ROBIS ELECTIONS, INC., ASKED EPOLLBOOK WITH ON-DEMAND BALLOT PRINTING
VERSION 3.4

Bak USA Atlas, Model 2018
Microsoft Windows Operating System, Version 10
AskED Electronic Poll Book Software, Version 3.4
AskED Command Center, Version 5.0.50.38
Zebra Barcode Scanner, Model DS6707-SR20007ZZR
Symbol Barcode Scanner, Model LI2208-SR00007ZZWW
Topaz Signature Pad, Model T-LBK750-BHSB-R
Topaz Signature Pad, Model T-L460-HSB-R
OKI Data Printer, Model C711
OKI Data Printer, Model C532
Bixolon Thermal Printer, Model SPP-R200llliK/USA
Verizon Global Modem, Model USB730L
PepWave Wireless Router, Model Surf Soho

Staff Report

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Voting Systems Technology Assessment

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I.   <u>INTRODUCTION</u>

1. Scope

This report presents the test results for all phases of the certification test of the Robis Elections, Inc., AskED ePollbook with On-Demand Ballot Printing, Version 3.4. The purpose of the testing is to assess the compliance of the electronic poll book with California laws. Testing also uncovers other findings, which do not constitute non-compliance, and those findings are reported to the electronic poll book vendor to address the issues procedurally. The procedures for mitigating any additional findings are made to the documentation, specifically the Robis AskED ePollbook with On-Demand Ballot Printing: Use Procedures Guide, Version 1.20181017.1-CA.

2. Summary of the Application

Robis submitted an application for the AskED ePollbook with On-Demand Ballot Printing, Version 3.4, on February 26, 2018. The system is comprised of the following major components:

- Bak USA Atlas, Model 2018
- Microsoft Windows Operating System, Version 10
- AskED Electronic Poll Book Software, Version 3.4
- AskED Command Center, Version 5.0.50.38
- Zebra Barcode Scanner, Model DS6707-SR20007ZZR
- Symbol Barcode Scanner, Model LI2208-SR00007ZZWW
- Topaz Signature Pad, Model T-LBK750-BHSB-R
- Topaz Signature Pad, Model T-L460-HSB-R
- OKI Data Printer, Model C711
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- Verizon Global Modem, Model USB730L
- PepWave Wireless Router, Model Surf Soho

In addition to these major components, which includes the executable code and the source code, Robis was required to submit the following: 1) the technical documentation package (TDP); 2) all the hardware components to field two complete working versions of the system, including all peripheral devices, one for the Functional Test Phase and one for the Security and Telecommunications Penetration Test Phase; 3) all the peripherals that would be in the polling place; and 4) the Robis AskED ePollbook with On-Demand Ballot Printing: Use Procedures Guide, Version 1.20181017.1-CA.

3. **Contracting and Consulting**

   Upon receipt of a complete application, the Secretary of State released a Request for Quote (RFQ) for assistance with the software, security and telecommunications and accessibility testing. The statement of work (SOW) also had an option for the Secretary of State to use the awarded contractor for additional software, security and telecommunications and accessibility testing, if it deemed necessary.

   Through the formal California contracting process, the Secretary of State awarded a contract to SLI Compliance.

II.   <u>SUMMARY OF THE SYSTEM</u>

The system consists of thirteen (13) components:

1. **Bak USA Atlas, Model 2018**
   The Atlas is a 2-in-1 laptop, equipped with Microsoft Windows 10 Operating System, Quad-Core Intel Celeron N4100 Processor, 128GB SSD and 4GB RAM.

2. **Microsoft Windows Operating System, Version 10**

3. **AskED Electronic Poll Book Software, Version 3.4**
   The AskED ePollbook is software that facilitates the check-in of voters during an election, guides poll workers through the process of verifying a voter's eligibility and determining their correct ballot style, and also has the ability to print the voter's correct ballot from a County-provided PDF upon check-in.

