

Decision No. C23-0160

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

PROCEEDING NO. 22I-0471R

IN THE MATTER OF THE REGIONAL TRANSPORTATION DISTRICT'S CORRECTIVE ACTION PLAN REGARDING THE SABLE BOULEVARD AND EXPOSITION AVENUE DERAILMENT, RULE 4 CCR 723-7-7347.

**COMMISSION DECISION APPROVING
ADDITIONAL CORRECTIVE ACTION PLAN**

Mailed Date: March 8, 2023

Adopted Date: March 8, 2023

I. BY THE COMMISSION

A. Statement

1. On September 21, 2022, a Regional Transportation District's (RTD) light-rail vehicle derailed at the intersection/crossing of Sable Boulevard and Exposition Avenue in the City of Aurora resulting in the decoupling of the two light-rail vehicles and three injuries requiring transport.

2. Today's discussion involves the use of the in-cab and forward-facing cameras by RTD.

3. By Commission Decision No. C23-0044, mailed January 25, 2023, the Commission required RTD to investigate why the in-cab camera video footage was not able to be recovered from the lead LRV in the derailment.

4. On February 14, 2023, RTD filed CAP03-09212022. The CAP discusses the investigation that RTD conducted regarding the inability to recover the in-cab video footage from the lead LRV involved in the Accident.

B. Finding of Fact

5. RTD performed a risk analysis on the in-cab cameras. The specific hazard was a lack of video footage. Possible hazard causes included potential tampering, equipment reliability, insufficient training, and inadequate procedures. The effect of the hazard was the inability to retrieve and view video footage. The risk was determined to be a medium risk assessment of 5A, which is a frequent probability of happening and a negligible severity.

6. RTD performed an investigation of the in-cab cameras per our order. RTD used a systematic approach to investigate a variety of potential and contributing causes. This review included mechanical, environmental and human factors and included the overall functionality of the LRV video surveillance system.

7. Sources used in this investigation included: 1) Interviews with LRV Maintenance and Security Staff; 2) Surveillance System Quality Assurance Checks; 3) LRV maintenance records; 4) review of the event data recorder from light rail vehicles 218 and 316 (the two LRV's involved in the derailment); 5) review of the Hard Disk Drives containing video; and 6) LRV operator, video investigations, and vehicle maintenance training materials and records.

8. RTD's investigation led to six findings.

9. First, the recovery of the HDDs, the in-cab cameras did not appear to be obstructed and appeared to be functional.

10. Second, LRV operators and mechanics have access to the LRV breaker panel which maintains power to the cameras and other LRV electrical systems (lighting, Automatic Train System bypass, doors).

11. Third, the camera system power is dependent on the power state of the LRV. However, if the camera system is powered off while the LRV is off, the camera system does not automatically turn on when the LRV power is turned on.

12. Fourth, the video HDD's were recovered and the video was reviewed from the second LRV in the consist.

13. Fifth, the video HDD was recovered from the lead LRV, but the video was not recovered. This camera system was determined to have been powered off at the locked breaker panel based on the camera functioning as normal upon the system reboot. Additionally, the HDD was in the older "Safety Vision 4C DVR", and these systems are starting to fail and do not always write to the disk.

14. Sixth, the HDD chain of custody started with the security division, which obtained the LRV 316 HDD, placed it in a docking station for review, and determined there was no video recorded. This HDD was placed back into revenue service and overwritten. At a subsequent evaluation, LRV Maintenance was able to access video footage from HDD's that were previously identified by the Security division as having no video. This suggests there may be intermittent failures with HDD docking stations. Additionally, there is inconsistent re-installation practices of formatting HDD's before they are swapped to ensure DVR's are recording properly.

15. Based on RTD's investigation, RTD has determined the most probable cause as inadequate procedures for removal and installation of HDD into DVR's as well as information retrieval from the HDD.

16. Contributing causes include inadequate employee training on data retrieval for HDD's and failure to check and monitor that LRV surveillance equipment is functional.

17. Additional contributing causes include reliability of the system due to the useful life of the camera and HDD, and potential tampering with the system.

C. Analysis

18. Based on the investigation, RTD had determined that corrective action is necessary to develop a formal process to verify and monitor functional surveillance systems are in place, including daily check to ensure camera functionality prior to revenue service. RTD has identified a target date of March 31, 2024, to complete this CAP.

19. RTD has identified six interim measures to complete as part of the plan to complete this completing this CAP.

20. Interim measure 1 – The LRV Maintenance division will wire all current 4C DVR surveillance systems directly to the power source via remote fuse to ensure tamper resistance. RTD's identified target date for this interim measure is March 31, 2024.

21. Interim measure 2 – The LRV Maintenance division will update the existing surveillance systems with new, Solid-State Drives until the new Denver VIII style surveillance system is installed on all LRV's. RTD identified target for this interim measure is March 31, 2024.

22. Interim measure 3 – update procedures for handling of cameras, hard drives, and DVRs, including hard drive installation, troubleshooting, recovery, and chain of custody. RTD identified target for this interim measure is September 30, 2023.

23. Interim measure 4 – train all impacted employees for the first three interim measures on procedures. RTD identified target for this interim measure is December 31, 2023.

24. Interim measure 5 – Conduct an LRV operator education campaign on rule infraction for obstructing or tampering with onboard cameras (Rule 3.6 and Bulletin TR-22-05), including operator signed acknowledgement of receipt of the Bulletin. RTD identified target for this interim measure is March 31, 2023

25. Interim measure 6 – Evaluate potential for alternative remote access to retrieve video files. RTD identified target for this interim measure is September 30, 2023.

26. The Assistant General Manager of Rail Operations will be responsible for implementing this CAP. CAP monitoring and completion will be monitored by RTD's leadership Safety Committee under the direction of the Chief Safety Officer/senior Manager, Safety and Environmental.

27. RTD proposes that regular reviews of the above items will be communicated to the Commission quarterly.

D. Discussion and Conclusion

28. Per our requirement in Decision No. C23-0044, RTD performed an investigation and developed a CAP to determine why video footage from the in-cab camera in the lead LRV was not available as part of the derailment investigation.

29. We have reviewed the details of the investigation performed by RTD and CAP03-092122 proposed by RTD for the identified in-cab camera issue.

30. We will approve RTD's proposed CAP03-092122.

II. ORDER

A. The Commission Orders That:

1. The Corrective Action Plan CAP03-092122 is approved.
2. The Regional Transportation District (RTD) is required to inform Staff as each interim item and the final item is completed for Staff verification.
3. This Decision is effective on its Mailed Date.

(S E A L)



ATTEST: A TRUE COPY

G. Harris Adams,
Interim Director

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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Commissioners