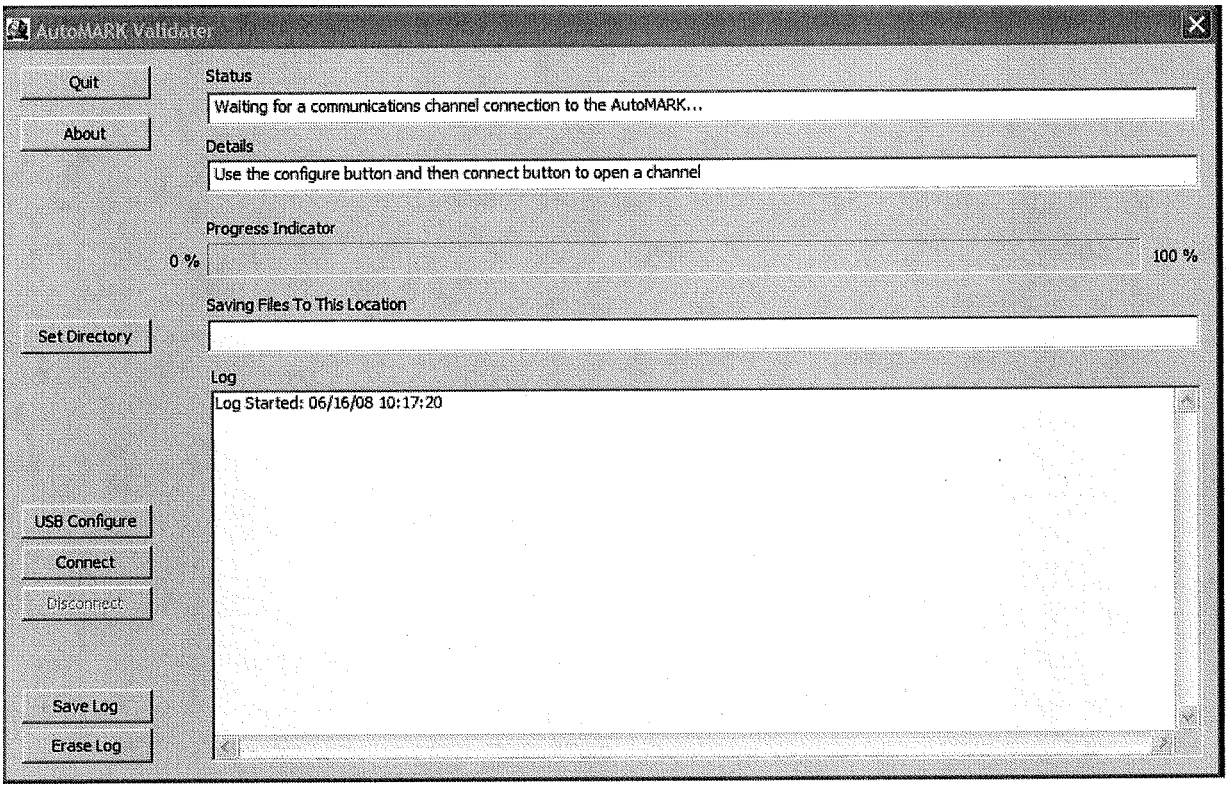
22. Copy the fciv application (executable) to the C:\ Directory. That completes the install.



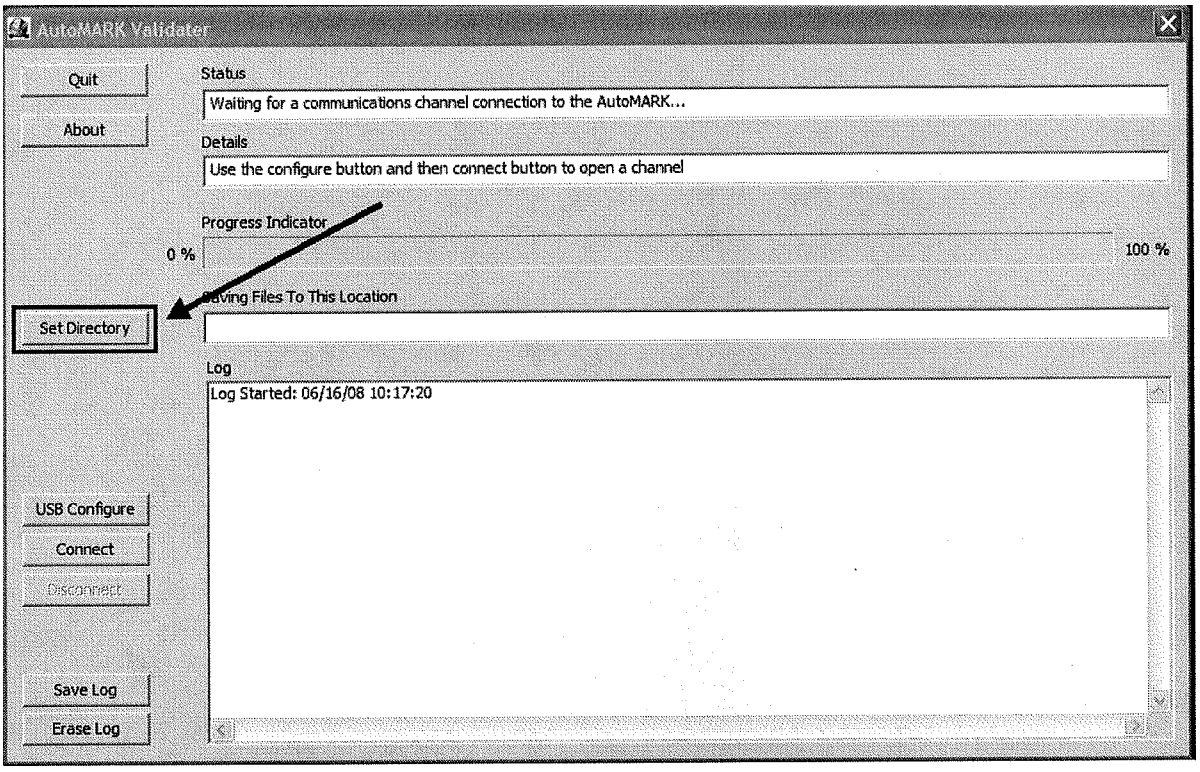
1.6 Setting the Directory (folder) to save files downloaded from the AutoMARK BMD



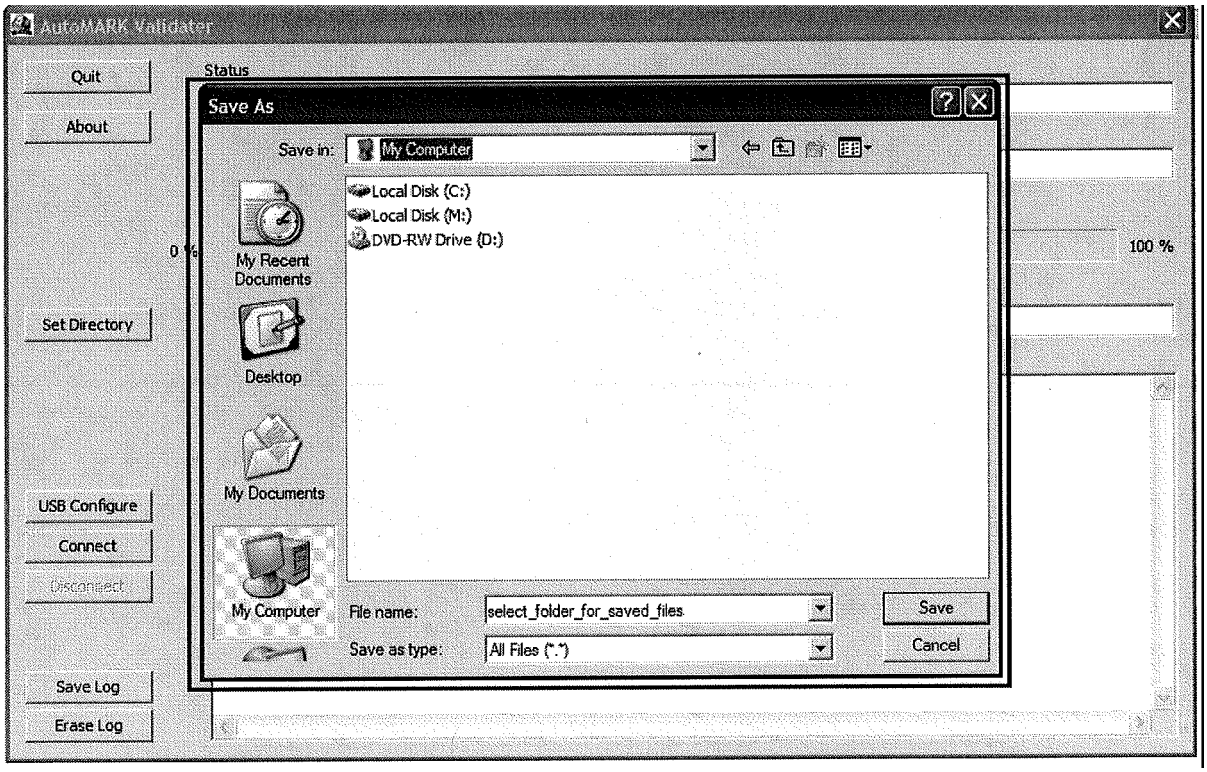
23. Double click the "Validater" icon located on the desktop to launch the application. The following screen will appear.



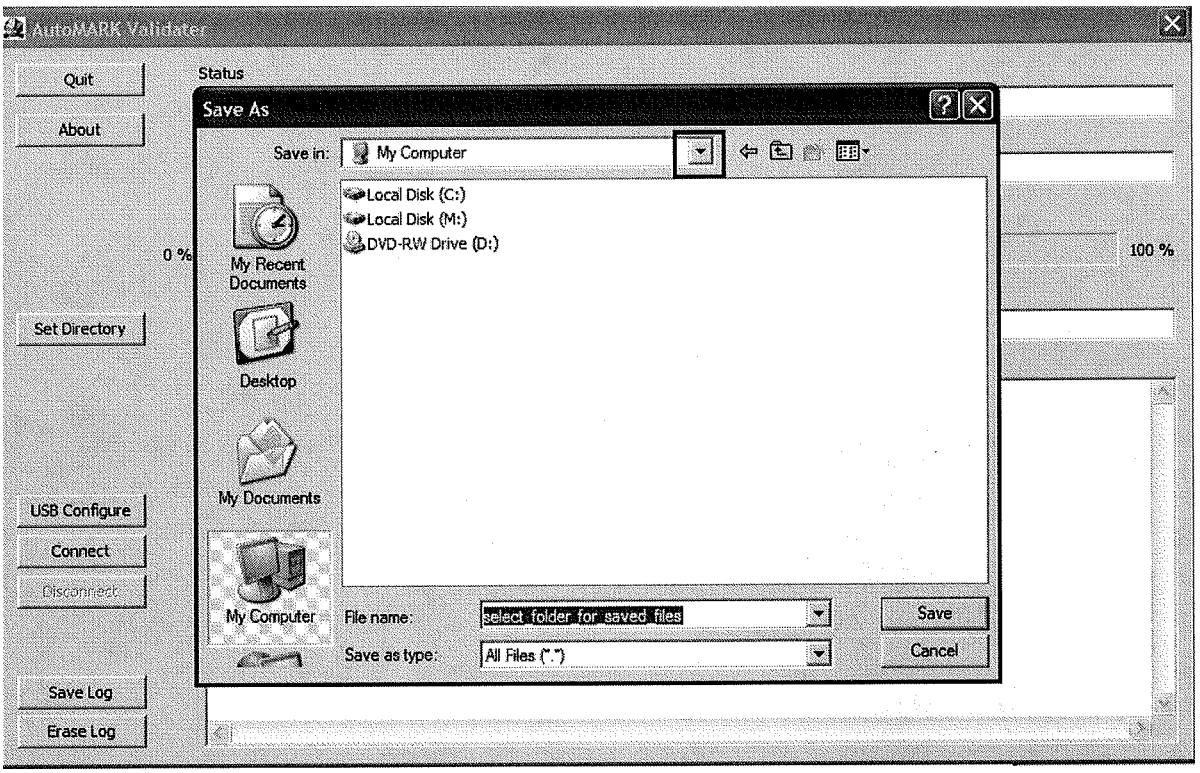
24. Click the "Set Directory" button to create a path to the "Saving Files To This Location". The "automark" folder that was created in step # 7 will be used to save the files that will be downloaded from the ES&S AutoMARK.



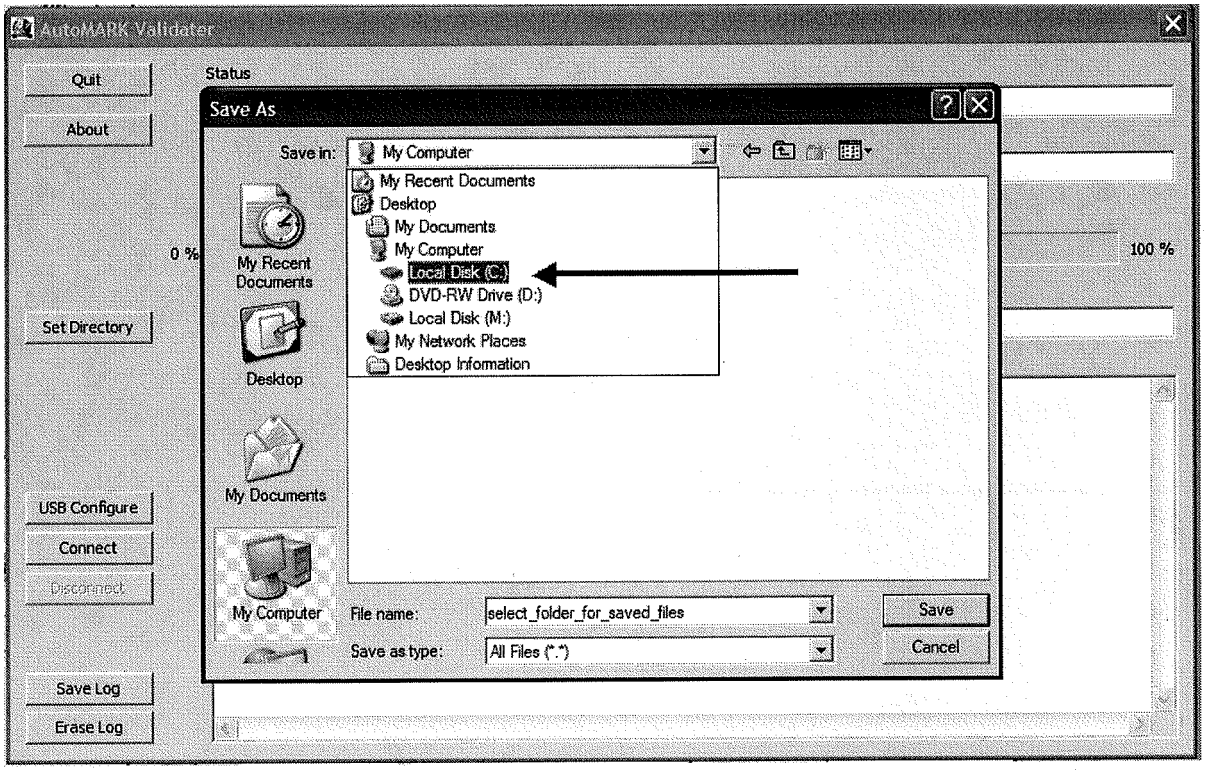
25. The "Save As" dialog window opens



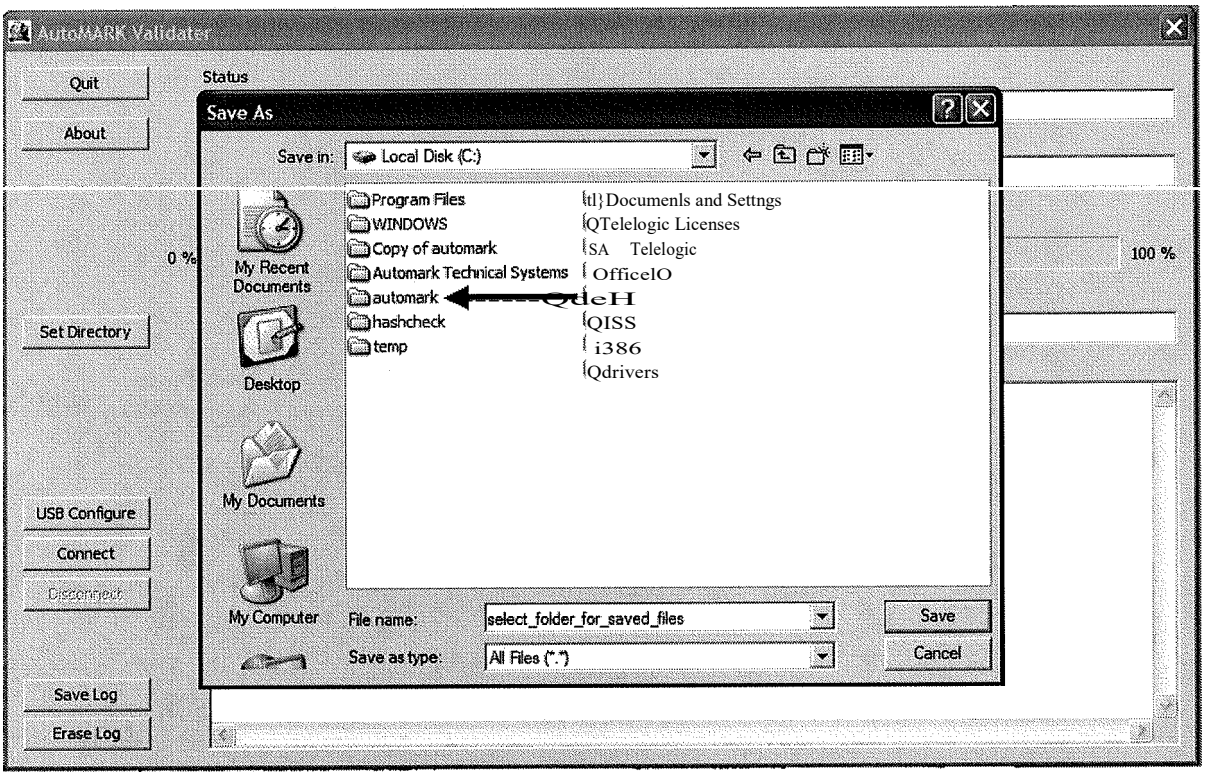
26. Browse to the "automark" folder located on the C:\ Drive. See example below.



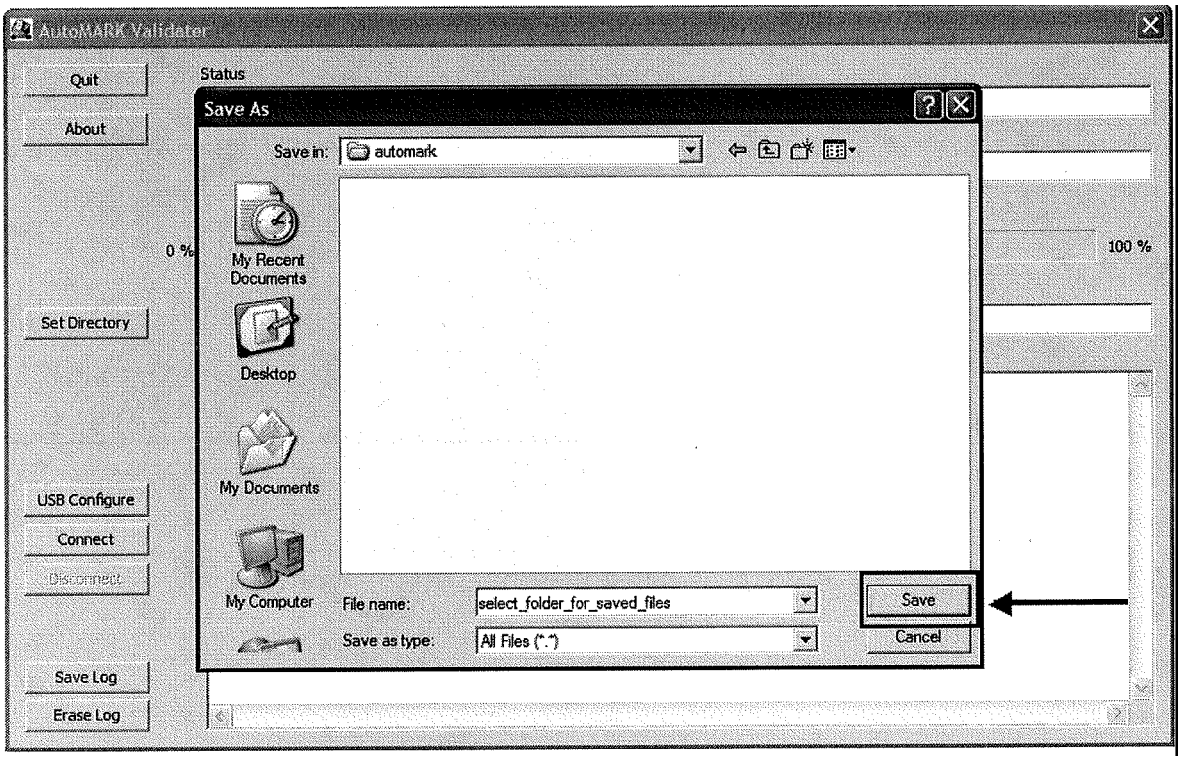
27. From the pull down menu select "Local Disk (C:)



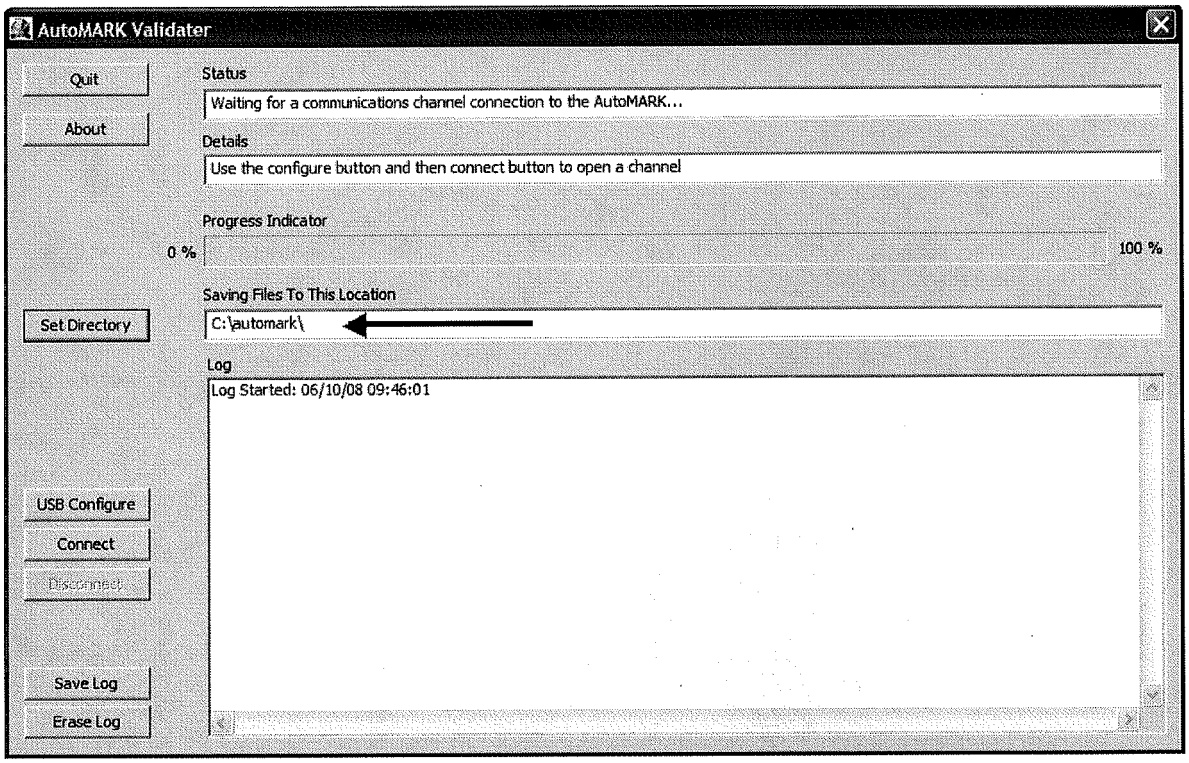
28. Double click "automark"



29. Click the "Save" button



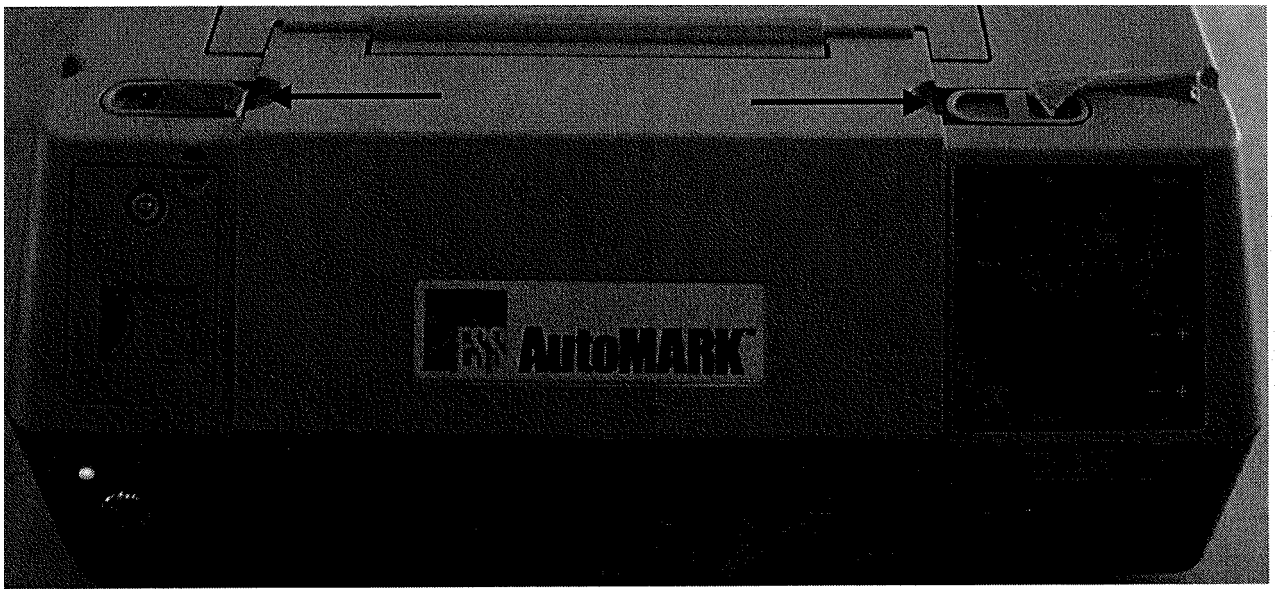
30. The path to the Directory is now set (C:\automark\)



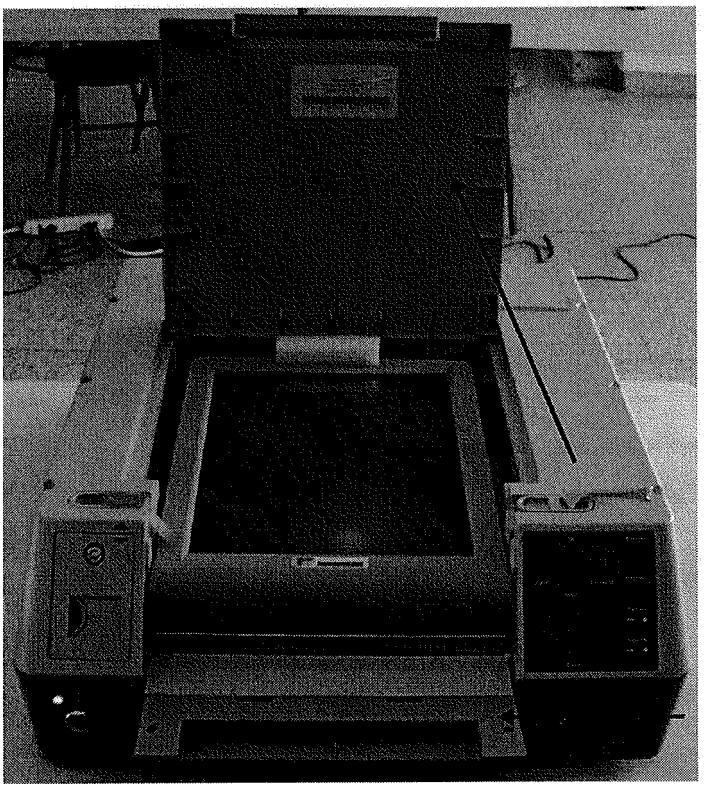
1.7 Hardware Set-Up

NOTE: *The orange tape that may be present in some photos is not security seals. This tape is used by ES&S for shipping purposes only.*

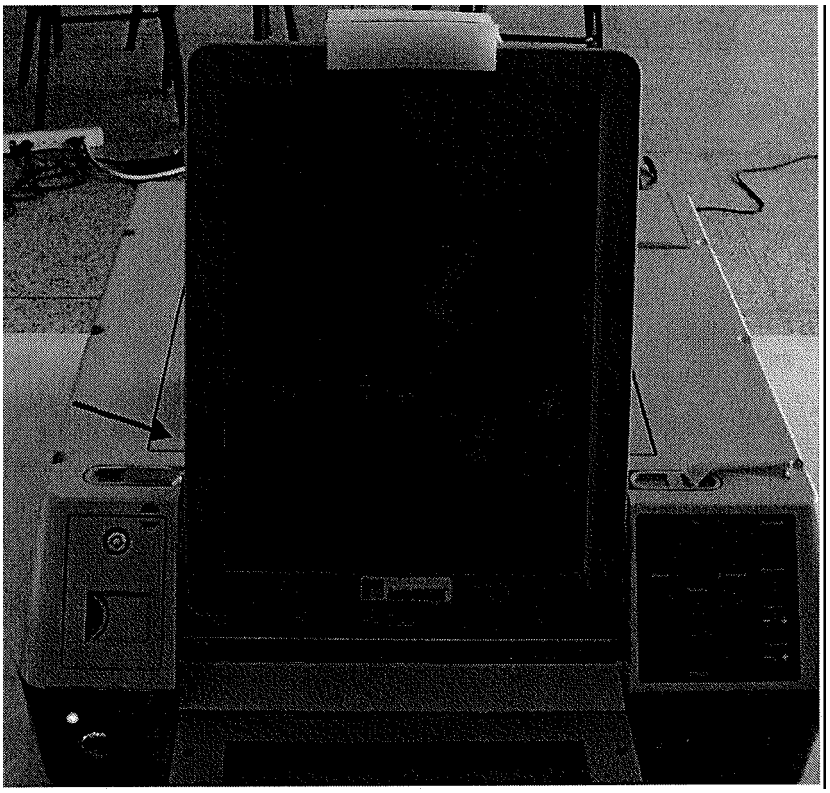
31. Slide latches out on top ofBMD.



32. Lift top cover and lower ballot feed tray.



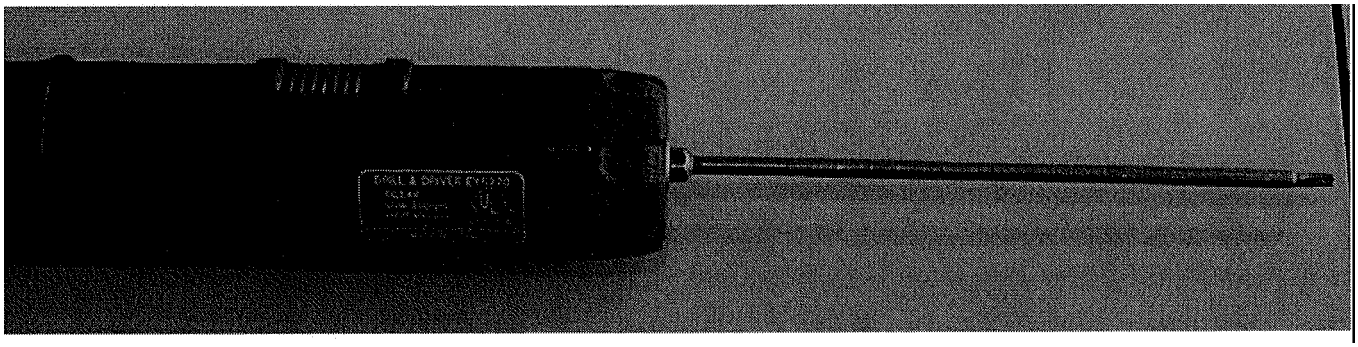
33. **Pull** the touch screen forward and lower top cover back into place.