4. **AskED Command Center, Version 5.0.50.38**
   The AskED Command Center is a web-based consolidation and reporting tool that provides the elections office with administrative tools to manage the election and ePollbook.

5. **Zebra Barcode Scanner, Model DS6707-SR20007ZZR**
   The handheld DS6707 combines is a 1D/2D barcode scanner.

6. **Symbol Barcode Scanner, Model LI2208-SR00007ZZWW**
   The LI2208 is a 1-D scanner.

7. **Topaz Signature Pad, Model T-LBK750-BHSB-R**
   The Topaz T-LBK750 is an electronic signature pad.

8. **Topaz Signature Pad, Model T-L460-HSB-R**
   The T-L460 is an electronic signature pad.

9. **OKI Data Printer, Model C711**
   The OKI C711 printer is used as a component of the On-Demand Ballot Printing option.

10. OKI Data Printer, Model C532

The OKI C532 printer is used as a component of the On-Demand Ballot Printing option.

11. Bixolon Thermal Printer, Model SPP-R200llliK/USA

The SPP-R200llliK/USA is a thermal printer.

12. Verizon Global Modem, Model USB730L

The Verizon USB730L enables connection to Verizon's LTE Advanced network.

13. PepWave Wireless Router, Model Surf Soho

The router enables network connectivity to the modem at a polling place, early vote site of voting center.

III.   TESTING INFORMATION AND RESULTS

1. Background

Robis submitted an application to the Secretary of State for certification of the AskED ePollbook with On-Demand Ballot Printing Version 3.4 on February 26, 2018.

State examination and functional testing of this system was conducted by Secretary of State Staff in conjunction with the State's technical consultant SLI Compliance. The configuration of the equipment was conducted at the Secretary of State's office in Sacramento, California on July 17, 2018. Functional testing was performed by Secretary of State Staff from July 17 to August 24, 2018 (Phase I), and October 1 to October 3, 2018 (Phase II). Volume testing was conducted by Secretary of State Staff from October 4 to October 5, 2018. Source Code Review, Security and Telecommunications Testing and Accessibility Testing were performed by SLI Compliance from August 2 to September 7, 2018.

2. Functional Testing Summary

Functional examination and review was conducted as if the California Secretary of State were a jurisdiction that just purchased Robis AskED ePollbook with On-Demand Ballot Printing Version 3.4 system. Robis' AskED ePollbook with On-Demand Ballot Printing: Use Procedures Guide, Version 1.20181017.1-CA documentation was executed to install all hardware and software per the vendor's instruction. All electronic poll book functions to be utilized by a jurisdiction were exercised.

Functional Testing Phase I

Phase I of Functional Testing began on July 17, 2018, and proceeded through July 21, 2018. However, Robis made code changes to their system between the dates of July 16, 2018, and proceeded through August 1, 2018. Phase I of Functional Tested resumed August 20, 2018, and proceeded through August 24, 2018. Robis provided two electronic poll books (Bak USA Atlas 2018 laptops with Microsoft Windows 10 operating system and the AskED Electronic Poll Book Version 3.4 software), one laptop providing access to the Robis Command Center 5.0.50.38 software, two barcode scanners (Zebra DS6707 and Symbol LI2208), two signature pads (Topaz T-LBK750 and T-L460), two printers

(Oki Data C711 and C532), one Bixolon SPP-R200llliK thermal printer, one Verizon USB730L global modem and one PepWave Surf Soho wireless router.

For approximately eight days, Secretary of State Staff exercised the functionality of the electronic poll book according to the vendor provided technical documentation. The exercises included verification of expected functions of the system as outlined in the vendor provided technical documentation, execution of test cases and verification of the electronic poll books compliance with State statutes and regulations. Two Robis representative were present for day 1 of Functional Testing.

Issues & Observations:

During Phase I, approximately thirty-nine (39) issues were identified. All thirty-nine (39) issues required mitigation.

a. **Documentation**
Thirty-five (35) issues were related to minor documentation discrepancies and were provided to Robis for modification. The documentation was subsequently modified and the changes verified by Secretary of State Staff.

b. **Hardware**
There were no issues related to the hardware.

c. **Software**
Three (3) issues were related to the software and were provided to Robis for response and/or mitigation. The responses and/or mitigations were implemented and verified by Secretary of State Staff.

