

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

August 3, 2015

Locomotive Event Recorder

Specialist's Factual Report
By Cassandra Johnson

1. EVENT SUMMARY

Location: Pine Bluff, Arkansas
Date: April 03, 2015
Company: Railroad Switching Services
Locomotive ID: 1912
NTSB Number: DCA15FR007

At about 9:23 pm central daylight time (CDT), in Pine Bluff, Arkansas at the Evergreen Packaging Plant, a switch crew consisting of an operator and ground person was shoving approximately 34 box and tank cars (nine box cars were loads) using an Electro-Motive Diesel (EMD) freight locomotive GP60, East from the switch lead into track four of the facility classification yard. The switch crew was building an outbound block of cars for interchange. The switch crew was attempting to make a cut approximately 9 cars ahead of the locomotive. The operator received a radio command from the ground person to shove East three cars. The operator stopped after moving approximately three car lengths and not receiving any further commands. The operator departed the locomotive and discovered the ground person fatally injured underneath the truck of the car where the cut was being made.

2. LOCOMOTIVE EVENT RECORDER GROUP

A locomotive event recorder group was not convened.

3. DETAILS OF RECORDER INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received an event recorder file from the following locomotive:

Locomotive ID: **1912**

3.1. Locomotive Event Recorder Recording Description

Using the wheel size of 38.75 inches as provided by investigators, locomotive 1912's event recorder data were extracted using the Quantum Desktop Playback Software. This software outputted locomotive event recorder parameters including distance and speed. The exported data have a sampling rate of one second; therefore, the data have an accuracy of +/- 1 second. Only the data relevant to this event are provided in this report.

3.2. Parameters

Table A-1 lists the parameters verified and provided in this report for locomotive 1912. Additionally, table A-2 contains the unit and discrete state abbreviations for the parameters.

3.2.1. Distance Traveled

The default output for the locomotive event recorder's total distance traveled started at 0 and the values were significantly large near the event. Therefore, for convenience, the distance traveled were zeroed when the locomotive stopped moving after the event.

3.3. Time Correlation

The recorded time from locomotive 1912's event recorder data is independently time stamped and, consequently, the times do not reflect the actual time of day. During the on-scene portion of the investigation, investigators had extracted and processed locomotive 1912's event recorder data using the Quantum Desktop Playback software program. Additionally, investigators correlated the event recorder time to real time. Using the on-scene extracted data as the time baseline, an offset of 4,192 seconds was added to locomotive 1912's event recorder data. Therefore, for the rest of the report, all times are referenced to CDT.

