

Federal Railroad Administration Office of Safety Headquarters Assigned Accident Investigation Report HQ-2005-109

> Union Pacific (UP) Lane, Kansas December 22, 2005

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report 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.

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION FRA FACTUAL RAILROAD ACCIDENT REPORT FRA File # <u>HQ-2005-109</u>																			
1.Name of Railroad Union Pacific RR	Ia. Alphabetic Code 1b. UP						Railroad Accident/Incident No. 1205WH009												
2.Name of Railroad O	2a. Alphabetic Code2b.						. Railroad Accident/Incident												
Union Pacific RR		UP						1205WH009											
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4. U.S. DOI_AAR O	5. L	5. Date of Accident/Incident 6. 7						Fime of Accident/Incident											
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7. Type of Accident/		7.	Hwy-rail crossing 10. Explosion-detonation 13. Other																
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cause reported	)		N/A		N/A			N	I∕A	5.	. was uns	consist	uansport	ing passen	gers. (	1/11)		N	
34. Locomotive Units a. Head					rain	Re	ear End		35. Ca	rs			Lo	aded		Emp	oty		
		End	b. Ma	inual	c. Remote	d. Manua	l c. Rei	mote				1	a. Freight	b. Pass.	c. Frei	ight	d. Pass.	e. Caboose	
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36. Equipment Dama	age		ļ.	37 Tre	ck Signal V	Vav			38 Drin	any Co				30 Cont	ributing	Cau	20		
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		Numbe	$\frac{1}{r \text{ of } Cr}$	ew Me	embers				Length of Time on Duty										
40. Engineer/	41. Fir	remen	-	42. Conductors   43. Brakem					44. Engineer/Operator					45. Conductor					
Operators 1	0				2		0		0	s 6 Mi 1		15		Н	rs	6	Mi 15		
Casualties to:	46 Rail	road Emplo	vees /	17 Tro	in Passangar	18 Other			49 EOT	Devia	Device?			50 Was EOT Device Properly Arm				Armed?	
		roud Empre	,,	+/. 11a		5 40.0	Juici		- 1. Yes 2. No			1	2	1. Yes 2. No $ $ N/					
Fatal			0 0			51 Cohoose Occurried by Crow?													
Nonfatal N/A					0 0				51. Caboose Occupied by Crew?					2. No I N/A					
N/A 0 0 1. Yes 2. No N/A																			
						0	PERAT	ΓINC	G TRAI	N #2									
52. Type of Equipment 1. Freight train 4. Work train 7. Yard/switching A. Spec. MoW Equip. Code 53. Was Equipment Code 54. Train Number/Symbol													nber/Symbol						
Consist (single er	gie car 8. Light loco(s).				1			A	1 Nor	2 No 1 CFGA			Г921						
55. Speed (recorded speed if available) Code 57 Method(s) of Operation (enter code(s) that apply) 57a Remotely Controlled Locomotive												motive?							
R - Recorded									mer coue(s) mut apply) atic block m.Special instructions						0 = Not a remotely controlled				
E - Estimated 14 MPH E a. AICS								and of traffic n. Other than main track $1 = \text{Remo}$							ote control portable				
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56. Trailing Tons (gross tonnage, excluding power units) 2881						c. Auto train stop i. Time table/tu d. Cab j.Track warran e. Traffic k. Direct traffi f. Itataloching I. Vard limite					in orders o. Positive train control control p. Other (Specify in narrative) control control code(s)					2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter				
58 Principal Car/Unit a Initial and Nu					Jumber	umber b Position in Train				d(ves/no)	59 1	f railroad	1 emple	se.						
(1) First involved							10		ouue	(yes/n0)	enter the number that were positive in						Alcohol	Drugs		
(derailed, struck, etc) OGEX 26					.637		т <i>)</i>		1	no	the appropriate box.						0	0		
(2) Causing (if mechanical cause reported) 0							N/A		N	I/A	60. Was this consist transporting passengers? (Y/N)						[)	N		
61. Locomotive	Units	a. Head End b. Mai			Mid ' anual <sub>I</sub>	Train c. Remote	Re d. Manua	ear End l   c. Remo	ote	62. Cars L a. Freigh					aded b. Pass.	npty d. Pass.	e. Caboose			
