



***Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2009-09***

***Conrail Shared Assets (CRSH)
Carteret, NJ
March 13, 2009***

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.

1. Name of Railroad Operating Train #1 Consolidated Rail Corp. [CRSH]			1a. Alphabetic Code CRSH			1b. Railroad Accident/Incident No. 054395						
2. Name of Railroad Operating Train #2 N/A			2a. Alphabetic Code N/A			2b. Railroad Accident/Incident No. N/A						
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: Consolidated Rail Corp. [CRSH]			4a. Alphabetic Code CRSH			4b. Railroad Accident/Incident No. 054395						
5. U.S. DOT_AAR Grade Crossing Identification Number			6. Date of Accident/Incident Month 03 Day 12 Year 2009			7. Time of Accident/Incident 09:45:00 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM						
8. Type of Accident/Incident (single entry in code box)												
1. Derailment			4. Side collision			7. Hwy-rail crossing						
2. Head on collision			5. Raking collision			10. Explosion-detonation						
3. Rear end collision			6. Broken Train collision			11. Fire/violent rupture						
			9. Obstruction			12. Other impacts						
						13. Other (describe in narrative)						
						Code 12						
9. Cars Carrying HAZMAT 39		10. HAZMAT Cars Damaged/Derailed 1		11. Cars Releasing HAZMAT 1		12. People Evacuated 0		13. Division New Jersey				
14. Nearest City/Town Carteret			15. Milepost (to nearest tenth) 15.40		16. State Abbr Code N/A NJ		17. County MIDDLESEX					
18. Temperature (F) (specify if minus) 50 F		19. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 2		20. Weather (single entry) Code 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow 1			21. Type of Track Code 1. Main 3. Siding 2. Yard 4. Industry 3					
22. Track Name/Number West Track Siding			23. FRA Track Code Class (1-9, X) 1		24. Annual Track Density (gross tons in millions) N/A		25. Time Table Direction Code 1. North 3. East 2. South 4. West 1					
OPERATING TRAIN #1												
26. Type of Equipment Consist (single entry)			1. Freight train 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car			27. Was Equipment Attended? Code 1. Yes 2. No 1		28. Train Number/Symbol YPPR06				
29. Speed (recorded speed, if available) Code R - Recorded E - Estimated 14 MPH R			31. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) e. Traffic k. Direct traffic control Code(s) f. Interlocking l. Yard limits			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						
30. Trailing Tons (gross tonnage, excluding power units) N/A			n N/A N/A N/A N/A									
32. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)		33. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.				
(1) First involved (derailed, struck, etc)		CSXT75		1		N/A		Alcohol 0				
(2) Causing (if mechanical cause reported)		0		0		N/A		Drugs 0				
34. Was this consist transporting passengers? (Y/N) N												
35. Locomotive Units		a. Head End		Mid Train		Rear End		36. Cars				
				b. Manual c. Remote		d. Manual c. Remote		a. Freight b. Pass. c. Freight d. Pass. e. Caboose				
(1) Total in Train		2		0 0		0 0		(1) Total in Equipment Consist		0 0 0 0 0		
(2) Total Derailed		0		0 0		0 0		(2) Total Derailed		0 0 0 0 0		
37. Equipment Damage This Consist \$445.00			38. Track, Signal, Way, & Structure Damage \$0.00			39. Primary Cause Code H399			40. Contributing Cause Code N/A			
Number of Crew Members						Length of Time on Duty						
41. Engineer/Operators 1		42. Firemen 0		43. Conductors 1		44. Brakemen 1		45. Engineer/Operator Hrs 2 Mi 45			46. Conductor Hrs 2 Mi 45	
Casualties to:		47. Railroad Employees		48. Train Passengers		49. Other		50. EOT Device? 1. Yes 2. No N/A			51. Was EOT Device Properly Armed? 1. Yes 2. No N/A	
Fatal		0		0		0						
Nonfatal		1		0		0		52. Caboose Occupied by Crew? 1. Yes 2. No			N/A	
OPERATING TRAIN #2												
53. Type of Equipment Consist (single entry)			1. Freight train 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car			A. Spec. MoW Equip. Code 6		54. Was Equipment Attended? Code 1. Yes 2. No 2		55. Train Number/Symbol N/A		
56. Speed (recorded speed, if available) Code R - Recorded E - Estimated 0 MPH N/A			58. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track			58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable						

