Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-14

Missouri & Northern Arkansas RR Co Inc. (MNA)
Bergman, Arkansas
April 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-2007-14

1.Name of Railroad Operating Train #1 Missouri & Northern Arkansas RR Co., Inc. [MNA]	1a. Alphabetic Code MNA	1b. Railroad Accident/Incident No. RINC070233
2.Name of Railroad Operating Train #2 Missouri & Northern Arkansas RR Co., Inc. [MNA]	2a. Alphabetic Code MNA	2b. Railroad Accident/Incident No. RINC070233
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: Missouri & Northern Arkansas RR Co., Inc. [MNA]	4a. Alphabetic Code MNA	4b. Railroad Accident/Incident No. RINC070233
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident Month 04 Day 06 Year 2007	7. Time of Accident/Incident 04:02: ☑ 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: 04

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
2	N/A	N/A	0	SYSTEM

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
BERGMAN	416.90	N/A	AR	BOONE

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
35 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. — Code
SINGLE MAIN TRACK	3	8	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	CNWNA 02

29. Speed (recorded speed, if available) R - Recorded E - Estimated	30. Trailing Tons (gross tonnage, excluding power units)	31. Method(s) of Operation (enter code(s) that apply)	31a. Remotely Controlled Locomotive?
19 MPH — Code: R	2660	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): j 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

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	UP 6017	1	N/A
(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	1
(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	0	0	133	0	0
(2) Total Derailed	0	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
605820	9000	H404	H401

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 2	Hrs 2 Mi 2

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 — 1

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

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	CONL 05

56. Speed (recorded speed, if available) R - Recorded E - Estimated	58. Method(s) of Operation (enter code(s) that apply)	58a. Remotely Controlled Locomotive?
0 MPH — Code: 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): 2900

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): j | 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)	NOKL819126	3	yes
(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	2	0	0	0	0
(2) Total Derailed	0	0	0	0	0

63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	20	0	20	0	0
(2) Total Derailed	4	0	0	0	0

64. Equipment Damage This Consist: 43008

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

66. Primary Cause Code: H404

67. Contributing Cause Code: H401

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 9 Mi 2

73. Conductor: Hrs 9 Mi 2

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: 1

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

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: N/A

82. Train Number/Symbol: N/A

83. Speed (recorded speed, if available) Code: R - Recorded; E - Estimated: N/A MPH: 0

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

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

90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

91. Equipment Damage This Consist: 0

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

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
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

104. EOT 1. Yes 2. No: N/A

105. Was EOT Device Properly 1. Yes 2. No: N/A

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

Highway User Involved

107. A. Auto; B. Truck; C. Truck-Trailer.; D. Pick-Up Truck; E. Van; F. Bus; G. School Bus; H. Motorcycle; J. Other Motor Vehicle; K. Pedestrian; M. Other (spec. in narrative) Code: N/A

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

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

Rail Equipment Involved

111. Equipment 1.Train(units pulling); 2.Train(units pushing); 3.Train (standing); 4.Car(s) (moving); 5.Car(s) (standing); 6.Light Loco(s) (moving); 7.Light(s) (standing); 8.Other (specify in narrative) Code: N/A

112. Position of Car Unit in: N/A

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110. Position	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

