

Federal Railroad Administration Office of Railroad Safety Accident and Analysis Branch

Accident Investigation Report HQ-2017-1184

Union Pacific Railroad Company (UP) Hearne, TX February 3, 2017

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.

SYNOPSIS

On February 3, 2017, at approximately 8:55 p.m., CST, southbound Union Pacific Railroad (UP) Coal Train CWTCL9-01, with 2 lead locomotives, 2 distributed power locomotives at the rear of the train, 133 loaded rail cars, and 0 empty rail cars, derailed 18 rail cars at Milepost 1.1 on UP's Giddings Subdivision, in Hearne, Texas. The derailment of rail cars on the coal train caused the derailment of four rail cars on a southbound manifest train, MFWHO-03, on the main track of UP's Bryan Subdivision. The manifest train was traveling at a recorded speed of 1 mph and consisted of 2 lead locomotives, 20 loaded railcars, and 31 empty rail cars. There were railcars containing hazardous materials in the manifest train, but they were not affected by the derailment.

The coal train was operating in centralized traffic control territory at a recorded speed of 19 mph and the manifest train was basically stationary in automatic block signal/yard limits territory. The railroad identified defective concrete crossties as the probable cause of the derailment and estimates total damages of \$871,302. There were no injuries reported. There was no hazardous materials involved.

The weather was 51° F, clear skies, and 6 mph winds from the west. There were no adverse impacts to roadways or waterways.

U.S. Department of Transportation Federal Railroad Administration	Transportation dministration FRA FACTUAL RAIL ROAD ACCIDENT REPORT F												
TRAIN SUMMARY													
1. Name of Railroad Ope	la.	Alphabetic Cod	le 1	lb. Ra	ilroad Acc	ccident/Incident No.							
Union Pacific Railroad C	τ	UP		()217S								
2. Name of Railroad Operating Train #2						Alphabetic Cod	e 2b. Railroad Accident/Incident No.						
Union Pacific Railroad C	ompany			τ	UP		0217SA007						
GENERAL INFORMATION													
1. Name of Railroad or Othe	enance		1a. Alphabetic	Code	1b.	Railroad Ao	l Accident/Incident No.						
Union Pacific Railroad C				UP		021							
2. U.S. DOT Grade Crossing			3. Date of Accid	ent/Incident 4. Time of			Accident/Incident						
			2/3/2017		8:5	5 PM							
5. Type of Accident/Inciden Derailment													
6. Cars Carrying 7. HAZMAT Cars 8. Cars Releasing						9. People	0		10. Subdivision				
HAZMAT 0 I	Damaged/Derailed	0 HAZMAT				Evacuated	0		Giddings				
11. Nearest City/Town 12. Milepost (to nearest ten						State Abbr.	14. County						
Hearne						TX	ROBERTSON						
15. Temperature (F)	Temperature (F)16. Visibility17. Weather						18. Type of Track						
51 °F Dark Clear							Main						
19. Track Name/Number	Track Cla	ISS			21. Annual Track Der		c Density	22. Time Table Direction					
Single Main Track	5, Passenger	Tra	ains-30	(gross tons in millions) 58.9			South						

U.S. Department of Transpor Federal Railroad Administrat	tation ion	••• FRA FACTUAL RAILROAD ACCIDENT REPORT FRA File #F									#HQ-2	2017-118	34			
OPERATING TRAIN #1																
1. Type of Equipment Consist: 2. Was Equipment Attended? 3. Train Number/Sym1														ool		
Freight Train								Yes CWTCL9-01)1		
4. Speed (recorded speed	ed,	Code 5	. Traili	ing Tons (gro	SS	6a. R	Remotely Cor	Code Code Code Code Code Code Code Code								
if available)		e	xluding	g power units)		1 = R	emote contro	ol po	ortable trai	nsmitter						
R - Recorded E - Estimated 19	MPH	R	18887			2 = R $3 = R$	emote contro emote contro	ontrol tower operation ontrol portable transmitter - more than one remote control transmitter 0								
6. Type of Territory		11				I										
Signalization:																
Signaled																
Method of Operation/Authority for Movement:																
Signal Indication																
Supplemental/Adjunct Codes:																
<u>Q</u>																_
7. Principal Car/Unit	a. Initi	al and Nu	mber	b. Position in	Frain	c. Loaded (yes/no)			8. If railro	bad emplo	yee(s) tes enter the	ted for	Alcohol		Drugs	
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(derailed, struck, etc.)	CC	TC 9094	C 9094 26			yes			approp	riate box			0		0	
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mechanical, N/A			0			no							N.			
to L i L i		1										1				
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12. Equipment Damage	This Co	onsist	13. Tı	rack, Signal, V	Vay a	& Stru	cture Damag	e								
534348				1720)36		C	,								
14. Primary Cause Cod	e															
T205 - Defective or	missing	g crosstie	s (use	code T110 i	f res	ults ir	n wide gage									
15. Contributing Cause	e Code						00									
T205 - Defective or	missing	g crosstie	s (use	code T110 i	f res	ults in	n wide gage	:								
	Nu	mber of C	rew M	embers							Length o	f Time on	Duty			
16. Engineers/Operators 17. Firemen 18				18. Conductors			rakemen 2	20. Engineer/C		Operator		21. Conductor				
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Casualities to: 22. Railroad Employees			23	23. Train Passengers				.J. L				20. was 1		ice i top		cu:
									No						N/A	
Fatal	ļ	0		0			0 2	27. Caboose Occupied by Crew?				1				
Nonfatal		0	0 0												N/A	
28. Latitude 29. Longitude															•	
30.868246000 -96.585081000																

