Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-02

CSX Transportation (CSX)
Calla, Kentucky
January 15, 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-2007-2

1.Name of Railroad Operating Train #1: CSX Transportation [CSX]	1a. Alphabetic Code: CSX	1b. Railroad Accident/Incident No.: 000028213
2.Name of Railroad Operating Train #2: CSX Transportation [CSX]	2a. Alphabetic Code: CSX	2b. Railroad Accident/Incident No.: R000028213
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: CSX Transportation [CSX]	4a. Alphabetic Code: CSX	4b. Railroad Accident/Incident No.: R000028213
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 01 | Day 15 | Year 2007	7. Time of Accident/Incident: 11:12: ☑ 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: 02

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
1	1	1	80	Huntington

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Irvine	230.8	N/A	KY	ESTILL

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
60 F	2	3	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
EK Main Line	3	17	2

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
	6	2	C70315

29. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	31. Method(s) of Operation (enter code(s) that apply)	31a. Remotely Controlled Locomotive?
35 MPH	E	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: 0

30. Trailing Tons (gross tonnage, excluding power units): 360

Code(s): e | N/A | N/A | N/A | N/A

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CELX3329	1	yes
(2) Causing (if mechanical cause reported)	0	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
0	0

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	4	0	0	0	0
(2) Total Derailed	1	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
31630	15000	H020	N/A

Number of Crew Members				Length of Time on Duty	
41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen	45. Engineer/Operator	46. Conductor
1	0	1	1	Hrs 4 Mi 12	Hrs 6 Mi 12

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 — N/A

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

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
	8	2	N25214

56. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	58. Method(s) of Operation (enter code(s) that apply)	58a. 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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57. Trailing Tons (gross tonnage, excluding power units): 0

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): e | N/A | N/A | N/A | N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: 0

59. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CSXT151	1	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
0	0

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	2	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: 2550000

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

66. Primary Cause Code: H020

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	1	0

Length of Time on Duty

72. Engineer/Operator: Hrs 1 Mi 32

73. Conductor: Hrs 1 Mi 32

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: 2

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 N/A

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)	N/A	N/A	N/A
(2) Causing (if mechanical cause reported)	N/A	N/A	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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(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

91. Equipment Damage This Consist: N/A

92. Track, Signal, Way, & Structure Damage: N/A

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
N/A	N/A	N/A	N/A

Length of Time on Duty

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

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

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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: N/A