57. Trailing Tons (gross tonnage, excluding power units) 5066	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 N/A N/A N/A N/A	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter 0
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59. Principal Car/Unit (1) First involved (derailed, struck, etc) GATX 17801	a. Initial and Number 1	b. Position in Train 1	c. Loaded(yes/no) yes	60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol 0 Drugs 0
(2) Causing (if mechanical cause reported) 0	0	0	N/A	61. Was this consist transporting passengers? (Y/N) N/A

62. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	63. Cars	Loaded a. Freight b. Pass.	Empty c. Freight d. Pass.	e. Caboose
(1) Total in Train 0	0	0 0	0 0	(1) Total in Equipment Consist 39	0	7 0	0
(2) Total Derailed 0	0	0 0	0 0	(2) Total Derailed 0	0	0 0	0

64. Equipment Damage This Consist \$70,519.00	65. Track, Signal, Way, & Structure Damage \$0.00	66. Primary Cause Code H399	67. Contributing Cause Code N/A
Number of Crew Members		Length of Time on Duty	

68. Engineer/Operators 0	69. Firemen 0	70. Conductors 0	71. Brakemen 0	72. Engineer/Operator Hrs 0 Mi 0	73. Conductor Hrs 0 Mi 0
Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other	77. EOT Device? 1. Yes 2. No N/A	78. Was EOT Device Properly Armed? 1. Yes 2. No N/A
Fatal 0	0	0	0	79. Caboose Occupied by Crew? 1. Yes 2. No N/A	
Nonfatal 0	0	0	0		

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 N/A	82. Train Number/Symbol N/A
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83. Speed (recorded speed, if available) R - Recorded E - Estimated N/A MPH 0	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
84. Trailing Tons (gross tonnage, excluding power units) N/A				

86. Principal Car/Unit (1) First involved (derailed, struck, etc) 0	a. Initial and Number 0	b. Position in Train 0	c. Loaded(yes/no) N/A	87. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol N/A Drugs N/A
(2) Causing (if mechanical cause reported) 0	0	0	N/A	88. Was this consist transporting passengers? (Y/N) N/A

89. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	90. Cars	Loaded a. Freight b. Pass.	Empty c. Freight d. Pass.	e. Caboose
(1) Total in Train 0	0	0 0	0 0	(1) Total in Equipment Consist 0	0	0 0	0
(2) Total Derailed 0	0	0 0	0 0	(2) Total Derailed 0	0	0 0	0

