Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-76

CSX Transportation (CSX)
Brookwood, Alabama
December 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-2007-76

1.Name of Railroad Operating Train #1: CSX Transportation [CSX]	1a. Alphabetic Code: CSX	1b. Railroad Accident/Incident No.: 000040259
2.Name of Railroad Operating Train #2: Alabama Southern RR [ABS]	2a. Alphabetic Code: ABS	2b. Railroad Accident/Incident No.: D663307
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.: 000040259
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 12 | Day 06 | Year 2007	7. Time of Accident/Incident: 01:25: ☑ 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
0	N/A	N/A	0	Atlanta

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	Code	17. County
Brookwood	OLK 430	N/A	AL	TUSCALOOSA

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	4	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. West — Code
Main	2	1	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
1	2	W01927

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?
24 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) Code(s): k, N/A, N/A, N/A, N/A	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): 2527

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CSXT 6473	1	no
(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
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	2	0	0	0	0
(2) Total Derailed	2	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	26	0	0	0	0
(2) Total Derailed	10	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$265,958.00	$0.00	H020	N/A

Number of Crew Members

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

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 0 Mi 0	Hrs 0 Mi 0

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

50. EOT Device? 1. Yes 2. No	51. Was EOT Device Properly Armed? 1. Yes 2. No
2	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
1	1	Q52206

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): 2939

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): k | 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)	CSXT 7847	1	no
(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

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	3	0	0	0	0
(2) Total Derailed	2	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	18	0	32	0	0
(2) Total Derailed	0	0	4	0	0

64. Equipment Damage This Consist: $51,914.00

65. Track, Signal, Way, & Structure Damage: $100,000.00

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 3 Mi 0

73. Conductor: Hrs 3 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: 2

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

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

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: 0

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

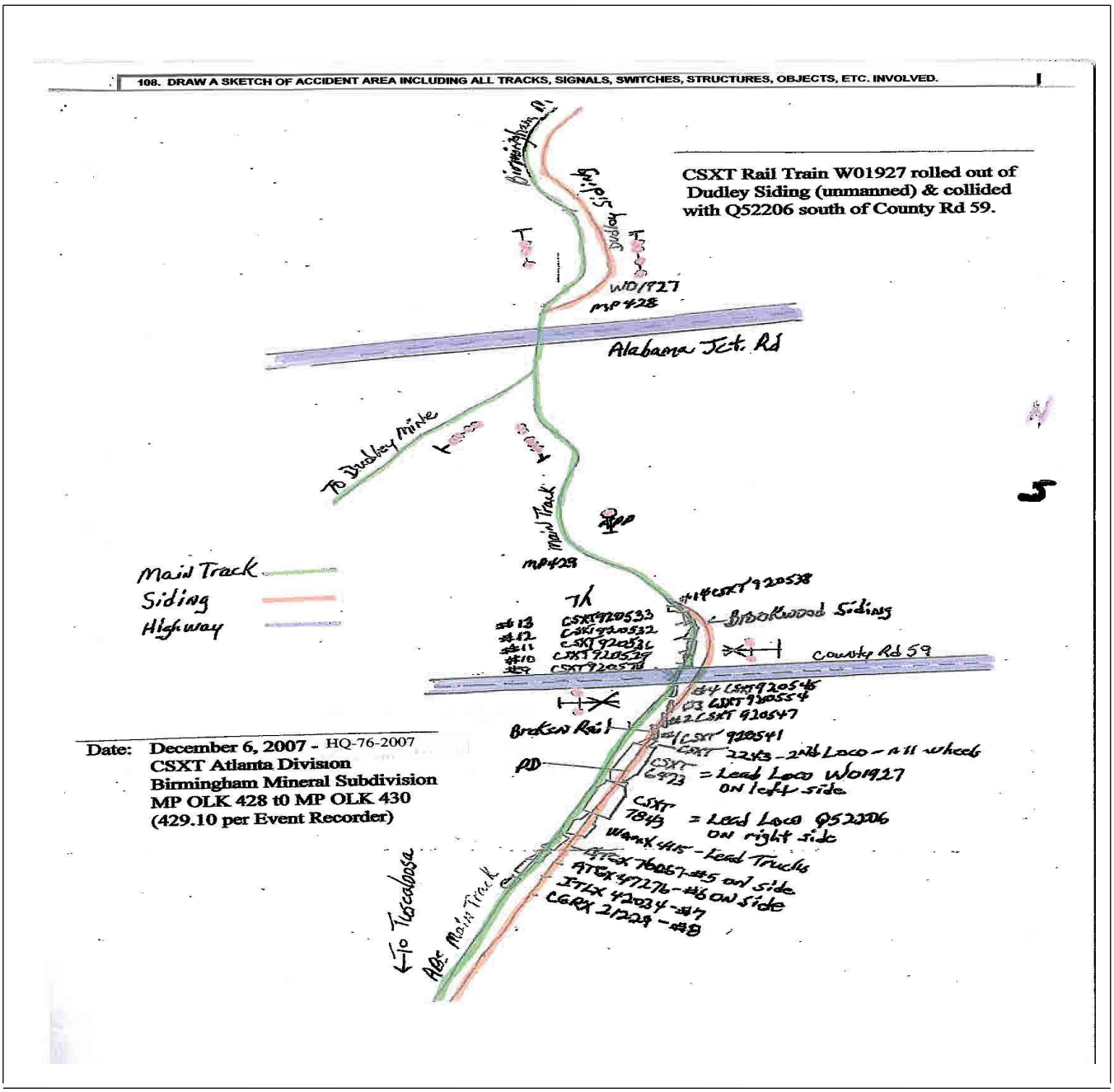
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)	Code
0		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	0	0	130. Highway Vehicle Property Damage (est. dollar damage)	0	131. Total Number of Highway-Rail Crossing Users (include driver)	0

