Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-62

Canadian National (CN)
Flora, MS
July 6, 2008

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-2008-62

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Canadian National - North America [CN]	CN	600362
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident No.
N/A	N/A	N/A
3.Name of Railroad Operating Train #3	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
N/A	N/A	N/A
4.Name of Railroad Responsible for Track Maintenance:	4a. Alphabetic Code	4b. Railroad Accident/Incident No.
Canadian National - North America [CN]	CN	600362
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident: Month 07 | Day 06 | Year 2008	7. Time of Accident/Incident: 10:45: ☐ 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: 01

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
28	0	0	0	Central

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr / Code	17. County
Flora	199.5	N/A / MS	MADISON

18. Temperature (F) *(specify if minus)*	19. Visibility *(single entry)* 1. Dawn 2. Day 3.Dusk 4.Dark — Code	20. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow — Code	21. Type of Track 1. Main 2. Yard 3. Siding 4. Industry — Code
75 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	4	44.61	1

OPERATING TRAIN #1

26. Type of Equipment Consist *(single entry)* 1. Freight train 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/switching 8. Light loco(s). 9. Maint./inspect.car — A. Spec. MoW Equip. Code	27. Was Equipment Attended? 1. Yes 2. No — Code	28. Train Number/Symbol
1	1	M3197106

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?
59 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
30. Trailing Tons *(gross tonnage, excluding power units)*: 5428	Code(s): e | N/A | N/A | N/A | N/A	0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	ICG765708	21	no
(2) Causing *(if mechanical cause reported)*	ATGX77022	20	no

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	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	28	0	62	0	0
(2) Total Derailed	2	0	40	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$853,662.00	$130,000.00	E33C	N/A

Number of Crew Members

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

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 2 Mi 45	Hrs 2 Mi 45

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
1	1

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
N/A	N/A	N/A

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?
N/A MPH — N/A	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)* N/A

c. Auto train stop
d. Cab
e. Traffic
f. Interlocking
i. Time table/train orders
j.Track warrant control
k. Direct traffic control
l.Yard limits
o. Positive train control
p. Other *(Specify in narrative)*
Code(s) N/A N/A N/A N/A N/A

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

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

60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

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

62. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. 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

64. Equipment Damage This Consist N/A

65. Track, Signal, Way, & Structure Damage N/A

66. Primary Cause Code N/A

67. Contributing Cause Code N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
N/A	N/A	N/A	N/A

Length of Time on Duty

72. Engineer/Operator Hrs N/A Mi N/A

73. Conductor Hrs N/A Mi N/A

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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

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

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

OPERATING TRAIN #3

80. Type of Equipment Consist *(single entry)*
1. Freight train
2. Passenger train
3. Commuter train
4. Work train
5. Single car
6. Cut of cars
7. Yard/switching
8. Light loco(s).
9. Maint./inspect.car
A. Spec. MoW Equip.
Code N/A

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

82. Train Number/Symbol N/A

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

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

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

Rail Equipment Involved

111. 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)*

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 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 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 N/A	117. Whistle Ban 1. Yes 2. No 3. Unknown	Code N/A
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	Code N/A