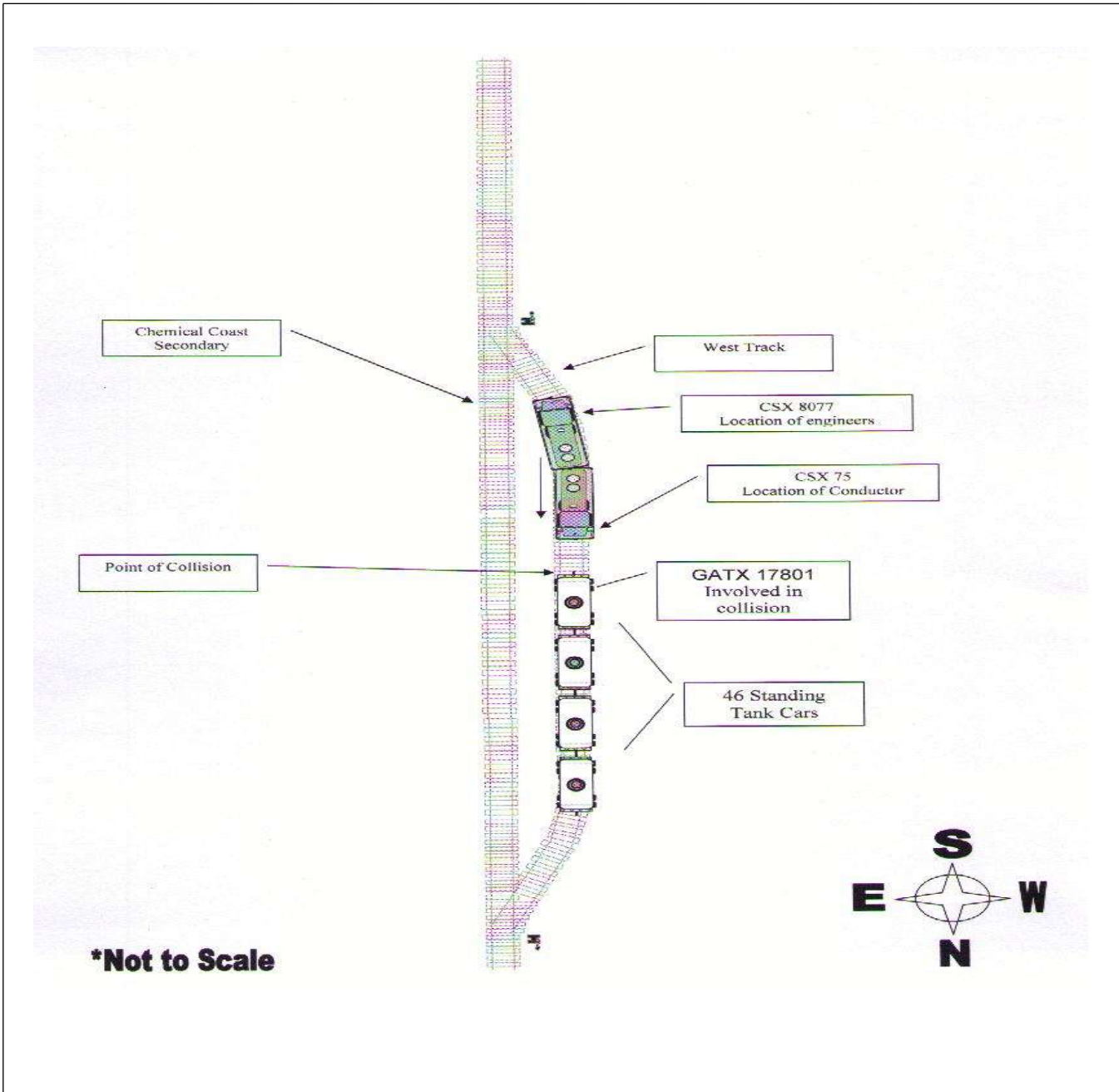
91. Equipment Damage This Consist \$0.00	92. Track, Signal, Way, & Structure Damage \$0.00	93. Primary Cause Code N/A	94. Contributing Cause Code N/A
Number of Crew Members		Length of Time on Duty	

95. Engineer/Operators 0	96. Firemen 0	97. Conductors 0	98. Brakemen 0	99. Engineer/Operator Hrs 0 Mi 0	100. Conductor Hrs 0 Mi 0
Casualties to:	101. Railroad Employees	102. Train	103. Other	104. EOT 1. Yes 2. No N/A	105. Was EOT Device Properly 1. Yes 2. No N/A
Fatal 0	0	0	0	106. Caboose Occupied by Crew? 1. Yes 2. No N/A	
Nonfatal 0	0	0	0		

Highway User Involved				Rail Equipment Involved			
107. C. Truck-Trailer A. Auto B. Truck 108. Vehicle Speed (est. MPH at impact) N/A	F. Bus G. School Bus H. Motorcycle	J. Other Motor Vehicle K. Pedestrian M. Other (spec. in narrative) N/A	Code N/A	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) N/A	Code N/A
109. geographical 1. North 2. South 3. East 4. West N/A				112. Position of Car Unit in N/A			

110. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped				Code N/A	113. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User				Code 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 1. Gates 2. Cantilever FLS 3. Standard FLS 4. Wigs 5. Hwy. traffic signals 6. Audible Warning 7. Crossbucks 8. Stop signs 9. Watchman 10. Flagged by crew 11. Other (spec. in narr.) 12. None				Code N/A	116. Signaled Crossing (See instructions for codes)				Code N/A	117. Whistle Ban 1. Yes 2. No 3. Unknown	
Code(s)				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 N/A	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown				Code N/A	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	
121. Age N/A		122. Driver's Gender 1. Male 2. Female		Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown				Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop	
125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown				Code N/A	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		
Casualties to:			Killed	Injured	127. Driver 1. Killed 2. Injured 3. Uninjured				Code N/A	128. Was Driver in the Vehicle? 1. Yes 2. No	
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)	
132. Locomotive Auxiliary Lights? 1. Yes 2. No				Code N/A	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No				Code N/A		
134. Locomotive Headlight Illuminated? 1. Yes 2. No				Code N/A	135. Locomotive Audible Warning Sounded? 1. Yes 2. No				Code N/A		

