Washington
Secretary of State
SAM REED

ELECTIONS DIVISION
520 Union Avenue SE - PO Box 40229
Olympia, WA 98504-0229
Tel: 360.902.4180
Fax: 360.664.4619
www.secstate.wa.gov/elections

APPROVAL OF MODIFICATIONS TO A CENTRAL COUNT DIGITAL SCAN SYSTEM AND DIRECT RECORDING ELECTRONIC VOTE TALLYING SYSTEM

In September 2008, Pierce County requested the approval of an upgrade to an isolated component of the WinEDS software currently installed on a provisional basis at Pierce County. This upgrade initializes a variable used by the component that reads Edge accessible voting unit memory cards into the reporting software.

At the request of our office, iBeta, a Voting System Test Laboratory (VSTL) certified by the Election Assistance Commission (EAC) reviewed the source code to ensure only this one line of code was added to this isolated component, and witnessed a new build of the WinEDS application for our testing.

After reviewing the iBeta report and testing the change at our office, the upgrade to the OCX component of the WinEDS software meets the requirements of WAC 434-335-200 for an emergency approval. The Office of the Secretary of State hereby approves it for use by Pierce County during the WinEDS v4 provisional certification time period and when used in compliance with the procedures contained in the provisional certification and Washington State law. This version of the system consists of:

- *Hardware* comprised of:
  - Optech 400-C 3.00P
  - AVC Edge II 5.1.23 with VVPAT 1.02 and Edge Audio Unit 8.7.5, Accessible Voting Unit (DRE)
  - AVC Edge Card Activator device 5.1.22
  - Memory Pack Reader (MPR) 3.01 080422.0552

- *Software* comprised of:
  - WinEDS; software version 4.0.108 with AvcEdge OCX v1.2.57.0
  - WinEDS Extended Services; software version 1.0.41
  - WinEDS Reporting; software version 4.0.41
  - WinETP; software version 1.16.6

Certified on this September 18, 2008

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NOTE: Accessible version of certificate.

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EXECUTIVE SUMMARY

The Pierce County Auditor applied for an emergency approval of an upgrade to the provisionally certified software in place in Pierce County for the 2008 General Election in accordance with WAC 434-335-200. Failure to obtain the updated software would materially affect the efficiency and accuracy of the upcoming election in November, 2008.

In mid September, Sequoia staff informed Pierce County and our office that they had discovered what seemed to be an intermittent error with its ranked choice voting (RCV) module.

Sequoia subsequently found that when copying the RCV data (originally from the Sequoia touch screen) into the files used to tabulate the RCV votes, in a very rare circumstance, some of the data was truncated. In other words, if there were records for 100 ballots in the original file, some of the records might not be completely loaded into the RCV tables, causing less than 100 ballots to be reported in the RCV reports.

The rare circumstance was when an unexpected and unusual character (technically speaking, it's the character that represents a carriage return) happened to be part of the name of a write-in candidate in the original data. Sequoia determined that this occurrence can be prevented with a very simple 4 character change to a single line of code.

Even though the chance this occurrence would actually happen in Pierce County's General Election was thought to be remote, the decision was made that the system must be updated.

After Sequoia demonstrated the error and the update to this office, our office decided an emergency approval was in order.

These actions were performed under the provisions of WAC 434-335-200 to 214, emergency approval procedures.

If the Sequoia system had not been updated and in the unlikely possibility that this error occurred, Pierce County would have discovered the issue using standard procedures early on in the process. However, without the update, Pierce County would have been required to duplicate an estimated 10,000 to 15,000 ballots from the paper trails off the Sequoia touch screens to paper ballots. The paper ballots would then have been scanned on the central optical scan system before the data was processed through the RCV module.

DETAILED DESCRIPTION OF PROBLEM

During additional testing of Sequoia Voting System v 4.0, including Rank Choice Voting, Sequoia Voting Systems' testing engineers found a discrepancy in the Rank Choice Voting module results. After careful examination, it was determined that a field in the Preferential Data File was not initialized before loading data into this from Edge results memory cards. This file is used by the Rank Choice Voting module. Because this field was not initialized, errant data present in computer memory was introduced into the Preferential Data File. If the errant data included certain characters, i.e. carriage return, the carriage return would cause incomplete loading of Edge results into the Rank Choice Voting module. This incomplete load results in missing data from the Rank Choice Voting module.

This condition does not affect the loading of results into WinEDS for the purpose of Election Night summary reporting for any contest including the first rank choices for Ranked Choice Voting contests. Furthermore, this condition has no affect on individual Edge machine results reports.

The modification involves a coding change to initialize the write-in field to clear out any errant characters so that they do not get introduced into the preferential data file before results are loaded into the RCV module. This involves the OCX portion of the WinEDS application. It is the module that processes the Edge memory cards. It is an ActiveX type component, written in C++. When the memory card is read in, the data goes into a memory buffer, then into the SQL table. If the memory buffer isn't initialized, there may be errant characters in it. If a race does not have a write-in voted, that race gets read in without changing the write-in area on the memory buffer, so the errant characters remain in the buffer, and then are transferred to the Preferential Data table.

This fix initializes, or clears out, the memory buffer area before loading the memory card.

iBeta will verify the following source code changes:

avcedge.rc: OCX file version is updated from 1.2.56.0 to 1.2.57.0.
preftally.cpp   Initialization added to the write-in field.

Our office will observe the software behavior before the modification and identify the errant characters. We will witness the effect of the carriage return character on the loading of results into the RCV module.
After the update is applied we will verify that the errant characters are no longer present, and that the RCV module is fully functional.

FINDINGS OF THE SECRETARY OF STATE

After reviewing the report from iBeta verifying the modification to the source code was one line of code to an isolated component of the WinEDS application, and after testing the change, our office recommends Sequoia install the upgraded WinEDS application for use in the General Election.

The county will continue to follow standard procedures for verifying the ballots processed in the WinEDS report equals ballots processed in each run of the Rank Choice Voting module. This check will be performed with each new report of results.