Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-84

CSX Transportation
Catlettsburg, KY
October 24, 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-2006-84

1.Name of Railroad Operating Train #1 CSX Transportation [CSX]	1a. Alphabetic Code CSX	1b. Railroad Accident/Incident No. 000026422
2.Name of Railroad Operating Train #2 CSX Transportation [CSX]	2a. Alphabetic Code CSX	2b. Railroad Accident/Incident 000026422
3.Name of Railroad Responsible for Track Maintenance: CSX Transportation [CSX]	3a. Alphabetic Code CSX	3b. Railroad Accident/Incident No. 000026422
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident Month 10 | Day 24 | Year 2006	6. Time of Accident/Incident 05:20: ☑ 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) — **02**

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

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
CATLETTSBURG	514.8	N/A	KY	BOYD

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
35 F		4		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
Number 2 Main		4	97		4

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
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		8		1	N657-21

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?
	3	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: 0

29. Trailing Tons (gross tonnage, excluding power units): 0

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

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
(1) Total in Train	2	0	0	0	0
(2) Total Derailed	1	0	0	0	0

35. Cars	Loade a. Freight	Loade 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

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
51000	0	H499	N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	1	0

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 9 Mi 45	Hrs 9 Mi 45

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: 2

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)	A. Spec. MoW Equip.	Code	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
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		8		1	V307-23

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?
	21	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
0			e N/A 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)	CSXT 4798	1	N/A		0	0
(2) Causing (if mechanical cause reported)	0	0	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	2	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	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
37000	0	H499	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 1 Mi 50	Hrs 1 Mi 50

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	2	0	0

76. EOT Device? 1. Yes 2. No | 2

77. Was EOT Device Properly Armed? 1. Yes 2. No | N/A

78. Caboose Occupied by Crew? 1. Yes 2. No | 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): 0

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: 0

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: 0

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
	0	0

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): 0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

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

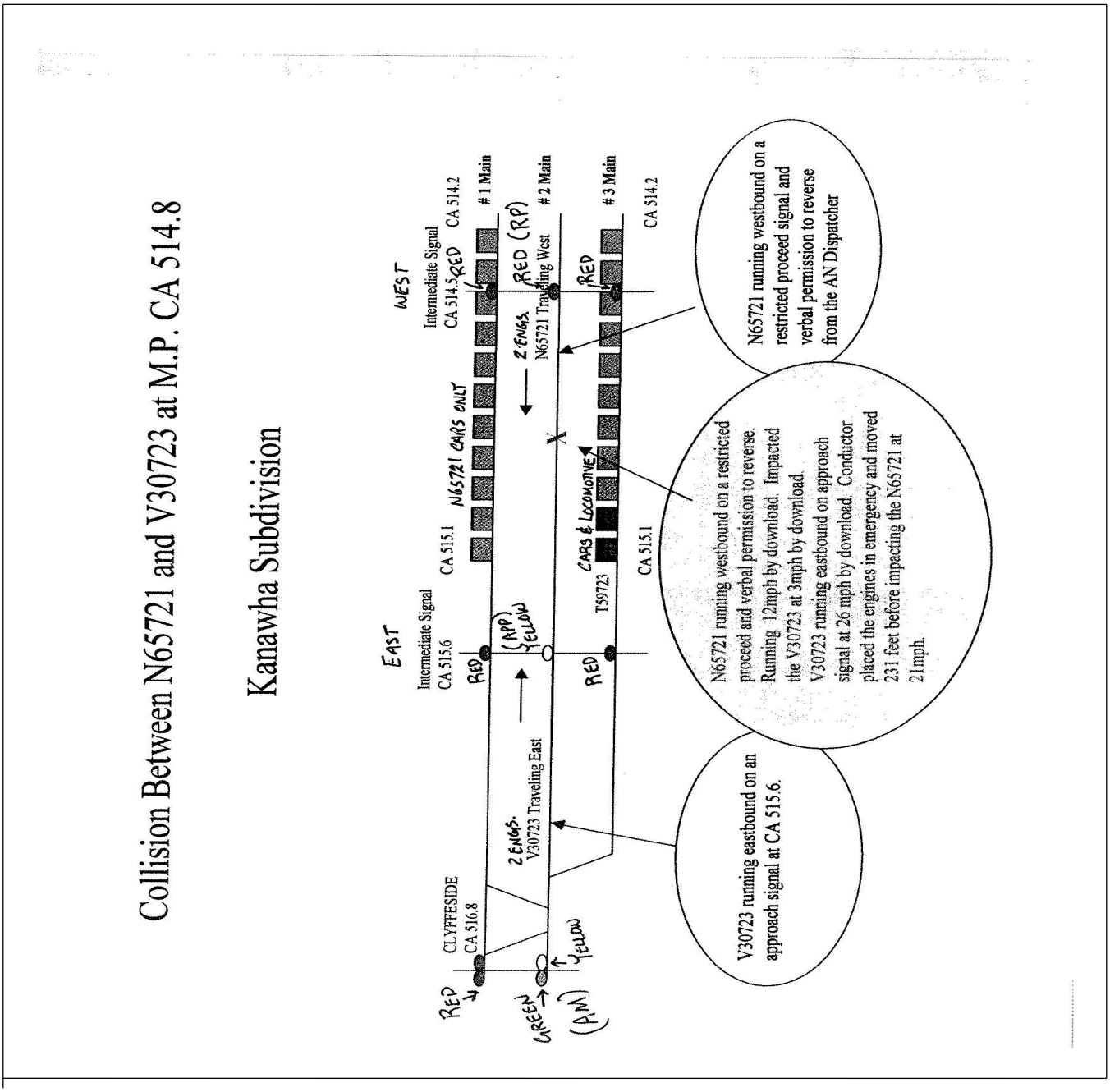
105. Locomotive Auxiliary Lights Operational? — Code: N/A
1. Yes 2. No