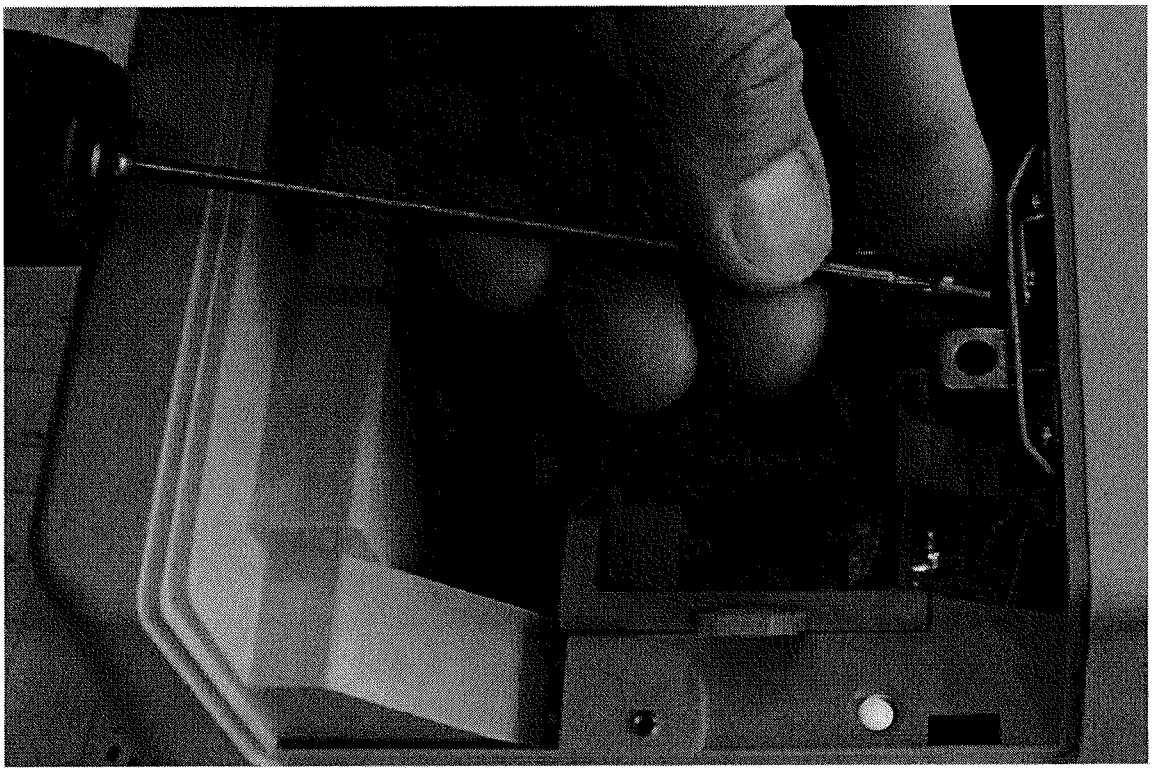


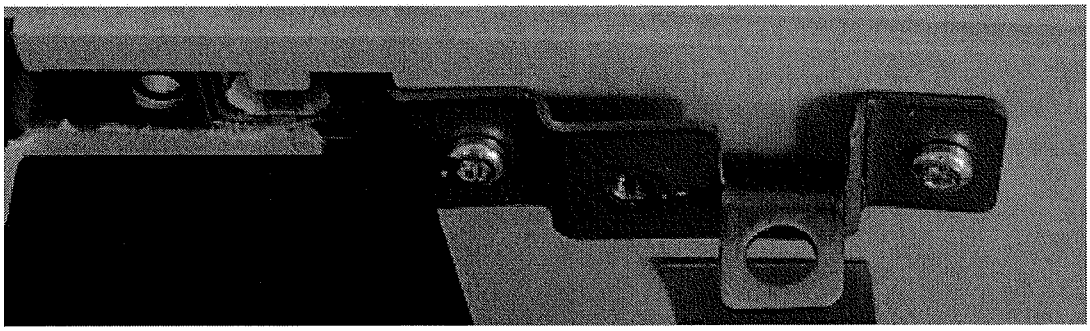
34. Open printer compartment door for access to the USB port. Remove security seal on bracket.

35. Remove security bracket using# 10 torx wrench. Be careful not to lose the screw.

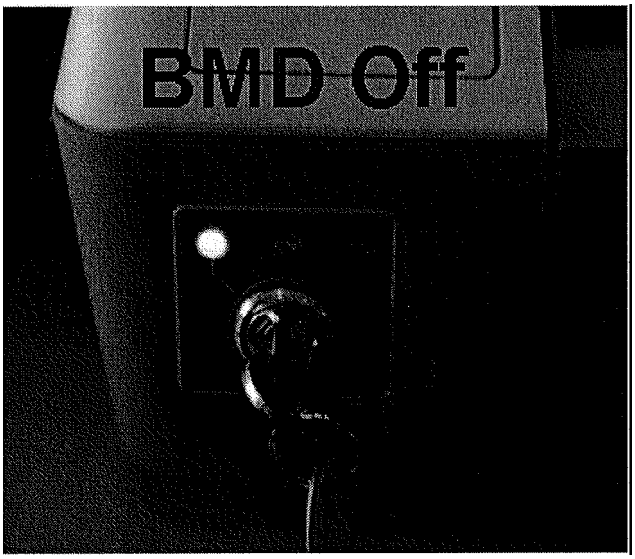
10 Torx Wrench



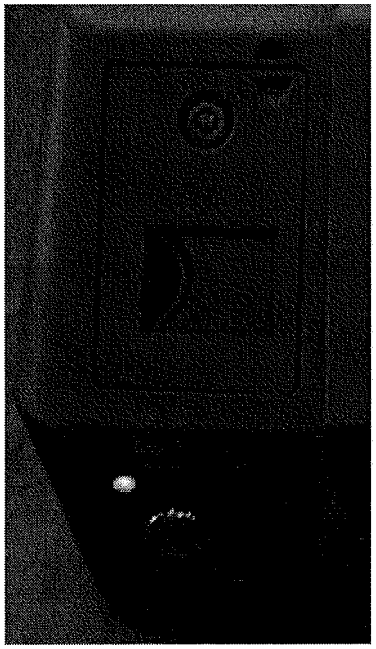




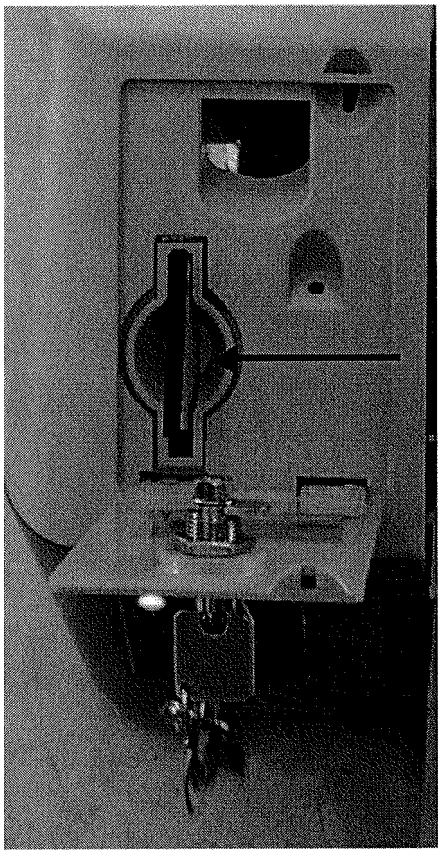
36. Start with the (BMD) "OFF"



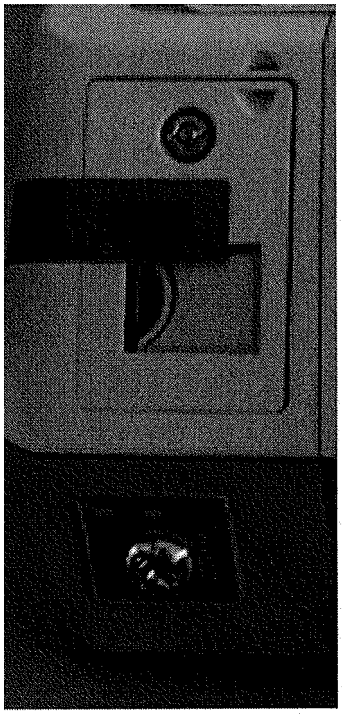
37. If the **BMD** does not have a Compact Flash (CF) card loaded, unlock and open CF access door on front of AutoMARK.



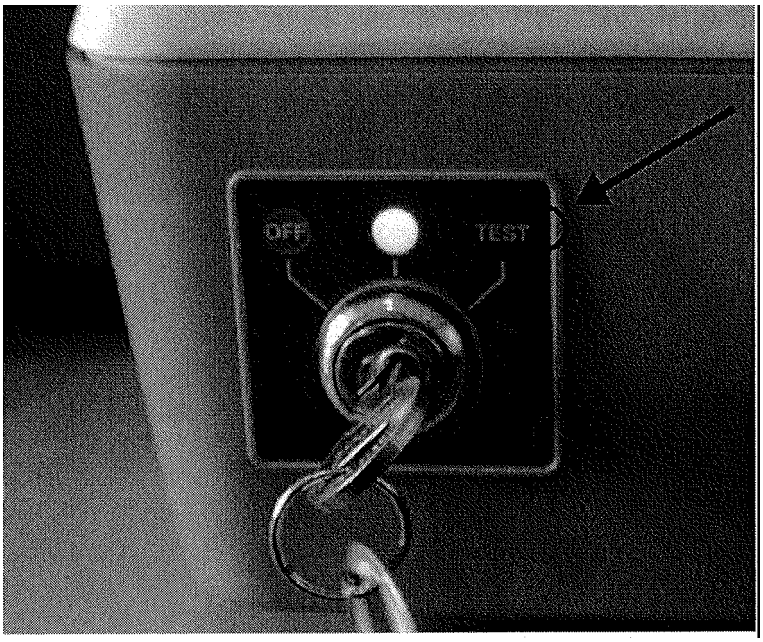
38. Carefully Insert CF Card into slot



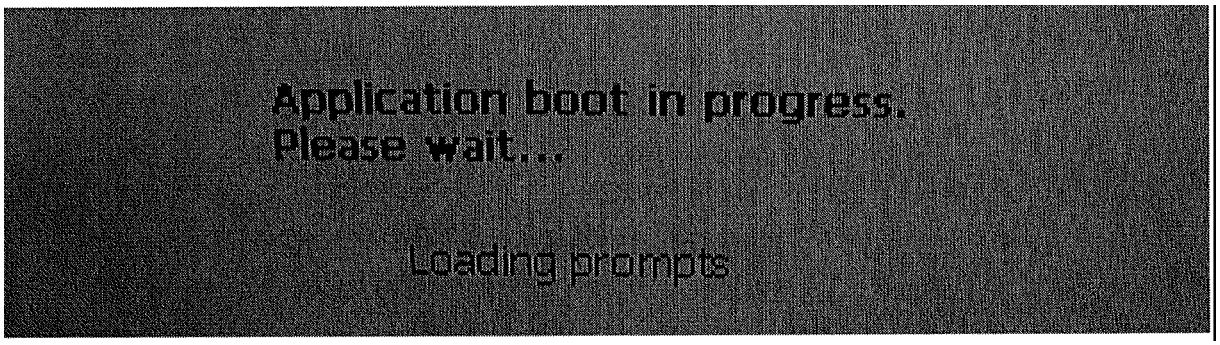
39. Close, lock and place a security seal across the CF access door on front of AutoMARK.



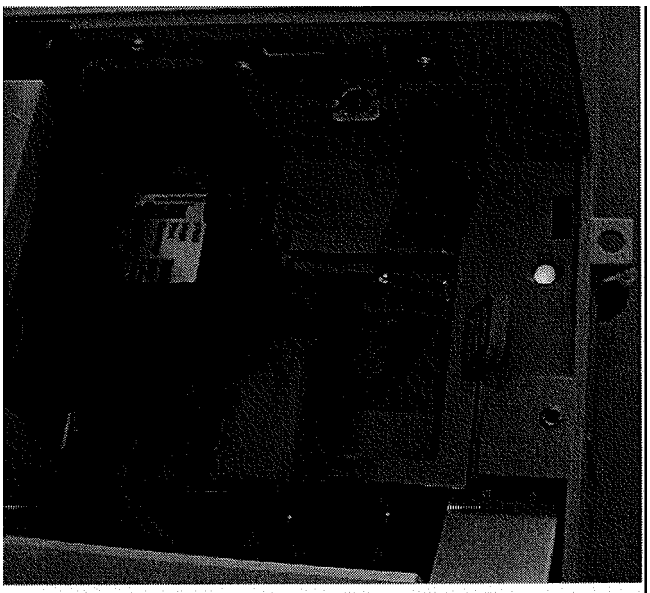
40. Insert key and turn key to "TEST" mode position.

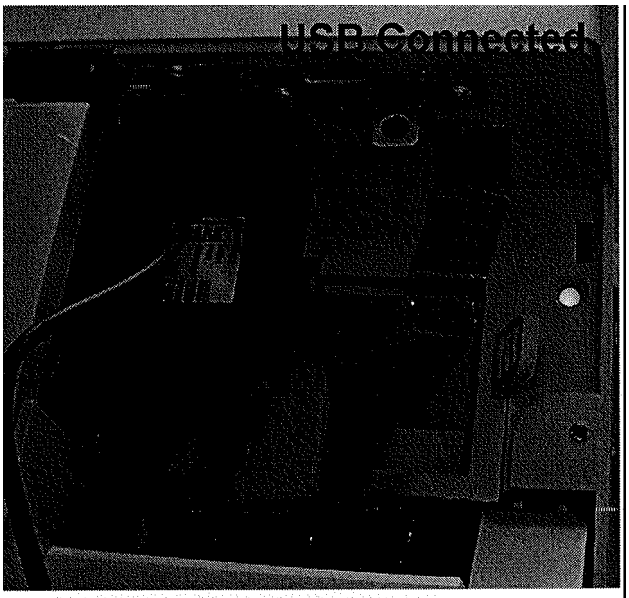


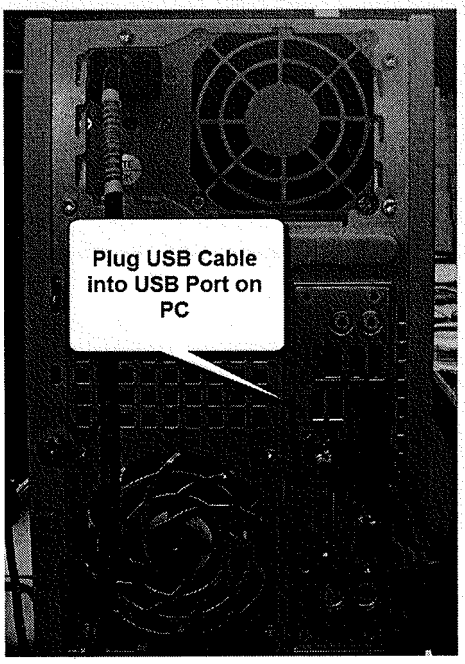
41. The AutoMARK will start-up "boot-up" in approximately 3 minutes. Wait for the motor to stop running before continuing.



42. Connect Universal Serial Bus (USB) cable from 1 way output port located under rear access door to PC.

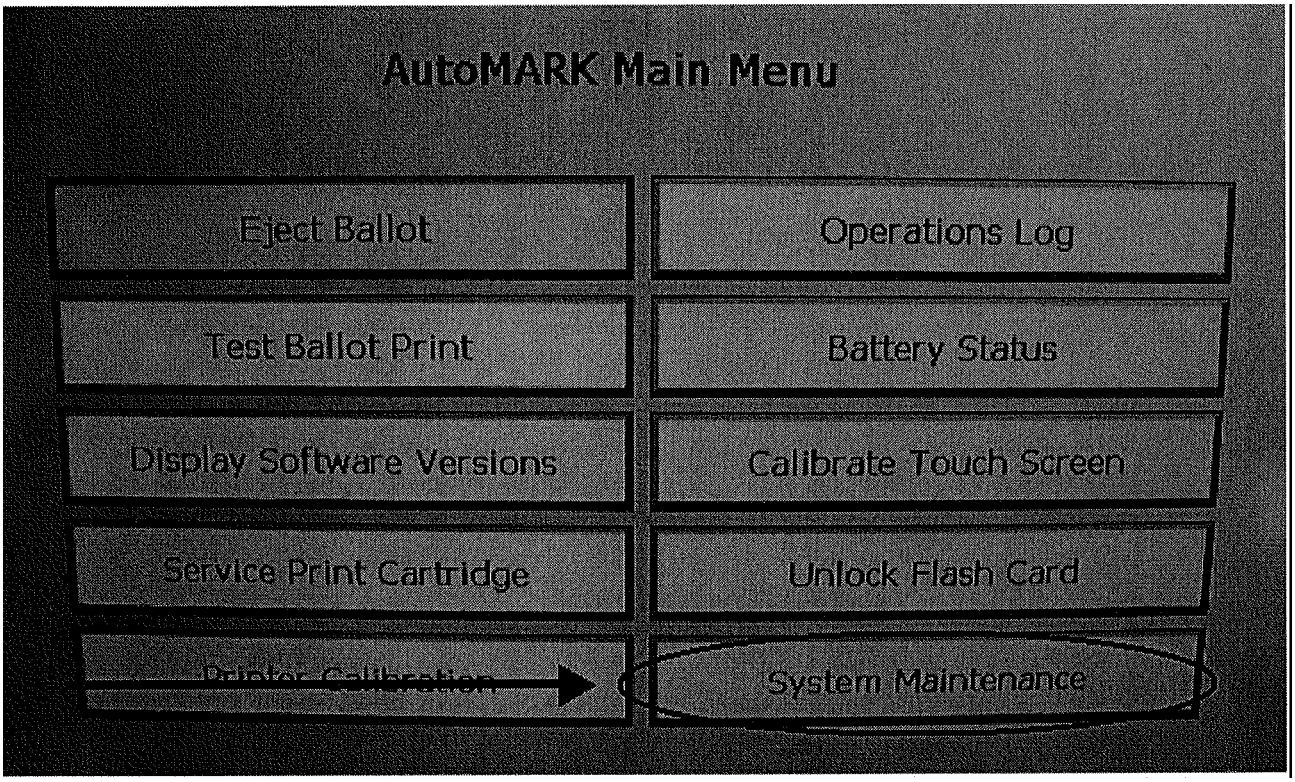




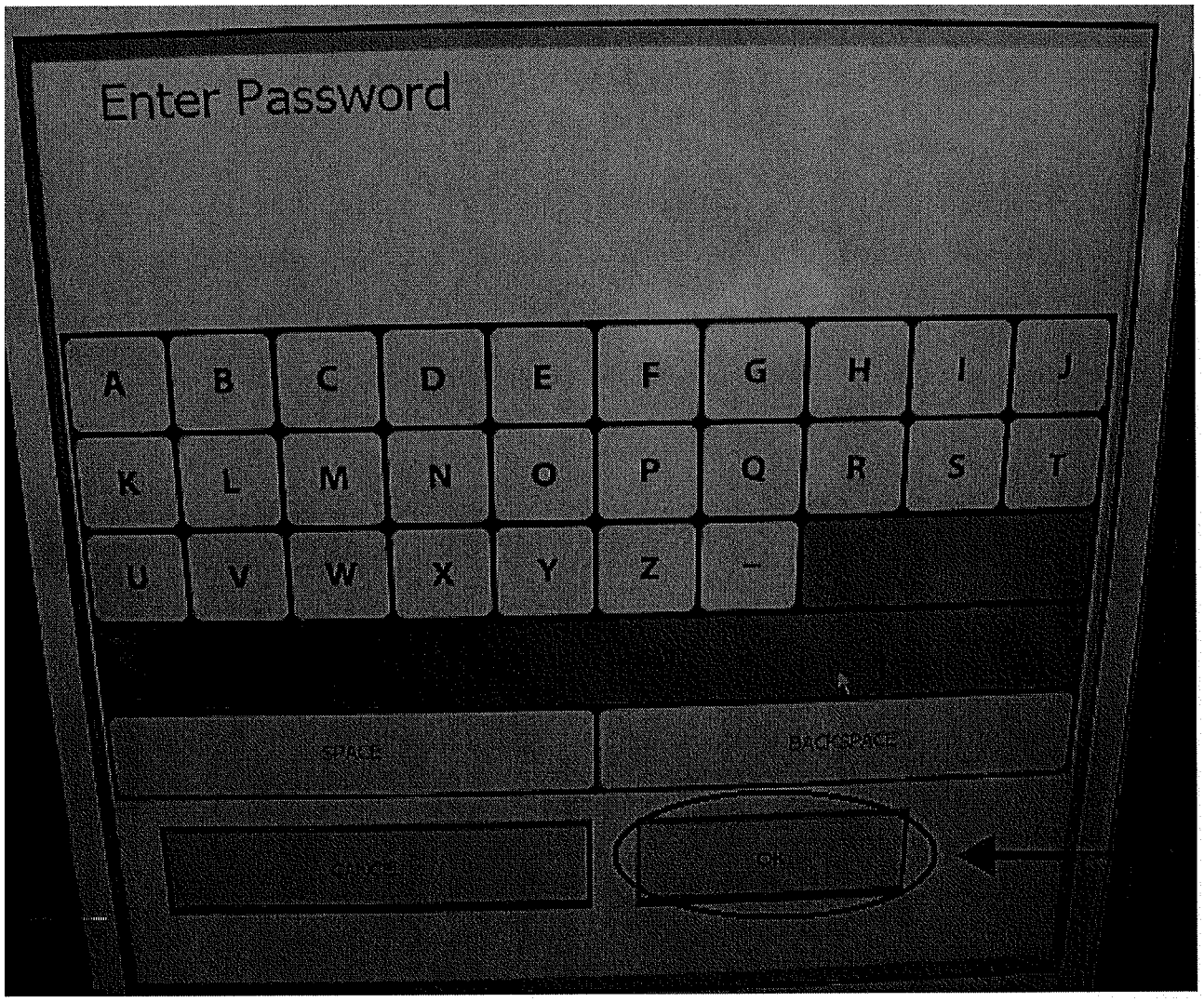


2. ES&S AUTOMARK BMD FILE EXTRACTION

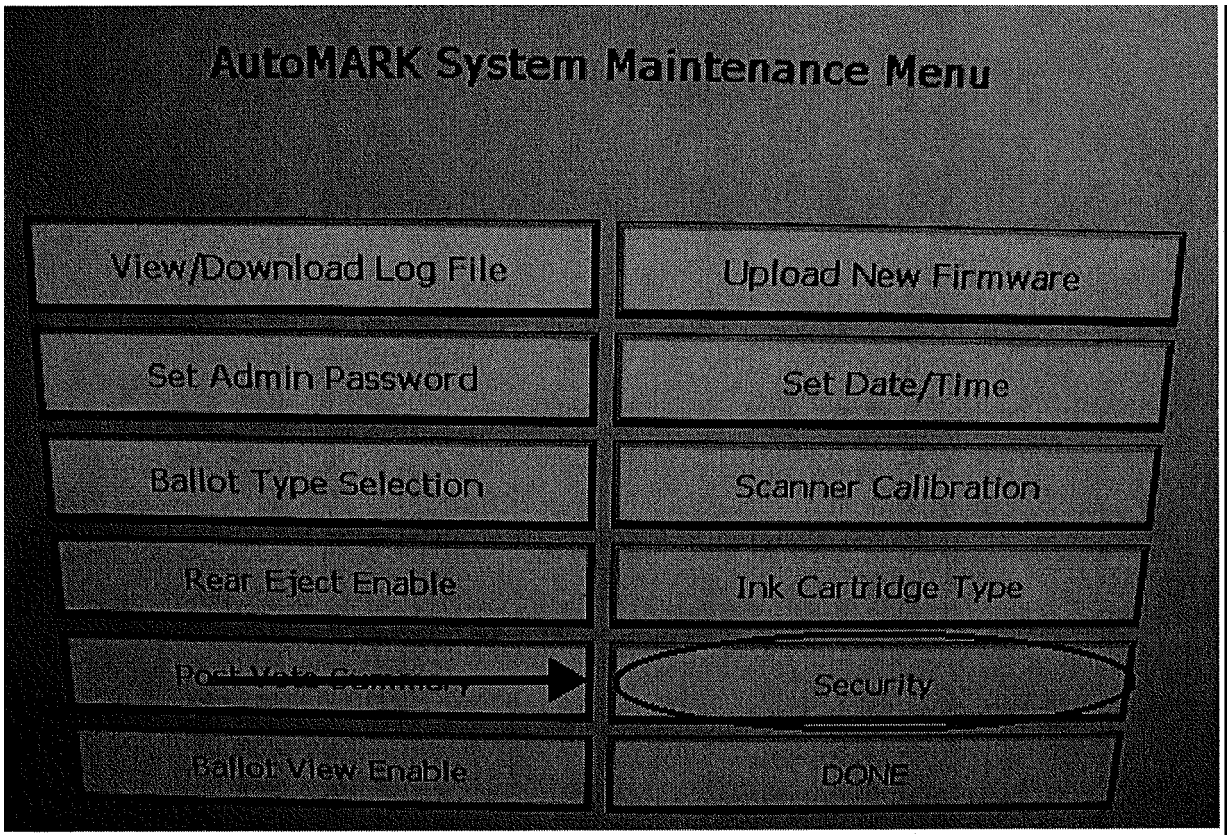
43. Select "System Maintenance" from the touch screen.



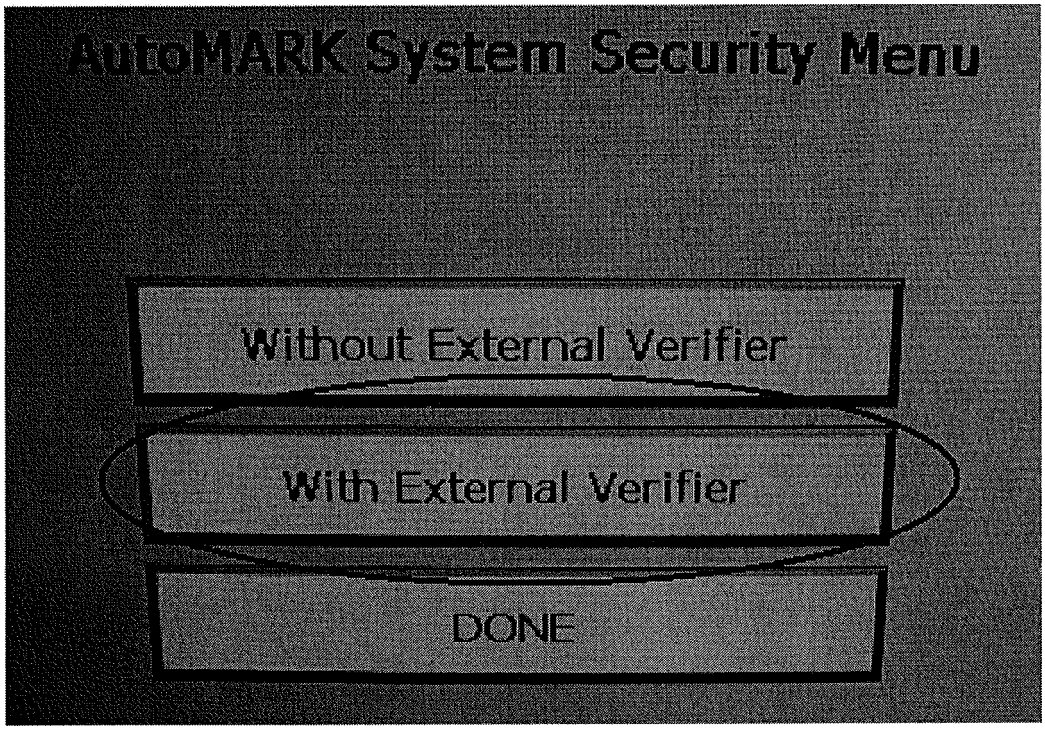
44. User is prompted for a password. Enter provided password and select "OK"



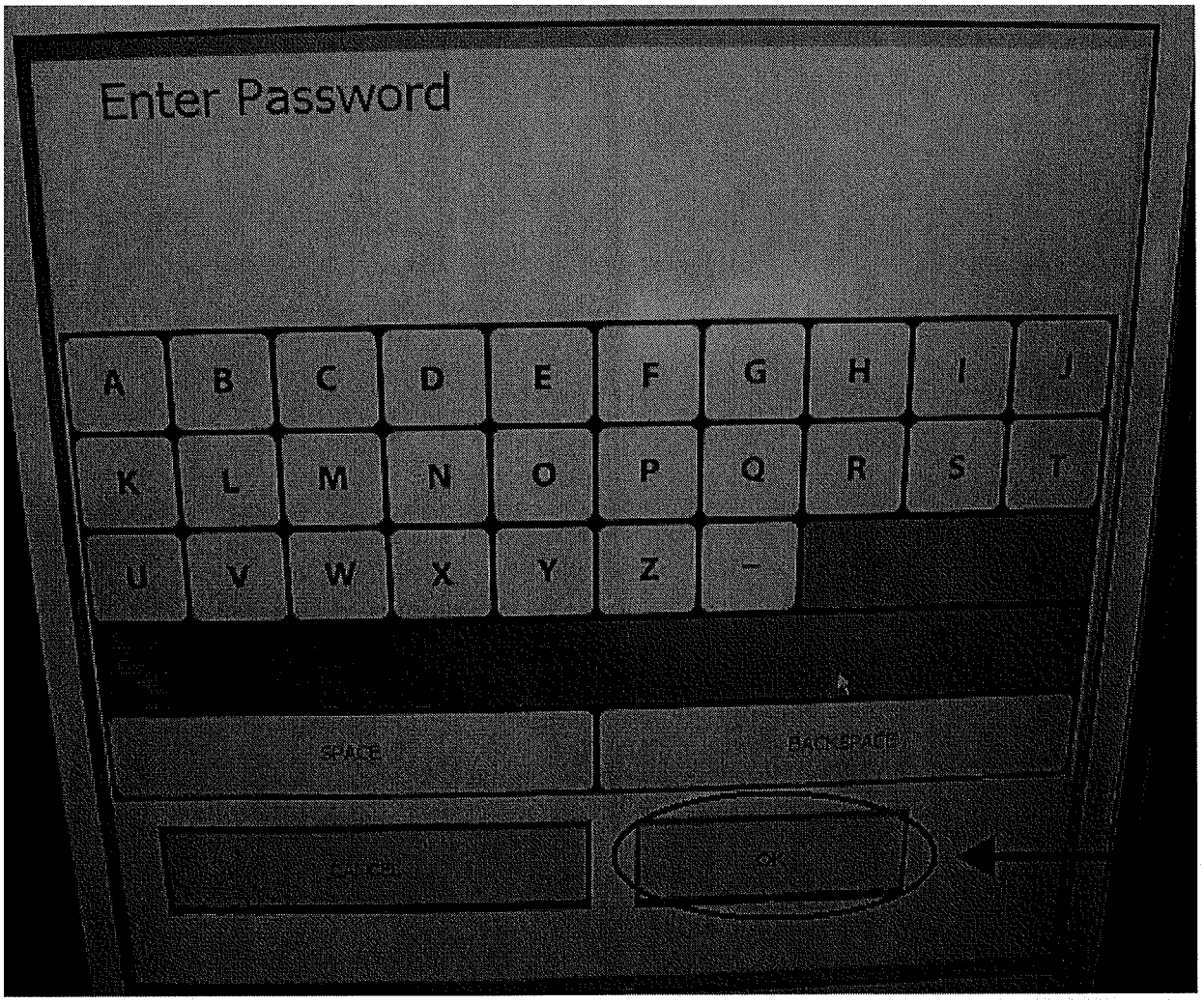
45. From the AutoMARK System Maintenance Menu select "Security".



