Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-79

Kansas City Southern (KCS)
Jackson, MS
October 23, 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-2008-79

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Kansas City Southern Rwy Co. [KCS]	KCS	08102301
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident No.
Kansas City Southern Rwy Co. [KCS]	KCS	08102301
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.
Kansas City Southern Rwy Co. [KCS]	KCS	08102301
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident: Month 10 | Day 23 | Year 2008	7. Time of Accident/Incident: 04:05: ☐ 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: 03

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
34	0	0	0	southeast

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Jackson	99.0	N/A	MS	HINDS

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
68 F	2	2	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
single main	3	31.72	3

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	MSHAR23

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	30. Trailing Tons *(gross tonnage, excluding power units)*	31. Method(s) of Operation *(enter code(s) that apply)*	31a. Remotely Controlled Locomotive?
24 MPH | R	7216	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): e | 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)*	TFM001648	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/A

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	48	0	28	0	0
(2) Total Derailed	2	0	1	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$60,000.00	$59,405.00	H605	N/A

Number of Crew Members

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

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 11 Mi 40	Hrs 11 Mi 40

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	3	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	IDAAT23

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 | E	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)*: 6041

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): e | 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)*	FEC070708	47	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	45	0	0	0	0
(2) Total Derailed	3	0	0	0	0

64. Equipment Damage This Consist: $300,000.00

65. Track, Signal, Way, & Structure Damage: $0.00

66. Primary Cause Code: H605

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	1	1

Length of Time on Duty

72. Engineer/Operator: Hrs 9 Mi 0

73. Conductor: Hrs 9 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: 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 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

110. Position	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A

113. Circumstance	Code
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?	Code
1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

114b. Was there a hazardous materials release	Code
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	4.Wig Wags	7.Crossbucks	10.Flagged by crew
	2.Cantilever FLS	5.Hwy. traffic signals	8.Stop signs	11.Other *(spec. in narr.)*
	3.Standard FLS	6.Audible	9.Watchman	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
	N/A

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

118. Location of Warning	Code
1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	N/A

119. Crossing Warning with Highway Signals	Code
1. Yes 2. No 3. Unknown	N/A

120. Crossing Illuminated by Street Lights or Special Lights	Code
1. Yes 2. No 3. Unknown	N/A

121. Age	122. Driver's Gender	Code
N/A	1. Male 2. Female	N/A

123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train	Code
1. Yes 2. No 3. Unknown	N/A