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 December 6, 2007, about 12:59 eastern standard time (EST), unattended CSX Rail Train W01927 consisting of two locomotives and 26 loads of continuous welded rail (CWR), rolled southward out of Dudley Siding, milepost (MP) OLK 428, and struck standing northbound CSX Freight Train Q52206 head-on at MP OLK 429.10. CSX Train Q52206 consisted of three locomotives and 50 cars. The collision occurred on the Birmingham Mineral Subdivision (BMS), Atlanta Division. The CSX Freight Train Q52206 engineer and conductor, warned of the approaching train by the activation of a nearby highway-rail grade crossing warning system, jumped from the lead locomotive prior to the collision.

There were no injuries reported by the train crew at the time of the accident, but two days later the engineer of CSX Train Q52206 reported injuries. The collision resulted in the derailment of both locomotives and 10 rail cars on either train; however, the fuel tanks on locomotives CSXT 6473, CSXT 2243, and CSXT 7847 were punctured and released a total of 1,500 gallons of diesel fuel. Estimated damages were $317,872 for equipment and $100,000 for track & structures.

At the time of the accident the weather was clear with a temperature of 45 degrees F.

The probable cause of the accident was failure of the train crew to apply a sufficient number of handbrakes on CSX Train W01927.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

CSX TRAIN W01927

On December 4, 2007, CSX Rail Train W01927 was assigned a train crew consisting of an engineer and conductor who reported for duty at 5:30 a.m. EST at Boyles Terminal, MP 388.0, Birmingham, Alabama (AL). The train crew had performed service on this same assignment the previous day and received a required statutory off-duty period. The crew reviewed their orders and bulletins, held a job briefing, and then were transported by taxi to Bessmer Yard, MP LB 404.1, Bessmer, AL. The train crew boarded CSX Train W01927 with lead Locomotive CSXT 6473, Locomotive CSXT 2243, and 26 loads of CWR, weighing 2,527 tons, and 1,560 feet in length. CSX Rail Train W01927 was scheduled to lay rail on the Birmingham Mineral Subdivision (BMS).

The CSX BMS trainmaster is responsible for all train operations on the BMS. On December 4th, he instructed the W01927 train crew to operate the train from Bessemer to Dudley Siding, MP 428.0, because room was needed in the Bessemer train yard for industrial switching. CSX Train W01927 departed Bessemer Yard southbound arriving at Dudley Siding about 4:15 p.m. on December 4th. After arriving at Dudley Siding, the train crew prepared the train to be left unattended for an indefinite period of time. The crew reported applying handbrakes on both locomotives and to the first three cars behind the locomotives on the downhill side of the train. The crew also performed an brake test to ensure that the handbrakes would hold the train as intended. According to the CSX BMS track chart, CSX Train W01927 was left standing on a 1.21 percent descending grade.

CSX TRAIN Q52206

On December 5th, about 9:30 p.m. CST, the Alabama Southern Railroad (ABS) interchanged CSX Train Q52206 to the CSX at Brookwood, AL, MP 429.10. The train was left standing on the main track about five car lengths south of County Road 59. CSX Train Q52206 consisted of three locomotives, CSXT 7847 (lead), WAMX 4115, WAMX 4120, 18 loads and 32 empties. The train weighed 2,939 tons and was 2,933 feet in length.

