Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-41

Kansas City Southern Railway Co. (KCS)
Hartford, Illinois
July 6, 2007

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-2007-41

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0707SL006
2.Name of Railroad Operating Train #2: Federal RR Administration [FRA]	2a. Alphabetic Code: FRA	2b. Railroad Accident/Incident No.: XXX
3.Name of Railroad Operating Train #3: N/A	3a. Alphabetic Code: N/A	3b. Railroad Accident/Incident No.: N/A
4.Name of Railroad Responsible for Track Maintenance: Gateway Eastern RR Co. [GWWE]	4a. Alphabetic Code: GWWE	4b. Railroad Accident/Incident No.: 07070601
5. U.S. DOT_AAR Grade Crossing Identification Number: 294459U	6. Date of Accident/Incident: Month 07 Day 06 Year 2007	7. Time of Accident/Incident: 08:48:00 ☑ AM ☐ PM

8. 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) — Code: 07

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	N/A	N/A	0	ST LOUIS

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
HARTFORD	266.7	N/A	IL	MADISON

18. Temperature (F) (specify if minus)	19. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark — Code	20. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow — Code	21. Type of Track 1. Main 2. Yard 3. Siding 4. Industry — Code
79 F	2	1	1

22. Track Name/Number	23. FRA Track Class (1-9, X) — Code	24. Annual Track Density (gross tons in millions)	25. Time Table Direction 1. North 2. South 3. East 4. — Code
MAIN TRACK NO. 2	4	1.37	1

OPERATING TRAIN #1

26. 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	27. Was Equipment Attended? 1. Yes 2. No — Code	28. Train Number/Symbol
9	1	WSLJLP-06

29. Speed (recorded speed, if available) R - Recorded E - Estimated: 60 MPH — Code: E

30. Trailing Tons (gross tonnage, excluding power units): 106

31. 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): g | j | N/A | N/A | N/A

31a. 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

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	DOTX-219	1	N/A
(2) Causing (if mechanical cause reported)	00	0	N/A

33. 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

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

35. 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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	1	0	0
(2) Total Derailed	0	0	1	0	0

37. Equipment Damage This Consist: 500000

38. Track, Signal, Way, & Structure Damage: 551

39. Primary Cause Code: M304

40. Contributing Cause Code: N/A

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
1	0	0	0

Length of Time on Duty

45. Engineer/Operator: Hrs 3 Mi 48

46. Conductor: Hrs 0 Mi 0

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	1	0	0

50. EOT Device? 1. Yes 2. No — 2

51. Was EOT Device Properly Armed? 1. Yes 2. No — 2

52. Caboose Occupied by Crew? 1. Yes 2. No — 2

OPERATING TRAIN #2

53. 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	54. Was Equipment Attended? 1. Yes 2. No — Code	55. Train Number/Symbol
N/A	N/A	N/A

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

58. 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

58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

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57. Trailing Tons (gross tonnage, excluding power units): N/A

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): N/A N/A N/A N/A N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: N/A

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

60. 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

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

62. 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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

64. Equipment Damage This Consist: 0

65. Track, Signal, Way, & Structure Damage: 0

66. Primary Cause Code: M304

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
0	0	0	0

Length of Time on Duty

72. Engineer/Operator: Hrs 0 Mi 0

73. Conductor: Hrs 0 Mi 0

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	0	0	0
Nonfatal	0	0	0

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

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

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

OPERATING TRAIN #3

80. 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

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

82. Train Number/Symbol: N/A

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

84. Trailing Tons (gross tonnage, excluding power units): N/A

85. 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): N/A N/A N/A N/A N/A

85a. 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: N/A

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

87. 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

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

89. 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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

91. Equipment Damage This Consist: 0

92. Track, Signal, Way, & Structure Damage: 0

93. Primary Cause Code: N/A

94. Contributing Cause Code: N/A

Number of Crew Members

95. Engineer/ Operators	96. Firemen	97. Conductors	98. Brakemen
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

104. EOT 1. Yes 2. No: N/A

105. Was EOT Device Properly 1. Yes 2. No: N/A

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

Highway User Involved

107. 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) Code: B

108. Vehicle Speed (est. MPH at impact): 2

109. geographical) 1.North 2.South 3.East 4.West Code: 3

Rail Equipment Involved

111. Equipment 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) Code: 4

112. Position of Car Unit in: 1

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110. Position	Code	113. Circumstance	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	3	1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	1
114a. 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	4	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	4