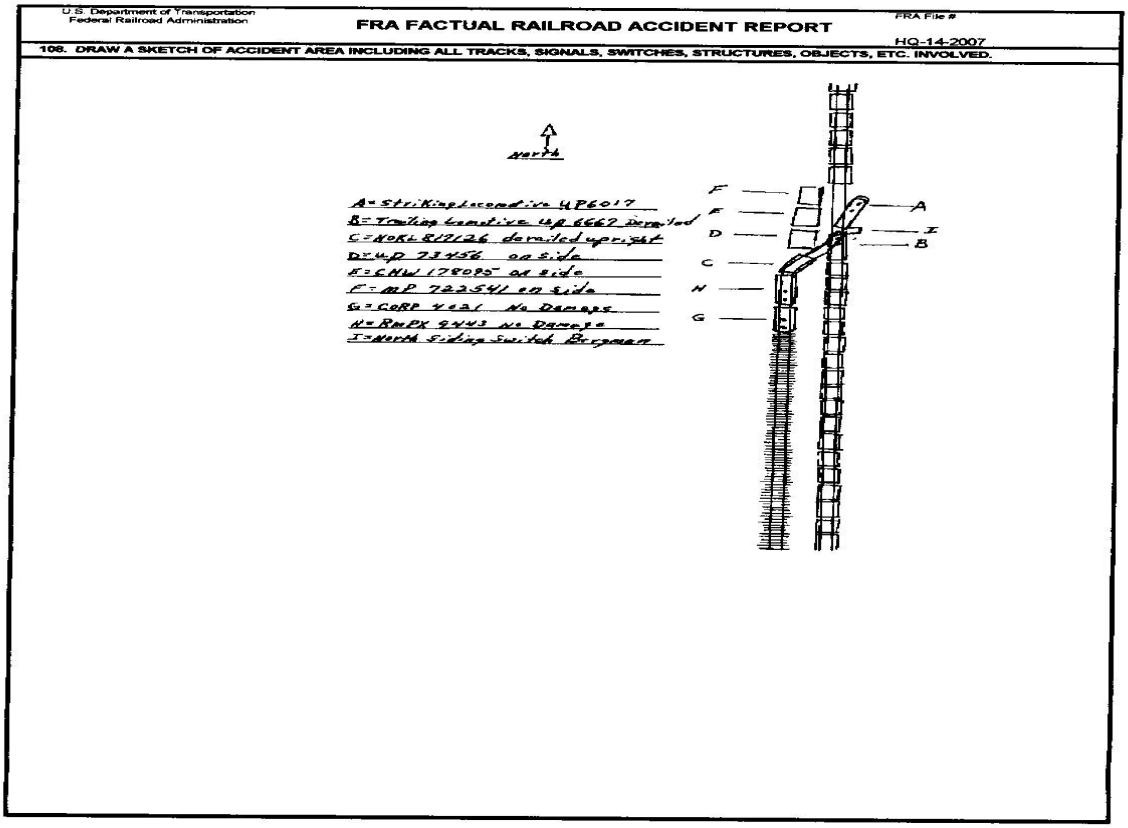
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)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

A northbound MNA freight train collided with a standing southbound MNA freight train at the north switch of Bergman siding on April 6.2007 at 4:02 a.m. The accident occurred at Bergman, AR at MNA Milepost 416.85 on the MNA Aurora subdivision.

Two locomotives of the northbound train were derailed and four cars of the standing train were derailed. Total estimated monetary damages were $657,828. There were no injuries.

At the time of the accident it was clear, with a temperature of 35 ºF.

Both locomotives of the striking train derailed but remained upright. There were no cars derailed or damaged in the striking train.

Four cars of the struck train derailed with three of those cars overturning.

There was no hazardous material involvement.

The collision was wholly human factor caused.

The primary cause of the accident was "H404 - Train order, track warrant, track bulletin, or timetable authority, failure to comply"; by the crew of the striking train CNWNA02. The striking train exceeded the limits of Track Warrant Control Authority by failing to comply with Track Warrant instructions - "not in effect until after arrival of". The striking train failed to ascertain that the struck train was clear of the main track prior to moving into the limits of a warrant conveying authority "after arrival of" the struck train.

A contributing cause of the accident was "H401 Failure to stop train in clear"; by the crew of the struck train CONL05. This crew violated GCOR rule 6.28.2 "Stopping Clear in Siding - When possible, a train entering a siding must not stop until the entire train is clear of the main track." This train arrived 1 hour and 58 minutes prior to the accident and could have cleared the main track prior to the arrival of the striking train.

138. NARRATIVE

Circumstances Prior to the Accident:

CNWNA-02:

Train CNWNA-02 was an empty unit coal train. It consisted of 2 locomotives leading, 1 distributed power locomotive at the rear of the train, and 133 empties. The train was approximately 7404 feet in length and weighed approximately 2660 tons. The air test had been completed and properly documented prior to the crew coming on duty.