U.S. Department of Transpor Federal Railroad Administrat	tation ion	FRA FACTUAL RAILROAD ACCIDENT REPORT FRA File #HQ-2017-3										017-1184						
OPERATING TRAIN #2																		
. Type of Equipment Consist: 2. Was Equipment Attended? 3. Train Number/Symbol													ber/Symbol					
Freight Train										Yes			MFV	WHO-0	3			
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11 available)		e.	xiuding	power units)		1 = 1	Remote contr	ol po	ortable trai									
R - Recorded 1 E - Estimated 1	E - Estimated 1 MPH R 3535							$2 = \text{Remote control tower operation} \\ 3 = \text{Remote control portable transmitter} - \text{more than one remote control transmitter} $										
6. Type of Territory															•			
Signalization:																		
Signaled																		
Method of Operation/Authority for Movement:																		
Signal Indication																		
Supplemental/Adjunc	Supplemental/Adjunct Codes:																	
<u>Q</u>																		
7 Principal Car/Unit	Principal Car/Unit a Initial and Number b Position in Train c. Loaded (ves/no) & If railroad employee(c) tested for Alcohol Drugs													Drugs				
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(1) First Involved (derailed struck etc.)									number that were positiv			in the	0		0			
(2) Cousing (if		INU 403	<u>55 9</u>				yes		approp	riate box	ransporti	na nassan	0		0			
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cause reported)		1N/A		0											No			
10. Locomotive Units	a. Head	Mid Train Rear F				nd 11. Cars				Loa	En	Empty						
(Exclude EMU, DML and Cab	End	b.	. c. d.		,	e.	(Include I DMU and	EIVIU,		a. b. c.			d.		e.			
Car Locomotives.)		Manual	Rem	ote Manual	Rei	note	te Car Locomotives.)		ves.)	.) Freight Pass.		Freight	Pass.	Pass. Caboo				
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12 Equipment Damage	This C	neist	13 Tr	ack Signal V	Vav	er Str	ructure Dama	ae										
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14. Primary Cause Cod	e			•														
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T205 - Defective or	missing	g crosstie	es (use	code T110 i	f res	ults	in wide gag	e										
	Nu	mber of C	Crew Me	embers							Length o	of Time on	Duty					
16. Engineers/Operators 17. Firemen			18.	8. Conductors			19. Brakemen		Engineer/O	Operator		21. Conductor						
1				0		Hrs: 0		Mins: 43		Hrs: 0		Mins: 43						
Casualties to: 22 Railroad 23 Train Passene		gers	24. Others		25. EOT Device?			-13	26. Was EOT Device Property			erly Armed?						
Employees				25. ITalli I assengers			21. 00015											
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28. Latitude 29. Longitude																		
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SKETCHES

Hearne TX Sketch 2



NARRATIVE

Circumstances Prior to the Accident

The crew of southbound Union Pacific Railroad (UP) Train CWTCL9-01 included a locomotive engineer and a conductor. The crew first went on duty at their home terminal at 1:40 p.m., CST, on February 3, 2017, in Fort Worth, Texas. Both employees received more than the statutory off-duty period prior to reporting for duty; approximately 21 hours and 8 minutes for the Engineer, and 23 hours and 20 minutes for the Conductor.

The crew was assigned to Train CWTCL9-01, consisting of two lead locomotives, UP 7310 and UP 7061, and two distributed power units, UP 6949 and UP 7234 at the rear of the train. It was comprised of 133 loaded coal hopper cars. The train was 7,484 feet in length, with 18,887 gross tons in weight.

Train CWTCL9-01 had an initial Class 1 air brake test entered at 12:01 a.m., on February 2, 2017, and it was performed on 133 cars according to the issued train list made available to the crew. The locomotives were up-to-date on their daily inspections.

As the train approached the accident area, the Locomotive Engineer was seated at the controls on the west side of the leading locomotive. The Conductor was seated on the east side of the leading locomotive.

The railroad timetable direction of travel for this train is south. The geographical direction for this train is also south. In this area of the railroad, from Milepost (MP) 0 to 5, there is a descending grade with a .59-percent maximum descent. This derailment occurred on tangent track approximately 1.2 miles from the last curve traversed and approximately 200 feet prior to the next curve. Timetable directions are used throughout this report.