3.4. Plots and Corresponding Tabular Data

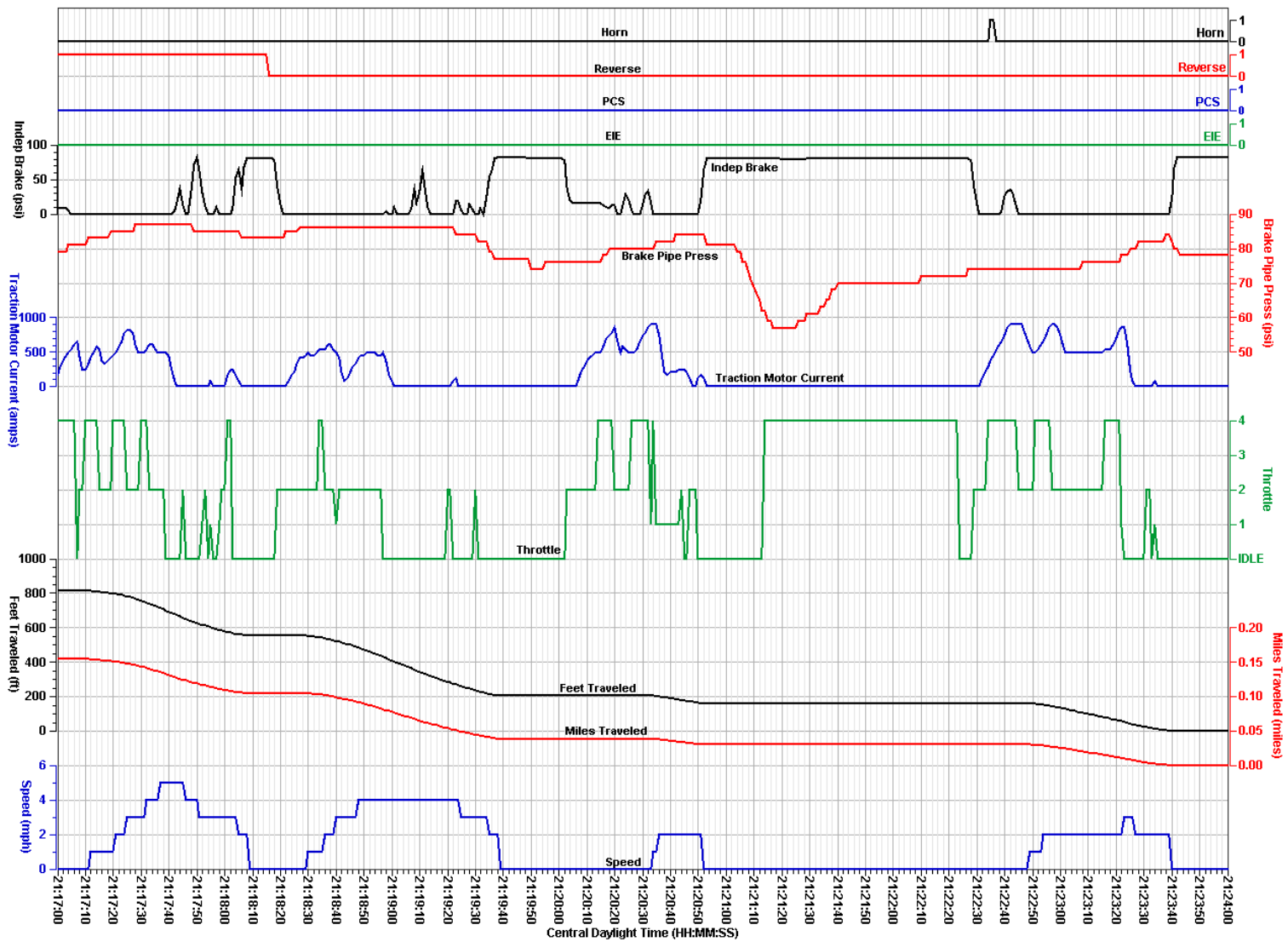
Figures 1 and 2 contain locomotive 1912's event recorder data recorded during the April 3, 2015 event. All the parameters listed in table A-1 were plotted.

Figure 1 covers 7 minutes of data from 21:17:00 CDT to 21:24:00 CDT, and figure 2 has an expanded scale covering 2 minutes of data from 21:21:50 CDT to 21:23:50 CDT.

In brief, locomotive 1912's event recorder data indicated at 21:22:49 CDT, the speed increased from 0 mph to 1 mph while the brake pipe pressure was 74 psi. Five seconds later at 21:22:54 CDT, the speed increased to 2 mph while the brake pipe pressure remained at 74 psi. Fourteen seconds later at 21:23:08 CDT, the brake pipe pressure increased to 76 psi. Another fourteen seconds later at 21:23:22 CDT, the brake pipe pressure increased to 78 psi and the speed had increased to 3 mph. Over the next sixteen seconds, the brake pipe pressure continued to increase to a maximum of 84 psi at 21:23:38 CDT. During this time the speed had decreased to 2 mph. Two seconds later at 21:23:40 CDT, the speed decreased to 0 mph and the brake pipe pressure decreased to 82 psi.

All of the corresponding tabular data used to create figures 1 and 2 are provided in electronic comma separated value (.csv) format as attachment 1 to this factual report.

