



ENGINEER CHANGE ORDER (ECO) ANALYSIS FORM

Manufacturer: Dominion Voting Systems

System: Democracy Suite (D-Suite) ImageCast Precinct (ICP)

ECO Number: 100827

ECO Description: ICP modification to reset provisional flag on each ballot scan

Overview:

BACKGROUND NOTE: An issue was encountered during the voting process on some fielded D-Suite 5.5-B systems in Williamson County, Tennessee (D-Suite 5.5-B is a predecessor to D-Suite 5.5-C). The issue was generated from a "QR Code Signature Mismatch" error which resulted in the printed results tape not matching the ballot count on the LCD screen, and the actual results obtained/verified. The public counter of the impacted components failed to increment in the audit logs, which matched the printed tape results. Dominion performed a Root Cause Analysis and determined the solution was a modification to the ICP code to reset the provisional flag before each scanned ballot image is processed. Dominion submitted this Engineering Change Order (ECO) for the ICP addressing the issue.

Additionally, Dominion released a Product Advisory Notice (PAN) on February 25, 2022, to notify users of the issue. As stated in the PAN, in all circumstances in which the error appeared, the following was noted:

- The public counter display on the LCD screen matches the number of ballots in the ballot box.*
- The ballots are tabulated accurately by the ICP units and the paper ballots match the recorded vote.*
- The results uploaded from the ICP tabulator to the EMS Results Tally and Reporting (RTR) module are accurate and match the ballot count.*
- Not all ICX BMD ballots that are interpreted as provisional will trigger the identified behavior.*

This ICP modification ensures that the provisional flag is reset on each ballot scan. If a QR code, from an ICX BMD ballot, is misread on an ICP unit with v5.5.41.3 firmware, it will reject the ballot, but it could potentially cause the provisional flag to be set for all subsequent ballots scanned. A provisional ballot is scanned, processed, and the tally count on the LCD display is incremented, but provisional ballots aren't included on the ICP paper tape results report. Once uploaded to RTR, provisional ballots are included in the total tally.

Products Affected: ImageCast Precinct (ICP) 5.5-C, 5.5-CS

Add: ICP v5.5.41.4

Per Dominion, this change will be used with the following EAC certified Democracy Suite (D-Suite) systems:
5.5-C

Per Dominion, , this change will be used with the following state level system configurations:
5.5-CS

Supporting Documentation:

ECO 100827 ICP Modification (5.5-C).pdf (*Dominion ECO*)

5.5-C ICP Test Report.pdf (*Dominion Test Report*)

ICP Smoke Test _ Fix Verification - 5.5-C (5.5.41.4) - Feb 9 2022 - TestRail.pdf (*Dominion Verification Report*)

Engineering Recommendation:

Technical Documentation Review, review of Dominion-provided test results, Source Code Review, Functional Testing, and Volume Test performed by Pro V&V for final recommendation. Based on testing performed, Pro V&V determined the change did not adversely affect the system functionality, performance, accessibility, usability, safety, or security of the system. Pro V&V utilized the original election to complete testing. Testing consisted of printing 2,000 ballots on an ICX loaded with the correct trusted build (*Correct Trusted Build for ICX: 5.5.15.2*) and MCF files. All activation codes were used in the creation of ballots. Five ballots for each of the first twenty-six activation codes, and seventy ballots for activation code "0028"(this activation code was used when the error in the field presented itself most often). Each ICP was loaded with the new trusted build (*New Trusted Build for ICP: 5.5.41.4*), firmware, and DCF files for the correct system (*D-Suite 5.5-C*). Each ballot that was created was scanned ten times on the ICP. Results were verified in RTR. System accuracy was verified by comparing the printed tapes and audit logs to ensure they matched the expected results. The audit logs were reviewed to check the error message for any Ballot Misreads encountered. The error message "QR Code Signature Mismatch" was never encountered during testing.

The system tested was verified to be accurate during testing with the actual results matching the expected results. No issues were encountered during testing.

The Source Code Review was performed by doing a manual comparison review using ExamDiffPro software. The previously certified ICP source code (*version 5.5.41.3*) was used as the baseline for the comparison against the newly updated ICP source code with the fix incorporated (*version 5.5.41.4*). Pro V&V verified the only changes that were made to the newly submitted source code were the single line fix and updating the version number.

Pro V&V determined the modification was successfully implemented and no additional testing is required.

This recommendation is based on the software change having the following general characteristics, as detailed by NOC 19-01: (1) Update a discrete component of the system and do not impact overall system functionality; (2) Do not modify the counting or tally logic of a component or the system (formatting changes to reports are allowable); (3) Do not affect the accuracy of the component or system; (4) Do not negatively impact the functionality, performance, accessibility, usability, safety, or security of a component or system; (5) Do not alter the overall configuration of the certified system; and (6) Can be reviewed and/or tested by VSTL personnel in a short amount of time (approximately less than 100 hours).

Engineering Analysis: No Additional Testing Required**Reviewer:**

Wendy Owens

Printed Name

Wendy Owens

Signature

03/26/2022

Date

Approver:

Michael L. Walker

Printed Name

Michael L. Walker

Signature

03/25/2022

Date