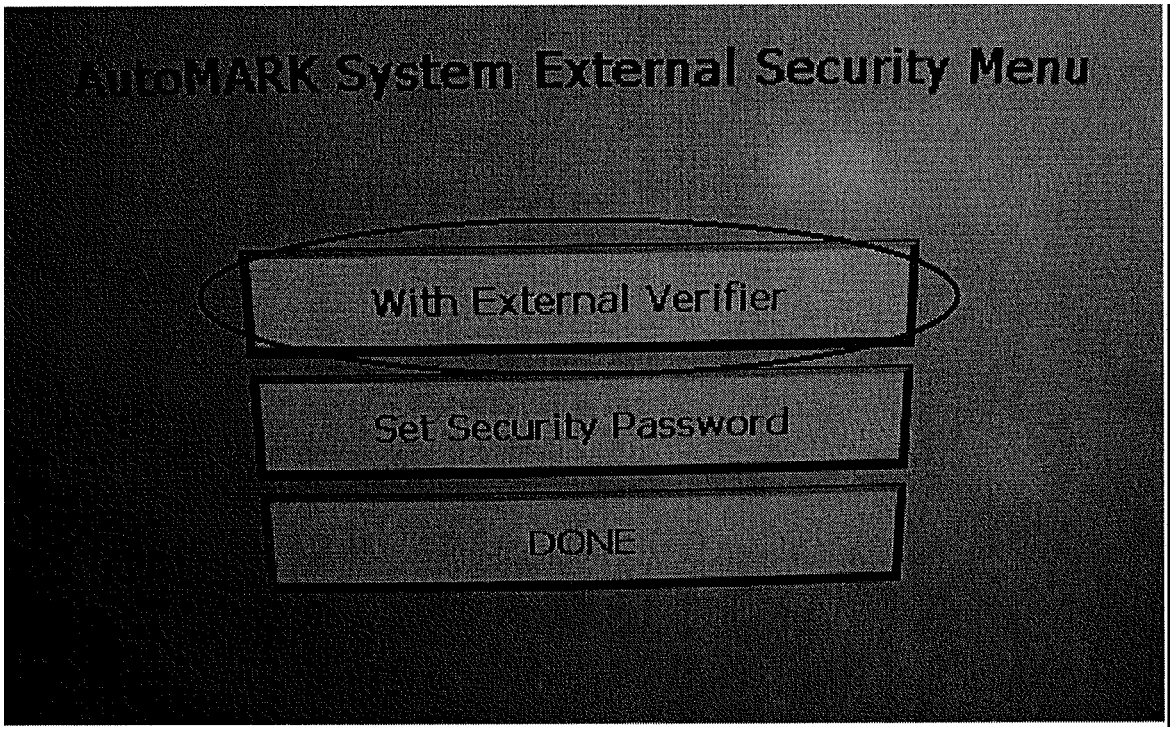
46. Select "With External Verifier"



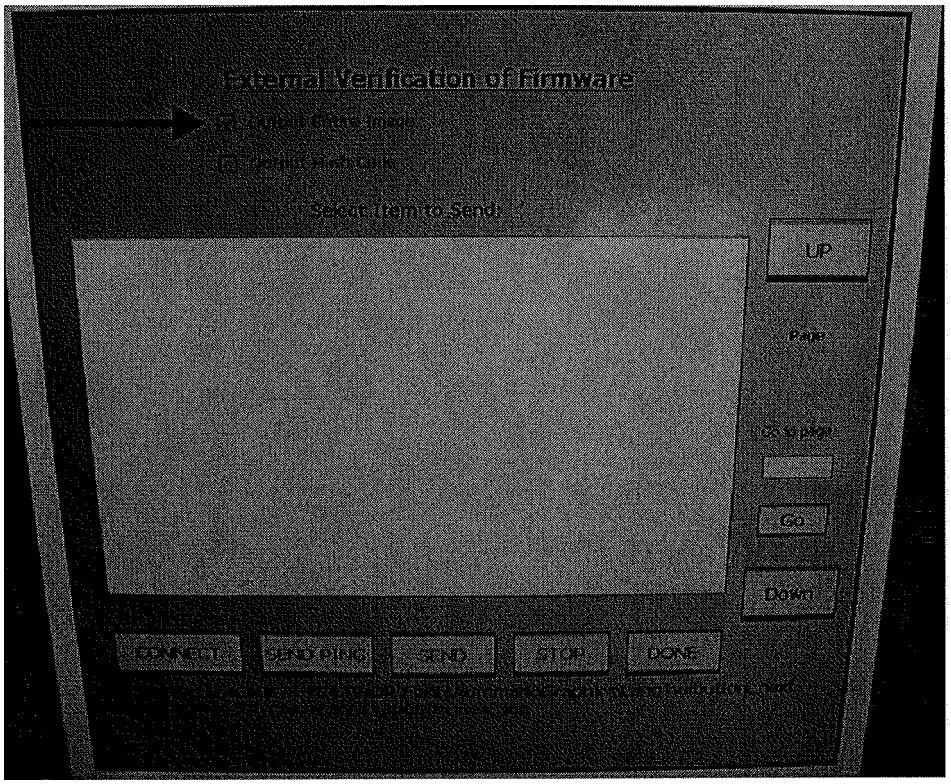
47. User is prompted for a password. Enter provided password and select "OK"



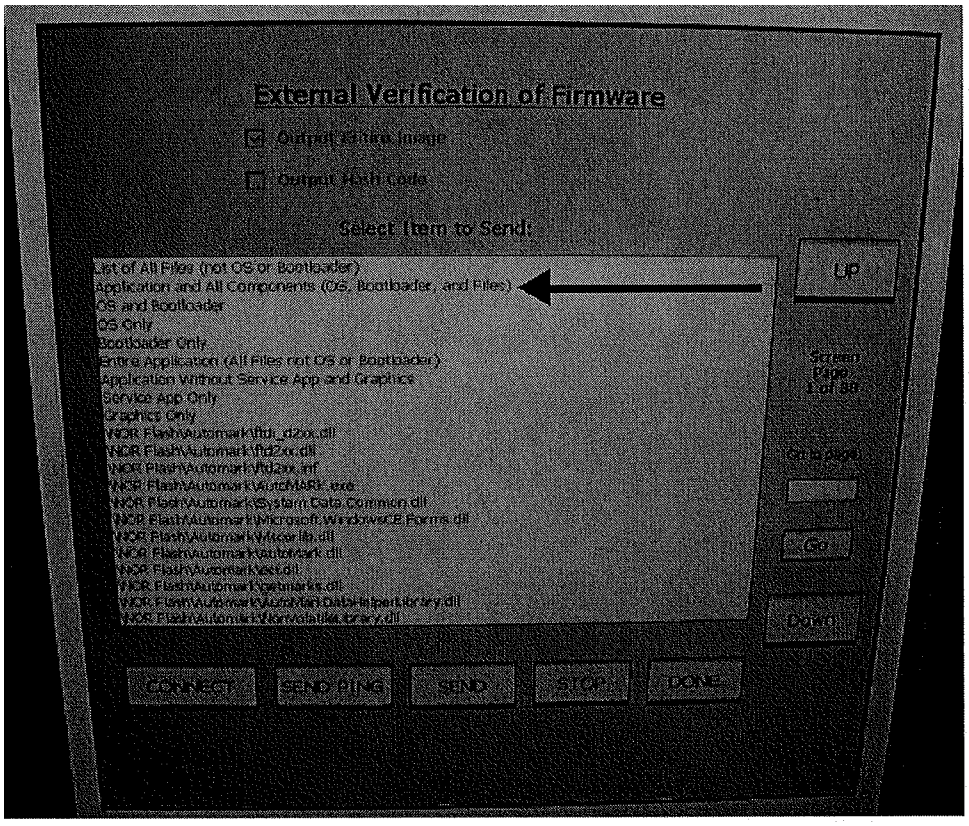
48. From the AutoMARK System External Security Menu select "With External Verification"



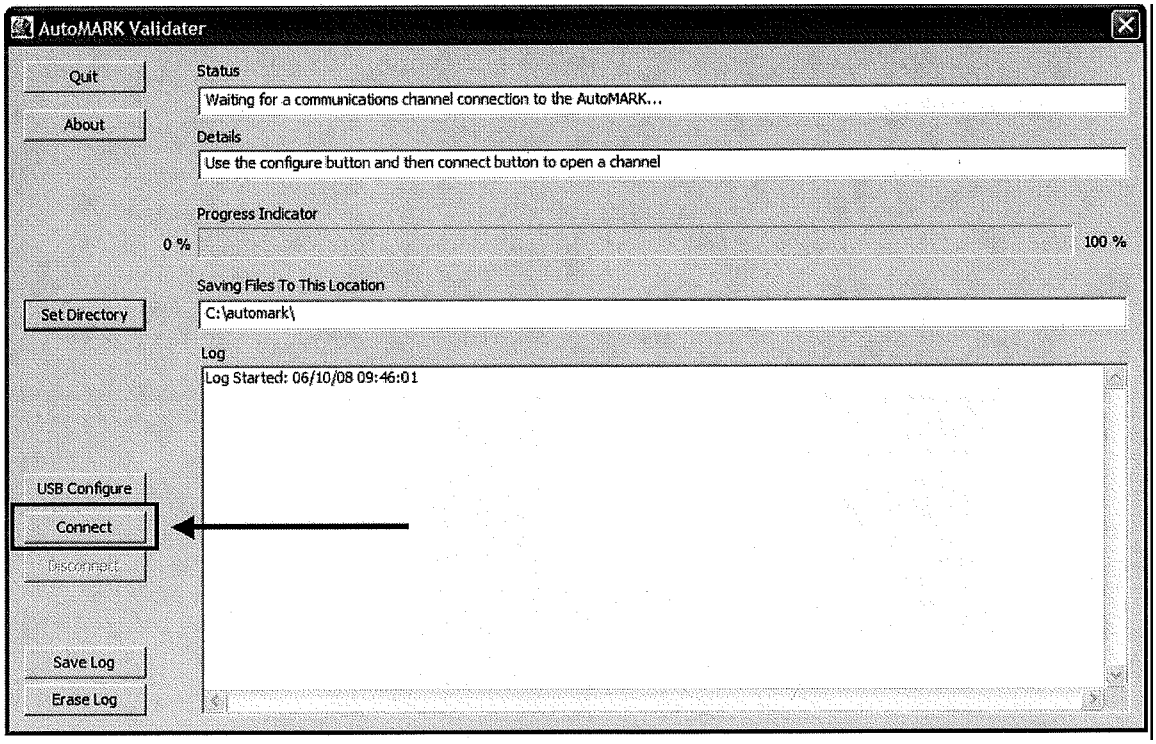
49. Verify that "Output Entire Image" is checked on the External Verification of Firmware Screen while BMD pre-loads.



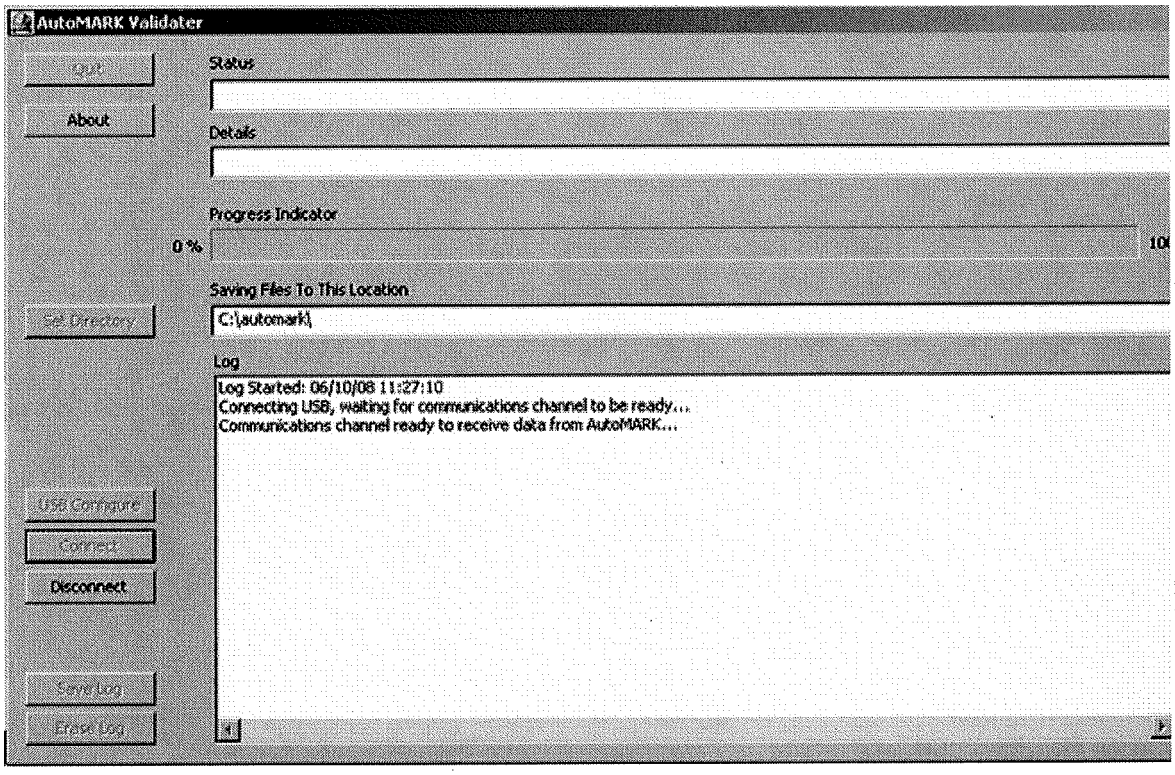
50. ***Select Item to Send*** "Application and All Components (OS, Bootloader, and files).



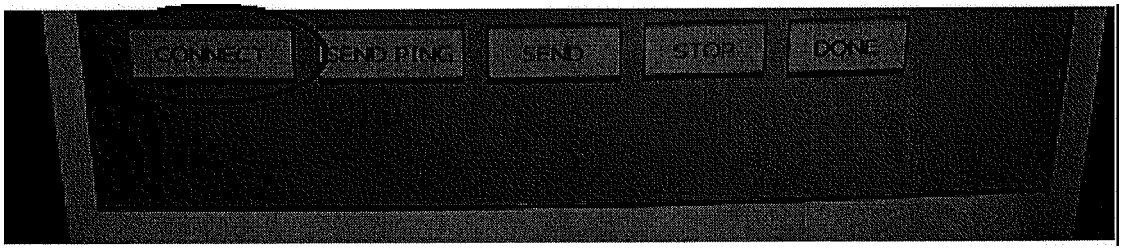
51. From the AutoMARK Validater Application, click "Connect"



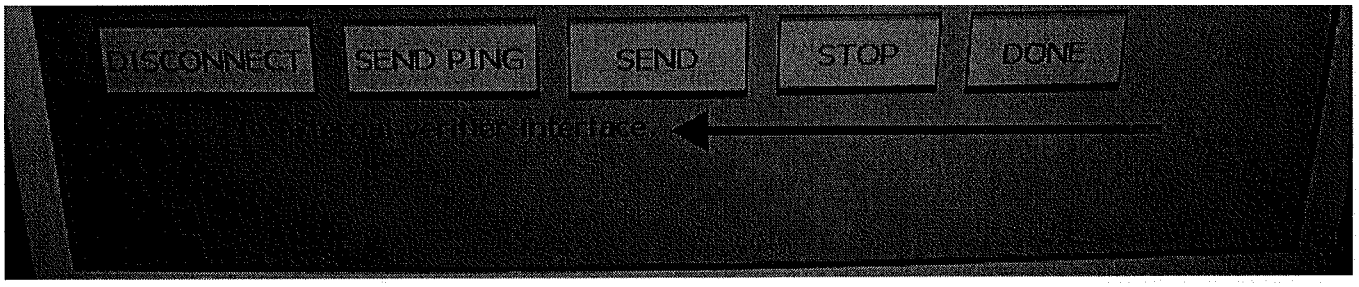
52. Validater connected - Communications channel ready to receive data from AutoMARK...



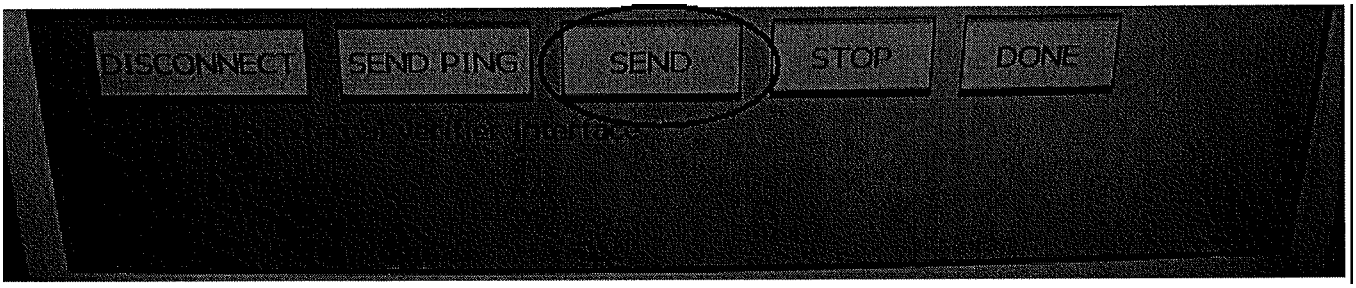
53. Select "Connect" on the ES&S AutoMARK BMD



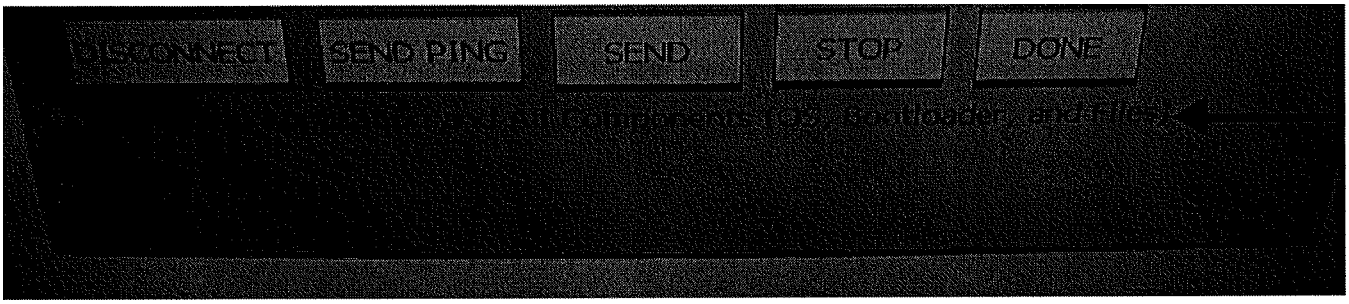
54. Verification BMD is connected to external verifier interface.



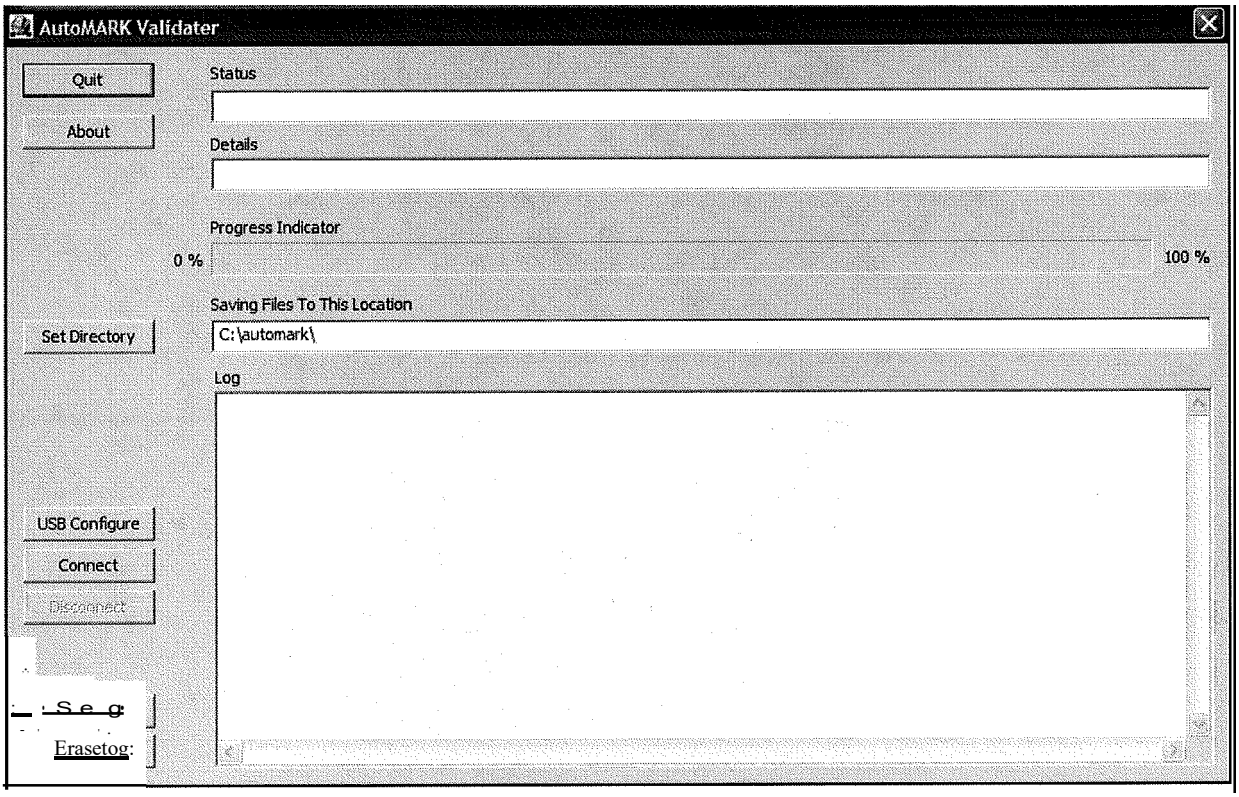
55. Select "Send" on ES&S AutoMARK BMD. This step takes approximately 15 to 17 minutes to complete.



56. Verification that application and all components were sent. This completes the file extraction from the ES&S AutoMARK BMD.



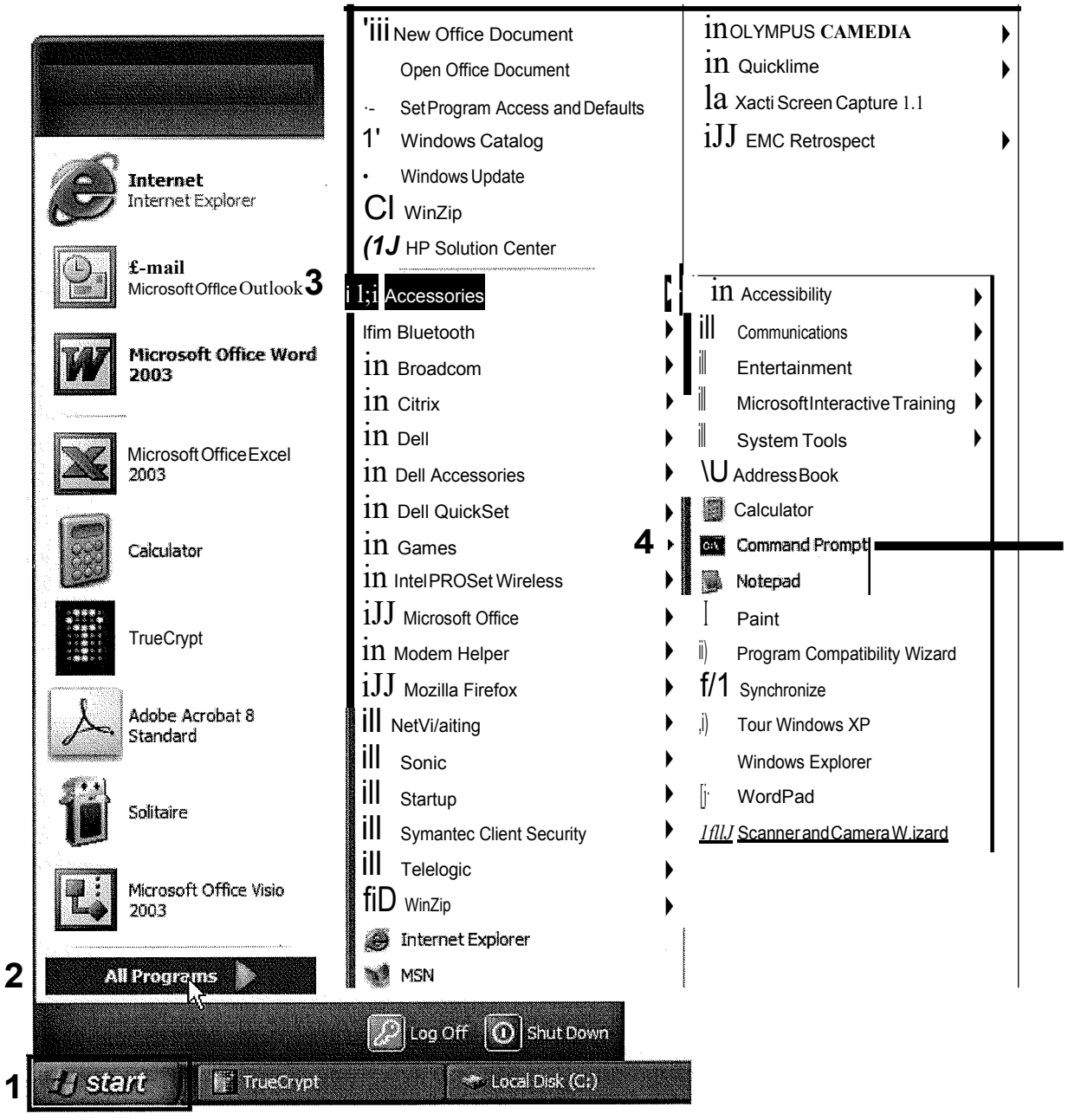
57. Close the Automark Validater application by clicking the "X"



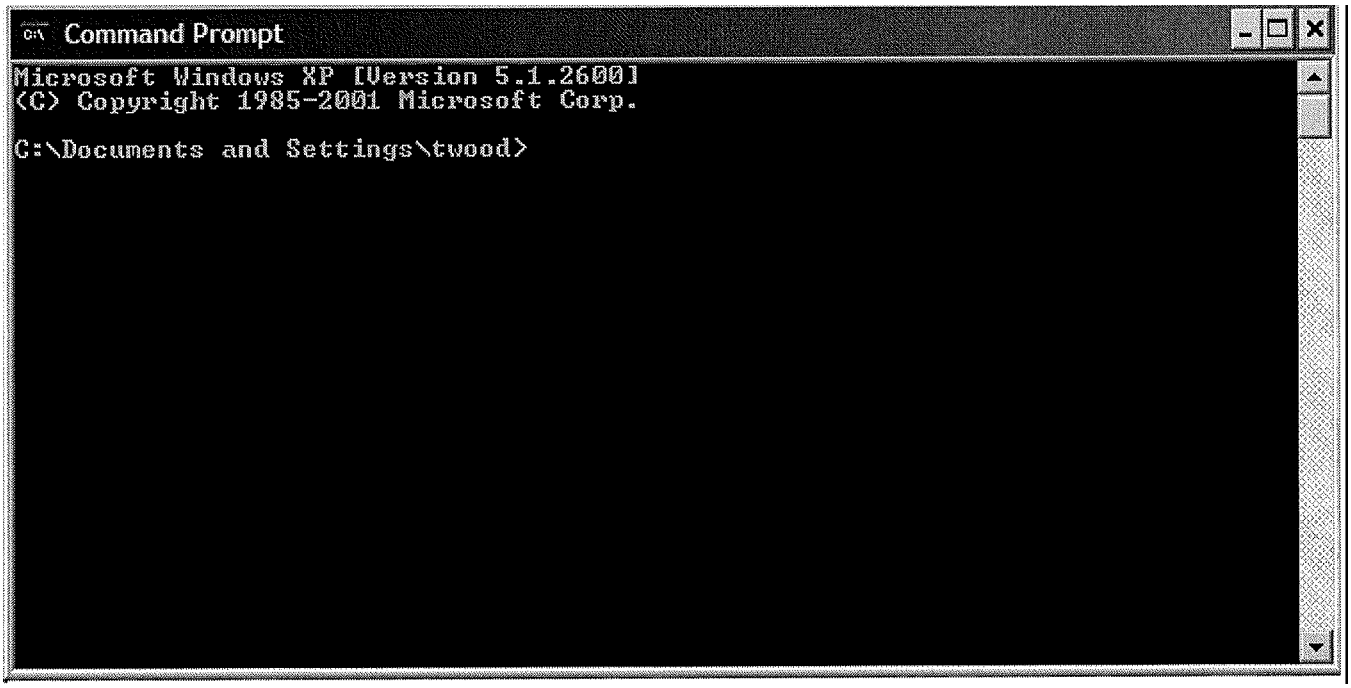
3. CALCULATE HASH CHECK PROCESS

3.1 Using File Checksum Integrity Verifier (FCIV)

58. Start the MS DOS Command Prompt by following the numbers:
    1) Start
    2) All Programs
    3) Accessories
    4) Command Prompt

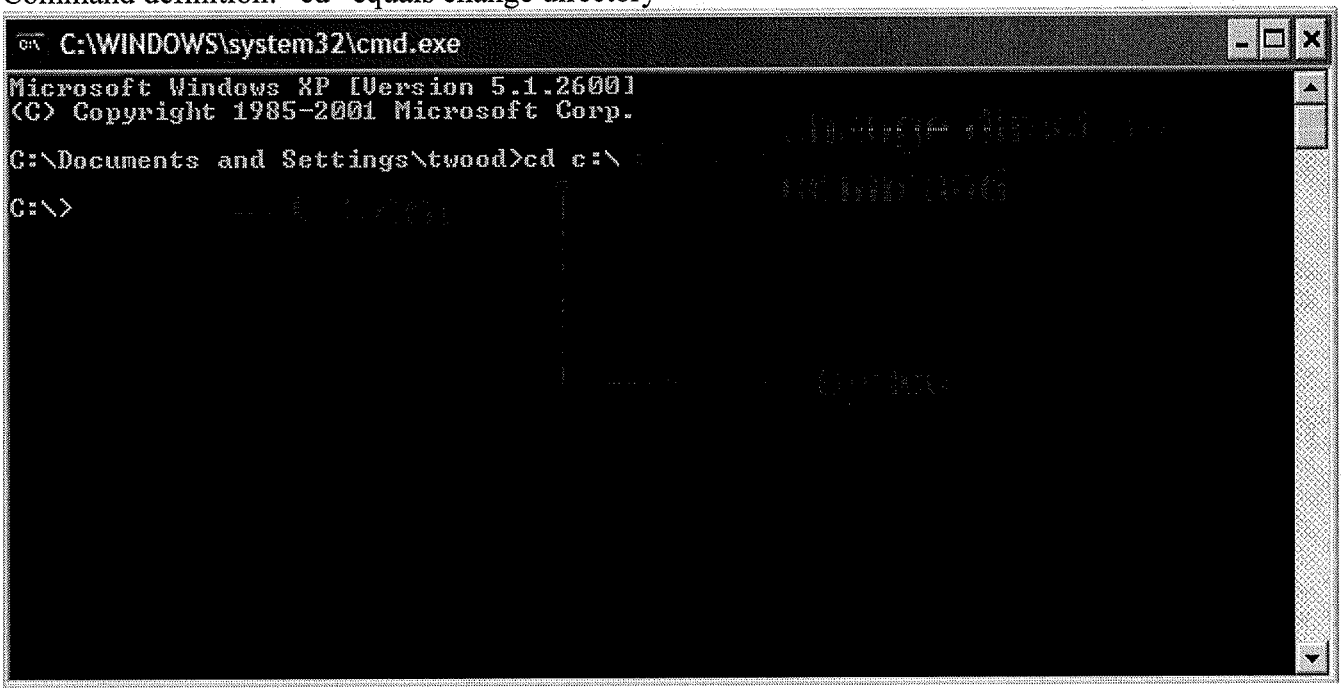


59. The MS DOS Command Prompt Launches



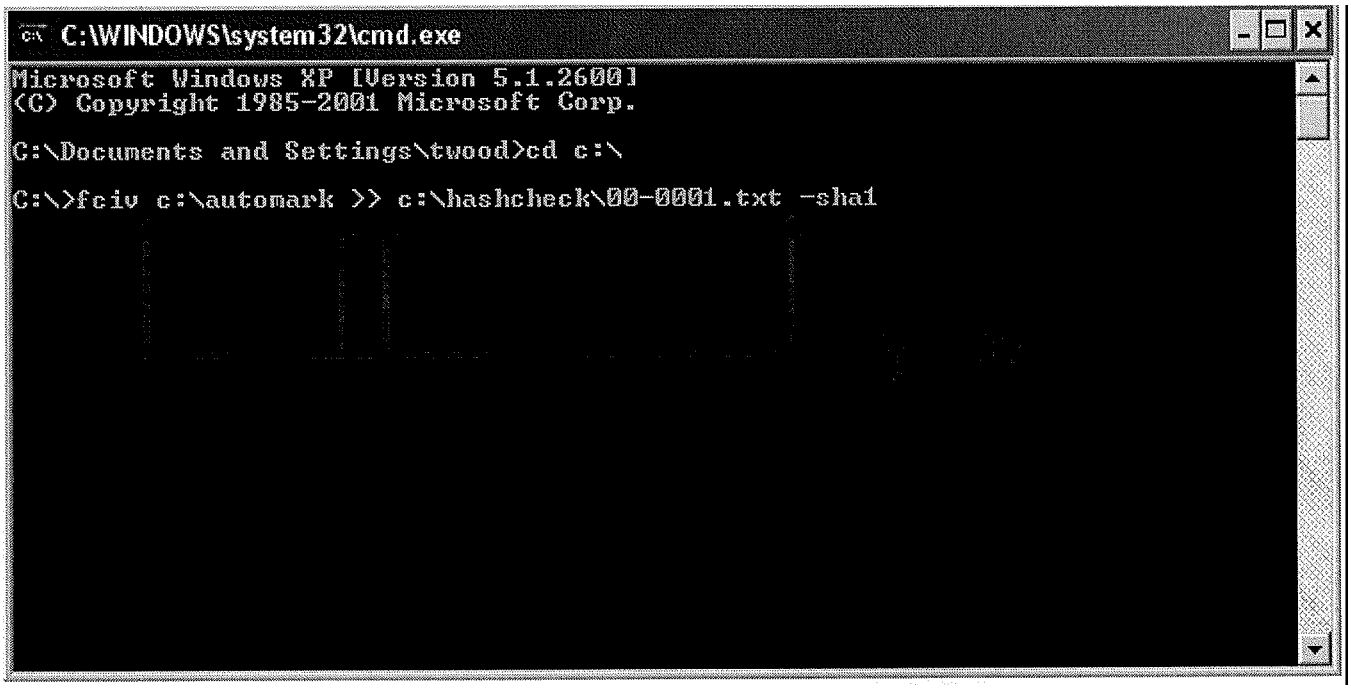
60. Navigate to the root of the C:\ Directory (folder) by using MS DOS command "cd :\c" andpress "Enter".

Command definition: “cd” equals change directory



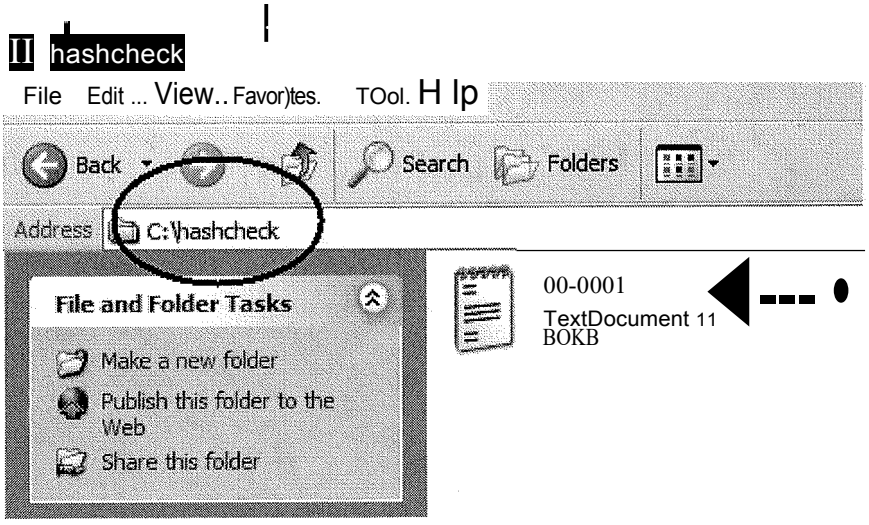
61. Run the Checksum Integrity Verifier (FCIV) application (executable) using the following DOS Command: c:\>fciv c:\automark >> c:\hashcheck\xx-xxxx.txt -shal and press "Enter".

    xx = County and xxxx = machine number



    The application is computing the hash values on the files located in the folder "automark" and place the results in the folder named "hashcheck". The results are stored in a file that is named in the command prompt. In this example, the file name is 00-0001.txt

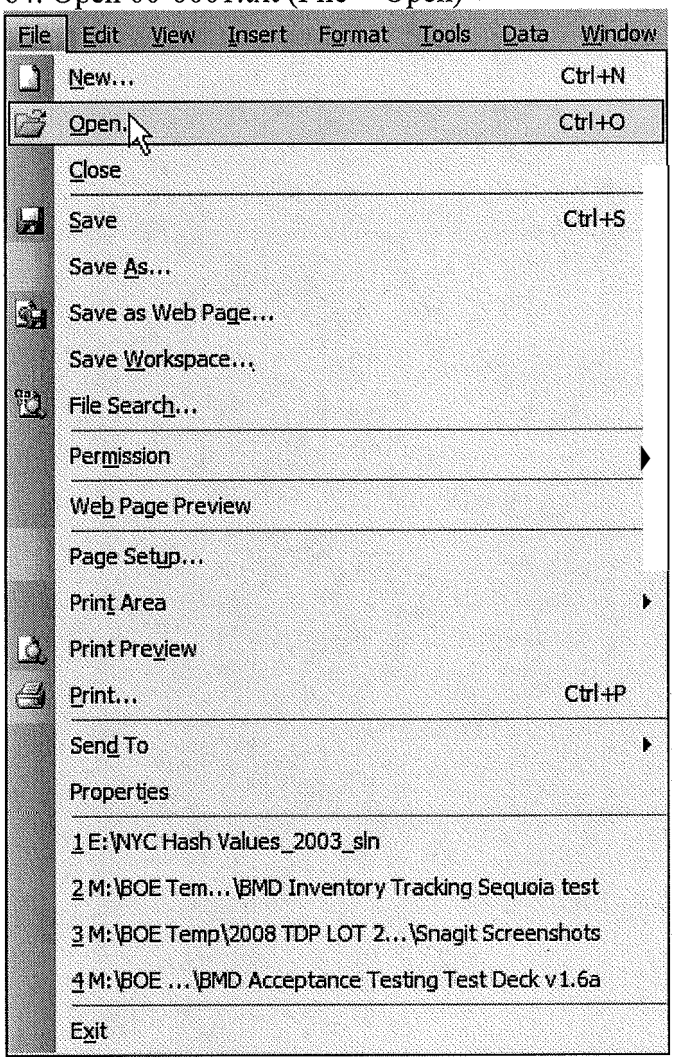
62. Verify that the file 00-0001.txt was created and is located in the "hashcheck" folder.