CSX called a train crew for 10:00 p.m. EST on December 5th, 2007 to operate CSX Train Q52206 northward from Brookwood to Birmingham. The train crew, consisting of an engineer and a conductor, reported for duty at Boyles Terminal in Birmingham, and had received the required statutory off-duty period. The crew held a job briefing at Boyles Terminal and were transported by automobile to Brookwood. The train crew arrived at Brookwood about 12:45 a.m. on December 6th, 2007. They boarded the train and inspected the locomotives. After reviewing their orders, they had a job briefing, and then contacted the CSX AH Train Dispatcher to obtain Direct Traffic Contril (DTC) authority to operate northward toward Birmingham. The engineer was sitting at the train controls located on the west side of lead Locomotive CSXT 7847, the conductor was sitting on the east side of the locomotive.

The method of operation on the BMS is Direct Traffic Control (DTC) accompanied by an Automatic Block Signal System (ABS). The maximum authorized speed is 25 miles per hour (mph). Train movements on the BMS are authorized by the CSX AH train dispatcher located in Jacksonville, Florida (FL).

Dudley Siding has a 1.21-percent descending grade and beginning at the south switch, MP OLK 428, in the direction of travel southward, the grade descends at 1.33 percent to the point of impact, MP OLK 430.0. In that track segment there are three consecutive left hand curves, then a right hand curve, and then two more left hand curves. These six curves are separated by short segments of tangent track. The impact occurred on tangent track at the south end of the last left hand curve.

CSX Timetable direction is north/south. Timetable direction is used throughout this report.

THE ACCIDENT:

CSX Train Q2206 conductor was copying a DTC authority from the dispatcher when both he and the engineer noticed the highway-rail grade crossing warning devices on the crossing just north of their location were activated. Seconds later the engineer observed an approaching headlight. The engineer knew there were no other trains operating in the area at that time, and both employees immediately jumped from the locomotive and ran to a safe location. Moments later CSX Train W01927 with lead Locomotive CSXT 6473 collided head -on with the lead Locomotive CSXT 7847 of CSX Train Q52206.

The collision occurred at MP OLK 430.0 about five car lengths south of Country Road 59. After running to safety, the train crew used their cell phones to call and explain the situation to the train dispatcher. Emergency response teams were immediately dispatched to the scene. The Brookwood Fire Department was the first to arrive. Brookwood Fire Department received a call about 1:15 a.m. on December 6th, 2007 and arrived on the scene at 1:20 a.m. Minutes later the Tuscaloosa County Rescue Squad arrived and provided comfort to the CSX train crew members. Both employees declined medical attention at the time of the accident.

The event recorder download from lead Locomotive CSXT 6473 of CSX Train W01927 indicated the train was traveling 24 mph at the time of the collision. Locomotive CSXT 6473 appeared to be destroyed, with several pieces of rail penetrating the outer shell. Both ends were caved in and holes were punctured in the fuel tank. Trailing Locomotive CSXT 2243 was also badly damaged, and 10 rail cars were derailed.

The lead locomotive of CSX Train Q52206, CSXT 7847, was badly damaged with a punctured fuel tank and lying on its side. The second (WAMX 4115) and third (WAMX 4120) locomotives were severely damaged and transported back to the ABS locomotive shop in Tuscaloosa, AL for further inspection and repair. The fourth through the seventh rail cars, all empty grain hoppers, were derailed and on their sides. The 15th car, a load of paper, derailed in the upright position.

Initial estimates of track damage reported by CSXT engineer of track was $100,000. A total of 22 rail panels were replaced, including the main track and the adjacent track called the Brookwood Siding. Equipment damage was reported to be $317,872 for CSX and $100,000 for the Alabama Southern Railroad.

Fuel leaks resulted from three punctured fuel tanks and environmental clean-up was required. CSX contracted SWS Environmental First Response of Birmingham to conduct the clean up. The SWS report indicates that the total volume of fuel discharged from the derailed locomotives was 1,500 gallons.

CSX reported that two days after the accident the engineer of CSX Train Q52206 reported injuries to his lower back and both knees as a result of jumping from Locomotive CSXT 7847. The employee received medical attention and was given prescriptions for pain and inflammation. CSX reported this injury in compliance with 49 CPR, Part 225, and Accident/Incidents.