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

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

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: N/A

112. Position of Car Unit in: N/A

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

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

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
	N/A		N/A		N/A

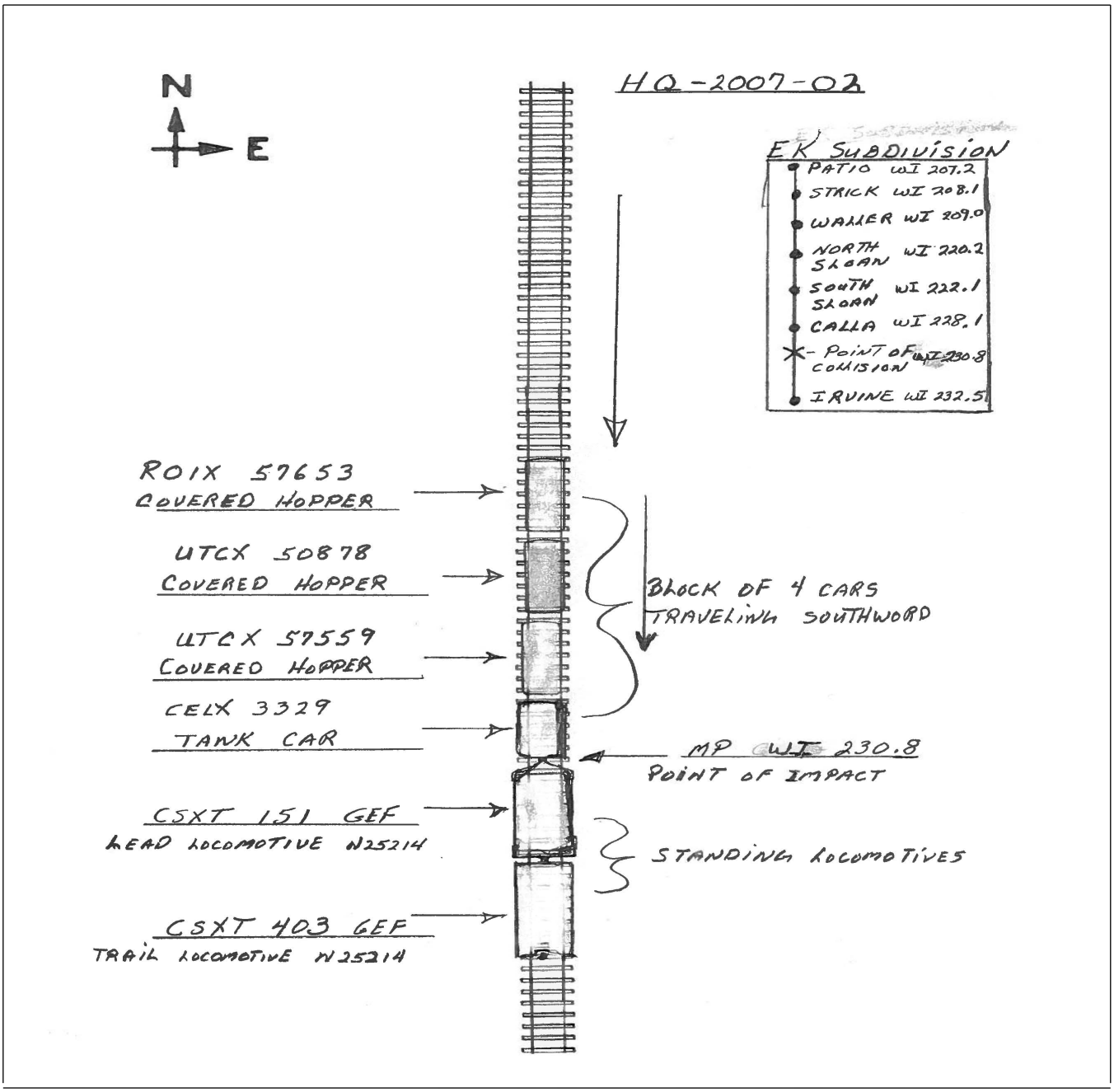
121. Age	122. Driver's Gender (1. Male 2. Female) Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train (1. Yes 2. No 3. Unknown) Code	124. Driver (1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in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

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
	N/A		N/A

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

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

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



137. SYNOPSIS OF THE ACCIDENT

On January 15, 2007, about 11:12 a.m. eastern standard time (EST), a CSX Transportation Inc. (CSX) Road Switcher Train C70315 was switching at Patio Yard in Winchester, Kentucky (KY) at milepost (MP) 0WI 208.0 and lost control of four loaded railcars. The four railcars, one of which contained (Butyl Acetate), rolled uncontrolled southbound onto the EK Subdivision for a distance of about 22.8 miles. The four railcars reached a speed of 35 miles per hour (mph), as indicated by an equipment defect detector at MP 0WI 227.2, until impacting the locomotives of Train N25214.

Train N25214 was traversing northbound toward Patio Yard on the EK Subdivision. The crew members of Train N25214 had separated the two locomotives from the rest of the freight cars, operated the locomotives a distance of 0.8 of a mile and stopped. They abandoned the locomotives three or four minutes before the runaway cars struck the equipment. The collision and resulting fire caused the total destruction of the leading tank car and the leading locomotive, which had been positioned and then abandoned by the crew of Train N25214. There was extensive damage to the second locomotive of Train N25214 and the three remaining covered hopper cars.

Total equipment damage is estimated at more than $2,581,630 and $15,000 for track damage. The lead railcar derailed on impact, the loaded tank car of Butyl Acetate and the fuel tanks of the lead locomotive ruptured and ignited. This caused a significant inhalation hazard causing an evacuation for about ½ mile from the accident site. The collision affected a small industrial operation and about 20 homes, totaling 80 people. The only reported injury was a sprained ankle on the conductor of Train C70315 when he attempted to apply handbrakes on the rolling railcars at Patio Yard.

The weather at the time of the accident was intermittent rain, 60°F with good visibility.

The cause of the accident was the failure of the conductor of Train C70315 to properly secure equipment left standing with a sufficient number of hand brakes.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

Train C70315

Train C70315 is a regularly assigned local switcher which works out of CSX Patio Yard in Winchester. The crew of Train C70315 consisted of an engineer, a conductor, and a brakeman reporting for duty at 7 a.m. on January 15, 2007, at the yard office in Patio Yard. The engineer was a regularly assigned employee and had received a statutory off-duty period of 61 hours prior to reporting for duty. The conductor had deadheaded to the assignment that morning in his personal vehicle. He reported deadheading from 5 a.m., arriving at the yard office at Patio Yard about 7 a.m. He had received a statutory off-duty period exceeding 99 hours. The brakeman was a regularly assigned employee and reported for duty after a statutory off-duty period exceeding 99 hours.