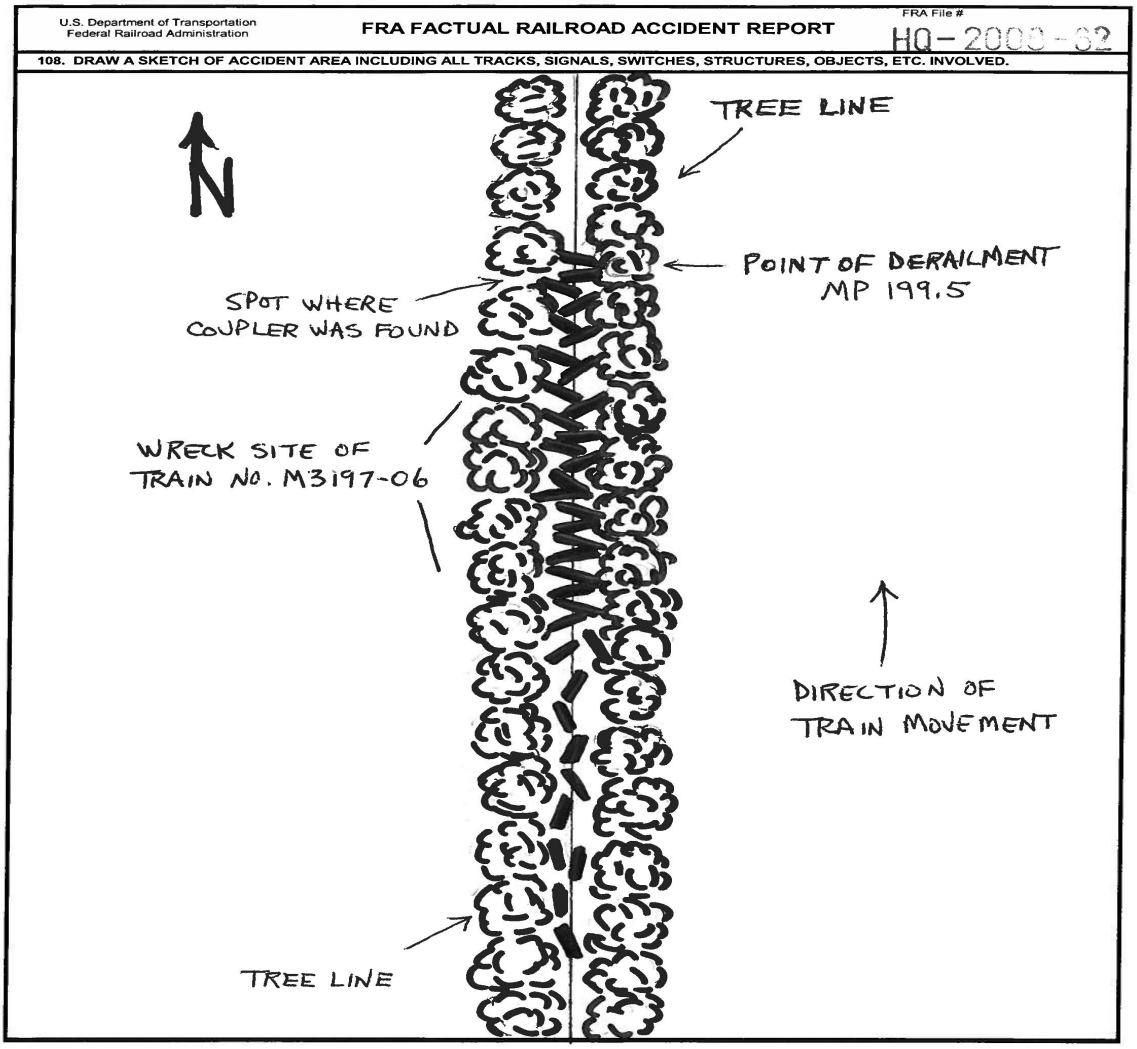
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify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

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	Code 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 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

On July 6, 2008 at 10:45 p.m. CST northbound Canadian National - North America (CN) freight Train M31971 -06 derailed 42 cars at milepost (MP) 199.5 near Flora, Mississippi (MS). The train was traveling on the Yazoo Subdivision at a recorded speed of 59 miles per hour (mph) when the derailment occurred. The maximum authorized speed for freight trains in this area is 60 mph as designated in the current CN timetable # 3 and the method of train operation is governed by a Traffic Control System (TCS).

There were no injuries of the train crew reported and no release of hazardous materials as a result of this derailment. CN estimated the damage to equipment was $853,662 and $130,000 for track and signals, totaling $983,662. This is an Amtrak route. Passengers were bussed around the derailment site during the 24 hour delay period.

At the time of the accident it was dark and the weather was clear with a temperature of 75 °F.

The probable cause of the derailment was the result of a coupler falling from the 18th rail car from the locomotives onto the track structure.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

CN freight Train # M31971-06 originated at Geismar, Louisiana (LA), and consisted of two locomotives (IC 2717 and IC 2700) with 28 loaded and 4 empty tank cars. The train received a Class I air brake test and pre-departure inspection by qualified car inspectors at Geismar. After departing from Geismar the train made an intermediate stop at Destrehan, LA, and added 58 empty covered hoppers rail cars to the head-end of the train. These cars had received a pre-departure inspection and Class I air brake test by qualified car inspectors at Destrehan. The train continued northward from Destrehan en route to Jackson, MS where the train crew was to be relieved.