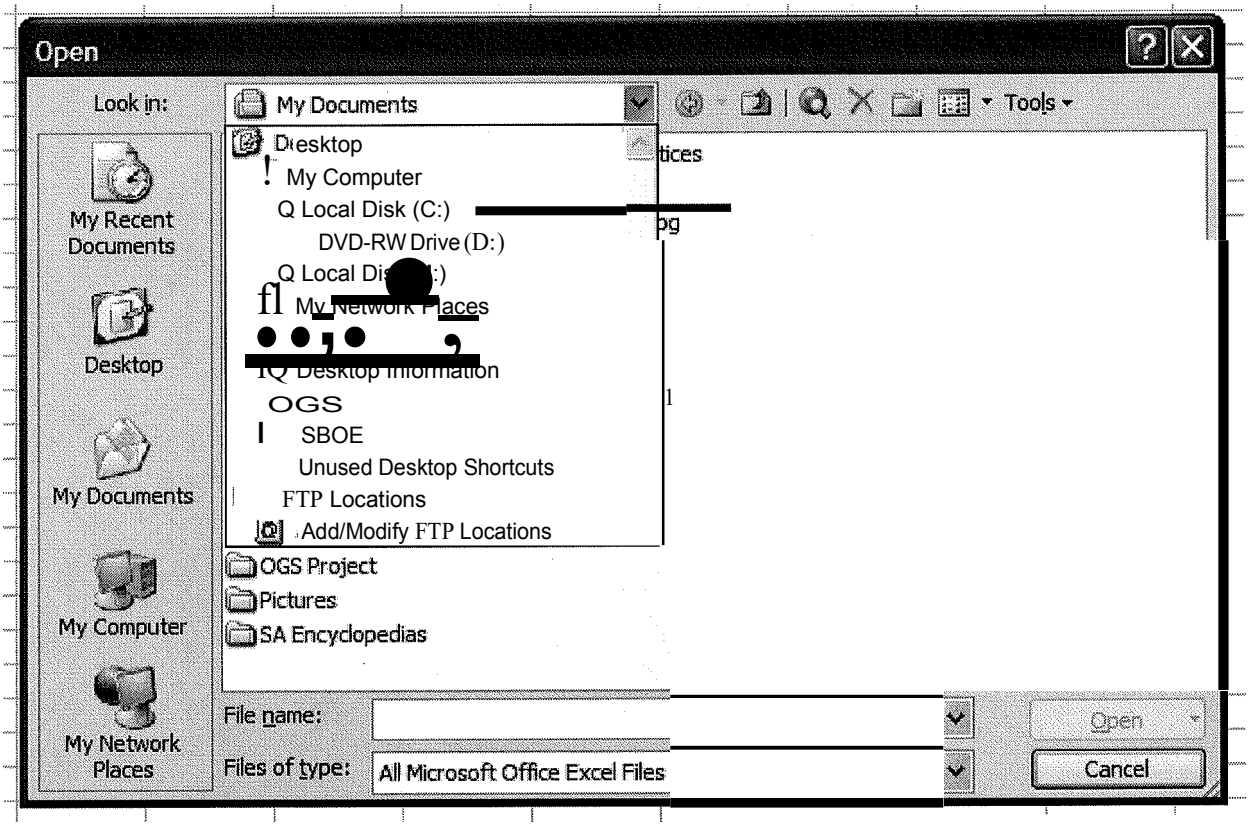
3.2 Import values into MS Excel

63. Open MS Excel
Click Start > All Programs > Microsoft Office > Microsoft Office Excel

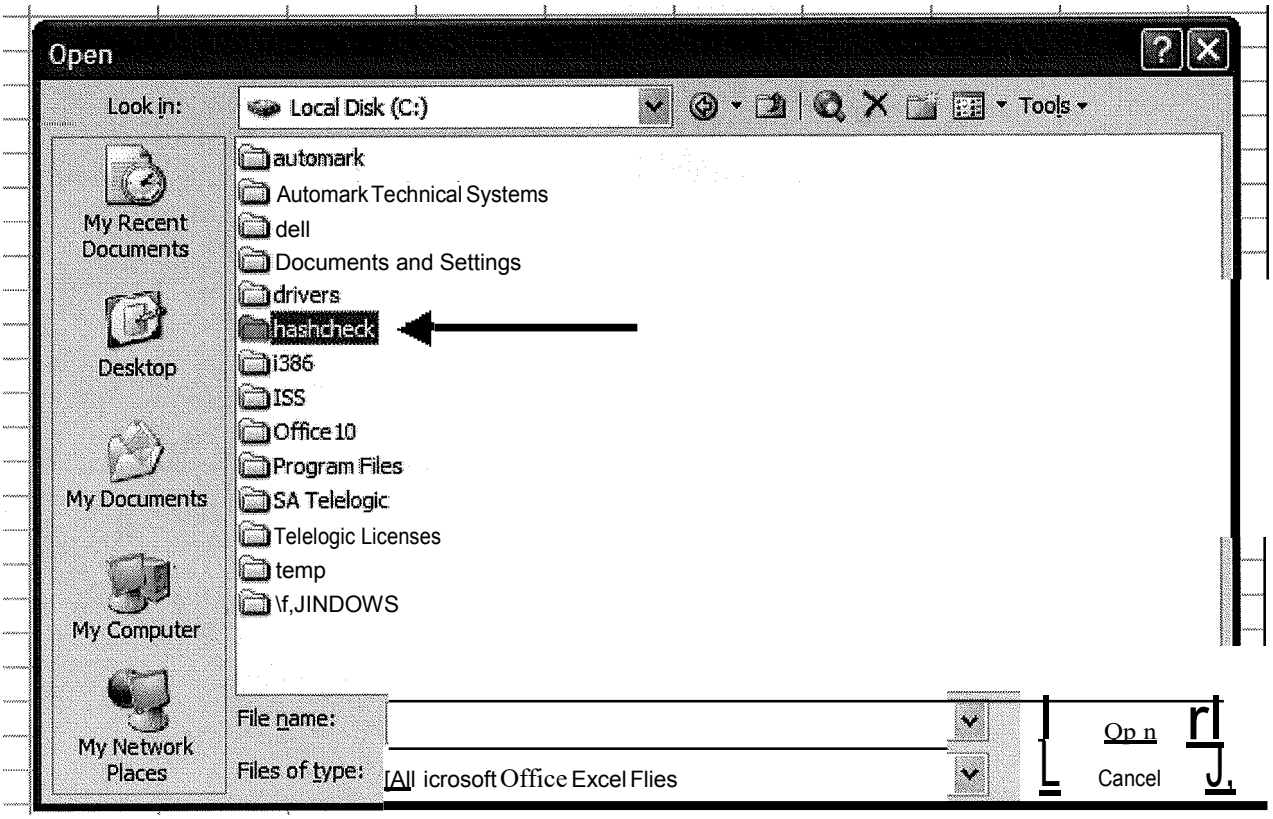
64. Open 00-0001.txt (File > Open)



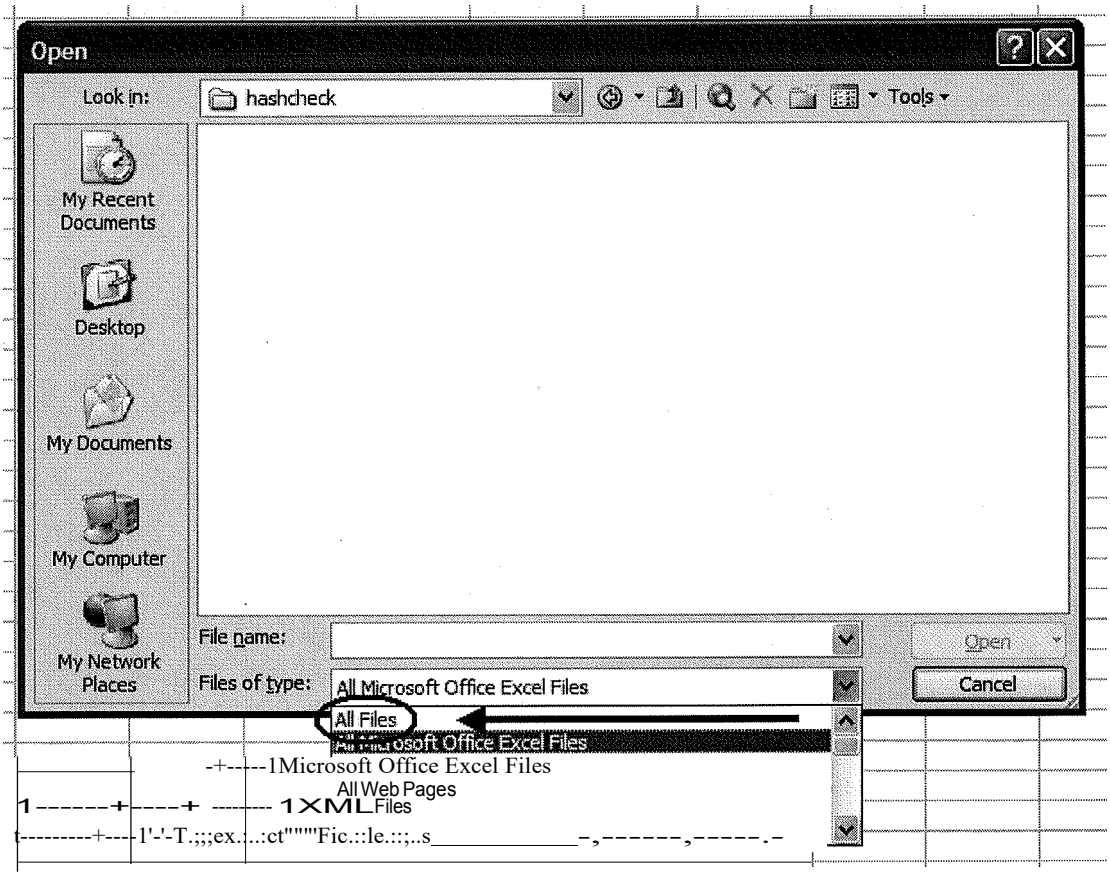
65. Browse to C:\ Drive



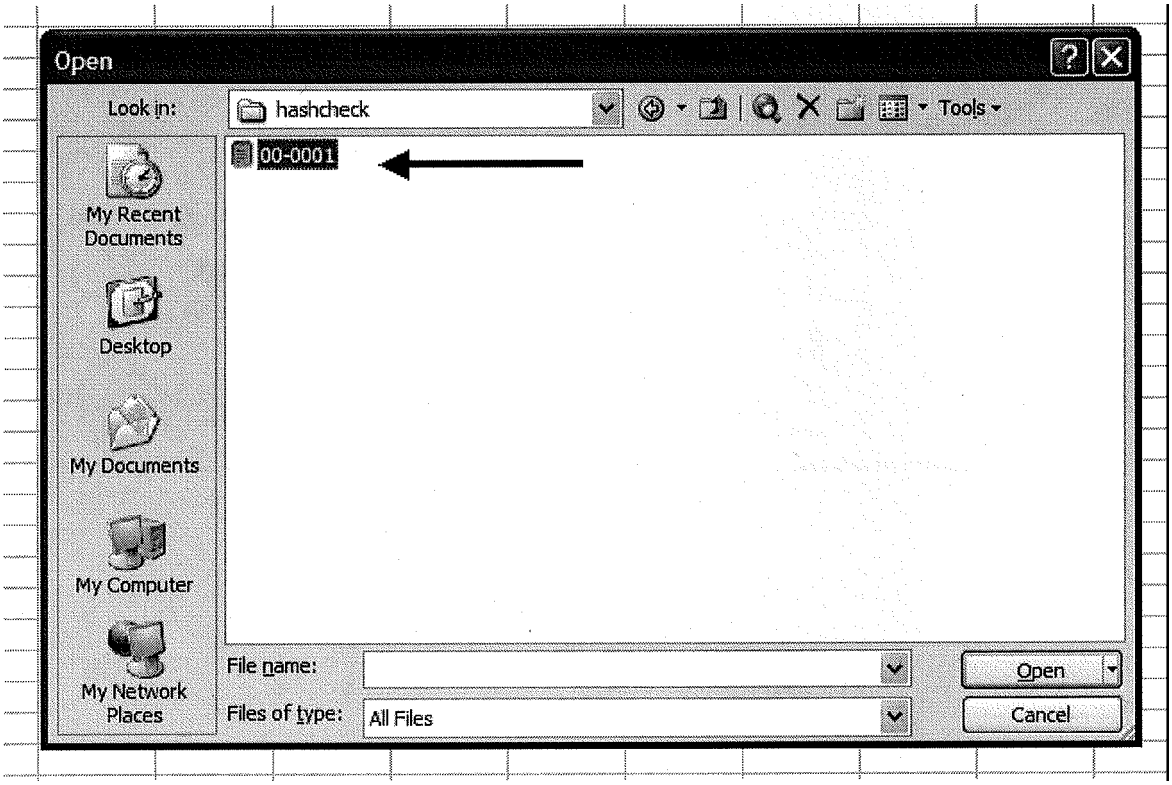
66. Double click "hashcheck"



67. Select **"All Files"** from the drop down menu

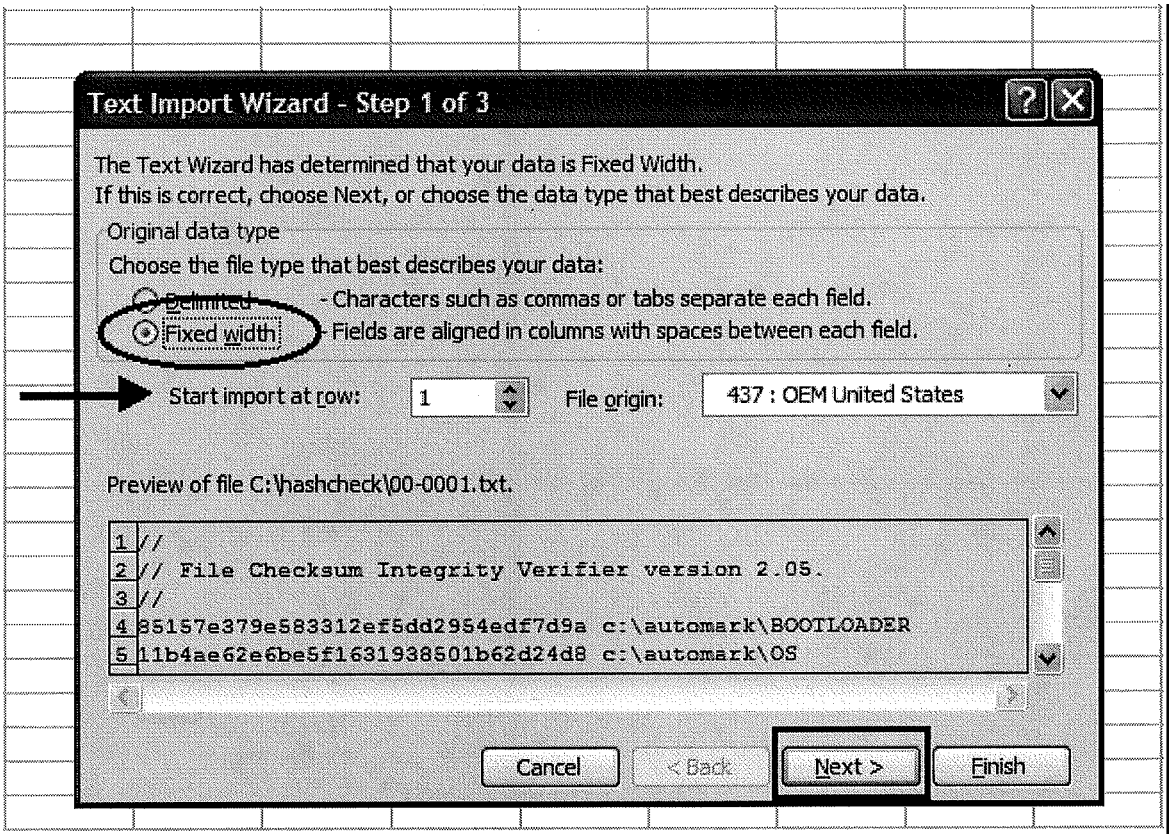


68. Double click "00-0001.txt"

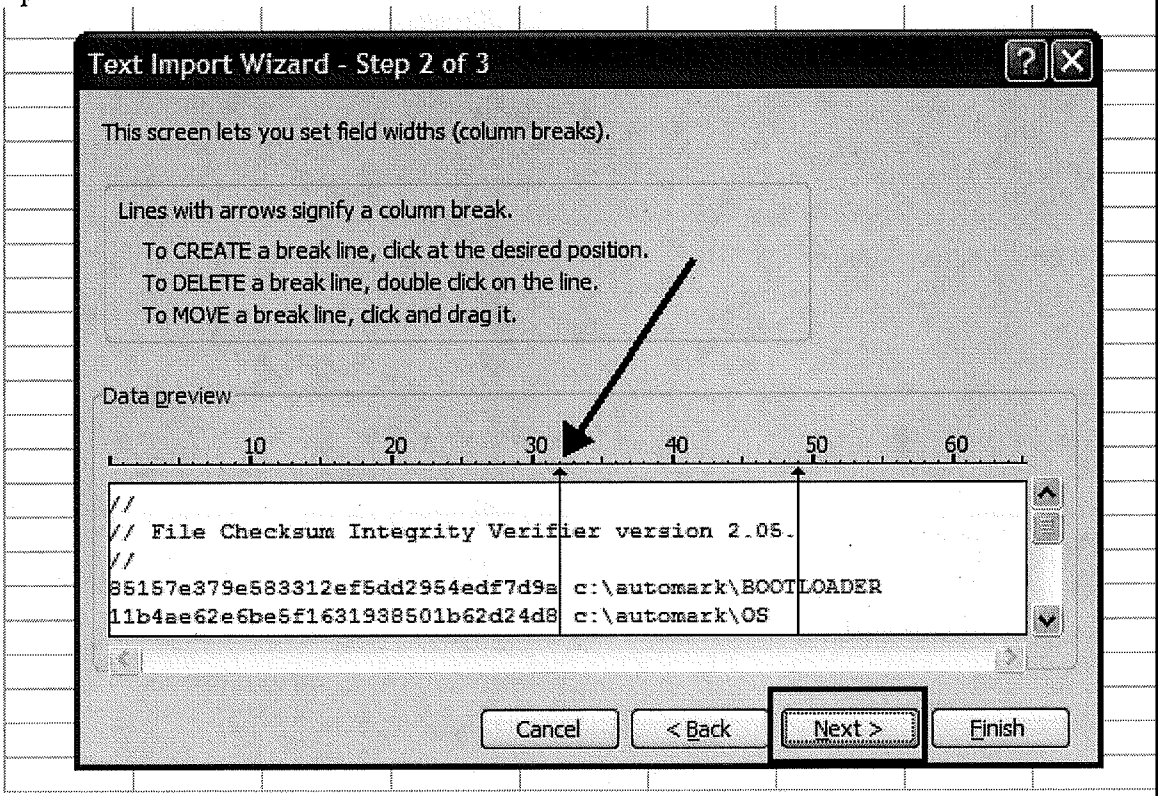


69. MS Excel Text Import will automatically launch.

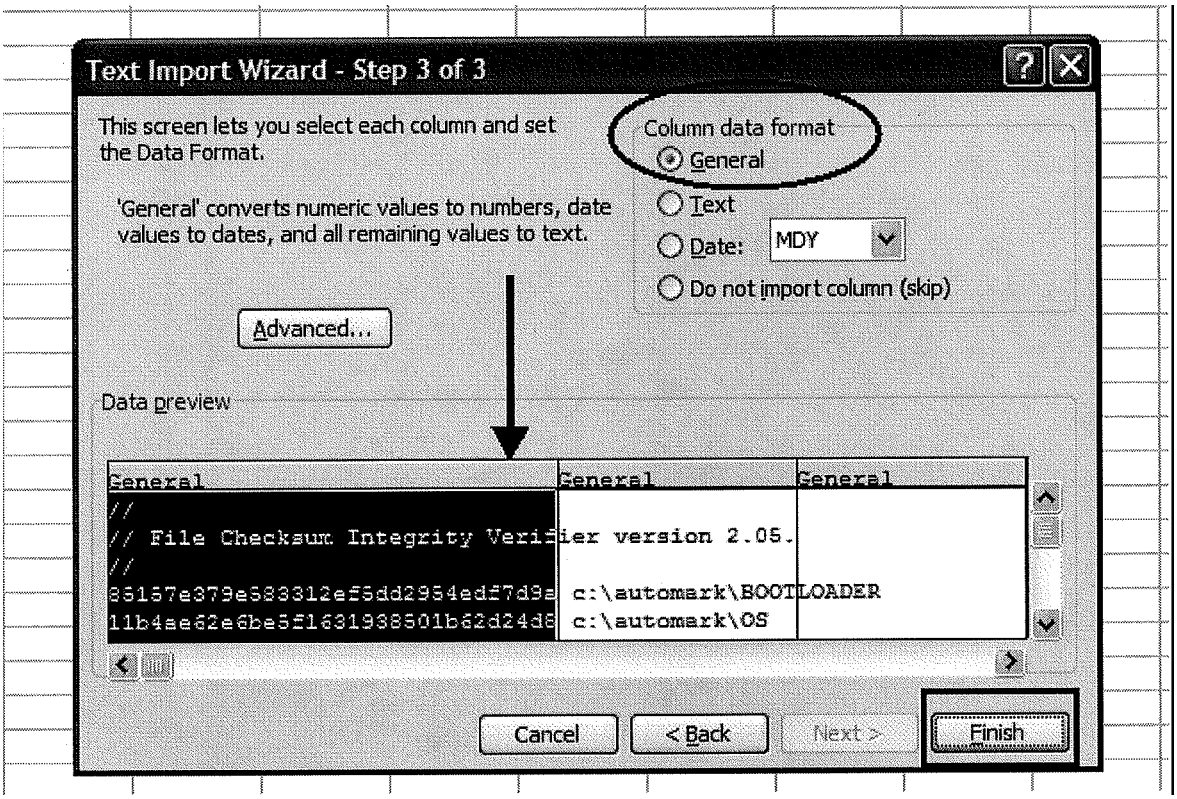
Step 1: Make sure "Fixed width" is selected and Start import at row "l ". Select "Next".



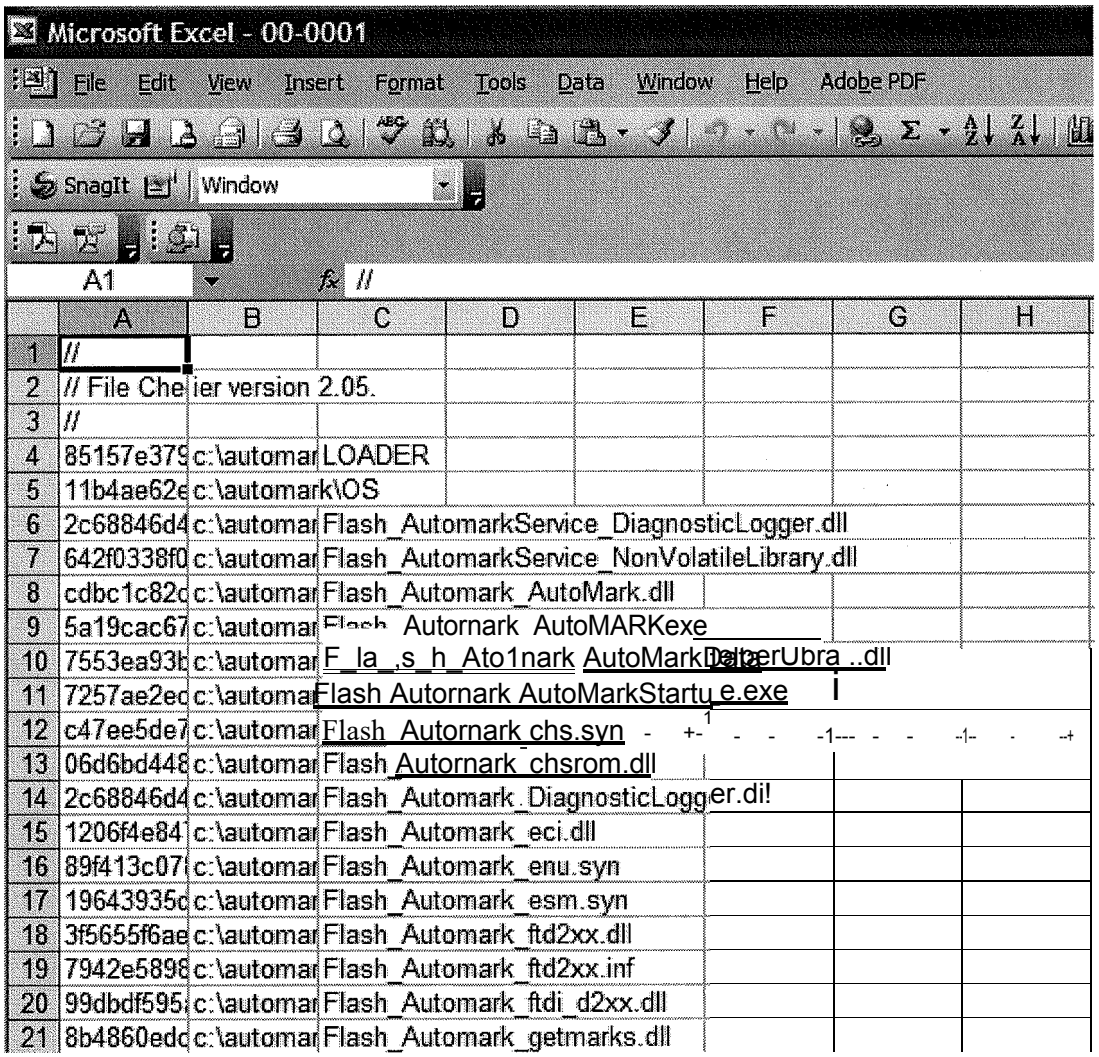
70. Step 2: Make sure the break line is after the first set of values. Then click “Next”



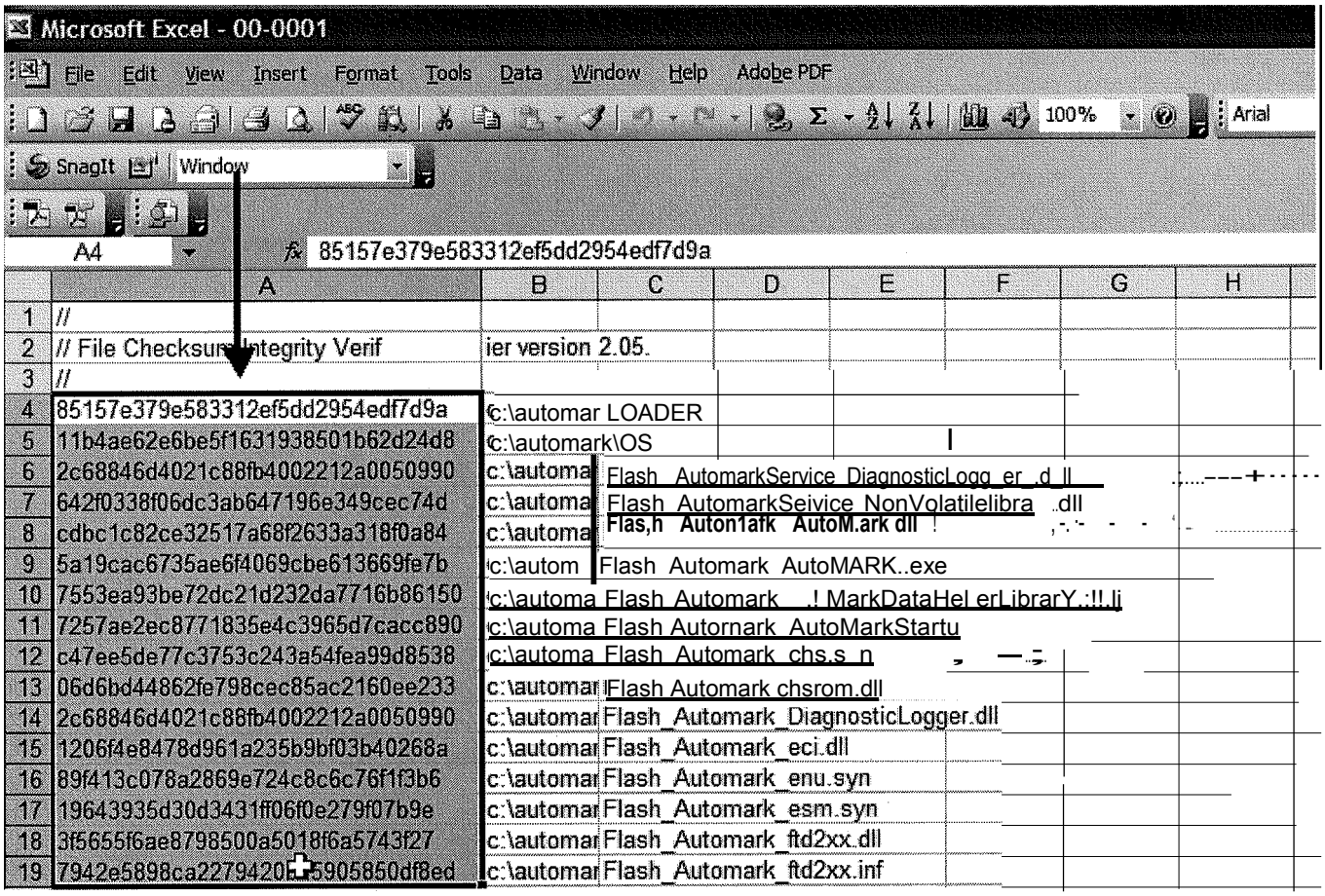
71. Step 3: Make sure that "General" is selected and verify information in the Data preview looks correct. Click "Finish".


Text Import Wizard - Step 3 of 3
This screen lets you select each column and set the Data Format.
'General' converts numeric values to numbers, date values to dates, and all remaining values to text.
Column data format
General
Text
Date:
MDY
Do not import column (skip)
Advanced...
Data preview
General
General
General
//
// File Checksum Integrity Verifier version 2.05.
//
c:\automark\BOOTLOADER
c:\automark\OS
Cancel
< Back
Next >
Finish

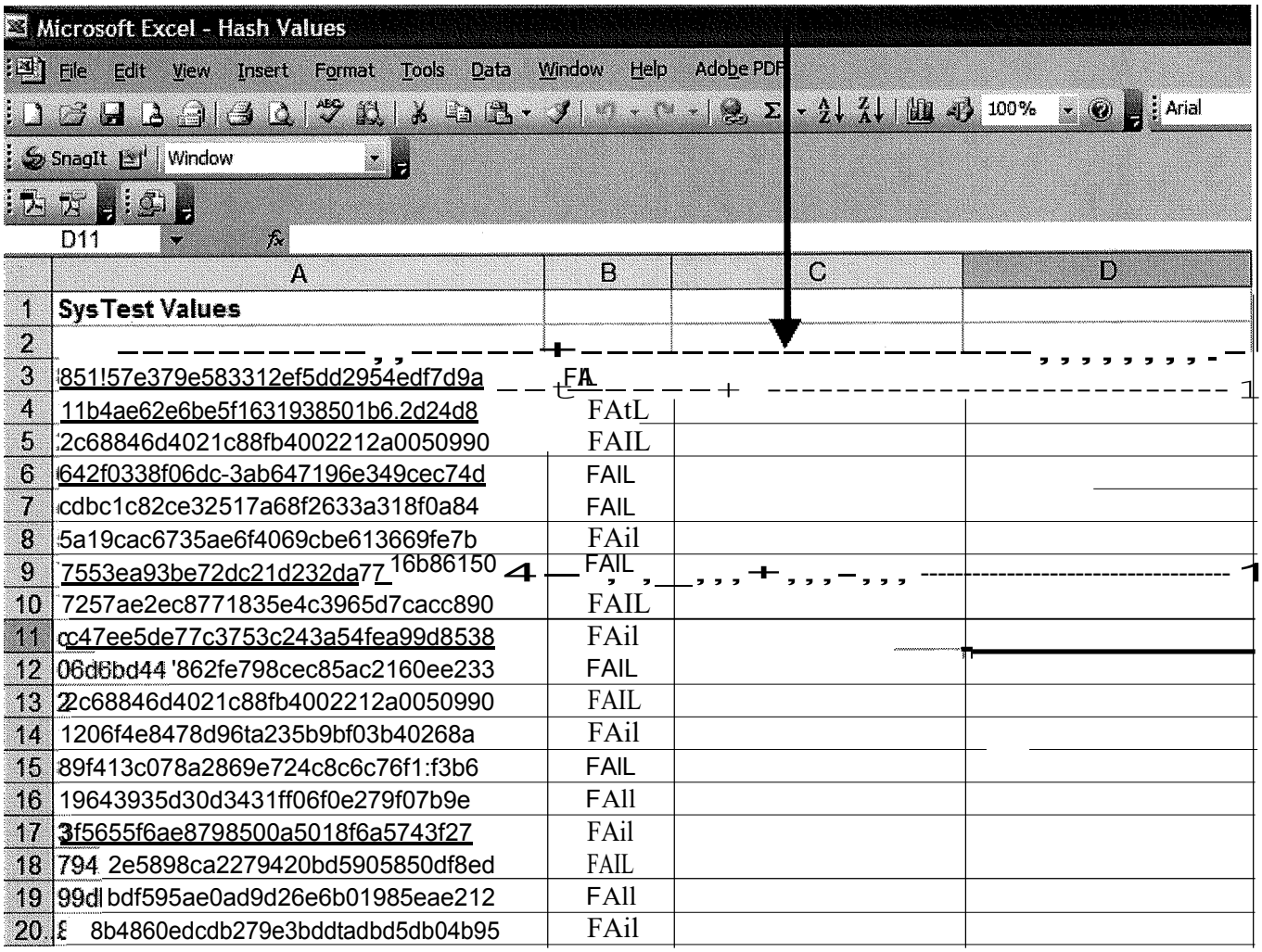
72. Excel will open and the data will be displayed.