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-2006-84 sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On October 24, 2006, about 5:20 a.m. Eastern Standard Time (EST), CSX Transportation, Inc. (CSX) through freight TrainV30723, consisting of two locomotives, collided head-on with the two locomotives of CSX through freight Train N65721 at milepost (MP) CA 514.8 on the C&O Division, Kanawha Subdivision, near Catlettsburg, Kentucky (KY). Train V30723 was traveling timetable east and Train N65721 was traveling west at the time of the collision. Both trains were being operated by an engineer and conductor.

The authority for movement in the area of the accident is signal indication controlled by a Centralized Traffic Control (CTC). Movement authority on this area of trackage is controlled by the AN dispatcher.

The engineer and conductor of both trains suffered injuries as a result of the accident and were taken to King's Daughters Medical Center in Catlettsburg for treatment. The damage to the locomotives was $88,000 and there was no hazardous material railcars involved.

At the time of the accident it was dark, the visibility was clear, and the temperature was 35°F.

The probable cause of the accident was the failure of the train dispatcher to comply with established CSX procedures for trains that are using main track authority and protecting the movements of these trains using his authority. The dispatcher did not apply the proper blocking devices that his computerized dispatching software allows. He failed to properly enter this information into the computer system allowing the two opposing movements to enter the block without proper protection, as required by the CSX Operating Rule 509.

110. NARRATIVE

Circumstances Prior to The Accident

Train N65721:

The crew members of Train N65721 reported for duty at the CSX yard office at Shelbiana, KY on October 23, 2006, at 7:35 p.m. They had received a rest period of 11 hours and 57 minutes at their away-from-home terminal after operating Train N82424 from Russell to Shelbiana. The crew consisted of a conductor and engineer and was deadheaded to Martin, KY. They arrived at Martin about 8:20 p.m., received their train orders, consist, and class I air brake test before departing toward Russell.

Train N65721 consisted of two locomotives and 101 loaded coal hoppers with a weight of 10,571 tons and a length of 5,430 feet. The crew experienced an uneventful trip traversing the Big Sandy Subdivision. When they arrived at Big Sandy Junction, they were routed by the dispatcher through the junction to main track 1, MP CA 515.1, on the Kanawha Subdivision. They separated the locomotives from their train to facilitate a run-around movement, utilizing main track 2 to remove end-of-train devices from their train, then placed it on the opposite end of their train. This train movement was commonly performed at this location, utilizing the main tracks between the dispatcher controlled signals at Clyffside, MP CA 516.8, and Brown Street, MP CA 513.7.