(1) Total in Train			2	2		0 0		1		(1) Total ir	1 Equipment Consist			0	0	131	0	0		
(2) Total D	(2) Total Derailed 0			0	0	0	0		(2) Total Derailed				0	0	0	0	0			
63. Equipment I This Cons	63. Equipment Damage 690000 6					ack, Signal, Structure D	Way, amage	0		65. Primary Cause 66. Contributing Cause Code H401 Code						luse	N/A			
			Number	r of Ċ	rew Me	mbers								Length of 7	Time on D	uty				
67. Engineer/	68.	Firem	nen		69. Co	59. Conductors 70. Bi				71. Engin	eer/O	perator			72. Con	ductor		Mi ao		
Operators	1	0				1		0			Hrs	4	Mi	20		Hrs	4	MI 20		
Casualties to	D: 73. F	Railroa	d Emplo	yees	74. Tra	in Passenge	rs 75. Ot	her	_	76. EOT Device?					77. Was	Armed?				
Fatal			0		0			0		1. Y	es	2. No		2	1.	Yes	2. No	N/A		
Nonfatal			0			0		0	78. Caboo	se Oc	cupied b	y Crew	? 2 No				N/A			
			U Highwa	av Us	er Inv	olved		0		1. res 2. No Rail Equipment Involv										
79. Type			Code	_	83. Equipr		Coda													
C. Tr	icle	Code	3.Train (standing) 6.Light Loco(s) (mo								oving)	Code								
B. Truck E. V	M. Othe	er (spec. in	narrative)	N/A	N/A 2.Train(units pushing) 5.Car(s) (standing) 8.Other (specify in narrati									N/A						
80. Vehicle Sp	geograph	ical)	Code	e	84. Position of Car Unit in Train															
(est. MPH	N/A	4						N/A												
82. Position		loving Ove	. Crossin a	Code	e	85. Circum 1 Rail Ec	stanc	e ent Struc	k Hioh	way User				Code						
4. Trapped	r Crossing	N/A		2. Rail Ec	uipm	ent Struc	k by H	ighway Use	er			N/A								
86a. Was the h		Code	e	86b. Was t	here a	hazardo	us mat	erials releas	e by			Code								
in the imp	pact transpo	orting h	hazardou	s mat	erials?			. N/A		1 High	way I	Iser 2	Rail F	auinment	3 Both	N/A				
1. Highway	User 2. R	Rail Eq	uipment	3. he ha	Both	4. Neither	alaacad if		<b>`</b>	1. Ingn	way c		Kan L	quipinent	J. Doui	4. IVenue		IN/A		
oue. State here t	ine name an	iu quai	inity of t		zaruous	materials	cicaseu, ii	ny. N/A												
87. Type of	1.Gates		4.Wig	Wag	s	7.Cross	bucks 1	0.Flagged	by c	rew	88. S	ignaled (	Crossin	g Warning	Code	89. Whis	tle Ban	Code		
Crossing	signs 1	1.Other (sp	pec.	in narr.)	(S	ee instru	ctions j	for codes)		1. Ye 2 No										
Code(s)	5.Standard	FLS	6.Aud	IDIE		9. watc				N/A					N/A	3. Un	known	N/A		
90 Location of	Warning	14/		19/1	<b>`</b>	Code	91 Cross	rossing Warning Interconnected Code 92 Crossing Illuminated by Street							Code					
1. Both Sides								Highway	Sign	nals		Lights or S			pecial Lig	Coue				
2. Side of Vehicle Approach								1. Yes 2 No			I.	1. Yes 2. No								
5. Opposite Side of Venicle Approach						N/A 3. Unknown					N/A 3. Unknown							N/A		
93. Driver's	iver Drove	Behind or	in Front of	f Tra	in Code	9	<ol> <li>Driver</li> <li>Drove</li> </ol>	e arour	d or thru th	Code										
Age	1. Ma 2. Fer	le nale	1		an 1.	1. Yes       2. No       3. Unknown					2. Stopped and then Proceeded 5. Other ( <i>specify in</i>							g I		
0 N/A								N/A 3. Did not Stop <i>narrative</i> )								N/A				
97. Driver Pass	ed Standing	g	Code	98.	View of	f Track Obs	cured by	(primary	obst	truction)			-	Other (				Code		
1. Yes 2. No	nanent Stru iding Railro	cture ad Equipn	5. Pa nent 4. To	issing opoខា	g 1 rain 5. raphy 6.	v eget Highv	ation vay Vehi	cle 8	Not obstru	<i>pecify in n</i> cted	urrative)		N/A							
101. Casulties to Highway-Rail					Injurad	99. Drive	r Was	1 0	1 2	Code 100			100. Was D	Was Driver in the Vehicle?						
Crossing Users Killed					1	nijurea	1. Killed	1 2.Injured	3. U	Uninjured N/A				1. Ye	N/A					
0 0 102. High								way Vehi dollar day	ay Vehicle Property Damage 103. Total Number of Highway-Ra (include driver)							Rail Cross	ing Users			
104. Locomotiv	e Auxiliary	Light	s?				(est.	Code	iuge	105. Locor	notive	Auxilia	ry Ligł	its Operatio	nal?		U	Code		
1. Ye	es		2. No					N/A		1. Yes 2. No							N/A			
106. Locomotive Headlight Illuminated?								Code	ode 107. Locomotive Audible Warning Sounded?						Code					
1. Yes 2. No										1.	1. Yes 2. No							N/A		

