Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-72

Union Pacific
Bradford, IA
August 4, 2006

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-2006-72

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0806TC014
2.Name of Railroad Operating Train #2: Union Pacific RR Co. [UP]	2a. Alphabetic Code: UP	2b. Railroad Accident/Incident: 0806TC014
3.Name of Railroad Responsible for Track Maintenance: Union Pacific RR Co. [UP]	3a. Alphabetic Code: UP	3b. Railroad Accident/Incident No.: 0806TC014
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 08 / Day 12 / Year 2006	6. Time of Accident/Incident: 04:43: ☐ 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): 03

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	0	0	0	Twin Cities

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Bradford	157.5	N/A	IA	FRANKLIN

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
85 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		4	28		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	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
	1	1. Yes	1	SSSON 11

28. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	30. Method(s) of Operation (enter code(s) that apply)	30a. Remotely Controlled Locomotive?
16 MPH	R	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)	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter

29. Trailing Tons (gross tonnage, excluding power units): 4984

Code(s): g | j | N/A | N/A | N/A

30a. Remotely Controlled Locomotive? 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	1	N/A
(2) Causing (if mechanical cause reported)	0	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
0	0

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

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	2	0	0	0	0	(1) Total in Equipment Consist	40	0	0	0	0
(2) Total Derailed	2	0	0	0	0	(2) Total Derailed	1	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
80297	0	H605	N/A

Number of Crew Members / Length of Time on Duty

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen	44. Engineer/Operator	45. Conductor
N/A	0	2	0	Hrs 4 Mi 28	Hrs 4 Mi 28

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	0	0

49. EOT Device? 1. Yes 2. No: 1

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

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	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
	1	1. Yes	1	MSSNP -11

55. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	57. Method(s) of Operation (enter code(s) that apply)	57a. Remotely Controlled Locomotive?
0 MPH	R	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	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
7350			g j N/A N/A N/A	0

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)	DTTA2 7005	106	no		N/A	N/A
(2) Causing (if mechanical cause reported)	N/A	N/A	N/A	60. Was this consist transporting passengers? (Y/N)		N

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	3	0	0	0	0
(2) Total Derailed	0	0	0	0	0

62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	54	0	51	0	0
(2) Total Derailed	0	0	4	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
174348	35060	H605	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
1	0	1	0	Hrs 5 Mi 13	Hrs 5 Mi 13

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)
1	1	N/A

Highway User Involved

79. Type — Code: N/A
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)

80. Vehicle Speed (est. MPH at impact): N/A

81. Direction geographical) — Code: N/A
1.North 2.South 3.East 4.West

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

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

Rail Equipment Involved

83. Equipment — Code: N/A
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)

84. Position of Car Unit in Train: N/A

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

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

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	N/A

88. Signaled Crossing Warning (See instructions for codes) — Code: N/A

89. Whistle Ban — Code: N/A
1. Yes 2. No 3. Unknown

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

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

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

93. Driver's Age: N/A

94. Driver's Gender — Code: N/A
1. Male 2. Female

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

96. Driver — Code: N/A
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)

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

98. View of Track Obscured by (primary obstruction) — Code: N/A
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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	N/A	N/A