The AskED software allowed poll workers the opportunity to update the poll books assigned precinct when on the Main Menu screen. The precinct assignment of an electronic poll book is designated by the Elections Office via the AskED software during setup and prior to deployment of an electronic poll book and should not be open to changes by a poll worker. A configuration setting in the AskED software was set to lock changes to the precinct selection on the electronic poll book.

The AskED software had the capability to store a voter's Social Security Number or portion thereof. This data is provided to the AskED software during the import of the voter file from the jurisdictions election management system. Per California Code of Regulations section 20150(2)(b), electronic poll books shall not contain a voters Social Security Number or portion thereof. This was mitigated by disabling the Social Security Number functionality on the AskED software and excluding the Social Security Number during the voter file import from the jurisdiction's election management system.

On one occasion, an Internal Server Error was encountered when attempting to connect to the AskED Command Center. The encountered error was

attributed to the site being off line as Robis was performing server maintenance. Upon conclusion of the maintenance, the server was back online and testing resumed. Outages for server maintenance will be coordinated with jurisdictions to avoid interruptions.

Functional Testing Phase II

Phase II of Functional Testing began on October 1, 2018, and proceeded through October 3, 2018. Robis provided mitigations to the issues and observations identified within Phase I of Functional Testing. For approximately three days, Secretary of State Staff exercised and confirmed the functionality of the mitigations to the issues and observations identified within Phase I of Functional Testing.

Issues & Observations:

During Phase II, mitigations to issues identified in Phase I were exercised and confirmed. Eighteen (18) additional issues were identified during Phase II. All Eighteen (18) issues required mitigation.

a. **Documentation**
   Sixteen (16) issues were related to minor documentation discrepancies, which were given to KNOWiNK for modification. The documentation was subsequently modified and the changes verified by Secretary of State Staff.

b. **Hardware**
   There were no issues related to the hardware.

c. **Software**
   Two (2) issues were related to the software and were provided to Robis for response and/or mitigation. The responses and/or mitigations were implemented and verified by Secretary of State Staff.

   The AskED system, as configured for testing, allowed a poll worker to check in a voter without requiring a signature. Per Elections Code section 14216(a), any person desiring to vote shall state or provide his or her name and address and, upon the precinct officers finding the name in the roster, the voter shall then sign his or her name in the space provided or, if the voter is unable to sign, shall have his or her name signed by another person on the roster provided for that purpose, whereupon a challenge may be interposed. The "Require Check in Signature" configuration setting in the AskED software was enabled.

   When processing a voter via a voter ID barcode, a rapid double tap of the barcode scanner caused the software to bypass the signature screen and moved directly to the check in screen. This will be mitigated during the next system version via administrative approval.

3. Software Review Testing Summary

SLI Compliance performed a review of the AskED source code. During the testing, SLI conducted a Security and Integrity review of the Objective C source code, a Vulnerability review of the VB.Net source code, a Security and Integrity review of the T-SQL source code, and a Security and Integrity review of the Pascal source code. The discrepancies and vendor mitigations/responses are listed in the following table:

Table 3A: Security and Integrity Review of Objective C Source Code	
Discrepancy	**Vendor Mitigation/Response**
A self-destruct mechanism responsible for erasing voter data from the poll book database is accessible to vendor insiders and election officials.	The feature is set prior to deployment and cannot be modified mid-election. Robis will disable the self-destruct feature on all devices. Jurisdictions will have the ability to activate and set the feature if desired.

Table 3B: Vulnerability Review of VB.Net Source Code	
Discrepancy	**Vendor Mitigation/Response**
A T4 file is used to generate a text file on demand and allows creation of a text file based on abstract string input that could be used to embed malicious code.	T4 files are used during system design. The T4 file submissions to SLI for source code review were an oversight. The T4 files will not be part of the compiled final deployed product.