The relief crew of CN Train # M31971-06 included a locomotive engineer and a conductor. They first went on duty at 8:00 p.m. CST on July 6, 2008 at the CN Jackson Yard in Jackson, MS. This is their home terminal and the locomotive engineer had received 12 hours and 15 minutes required statutory off duty rest period and the conductor had received 11 hours and 40 minutes required statutory off duty rest period prior to reporting for duty.
The assigned freight train consisted of two locomotives, 28 loaded rail cars and 62 empties with a total weight of 5,428 tons and 5,074 feet in length. No changes were made to the train's consist at Jackson and it departed at 8:00 p.m. The train crew's assignment was to travel north and meet southbound CN Train No. 33471-06, exchange trains, and return to Jackson. These two train assignments normally meet and exchange trains at various locations south of Memphis, Tennessee (TN).

After northbound CN freight train # M31971-06 departed Jackson the trip was uneventful. As the train approached the accident area the engineer was seated at the controls on the right (east) side of the lead locomotive and the conductor was seated on the left (west) side of that same locomotive. In the area of the accident the track has a 2% descending grade and is tangent for more than half a mile prior to Point of Derailment (POD) and for a considerable distance beyond.

Both geographical and railroad timetable direction of the train movement is north. Timetable directions are

used throughout this report.

THE ACCIDENT

Approaching the accident area the train was being operated at 59 miles per hour (mph) when an emergency application of the train air brakes occurred. The train speed was verified by the lead locomotive event recorder data. Once the train came to a stop the conductor walked back and inspected the train and discovered the 42 derailed cars. In the derailment were 40 empty covered hopper cars and two tank cars loaded with non-hazardous material. The cars were stacked accordion fashion along the right of way with the track structure completely destroyed. The total estimated damage cost for the derailment is $983,662.

ANALYSIS AND CONCLUSION

ANALYSIS – RAIL CAR ATGX 77022

At the accident scene, the first car north of the derailed cars, ATGX 77022 (18th car from the locomotives), was found with the “A” end (south and trailing end) coupler and coupler cross key missing. An inspection of the car disclosed the car was equipped with E60 couplers and conventional draft gear, a coupler cross key, a cross key retainer lock, and draft gear arrangements. The coupler carriers and draft components displayed normal wear conditions. After the derailment the missing coupler was found at the initial POD, on the west side, outside of the gage of the track. The coupler cross key and cross key retainer lock was not found.

CONCLUSION:

The rail car missing draft components caused the following rail cars to derail.

ANALYSIS – ENGINEER OPERATING PRACTICES

The lead locomotive (IC 2717) was equipped with a speed indicator and an event recorder as required by Federal Regulations. The relevant event recorder data was downloaded by a CN Trainmaster at the accident site and analyzed by CN Officials. The analysis concluded that the locomotive engineer was in compliance with all applicable railroad operating and train handling requirements. The Federal Railroad Administration (FRA) reviewed the results of this analysis and concurred with the results.

CONCLUSION

The train crew performance during the operation of the CN train did not contribute to the derailment.

The incident occurred on an Amtrak route and during the time the main line was out of service Amtrak passengers were bused between New Orleans, LA and Memphis, TN. The main line returned to service within 24 hours.

ANALYSIS – TOXICOLOGICAL TESTING

Toxicological tests were performed on the train crew members and the results were negative.

CONCLUSION

Alcohol and drugs did not contribute to the incident.

ANALYSIS – FATIGUE

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline FRA does 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.

CONCLUSION:

FRA obtained fatigue related information, including a 10-day work history, for the employees involved in this accident and it was determined that fatigue was not probable for train crew members.

OVERALL CONCLUSION

Rail car ATGX 77022 was the 18th car of a block of 58 cars added to CN Train # M31971-06 at Destrehan, LA. This block of cars was given a pre-departure inspection in accordance with 49 CFR Part 215.13 prior to being added to the train. The most common cause for the loss of a draft key is a missing draft key retainer which allows the draft key to work out of the center sill and draft arrangement as a result of forces encountered during normal train operations. Once the draft key is disengaged the coupler is free to be pulled out of the car. The draft key and retainer were not found either at the derailment scene or along the main track the train traveled prior to the derailment. No action will be taken against the carrier because this condition was not observed prior to departure and there is a small probability that the condition could have occurred en route.

PROBABLE CAUSE

FRA determined that the probable cause of the derailment was the result of a coupler falling from the 18th rail car behind the locomotives onto the track structure.