124. Driver	Code
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)*	N/A

125. Driver Passed Highway Vehicle	Code
1. Yes 2. No 3. Unknown	N/A

126. View of Track Obscured by *(primary obstruction)*	Code
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	N/A

Casualties to:	Killed	Injured
129. Highway-Rail Crossing Users	N/A	N/A

127. Driver	Code
1. Killed 2.Injured 3. Uninjured	N/A

128. Was Driver in the Vehicle?	Code
1. Yes 2. No	N/A

130. Highway Vehicle Property Damage *(est. dollar damage)*
N/A

131. Total Number of Highway-Rail Crossing Users *(include driver)*
N/A

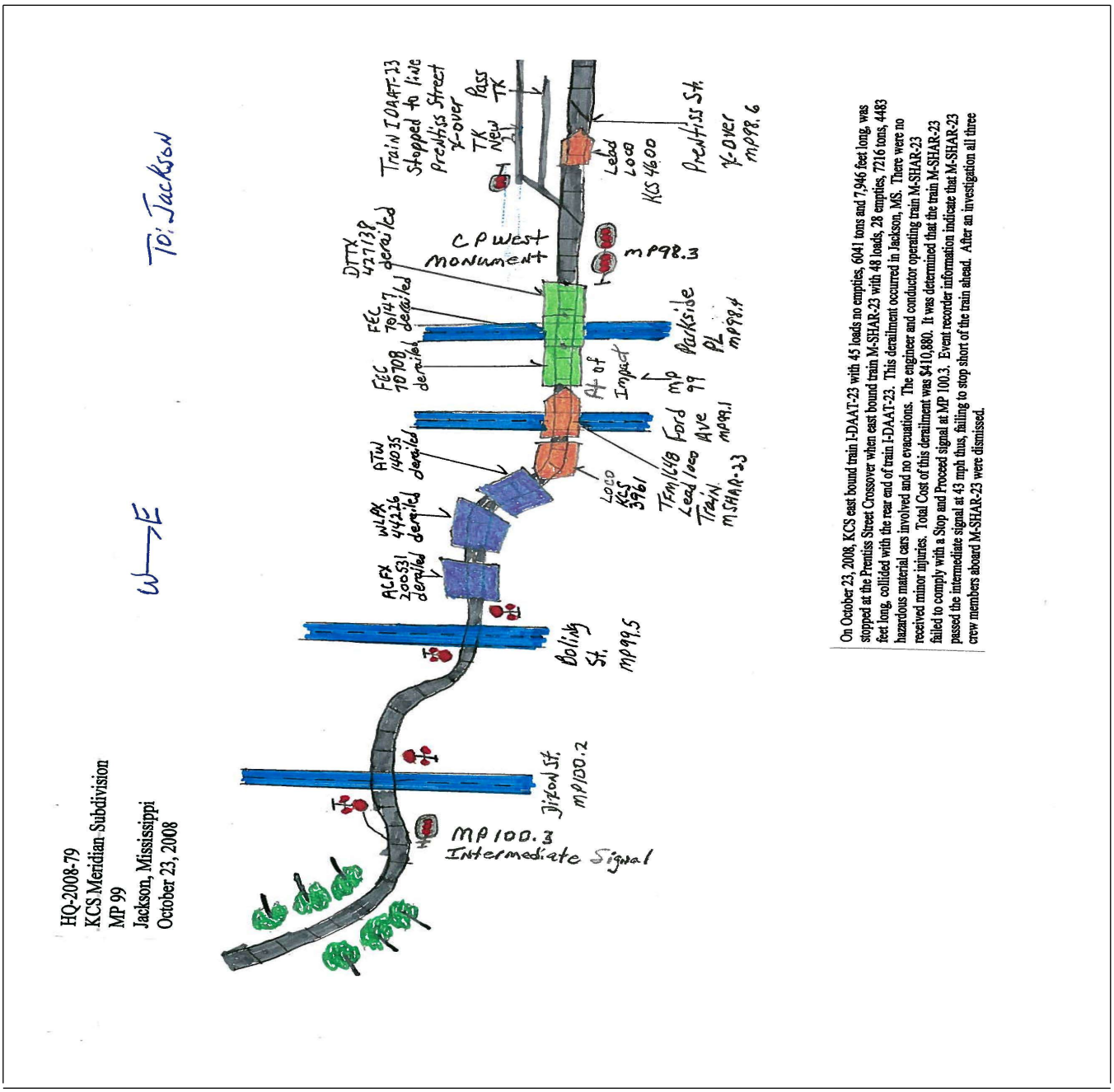
132. Locomotive Auxiliary Lights?	Code
1. Yes 2. No	N/A

133. Locomotive Auxiliary Lights Operational?	Code
1. Yes 2. No	N/A

134. Locomotive Headlight Illuminated?	Code
1. Yes 2. No	N/A

135. Locomotive Audible Warning Sounded?	Code
1. Yes 2. No	N/A

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



On October 23, 2008, KCS east bound train I-DAAT-23 with 45 loads no empties, 6041 tons and 7,946 feet long, was stopped at the Prentiss Street Crossover when east bound train M-SHAR-23 with 48 loads, 28 empties, 7216 tons, 4483 feet long, collided with the rear end of train I-DAAT-23. This derailment occurred in Jackson, MS. There were no hazardous material cars involved and no evacuations. The engineer and conductor operating train M-SHAR-23 received minor injuries. Total Cost of this derailment was $410,880. It was determined that the train M-SHAR-23 failed to comply with a Stop and Proceed signal at MP 100.3. Event recorder information indicate that M-SHAR-23 passed the intermediate signal at 43 mph thus, failing to stop short of the train ahead. After an investigation all three crew members aboard M-SHAR-23 were dismissed.

137. SYNOPSIS OF THE ACCIDENT

On October 23, 2008, approximately 4:05 p.m., Central Standard Time (CST) eastbound Kansas City Southern Railway (KCS) Train IDAAT-23, with Locomotive KCS 4600 + 1, was standing at West Monument, milepost (MP) 99, on the Meridian Subdivision in Jackson, Mississippi (MS), when it was struck in the rear by eastbound KCS Train MSHAR-23 with Locomotives KCS 1648 and KCS 3961. The rear three cars derailed on KCS Train IDAAT-23. Both locomotives on KCS Train MSHAR-23 derailed, including the two head cars. There were no reported hazardous materials cars involved. The derailment occurred on single Main Track as KCS Train IDAAT-23 was entering Jackson yard. The engineer and conductor on KCS Train MSHAR-23 were taken to an emergency room for minor bumps and bruises. There were no reported injuries to crew members on KCS Train IDAAT-23. The method of operation is Centralized Traffic Control (CTC) and the maximum authorized speed at this location is 50 miles per hour (mph). KCS Train MSHAR-23 consisted of 48 loads and 28 empties, weighed 7,216 tons, and was 4,483 feet long. KCS Train IDAAT-23 was an intermodal train with 45 loaded articulated rail cars, weighed 6,041 tons, and was 7,940 feet long.