99. Driver Was — Code: N/A
1. Killed 2.Injured 3. Uninjured

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

102. Highway Vehicle Property Damage (est. dollar damage): N/A

103. Total Number of Highway-Rail Crossing Users (include driver): N/A

104. Locomotive Auxiliary Lights? — Code: N/A
1. Yes 2. No

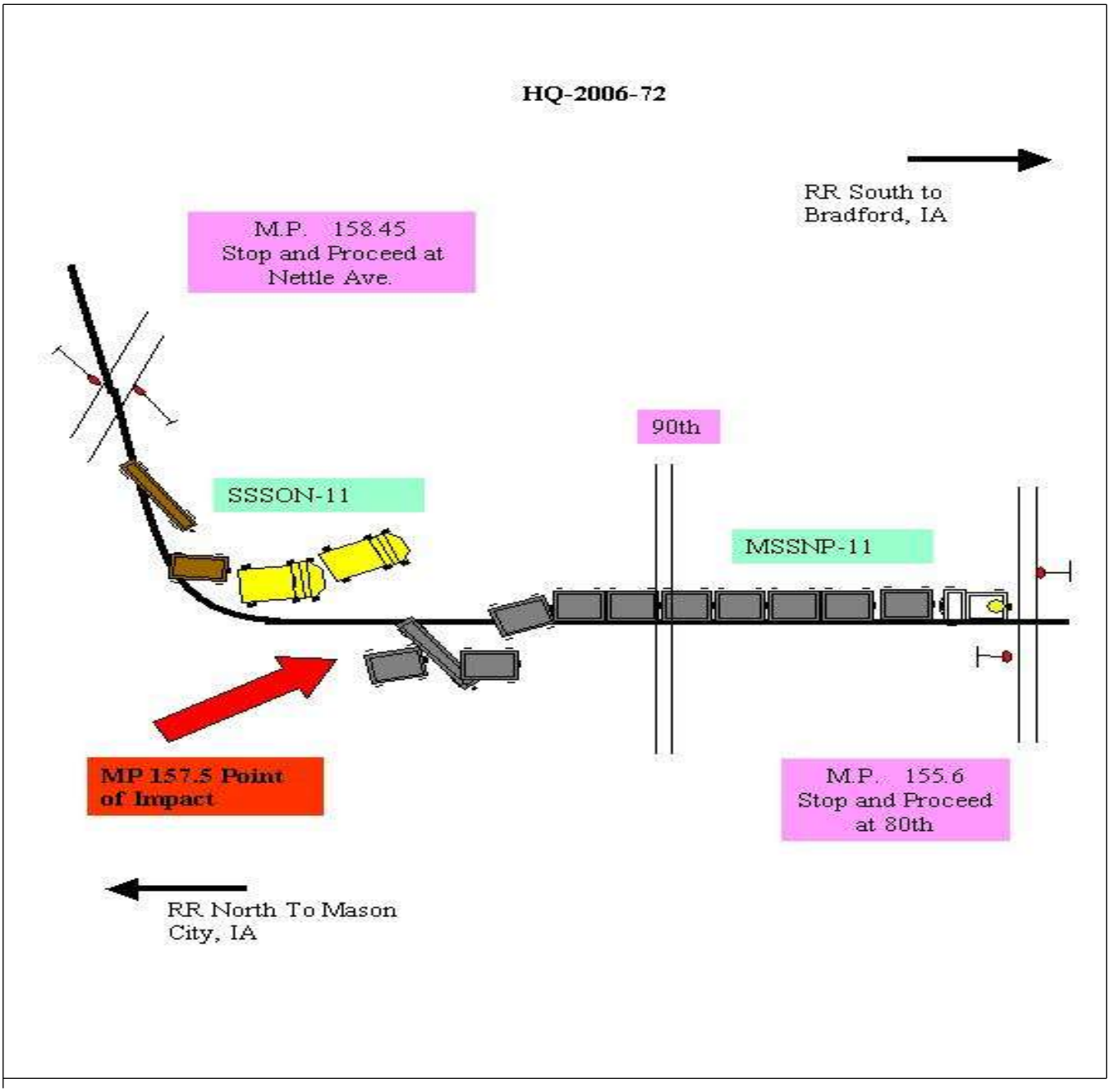
105. Locomotive Auxiliary Lights Operational? — Code: N/A
1. Yes 2. No

106. Locomotive Headlight Illuminated? — Code: N/A
1. Yes 2. No

107. Locomotive Audible Warning Sounded? — Code: N/A
1. Yes 2. No

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

HQ-2006-72 Sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

A southbound UP freight train bearing Train Symbol SSSON-11 (Train No. 1) collided with another southbound UP freight train bearing Train Symbol MSSNP-11 (Train No. 2) on August 12, 2006, at 4:43 p.m. The accident occurred on UP single main track near Bradford, Iowa, milepost (MP) 157.5, on the Mason City Subdivision, Twin Cities Service Unit.