The crew of Train N65721 operated their locomotives past the signal at Clyffside proceeding through the westbound crossover from main track 1 to main track 2. They stopped west of control point signal at Clyffside on main track 2. The engineer swapped the controlling locomotive from the west to the east, performed a brake test, then initiated a tone call to the AN dispatcher. The locomotives proceeded eastbound on main track 2 authorized by a clear signal indication to retrieve their end-of-train device. The conductor removed the device from the east-end of their train, placed it on the west locomotive, then occupied the platform in a position to protect the lead end of the shoving move. The engineer requested permission from the dispatcher to make a westbound move. The dispatcher granted him verbal permission to move westbound within the block between Clyffside and Brown Street.

The engineer began the westbound movement when the conductor notified him by radio that the intermediate signal at MP CA 514.6 displayed a Restricted Proceed Signal. The engineer acknowledged him by signal indication in accordance with the rules. The conductor was standing on the leading locomotive platform, then entered into the operating compartment where he observed a headlight he thought was from a locomotive occupying main track 3. The movement of Train N65721 continued westbound passing the signal at MP CA 514.6 at a recorded speed of 12 miles per hour (mph) as authorized by the dispatcher.

The engineer was on the south side of the east locomotive shoving westbound with the conductor protecting the shoving move, via radio, from the operating compartment of the west locomotive. The short hood end of the west locomotive was leading the movement. The conductor had taken note of the glare of a locomotive headlight, but had dismissed it as coming from the headlight of the train occupying main track 3.

Train V30723:

The crew of Train V30723, consisting of an engineer and conductor, reported for duty at the Coal Hump Yard Office at Russell on October 24, 2006, at 3:30 a.m. The conductor had been off duty for 99 hours and 50 minutes and the engineer had been off duty for 79 hours and 50 minutes at their home terminal. The crew was taxied to the locomotive terminal at Russell Yard after receiving the necessary train documentation and verifying the dispatcher's bulletin. They boarded Train V30723 (two locomotives) and departed Russell Yard eastbound for Ceredo Yard, MP CA 510.8, on the Kanawha Subdivision.

They had received a Slow Approach signal at RU Cabin within the Russell Terminal and at 19th Street, MP CA 518.7, received a Stop signal and stopped the locomotives on main track 2. After a while they received an Approach signal, which changed to Approach Medium before they passed it, and continued their

movement to Clyffside where they received an Approach signal, then received another Approach signal at MP CA 515.6. They proceeded by this signal at a recorded speed of 26 mph. The conductor observed a distant locomotive headlight and thought it was the locomotives from a train on main track 1. Train V30723 continued westbound at 26 mph, operating in accordance with the signal indication they passed.

Approaching the accident site from the east the track is tangent for 0.1 of a mile, followed by a 3-degree right hand curve for 0.1 of a mile, tangent for 0.1 of a mile, a 2-degree left hand curve for 0.1 of a mile, level tangent track for 0.5 of a mile, then entering a 2-degree right hand curve for about 0.1 of a mile to the point of impact. The track grade is insignificant in the area following the banks of the Ohio River. At the point of impact, main track 1was occupied by 101 loaded coal hoppers from Train N65721, main track 3 was occupied by Train T59723 consisting of two locomotives and 100 loaded coal hoppers.

The timetable direction in this report is east and west and will be used throughout this report.

The Accident

The conductor of Train N65721 sighted an approaching movement at a distance of about five or six railcar lengths. He immediately radioed the engineer shouting, “STOP, STOP, STOP”. The engineer immediately applied a full service independent brake application. The conductor exited the operating compartment of the locomotive through the north access door with thoughts of abandoning the equipment. He immediately realized that there was no where to go and elected to hold on to the hand rail on the locomotive walkway and ride out the impact. The engineer rode out the impact in the operating compartment of the east locomotive.