The weather was cloudy and the temperature was 68 °F. KCS reported damages of $59,405 for track, $360,000 for equipment, and no signal damage. The crew consisted of an engineer, conductor, and a previously dismissed employee on a re-familiarization trip. All three were Alcohol & Drug (A&D) tested and are out-of-service. Lead Locomotive KCS 1648 on the striking train, KCS MSHAR-23, was equipped with a camera. KCS reported that the camera showed that the intermediate signal was red (stop) and the signal department download indicated a stop signal. All signal tests showed the signal to be working properly.

FRA and KCS determined the cause to be Human Factor H605, failure to comply with restricted speed in connection with the restrictive indication of a block or interlocking signal.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

On October 23, 2008, the crew of eastbound KCS Train MSHAR-23 reported for duty in Shreveport, Louisiana (LA) at 4:30 a.m. CST. KCS Train MSHAR-23 originated in Shreveport and was destined for Artesia, MS. The geographic and timetable direction is eastward. The train operates from Shreveport, LA, (MP 166.5) to Vicksburg, MS, (MP 0.0) on the Vicksburg Subdivision. The method of operation on the Vicksburg Subdivision is a combination of Centralized Traffic Control (CTC), Direct Traffic Control (DTC) and Yard Limits (YL). From Vicksburg, MS, to Jackson, MS, the train operates on the Meridian Subdivision. The method of operation on the Meridian Subdivision is CTC. Each method of operation is specifically defined in the KCS System Timetable No. 7. The maximum authorized speed on this subdivision is 55 mph.

The train crew operating KCS Train MSHAR-23 included an engineer, conductor, and an engineer trainee. Shreveport is the home terminal for the crew and each employee received the required statutory off duty rest period and was properly rested in compliance with the Federal Hours of Service Law. Jackson is the away from home terminal. The train consisted of two locomotives and a total of 48 loads and 28 empties, weighed 7,216 tons, and was 4,483 feet long. From Vicksburg, MS, (MP 140.6) to Jackson, MS, (MP 91.1) the train operates on the Meridian Subdivision. The method of operation on the Meridian Subdivision is CTC and the maximum authorized speed is 50 mph. The train included a total of 34 hazardous materials cars, which were not disturbed by the accident. KCS Train MSHAR-23 received a Class 1 (initial terminal air brake test) by KCS mechanical department employees in Shreveport prior to departure. KCS Train MSHAR-23 departed Shreveport at 6:14 a.m. on October 23, 2008, with no scheduled work prior to reaching Jackson, which is the crew change point.

On October 22, 2008, eastbound KCS Train IDAAT-23 with two locomotives originated in Garland, Texas (TX). The train was interchanged to Norfolk Southern (NS) at Meridian, MS, destined for Atlanta, Georgia (GA). KCS Train IDAAT-23 was operated by an engineer and conductor from Garland (Dallas) to Shreveport, departing at 10:00 p.m. The train crew received the required statutory off duty rest period and was properly rested in compliance with the Federal Hours of Service Law. Dallas is the home terminal for this crew. KCS

Train IDAAT-23 received a Class 1 brake test prior to departure. The train consist header indicated that KCS Train IDAAT-23 consisted of 45 loaded rail cars. However, the actual number of cars identified was 47 loaded rail cars, weighed 6,041 tons, and was 7,946 feet long. The train arrived at Shreveport at 6:59 a.m. The relief crew at Shreveport reported to duty at 7:00 a.m. on October 23, 2008. KCS Train IDAAT-23 departed Shreveport at 8:53 a.m. en route to Jackson, MS. The train crew included an engineer, conductor, and an engineer trainee. Prior to the accident, the engineer was operating from the controls on the north side of the locomotive cab and the conductor and brakeman were seated on the south side of the cab.