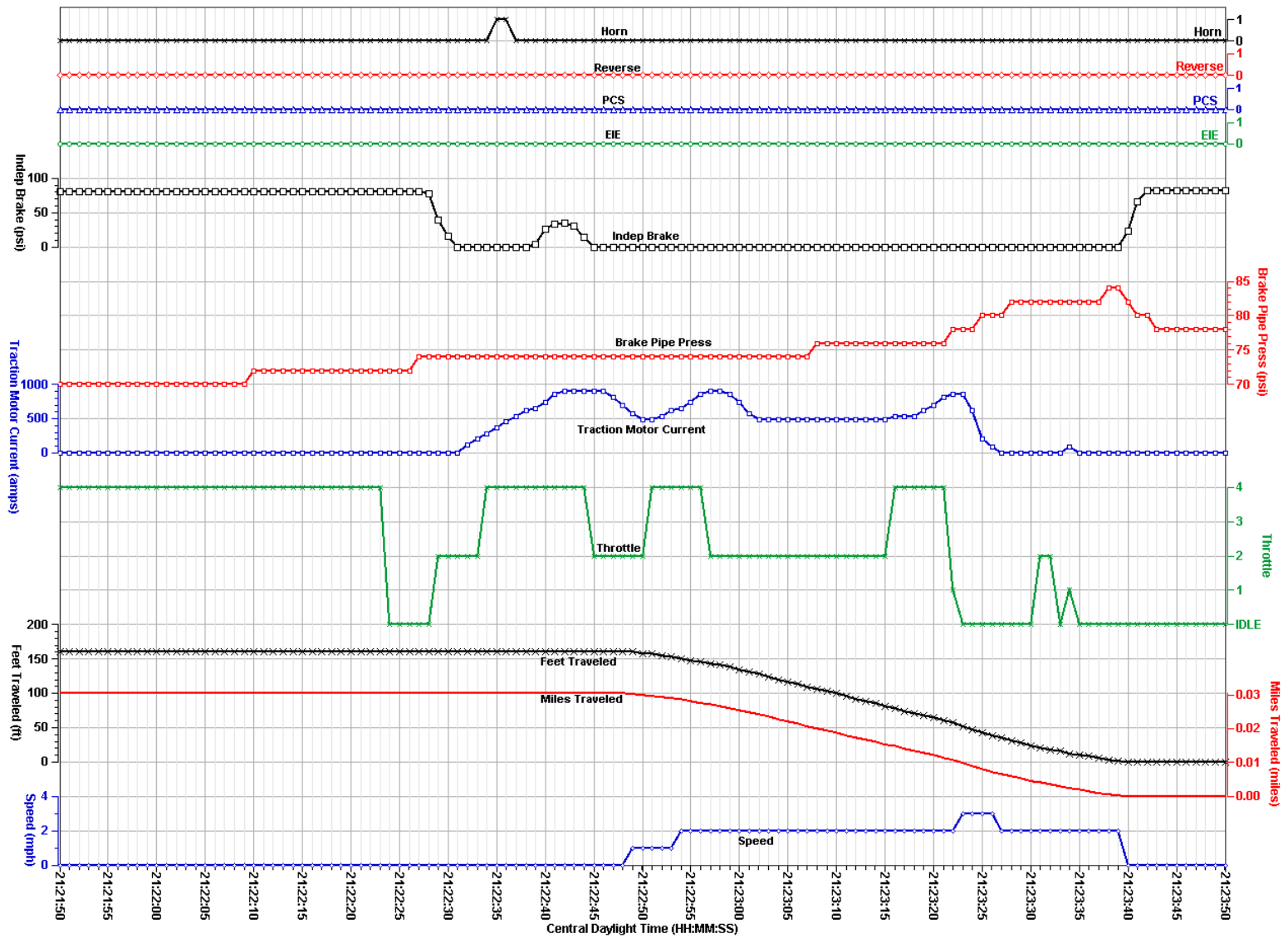
Figure 1: Locomotive 1912's locomotive event recorder parameters (7 minutes).



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Figure 2: Locomotive 1912's locomotive event recorder parameters (2 minutes).



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APPENDIX A

This appendix describes the locomotive event recorder parameters provided and verified in this report for locomotive 1912. Table A-1 lists the parameters and table A-2 contains the unit and discrete state abbreviations for the parameters.

Table A-1. Verified and provided locomotive event recorder parameters for locomotive 1912.

Parameter Name	Parameter Description
1. Brake Pipe Press (psi)	Brake Pipe Pressure
2. EIE (discrete)	Engineer Initiated Emergency
3. Feet Traveled (ft)	Feet Traveled
4. Horn (discrete)	Horn
5. Indep Brake (psi)	Independent Brake Pressure
6. Miles Traveled (miles)	Miles Traveled
7. PCS (discrete)	Pneumatic Control Switch
8. Reverse (discrete)	Reverse Direction
9. Speed (mph)	Speed
10. Throttle (discrete)	Throttle Position
11. Traction Motor Current (amps)	Traction Motor Current

Table A-2. Unit and discrete state abbreviations.

Units Abbreviation	Description
1	Throttle Position 1
2	Throttle Position 2
3	Throttle Position 3
4	Throttle Position 4
amps	Amperes
discrete	discrete
ft	feet
miles	miles
mph	miles per hour
psi	pounds per square inch

NOTE: For parameters with a unit description of discrete, a discrete is typically a 1-bit parameter that is either a 0 state or a 1 state where each state is uniquely defined for each parameter.