73. Copy all values in column A (776 values) and paste them into SBOE provided spreadsheet with the Authorized hash check values for comparison.



74. Paste values into column C starting at row 3.



	A	B	C	D
1	**Sys Test Values**			
2				
3	851!57e379e583312ef5dd2954edf7d9a	FA		
4	11b4ae62e6be5f1631938501b6.2d24d8	FAtL		
5	2c68846d4021c88fb4002212a0050990	FAIL		
6	642f0338f06dc-3ab647196e349cec74d	FAIL		
7	cdbc1c82ce32517a68f2633a318f0a84	FAIL		
8	5a19cac6735ae6f4069cbe613669fe7b	FAil		
9	7553ea93be72dc21d232da77 16b86150	FAIL		
10	7257ae2ec8771835e4c3965d7cacc890	FAIL		
11	cc47ee5de77c3753c243a54fea99d8538	FAil		
12	06d6bd44 '862fe798cec85ac2160ee233	FAIL		
13	2c68846d4021c88fb4002212a0050990	FAIL		
14	1206f4e8478d96ta235b9bf03b40268a	FAil		
15	89f413c078a2869e724c8c6c76f1:f3b6	FAIL		
16	19643935d30d3431ff06f0e279f07b9e	FAll		
17	3f5655f6ae8798500a5018f6a5743f27	FAil		
18	794 2e5898ca2279420bd5905850df8ed	FAIL		
19	99d bdf595ae0ad9d26e6b01985eae212	FAll		
20	8b4860edcdb279e3bddtadbd5db04b95	FAil		

Microsoft Excel - Hash Values

File Edit View Insert Format Tools Data Window Help Adobe PDF

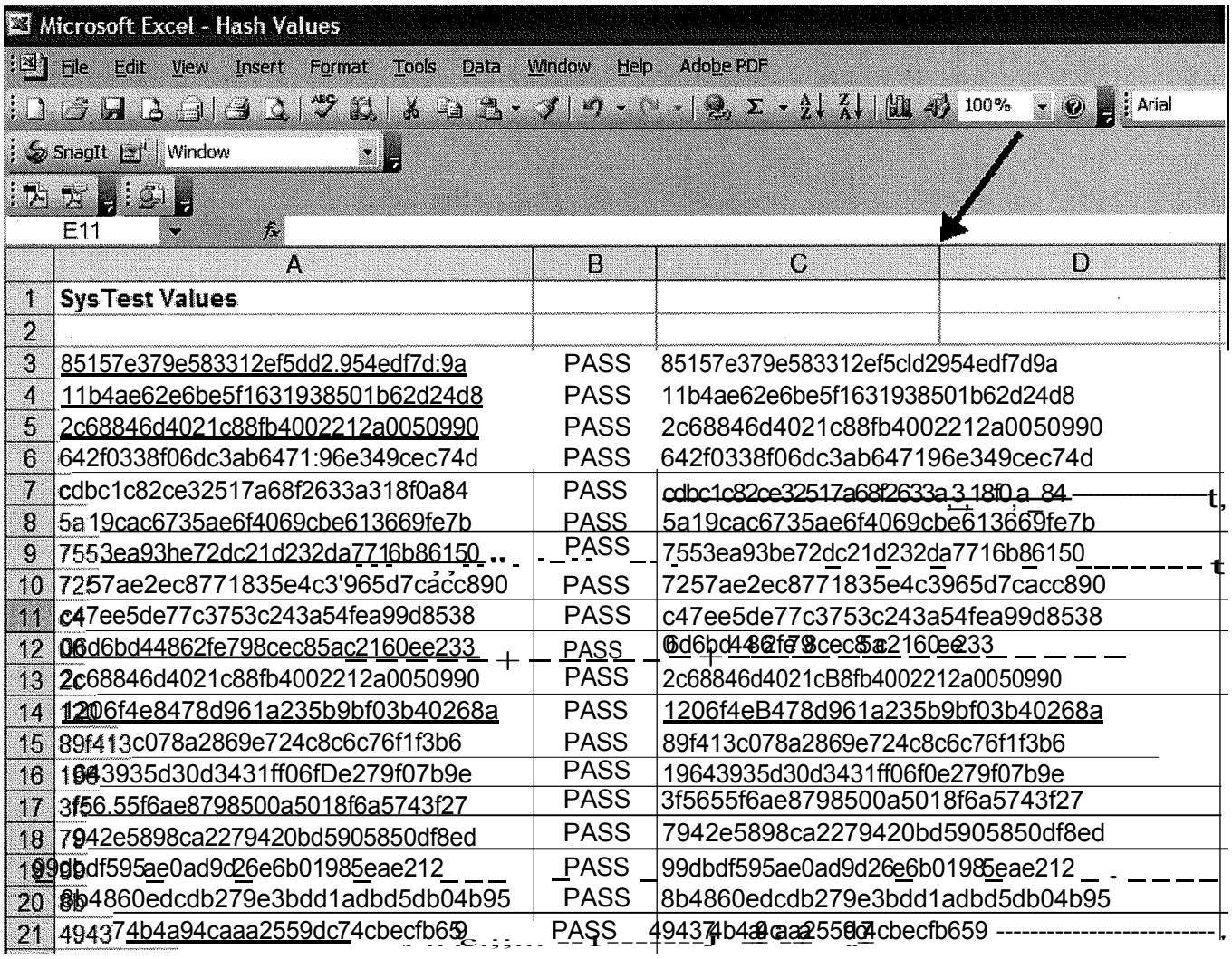
100% Arial

SnagIt Window

E11

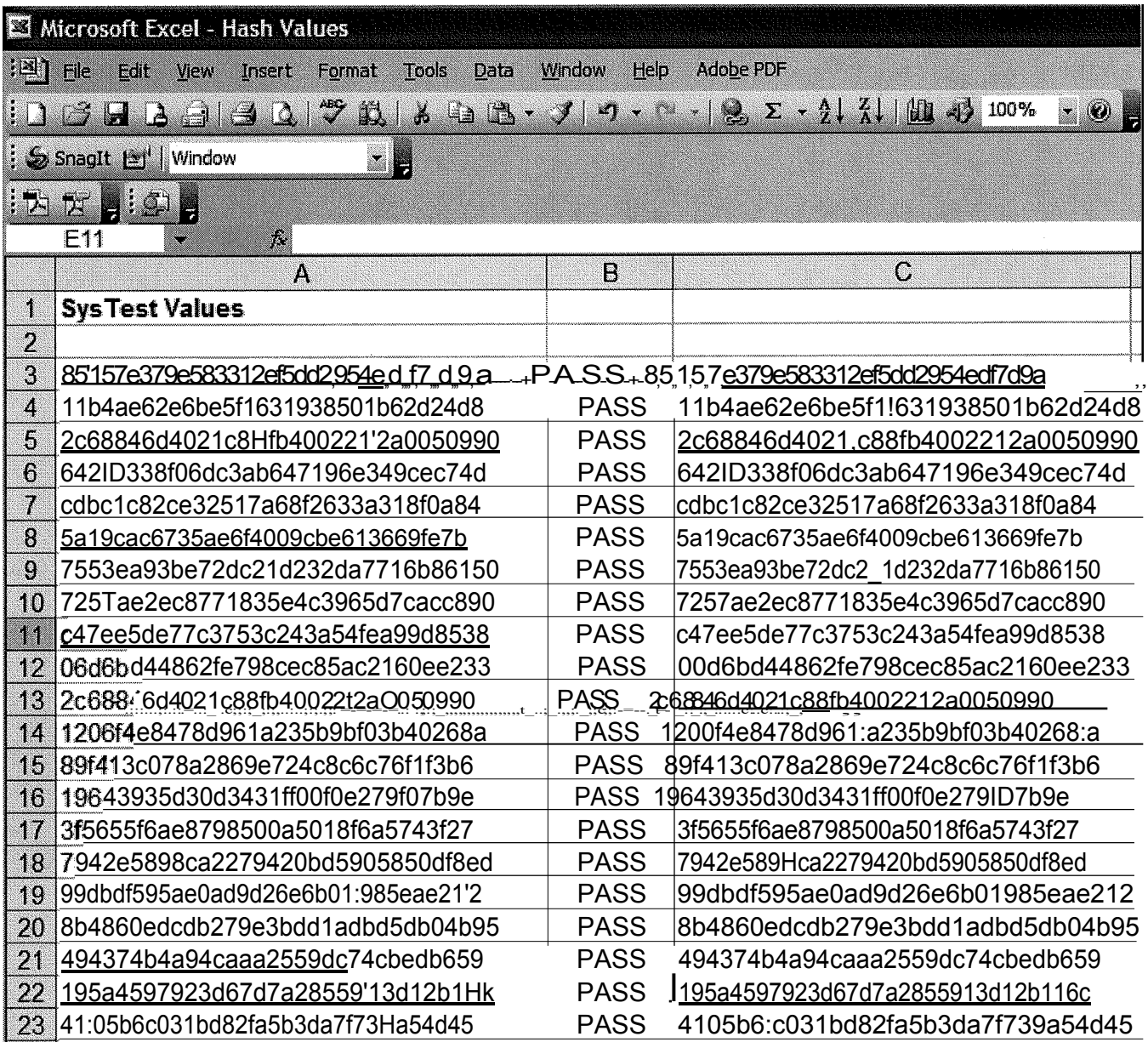
	A	B	C	D
1	**SysTest Values**			
2				
3	85157e379e583312ef5dd2954edf7d9a	PASS	85157e379e583312ef5dd2954edf7d9a	
4	[illegible]	[illegible]	11b4ae62e6be5f1631938501b62d24d8	
5	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990	
6	642f0338f06dc3ab6471:96e349cec74d	PASS	642f0338f06dc3ab647196e349cec74d	
7	CdbC1C82ce32517a68f2633a318fOa84	PASS	cdbc1c82ce32517a68f2633a318f0a84	
8	5a19cac6735ae6f4069cbe613669fe7b	PASS	5a19cac6735ae6f4069cbe613669fe7b	
9	7553ea93be72dc21d232da7716b86150	PASS	7553ea93be72dc21d232da7716b86150	
10	7257ae2ec8TT1835e4c3965d7cacc890	PASS	7257ae2ec8771835e4c3965d7cacc890	
11	c47ee5de77c3753c243a54fea99d8538	PASS	c47ee5cle77c3753c243a54fea99d85-38	
12	00d6bd44862fe798cec85ac2160ee233	PASS	06d6bd44862fe798cec85ac2160ee233	
13	2c68846d4021i c-88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990	
14	1206f4e8478d961a235b9bf03b40268a	PASS	1206f4e8478d961a235b9bf03b40268a	
15	89f413c078a2869e724c8c6c76f1f3b6	PASS	89f413c078a2869e724c8c6c76f1f3b6	
16	19643935d30d3431ff06f0e279f07b9e	PASS	19643935d30d3431ff06f0e.279f07b9e	
17	3f5655f6[illegible]	-J:§§	3f5655f6ae8?]?500a5018f6a5743f27	
18	7942e5898ca2279420bd5905850df8ecl	PASS	7942e5898ca2279420bd5905850df8ed	
19	99dbdf595ae0ad9d26e8b01985eae212	PASS	99dbclf595ae0ad9d26e6b01985eae212	
20	8b4860eckdb279e.3bdd1adbd5db04b95	PASS	8b4860edcdb279e3bdd1adbd5db04b95	
21	494374b4a94caaa2559dc74cbecfb659	PASS	494374b4a94caaa2559dc74cbecfb659	
22	195a4597923d67d7a2855913d12b116c	PASS	195a4597923d67d7a2855913d1.2b116c	
23	4105b6c031bd82.fa5b3da7f739a54d45	PASS	4105b6c031bd82fa5b3da7f739a54d45	

75. Double click the line between C and D to expand column for proper width.



	A	B	C	D
1	**SysTest Values**			
2				
3	85157e379e583312ef5dd2.954edf7d:9a	PASS	85157e379e583312ef5cld2954edf7d9a	
4	11b4ae62e6be5f1631938501b62d24d8	PASS	11b4ae62e6be5f1631938501b62d24d8	
5	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990	
6	642f0338f06dc3ab6471:96e349cec74d	PASS	642f0338f06dc3ab647196e349cec74d	
7	cdbc1c82ce32517a68f2633a318f0a84	PASS	cdbc1c82ce32517a68f2633a,3.18f0,a_84	t,
8	5a19cac6735ae6f4069cbe613669fe7b	PASS	5a19cac6735ae6f4069cbe613669fe7b	
9	7553ea93he72dc21d232da7716b86150 ..	PASS	7553ea93be72dc21d232da7716b86150	t
10	7257ae2ec8771835e4c3'965d7cacc890	PASS	7257ae2ec8771835e4c3965d7cacc890	
11	c47ee5de77c3753c243a54fea99d8538	PASS	c47ee5de77c3753c243a54fea99d8538	
12	06d6bd44862fe798cec85ac2160ee233	PASS	6d6bd4462fe78cec5a2160e233	
13	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021cB8fb4002212a0050990	
14	1206f4e8478d961a235b9bf03b40268a	PASS	1206f4eB478d961a235b9bf03b40268a	
15	89f413c078a2869e724c8c6c76f1f3b6	PASS	89f413c078a2869e724c8c6c76f1f3b6	
16	19643935d30d3431ff06fDe279f07b9e	PASS	19643935d30d3431ff06f0e279f07b9e	
17	3f56.55f6ae8798500a5018f6a5743f27	PASS	3f5655f6ae8798500a5018f6a5743f27	
18	7942e5898ca2279420bd5905850df8ed	PASS	7942e5898ca2279420bd5905850df8ed	
19	99dbdf595ae0ad9d26e6b01985eae212	PASS	99dbdf595ae0ad9d26e6b01985eae212	
20	8b4860edcdb279e3bdd1adbd5db04b95	PASS	8b4860edcdb279e3bdd1adbd5db04b95	
21	494374b4a94caaa2559dc74cbecfb659	PASS	494374b4a94caaa2559dc74cbecfb659	

76. If values are NOT THE SAME in Column A and Column C, then call SBOE- 518-485-5637



Microsoft Excel - Hash Values

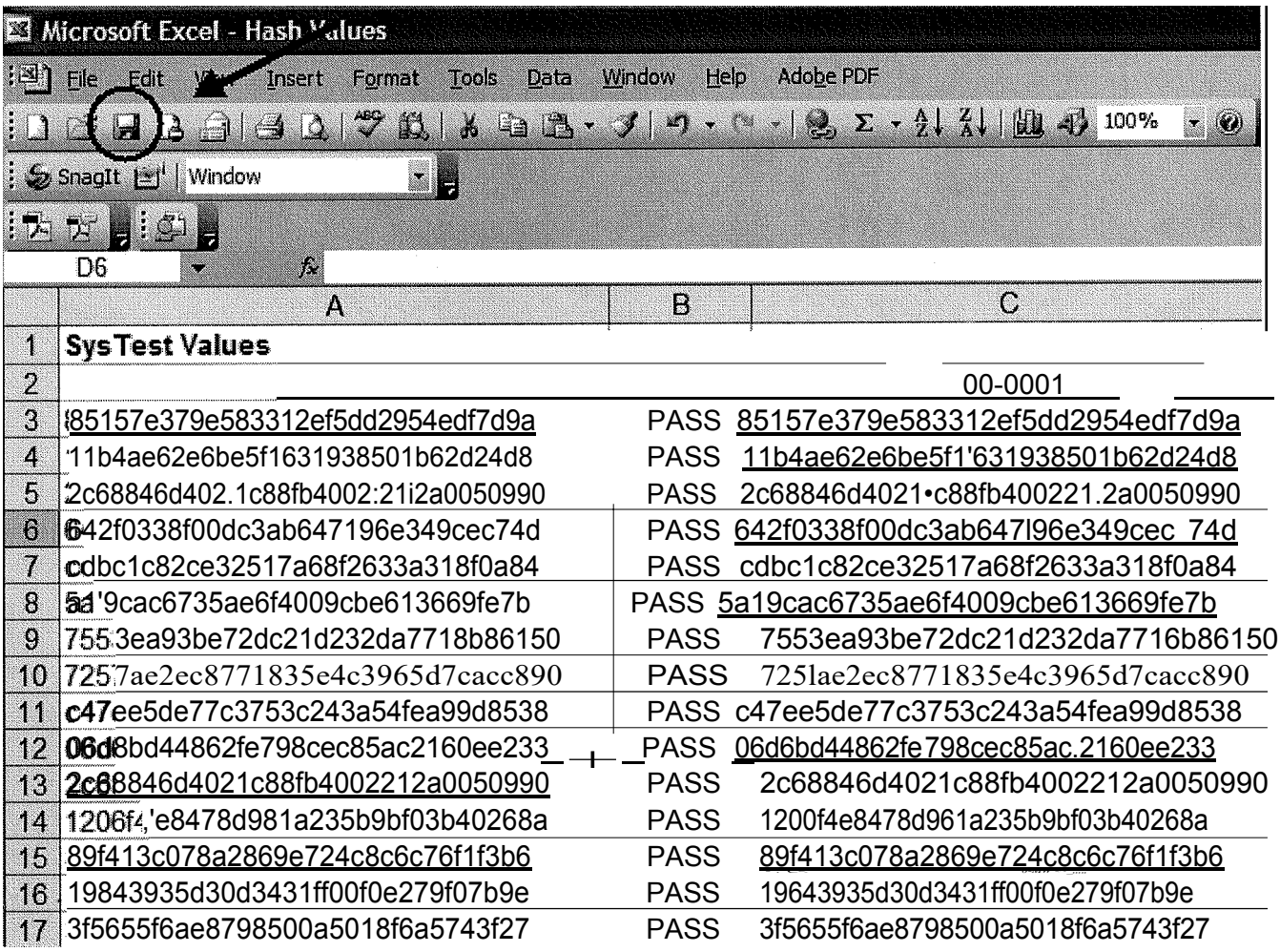
File Edit View Insert Format Tools Data Window Help Adobe PDF

SnagIt Window

E11

	A	B	C
1	**SysTest Values**		
2			
3	85157e379e583312ef5dd2954ed f7 d 9a	PASS	85157e379e583312ef5dd2954edf7d9a
4	11b4ae62e6be5f1631938501b62d24d8	PASS	11b4ae62e6be5f1!631938501b62d24d8
5	2c68846d4021c8Hfb400221'2a0050990	PASS	2c68846d4021.c88fb4002212a0050990
6	642ID338f06dc3ab647196e349cec74d	PASS	642ID338f06dc3ab647196e349cec74d
7	cdbc1c82ce32517a68f2633a318f0a84	PASS	cdbc1c82ce32517a68f2633a318f0a84
8	5a19cac6735ae6f4009cbe613669fe7b	PASS	5a19cac6735ae6f4009cbe613669fe7b
9	7553ea93be72dc21d232da7716b86150	PASS	7553ea93be72dc2_1d232da7716b86150
10	725Tae2ec8771835e4c3965d7cacc890	PASS	7257ae2ec8771835e4c3965d7cacc890
11	c47ee5de77c3753c243a54fea99d8538	PASS	c47ee5de77c3753c243a54fea99d8538
12	06d6bd44862fe798cec85ac2160ee233	PASS	00d6bd44862fe798cec85ac2160ee233
13	2c688 6d4021c88fb40022t2aO050990	PASS	2c6846d4021c88fb4002212a0050990
14	1206f4e8478d961a235b9bf03b40268a	PASS	1200f4e8478d961:a235b9bf03b40268:a
15	89f413c078a2869e724c8c6c76f1f3b6	PASS	89f413c078a2869e724c8c6c76f1f3b6
16	19643935d30d3431ff00f0e279f07b9e	PASS	19643935d30d3431ff00f0e279ID7b9e
17	3f5655f6ae8798500a5018f6a5743f27	PASS	3f5655f6ae8798500a5018f6a5743f27
18	7942e5898ca2279420bd5905850df8ed	PASS	7942e589Hca2279420bd5905850df8ed
19	99dbdf595ae0ad9d26e6b01:985eae21'2	PASS	99dbdf595ae0ad9d26e6b01985eae212
20	8b4860edcdb279e3bdd1adbd5db04b95	PASS	8b4860edcdb279e3bdd1adbd5db04b95
21	494374b4a94caaa2559dc74cbedb659	PASS	494374b4a94caaa2559dc74cbedb659
22	195a4597923d67d7a28559'13d12b1Hk	PASS	195a4597923d67d7a2855913d12b116c
23	41:05b6c031bd82fa5b3da7f73Ha54d45	PASS	4105b6:c031bd82fa5b3da7f739a54d45

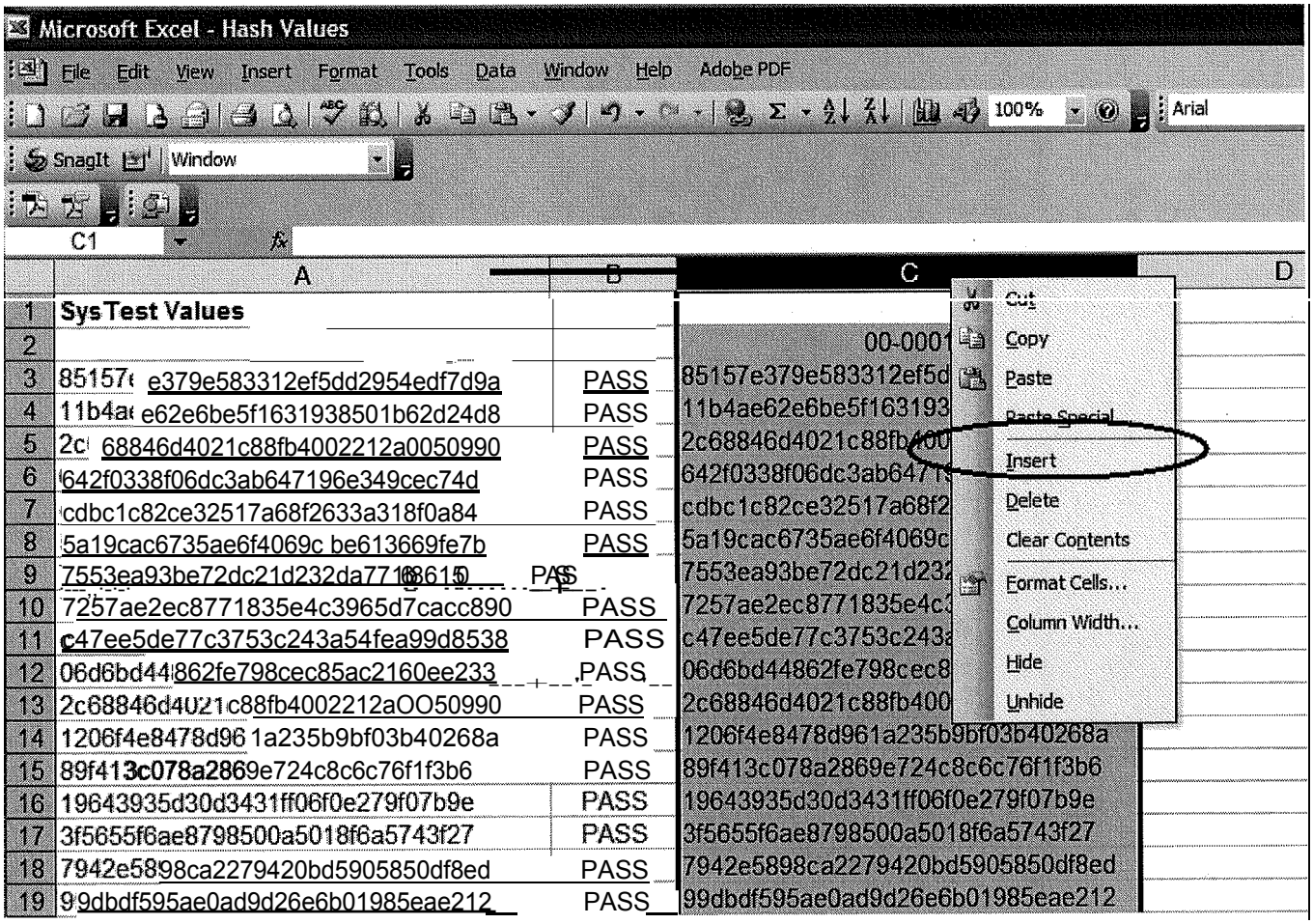
77. Label the inserted column with name of file- xx-xxxx which represents a specific BMD and click the "Save" icon.



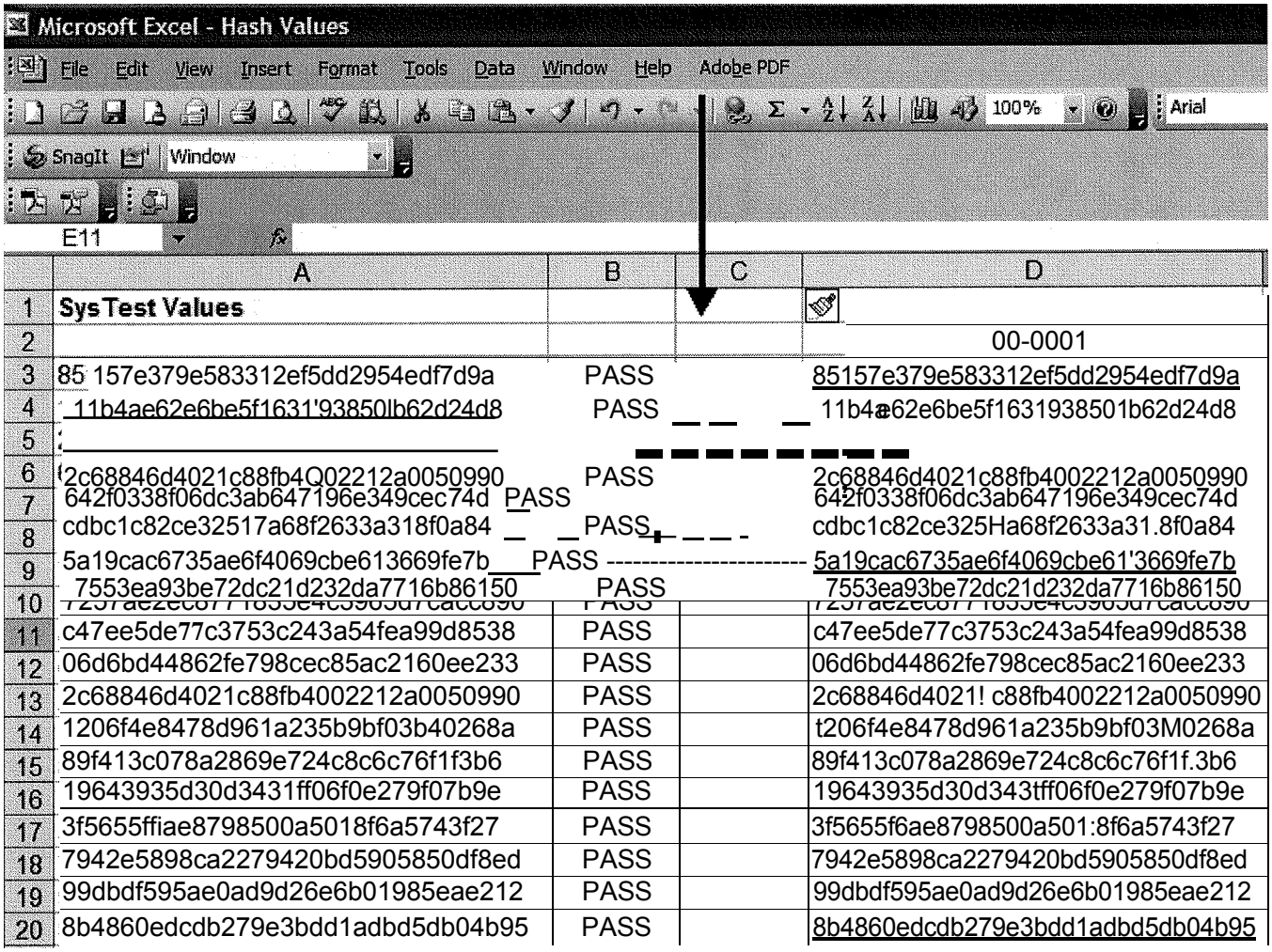
	A	B	C
1	**SysTest Values**		
2			00-0001
3	85157e379e583312ef5dd2954edf7d9a	PASS	85157e379e583312ef5dd2954edf7d9a
4	11b4ae62e6be5f1631938501b62d24d8	PASS	11b4ae62e6be5f1'631938501b62d24d8
5	2c68846d402.1c88fb4002:21i2a0050990	PASS	2c68846d4021•c88fb400221.2a0050990
6	642f0338f00dc3ab647196e349cec74d	PASS	642f0338f00dc3ab647l96e349cec_74d
7	cdbc1c82ce32517a68f2633a318f0a84	PASS	cdbc1c82ce32517a68f2633a318f0a84
8	5a'9cac6735ae6f4009cbe613669fe7b	PASS	5a19cac6735ae6f4009cbe613669fe7b
9	7553ea93be72dc21d232da7718b86150	PASS	7553ea93be72dc21d232da7716b86150
10	7257ae2ec8771835e4c3965d7cacc890	PASS	725lae2ec8771835e4c3965d7cacc890
11	c47ee5de77c3753c243a54fea99d8538	PASS	c47ee5de77c3753c243a54fea99d8538
12	06d8bd44862fe798cec85ac2160ee233	PASS	06d6bd44862fe798cec85ac.2160ee233
13	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990
14	1206f4'e8478d981a235b9bf03b40268a	PASS	1200f4e8478d961a235b9bf03b40268a
15	89f413c078a2869e724c8c6c76f1f3b6	PASS	89f413c078a2869e724c8c6c76f1f3b6
16	19843935d30d3431ff00f0e279f07b9e	PASS	19643935d30d3431ff00f0e279f07b9e
17	3f5655f6ae8798500a5018f6a5743f27	PASS	3f5655f6ae8798500a5018f6a5743f27