The crew of the striking train CNWNA-02 consisted of one conductor and one engineer. The crew was called off the Cotter extra-board at Cotter, AR. Both crew-members came on duty at 2:00 a.m. (CDT) April 6, 2007. This is the home terminal for both crew-members. Both crew-members received more than the statutory off duty period prior to reporting for duty. The conductor had 62 hours and 30 minutes off duty prior to reporting on duty. The engineer had 11 hours and 30 minutes off duty prior to reporting on duty.

The conductor held a job briefing via telephone with the dispatcher at the contracted dispatching center, American Rail Dispatching Center (ARDC), located in St. Alban, VT. This job briefing was initiated to discuss track warrants that had been electronically transmitted. During this job briefing the dispatcher advised the conductor they would meet train CONL-05 at Bergman AR. When asked by the conductor, the dispatcher said Southward train CONL-05 was "arriving at Bergman now."

Northward train CNWNA-02 identified as UP 6017 North departed Cotter, AR at approximately 2:30 a.m. with main track authority conveyed by an electronically transmitted track warrant.
The heading of this track warrant shows "Number AURO 0464 - Date April 5, 2007 - To UP 6017 North - At (field left blank).
Box 2 of this warrant conveys main track authority as - "Proceed from N. Yard Limit Cotter to North Siding Switch Bergman."
Box 16 of this warrant shows "Track Bulletins in effect 095,096"
This track warrant states - "This Track Warrant has 2 boxes marked. 2,16."
The OK time on this warrant is "22:57 - Dispatcher JCB - Copied by (field blank)"

Also in possession of UP 6017 North was track warrant AURO 0002.
This track warrant was transmitted electronically.
The heading of this track warrant shows "Number AURO0002 - Date April 05, 2007 - To UP6017 North - At (field blank).
Box two of this track warrant conveys main track authority as - "Proceed from North Siding Switch Bergman to MP 419."
Box seven of this track warrant directed "Not in effect until after the arrival of CORP 4021 South at North Siding Switch Bergman.
Box 16 of this warrant shows "Track Bulletins in effect 095,096."
This Track Warrant has 3 boxes marked. 2,7,16."
The dispatcher computer generated copy of this track warrant shows an OK time of 23:07 - Dispatcher JCB - Copied by (field blank.).

It is approximately 1 hour running time from Cotter to Bergman.

While en route from N.Yard Limits Cotter to North Siding Bergman the crew of Northward train UP 6017 North (CNWNA-02) copied a track warrant transmitted by radio from the dispatching center to the train.
The computer generated heading of this track warrant shows "Number AURO 0013 - Date April 6, 2007 - To UP 6017 North - At North Siding Switch Bergman."
(The hand written copy, presented as that copy in possession of the crew, leaves the "At" field blank.)
Box one of this track warrant directed "Track Warrant No AURO 0002 is void."
Box two of this track warrant conveys main track authority as - "Proceed from the North Siding Switch Bergman to South Siding Switch Gretna".
Box seven of this track warrant directed "Not in effect until after the arrival of CORP 4021 South at North Siding Bergman."

Box 16 of this warrant shows "Track Bulletin in effect 096".
Box 19 of this track warrant states "Expect to find the following switch(es) lined and locked in the reverse position South Siding Switch Gretna".
This track warrant states "This Track Warrant has 5 boxes marked, 1,2,7,16,19"
The dispatcher computer generated copy of this track warrant gives "OK - 03:20 - Dispatcher JCB - Copied By PRW."

As CNWNA-02 approached the accident scene it was restricted to 25 MPH by item 33 of Daily Operating Bulletin 096.

As this train passed the south siding switch of the 7710 foot Bergman siding, the crew noted that the south end of Bergman siding was blocked with cars.

There were no placarded cars in this consist.

The lead locomotive was operating with front end forward.

Approaching the accident scene the engineer was sitting at the control stand of the locomotive and the conductor was sitting in the conductor's seat.

