Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch

Accident Investigation Report
HQ-2015-1051

Union Pacific Railroad Company (UP)
Peck, KS
May 6, 2015

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

U.S. Department of Transportation
Federal Railroad Administration

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File #HQ-2015-1051

TRAIN SUMMARY

1. Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Union Pacific Railroad Company	UP	HQ-2015-1051

GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Union Pacific Railroad Company	UP	0515WH004
2. U.S. DOT Grade Crossing Identification Number	3. Date of Accident/Incident	4. Time of Accident/Incident
	5/6/2015	1:45 AM

5. Type of Accident/Incident
Derailment

6. Cars Carrying HAZMAT	7. HAZMAT Cars Damaged/Derailed	8. Cars Releasing HAZMAT	9. People Evacuated	10. Subdivision
0	0	0	0	Enid

11. Nearest City/Town	12. Milepost *(to nearest tenth)*	13. State Abbr.	14. County
Peck	262.5	KS	SEDGWICK

15. Temperature (F)	16. Visibility	17. Weather	18. Type of Track
52 °F	Dark	Rain	Main

19. Track Name/Number	20. FRA Track Class	21. Annual Track Density *(gross tons in millions)*	22. Time Table Direction
Main Track	Freight Trains-60, Passenger Trains-80	21.8	South

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OPERATING TRAIN #1

1. Type of Equipment Consist:	2. Was Equipment Attended?	3. Train Number/Symbol
Freight Train	Yes	MWTFW 06

4. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	5. Trailing Tons (gross exluding power units)	6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter	Code
47 MPH	R	8126		0

6. Type of Territory

Signalization:

Not Signaled

Method of Operation/Authority for Movement:

Direct Train Control

Supplemental/Adjunct Codes:

P

7. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.	Alcohol	Drugs
(1) First Involved *(derailed, struck, etc.)*	BLHX 112	5	yes		0	0
(2) Causing *(if mechanical, cause reported)*	N/A	0	no	9. Was this consist transporting passengers?		No

10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	59	0	11	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	33	0	7	0	0

12. Equipment Damage This Consist	13. Track, Signal, Way & Structure Damage
2469682	162800

14. Primary Cause Code

T299 - Other rail and joint bar defects (Provide detailed description in narrative)

15. Contributing Cause Code

Number of Crew Members				Length of Time on Duty	
16. Engineers/Operators	17. Firemen	18. Conductors	19. Brakemen	20. Engineer/Operator	21. Conductor
1	0	2	0	Hrs: 4 Mins: 15	Hrs: 4 Mins: 15

Casualties to:	22. Railroad Employees	23. Train Passengers	24. Others	25. EOT Device?	26. Was EOT Device Properly Armed?
				Yes	Yes
Fatal	0	0	0	27. Caboose Occupied by Crew?	
Nonfatal	0	0	0		N/A

28. Latitude	29. Longitude
37.428277000	-97.390269000

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CROSSING INFORMATION

Highway User Involved		Rail Equipment Involved
1. Type		5. Equipment
2. Vehicle Speed *(est. mph at impact)*	3. Direction *(geographical)*	6. Position of Car Unit in Train
4. Position of Involved Highway User		7. Circumstance
8a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials?		8b. Was there a hazardous materials release by
8c. State here the name and quantity of the hazardous material released, if any.		

9. Type of Crossing Warning	10. Signaled Crossing Warning	11. Roadway Conditions
1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other *(spec. in narr.)* 3. Standard FLS 6. Audible 9. Watchman 12. None		

12. Location of Warning	13. Crossing Warning Interconnected with Highway Signals	14. Crossing Illuminated by Street Lights or Special Lights

15. Highway User's Age	16. Highway User's Gender	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train	18. Highway User

19. Driver Passed Standing Highway Vehicle	20. View of Track Obscured by *(primary obstruction)*

Casualties to:	Killed	Injured	21. Driver was	22. Was Driver in the Vehicle?
23. Highway-Rail Crossing Users			24. Highway Vehicle Property Damage *(est. dollar damage)*	25. Total Number of Vehicle Occupants *(including driver)*