114c. State here the name and quantity of the hazardous materials released, if any.
N/A

115. Type 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)	07	N/A	N/A	N/A	N/A	N/A	N/A					

116. Signaled Crossing (See instructions for codes)	Code	117. Whistle 1. Yes 2. No 3. Unknown	Code
	N/A		2

118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	Code	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown	Code	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code
	1		2		2

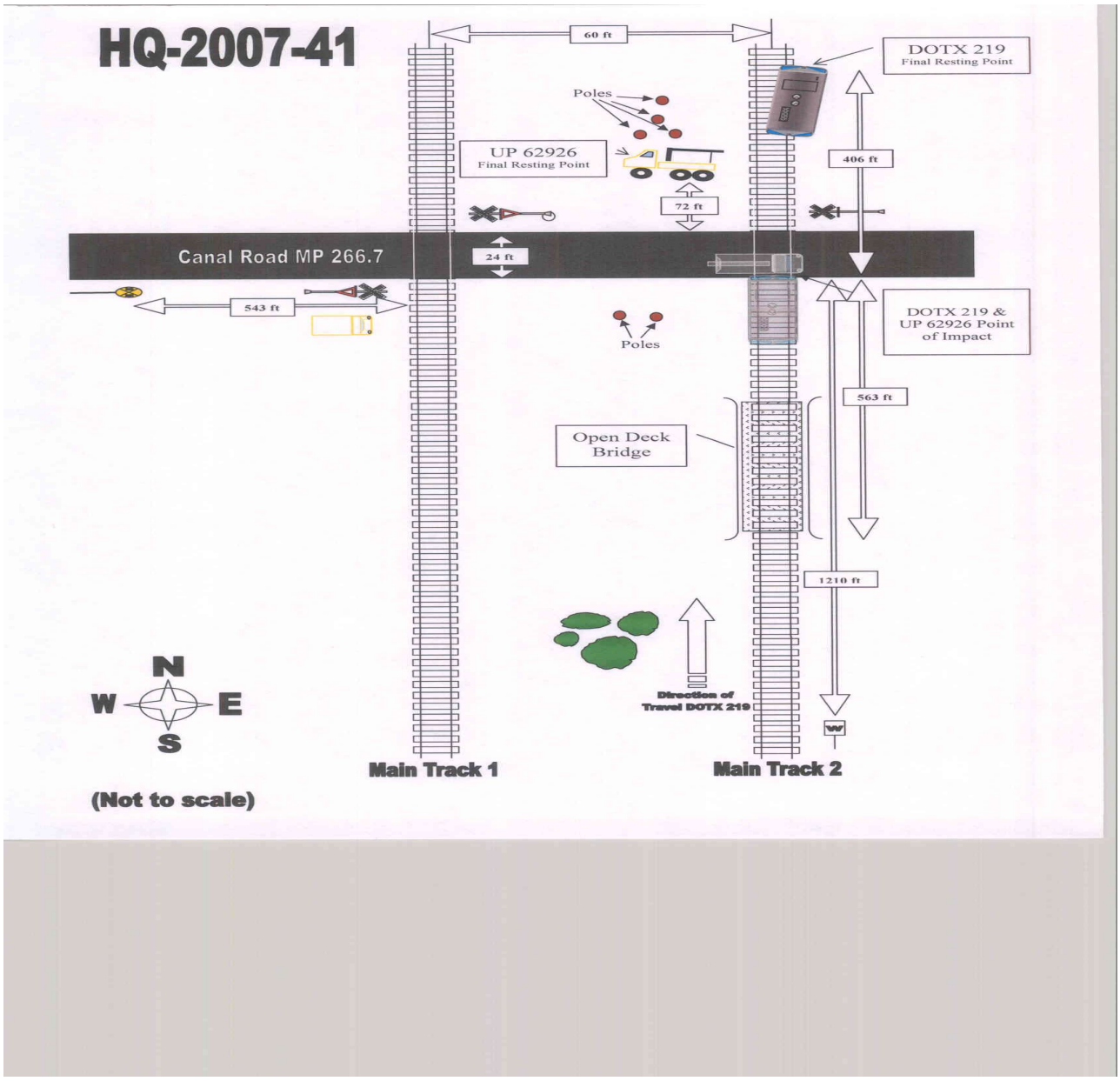
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)	Code
56		1		2		2