THE ACCIDENT

On October 23, 2008, KCS Train MSHAR-23 departed Shreveport, LA, at 6:14 a.m. en route to Jackson, MS, to change crews and continue to its final destination of Artesia, MS. On this date, KCS Train IDAAT-23 departed Shreveport, LA, at 8:53 a.m. en route for a crew change in Jackson, MS. While operating on the Meridian Subdivision, the train dispatcher instructed the crew of KCS Train MSHAR-23 to take the siding at Smiths, MP 125.9, holding at the east end in order that eastward KCS Train IDAAT-23 could run-around and operate ahead of KCS Train MSHAR-23 to Jackson. KCS Train MSHAR-23 cleared the west end of Smiths siding at 2:40 p.m. KCS Train IDAAT-23, operating on the Main Track, arrived at the west end of Smiths siding at 2:58 p.m. and cleared the signal at the east end of the siding at 3:04 p.m. en route to Jackson. KCS Train MSHAR-23 followed KCS Train IDAAT-23 toward Jackson, exiting the east end of Smiths siding at 3:22 p.m.

KCS requires each crew to maintain a signal log identified as KCS Form 4751, identifying each signal aspect, location, and time of the train history. The signal log maintained by KCS Train MSHAR-23 crew members indicates that they received an approach signal indication entering Smiths siding. After KCS Train IDAAT-23 cleared the east end of Smiths siding, KCS Train MSHAR-23's Form 4751 verified that the crew had a stop signal aspect, holding for KCS Train IDAAT-23. After KCS Train IDAAT-23 cleared the east end of Smiths siding, KCS Train MSHAR-23's Form 4751 showed they had a clear signal indication from Smiths siding to the Main Track, behind KCS Train IDAAT-23. KCS Train IDAAT-23 was then operating ahead of KCS Train MSHAR-23 toward Jackson. As KCS Train IDAAT-23 approached Control Point West (CP) Monument (MP 97.0), the crew received instructions from the ATM at Jackson. The Jackson yard limits begin at West Monument.

The crew of KCS Train IDAAT-23 was instructed to hold the Main Track at Jackson as they approach the yard office to change crews. The Prentiss Street cross-over switch at MP 98.6 was left lined against Main Track movement and the ATM advised the crew of KCS Train IDAAT-23 that they would have to stop and re-align the cross-over switch for the Main Track. (This is a hand operated cross-over within yard limits and KCS operating rules allow for this cross-over to be left as last used). KCS Train IDAAT-23 stopped west of the Prentiss Street cross-over at approximately 4:00 p.m. At this location, the rear end of KCS Train IDAAT-23 is still occupying the West Monument interlocking. KCS Train MSHAR-23 was following KCS Train IDAAT-23 and instructed to look out for KCS Train IDAAT-23.

KCS Train MSHAR-23 approached an intermediate signal at MP 100.3. The crew stated that the signal indication received at this location was an "APPROACH". After the collision, the KCS signal department tested the signal system and the results indicated that the signal indication was "STOP", which means the crew should have stopped their train and proceeded at restricted speed. The event recorder on the lead locomotive of KCS Train MSHAR-23 revealed the train passed the signal at MP 100.3 operating at 43 mph as it approached the point of impact. The maximum authorized speed on the Meridian Subdivision is 50 mph. The lead locomotive was also equipped with a camera, which showed the signal red, indicating that the train should have stopped and proceeded at restricted speed.

The conductor of KCS Train IDAAT-23 dismounted Locomotive KCS 4600 and lined the cross-over switch for their movement. After the cross-over was properly lined, the conductor contacted the engineer via radio stating that the cross-over was lined for their movement and it was ok to come ahead. At that moment, KCS Train IDAAT-23 experienced an undesired emergency brake application. Seconds later they heard the crew of KCS Train MSHAR-23 radio to the ATM at Jackson that they had hit the rear end of KCS Train IDAAT-23, derailed and needed assistance immediately. The event recorder on KCS Train MSHAR-23 indicated that the train was operating at 24 mph upon impact.

The rear end of KCS Train IDAAT-23 was standing approximately two car lengths east of Ford Avenue near

MP 99.0. In this area, the train exits a 2.56 degree right hand curve and begins operating on a 0.25 descending grade. At approximately 600 feet prior to impact, the KCS Train MSHAR-23 crew observed the rear end of KCS Train IDAAT-23 ahead, at which time the train was placed in emergency and the crew dove to the floor in an effort to avoid serious injury. The crew operating KCS Train MSHAR-23 submitted to a Post Accident Alcohol and Drug test. All tests were reported to have been negative.