CONL-05:

CONL-05 (CORP 4021 South) consisted of two locomotives, 20 loads, and 20 empty cars of mixed type and various commodities. The train was approximately 2400 feet in length and weighed approximately 2900 tons. An air test had been completed and properly documented at the initial terminal.

The crew of struck train CONL-05 consisted of one conductor and one engineer. This was the crew's regular job assignment. This assignment is not "called" but has an assigned starting time. Both crew-members came on duty at 7:00 pm (CDT) April 5, 2007 at Cotter, AR. This is the home terminal for both crew-members. Both crew-members received more than the statutory off duty time prior to reporting for duty. The conductor had 58 hours and 30 minutes off duty prior to reporting for duty. The engineer had 12 hours and 00 minutes off duty prior to coming on duty.

This crew operated train MNA 4044 North from Cotter, AR to Gretna, MO and then returned southward with struck train CORP 4021 (CONL-05). This crew departed Cotter, AR northward at 8:45 pm (CDT) April 5, 2007 arriving Gretna, MO at 11:55 pm and departing southward from Gretna, MO at 12:10 a.m. (CDT) April 6, 2007 operating under track warrant AURO0433.

Track warrant AURO 0433 was copied by the crew that brought the train to Gretna.
The heading of this warrant shows "Number AURO0433 - Date April 05, 2007 - To CORP 4021 - at (blank field).
Box 2 of this warrant conveys main track authority as - "Proceed from South Siding Switch Gretna to North Siding Switch Bergman."
Box 7 states - "Not in effect until after the arrival of MNA 4044 North at South Siding Switch Gretna."
Box 10 directs - "Clear main track at last named point."
Box 16 shows - "Track Bulletins in effect 095,096."
This track warrant states - "This Track Warrant has 4 boxes marked 2,7,10,16."
This track warrant shows - "OK 22:18 - Dispatcher JCB - Copied by KAK.

There were two placarded hazardous materials cars in this consist. Both contained fuel oil and neither were damaged or derailed.

The lead locomotive was operating front end forward.

Just prior to the accident the engineer was sitting at the control stand and the conductor was in the conductor's seat.

Method of Operation:

The method of operation was non-signaled Track Warrant Control (TWC).
The maximum authorized speed at the point of collision was 30 MPH.

Mechanical Condition and Required Inspections of Locomotives and Air Brakes:

The required air brake tests had been successfully completed on both trains.

The locomotives of the striking train were in operational condition, under current inspection, with no federal defects noted.

Mechanical condition of equipment did not contribute to the cause or severity of the accident.

Infrastructure:

Track and roadbed met federal requirements for class 3 track as indicated by FRA track inspection.

Condition of infrastructure did not contribute to the cause or severity of the accident.

Topography:

The collision occurred on the Missouri and North Arkansas (MNA) Aurora Subdivision at Mile Post 416.85, near Bergman, Arkansas. The area adjacent to both sides of the right of way is mostly rural and wooded.

The track profile indicates a northward ascending one mile average grade of + .92% cresting approximately 3033 feet from the point of collision then descending at an average grade of -1.31% to the point of collision. The train would have been near balance on grade at the point of collision.

Line of site measured by a member of the FRA track group determined that the line of sight distance from the exit spiral of the last curve to the point of collision of was 1717 feet.

The main track and siding run near parallel at this location.

The Accident:

Striking Train UP 6017 North (CNWNA-02)

As UP 6017 North entered the last curve prior to the North Siding Switch Bergman, the engineer saw CORP 4021 South sitting on the siding with the headlight extinguished and number plates illuminated. The distance to the leading unit of the struck train at this point would have been about 1500 feet. The engineer of UP 6017 North then extinguished his headlight. Line of sight was not obstructed by vegetation or any rail equipment.

As UP 6017 North passed the lead locomotive of the struck train the engineer of UP 6017 North switched the headlight to bright at which time the crew saw that the cars from train CORP 4021 South were still occupying the main track.

The conductor, sitting in his seat on the left-hand side (west) of the locomotive, dove to the right side of the locomotive cab reaching a position behind the engineer's seat at the same time the locomotive collided with the second head car of the struck train. The impact caused the lead locomotive of the striking train to derail to the east, rolling to the east but remaining upright. The second unit also derailed. No cars on the striking train derailed.