26. Locomotive Auxiliary Lights?	27. Locomotive Auxiliary Lights Operational?

28. Locomotive Headlight Illuminated?	29. Locomotive Audible Warning Sounded?

10. Signaled Crossing Warning

1 - Provided minimum 20-second warning
2 - Alleged warning time greater than 60 seconds
3 - Alleged warning time less than 20 seconds
4 - Alleged no warning
5 - Confirmed warning time greater than 60 seconds
6 - Confirmed warning time less than 20 seconds
7 - Confirmed no warning
N/A - N/A

Explanation Code

A - Insulated rail vehicle
B - Storm/lightning damage
C - Vandalism
D - No power/batteries dead
E - Devices down for repair
F - Devices out of service
G - Warning time greater than 60 seconds attributed to accident-involved train stopping short of the crossing, but within track circuit limits, while warning devices remain continuously active with no other in-motion train present
H - Warning time greater than 60 seconds attributed to track circuit failure (e.g., insulated rail joint or rail bonding failure, track or ballast fouled)
J - Warning time greater than 60 seconds attributed to other train/equipment within track circuit limits
K - Warning time less than 20 seconds attributed to signals timing out before train's arrival at the crossing/ island circuit
L - Warning time less than 20 seconds attributed to train operating counter to track circuit design direction
M - Warning time less than 20 seconds attributed to train speed in excess of track circuit's design speed
N - Warning time less than 20 seconds attributed to signal system's failure to detect train approach
O - Warning time less than 20 seconds attributed to violation of special train operating instructions
P - No warning attributed to signal systems failure to detect the train
R - Other cause(s). Explain in Narrative Description

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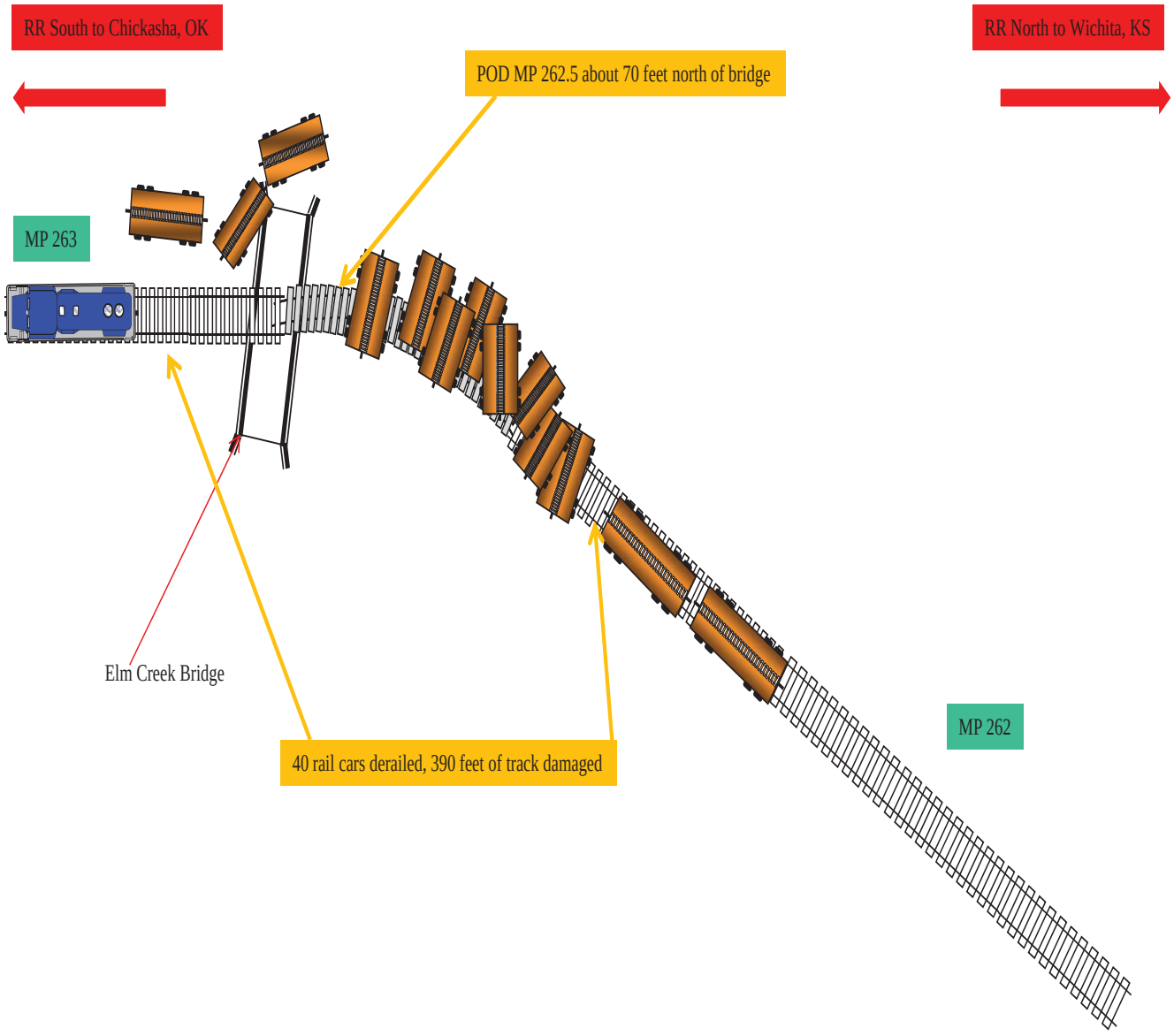
SKETCHES