Table 3C: Security and Integrity Review of T-SQL Source Code	
Discrepancy	**Vendor Mitigation/Response**
No findings or vulnerabilities were located.	N/A

Table 3D: Security and Integrity Review of Pascal Source Code	
Discrepancy	**Vendor Mitigation/Response**
No findings or vulnerabilities were located.	N/A

4. Security and Telecommunications Testing

SLI Compliance performed Security and Telecommunications testing of the AskED system. During the testing, SLI conducted a physical security review, logical security review, physical telecommunications review and a logical telecommunications review. The discrepancies and vendor mitigations/responses are listed in the following table:

Table 4A: Physical Security Review	
Discrepancy	**Vendor Mitigation/Response**
No findings or vulnerabilities were located.	N/A

Table 4B: Logical Security Review	
Note: The following pertain to Robis' Command Center and were considered of minimal impact to the security of the AskED solution.	
Discrepancy	**Vendor Mitigation/Response**
System incorporates self-signed certificates not specific to a user or computer, allowing unauthorized exports and imports.	Individual private certificates can be created. In addition, exported certificates would require exported private keys and the passphrases.

The Pepwave Soho WiFI Device is setup to incorporate MAC address filtering.	MAC address filtering is utilized in conjunction with 63-character maximum-length WPA2 pre shared key (PSK). The PSK would have to be disclosed and loaded on the machine spoofing the MAC address.
The Pepwave Management interface is accessible from the public internet.	The Pepwave units will be configured to not allow external access.
There is 63-Character pre-shared keys (PSK) usage that may prove cumbersome to jurisdictions.	Complex, randomly generated passwords are cumbersome, but secure. Robis does not recommend a change to this.
Compromise of any machine may compromise the entire system at a specific location by allowing access to: WPA2 PSK, part of Command Centers two factor authentication certificate, connectivity from a trusted IP address to help bypass IP filtering, and the BitLocker recovery Key.	Robis will configure and implement firewall-level IP filtering, if desired by the jurisdiction.
IP filtering used for authentication on a server allows incoming connections from unauthorized hosts, and serves a 403 forbidden opposed to dropping the traffic.	Individual private certificates can be created by the jurisdiction. In addition, an exported certificate would also require an exported private key and the passphrase.

Table 4C: Physical Telecommunications Review	
Discrepancy	**Vendor Mitigation/Response**
All RJ-45 network ports on the COTS OKI printers were enabled.	TCP/IP will be disabled on the printers.
The Pepwave Soho router has the ability to be reset utilizing a small pinhole reset button.	Resetting the router would render it inoperable. A new router would be deployed to the location. Instruction will be added to the use procedures to clarify actions to take in an event as such.
Ports on the Bak Atlas devices are enabled/accessible.	The ports have to be enabled in order for the solution to function. The USB ports are only used by the solution. They do not auto run and cannot be accessed by a user with a thumb drive.
Data ports on the OKI C711 are accessible and enabled.	TCP/IP will be disabled on the printer.

Table 4D: Logical Telecommunications Review	
Discrepancy	**Vendor Mitigation/Response**
The OKI printers have active network interface cards that are enabled and waiting for assignment of a dynamic IP address.	TCP/IP will be disabled on the printers.
The OKI printers are configured with default credentials providing complete access to the printer functionality.	Instruction will be added to the use procedures explaining how and why printer passwords should be set.

The PepWave Surf SOHO router's administrative interface is publicly accessible.	The Pepwave units will be configured to not allow external access.
Certificates for two factor authentication are not specific to devices, allowing unauthorized exports and imports.	Individual private certificates can be created. In addition, exported certificates would require exported private keys and the passphrases.

5. Volume Testing Summary

Volume Testing began on October 4, 2018, and proceeded through October 5, 2018. For approximately two days, Secretary of State Staff processed 250 mock voters on all three (3) of the proposed configurations of the AskED system. No unexpected results or issues were encountered during the Volume test.