There were no injuries.

The impact caused the rear four cars of Train No. 2 to derail and the two locomotives and leading wheels of the head car of Train No. 1 to derail. Both locomotives of Train No. 1 remained upright with diesel fuel leaking from the lead locomotive's ruptured fuel tanks. Approximately 2,000 gallons of diesel fuel spilled and began to flow toward waterway Mayne Creek near milepost 157.6, approximately 10 car lengths to the north. Spill flow was stopped before reaching the waterway. The end-of-train device of Train No. 2 was destroyed in the collision. The three rear cars of Train No. 2 had all wheels derailed on the ground with the platforms crosswise to the main track. The fourth rear car of Train No. 2 (the rear end of a 5-pack platform) had all wheels derailed in the west ditch with the head end of platform wheels on the rails.

The weather at the time of the accident was clear, daylight, wind SSE at 13 mph, and the temperature was 85 °F.

The accident was caused by the failure of the crew of Train No. 1 to comply with signal indication requiring train to operate at restricted speed.

110. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of Train No. 1, after receiving more than the required off-duty time (15-hours 45-minutes off duty prior to going on duty) prior to reporting for duty at Mason City, Iowa, at 12:15 p.m. CDT, on August 12, 2006. The crew consisted of an engineer, conductor, and conductor pilot, assigned to operate freight Train No.1, which consisted of 2 locomotives (UP 3388 and CSXT 8574) coupled to 40 carloads of pipe (40 loads, 0 empties), 4,984 trailing tons, and 4,053 feet, from Mason City (milepost 193.1) to Des Moines, Iowa, (milepost 73.6), a distance of approximately 119.5 miles. At Mason City Yard, Train No. 1 was parked behind Train No. 2. After Train No. 2 departed, Train No. 1 broke a knuckle which took some time to replace. The train did not depart Mason City until approximately 3:30 p.m., with the engineer operating the train, the conductor seated in the left front seat, and the conductor pilot seated in the left rear seat of the lead unit (UP 3388). Train No. 1 was following southbound freight Train No. 2.

The method of operation in the area where the accident occurred is by Track Warrant Control supplemented by Automatic Block Signal System. The maximum authorized speed is 50 mph for freight trains.

The crew of Train No. 2 reported for duty at 11:30 a.m., at Mason City after receiving more than the required off-duty time (over 30 hours). The crew consisted of an engineer and a conductor assigned to operate a manifest freight train consisting of 3 locomotives (UP 9740, UP 9682, and UP 5907) coupled to 105 cars (54 loads, 51 empties), 7,350 trailing tons, and 6,377 feet, bound from Mason City to Boone, Iowa, a distance of approximately 105 miles. Train No. 2 had some work to perform in the Mason City Yard before departing. The train did not depart Mason City until approximately 2:30 p.m., with the engineer operating the train and the conductor seated in the left front seat.

As the trains traversed the distance between Mason City and Bradford, Iowa, Train No. 1 began to close the distance between the two trains, and encountered various wayside automatic block signal (ABS) aspects more restricting than clear beginning at milepost 192.

Train No. 2 was stopped in approach to a "stop and proceed" signal, at milepost 155.6.

Train No. 1 continued to close the gap. Train No. 1 encountered an "approach" signal at milepost 160.7. At milepost 158.5, Train No. 1 stopped for a "stop and proceed" signal. (This signal is approximately 8,350 feet beyond the rear car on Train No. 2.) Train No. 1, after stopping for this "stop and proceed" signal, proceeded south.

The trackage in the area of the accident beginning at milepost 159 has a 1-percent descending grade to the south to milepost 157.9, where it changes to a 1-percent ascending grade to the south, with a 2-degree 45-minute right-hand curve to milepost 157.6. The trackage is then tangent to the point of impact at milepost 157.5. The weather at the time of the accident was clear, daylight, wind SSE at 13 mph, and the temperature was 85°F. Sight distance approaching the point of collision was obstructed by the curvature of the track and dense foliage, with visibility less than 1,000 feet.