ANALYSIS:

The crew of CSX Train W01927 indicated they arrived in Dudley Siding about 4:30 p.m. EST. The conductor reported that after the train came to a complete stop, he dismounted the lead locomotive, then walked back and applied hand brakes to the first three cars behind the locomotives. The engineer said that he applied the hand brakes on both locomotives. Both the engineer and conductor said they tested the brakes in accordance with CSX train handling rules to make sure the train was secure. Shortly after completing the brake test, the train crew was picked up and transported via taxi back to Boyles Terminal.

The initial concern was vandalism, and CSX dispatched a team of investigators to the accident site that included a division engineer of track, the Atlanta division mechanical superintendent, and a transportation superintendent. The team was able to determine that the hand brakes were applied on the cars and locomotives as stated by the train crew. This finding eliminated the possibility of vandalism; thus, the team concluded there were an insufficient number of handbrakes applied to hold the train after the brake system was depleted of air.

The event recorder download from lead Locomotive CSXT 6473 indicated CSX Train W01927 arrived on the Dudley Siding at 4:54 p.m. EST on December 4, 2007 and a brake test was conducted from 4:57 p.m. to 4:58 p.m. to determine if the hand brakes were sufficient to hold the train. During the brake test the Automatic Brake (AB) indicated a steady reading of 61 lbs, and the Independent Brake pipe pressure (IB) was reduced from 12 lbs to 2 lbs. However, there was no indication that the automatic and independent brakes were released when the brake test was conducted as required by CSX air brake and train handling rules. At 6:18 p.m., the automatic brake pipe pressure dropped from 61 lbs to 58 lbs, then to 551bs at 6:20 p.m., and finally to 52 lbs at 6:22 p.m. The independent brake pipe pressure held steady at 43 lbs, but both the automatic and independent brake pipe pressures began to gradually drop, with both reaching zero pressure at 9:29 p.m.

On December 5th, 2007 the independent brake pipe pressure began to build pressure reaching 63 lbs at 3:55 a.m. Only 4 or 5 lbs of pressure were lost until after 11:55 p.m., when the pressure dropped dramatically at 6 to 8 lb intervals.

On December 6th at 12:59:04 a.m., with the automatic brake pipe pressure still at zero, and the independent brake pipe pressure dropped to 8 lbs, the first sign of movement occurs. The event recorder indicates 1 mph then 0 mph at 12:59:05 a.m. One-tenth of a second later, 12:59:06 a.m., movement again reaches 1 mph. One-tenth of a second later the movement stops and the speed indicates 0 mph. At 12:59:08 a.m., CSX Train W01927 begins to roll south, reaching a maximum speed of 24 mph. At 1:07:25 a.m., the speed immediately drops from 24 mph to 0 mph, indicating impact with standing northbound CSX Train Q52206. The calculated distance CSX Train WO1927 traveled was 1.49 miles before impact.

CSX Train Q52206 was standing on the main track about five rail car lengths south of County Road 59 at the time of impact. The activation of the highway-rail grade crossing warning system, and the engineer's observation of the approaching headlight on CSX Train W01927 provided the warning which allowed the train crew to jump from their train and run to safety before the collision occurred.

The CSX track chart for the BMS shows that CSX Train W01927 was left standing in the Dudley Siding on a 1.21-percent descending grade. From the south switch, MP OLK 428, going southward the grade descends at 1.33 percent to the point of impact. Between the south switch and the point of impact, there are three consecutive left hand curves, a right hand curve, and then two more left hand curves. The curves are separated by short segments of tangent track.

CONCLUSION:

The investigation determined that the handbrakes were applied as described by the train crew. The event recorder download from lead Locomotive CSXT 6473 on Train W01927 verified that a brake test was conducted to determine the effectiveness of the handbrakes. However, the engineer failed to release the ABS while conducting the test as required by CSX air brake and train handling rules. The train crew believed the brake test they conducted verified the effectiveness of the handbrakes they had applied, but in reality they conducted the test with air brakes applied to the entire train.

Analysis:

FRA obtained fatigue related information, for the 10-day period preceding this incident including the 10-day work history (on duty/off duty cycles) for all of the employees involved.

Conclusion:

Upon analysis of that information FRA concluded that one or more of the employees may have been working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue, which may have contributed to the cause of the accident.

THE PROBABLE CAUSE:

The probable cause, as determined by an investigation by the Federal Railroad Administration was determined to be the failure of the CSX W01927 train crew to apply a sufficient number of handbrakes.