ANALYSIS

The last signal encountered by KCS Train MSHAR-23 prior to impact was located at Dixon at MP 100.3. This is an intermediate signal and the most restrictive indication at this location is a restricted proceed, which is an all red aspect requiring the train to make a complete stop before passing the signal, then proceed at restricted speed. KCS states that when required to move at restricted speed, movement must be made at a speed that allows stopping within half the range of vision short of, a train, engine, railroad car, men or equipment fouling the track, stop signal or derail or a switch lined improperly. All three crew members operating KCS Train MSHAR-23 stated that the signal indication at Dixon was an approach which means, precede immediately reducing speed to 35 mph and be prepared to stop at the next signal. The crew members submitted a signed statement that they were instructed by the ATM at Jackson to come down to Control Point West Monument looking out for KCS Train IDAAT-23. They reported that they repeated these instructions to the ATM, but only minutes later ran into the rear end of KCS Train IDAAT-23.

The KCS Signal Department performed an inspection and conducted a test at Dixon to determine whether the signal at Dixon was working properly. The results indicate that the signal was working as intended and was a stop indication. Information obtained from the event recorder located on the KCS Train MSHAR-23 lead Locomotive, KCS 1648, revealed that KCS Train MSHAR-23 was operating at 43 mph and the time was 4:03.52 p.m. when they passed the signal at Dixon. The speed at impact was initially reported as 18 mph, however, a subsequent review of the event recorder tapes by the Federal Railroad Administration (FRA) and the KCS manager of operating practices indicate that the impact speed was 24 mph. The time shown on the event recorder at impact was 4:05.48 p.m.

KCS Form 4751 is the document in which train and engine service employees are required to record the location of each signal, each aspect received, and the time the signal was passed. Information recorded on the Form 4751 maintained by crew of KCS Train MSHAR-23 indicates that at MP 112.9 (Control Point Century) they received a clear signal and were operating at 45 mph. The next signal recorded on the Form 4751 is an approach at MP 102.2 (Clinton) at 3:59 p.m. The crew failed to record the signal aspect at Dixon, MP 100.3. In addition, KCS train crews are required to call each signal via radio. KCS reported that recorded radio transmissions by KCS Train MSHAR-23 on the date in question do not include any evidence that they called the signal at Dixon over the radio.

CONCLUSION:

FRA Investigators and KCS Officials determined that the cause was be Human Factor, code H605, failure to comply with restricted speed in connection with the restrictive indication of a block or interlocking signal. A formal investigation was conducted on October 31, 2008. KCS suspended KCS Train MSHAR-23 locomotive engineer's certification for operating his train in violation of 49 CFR, Part 240.117 (e) (1) which states:

(e) A railroad shall consider violations of its operating rules and practices that involve:
(1) Failure to control a locomotive or train in accordance with a signal indication excluding a hand or a radio signal indication or a switch that requires a complete stop before passing it.

The KCS formal investigation also determined that all crew members operating KCS Train MSHAR-23 were in violation of the following KCS General Code of Operating Rules:

1. Rule 6.27, Move at Restricted Speed which states: When a train or engine is required to move at Restricted Speed, movement must be made at a speed that allows stopping within half the range of vision short of, train, engine, railroad car, men or equipment fouling the track, stop signal or derail or switch lined improperly. The crew must keep a lookout for broken rail and not exceed 20 mph. The crew must comply with these requirements until the leading wheels reach a point where movement at Restricted Speed is no longer required.

2. Rule 9.5, Where Stop Must Be Made, which states: When movement is being made beyond a block signal requiring a train to be prepared to stop at the next signal, the stop must be made before any part of a train passes the block signal requiring the train to stop. If a train overruns any block signal that requires it to stop, the crew must; warn other trains at once by radio, stop the train immediately, report it to the train dispatcher.

3. Rule 9.11, Movement from Signal Requiring Restricted Speed, which states: When a train passes a signal requiring movement at Restricted Speed, the train must move at Restricted Speed until its leading wheels have passed the next governing signal or the end of the block system.

4. Rule 9.16, Stop and Proceed Indication (see attachment).

The final piece of information used to determine the signal indication at Dixon was a camera located on lead Locomotive KCS 1648. KCS reported that the camera clearly showed the signal at Dixon was red. Railroads will often select certain locomotives to apply a camera to record highway traffic activity at high volume rail/highway crossings. The crew was unaware the locomotive was equipped with the camera. During the interviews conducted by FRA, the crew of Train MSHAR-23 still maintained that they had an approach signal at Dixon, MP 100.3.

The formal investigation held by KCS resulted in the dismissal of the crew members operating eastbound KCS Train MSHAR-23.