125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code	126. 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
	2		8

Casualties to:	Killed	Injured	127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
				2		1
129. Highway-Rail Crossing Users	0	1	130. Highway Vehicle Property Damage (est. dollar damage)	118987	131. Total Number of Highway-Rail Crossing Users (include driver)	1

132. Locomotive Auxiliary Lights? 1. Yes 2. No	Code	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code
	1		1
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code
	1		1

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



137. SYNOPSIS OF THE ACCIDENT

A northbound Federal Railroad Administration (FRA) track geometry car, DOTX-219, collided with an eastbound Union Pacific Railroad (UP) maintenance of way truck at a highway-rail grade crossing at 8:48 a.m., c.d.t., on July 6, 2007. The accident occurred near Hartford, Illinois, at Milepost 266.7 on the Gateway Eastern (GWWE) St. Louis Terminal Subdivision.

The motor vehicle operator was injured and the truck destroyed. A non-reportable injury occurred to an FRA operating practices inspector riding on the track geometry car. The DOTX-219 sustained $500,000 of damage and derailed as a result of the collision.

At the time of the derailment, it was daylight and sunny. The temperature was 79 °F.

The accident was caused by the driver's failure to yield the right of way to the DOTX-219. Hartford police issued the driver a citation for violation of Illinois Statute 625-11-904.

138. NARRATIVE

Circumstances Prior to the Accident

The onboard staff of the FRA track geometry car, DOTX-219, consisted of five employees of ENSCO, a contractor FRA employs to operate its geometry cars. The DOTX-219 operator went on duty at 6:00 a.m., c.d.t., at a lodging facility in the area and along with the other staff, traveled by highway to the Terminal Railroad Association of St. Louis (TRRA) yard in Madison, Illinois. They arrived at the yard between 6:30 and 6:45 a.m. After arrival, they performed routine maintenance checks on the DOTX-219, including operation of the horn, headlights, and an initial terminal brake test.

At approximately 7:05 a.m., a locomotive engineer pilot (Pilot) from the Union Pacific Railroad (UP) joined the ENSCO staff. The Pilot was to guide the DOTX-219 operator over the railroad territory they were to travel between Madison and Bloomington, Illinois. The Pilot originally went on duty at 6:00 a.m. at the Alton and Southern Railroad's Gateway Yard in East St. Louis, Illinois. After obtaining required paperwork, the Pilot was transported by highway to the location of the DOTX-219 at the TRRA yard.

At about 7:30 a.m., an FRA operating practices inspector and an FRA track inspector arrived at the TRRA yard to accompany the DOTX-219. Following a job briefing, held with all personnel on the car, the DOTX-219 departed the yard at 8:10 a.m. The DOTX-219 stopped several times prior to reaching the accident site to allow ENSCO personnel to verify instrument readings and to allow railroad personnel to board and leave.

As the DOTX-219 approached the accident site, the operator (an ENSCO employee) was seated at the controls on the right (east) side of the car, and the Pilot was seated directly to his left. The FRA operating practices inspector was seated behind the operator and the forward observer (another ENSCO employee) was seated behind the Pilot. DOTX-219 was operating with a train symbol designation of WSLJP-06.

The track is tangent for a mile to the point of the accident with a 0.5 percent ascending grade and becomes level at the point of the accident. Traveling west to east on the highway, at the point of the accident, the road is level.

The timetable direction of the DOTX-219 was north per the UP timetable and east per the Kansas City Southern (KCS) timetable. The KCS timetable is used for GWWE operations in this area, and the geographic direction was north. UP timetable directions are used throughout this report.

The Accident

DOTX-219
The DOTX-219 was being operated at an estimated speed of 60 mph approaching the crossing. The operator sounded the horn at the whistle post. Witnesses on the car saw the truck slowly approach the crossing, stop briefly, then foul the track on which the geometry car operated. The operator made an emergency brake application while the car was on a bridge south of the crossing. Maximum authorized speed at this point was 79 mph, as designated in UP St. Louis Area Timetable 3

and KCS System Timetable 7.