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



137. SYNOPSIS OF THE ACCIDENT

At approximately 9:00 a.m. EST on March 12, 2009, a certified locomotive engineer and student engineer were instructed by the CSX Yardmaster at Port Reading Rail Yard to leave the yard on the Port Reading Secondary, reverse onto the West Track via the Chemical Coast Secondary, pick up 46 standing rail cars from the West Track, and shove the cars into the yard. Coupled locomotives, CSXT 8077 and CSXT 75, were to be used for this movement. Locomotive CSXT 8077 was being operated by the student engineer under the direction of the certified engineer. While reversing on the West Track, the light locomotives collided with the standing rail cars at approximately 14 mph, causing damage to loaded tank car GATX 17801 and resulting in a hazardous materials release. Equipment damage is estimated at \$70,516 for the tank car and \$445 for locomotive CSXT 75. The certified engineer was injured in the accident.

The accident was caused by the certified engineer not stopping the movement when he did not have an accurate car count from the conductor. Improper monitoring of the student engineer's train speed or confirming the distances relayed via radio by the conductor, who was located on the leading end of the movement resulted in the accident. If the distance radioed by the conductor is not heard or understood the engineer is required to immediately stop the movement.

The FRA Investigator submitted evidence of four violations of Federal Regulations as a result of this investigation.

138. NARRATIVE

Circumstances Prior to the Accident

The crew of YPPR06 signed up for duty at the Port Reading Yard Office at 7 a.m. EST on March 12, 2009, after the required mandatory rest period. The crew consisted of a conductor, certified engineer, and student engineer. The student engineer was in the engineer training program and assigned to YPPR06 for on the job training to gain train handling experience. This was his second day as part of this crew; he had previously worked for four weeks with other engineers. A student engineer is required to only operate under the direct supervision of a certified engineer. The student engineer had nine months of railroading experience.

The crew was assigned to take the CSX 8077 and CSX 75 as coupled light engines. The engines were properly tested, but was noted to have a non functioning speed indicator on the CSX 8077. A controlling locomotive's speed indicator is not required up to 20 mph according to Federal regulation. The crew was operating at restricted speed not to exceed 15 mph for this territory. The locomotives were to proceed west out of Port Reading Yard to CP PD on the Port Reading Secondary; once they were clear of the eastbound signal at CP PD, they were to be lined for the Chemical Coast Secondary. Under signal indication they were to proceed in a north direction to the south end of the West Track (siding), reverse the hand operated switch, and operate north to couple into 39 loaded and 7 empty cars located at MP 15.4 on the West Track. After coupling to the cars, they were to operate back to the Port Reading Secondary and shove the cars into the yard.

Approaching the scene of the accident, the CSX 8077 was the lead unit with the CSX 75 as the trailing unit. The student engineer was operating from the control stand on the CSX 8077 with the certified engineer in the fireman's seat. The locomotives were backing north towards the cut of cars. The conductor was on the platform on the north end of the CSX 75 protecting the shoving movement and communicating with the CSX 8077 via the radio.

All references to direction are according to timetable directions. CP PD is a remote interlocking controlled by the South Jersey train dispatcher at Mt. Laurel, NJ. The area of the accident is tangent track with good

visibility.

The Accident

The Collision

The light engines CSX 8077 and CSX 75 were stopped at the hand operated switch from the Chemical Coast Secondary to the West Track, milepost (MP) 16.5. Approaching the standing cars at MP 15.4, the engines were traveling at a maximum recorded speed of 14 MPH, authorized speed for this area is Restricted Speed not to exceed 15 MPH. Speed fluctuated little from the time the engines reached 14 MPH until impact at 14 MPH.

On the West Track approaching the standing cars the track is tangent. The locomotives were back to back, both the student engineer and the certified engineer would have little or no sight of the cars ahead. The conductor riding the lead end of the CSX 75 had an excellent view of the cars ahead of the movement.

The distance between the hand operated switch and the stand of cars on the West Track was 3335 feet or approximately 55 car lengths. According to the event recorder download on the CSX 75 (event recorder speed was not functioning on the CSX 8077), the engines were travelling at 14 MPH approaching and at impact.

The engines impacted the lead car GATX 17801, and pushed the 46 cars approximately 68 feet. This impact caused tank car GATX 17801 to rupture, spilling about 100 gallons of Isopropyl Acetate, a combustible hazardous material. The cars and locomotives did not derail. Upon impact, the certified engineer was thrown forward, cut his head, and required medical treatment and sutures. There was no evacuation and no injuries due to the hazmat spillage. Emergency responders were called and tank trucks ordered to offload the commodity.