108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED. HQ-109.gif



109. SYNOPSIS OF THE ACCIDENT

On December 22, 2005, a southbound Union Pacific Railroad Company (UP) Train Symbol CJROL9-20, a loaded coal train, operating on main Track No. 1, passed the southbound absolute signal on main Track No. 1 at Control Point (CP) V343, railroad station Lane Jct., milepost 343.5, displaying a "Dark" aspect. The train crew placed the train brakes into "Emergency" when passing this signal while traveling at 12 mph, timetable authorized 55 mph, and proceeded another 237 feet into the "OS" section. This train stopped at 6:22 p.m. CST, upon side swiping a northbound train occupying the "OS" section.

The "OS" section, or over-switch, is defined as the trackage between the northbound and southbound absolute signals at this CP. This trackage includes the entire switch layout.

Main Track No. 1 is geographically located on the west with main Track No. 2 on the east. Southward from Lane Jct. is a single main track to Coffeyville, Kansas, a distance of 319.3 miles.

Northbound UP Train Symbol CFGAT9-21, an empty coal train operating at 14 mph, was proceeding from the Main Track on the diverging route to main Track No. 2 at CP V343, Lane Jct., at the time of the incident. There was no equipment derailed with an estimated \$750,000 in total damages. No train crew members reported any injuries, no hazmat was released and no evacuation order was issued.

Railroad station Lane Jct. is located in the southwest corner of Lane, Kansas. At the time of the incident, it was dark and the weather was cloudy with a calm wind and a temperature of 45 °F.

The accident occurred because the train crew of southbound UP Train Symbol CJROL9-20 failed to stop their train in the clear prior to passing the southbound absolute signal on main Track No. 1 at CP V343, Lane Jct., Lane, Kansas.

## 110. NARRATIVE

The following information was obtained from an investigation that was conducted by the FRA. Circumstances Prior to the Accident

UP Train Symbol CJROL9-20 (Train No. 1)

The assigned loaded coal train consisted of 2 head-end locomotives (UP 7144 and UP 7097) and 1 DPU locomotive (UP 7216), 118 loads, no empties, 6,594 feet in length with 16,244 trailing gross tonnage. This train originated at the Jeremy Ranch Mine, Wyoming and was enroute to Oologah, Oklahoma. The train departed Kansas City at 1:45 p.m., December 22, enroute to Coffeyville, Kansas.

This train had received a "Class 1 Brake Test-Initial Terminal" on December 21 at 6:13 p.m. in North Platte, Nebraska. The train was also designed as an "extended haul train" which allows this train to move up to, but not exceed, 1,500 miles between brake test and mechanical inspection.

The train crew consisted of a locomotive engineer, conductor pilot, and conductor. They had reported for duty on December 22, at 12:05 p.m. in Kansas City, Missouri, their home terminal. All crew members had received more than the statutory off duty period, prior to reporting for duty. This train crew's employment and gualification dates are:

Engineer - 2 years and promoted on 10/18/2005

Conductor - 5 months and promoted on 7/25/05

Conductor Pilot - 1.5 years and promoted on 4/19/04

The conductor pilot was assigned to this crew to supervise the conductor on his second territory familiarization trip as part of the qualification process.

As this southbound train approached the accident area, the locomotive engineer was seated at the controls on the right (west) side of the lead/controlling locomotive. The conductor was seated on the left (east) side and the conductor pilot was seated in the center of the cab of the lead/controlling locomotive.

Approaching the accident area from the north, there are, in succession from MP 342.76 a 3-degree 4-minute left-hand curve of approximately 2,270 feet, followed by a tangent of 370 feet, then a 1,109 foot 2-degree 54-minute right-hand curve to the switch point at MP 343.47. This trackage is on a relatively level grade. UP Train Symbol CFGAT9-21 (Train No. 2)

The assigned empty coal train consisted of 2 head-end locomotives (UP 6027 and UP 7371) and 1 DPU

locomotive (UP 8156), no loads, 131 empties, 7,277 feet in length with 2,881 trailing gross tonnage. This train originated in Fort Gibson, Oklahoma and was enroute to the Antelope Mine, Wyoming. The train departed Coffeyville at 2:23 p.m. enroute to Kansas City, Missouri.

