Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-34

Union Pacific (UP)
Solon Springs, Wisconsin
April 14, 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 # HQ-2005-34

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0405TC007
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident: N/A
3.Name of Railroad Responsible for Track Maintenance: Canadian National	3a. Alphabetic Code: CN	3b. Railroad Accident/Incident No.: 357707
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 04 / Day 14 / Year 2005	6. Time of Accident/Incident: 03:18:00 ☐ AM ☑ PM

7. Type of Accident/Indicent (single entry in code box): 1. Derailment; 2. Head on collision; 3. Rear end collision; 4. Side collision; 5. Raking collision; 6. Broken Train collision; 7. Hwy-rail crossing; 8. RR grade crossing; 9. Obstruction; 10. Explosion-detonation; 11. Fire/violent rupture; 12. Other impacts; 13. Other (describe in narrative): 01

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
5	1	0	120	TWIN CITIES

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
SOLON SPRINGS	427.8	N/A	WI	DOUGLAS

17. Temperature (F) (specify if minus)	18. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark	Code	19. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow	Code	20. Type of Track 1. Main 2. Yard 3. Siding 4. Industry	Code
56 F		2		1		1

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
SINGLE MAIN TRACK		4	31		2

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. Code: 1

26. Was Equipment Attended? 1. Yes 2. No: 1

27. Train Number/Symbol: MITPR -14

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 44 MPH; Code: R

29. Trailing Tons (gross tonnage, excluding power units): 6369

30. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; g. Automatic block; h. Current of traffic; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; m.Special instructions; n. Other than main track; o. Positive train control; p. Other (Specify in narrative) Code(s): e N/A N/A N/A N/A

30a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	39	yes
(2) Causing (if mechanical cause reported)	M505	0	N/A

32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

33. Was this consist transporting passengers? (Y/N): N/A

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	N/A	N/A	N/A	N/A	N/A	(1) Total in Equipment Consist	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A	(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
N/A	N/A	N/A	N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	N/A	N/A	N/A

Length of Time on Duty

44. Engineer/Operator: Hrs N/A Mi N/A

45. Conductor: Hrs N/A Mi N/A

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

49. EOT Device? 1. Yes 2. No: N/A

50. Was EOT Device Properly Armed? 1. Yes 2. No: N/A

51. Caboose Occupied by Crew? 1. Yes 2. No: N/A

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. Code: N/A

53. Was Equipment Attended? 1. Yes 2. No: N/A

54. Train Number/Symbol: N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated: 0 MPH; Code: N/A

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

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56. Trailing Tons (gross tonnage, excluding power units)	c. Auto train stop d. Cab e. Traffic f. Interlocking	i. Time table/train orders j.Track warrant control k. Direct traffic control l.Yard limits	o. Positive train control p. Other (Specify in narrative) Code(s)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
0			N/A N/A N/A N/A N/A	N/A

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. 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)	0	0	N/A		N/A	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A	60. Was this consist transporting passengers? (Y/N)	N/A	

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	0	0	0	0	0	(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
0	0	N/A	N/A

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
0	0	0	0	Hrs 0 Mi 0	Hrs 0 Mi 0

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	0	0	0

76. EOT Device? (1. Yes 2. No)	77. Was EOT Device Properly Armed? (1. Yes 2. No)	78. Caboose Occupied by Crew? (1. Yes 2. No)
N/A	N/A	N/A

Highway User Involved

79. Type	Code
A. Auto B. Truck C. Truck-Trailer. D. Pick-Up Truck E. Van F. Bus G. School Bus H. Motorcycle J. Other Motor Vehicle K. Pedestrian M. Other (spec. in narrative)	N/A

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) 1.North 2.South 3.East 4.West	Code
0		N/A

82. Position	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? (1. Highway User 2. Rail Equipment 3. Both 4. Neither)	Code
	N/A