3.3 Prepare spreadsheet for the next set of hash check values.

78. Highlight column C and right click. Select **"Insert".**

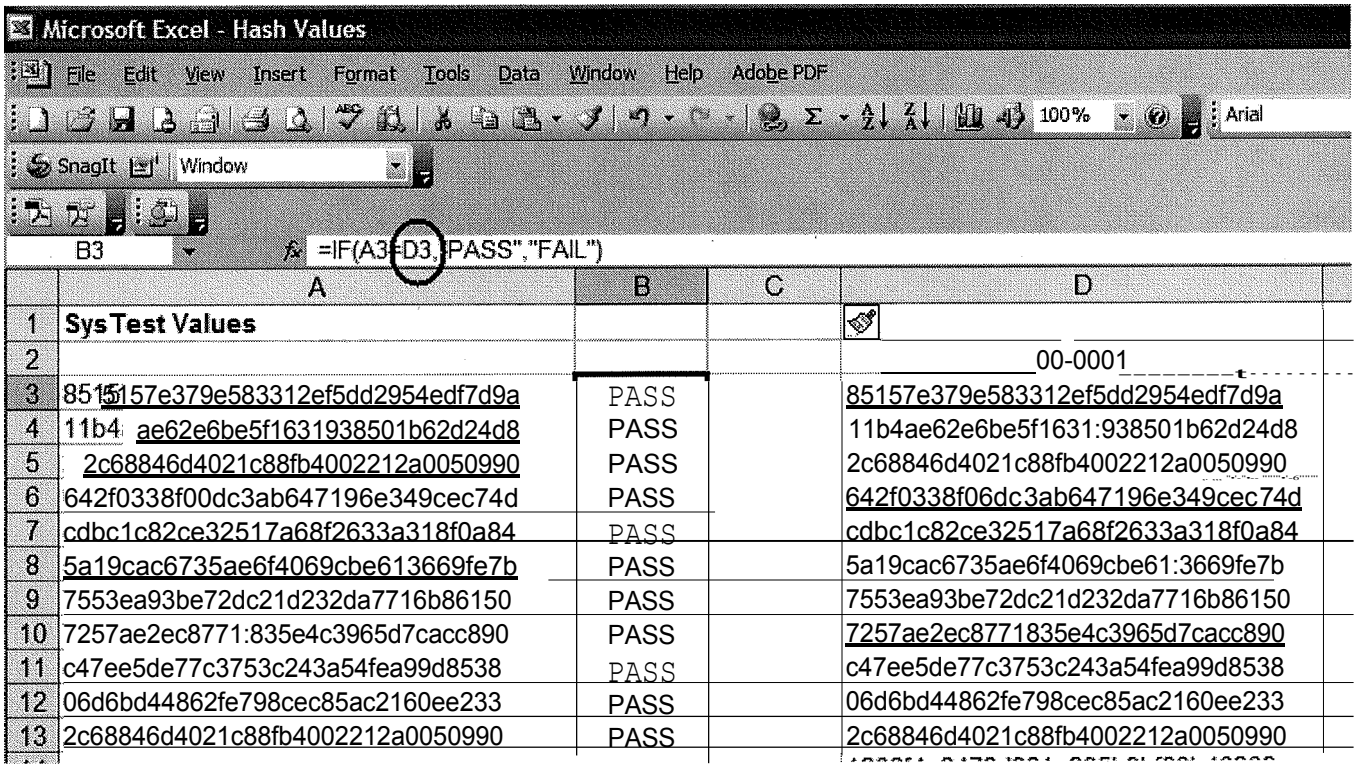


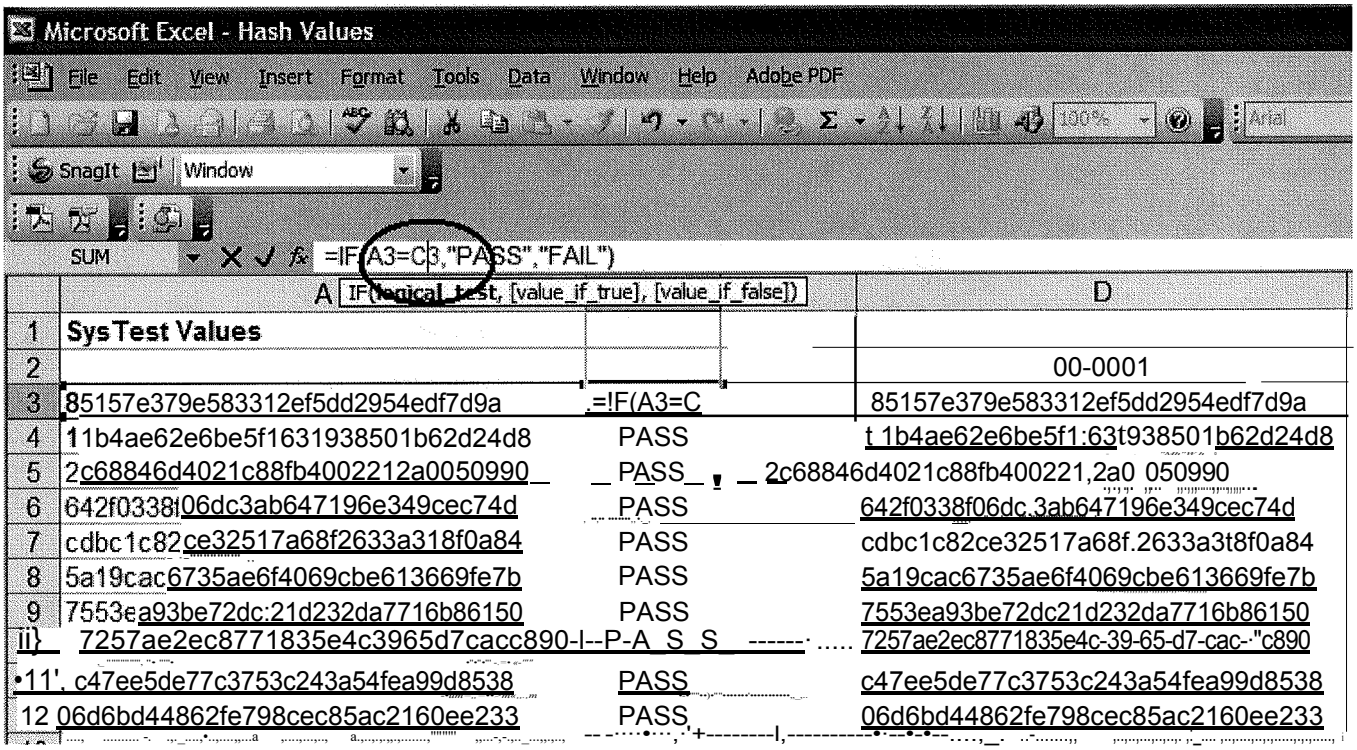
79. New **column** "C" Inserted

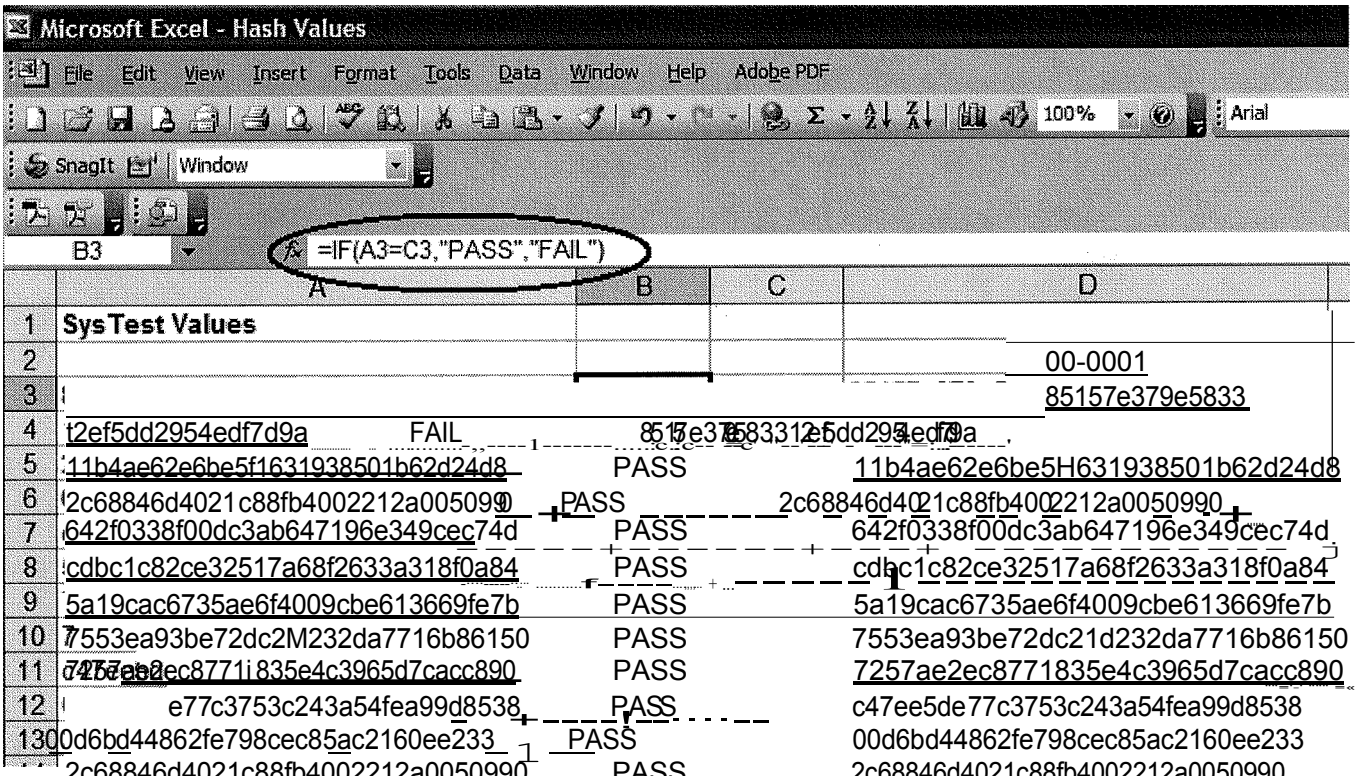


	A	B	C	D
1	**SysTest Values**			
2				00-0001
3	85 157e379e583312ef5dd2954edf7d9a	PASS		85157e379e583312ef5dd2954edf7d9a
4	11b4ae62e6be5f1631'93850lb62d24d8	PASS		11b4ae62e6be5f1631938501b62d24d8
5				
6	2c68846d4021c88fb4Q02212a0050990	PASS		2c68846d4021c88fb4002212a0050990
7	642f0338f06dc3ab647196e349cec74d	PASS		642f0338f06dc3ab647196e349cec74d
8	cdbc1c82ce32517a68f2633a318f0a84	PASS		cdbc1c82ce325Ha68f2633a31.8f0a84
9	5a19cac6735ae6f4069cbe613669fe7b	PASS		5a19cac6735ae6f4069cbe61'3669fe7b
10	7553ea93be72dc21d232da7716b86150	PASS		7553ea93be72dc21d232da7716b86150
11	c47ee5de77c3753c243a54fea99d8538	PASS		c47ee5de77c3753c243a54fea99d8538
12	06d6bd44862fe798cec85ac2160ee233	PASS		06d6bd44862fe798cec85ac2160ee233
13	2c68846d4021c88fb4002212a0050990	PASS		2c68846d4021! c88fb4002212a0050990
14	1206f4e8478d961a235b9bf03b40268a	PASS		t206f4e8478d961a235b9bf03M0268a
15	89f413c078a2869e724c8c6c76f1f3b6	PASS		89f413c078a2869e724c8c6c76f1f.3b6
16	19643935d30d3431ff06f0e279f07b9e	PASS		19643935d30d343tff06f0e279f07b9e
17	3f5655ffiae8798500a5018f6a5743f27	PASS		3f5655f6ae8798500a501:8f6a5743f27
18	7942e5898ca2279420bd5905850df8ed	PASS		7942e5898ca2279420bd5905850df8ed
19	99dbdf595ae0ad9d26e6b01985eae212	PASS		99dbdf595ae0ad9d26e6b01985eae212
20	8b4860edcdb279e3bdd1adbd5db04b95	PASS		8b4860edcdb279e3bdd1adbd5db04b95

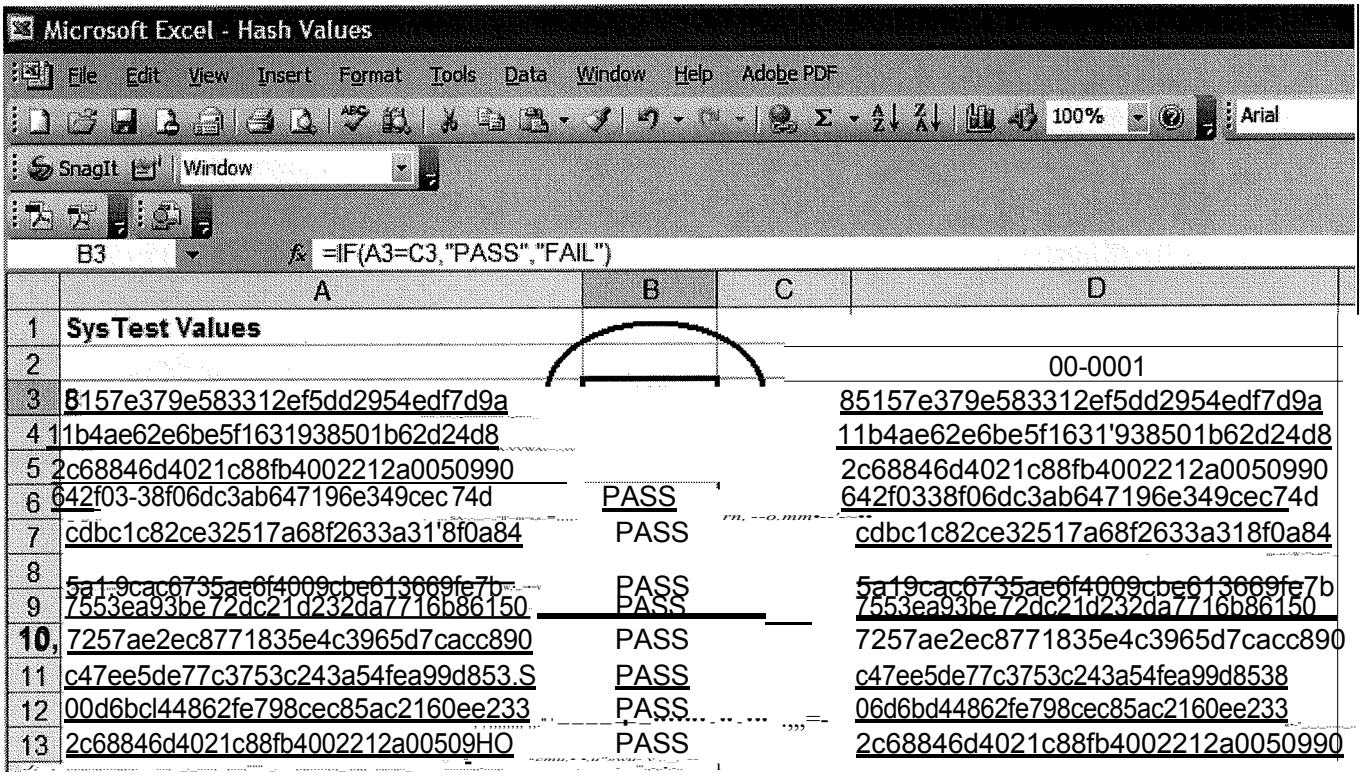
80. Click on cell B3. In the formula bar, change the value from "D" to "C" and press "Enter"

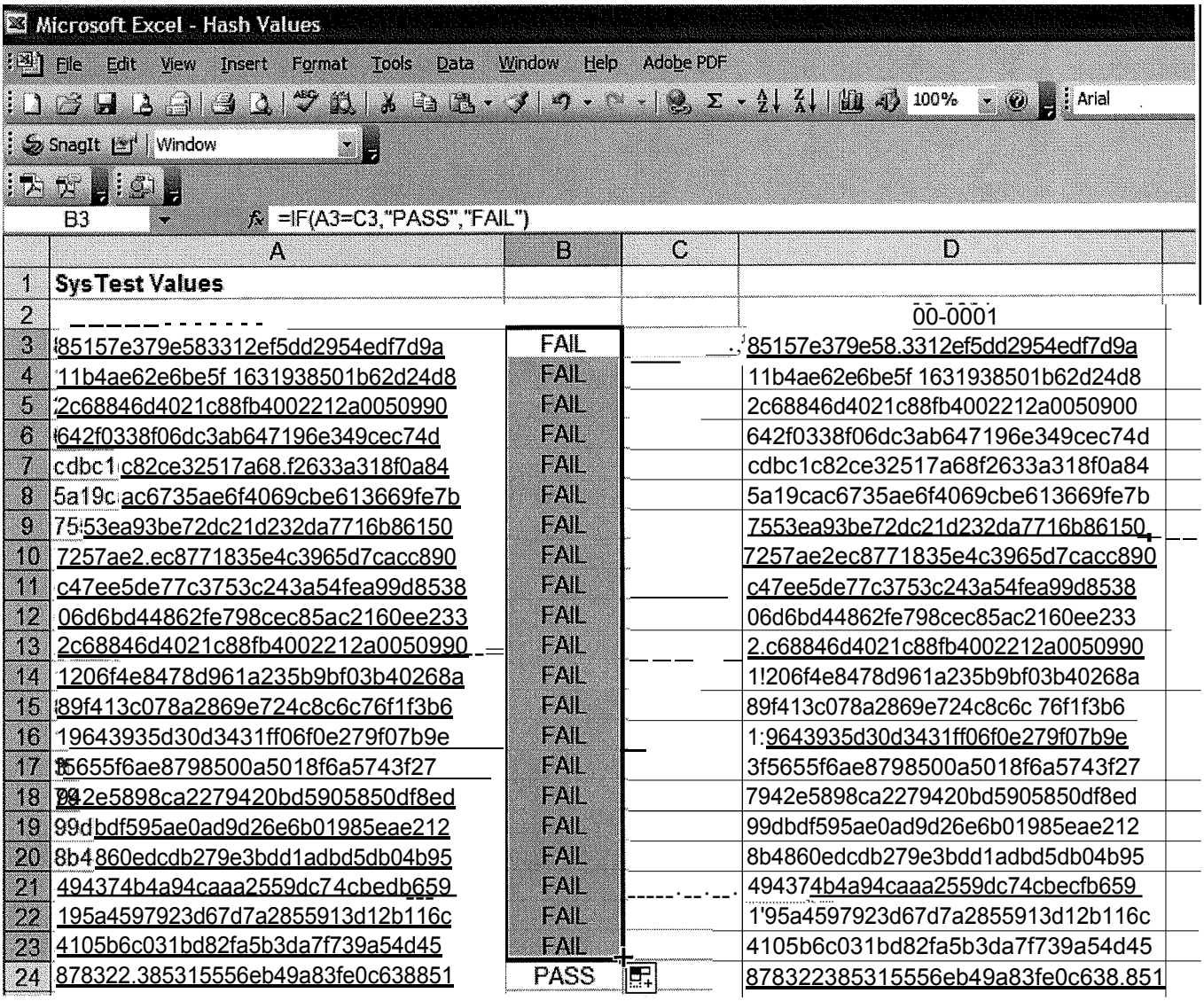






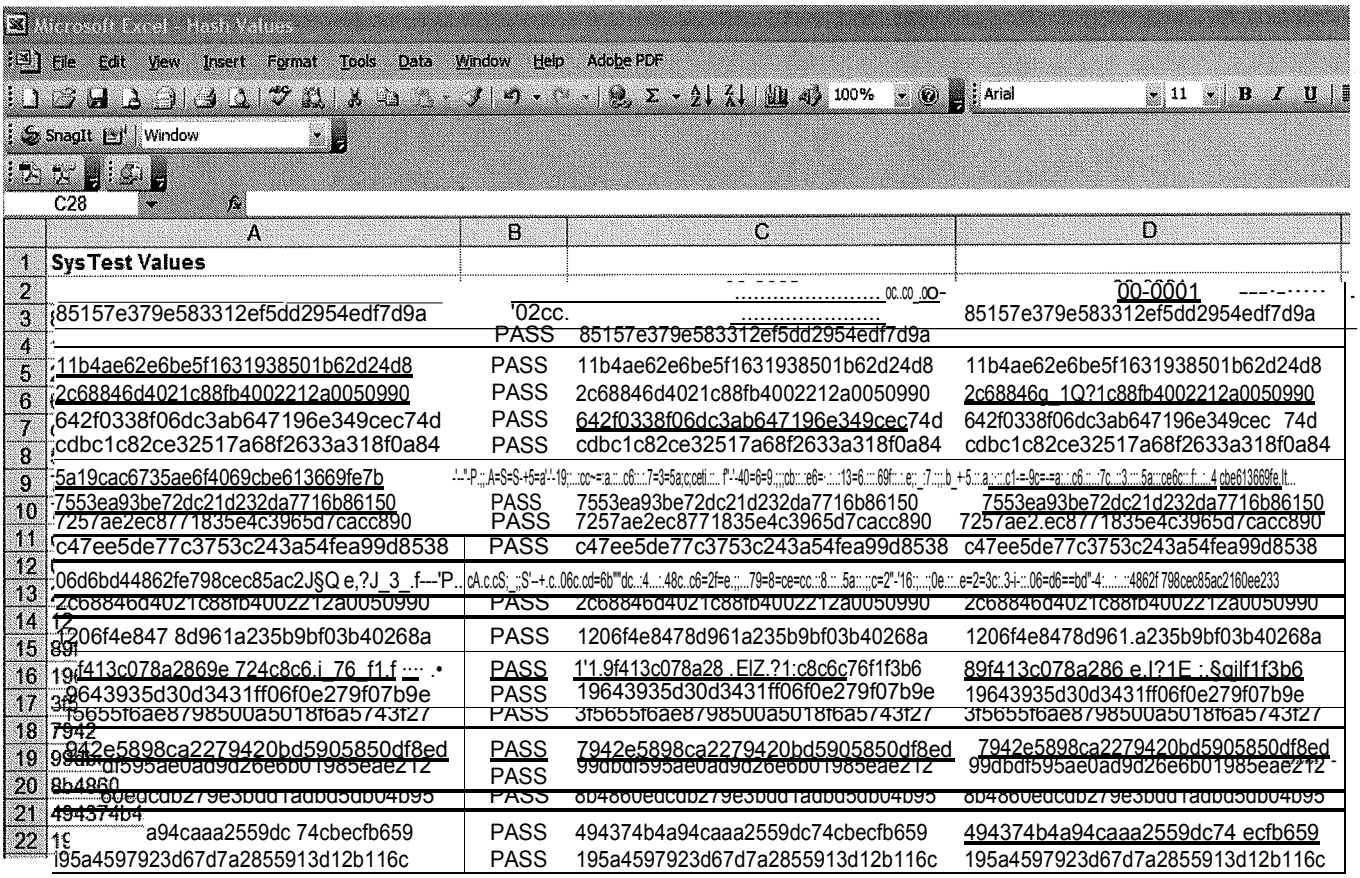
81. Click the bottom right corner of cell B3 and drag down the entire length of values in Row B and click "Save" icon.





	A	B	C	D
1	**SysTest Values**			
2				00-0001
3	85157e379e583312ef5dd2954edf7d9a	FAIL		85157e379e58.3312ef5dd2954edf7d9a
4	11b4ae62e6be5f 1631938501b62d24d8	FAIL		11b4ae62e6be5f 1631938501b62d24d8
5	2c68846d4021c88fb4002212a0050990	FAIL		2c68846d4021c88fb4002212a0050900
6	642f0338f06dc3ab647196e349cec74d	FAIL		642f0338f06dc3ab647196e349cec74d
7	cdbc1c82ce32517a68.f2633a318f0a84	FAIL		cdbc1c82ce32517a68f2633a318f0a84
8	5a19cac6735ae6f4069cbe613669fe7b	FAIL		5a19cac6735ae6f4069cbe613669fe7b
9	7553ea93be72dc21d232da7716b86150	FAIL		7553ea93be72dc21d232da7716b86150
10	7257ae2.ec8771835e4c3965d7cacc890	FAIL		7257ae2ec8771835e4c3965d7cacc890
11	c47ee5de77c3753c243a54fea99d8538	FAIL		c47ee5de77c3753c243a54fea99d8538
12	06d6bd44862fe798cec85ac2160ee233	FAIL		06d6bd44862fe798cec85ac2160ee233
13	2c68846d4021c88fb4002212a0050990	FAIL		2.c68846d4021c88fb4002212a0050990
14	1206f4e8478d961a235b9bf03b40268a	FAIL		1!206f4e8478d961a235b9bf03b40268a
15	89f413c078a2869e724c8c6c76f1f3b6	FAIL		89f413c078a2869e724c8c6c 76f1f3b6
16	19643935d30d3431ff06f0e279f07b9e	FAIL		1:9643935d30d3431ff06f0e279f07b9e
17	3f5655f6ae8798500a5018f6a5743f27	FAIL		3f5655f6ae8798500a5018f6a5743f27
18	7942e5898ca2279420bd5905850df8ed	FAIL		7942e5898ca2279420bd5905850df8ed
19	99dbdf595ae0ad9d26e6b01985eae212	FAIL		99dbdf595ae0ad9d26e6b01985eae212
20	8b4860edcdb279e3bdd1adbd5db04b95	FAIL		8b4860edcdb279e3bdd1adbd5db04b95
21	494374b4a94caaa2559dc74cbedb659	FAIL		494374b4a94caaa2559dc74cbecfb659
22	195a4597923d67d7a2855913d12b116c	FAIL		1'95a4597923d67d7a2855913d12b116c
23	4105b6c031bd82fa5b3da7f739a54d45	FAIL		4105b6c031bd82fa5b3da7f739a54d45
24	878322.385315556eb49a83fe0c638851	PASS		878322385315556eb49a83fe0c638.851

82. Repeat this process for each hash check conducted per BMD to verify that the hash values are correct. Remember to save regularly.



Microsoft Excel - Hash Values

File Edit View Insert Format Tools Data Window Help Adobe PDF

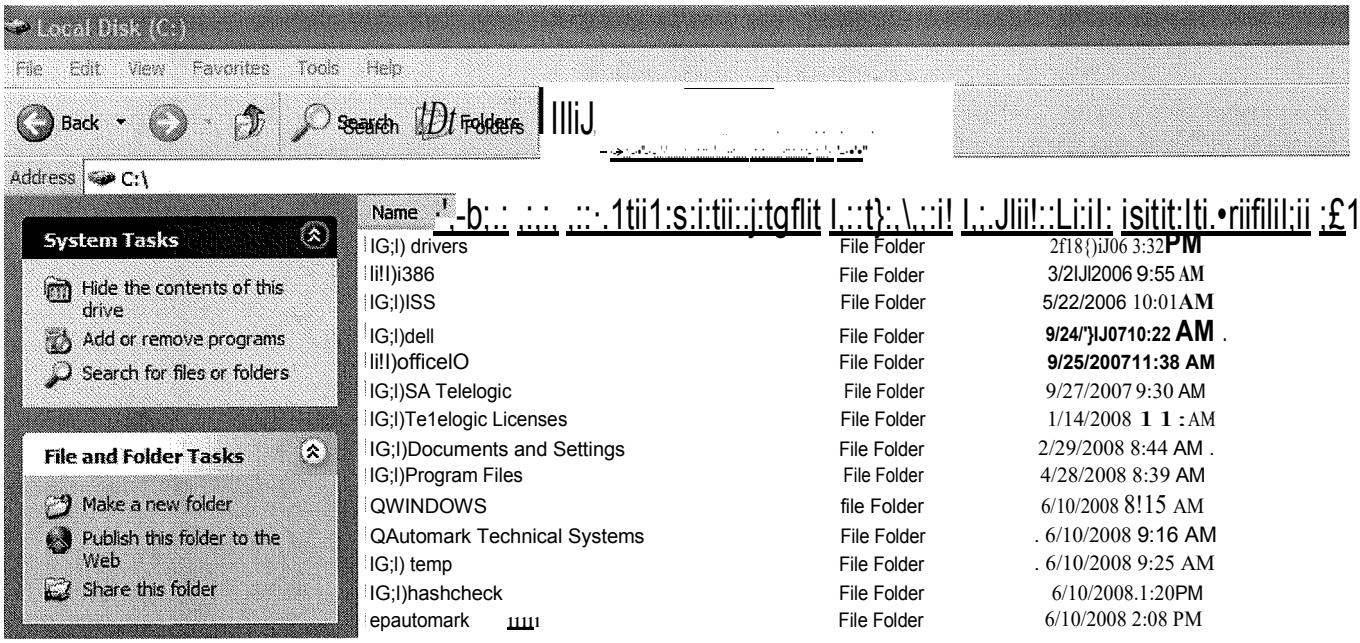
SnagIt Window

C28

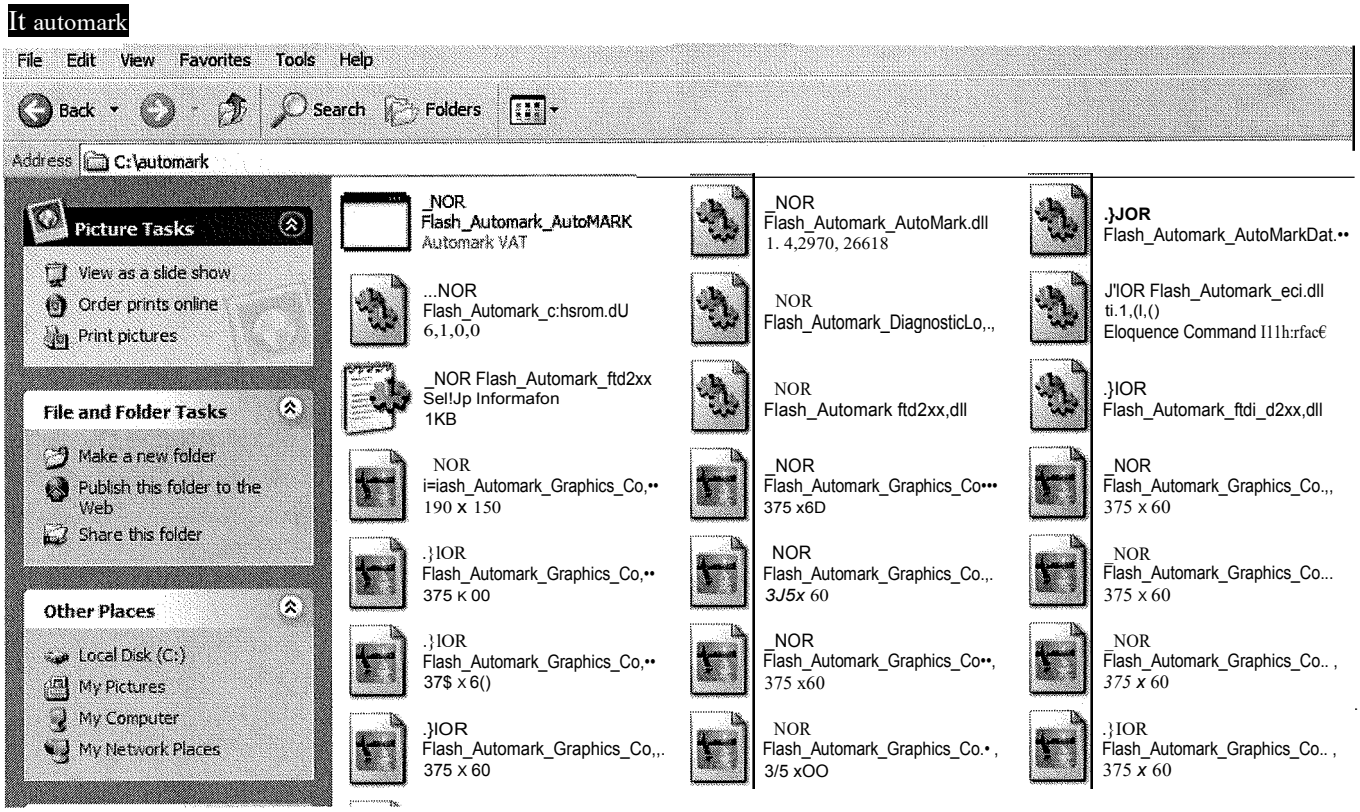
	A	B	C	D
1	**SysTest Values**			
2				00-0001
3	85157e379e583312ef5dd2954edf7d9a	'02cc.		85157e379e583312ef5dd2954edf7d9a
4		PASS	85157e379e583312ef5dd2954edf7d9a	
5	11b4ae62e6be5f1631938501b62d24d8	PASS	11b4ae62e6be5f1631938501b62d24d8	11b4ae62e6be5f1631938501b62d24d8
6	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990	2c68846g_1Q?1c88fb4002212a0050990
7	642f0338f06dc3ab647196e349cec74d	PASS	642f0338f06dc3ab647196e349cec74d	642f0338f06dc3ab647196e349cec 74d
8	cdbc1c82ce32517a68f2633a318f0a84	PASS	cdbc1c82ce32517a68f2633a318f0a84	cdbc1c82ce32517a68f2633a318f0a84
9	5a19cac6735ae6f4069cbe613669fe7b			
10	7553ea93be72dc21d232da7716b86150	PASS	7553ea93be72dc21d232da7716b86150	7553ea93be72dc21d232da7716b86150
11	7257ae2ec8771835e4c3965d7cacc890	PASS	7257ae2ec8771835e4c3965d7cacc890	7257ae2.ec8771835e4c3965d7cacc890
12	c47ee5de77c3753c243a54fea99d8538	PASS	c47ee5de77c3753c243a54fea99d8538	c47ee5de77c3753c243a54fea99d8538
13				
14	2c68846d4021c88fb4002212a0050990	PASS	2c68846d4021c88fb4002212a0050990	2c68846d4021c88fb4002212a0050990
15	1206f4e847 8d961a235b9bf03b40268a	PASS	1206f4e8478d961a235b9bf03b40268a	1206f4e8478d961.a235b9bf03b40268a
16	f413c078a2869e 724c8c6.j_76_f1.f	PASS	1'1.9f413c078a28 .ElZ.?1:c8c6c76f1f3b6	89f413c078a286 e.I?1E :.Sqilf1f3b6
17	9643935d30d3431ff06f0e279f07b9e	PASS	19643935d30d3431ff06f0e279f07b9e	19643935d30d3431ff06f0e279f07b9e
18	7942e5898ca2279420bd5905850df8ed	PASS	7942e5898ca2279420bd5905850df8ed	7942e5898ca2279420bd5905850df8ed
19	99dbdf595ae0ad9d26e6b01985eae212	PASS	99dbdf595ae0ad9d26e6b01985eae212	99dbdf595ae0ad9d26e6b01985eae212
20	8b4860	PASS		
21	494374b4			
22	a94caaa2559dc 74cbecfb659	PASS	494374b4a94caaa2559dc74cbecfb659	494374b4a94caaa2559dc74 ecfb659
	195a4597923d67d7a2855913d12b116c	PASS	195a4597923d67d7a2855913d12b116c	195a4597923d67d7a2855913d12b116c

3.4 Clear "automark" folder contents

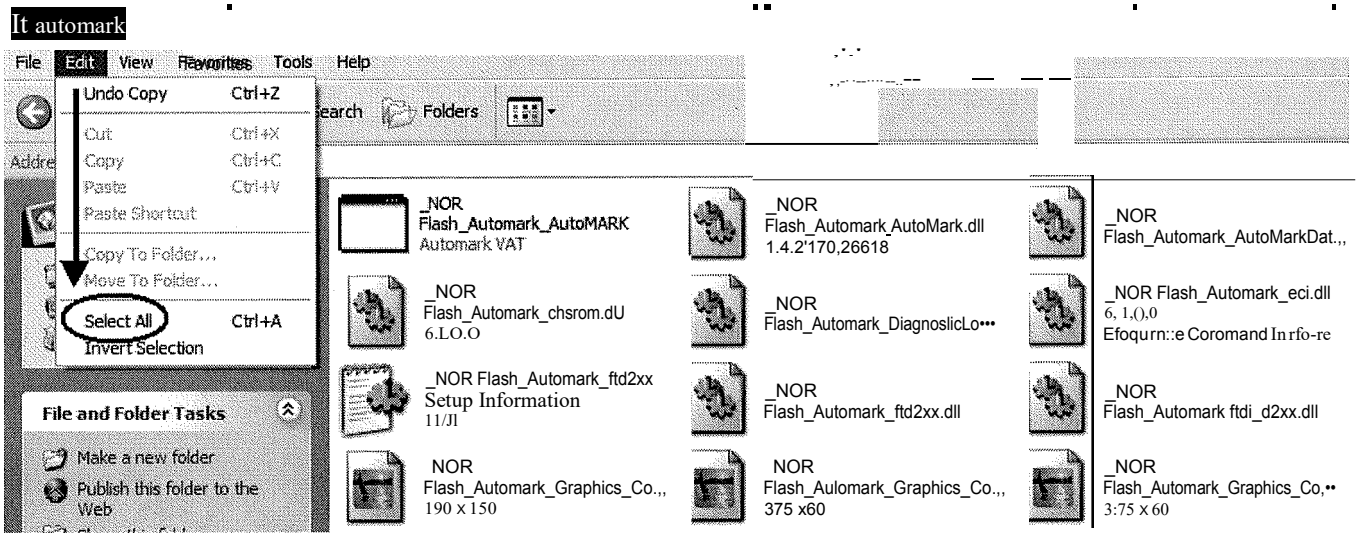
83. Browse to "automark" folder on the C:\ Drive



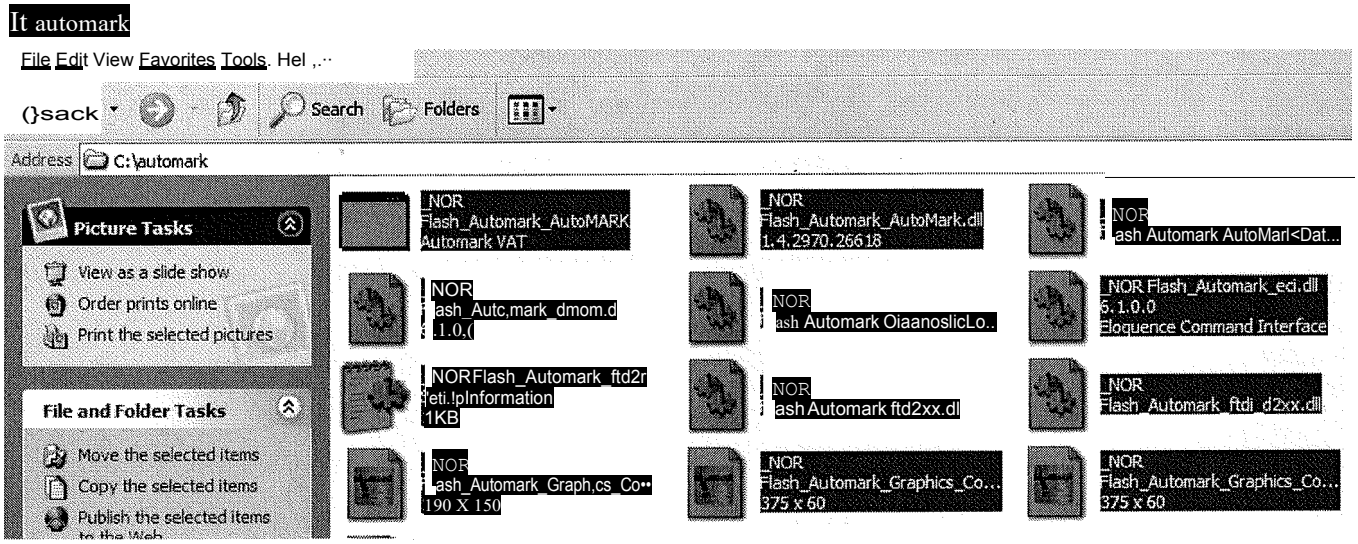
84. Double click the "automark" folder to open.