The Houston Area Timetable No. 6, effective January 26, 2015 governs UP train operation on the Giddings subdivision. At the derailment site, train operations are governed by centralized traffic control. The derailment occurred at MP 1.1, on a single main track, adjacent to Bryan subdivision main track. The maximum authorized timetable speed for trains operating on this section of track on the Giddings subdivision is 25 mph. The operating rules governing UP employees are the General Code of Operating Rules, 7th edition, effective April 1, 2015, which includes updates as of July 6, 2016.

The Accident

Train CWTCL9-01, traveling southbound at a recorded speed of 19 mph, experienced an undesired emergency brake application at 8:55 p.m. The undesired brake application was due to 18 loaded coal cars derailing at MP 1.1 on the Giddings Subdivision. A southbound manifest train, MFWHO-03, had just initiated movement at MP 119.5 on the Bryan Subdivision, which is adjacent to the point of derailment (POD). Cars from the 18-car derailment collided with four cars of the southbound manifest train causing

them to derail. The crew of Manifest Train MFWHO-03 notified the dispatcher after the train stopped. While making a walking inspection of the train, the Conductor discovered that a derailment had occurred. Train MFWHO-03 did contain hazardous material, but no hazardous materials were involved in the derailment. No injuries were sustained by the crew and there were no evacuations.

Analysis and Conclusions

Analysis - Toxicology Testing: The Federal Railroad Administration (FRA) Post-Accident Toxicology Reports indicate that both crew members were properly tested. All test results were negative. <u>Conclusion</u>: Drug and alcohol use by the crew of Train CWTCL9-01 was not a probable cause of this accident.

<u>Analysis - Fatigue</u>: FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses the default software settings.

FRA obtained fatigue-related information, including a 10-day work history, for both employees involved in this derailment of Train CWTCL9-01.

Information for the employees follows:

1. Locomotive Engineer assigned to Train CWTCL9-01: Sleep setting - Good Overall effectiveness = 92.41 percent Lapse index = 1.15Reaction time = 108 percent Chronic sleep debt = 6.46Hours of continuous wakefulness = 13.92 Time of day 20:55 Finding: Fatigue was not probable for this employee. Conductor assigned to Train CWTCL9-01: Sleep setting - Good Overall effectiveness = 88.54 percent Lapse index = 1.71Reaction time = 113 percent Chronic sleep debt = 6.84Hours of continuous wakefulness = 8.77 Time of day 20:55 Finding: Fatigue was not probable for this employee. Conclusion: Fatigue of Train CWTCL9-01's crew was not a probable cause of this accident.

Analysis - Locomotive Engineer Performance, Train CWTCL9-01: The Engineer was a certified engineer

with a certification date of August 9, 2015, and an expiration date of August 9, 2018. He had been a qualified engineer since October 7, 2004, with previous experience as a qualified conductor, and was hired by UP on March 20, 2002. The event recorder was reviewed and no anomalies were found in the handling of the train.

Conclusion: The Engineer was properly trained in compliance with Federal regulations and was using proper train handling.

Analysis - Conductor Performance, CWTCL9-01: The Conductor was a certified conductor with a certification date of July 11, 2012, and an expiration date of July 19, 2019. He was hired by UP on April 25, 2011.

Conclusion: The Conductor was properly trained in compliance with Federal regulations.

Analysis - Mechanical: A compliant Class 1 air brake test and pre-departure inspection was performed on Train CWTCL9-01, at 12:01 a.m., on February 2, 2017. No defective conditions were found or reported during this inspection. FRA reviewed inspection records for all the locomotives and no exceptions were taken.

Conclusion: Mechanical conditions were not a contributing factor in this derailment.

<u>Analysis - Track and Track Structures</u>: The track where the derailment occurred was last traversed and inspected on February 3, 2017, prior to the derailment. This inspection was conducted by a qualified UP track inspector. No defective conditions were recorded in the area of derailment. The rail at this location was last tested on November 3, 2016, with no exceptions noted.

The post-derailment investigation revealed that defective concrete crossties was the determining factor in the derailment of the 18 loaded coal cars. A review of the outward-facing camera, by FRA inspectors, revealed a visual defective crosstie condition at the POD. No pictures of the defective crossties were taken by FRA due to the time of the accident. A request was made to UP for the pictures that they had taken, but was never produced for this report.

Conclusion: defective concrete crossties were the probable cause of this derailment.

Overall Conclusion

The railroad was in compliance with its own standards, and all applicable Federal standards relating to the Locomotive Engineer and Conductor performance, toxicology testing, and mechanical regulations; however, UP did not comply with track safety standards.

Probable Cause

The probable cause of the accident was Cause Code T205, "defective or missing crossties."