Rail Equipment Involved

83. Equipment	Code
1.Train(units pulling) 2.Train(units pushing) 3.Train (standing) 4.Car(s) (moving) 5.Car(s) (standing) 6.Light Loco(s) (moving) 7.Light(s) (standing) 8.Other (specify in narrative)	N/A

84. Position of Car Unit in Train
0

85. Circumstance	Code
1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	N/A

86b. Was there a hazardous materials release by (1. Highway User 2. Rail Equipment 3. Both 4. Neither)	Code
	N/A

86c. State here the name and quantity of the hazardous materials released, if any.
N/A

87. Type of Crossing Warning	1.Gates	2.Cantilever FLS	3.Standard FLS	4.Wig Wags	5.Hwy. traffic signals	6.Audible	7.Crossbucks	8.Stop signs	9.Watchman	10.Flagged by crew	11.Other (spec. in narr.)	12.None
Code(s)	N/A	N/A		N/A		N/A	N/A			N/A		N/A

88. Signaled Crossing Warning (See instructions for codes)	Code

89. Whistle Ban (1. Yes 2. No 3. Unknown)	Code
	N/A

90. Location of Warning (1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach)	Code
	N/A

91. Crossing Warning Interconnected with Highway Signals (1. Yes 2. No 3. Unknown)	Code
	N/A

92. Crossing Illuminated by Street Lights or Special Lights (1. Yes 2. No 3. Unknown)	Code
	N/A

93. Driver's Age	94. Driver's Gender (1. Male 2. Female)	Code
0		N/A

95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train (1. Yes 2. No 3. Unknown)	Code
	N/A

96. Driver (1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative))	Code
	N/A

97. Driver Passed Standing Highway Vehicle (1. Yes 2. No 3. Unknown)	Code
	N/A

98. View of Track Obscured by (primary obstruction) (1. Permanent Structure 2. Standing Railroad Equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicle 7. Other (specify in narrative) 8. Not obstructed)	Code
	N/A

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

99. Driver Was (1. Killed 2.Injured 3. Uninjured)	Code
	N/A

100. Was Driver in the Vehicle? (1. Yes 2. No)	Code
	N/A

102. Highway Vehicle Property Damage (est. dollar damage)	103. Total Number of Highway-Rail Crossing Users (include driver)
0	0

104. Locomotive Auxiliary Lights? (1. Yes 2. No)	Code
	N/A

105. Locomotive Auxiliary Lights Operational? (1. Yes 2. No)	Code
	N/A

106. Locomotive Headlight Illuminated? (1. Yes 2. No)	Code
	N/A

107. Locomotive Audible Warning Sounded? (1. Yes 2. No)	Code
	N/A

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

109. SYNOPSIS OF THE ACCIDENT

On April 14, 2005, at about 3:18 p.m., Union Pacific (UP) Train No. MITPR-14 with 6369 trailing tons (48 loads, 8 empties) traveling in a southerly direction derailed at mile post 427.8. The train was traveling 44 mph (recorded) at the time of the derailment, authorized track speed is 50 mph (timetable).

Twenty one freight cars derailed including one hazardous material car containing Hexene, (UN 2370) in Tank Car, TILX 301495. The car did not rupture or leak any of the contents. Due to the derailment of the tank car approximately 80 residences were evacuated. The evacuation was conducted by the fire chief of Solon Springs, Wisconsin (WI). There were no injures to civilian or railroad personnel.

Eight cars containing lumber were on fire after the derailment, the cars were ultimately destroyed, contributing to the evacuation. The weather at the time of the derailment was 56° F and dry.

Of the 21 cars derailed, 18 were destroyed. The total damage to the equipment was $571,661.00 and $45,000 damage to track and signal.

The probable cause of this accident was the uncoupling of car CN 623378 (29th car in the consist) and the sequential internal train forces which the uncoupling set-in-motion. The uncoupling resulted due to a missing vertical coupler retaining pin on the a-end coupler shank of car CN 623378.