After the initial morning job briefing, the engineer performed the locomotive inspection and tests prior to commencing switching operations. At 8:30 a.m., the crew left the yard office and proceeded into the yard to switch 12 railcars out of the yard, which would be their train consist for that day. The engineer was operating from the north locomotive and was sitting on the east side of the cab. The brakeman and the conductor were on the ground. The brakeman remained in the vicinity of the locomotives to facilitate the movement of the north end train movements. The conductor was on the south end of the equipment protecting the shoving moves. He remained in place to facilitate, couple, and separate the railcars they were switching out from their train. They were assembling the railcars for their train in the W&I Passing Track (called the WIP Track), which was a clear track and normally used for this purpose.

The crew's first move was to position two railcars for their train, a tank car and a covered hopper, on the WIP Track. The crew was not switching with air brakes and the conductor utilized a brake stick to apply a handbrake on both railcars. The crew then proceeded to other yard tracks to assemble more of the railcars for their train for 1 - 1.5 hrs. They returned to the WIP track with about 14 or 15 railcars coupled to the locomotives. The conductor completed the coupling between the railcars and the two railcars already in the WIP track. He was on the west side of the equipment and walked north for two car lengths and applied a handbrake at the point where he intended to separate the railcars.

The conductor said that he did not apply the handbrake because it was on the east side of the equipment and he thought he had applied sufficient handbrakes to secure the railcars in compliance with CSX special instructions for handbrake application at this location. He separated the four railcars on the WIP Track and the locomotives took the remaining cars to the storage tracks. He remained in the vicinity of the equipment on the WIP Track. The engineer and brakeman moved the locomotives to clear the north switch on Track No. 2. The brakeman radioed the conductor advising him they were ready to shove onto Storage Track No. 2. He received no answer and repeated the transmission again. The brakeman contacted the engineer via radio and asked him to relay the message to the conductor. At this time, the conductor responded and advised the engineer that the four railcars they left on the WIP Track were rolling away.

Train N25214

Train N25214 is a regularly scheduled freight which is a run-through train at Ravenna, KY. The crew boarded the train at Ravenna to operate the train to Corbin, KY. The crew consisted of a conductor and an engineer who had reported for duty at the Ravenna Yard office at 9:40 a.m. on January 15, 2007. Both crew members received a rest period of 19 hours and 54 minutes before reporting for duty. They performed the required initial terminal duties and completed a job briefing. They secured their train orders and departed north out of Ravenna Yard.

Train N25214 was leaving the north end of Ravenna Yard when they contacted the CSX Jacksonville dispatcher about pusher service assistance for two grades they would encounter on the CC Subdivision once they headed south at Patio Yard. The crew was informed by the Jacksonville dispatcher to contact the EK dispatcher. The EK dispatcher advised them of the runaway cars heading southbound out of Patio Yard. When the engineer stopped the train, the lead car in the train was at MP 0WI 231.6. The crew uncoupled the locomotive and proceeded north toward the runaway railcars. The EK dispatcher called the on-duty trainmaster and advised him what the crew of Train N25214 was attempting. The trainmaster instructed the dispatcher to stop Train N25214 and have the crew abandon the locomotives. The engineer stopped the locomotives at MP 0WI 230.8, and he and the conductor abandoned the equipment.

The Patio Yard is a gently descending downhill grade in a southerly direction. The grades vary from 0.18 to 0.84 approaching the southern ends of the storage and switching tracks extending toward Ravenna. At the southern end of the storage and switching tracks, a descending gradient is present for the next 25 miles. The grade at MP 0WI 230.8 is 0.19 ascending northbound.

The weather at the time of the accident was 60°F with intermittent rain.

The timetable direction is north and south. The timetable direction will be used throughout this accident.

The Accident

The conductor of Train C70315 said he was standing next to the four railcars on the west side of the WIP Track when he noticed the cars beginning to move. He said within a few seconds the railcars were gaining speed. He dropped the brake stick and ran toward the north end of the rolling railcars. He was trying to reach the second car, which he said was the only car without an applied handbrake. He was unable to get to the rolling cars and immediately notified the engineer who initiated an emergency radio transmission to the Jacksonville dispatcher.