Sketch HQ-2015-1051



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SYNOPSIS

On May 6, 2015, at 1:45 a.m., CST, a southbound Union Pacific Railroad (UP) loaded mixed freight train derailed. The derailment occurred at Peck, Kansas, Milepost (MP) 262.5, on the main track of the Wichita Division, Enid Subdivision area, Timetable Number 4, dated March 26, 2012.

Train MWTFW-06 consisted of 2 locomotives, 59 loads and 11 empties. The train was traveling at a recorded speed of 47 mph when the train experienced an undesired emergency brake application. A total of 40 cars derailed. The derailed cars were the fifth through the forty-fifth cars from the head-end of the train. The train crew reported having an uneventful trip to that point.

No injuries or hazardous materials were involved. The equipment damage cost was $2,469,682; the track damages were $162,800. The total monetary damages were $2,632,482.

At the time of the derailment, the conditions were dark and raining with a temperature of 52 °degrees F.

The Federal Railroad Administration completed its investigation and determined the probable cause of the accident was Cause Code T299 - Other rail and joint bar defect. The 1943, 115-pound rail catastrophically failed under the dynamic load of a loaded mixed freight train. No contributing factor was identified.

NARRATIVE

Circumstances Prior to the Accident

The operating crew of southbound loaded mixed Freight Train MWTFW-06 consisted of a locomotive engineer, a conductor, and a conductor student. The crew went on duty at 9:30 p.m., CST, on May 5, 2015, at Wichita, Kansas, their away-from-home terminal. The crew received more than the statutory off-duty period prior to reporting for duty.

Their assigned train consisted of 2 head-end locomotives, 59 loads, and 11 empties. A Class I 1,000-mile air brake test was performed at Wichita, with no exceptions. The train departed Wichita heading southward to Chickasha, Oklahoma. They made no switching stops prior to the derailment site.

Timetable direction for this train was south. Geographical direction of travel was south. Timetable direction will be used throughout this report.

As the southbound mixed freight train approached the accident area, the Engineer was seated at the controls in the Engineer's seat on the west side of the lead locomotive and the Conductor and Student Conductor was seated in the conductor's seats on the east side of the lead locomotive.

The area approaching the accident site features a right hand 1 degree 20 minute curve track. The grade in this area changes from .67-percent ascending to 0.07-percent descending grade.