110. NARRATIVE

Circumstances Prior to the Accident

The train crew for Train No. MITPR-14 consisted of an engineer and conductor, who reported for duty on April 14, 2005, at 10 a.m., CDT.

Prior to reporting for duty, the engineer had 48 hours rest and the conductor had 41 hours rest. The crew members went on duty at Itasca Yard, in Superior, Wisconsin (WI).

The train originated at Itasca Yard and it was the responsibility of the train crew to perform the Class I air brake test on the train.

Train No. MITPR-14 was operating on Wisconsin Central LTD (WC) trackage as it approached Provost Crossing (private) at 44 miles per hour as recorded by the event recorder of the lead locomotive. Authorized track speed is 50 miles per hour as indicated by Canadian National Railroad (CN) timetable No. 2, dated December 12, 2004.

The locomotive engineer was seated on the west side of the lead locomotive (short hood forward) facing south. The conductor was seated on the east side of the locomotive facing south. The conductor stated as lead Locomotive UP 2985 cleared the crossing they felt a rough spot in the rail as the locomotive dipped.

The Accident

Simultaneously, the locomotive engineer made a reduction of the train air brakes. Prior to this, the train air brakes were set to control the speed at a minimum reduction. The locomotive engineer looked into the rear mirror and observed the cars bouncing up and down, it was at this point the train air brakes went into emergency.

When the train came to a complete stop, the conductor walked back to the derailment. This was about 19 cars from the head end and he observed several freight cars on fire. He immediately notified the locomotive engineer of the circumstances who called the dispatcher. The dispatcher called local fire and police departments. Initially, the local fire department received a call from an unknown truck driver who reported a brush fire in the derailment area. It could not be determined if it was direct cause of the derailment. The locomotive engineer and conductor were both alcohol and drug tested under UP reasonable cause. The results were negative for both.

Analysis and Conclusions

On April 14, 2005, prior to departure from Itasca Yard, the locomotives received a daily inspection by the locomotive engineer. The train crew performed a Class I air brake test on the 56 freight cars.

A WC track geometry car tested the rail in November 2004, no exceptions were noted. There were no indications found that track structure was the cause of this derailment.

An inspection of Locomotive UP 2985 revealed it received a daily inspection on April 14, 2005 at 10:40 a.m, at Itasca Yard. The last periodic inspection was conducted on February 11, 2005, at Mt. Vernon, IL.

Locomotive NREX 5066 received a daily inspection on April 14, 2005 at 11:00am, at Itasca Yard. The last periodic inspection was conducted on March 25, 2005, at

Northtown Yard in Minneapolis, MN.

An inspection by FRA, MP&E Inspectors of the locomotives did not reveal any conditions that may have contributed to the derailment. Lead Locomotive UP 2985 had the fuel line safety cut-off device stenciling on the right and left sides of the locomotive missing. Locomotive NREX 5066 had excessive accumulation of water on the cab floor, contributing to a slipping hazard, subject locomotive also had the rear control stand panel missing as it is used only as a trailing locomotive.

An inspection of the derailment site by a FRA track inspector was conducted. The track is 115# continuous welded rail laid in 1999 and ties were replaced in 2000. Mile post 427.84 has a 3 degree 45 minute right hand curve with 3 1/4 inch elevation. Immediately to the north is a 3 degree 19 minute left hand curve with 2 3/4 elevation and to the south a 2 degree 6 minute left hand curve with a 1 ½ inches elevation. No Track Safety Standard exceptions were observed.

Probable Cause and Contributing Factors

An inspection by Union Pacific mechanical personnel revealed that the vertical coupler retaining pin on the a-end coupler shank of car CN 623378 was missing. The missing pin allowed car CN 623378 to become uncoupled while in transit.

The probable cause of this accident was the uncoupling of car CN 623378 (29th car in the consist) and the sequential internal train forces which the uncoupling set-in-motion. The uncoupling resulted due to a missing vertical coupler retaining pin on the a-end coupler shank of car CN 623378.