The train crew consisted of a locomotive engineer and conductor. They had reported for duty on December 22, at 2:00 p.m. in Coffeyville. The home terminal for this train crew is Kansas City, and all had received more than the statutory off duty period, prior to reporting for duty. The crews service and qualification dates are:

Engineer - 2 years and promoted on 7/13/2005 Conductor - 1 year and promoted on 5/17/2004

As this northbound train approached the accident area, the locomotive engineer was seated at the controls on the right (east) side, with the conductor seated on the left (west) side, in the cab of the lead/controlling locomotive.

Approaching the accident area from the south, there are in succession, from MP 344.22 a 4-degree 4-minute, left-hand curve of approximately 1,003 feet; followed by a tangent of 53 feet, then a 2,693 foot 3-degree 6-minute right-hand curve, and a tangent for 211 feet to the switch point at MP 343.47. This trackage is on a relatively level grade.

The Accident

The UP operates on the Wichita Division, Coffeyville Subdivision from Kansas City, Missouri, milepost 284.7, southward to Coffeyville, Kansas, milepost 662.8, a distance of 378.1 miles. The method of operation is by signal indication of a Traffic Control System (TCS) supplemented by timetable and special instructions. This TCS is remotely-controlled by the UP train dispatcher located at the Co-Located Dispatching Center in Kansas City, Kansas.

In the vicinity of the accident, the UP operates over two main tracks southward from Osawatomie, Kansas, milepost 333.0, to Lane Jct., milepost 343.5, a distance of 10.5 miles. Main Track No. 1 on the west with main Track No. 2 on the east. Southward from Lane Jct. is a single main track to Coffeyville, a distance of 319.3 miles. Lane Jct. is located in the southwest corner of Lane, in Franklin County, Kansas.

The UP Kansas City Area Timetable No. 2, with an effective date of October 28, 2001, maximum authorized speed is 60 mph for freight movements only. A speed restriction of 55 mph was in effect from milepost 341.8 to milepost 343.5 and 50 mph from milepost 343.5 to milepost 344.2 via Coffeyville Subdivision General Order No. 11, dated December 05, 2005. An additional timetable "Tonnage Restrictions" was in effect restricting to 55 mph if train averages over 90 tons per operative brake or 50 mph if train averages over 110 tons per operative brake between Osawatomie and Coffeyville.

The TCS signal equipment associated with this accident consists of colorlight-type signals (US&S), DC electronically-coded (Electro-Code) main track circuits, DC non-coded track circuits (OS section), and a power-operated dual-controlled switch machine (US&S).

The track structure in the vicinity of the accident consists of 136-lb and 133-lb Continuous-Welded Rail (CWR) mounted on wooden crossties. The switch at Lane Jct. is a northbound right-hand No. 20 turnout with a speed restriction of 40 mph for a diverging movement.

UP Train Symbol CJROL9-20

This southbound train had passed southward intermediate Signal No. 34131 (MP 341.25) on main Track No. 1 displaying a "Yellow" aspect at 44 mph. This displayed indication instructs the train crew to:

UP System Special Instructions

Revised, April 3, 2005

Rule - 9.2.6 Name - Approach . Indication - Proceed prepared to stop before any part of train or engine passes the next signal. Freight trains exceeding 30 MPH must immediately reduce to 30 MPH. This displayed aspect was acknowledged by the train crew at 6:12 p.m. and recorded by the conductor on the "UP Conductor Report" form. The next signal is the southbound absolute signal at Lane Jct., a distance of 2.25 miles.

This train was being operated at a decreasing speed from 44 mph to 12 mph while approaching the accident area. At the time of the accident, the train was being operated at 1 mph. The speeds were recorded by the event recorder of the lead/controlling locomotive.

As this train approached Lane Jct., the train crew observed that the southbound absolute signal on main Track No. 1 was "Dark." This signal is located on the west side (right) of main Track No. 1 with a preview distance of approximately 1,500 feet. There is a mature forest and ground vegetation on both sides of the track

obstructing an earlier preview. The train crew did observe a northbound train on the adjacent track to the east on main Track No. 2.

The train crew realized that they were not going to be able to stop as the train passed the absolute signal at Lane Jct. The engineer made an emergency application of the train's brakes. This train continued for another 237 feet prior to coming to a stop following a side swipe collision with the northbound train on main Track No.