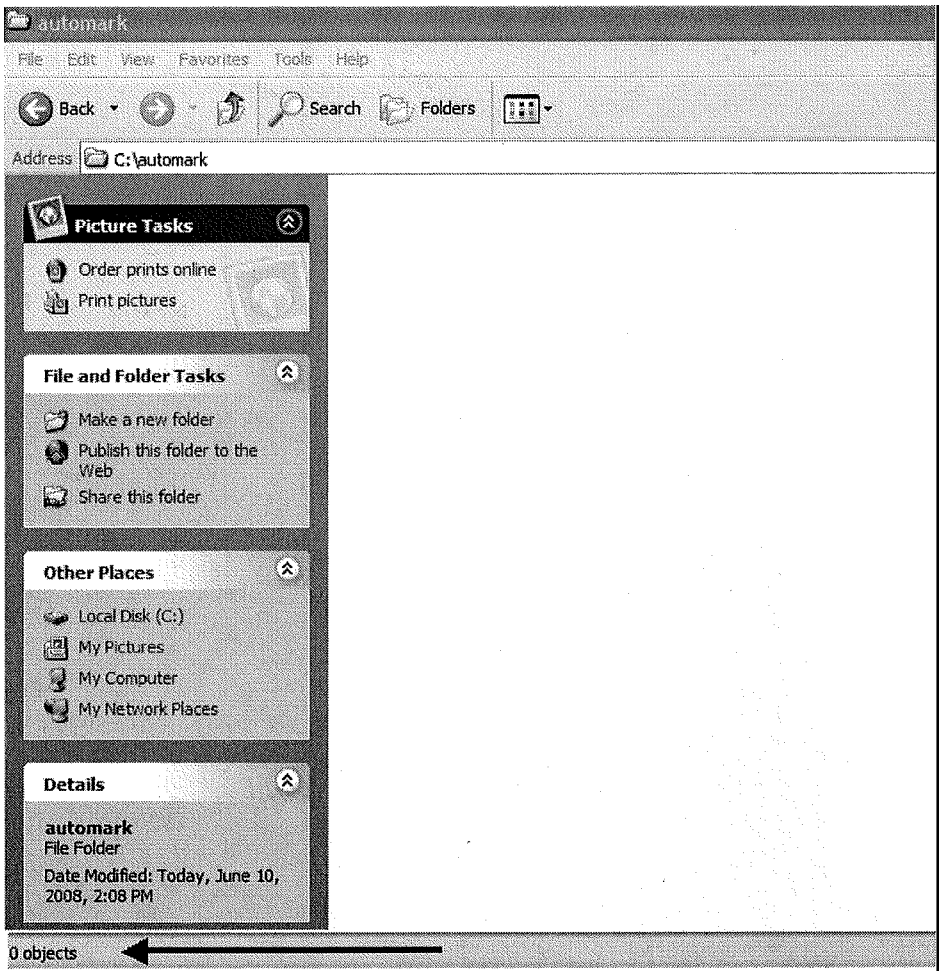
85. Click> Edit> Select All from the drop down menu



86. Verify that all 776 files have been selected.



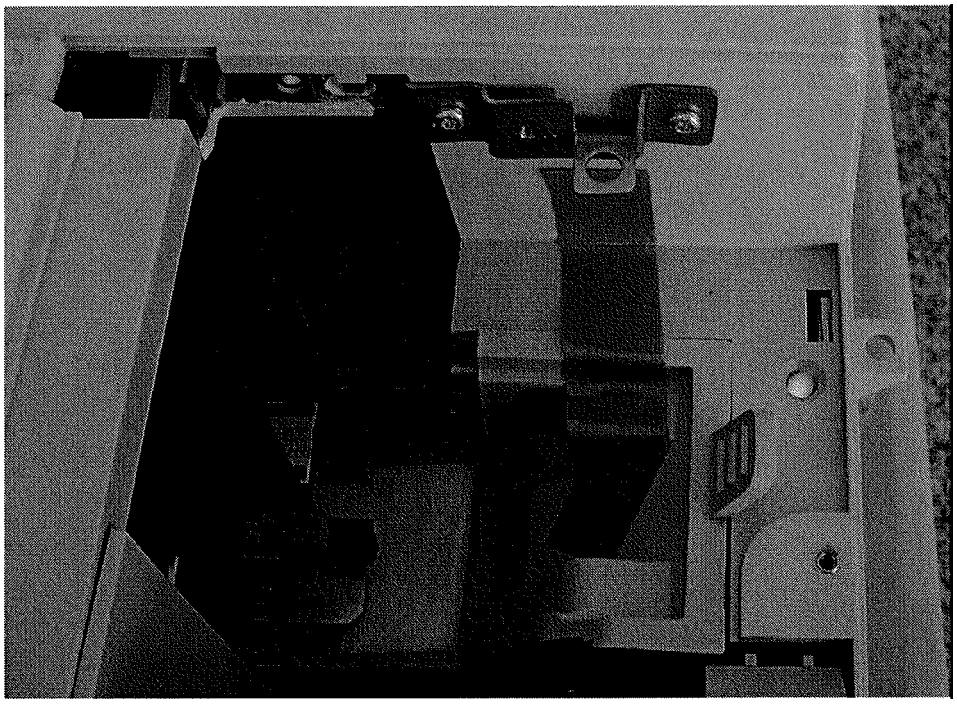
87. From the keyboard, press the "Delete" button and verify that all files have been deleted.



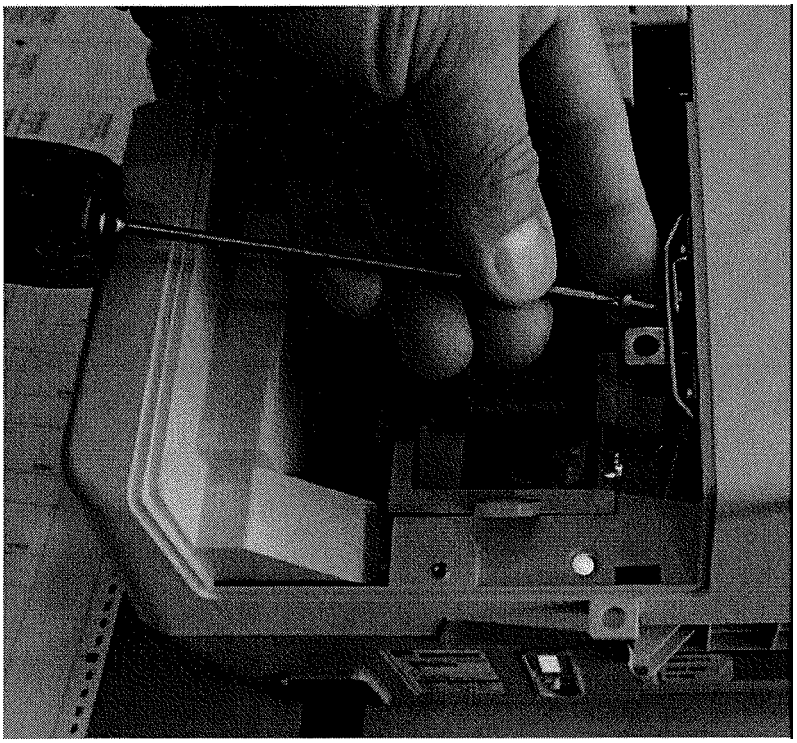
4. ATTACH SECURITY SEAL

88. Once the BMD has passed the hash check, remove the USB cord.

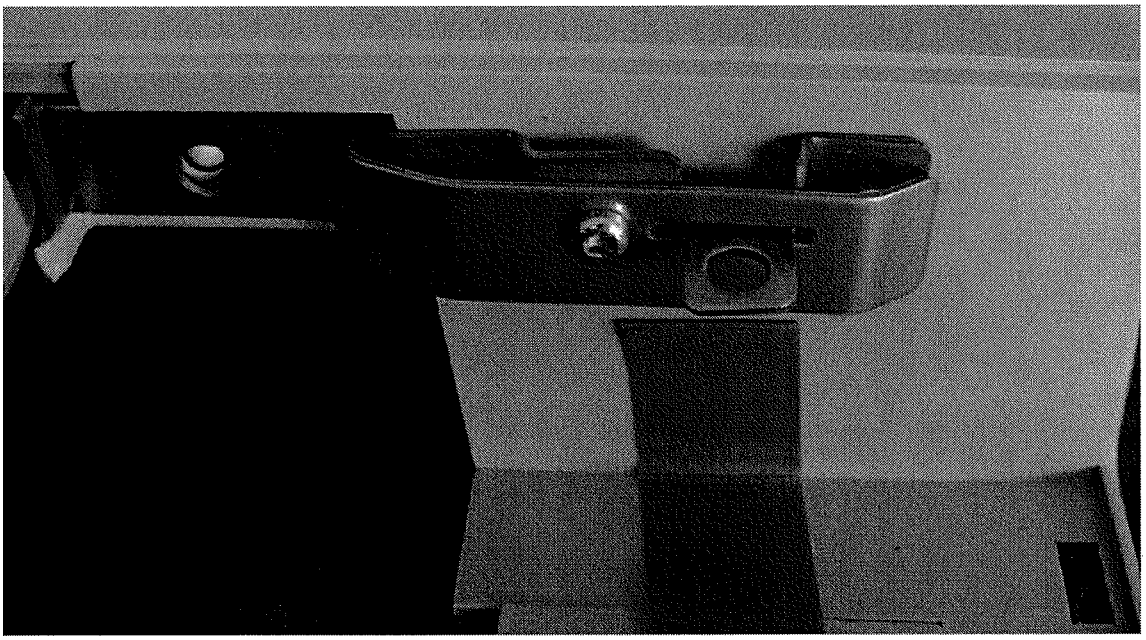
ES&S AutoMARK USB Port Unsealed



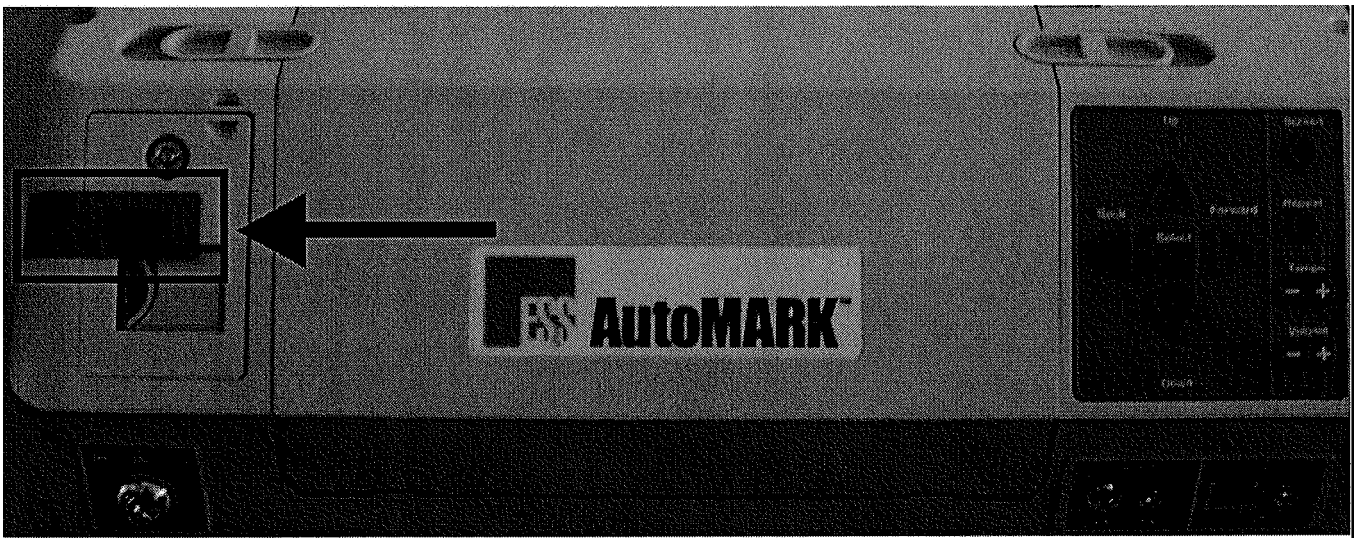
89. Attach the security bracket.



ES&S AutoMARK USB Port Covered with security bracket



90. Attach security seals.



91. Repeat process for each BMD requiring a Hash Check.

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best_ Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

New York State

Board of Elections

Voting System Version Information

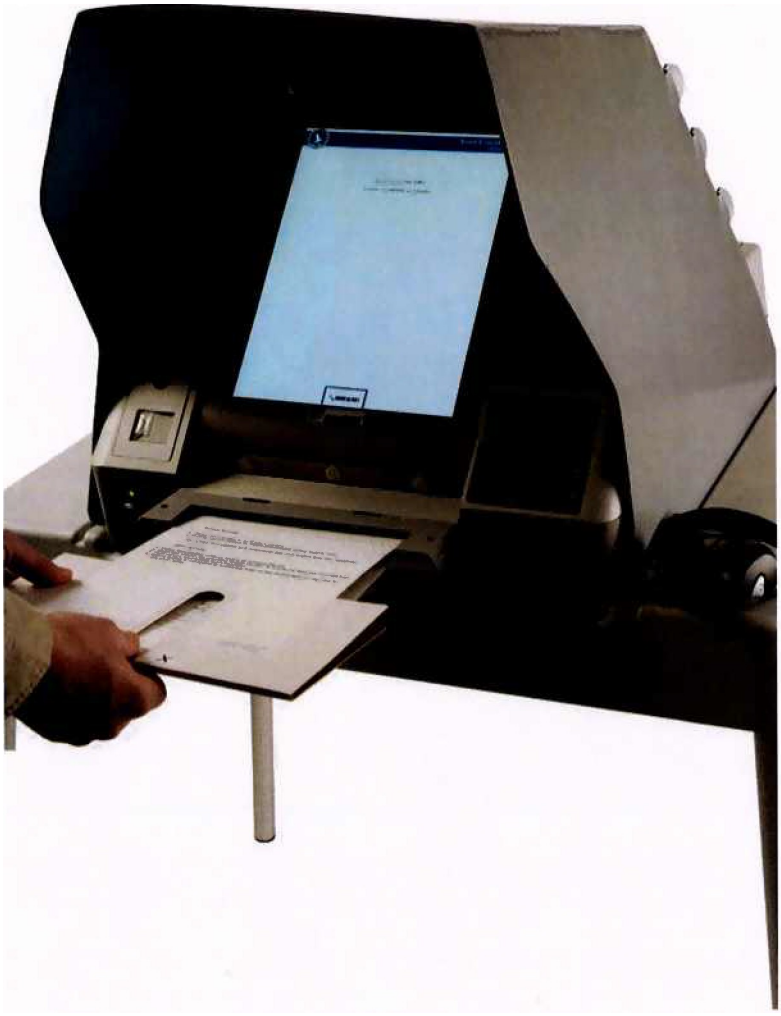
APPENDIX 5

ES&S DS200

DS200 Scanner Version 2.9.0.0

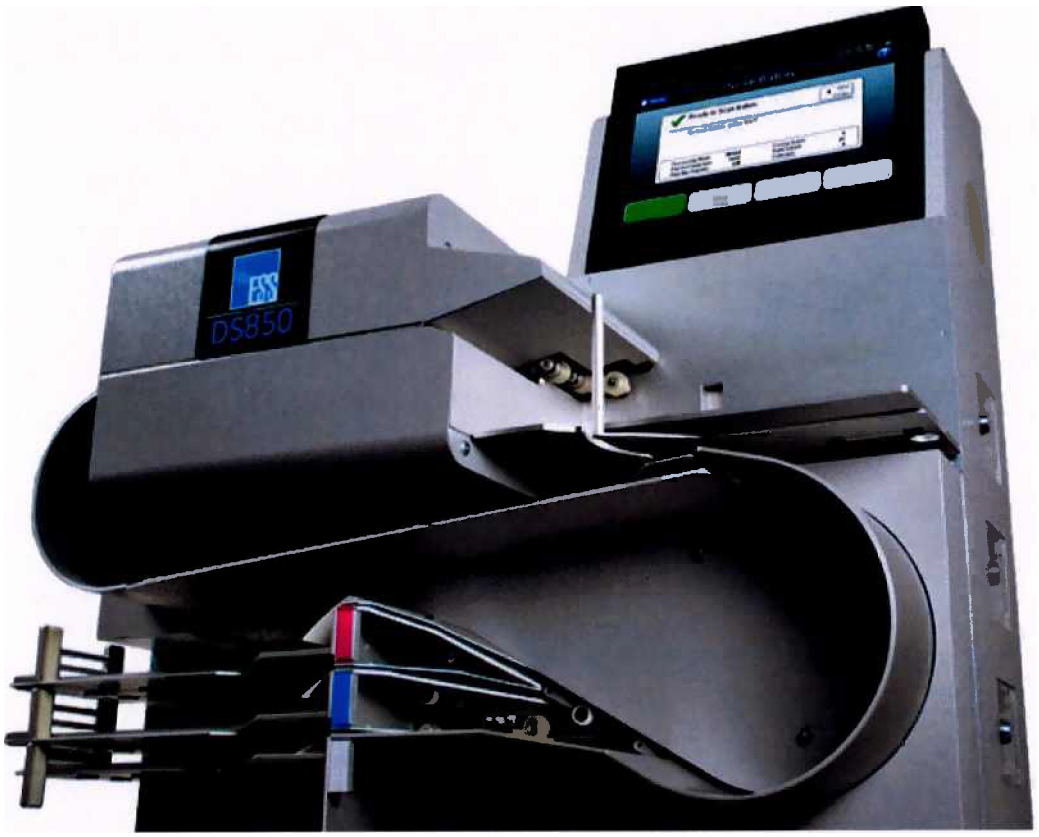
DS200 Scanner Board Version 2.24.2.0

DS200 Power Management Firmware 1.2.8.0



ES&S AutoMark

AutoMark VAT Firmware Version 1.8.3.0



ES&S DS850

DS850 Firmware Version 2.4.0.1

Dominion BMD

ImageCast Scanner Version 4.9.10

ImageCast BMD Version 4.9.6

Dominion Central Count

ICC Version 4.9.14

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

TEST DECK CALCULATOR

APPENDIX 6

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

PRIMARY ELECTION

BALLOT CALCULATOR

HOW TO USE THE PRIMARY ELECTION BALLOT CALCULATOR

The Primary Election Ballot Calculator will assist County Board of Elections (CBOE) in determining the number of test deck ballots required to create a **Comprehensive Test Deck.** The Primary Election Ballot Calculator (MS Excel spreadsheet) is available for download on the SBOE FTP site.

File Name: Primary Election Ballot Calculator Amended Procedure 11_22_1 l.xls

Step #1- Download the Primary Election Ballot Calculator Amended Procedure 11_22_11.xls file from the SBOE FTP site.

SBOE FTP site is located at **ftp://ftp.elections.state.ny.us** (if needed, contact SBOE Election Operations for user name and password- 518.473.5086)

Step #2 - Open the Primary Election Ballot Calculator Amended Procedure 11_22_l 1.xls (MS Excel File). The following spreadsheet will open.

Primary Election Ballot Calculator

Ballot Properties			
	# of Candidates	# of Allowables (Vote for)	# of Contests
Election Verification	0	0	
Pattern Vote	0		

Ballots Required by OS Sub-deck			
OS - EV # Ballots	OS - Pattern # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
#DIV/0!	0	5	#DIV/0!

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	#DIV/0!

Step #3 - Determine the number of ballots required for the OS - EV # Ballots.

	1	2	3				8	9
	Representative *in* Congress. 6/1 =6 (Vote for otlE)			Sheriff (Vote for ONE) 12				
B REPUBLICAN	RepubHcan 1B Randal **Terry** 1	**Republican** 2B Douglas **Drazers** 2	Republican 38 **Wil:lil:lm** Walker 3	, Republican 4B **David Harder** 1	**Repubtica.n** 56 **Richard Watlikas** 2	**Republican** 6B **Thomas Richards** 3	R publican 7B **James Reif** 4	**Repub can** 8B Oavid **Beers** 5	**Republican '** 9B **Derald !:Hiott** 6
WRITE-IN	4 WRITE-Ill	5 WRITE-ti	6 **'WRITE-IN**		8 WRITE-IN	9 WRITE-IN	10 WRITE-II'!	11 WRITE-Ill	
	10	11	12	13					
	8 / 2 = 4 **Councilman** (VOie for TWO)								
B REPUBLICAN	Republican 10B Jo n **Chauncey** 1	Republican HB Michael Alen 2	Republicen 12B **Carol** Splgel 3	Republicen 136 Robert **ae.r\Si** 4					
WRITE-IN	5 WRlrE-111	6 WRIrE-IN	7 WRrrE-IN	8 **WRITf IN**					

Step #4 - Enter the # **of Candidates** and# **of Allowables (Vote for)** into the Election Verification fields for the contest that has the largest total. The Ballots Required By Sub-deck will automatically update for **OS - EV # Ballots.**

Primary Election Ballot Calculator

Ballot Properties

	# of Candidates	# of Allowables (Vote for)	# of Contests
Election Verification	12	1	
Pattern Vote	1		

Ballots Required by OS Sub-deck

OS - EV # Ballots	OS - Pattern # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
12	1	5	18

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	22

Step #5 - Calculate the number of ballots required for OS - Pattern Vote sub-deck. Determine the contest that has the largest number of candidates **(Do Not Include Write-Ins).**

	1	2	J	4	5	v		3	9
	Representative in Congress (Vole for ONE)			**Sherill** (Vole for ONE)					
B REPUBLICAN	**Republican** 1B **RandaD Terry** **1**	**Republican** 26 **Douglas Orazers** **2**	**Republican** 3B Wliiiam **Walter** **3**	Republican 48 **Davxi Harder** **1**	**Republican** SB **Richard** Waffi!cas: **2**	Republican 6B **1homas Richards** **3**	Republican 78 **James Reif** **4**	**Republican** *BB* **David Beers** **5**	**Republican'** 9B **Dera.ld** Elliott **6**
WRITE-IN	WRITE-Ill	WRITE-It!	WRITE-IN		WRITE-IN		WRITE-IN	WRITE-if!	
	10	11	12	13		WRITE-IN			
	Councilman (Vote for TWO)								
B REPUBLICAN	**Repubfican** 10B **JoIln Chauncey** **1**	**RepubUcan** 118 **Michael** Allen **2**	Republican 128 **Carol** Spig;,I **3**	**Repob!ic:an** BB Robert **Bens!** **4**					
WRITE-IN	WRITE-#!	WRITE- !	**WRITE-IN**	WRITE-IN					

Enter the number of candidates into the # **of Candidates** field for the **Pattern Vote.** The Ballots Required By Sub-deck will automatically update for **OS - Pattern # Ballots.**

Primary Election Ballot Calculator

Ballot Properties

	# of Candidates	# of Allowables (Vote for)	# of Contests
Election Verification	12	1	
Pattern Vote	6		

Ballots Required by OS Sub-deck

OS - EV # Ballots	OS - Pattern # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
12	21	5	38

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	42

BALLOT STYLES TALLY WORKSHEET

The Ballot Styles Tally worksheet may be used to track and tally the overall number of ballots required to conduct the comprehensive test decks for the Primary Election Pre-Qualification Testing. The CBOE may modify this spreadsheet to in order to accommodate the number of ballot styles being tested.

Ballots RequIrecf By Sub-deck	OS - EV # Ballots	OS - Pattern # Ballots	OS – Blank # Ballots	BMD - PV # Ballots	BMD- Random # Ballots	Total # Ballots
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
					Total	0

REPORT IN RESPONSE TO THE MISSION AND OPPORTUNITY PROVIDED FOR

IN A GRANT FROM THE U.S. ELECTION ASSISTANCE COMMISSION:

Develop and Document Processes and Best Practices

for Coordinating Quality and Cost-effective

VOTING SYSTEM PRE-ELECTION LOGIC AND ACCURACY TESTING

GENERAL ELECTION

BALLOT CALCULATOR.

How TO USE THE GENERAL ELECTION BALLOT CALCULATOR

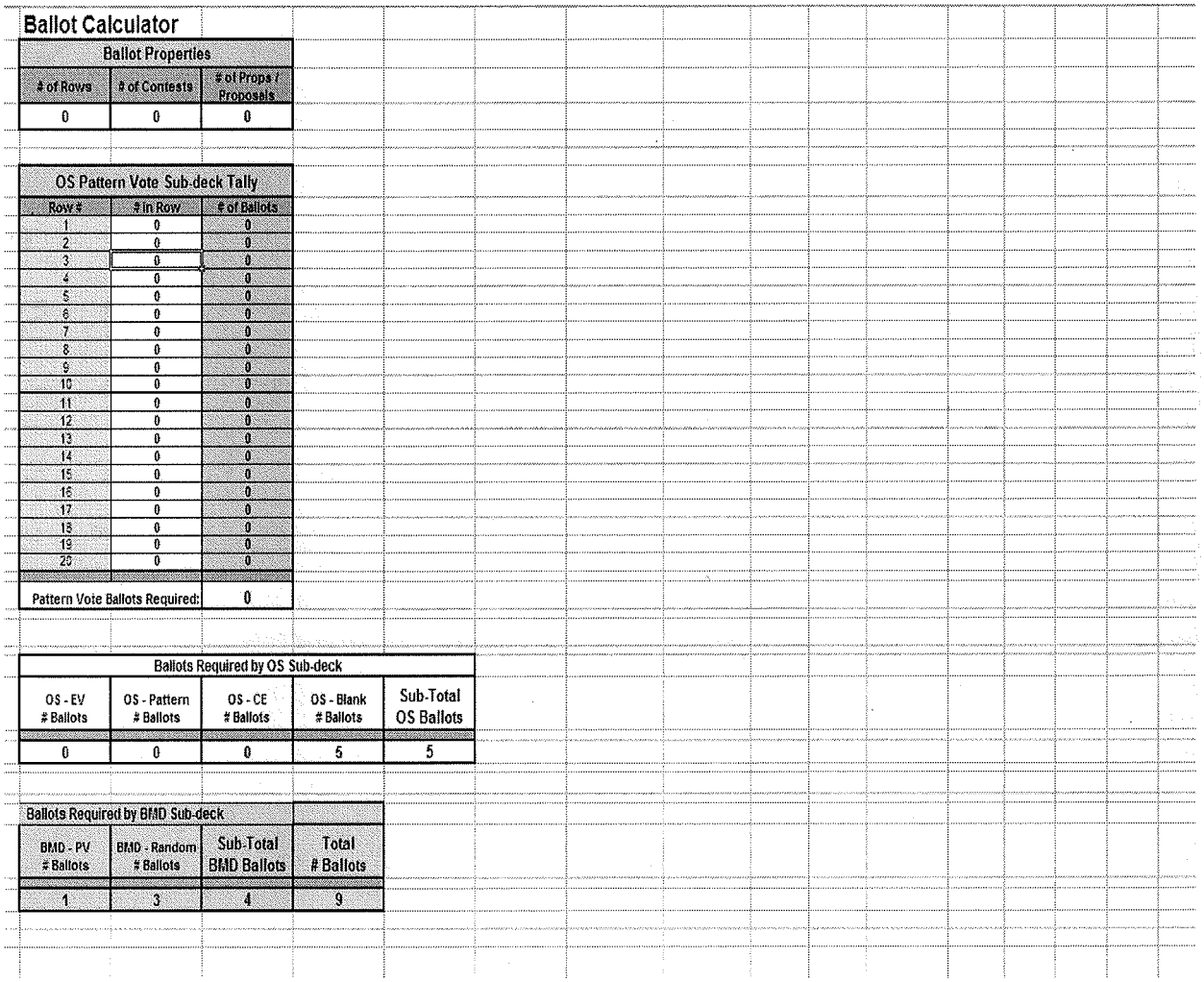
The General Election Ballot Calculator will assist County Board of Elections (CBOE) in determining the number oftest deck ballots required to create a **Comprehensive Test Deck.** The General Election Ballot Calculator (MS Excel spreadsheet) is available for download on the SBOE FTP site.

File Name: General Election Ballot Calculator Amended Procedure 11 22 11.xls

Download the General Election Ballot Calculator Amended Procedure 11 22 11.xls file from the SBOE FTP site.

SBOE FTP site is located at **ftp://ftp.elections.state.ny.us** (if needed, contact SBOE Election Operations for user name and password- 518.473.5086)

Open the General Election Ballot Calculator Amended Procedure 11 22 11.xls (MS Excel File). The following spreadsheet will open.