The application of the independent brake had dropped the speed of the N65721 locomotives to three mph or less. The conductor was thrown against the door of the locomotive he had just exited and the engineer was thrown from his seat and into the door of the locomotive behind him. Both crew members were dazed as a result of the collision and suffered bruises, contusions, and various sprains and strains. The conductor received three cracked vertebra and had to be removed from the scene by ambulance service. The engineer was ambulatory, but he was also taken to the hospital for examination. Neither crew member has returned to service.

Train V30723 was eastbound at a speed of 26 mph on main track 2 when the conductor overheard, via the radio, the conductor of Train N65721 yelling, “STOP, STOP, STOP”. He immediately initiated an emergency brake application. The locomotive event recorder indicated the movement slowed from 26 to 21 mph prior to impact. The conductor said he and the engineer were dazed by the collision and may have been knocked out. When they regained their senses they continued to call the other crew until the engineer of Train N65721 answered and they indicated the need for an ambulance. The conductor of Train V30723 notified the dispatcher about the accident and the need for an ambulance.

All four crew members were injured as a result of the collision and were taken to King’s Daughters Medical Center for treatment by Boyd County EMS ambulance service. The Catlettsburg Fire Department also responded as a precaution.

Analysis and Conclusions

The investigation of track, signal, or operational failures by the train crews involved in the accident disclosed no defective conditions.

The Federal Railroad Administration (FRA) investigation revealed that the AN dispatcher had failed to properly protect the movement of the two trains that he had authorized to move between the Clyffside and Brown Street control points. He should have blocked out this section of track for the exclusive use of Train N65721 when he authorized the reverse move. He did not apply these blocking devices, which would have triggered a warning by the computer assisted dispatching software advising him of the conflicting movements. He failed to properly enter this information allowing the two opposing movements to enter the block without proper protection as required by Railroad Operating Rule 509.

FRA Post-Accident drug and alcohol testing was conducted on both trains’ crew members and the CSX dispatcher. The test results were negative for the five employees.

Fatigue Analysis:

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is equivalent to a blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable cause 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 five CSX employees involved in this accident including the engineer and conductor of Train V30723, engineer and conductor of Train N65721, and the AN dispatcher.

FRA concluded fatigue was not a probable cause for the following employees, the engineer and conductor of Train V30723. FRA concluded fatigue was probable cause for the following employees, the engineer and conductor of Train N65721 and the AN dispatcher. The information for these three employees follows:

Conductor assigned to Train N657-21
Sleep setting Excellent
Overall Effectiveness = 53.69 %
Lapse Index =10
Reaction Time = 184
Chronic Sleep Debt = 11.47
Hours of Continuous Wakefulness = 16.33
Time of Day (military) = 05:20
BAC Equivalent = >0.08
Conclusion: Fatigue was probable for this employee.

Locomotive engineer assigned to Train N657-21
Sleep setting Excellent
Overall Effectiveness = 56.07 %
Lapse Index = 19.2
Reaction Time = 177
Chronic Sleep Debt = 11.51
Hours of Continuous Wakefulness = 16.33
Time of Day (military) = 05:20
BAC Equivalent = >0.08
Conclusion: Fatigue was probable for this employee.

Dispatcher

Sleep setting Excellent
Overall Effectiveness = 67.44 %
Lapse Index = 5.8
Reaction Time = 148
Chronic Sleep Debt = 8.04
Hours of Continuous Wakefulness = 15.33
Time of Day (military) = 0520
BAC Equivalent = >0.08
Conclusion: Fatigue was probable for this employee

Probable Cause:

It was found through an investigation by the Federal Railroad Administration that the probable cause of the accident was the failure of the train dispatcher to comply with established CSX procedures for trains that are using main track authority and protecting the movements of these trains using his authority. The dispatcher did not apply the proper blocking devices that his computerized dispatching software allows. He failed to properly enter this information into the computer system allowing the two opposing movements to enter the block without proper protection as required by the CSX Operating Rule 509.