The Accident

Train MWTFW-06 was traveling southbound on the main track at a recorded speed of 47 mph, as indicated by the locomotive event recorder on Locomotive Number UP 8759. The maximum authorized speed in the area of the derailment is 49 mph. The governing timetable is Timetable Number 4 of the Wichita Division, Enid Subdivision; effective March 26, 2012.

The train was operating on a track warrant from Wichita, heading toward Chickasha. The Engineer stated that he saw and felt nothing at the point of derailment (POD), Milepost (MP) 262.5 and soon after that, the train went into an undesirable emergency application of the train's air brake system. The train came to a stop near MP 262.6 then the Engineer called the dispatcher. The Conductors began walking the train and found that 40 cars had derailed, and the main track was damaged.

Management from UP was on scene within 45 minutes of the derailment. The crew was transported to Wichita, Kansas, for Federal Railroad Administration (FRA) Post-Accident Toxicological testing.

The cost of the damaged cars was $2,469,682 and track and structure damages were $162,800. The total monetary damages were $2,632,482.

Analysis and Conclusions

Analysis - Post Accident Toxicological Test Results: The train crew was toxicologically tested under FRA's post-accident toxicological testing at Wichita, Kansas.

Conclusion: FRA post-accident forensic toxicology result reports indicate that the three employees tested had negative test results. Intoxication was not a factor.

Analysis - Fatigue: FRA also obtained fatigue-related information for the 10-day period preceding this accident/incident, including the 10-day work history (on-duty/off-duty cycles) for all of the employees involved.

Conclusions: Upon analysis of that information, FRA concluded fatigue was probable for all three crew members. There was no supporting evidence however to demonstrate that fatigue played a role in the cause or severity of the derailment.

Analysis - Train Handling: The event recorder data indicated proper train handling and compliance with the operating rules. The Track Bulletin Form "A" Number 99730, dated May 5, 2015, indicates no slow order was in effect at the location, allowing them to operate at maximum authorized speed as indicated by the timetable in effect.

Conclusion: The train was operated in compliance with all train handling rules and procedures. Train handling was not an issue.

Analysis - Mechanical: A Class I air brake test report for this train consist was performed May 5, under Train MWTFW-06. The train crew made no prior switch stops before the derailment. No mechanical issues were discovered.

Conclusion: No evidence recovered indicated that mechanical failure was a factor.

Analysis - Weather: At the time of the derailment, the weather was raining and dark with a temperature of 52 degrees F. In the days prior to the derailment, the temperature ranged between 25 and 65 degrees F.

Conclusion: Weather was not a factor in this derailment.

Analysis - Track Maintenance: The rail is 115-pound premium strength rail, installed in 2011. The test interval for this subdivision and track is 90 days; the last test was completed April 9, 2015, with no defects reported in this area.

The last inspection of the derailment area was made by a qualified UP track inspector on May 5, the day prior to the derailment. UP's Rail Defect Detector Car Number DC968 inspected the area on April 9, twenty-seven days prior to the derailment. UP's Geometry Car EC4 inspected the derailment site on February 18, 2015.

Conclusion: The track had been inspected as required and track defects were not evident in the days leading up to the derailment. The track inspection by a UP-qualified track inspector uncovered no defective conditions. UP's Rail Defect Detector Car Number DC968 revealed no defects.

The 1943, 115-pound rail catastrophically failed under the dynamic load of a loaded mixed freight train.

Overall Conclusion: The investigation shows that fatigue and train handling were not factors in the derailment. There was no evidence recovered indicating that any mechanical failure had occurred. A track inspection prior to the incident on the main track indicated no defects at the locations. The 1943, 115-pound premium strength rail catastrophically failed under the dynamic load of a loaded mixed freight train. Inspection of the accident site verified this condition.

Probable Cause and Contributing Factors

FRA has completed its investigation and determined the probable cause of the accident was Cause Code T299 - Other rail and joint bar defect. The 1943, 115-pound rail catastrophically failed under the dynamic load of a loaded mixed freight train. No contributing factor was identified.