## FRA FACTUAL RAILROAD ACCIDENT REPORT

2. This trains lead/controlling locomotives left front initially collided with the 49th car of the northbound train. When the train was stopped, the train crew instructed the northbound train via radio to stop account of the side swipe collision. This trains crew members remained in the cab of the locomotive until both trains were at stop. There was no derailment of the locomotives or cars associated with this train. This train consist contained no hazardous materials. No crew member reported being injured and did not request medical attention following the accident.

UP Train Symbol CFGAT9-21

This northbound train was being operated at a decreasing speed from 41 mph to 14 mph while approaching the accident area. This train passed the northbound absolute signal at Lane Jct. on the Main Track displaying a "Red over Green" aspect at 14 mph. This displayed "Diverging Clear" indication instructs the train crew to "Proceed on diverging route not exceeding prescribed speed through turnout." This diverging route is from the Main Track to main Track No. 2.

The train was brought to a controlled stop following instructions via radio from the southbound train on the adjacent track to the west, main Track No. 1.

At the time of the accident, the train was being operated at 14 mph. The speeds were recorded by the event recorder of the lead/controlling locomotive.

There was no derailment of the locomotives or cars associated with this train. This train consist contained no hazardous materials. Cars No. 49 through 118 (69-total) were damaged prior to the train stopping as a result of this collision. Neither crew member reported being injured nor requested medical attention following the accident.

This train crew reported the accident to the UP train dispatcher via radio at 6:33 p.m. and requested a manager be dispatched to the accident site. The train dispatcher notified the local law enforcement dispatcher of the accident at 6:41 p.m. .

The locomotive engineer remained in the cab of the locomotive in order to maintain radio communications with the train dispatcher following the accident. The conductor walked back (south) to the point of the accident inspecting the train for damage and any derailments.

Analysis and Conclusions

Analysis

The UP downloaded the event recorders of both trains lead/controlling locomotives at the accident site. Upon review, no exceptions were noted to locomotive or train performance, or train handling prior to the accident by either train crew.

The southbound UP Train Symbol CJROL9-20 had received a "brake test-initial terminal" prior to departure from its initial terminal. The incident train crew did not perform an air brake test prior to departing Kansas City in that this was an "extended haul train" with no exceptions noted by the previous train crew.

The performance of the wayside signal system was tested on December 23, in the presence of the FRA accident Inspector-in-Charge (IIC). This testing was performed by the UP Manager Signal Maintenance (Kansas City), the signal testman and two signal maintainers. The results of this TCS testing confirmed that the wayside signal system in the vicinity of the accident was operating as intended and designed. The test also confirmed that the southbound absolute signal on main Track No. 1 at Lane Jct. was "Dark" as reported by the incident train crew. The red position lamp was in fact burned out and was replaced at the time of the investigation. The yellow and green position lamps were functioning properly.

During this field testing of this wayside signal system, the southbound absolute signal on main Track No. 2 was also "Dark." This signal is located on the east side of main Track No. 2, adjacent to the signal on main Track No. 1. The red position lamp was not illuminated account of an intermittent lamp socket connection which was replaced at the time of the investigation. The yellow and green position lamps were functioning properly. The train crew of UP Train Symbol CJROL9-20 accepted responsibility for the accident. They elected to enroll

in the UP's Continuing Operating Rules Education Program (CORE) and are currently being retrained in each of their occupations. Each crew member received a 30-day suspension and would be eligible to return to duty on January 22, 2006 following a successful completion of CORE. There was no formal investigation conducted by the UP account of the train crew accepting responsibility.

The UP collected Toxicological (TOX) samples from both train crews in accordance with company policy of reasonable cause, with negative results. The TOX samples for the three incident train crew members where not obtained in accordance with FRA's Post-Accident Toxicological Testing requirements (49 CFR Part 219, Subpart C).

Conclusions

The wayside signal system was operating as intended and within the UP and FRA's regulatory guidelines. The incident train's locomotive and consist mechanical functions were operating as intended and within the UP's regulatory guidelines. The incident train crew did not indicate any problems with the train or its performance, nor with the movement authority prior to the accident. The incident train crews drug and alcohol TOX testing

## FRA FACTUAL RAILROAD ACCIDENT REPORT

results indicated negatively for a foreign substance influence. A review of the incident train crews recent efficiency testing results, indicates compliance with UP's General Code of Operating Rules (GCOR) and company safety rules.

Probable Cause and Contributing Factors

The probable cause of this accident is FRA code H401- Failure to stop train in clear. The accident occurred because the train crew of southbound UP Train Symbol CJROL9-20 failed to stop their train in the clear prior to passing the dark southbound absolute signal on main Track No. 1 at CP V343, Station Lane Jct., Lane, Kansas.

There were no contributing factors involved in this accident.