Analysis and Conclusion

Analysis-Toxicological Testing: All three members of the crew were Post Accident Tested under 49 CFR 219 Subpart C. Results were negative for all three employees.

Conclusion: Intoxication was not a factor.

Analysis-Fatigue: A fatigue analysis was conducted using the FAST program on the student and certified engineers to determine if fatigue might have been an issue.

Conclusion: It was determined that fatigue was not a factor.

Analysis-Locomotive Safety Devices: Both engines the CSX 8077 and the CSX 75 were properly tested and compliant. The CSX 8077 speed indicator was not functioning.

Conclusion: Both the student engineer and certified engineer were aware that the speed indicator was not functioning on the CSX 8077. The experienced certified engineer should have been more attentive to the speed of the engines based on his experience.

Analysis-Locomotive Engineer Operating Performance: The Student Engineer was operating the locomotives under the direct supervision of the certified Engineer. The Student Engineer had 4 weeks experience as an engineer and only 9 months of total railroad experience. The accident occurred on the student engineer's second day assigned to the crew YPPR06. The engines were being operated at Restricted Speed which requires the engineer to be able to stop within one-half the range of vision and not to exceed 15 MPH. The reverse movement required the conductor to relay distance to the cars that were to be coupled, due to the position of the engineers and their lack of visibility. As per NORAC Rule 711, the movement must stop if instructions are not heard or understood. Both engineer and student should have been attentive to the radio instructions given by their conductor. If they did not understand the conductor's radio transmission, the movement should have been stopped by the certified engineer.

Conclusion: The inexperienced student engineer was relying on the certified engineer to determine speed

and compliance with the radio instructions of the conductor. The certified engineer should have been more attentive to the radio and the speed of the engines. Operation at Restricted Speed requires judgment on the part of the certified engineer. The student engineer was at the controls of the engines and would have required greater supervision on the part of the experienced certified engineer.

Analysis-Fatigue: 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 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 the two employees involved in this accident, including the certified locomotive engineer and the student engineer.

Conclusions: FRA concluded fatigue was not probable for the engineers. Information for these two employees follows:

1. Certified Locomotive engineer train YPPR06
Sleep setting - Excellent,
Overall effectiveness = 98.50 percent
Lapse Index = 0.3
Reaction Time = 101 percent
Chronic Sleep Debt = 1.32
Hours of Continuous Wakefulness = 3.22
Time of Day 09:12
BAC Equivalent = < 0.05
Conclusion: Fatigue was probable for this employee

2. Student Locomotive engineer train YPPR06
Sleep setting - Excellent
Overall effectiveness = 98.72 percent
Lapse Index = 0.3
Reaction Time = 101 percent
Chronic Sleep Debt = 1.27
Hours of Continuous Wakefulness = 3.22
Time of Day 09:12
BAC Equivalent = < 0.05
Conclusion: Fatigue was probable for this employee.

Analysis- Forensic Investigation: Lead car GATX 17801 damaged during the collision contained Isopropyl Acetate, a combustible hazardous material. FRA dispatched a Hazmat Safety Inspector to assess damage and oversee the offloading of the commodity.

FRA interviewed crewmembers and ConRail Supervision. FRA requested supporting documents needed for the investigation. FAST Report written to assess fatigue factors.

Conclusion: Tank car GATX 17801 leaked approximately 20 gallons of hazardous material which was contained and cleaned. Commodity was transferred to tanker trucks under the supervision of local Fire Departments, FRA and state DEP. No evacuations were required. All required documents were submitted and fatigue was not an issue.

Probable Cause and Contributing Factors

This accident was caused by poor radio procedures and train handling. The movement should have stopped once the engineers lost contact with the conductor or they did not hear continued car counts for the reverse movement. It is unreasonable to assume the student engineer possessed the experience or skills to accurately determine the engine speed, distance travelled or to determine the proper method of reversing the engines in a Restricted Speed operation where he could not see. The onus was on the certified engineer to ensure proper operation of the engines. The engineer failed to properly supervise the student engineer causing the collision between the coupled engines and standing cars.

A contributing factor could be the excessive radio transmissions during this time period. The conductor was asked to relay some information concerning an open gate which had nothing to do with the intended move. The conductor should have been concentrating on the movement alone.