Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-52

Kansas City Southern (KCS)
Dixon, Mississippi
June 28, 2005

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-2005-52

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Kansas City Southern Rwy Co. [KCS]	KCS	05062802
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident
Kansas City Southern Rwy Co. [KCS]	KCS	05062802
3.Name of Railroad Responsible for Track Maintenance:	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
Kansas City Southern Rwy Co. [KCS]	KCS	05062802

4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident			6. Time of Accident/Incident
	Month	Day	Year	09:10: ☑ AM ☐ PM
	06	28	2005	

7. 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) — **02**

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	0	0	0	Southeast

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Jackson	101.6	N/A	MS	HINDS

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

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
Main		4	28		4

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
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		1		1	HMES H28

28. Speed (recorded speed, if available) R - Recorded; E - Estimated 28 MPH | Code E

30. 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): k | N/A | N/A | N/A | N/A

30a. 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

29. Trailing Tons (gross tonnage, excluding power units) 1584

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

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

Alcohol	Drugs
0	0

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

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	3	0	0	0	0
(2) Total Derailed	0	0	0	0	0

35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	3	0	35	0	0
(2) Total Derailed	0	0	7	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
825000	0	H404	H499

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	1	1	0

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 6 Mi 40	Hrs 6 Mi 40

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	0	0

49. EOT Device? 1. Yes 2. No — 1

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

51. Caboose Occupied by Crew? 1. Yes 2. No — 2

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
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		1		1	MSHC N27

55. Speed (recorded speed, if available) R - Recorded; E - Estimated 29 MPH | Code E

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

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56. Trailing Tons (gross tonnage, excluding power units)	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)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
3923			k | N/A | N/A | N/A | N/A	0

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	KCS757	1	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A

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

Alcohol	Drugs
0	0

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

61. 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

62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	14	0	71	0	0
(2) Total Derailed	0	0	12	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
1432000	35776	H403	H404

Number of Crew Members

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

Length of Time on Duty

71. Engineer/Operator	72. Conductor
Hrs 3 Mi 55	Hrs 3 Mi 55

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	2	0	0

76. EOT Device? 1. Yes 2. No | 1

77. Was EOT Device Properly Armed? 1. Yes 2. No | 1

78. Caboose Occupied by Crew? 1. Yes 2. No 2

Highway User Involved

79. Type — 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)

80. Vehicle Speed (est. MPH at impact): 0

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

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

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

Rail Equipment Involved

83. 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)

84. Position of Car Unit in Train: 0

85. Circumstance — Code: N/A
1. Rail Equipment Struck Highway User
2. Rail Equipment Struck by Highway User

86b. Was there a hazardous materials release by — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

86c. State here the name and quantity of the hazardous materials released, if any.
N/A

87. Type of 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	N/A

88. Signaled Crossing Warning (See instructions for codes) Code:

89. Whistle Ban — Code: N/A
1. Yes 2. No 3. Unknown

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

91. Crossing Warning Interconnected with Highway Signals — Code: N/A
1. Yes 2. No 3. Unknown

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

93. Driver's Age: 0

94. Driver's Gender — Code: N/A
1. Male 2. Female

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

96. Driver — Code: N/A
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)

97. Driver Passed Standing Highway Vehicle — Code: N/A
1. Yes 2. No 3. Unknown

98. View of Track Obscured by (primary obstruction) — Code: N/A
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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