6. Accessibility

SLI evaluated the AskED system against the applicable portions of the Web Content Accessibility Guidelines (WCAG) 2.0 and Section 508 of the Rehabilitation Act of 1973 for compliance. The discrepancies and vendor mitigations/responses are listed in the following table:

Table 6A: WCAG 2.0 Review	
NOTE: The WCAG 2.0 examination included 93 requirements.	
Discrepancy	**Vendor Mitigation/Response**
1.4.3 Contrast (Level AA) - Text and images of text have a contrast ratio of at least 4.5:1.	Robis will make all text black in the next version of the system via administrative approval.
1.4.3 Contrast (Level AA) - Large text (over 18 point or 14 point bold) has a contrast ratio of at least 3:1.	Robis will make all text black in the next version of the system via administrative approval.
1.4.6 Contrast (Level AAA) - Text and images of text have a contrast ratio of at least 7:1.	Robis will make all text black in the next version of the system via administrative approval.
1.4.6 Contrast (Level AAA) - Large text (over 18 point or 14 point bold) has a contrast ratio of at least 4.5:1.	Robis will make all text black in the next version of the system via administrative approval.
2.1.1 Keyboard (Level A) - All page functionality is available using the keyboard, unless the functionality cannot be accomplished in any known way using a keyboard (e.g., free hand drawing).	Robis will ensure all applicable page functionality is available using the keyboard in the next version of the system via administrative approval.
2.1.3 Keyboard (Level AAA) - All page functionality is available using the keyboard.	Robis will ensure all page functionality is available using the keyboard in the next version of the system via administrative approval.

Table 6B: Section 508 Review	
Note: The Section 508 examination included 50 requirements.	
Discrepancy	**Vendor Mitigation/Response**
§ 1194.21 Software applications and operating systems - (c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.	Robis is in the process of enabling the Windows Narrator. This will be completed in the next version of the system via administrative approval.
§ 1194.31 Functional performance criteria - (a) At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.	Robis is in the process of enabling the Windows Narrator. This will be completed in the next version of the system via administrative approval.
§ 1194.31 Functional performance criteria - (b) At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.	Windows Zoom is already supported as visual assistance. Robis is in the process of enabling the Windows Narrator. This will be completed in the next version of the system via administrative approval.

IV. <u>COMPLIANCE WITH STATE LAWS AND REGULATIONS</u>

Two (2) sections of the California Code of Regulations, sections 20150 and 20158, describe in detail the requirements any electronic poll book system must meet in order to be approved for use in California elections. These sections are described in detail and analyzed for compliance below.

1) §20150(a)(1): An electronic poll book shall contain, at a minimum, all of the following voter registration data: Name, Address, District/Precinct, Party preference, Voter status, Whether or not the voter has been issued a vote by mail ballot, Whether or not the vote by mail ballot has been recorded as accepted by the elections official, and Whether or not the voter's identification must be verified.
   The system meets this requirement.

2) §20150(a)(2): An electronic poll book shall not contain the following voter registration data: California driver's license number, and Social Security Number or portion thereof.
   The system meets this requirement.

3) §20158(a): The electronic poll book shall not be connected to a voting system at any time.
   The system meets this requirement.

4) §20158(b): The electronic poll book shall demonstrate that it accurately processes all activity as prescribed in the vendor's application packet.
   The system meets this requirement.

5) §20158(c): The electronic poll book shall be capable of operating for a period of at least two hours on backup power, such that no data is lost or corrupted nor normal operations interrupted. When backup power is exhausted, the electronic poll book shall retain the contents of all memories intact.
   The system meets this requirement.

6) §20158(d): The electronic poll book shall be compatible with: all voter registration election management systems used in the State of California, including any software system (middle ware) used to prepare the list of voters for the equipment, and any hardware attached to the electronic poll book (e.g. bar code scanners, signature capture devices, transport media, printers, etc.).
   The system meets this requirement.