The event recorder of UP 6017 North registered the speed of the striking train at 19 and 20 MPH from approximately 1000 ft prior to and up to the point of Engineer Induced Emergency Application of the train brakes. The train and engine brakes were released and the dynamic brakes were not activated approaching the accident scene. An engineer induced emergency application of the brakes registers approximately 86 feet prior to the point of impact and 209 feet from stop. Impact occurred at a speed of 19 MPH.

Neither crew member was injured.

Struck Train CONL-05:

The conductor's delay report shows the struck train arriving North Siding Switch Bergman at 2:05 am. This is approximately 1 hour and 58 minutes before the accident occurred. The conductor lined the switch for movement into the siding. The engineer began to operate the train into the siding but stopped with only the two unit consist and one car in the clear. The engineer then extinguished the headlight leaving only the number plate illuminated on the controlling locomotive. The train remained at this position until the accident occurred.

Just prior to the accident the engineer was sitting at the control stand of the locomotive looking across the cab and out the conductor's window. The conductor was sitting in the conductor's position. There was no communication between the engineer and conductor regarding the approach of the striking train. There was no attempt to contact the striking train except at the last moment when the engineer of the struck train attempted to shout a warning over the radio.

The striking train struck the 2nd head car behind the two unit locomotive consist. The impact caused the trailing trucks of the lead car to derail. The 2nd, 3rd, and 4th cars of the struck train were knocked onto their sides.

Both crewmembers stated they never saw or heard the striking train until the lead locomotive passed the cab of their locomotive.

Although the south end of the siding was blocked with cars, there was adequate room for the struck train to clear the entire train in the siding.

The crew stated that their intent was to wait in the locomotive near the siding entry switch until the opposing train got close and then pull into the siding, line the main track switch for main track movement, and allow the opposing train to pass. Once the opposing train had passed and cleared adequate track with the dispatcher, they would get a warrant from the dispatcher that would allow them to back out of the siding. The crew stated the reason for stopping the locomotives near the siding entry switch was to prevent the conductor from having to walk the length of his 40 car train to sit in the cab of the locomotive, wait for the opposing train to arrive, and then walk back the length of his train to line the main track switch to back out of the siding.

Analysis and Conclusions:

Analysis:

The engineer of the offending train held current train service certification without restrictions. He had been a certified engineer for only 30 days prior to the accident.

The conductor of the offending train had been made a conductor in May 2006.

The radio recordings were reviewed and support that the active warrant in possession of the offending train was copied

correctly by the crew.

Neither crew attempted to initiate radio communication as the striking train approached the meeting point.

Both crews contributed to the causes of the accident by failure to comply with various carrier operating rules.

The crew of the striking train assumed that the opposing train was clear of the main track with the switch lined for main track movement.

Event recorder data indicates that the crew of the striking train was not preparing to stop short of the train fouling and occupying the main track.

The crew of the struck train could have cleared the main track prior to the arrival of the striking train.

The operating officer on scene made a good faith determination that the accident would meet FRA threshold for Post Accident Testing.

The carrier initiated drug and alcohol testing under Federal Post Accident Testing on the striking crew only; when both crews should have been tested.

The carrier failed to ensure that Federal Post Accident Testing was properly conducted and as a result blood tests were not performed as required.

The breath and urine tests performed on the striking crew members were negative.

Fatigue analysis using the FAST model indicates that on May 6, 2007, the engineer of the striking train was performing with a 73 percent effectiveness value when the accident occurred. His circadian rhythm does not reveal that his rest probably played a role in the accident.

Fatigue analysis using the FAST model indicates that during the Striking Train Conductor's prior three on-duty episodes he reported for duty at the time he was starting into his rest cycle. On the date of accident, this conductor reported for duty at 0200 hours and the accident occurred at 0402 hours. This conductor reported for duty with an effectiveness value of 76 percent which is below the optimum minimum level of 77.5. When the accident occurred his effectiveness value was 66 percent with a cognitive value of 79 percent.