Ballot Calculator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
0	0	0

OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		0

Ballots Required by OS Sub-deck				
OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
0	0	0	5	5

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	9

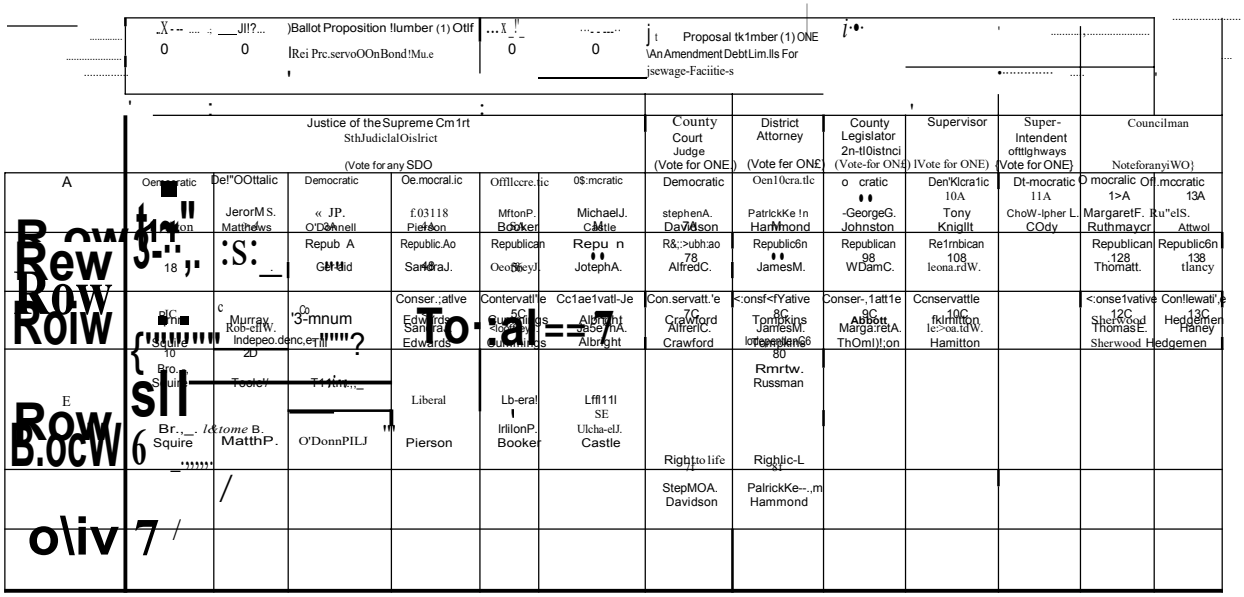
Step #1 - Take a look at your ballot. Determine the following Ballot Properties:

of Rows (displayed on the ballot)

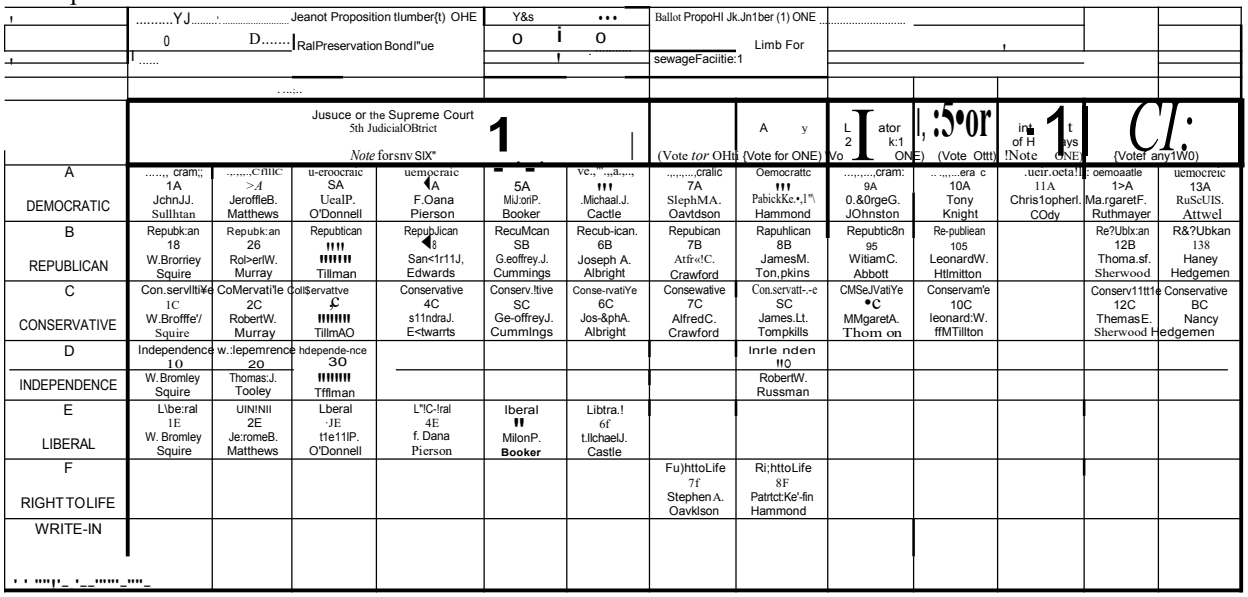
of Contests (displayed on the ballot)

of Props / Proposals (displayed on the ballot)

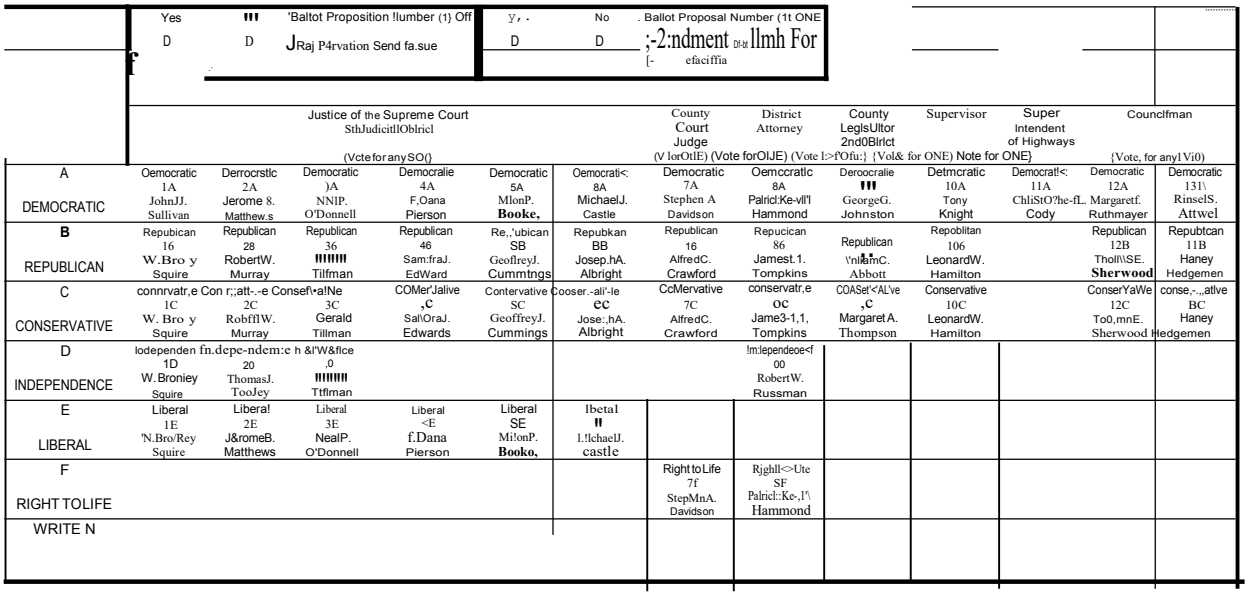
Example:# of Rows= 7



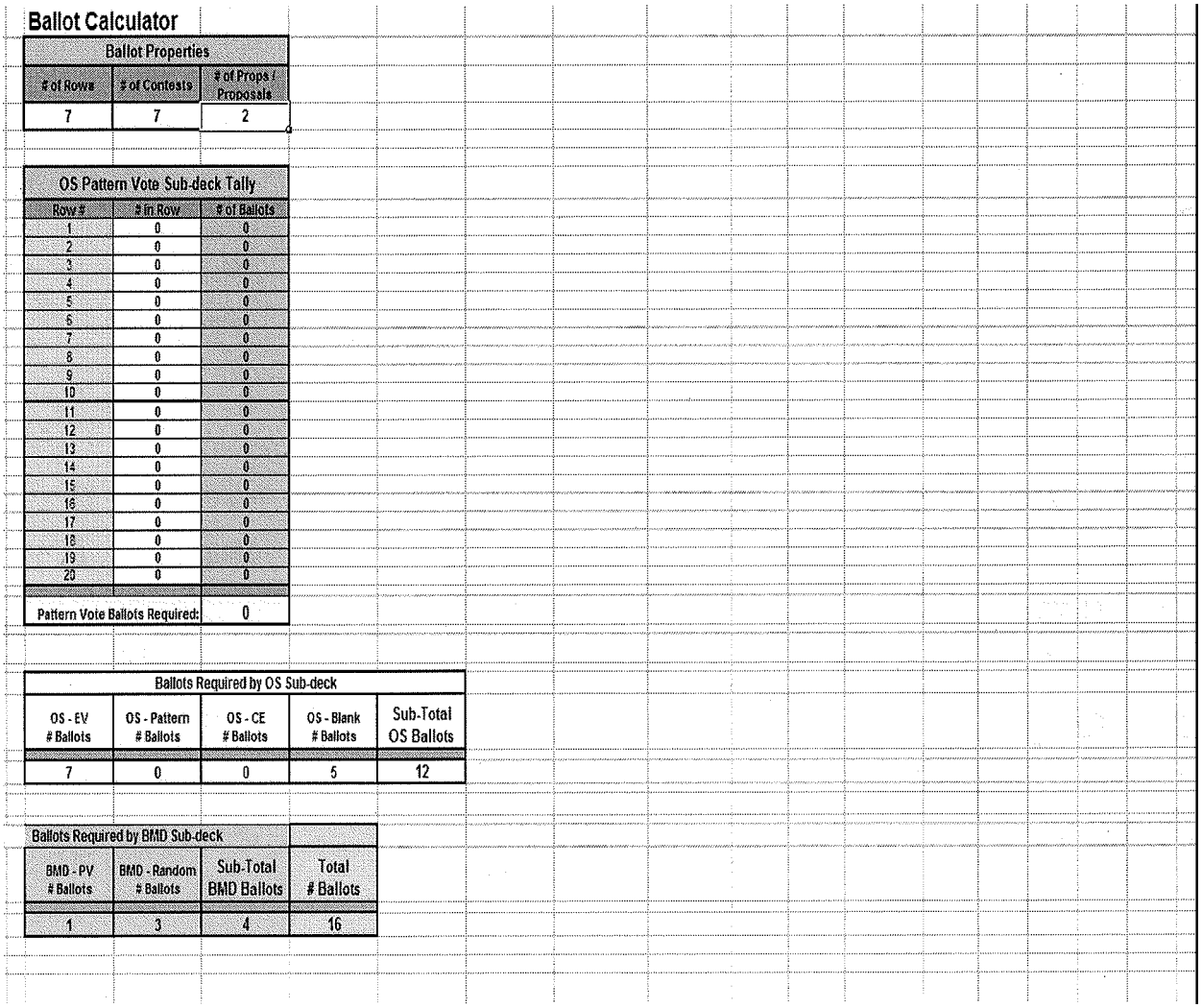
Example: # of Contests = 7



Example: # of Props / Proposals = 2



Step #2 - Enter (fill in) each of the Ballot Properties numbers into corresponding field.



Ballot Calculator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

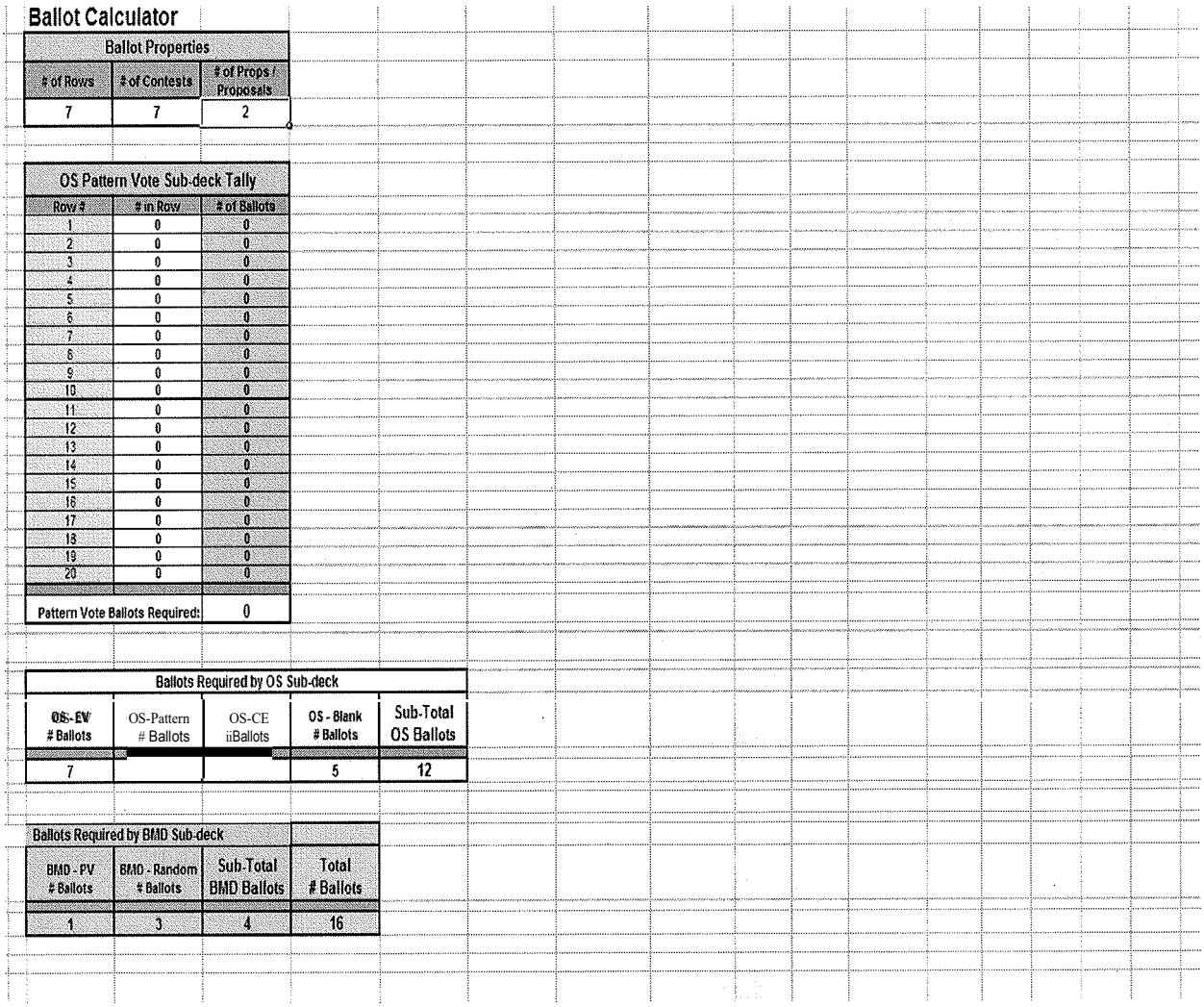
OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		0

Ballots Required by OS Sub-deck				
OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	0	0	5	12

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	16

The number of ballots required is automatically calculated for the following sub-decks:

OS - EV # Ballots



Ballot Calculator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

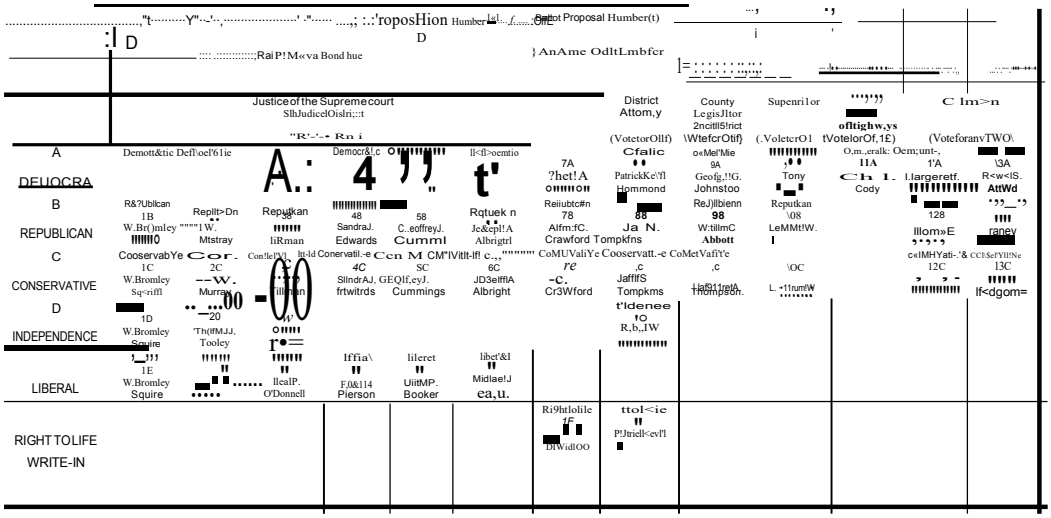
OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		0

Ballots Required by OS Sub-deck				
OS - EV # Ballots	OS-Pattern # Ballots	OS-CE iiBallots	OS - Blank # Ballots	Sub-Total OS Ballots
7			5	12

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	16

Step #3 - Calculate the number of ballots required for OS - Pattern Vote sub-deck. Looking across each row on your ballot, find the contest in that row with the largest number of candidates. Enter that number next to its row in the OS Pattern Vote Sub-deck Tally grid. Go down row by row and do the same for each row until you reach the 'Write-In' row.

Row 1:



Ballot Calculator

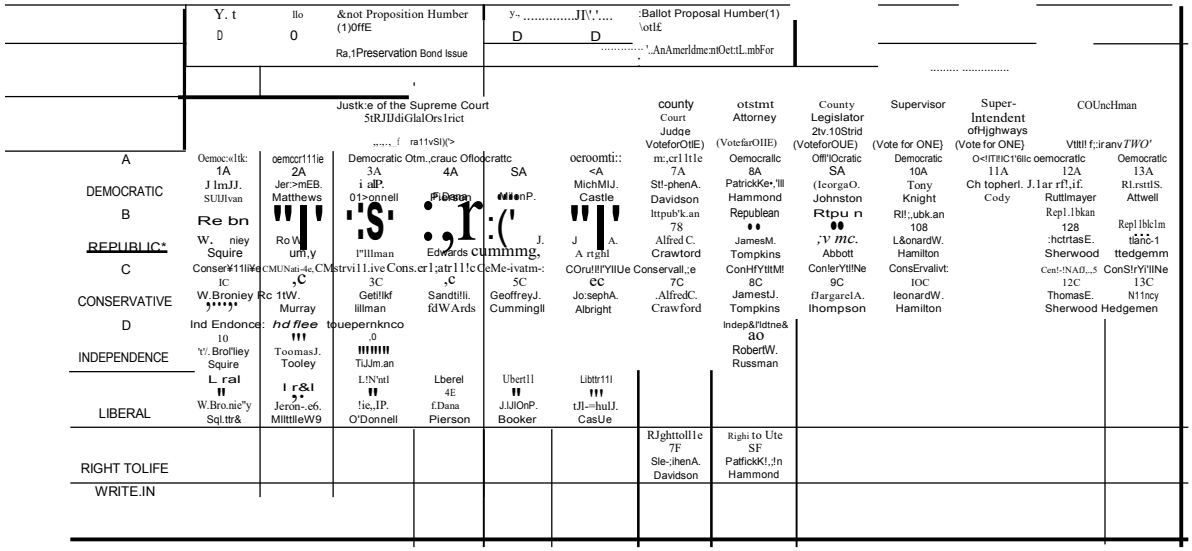
Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	6	6
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		6

Ballots Required by OS Sub-deck				
OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	6	0	5	18

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	22

Row2



Ballot Calculator

Ballot Properties

# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally

Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		18

Ballots Required by OS Sub-deck

OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	18	0	5	30

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	34

Row3

Yes	No	Ballot Proposition Number (1) ONE	Yes	No	Ballot Proposal Number (1) ONE
☐	☐	Rail Preservation Bond Issue	☐	☐	An Amendment Debt Limits For Sewage Facilities

	Justice of the Supreme Court 5th Judicial District						County Court Judge	District Attorney	County Legislator 2nd District	Supervisor	Super-Intendent ofHighWAys	Councilman	
								(Vole forOW.:)		(Vote!orONEi	lVOU: fnOHE}	V;:itef;:,ra TWO}	
A DEMOCRATIC	oemceratt: 1A JotmJJ. suHi'van	Demccratic 2A Jerome 6. Matthews	:3emocratir. '.)A NHIP. 01>onm:,II	S"C<"i "Oemocralic 'A F.Oana Pierson	Derr.ocratie SA M nP. Booker	oemocrat.c Mic.hMIJ. Castle	Oerrocrati¢ 7A Ste.;>henA. llavld,on	o.mocr... 8A PatrickKe>f.n Ht!Immond	OecrgeO. Johnston	Democratic 10A Tonv Knight	Oemocrallc 11A Chrillt::iphe-rl. Cody	m::>cr&tx: 12A Mat9ar f. Ruthmeyer	OeimcnttiC 13A Ruue!S. Ahw"
B REPUBLICAN	Rf1)Ublc&n 1B ·w.Bromley Squire	Repijbl:can 2S RobertW. Murray	Reputik&n ''' Gerald: Tliiman	Re t:kan SandroJ. Edwards	RepuMcan SB G«ffreyJ. Cummings	Re;mbka.'l 68 Jo,ephA Albright	Rt1>1.1bkan 78 AlfredC. crawtord	Republcan •• Jt1m.uM. Tompkins	–'''''' 98 WibmC. Abbott	Rtpublc&n 108 LeonardW. H,mlllon		ubkan 128 ihei'M$£. She<Wood	Repubk.an 138 tlancy Hedgemen
C CONSERVATIVE	CorJ.U!NL!:ltte wJo,,y	ConttHvatr,e R V. 'y	Coo3er<.-iltve Tle	CMS.ENll!iYe ·& Edw	CMHNllti'v& C yJ.- ng,	CoMeyatt,e ,& A 1	Co!UIMV&We 7C AlfrttdC. Crawford	ConnM1,tive SC Jame.st.l. Tompkins	Con:l!Natm •c Marge tA. Thompson	COJ'l:SMYftfivE- IOC LeonllrdW. IhmlJton		CortiaJYIlliY-a 12C 1lIOIDO!!f. Sherwood	ConHr<.'lllive 1JC Nancy Hedgemen
D INDEPENDENCE	Indo;>endonca 10 W.Brc«iley Squire	hd&yernterice 20 Thot'l'.a J. Tooley	!Me rntenu w Gerald lillmtn					rnlei,Iffldenco 80 RowtW. Ruuman					
E LIBERAL	Liberal W.Bro.mley Squire	Liber1'J '' Jerome 6. Matthews	'!.ctl'lll HealP. O'Donnell	Libetd! f.Oana Pierson	Liberal 5 MilonP. Booker	ut,r5! 6' MlchaelJ. Castle							
RIGHTTOLIFE							RightloUfe 7F Slt>;>M'nA. Dllvidson	Rightlatife 8F Patrick Kev Hammond					
WRITE-IN													

Ballot Cal -lator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0

0

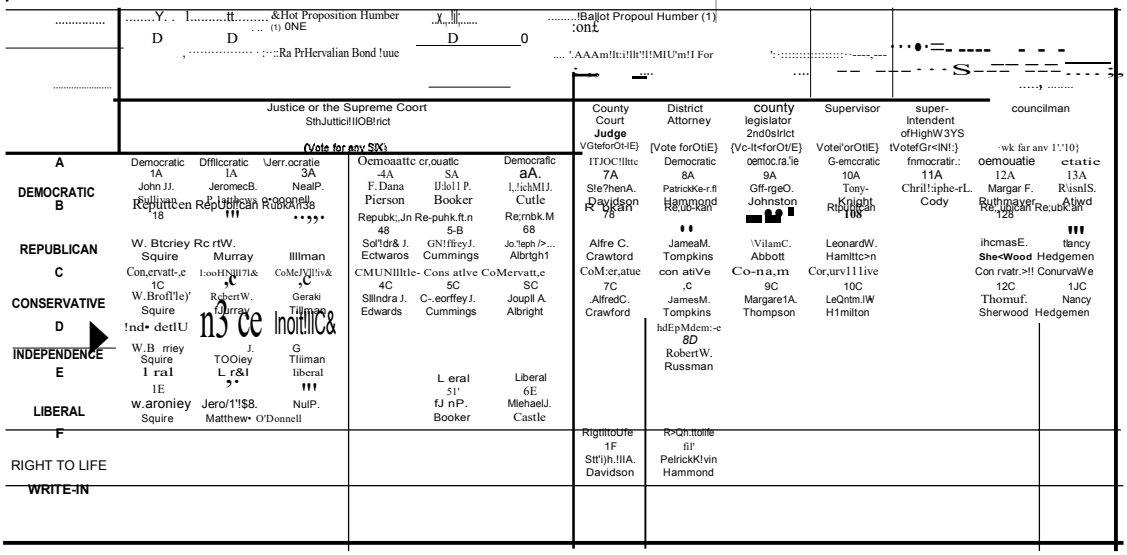
Pattern Vote Ballots Required:

OS-EV # Ballots	OS - Pattern # Ballots	OS-CE # Baflots	OS-. Blank ii Ballots	Sub.Total OS Ballots
1		0		a

B.IIIQ';

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	52

Row4



Ballot Calculator

Ballot Properties

# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally

Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	3	12
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		48

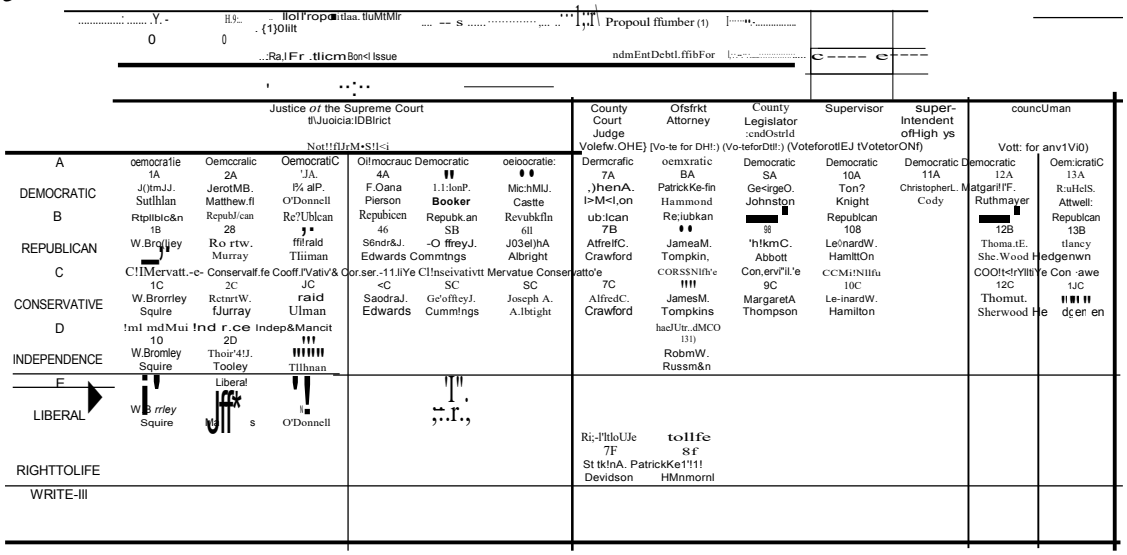
Ballots Required by OS Sub-deck

OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	48	0	5	60

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	64

Row5



Ballot Calculator

Ballot Properties

# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally

Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	3	12
5	6	30
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		78

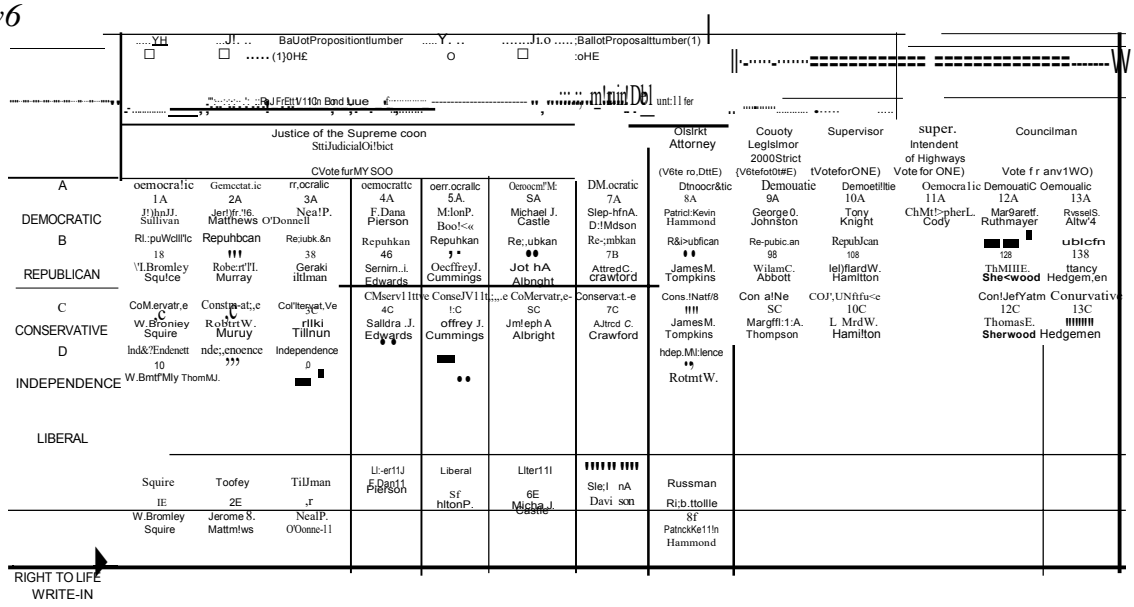
Ballots Required by OS Sub-deck

OS-EV #Ballots	OS-Pattern #Ballots	OS-CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	78	0	5	90

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	94

Row6



Ballot Calculator

Ballot Properties

# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally

Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	3	12
5	6	30
6	1	6
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		84

Ballots Required by OS Sub-deck

OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	84	0	5	96

Ballots Required by BMD Sub-deck

BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	100

The number of ballots required is automatically calculated for the OS - Pattern # Ballots sub-deck.

Ballot Calculator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	3	12
5	6	30
6	1	6
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		84

Ballots R'equired by OS Strb-deck

OS-EV # Ballots	OS- Pattern # Ballots	OS-CE # BaUots	OS-Blank #'Ba:lfots	Sub Total OS Ballots
7	84	0	5	96,

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	100

Step #4 - Determine the number of ballots required for OS - Cross Endorsement Sub-deck. Manually enter the number of ballots required into the OS - CE # Ballots field. The BMD - CE # Ballots will automatically update with the correct number of ballots.

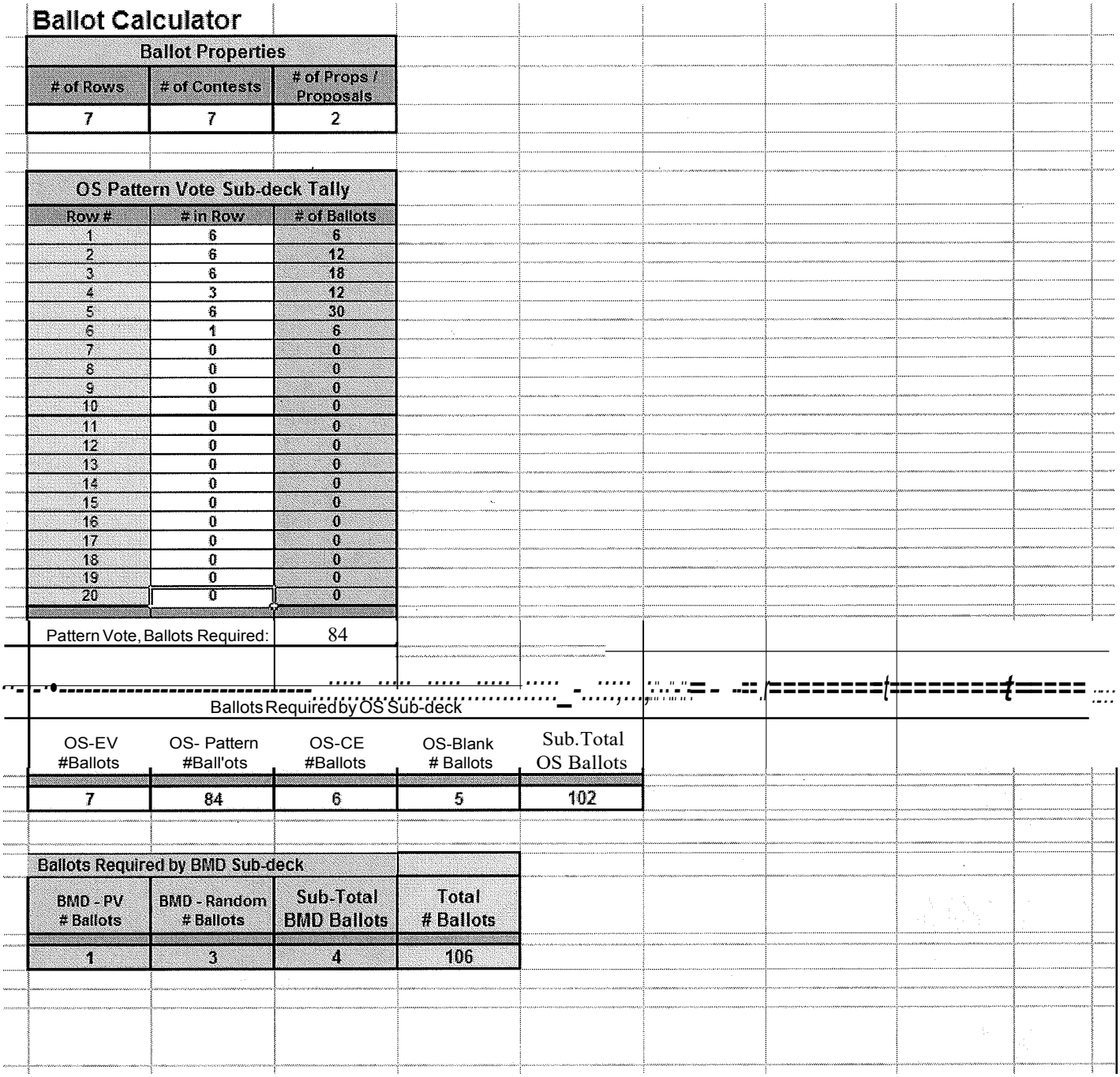
Ballot Calculator

		# of Ballots
		6
		12
		18
4	3	12
5	6	30
6	1	6
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote Ballots Required:		84

Ballots Required by OS Sub-deck				
OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	Sub-Total OS Ballots
7	84	6	5	102

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	106

Step #5 - The **OS Sub-Total OS Ballots, Sub-Total BMD Ballots and Total # Ballots** have automatically been calculated once the above information was entered for **Steps #1 through #4.**



Ballot Calculator

Ballot Properties		
# of Rows	# of Contests	# of Props / Proposals
7	7	2

OS Pattern Vote Sub-deck Tally		
Row #	# in Row	# of Ballots
1	6	6
2	6	12
3	6	18
4	3	12
5	6	30
6	1	6
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
Pattern Vote, Ballots Required:		84

Ballots Required by OS Sub-deck

OS-EV #Ballots	OS- Pattern #Ball'ots	OS-CE #Ballots	OS-Blank # Ballots	Sub.Total OS Ballots
7	84	6	5	102

Ballots Required by BMD Sub-deck			
BMD - PV # Ballots	BMD - Random # Ballots	Sub-Total BMD Ballots	Total # Ballots
1	3	4	106

This example will require 106 ballots for the comprehensive test deck.

BALLOT STYLES TALLY WORKSHEET

The Ballot Styles Tally worksheet may be used to track and tally the overall number of ballots required to conduct the comprehensive test decks for the General Election Pre-Qualification Testing. The CBOE may modify this spreadsheet to in order to accommodate the number of ballot styles being tested.

Ballots Required By Sub-deck	OS - EV # Ballots	OS - Pattern # Ballots	OS - CE # Ballots	OS - Blank # Ballots	BMD - PV # Ballots	BMD - Random # Ballots	Total # Ballots
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
						Total	0