THE ACCIDENT

The event recorder taken from the lead locomotive of Train No. ,1 indicated that the train stopped 1/4-mile prior to the "stop and proceed" signal, at milepost 158.5. It also indicated that after stopping, Train No. 1 proceeded and passed the signal at milepost 158.5, at 17 mph. The event recorder also indicated that Train No. 1 was traveling at 20 mph 90 seconds prior to impact and 32 mph 30 seconds prior to impact, when the engineer initiated an emergency application of the air brakes. Train No. 1 impacted the rear car of Train No. 2 at 16 mph.

UP System Special Instructions, effective 0001 Sunday, June 18, 2006, Item 20, Block and Interlocking Signals, Rule 9.2.14, entitled "Stop and Proceed" reads as follows:

Stop before any part of train or engine passes the signal then proceed at restricted speed to next signal.

General Code of Operating Rules, Fifth Edition, Effective April 3, 2005, Rule 6.27, Movement at Restricted Speed, reads as follows:

When required to move at restricted speed, movement must be made at a speed that allows stopping within half the range of vision short of:
Train.
Engine.
Railroad car.
Men or equipment fouling the track.
Stop signal.
Or
Derail of switch lined improperly.

When a train or engine is required to move at restricted speed, the crew must keep a lookout for broken rail and not exceed 20 mph.

Comply with these requirements until the leading wheels reach a point where movement at restricted speed is no longer required.

The impact caused the rear four cars of Train No. 2 to derail and the two locomotives and leading wheels of the head car of Train No. 1 to derail. Both locomotives of Train No. 1 remained upright with diesel fuel leaking from the lead locomotive's ruptured fuel tanks. Approximately 2,000 gallons of diesel fuel spilled and began to flow toward waterway Mayne Creek near milepost 157.6, located approximately 10 car lengths to the north. Spill flow was stopped before reaching the waterway. The end-of-train device of Train No. 2 was destroyed in the collision. The three rear cars of Train No. 2 had all wheels derailed on the ground with the platforms crosswise to the main track. The fourth rear car of Train No. 2 (the rear end of a 5-pack platform) had all wheels derailed in the west ditch with the head end of platform wheels on the rails.

ANALYSIS AND CONCLUSIONS

FRA Post-Accident Forensic Toxicology Result Reports indicates that all crew members of Train No. 1 had negative test results.

Engineer of Train No. 1 was issued Notification of Certificate Suspension effective on August 13, 2006, for colliding with rear end of MSSNP-11 while running on Stop and Proceed. This suspension was taken as a result of CFR 240.117(e)(2), failure to adhere to limitations concerning train speed when the speed at which the train was operated exceeds the maximum authorized limit by at least 10 mph. Where restricted speed is in effect, railroads shall consider only those violations of the conditional clause of restricted speed rules (i.e., the clause that requires stopping within one-half of the locomotive engineer's or Remote Control Operator's range of vision), or the operational equivalent thereof, which causes reportable accidents or incidents under Part 225 of this chapter, as instances of failure to adhere to this section. NOTE: Restricted speed results in revocation if violation results in meeting or exceeding the monetary reporting threshold for FRA reportable accidents/incidents, or if there is a reportable personal injury. The suspension was for 30 days.

A formal investigation on all crew members of Train No. 1 was held on September 28, 2006, for violation of the GCOR Rule 1.6 resulting in the rear-end collision with MSSNP-11 on August 12, 2006. All members of the crew were issued Level V of the UP Behavior Modification Policy and were permanently dismissed on October 9, 2006.

UP Managers conducted interviews with the crew members of Train No. 1 on August 12, 2006. Copies of those interview notes are attached.

A followup interview with the crew members of Train No. 1 and their union representatives was conducted by FRA OP Inspectors on August 15, 2006, in Des Moines, Iowa.

PROBABLE CAUSE AND CONTRIBUTING FACTORS

An investigation by the Federal Railroad Administration found that the crew of Train No. 1 failed to operate their train in accordance with restricted speed was the contributing factor in this accident.