99. Driver Was — Code: N/A
1. Killed 2.Injured 3. Uninjured

100. Was Driver in the Vehicle? — Code: N/A
1. Yes 2. No

102. Highway Vehicle Property Damage (est. dollar damage): 0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

104. Locomotive Auxiliary Lights? — Code: N/A
1. Yes 2. No

105. Locomotive Auxiliary Lights Operational? — Code: N/A
1. Yes 2. No

106. Locomotive Headlight Illuminated? — Code: N/A
1. Yes 2. No

107. Locomotive Audible Warning Sounded? — Code: N/A
1. Yes 2. No

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

109. SYNOPSIS OF THE ACCIDENT

On June 28, 2005, at 9:10 a.m. Central Standard Time (CST) a head on collision occurred on the Kansas City Southern Railway Company (KCS) Southeast Division, Meridian Subdivision, milepost (MP) 101.6 at Jackson, Mississippi (MS). The method of operation for the Meridian Subdivision is Direct Traffic Control (DTC). A westbound KCS mixed freight Train No. HMESH-28 consisting of three locomotives, three loads, and 35 empty cars, was operating on the single main track at an estimated speed of 29 miles per hour (mph) approaching the accident area. The train crew consisted of a conductor, a locomotive engineer, and a locomotive engineer trainee.

An eastbound KCS Train No. MSHCN-27 consisting of two locomotives, 14 loads, and 71 empty cars was operating on the single main track at an estimated speed of 28 mph approaching the accident area. The train crew consisted of a locomotive engineer and a conductor.

The collision resulted in the derailment of the two locomotives and 12 cars on Train No. MSHCN-27 and the derailment of seven cars on Train No. HMESH-28. Both trains were operating on the KCS Meridian Subdivision. The collision an point of collision occurred at MP 101.6

Two crew members of Train No. MSHCN -27 were seriously injured and the three crew members on Train No. HMESH-28 received minor injuries. An estimated 5,000 gallons of diesel fuel was spilled onto the ground from the ruptured fuel tank of lead locomotive KCS 757 on Train No. MSHCN-27. The spillage resulted in a small fire that was extinguished by local emergency response personnel.

Damages were estimated at $2,257,000 for equipment and $35,776 for track and structure damage.

At the time of the accident it was daylight and clear, with an ambient temperature of about 85 °F.

A contributing cause of the accident was the failure of the locomotive engineer of Train No. HMESH-28 to read and understand the DTC Authority after receiving a copy of the authority copied by the conductor.

The probable cause of the accident was the train crew of Train No. HMESH-28 operating the train without complying with the conditions of their authority.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railroad Administration.

Circumstances Prior to the Accident

KCS Train No. HMESH-28 (Westbound)

On June 28, 2005, at 2:30 a.m., CST, a train crew consisting of a conductor, a locomotive engineer, and a locomotive engineer trainee went on duty at KCS Meridian Yard, Meridian, MS, after completing a statutory off-duty period. The train crew was assigned to operate Train No. HMESH-28 westbound from Meridian to Vicksburg, MS, a distance of about 140 miles. Train No. HMESH-28 is scheduled seven days a week as a local freight train servicing industries between Meridian and Vicksburg.

Train No. HMESH-28 received a Class I brake test (initial terminal) inspection by a yard crew at Meridian Yard. The outbound train crew took charge of the train from the yard crew and departed Meridian Yard at 4:10 p.m., with three locomotives and 53 empty freight cars. The lead and controlling locomotive was KCS 7010. The train crew had DTC directional authority from the train dispatcher to occupy the Meehan, Hickory, and Newton Control Points. The train's first work was at Newton, MS, MP 30.9, where the crew set out 47 cars from their train. After completing their work and conducting a Class III brake test (train line continuity inspection), they received DTC directional authority from the train dispatcher to occupy Control Points between Newton and Jackson Yard located at Jackson, MS.

Train No. HMESH-28 continued westward with KCS 7010 as the lead and controlling locomotive, stopping at Jackson Yard on the main track within yard limits, where they left six cars on the main track. They picked up 32 empty cars from departure yard track No. 6, which had previously received a Class I brake test (initial terminal) inspection by mechanical forces. After completing the pick up, they coupled their train together and performed a Class III brake test - train line continuity inspection test. The train crew then notified the Jackson Yard trainmaster they were departing Jackson Yard. The train consisted of three locomotives, three loads, and 35 empty freight cars. The train had 1,584 trailing tons and was 2,414 feet in length. Locomotive No. KCS 7010 remained in the lead and controlling position.