Fatigue analysis using the FAST model indicates that immediately preceding the accident the conductor of the struck train performed covered service in eleven of the previous thirteen days. The time worked during these 8 work episodes totaled 75.8 hours. These episodes were interrupted by 2 periods of extended time off (defined as greater than 24-hours). This schedule accounted for an accumulated sleep debt of 8.86 hours over the thirteen day period. At the time of the accident, this conductor was performing at 74 percent effectiveness, his mean cognitive skills were 84 percent and a reaction time of 135 percent. Seven of the 8 work episodes resulted in the employee working, in part, under the acceptable low range of 77 percent.

Fatigue analysis using the FAST model indicates that immediately preceding the accident, the engineer of the struck train performed covered service on nine of the eleven previous days. The length of time worked during these nine episodes totaled 96 hours 45 minutes. During seven of these days his total time on duty was 12 or more hours. These eight work episodes were interrupted by two periods of extended time off (defined as greater than 24-hours). This schedule accounted for an accumulated sleep debt of 6.95 hours over the eleven day period. At the time of the accident, this engineer was performing at 72 percent effectiveness, his reaction time was 138 percent. Five of the 7 work episodes resulted in the employee working, in part, under the acceptable low range of 77 percent.

Conclusions:

The cause of the accident was wholly human factor with both crews contributing.

Track Warrants were properly issued with no conflicting or overlapping limits.

Primary and Contributing Causes:

The primary cause of the accident was failure of the crew operating the striking train to comply with Box 7 of active Track Warrant - AURO0013 - "Not in effect until after the arrival of CORP 4021 at North Siding Bergman." The crew of the striking train UP 6017 North failed to ascertain the completion of arrival by CORP 4021 South at North Siding Bergman before occupying main track beyond North Siding Switch Bergman.

General Code of Operating Rules - Fifth Addition - April 3, 2005.

6.2.1 – "Train Location – Trains or maintenance of way employees who receive authority to occupy the main track after the arrival of a train or to follow a train must ascertain the train's location by one of the following methods: Visual identification of the train. – Direct communication with a crew member of the train. - or Receiving information about the train from the train dispatcher or control operator."

A contributing cause was the failure of the crew operating the struck train to comply with GCOR rule 6.28.2

6.28.2 - "Stopping Clear in Siding - When possible, a train entering a siding must not stop until the entire train is clear of the main track."

There were no operational challenges that would have prevented the crew of the struck train from complying with this rule. Had the crew complied with this rule, it is certain that the accident would not have occurred.

The crew of the striking train violated rule GCOR 5.9 by extinguishing the headlight while moving on main track thus impairing the crew's ability to see the struck train occupying main track.

5.9 - "Headlight Display - Turn the headlight on bright to the front of every train, except when the light must be dimmed as outlined in Rule 5.9.1 (Dimming Headlight) or turned off as outline in Rule 5.9.2 (Headlight Off)".

There are no provisions for extinguishing the Headlight when moving on main track.

The crew of the struck train violated rule GCOR 5.9.2 by extinguishing the headlight when the train was not clear of the main track.

5.9.2 - "Headlight Off - Turn the headlight off under either of the following condition: 1. The train is stopped clear of the main track. - 2. The train is left unattended on the main track in block system limits."

Both crews violated rule GCOR 1.1.2

1.1.2 - "Alert and Attentive - Employees must be careful to prevent injuring themselves or others. They must be alert and attentive when performing their duties and plan their work to avoid injury."

Both crews failed to comply with Timetable Special Instructions.

Missouri & Northern Arkansas Railroad Timetable NO. 8 page 2

"JOB BRIEFING

Prior to performing any task requiring the coordination of two or more employees, those employees invovled must hold a "job briefing" to ensure all have a clear understanding of the task to be performed and their individual responsibility and must discuss the following:
1. The job(s) to be done or move(s) to be made.
2. The responsibility of each employee

A contributing factor, as found by the Federal Railroad Administration was failure to stop train in clear.

The probable cause was determined by the FRA to be a failure to comply with track warrant.