Highway Vehicle
The highway vehicle, a UP boom truck, had stopped west of the Canal Road crossing prior to the accident to unload rail anchors for welders working on Main Track No. 1 (60 feet west of the point of collision). After completing this task, the driver entered the truck and began to drive slowly to the east. According to railroad maintenance employees working in the area, the truck appeared to stop briefly before fouling Main Track No. 2, then pulled onto the track, where the DOTX-219 struck it immediately behind the cab on the passenger side. The impact threw the truck to the west side of the track where it came to rest, facing west, (opposite its' direction of travel) 72 feet north of the crossing. The DOTX-219 derailed and stopped 406 feet north of the point of collision.

All persons on the DOTX-219 evacuated after the collision and returned to the crossing. The railroad maintenance employees who witnessed the accident rushed to render aid to the truck driver and notified emergency responders.

Police from Hartford, South Roxana, and Roxana, Illinois, responded to the scene. Also responding was the Hartford Volunteer Fire Department. An ambulance from the Alton, Illinois, Memorial Hospital transported the injured truck driver to a hospital in St. Louis, Missouri.

Analysis and Conclusions

Analysis-Toxicological Testing: The driver of the truck was a 56 year old male. There was no drug or alcohol testing performed on the truck driver after the collision. There were no toxicological tests performed on the ENSCO operator or Pilot. FRA does not require testing for this type of accident.

Conclusion: Intoxication was not a factor.

Analysis-Highway-Rail Grade Crossing: At the point of the accident, the roadway is 24 feet wide. The highway-rail grade crossing surface is a combination of timber and asphalt. On Main Track No. 1, the crossing is protected by crossbucks with "yield" signs on both sides; on Main Track No. 2, the crossing is protected by a crossbuck on the east side. There is an advance warning sign 545 feet west of Main Track No. 1. There were trees between the two main tracks, approximately 563 feet south of the crossing that did not interfere with the vehicle driver's view of the DOTX-219 approach.

A whistle post is located 1,210 feet south of the crossing. All persons in the operating compartment of the DOTX-219 stated the operator began blowing the horn at the whistle post. The maintenance employees in the vicinity reported hearing the horn.

Conclusion: The highway-rail grade crossing is in relatively good condition and surface condition was not a factor in the accident. The truck driver's view was not obstructed.

Analysis-Geometry Car Safety Devices: The DOTX-219 was equipped with headlights and ditch lights, which were destroyed in the accident. The daily maintenance log indicates they were tested and operative prior to the beginning of the day's activities. The rear headlight was displayed to the rear as a marking device in compliance with Federal regulations. The maintenance log also indicates the horn and bell were operative prior to the beginning of the trip.

Witnesses on the DOTX-219 stated the operator sounded the horn and witnesses in the vicinity of the crossing stated they heard the horn as it approached the crossing, prior to the accident.

Conclusion: The DOTX-219 safety devices were operating as required by Federal requirements.

Analysis-Geometry Car Operator and Pilot's Operating Performance: The DOTX-219 was not equipped with an operative event recorder. In interviews, the operator and Pilot stated the DOTX-219 was being operated in accordance with applicable railroad operating rules and this was confirmed by witnesses on DOTX-219.

Conclusion: The DOTX-219 operator and Pilot were in compliance with applicable railroad operating rules.

Fatigue Analysis

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 two employees involved in this accident.

Conclusions

FRA concluded fatigue was not probable for any of the employees.

Overall Conclusions:
The accident occurred due to the driver's failure to yield the right of way to the approaching DOTX-219 as required by Illinois Statute 625-11-904. None of the witnesses could provide information that could be used to determine why the driver failed to yield the right of way, and the driver refused FRA's request for an interview. In addition, the UP cited the employee for violation of UP Operating Rules 1.1, 1.1.2, 1.6, 1.20, and Safety Rules 74.3 and 74.12.

Probable Cause & Contributing Factors:

As determined by an FRA investigation, it was found that the accident was caused by the driver's failure to yield the right of way to the DOTX-219. Hartford, Illinois, police issued the driver a citation for violation of Illinois Statute 625-11-904.