

# National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials

Washington, DC 20594



RRD24LR012 - BORDULAC, NORTH DAKOTA

## **SIGNALS & TRAIN CONTROL**

Group Chair's Factual Report

November 22, 2024

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## **A INCIDENT**

Location: Bordulac, North Dakota  
CPKC Railroad, US Eastern Region, Carrington Subdivision  
Date: July 5, 2024  
Time: 3:36 am, central daylight time  
Train: Eastbound CPKC Key Train 242-03

## **B SIGNALS & TRAIN CONTROL GROUP**

NTSB	R. Payan Electrical Engineer Washington, DC
FRA	A. Drake Signal & Train Control Inspector Grand Forks, ND
CPKC	Aaron Shockey Signal Manager

## **C SYNOPSIS**

See Accident Docket for a synopsis of this accident.

## **D DETAILS OF THE INVESTIGATION**

### **1.0 Description of CPKC Signal & Train Control Systems**

The CPKC Carrington Subdivision extended from control point Enderlin at milepost 253.6 (near Enderlin, ND) to control point Harvey East at milepost 395.7 (near Harvey, ND) in an east/west timetable direction. The Carrington Subdivision consisted of single main track territory with passing sidings. Milepost numbering increased in a timetable west direction. Maximum authorized timetable speed on main track between milepost 253.6 and milepost 395.8 was 60 mph for freight trains with permanent timetable speed restrictions.<sup>1</sup>

In the vicinity of the derailment area, CPKC authorized train movements with the signal indications of the Traffic Control System (TCS). Train movements were coordinated by a train dispatcher located at the CPKC dispatch center in Minneapolis, Minnesota. Train movements on the Carrington Subdivision were also

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<sup>1</sup> CPKC - US, Eastern Region, Timetable No. 1 (effective at 0001, July 1, 2024 CDT)

governed by operating rules, special instruction, and timetable instructions. The subdivision was supplemented with an overlaid positive train control system (Interoperable -Electronic Train Management System) on the main track.

The signal system used coded track circuits for train occupancy detection. Wayside signals were colorlight signals with upper and lower signal heads capable of displaying green, yellow, and red aspects for train movements in either direction.

## 2.0 Signal & PTC Data Logs

Following the derailment, signal data logs for control point Carrington East and control point 346 were reviewed. In addition, PTC system data logs and locomotive data logs were reviewed. Investigators developed a timeline of signal events as summarized in Table 1.

**Table 1 Signal Events Timeline**

Time	Location	Event
2:27:50	CP 346	Westbound signal indicated clear
2:27:54	CP Carrington East	Westbound signal indicated request cancelled
2:27:57	CP Carrington East	Westbound signal indicated running time
2:28:02	CP Carrington East	Westbound signal requested clear
2:28:28	CP Carrington East	Westbound signal indicated clear
3:11:12	CP 346	East approach track circuit indicated occupied by Train 243-04
3:11:15	CP 346	OS track circuit indicated occupied by Train 243-04 Westbound signal indicated at stop West approach track circuit indicated occupied by Train 243-04
3:11:17	CP 346	West track circuit indicated occupied by Train 243-04
3:16:54	CP 346	East approach track circuit indicated unoccupied by Train 243-04
3:13:58	CP 346	OS track circuit indicated unoccupied by Train 243-04 West approach track circuit indicated unoccupied by Train 243-04
3:14:08	CP 346	Westbound signal requested clear
3:14:25	CP 346	Westbound signal indicated clear
3:16:07	CP Carrington East	OS track circuit indicated occupied by Train 243-04 Westbound signal indicated at stop
3:18:59	CP Carrington East	OS track circuit indicated unoccupied by Train 243-04
3:19:04	CP Carrington East	Switch requested reverse Westbound signal requested clear
3:19:04	CP 346	West track circuit indicated unoccupied
3:19:06	CP Carrington East	Switch indicated out of correspondence
3:19:24	CP Carrington East	Switch indicated lined reverse
3:19:29	CP Carrington East	Switch indicated locked
3:19:47	CP Carrington East	Westbound signal indicated clear

3:22:49	CP Carrington East	OS track circuit indicated occupied by Train 242-03 Eastbound signal indicated at stop
3:23:13	CP 346	West track circuit indicated occupied by Train 242-03
3:27:56	CP Carrington East	OS track circuit indicated unoccupied by Train 242-03
3:27:57	CP Carrington East	East switch requested normal
3:28:02	CP Carrington East	East switch indicated out of correspondence
3:28:17	CP Carrington East	East switch indicated lined normal
3:31:38	CP 346	West approach track circuit indicated occupied by Train 242-03
3:31:41	CP 346	OS track circuit indicated occupied by Train 242-03 Westbound signal indicated at stop
3:31:41	CP 346	East approach track circuit indicated occupied by Train 242-03
3:34:30	CP 346	West approach track circuit indicated unoccupied by Train 242-03
3:34:32	CP 346	OS track circuit indicated unoccupied by Train 242-03
3:34:39	CP 346	West track circuit indicated unoccupied by Train 242-03
4:06:44	CP 346	Track block requested

### **3.0 Wayside Defect Detectors**

Data logs for wayside defect detector locations at milepost 358.0 and milepost 383.9. The detector at milepost 358.0 was a hot bearing and dragging equipment detector and did not log any defects with Train 242-03. The detector at milepost 383.9 was also a hot bearing and dragging equipment detector and did not log any defects associated with Train 242-03.

### **4.0 Postaccident Signal & Train Control Examination**

The postaccident investigation found all wayside signal equipment and appurtenances between control point CP Carrington East, CP 346 and CP Dry Lake West locked and secured with no indications of tampering or vandalism.

Signal indications were found to be in accordance with the physical location of the accident wreckage during the postaccident examination. No terrain or physical structures were identified during the examination of the alignment of the signal heads that could obstruct the signal aspect preview at the control points.

## **END OF SIGNAL & TRAIN CONTROL FACTUAL REPORT OF INVESTIGATION**