



# **Voting System Anomaly Root Cause Analysis Template v2.0**

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## **Root Cause Analysis for:**

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**VV40ECT-147: VxSCAN TEST SOUND BUTTON BUG - REV. 1**  
**VxSUITE, VERSION 4.0 AND EAC CERTIFICATION #VXS4**

**VOTINGWORKS**  
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## Introduction

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An anomaly was reported in VxScan when using the “Test Sound” feature in the Diagnostics menu, where if a user tapped outside the dialogue, the screen would then turn black and then white before resetting to the Election Manager menu. This could cause confusion in a user, and investigating the anomaly was important to improve the user experience for election officials.

## Anomaly Description

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Complete all sections. Descriptions must be as detailed as possible, while being clear and concise since the anomaly is the source of the entire RCA. This detail should include a complete list and/or description of the “symptoms” of the anomaly and the conditions present which the symptoms occurred.

<u>Date of Anomaly:</u> June 27, 2025	<u>Time of Anomaly:</u> 2:15pm
<u>Place of Anomaly:</u> SLI, Wheat Ridge, CO	<u>Person identifying Anomaly:</u> Jessica Myers, VotingWorks
<u>Expected Results of actions leading up to anomaly:</u>  Tapping outside the “Test Sound” dialog should not cause anything to happen, and the dialog should stay open.	
<u>Detailed description of the event / anomaly:</u>  When using the Diagnostics menu of VxScan, and tapping on the “Test Sound” button under the Speaker section, a sound plays, and a dialog pops up. The dialog asks if the sound was heard, and it has two buttons labeled “No” and “Yes.” The anomaly occurs when tapping outside the dialog box, causing the screen to flash black and then white and then go back to the Election Manager menu.	

## EAC (Election Assistance Commission) Root Cause Analysis

If the anomaly is repeatable, provide step by step instructions to recreate it:

1. Log into VxScan using the Election Manager or System Administrator card.
2. Load the Diagnostics menu.
3. Scroll down to find the Speaker section.
4. Tap the “Test Sound” button. A sound plays, while a Sound Test dialog pops up.
5. Instead of tapping the “No” or “Yes” buttons, tap outside the dialog in the background.  
This should cause the anomaly to happen.

## Chronology of Events / Timeline

Provide a detailed chronology of the events leading up to, and following, the anomaly. Add additional events if necessary.

ID	Date/Time	Description	Entity Org/person	Result / Notes
1	June 27, 2025, 2:15pm	Anomaly is reported to VotingWorks by SLI testers.	Jessica Myers, VotingWorks	Details are shared with the wider VotingWorks team. Confirmation of the issue leads to assigning software development work on it.
2	Aug 16, 2025	A code revision was applied to the software to resolve the bug.	Drew Hayes, VotingWorks	Solution verified with manual testing.

## Investigative Team and Method

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This section shall describe how the investigative team is assembled by the voting system manufacturer, who it consists of, and how it gathers the data to be used in the analysis. Include the RCA method employed by the manufacturer in conducting the analysis and why this method was used.

Names and Positions of members of the investigation team:
Jessica Myers, Head of Compliance
Drew Hayes, Product Manager
Describe the data gathering process:
Jessica Myers collected the initial anomaly details and shared with the wider VotingWorks team. It was reproduced and confirmed as a software bug, and Drew Hayes investigated the specific causes in the code and developed a mitigation.
Describe which methodology(s) is used to conduct the root cause analysis:
The methodology was relatively straightforward and not needing a complex strategy. It was focused on code review of the Sound Test dialog of the graphical user interface, because attempts to reproduce the issue pointed specifically to that feature. That part of the code base was systematically analyzed for unusual logic related to handling the Sound Test dialog.

## Findings and Root Cause

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Describe the findings of the investigation and explain the root cause(s) based on these findings. If the RCA results in findings that are not directly related to the root cause of the anomaly, these should also be captured as manufacturer product/process improvement steps in an effort to improve the voting system.

The root cause was that the code for the Sound Test pop-up dialog (or modal) had an unnecessary call to close the whole window when clicking or tapping outside the dialog. Removing this call eliminated the bug.

The original unnecessary call to close the window may have been an oversight related to iterating on older code, or mixing it up with a call to close just the dialog. The chances of putting in a coding error like this could be reduced with more automated checking of the code for similar issues.

## Corrective Action(s)

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The code for the user interface was fixed by removing the call to close the window in the Sound Test dialog. Linting was also added to help scan for similar issues automatically and prevent this from happening in the future. These code changes are in the open source code base here: <https://github.com/votingworks/vxsuite/pull/7054#issue-3326981978>

## Solution Management

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The purpose of this section is to manage the corrective action(s) moving forward. This should detail all process changes to manage those corrective actions, and steps taken to ensure the actions eliminate the anomaly over time.

The codebase linting rules were updated to discourage the unnecessary use of the “close” function that closes the whole window. This can help prevent encoding similar errors in the future.