The four railcars negotiated 22.8 miles of track from MP 0WI 208.0 at Patio Yard to the point of impact at MP 0WI 230.8. There are two wayside equipment defect detectors between Patio Yard and Ravenna. One is located at Waller, MP 0WI 210.7, and a second is located at Calla, MP 0WI 227.2. The four railcars passed the first detector at Waller at 10:30 a.m. traveling at 25 mph and passed the next detector at 11:03 a.m. traveling 35 mph. This indicates the cars traveled 16.5 miles between the two detectors at an average speed of 38.08 mph. The dispatcher routed the railcars through the siding at Sloan, which is 10,048 ft, with a maximum authorized speed of 10 mph. He intended the four cars to derail in the siding, but the track structure held the movement and the railcars reentered the main track at the south end of Sloan.

The engineer of Train N25214 indicated that he was off the locomotives for three or four minutes prior to the impact, which occurred about 11:12 a.m. at MP 0WI 230.8. He said the locomotives were shoved about four railcar lengths. The lead tank car buckled on impact, rupturing at the bottom, and began spilling contents on the right of way. The lead wheels derailed and the resulting sparks ignited the contents. There was no explosion, but the fire gained strength quickly and engulfed the lead locomotive and tank car.

The Estill County Fire and Rescue and Irvine City Police responded to the accident site and issued an evacuation order for a small business in the immediate area. The Kentucky State FEMA issued an evacuation order for 20 homes in Estill County that were within a half mile of the incident location. This evacuation affected about 80 people and was cancelled at 6:30 p.m. on January 15. Railroad personnel were allowed into the site at 7 p.m. to begin inspection, evaluation, and clearing operations. There were no reports of contamination beyond the immediate site of the incident.

Analysis and Conclusion

Analysis

The entire EK Subdivision between the Winchester Patio Yard and Irvine, KY is generally a descending grade. Southbound from Patio Yard to MP 0WI 223.8 is a descending grade between -0.41 and -0.13. There is an ascending grade for 0.6 of a mile which is between 0.45 and 0.26. The gradient then begins descending again at MP 0WI 224.4 to MP 0WI 227.9 with gradients between -0.41 and -0.20. There is another ascending gradient of 0.37 between MP 0WI 227.9 to MP 0WI 228.6 followed by a descending gradient between -0.35 and -0.19 from MP 0WI 228.6 to the point of impact at MP 230.8.

The speed at the time of the collision was estimated to be 35 mph and this was the speed indicated on the defect detector at MP 0WI 227.2. The track gradient between the detector and the point of impact was descending through the entire route.

The leading railcar of the runaway movement was a tank car, CELX 3329, loaded with 29,000 gallons of Butyl Acetate. The railcar ruptured and the material ignited on impact. This conflagration was accentuated by the addition of the fuel from the lead locomotive, CSXT 151, which was ultimately ignited during the course of the fire. This General Electric locomotive was totally destroyed during the course of the blaze, as was tank car CELX 3329. The rest of the equipment at the site suffered extensive damage.

In the presence of a Federal Railroad Administration (FRA) inspector, the CSX railroad conducted a re-enactment of the roll away on January 17, 2007, at Patio Yard. They used similar railcars to those involved in the accident. CSX applied three handbrakes using a brake stick on four similar cars on the south end of the WIP Track as indicated by the conductor. They obtained slack and made a cut on the four cars as the conductor said in his interview. The re-enactment did not produce the results claimed by the conductor.

Federal Railroad Administration (FRA) Post Accident Toxicological Testing was performed on the crew members of Trains C70315 and N25214 with negative results.

On January 15, 2007, an FRA inspector performed mechanical inspections of the railcars involved in the incident produced no mechanical defects on the three north railcars in the runaway group. The lead, or south, railcar could not be inspected because it was destroyed in the collision.

Fatigue Analysis

FRA obtained fatigue related information, including a 10-day work history, for all of the employees involved in this incident. FRA concluded fatigue was not probable for any of these employees.

Conclusion

The first indication there were no brakes on the railcars was that the cars passed the two defect detectors and did not indicate elevation in wheel temperature on any cars. The signal maintainer verified this data from the two defect detectors event logs. The second indication the conductor did not properly secure the standing cars on the south end of track WIP was the information obtained from the re-enactment on January 17, 2007. The third indication was the lack of any derail protection between the main track operation and the switching and storage tracks in Patio Yard.

Probable cause

The Federal Railroad Administration concluded that the accident was caused by the failure of the conductor to apply a sufficient number of handbrakes on unattended railcars.