7) §20158(e): An electronic poll book shall contain all of the following voter registration data: Name, Address, District/Precinct, Party preference, Voter status, Whether or not the voter has been issued a vote by mail ballot, Whether or not the vote by mail ballot has been recorded as accepted by the elections official, and Whether or not the voter's identification must be verified.
   The system meets this requirement.

8) §20158(f): The electronic poll book shall encrypt all voter registration data at rest and in transit, utilizing a minimum of Advanced Encryption Standard (AES) 256-bit data encryption, based on recognized industry standards.
   The system meets this requirement.

9) §20158(g): The electronic poll book shall provide reliable transmission of voter registration and election information.
   The system meets this requirement.

10) §20158(h): The electronic poll book shall have the capability to store a local version of the electronic list of registered voters to serve as a backup.
    The system meets this requirement.

11) §20158(i): The electronic poll book shall produce a list of audit records that reflect all actions of the system, including in-process audit records that display all transactions. Such audit records shall be able to be exported in non-proprietary, human readable format.
    The system meets this requirement.

12) §20158(j): The electronic poll book shall enable a poll worker to easily verify that the electronic poll book: has been set up correctly, is working correctly so as to verify the eligibility of the voter, is correctly recording that a voter has voted, and has been shut down correctly.
The system meets this requirement.

13) §20158(k): After the voter has been provided with a ballot, the electronic poll book shall permit a poll worker to enter information indicating that the voter has voted at the election. The electronic poll book shall have the capability to transmit this information to every other electronic poll book in the county utilizing the same list of registered voters.
The system meets this requirement.

14) §20158(l): The electronic poll book shall permit voter activity to be accurately uploaded into the county's voter registration election management system.
The system meets this requirement.

15) §20158(m): During an interruption in network connectivity of an electronic poll book, all voter activity shall be captured and the electronic poll book shall have the capacity to transmit that voter activity upon connectivity being restored.
The system meets this requirement.

16) §20158(n): If the electronic poll book uses an electronic signature capture device, the device shall: produce a clear image of the electronic signature capable of verification, and retain and identify the signature of the voter
The system meets this requirement.

17) §20158(o): The electronic poll book shall have the capacity to transmit all information generated by the voter or poll worker as part of the process of receiving a ballot, including the time and date stamp indicating when the voter voted, and the electronic signature of the voter, where applicable, to the county's voter registration election management system.
The system meets this requirement.

18) §20158 (p): The Secretary of State recommends electronic poll books not be enabled or installed with any technologies delineated in the Institute of Electrical and Electronics Engineers' (IEEE) 802.11 wireless local area network (LAN) standards. However, should an electronic poll book be enabled or installed with a wireless technology, the following shall be utilized: a minimum of 256-bit data encryption, a minimum of Wireless Protected Access (WPA) 2 security enabled, compliance with Payment Card Industry Data Security Standards (PCI DSS) Version 3.2, a dedicated wireless access point (WAP) or connection utilized only by county employees or elections officials and void of public or guest access, and devices equipped with one or more of the following: biometric authentication, multi-factor authentication, compliance with current PCI DSS Version 3.2 password requirements, or remote wipe technology set to automatically clear a device upon 8 eight failed login attempts.
The system meets this requirement.

19) §20158 (q): Jurisdictions utilizing a wide area network (WAN) to transmit voter registration data from an electronic poll book to a centralized location shall utilize one of the following: a dedicated leased line, a hardware virtual private network (VPN), or a dedicated cellular connection void of public or guest access.
The system meets this requirement.

20) §20158 (r): The electronic poll book shall be reviewed for accessibility.
The system meets this requirement.

V. <u>CONCLUSION</u>

The Robis AskED ePollbook with On-Demand Ballot Printing Version 3.4, in the configuration tested and documented by the California Secretary of State, is compliant with all California laws.

SECRETARY OF STATE'S STAFF REPORT
Robis AskED ePollbook with On-Demand Ballot Printing, Version 3.4
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