As the train was moving to the west end of Jackson Yard on the main track, the train crew observed an eastbound train stopped on the side track located on the north side of the main track. At no time did the crew of HMESH-28 observe the number of the lead locomotive of the train located in the side track. After stopping the train at the yard limit sign located at the west end of the yard at MP 98.5, the conductor copied a DTC directional track authority with an "OK" time of 8:36 a.m. The track authority authorized the train crew to occupy the Dixon, Century, Edwards, and Smith DTC Control Points, after the departure of Locomotive No. KCS 757. The conductor gave a copy of the directional authority to the locomotive engineer who folded the copy without reading it, placed the copy on the dash of the locomotive, and began to operate the train westbound.

As the train approached the accident area, the engineer was seated in the cab at the controls on the south side of lead Locomotive No. KCS 7010. The conductor was seated in the cab on the north side of the lead locomotive. The short hood of the locomotive was forward. The locomotive engineer trainee was on the walkway of the second locomotive on the south side, walking toward the lead locomotive. The long hood of the second locomotive was forward. The maximum authorized speed approaching the accident area is 50 mph. Leaving Jackson Yard, the train was being operated at a speed of about 28 mph.

Approaching the accident site from the east, the track is successively a tangent for about 1,060 feet, a 1-degree 27-minute left hand curve for about 1,850 feet, and a tangent for about 260 feet to the collision point. In the accident area the track is practically level.

KCS Train No. MSHCN -27 (Eastbound)

On June 28, 2005, at 5:15 a.m., a train crew consisting of a conductor and a locomotive engineer went on duty at KCS Vicksburg Yard in Vicksburg, MS, MP 140.6, after completing a statutory off-duty period. The train crew was assigned to operate eastbound Train No. MSHCN-27 from Control Point East Newmans to Jackson, MS, a distance of about 40 miles. Train No. MSHCN-27 was a mixed freight train that originated in Shreveport, Louisiana (LA) and was scheduled for delivery to the Canadian National Railroad (CN) at Jackson, MS.

The train crew were transported via taxi from Vicksburg Yard to the east end of Newmans, MP 131.9, where their train was in the side track. The train had previously received a Class I brake test -initial terminal inspection at Shreveport, LA, as indicated by the KCS Form 540-air brake inspection record that was on the control stand of KCS 757, the leading and controlling locomotive. The train crew received a DTC directional track authority from the train dispatcher to occupy the Control Points from East Newmans to West Jackson. They departed East Newmans at about 8 a.m. The train consisted of two locomotives, 14 loaded, and 71 empty freight cars. The train had 3,923 trailing tons and was 5,088 feet in length.
As Train No. MSHCN-27 approached the accident area, the engineer was seated in the cab at the controls on the south side of lead locomotive. The conductor was seated in the cab on the north side of the lead locomotive. The locomotive was being operated with the short hood forward. The maximum authorized speed approaching the accident area is 50 mph. Due to track curvature, a permanent speed restriction of 30 mph was in effect from MP 103 to MP 105. The train was moving at a speed of about 29 mph.

Approaching the accident area from the west at MP 103.5, the track is successively tangent for about 600 feet, a 2-degree 50 minute left-hand curve for about 1,050 feet and tangent for about 3,100 feet to the collision point. In the accident area the track is practically level.

KCS System Timetable No. 6, dated Thursday, July 1, 2004, directions are east/west. The geographic directions are east/west. Timetable directions are used throughout this report.

The Accident

KCS Train No. HMESH- 28 was operating at an estimated speed of 28 mph approaching the accident area. The engineer, conductor, and locomotive engineer trainee said they saw the headlight of the westbound train as it came around the curve. The engineer initiated an emergency air brake application and was going out the back door on the north side of the locomotive when the collision occurred. The conductor does not remember what he did. The locomotive engineer trainee ran back to the second locomotive and laid in the floor of the cab.

Train No. MSHCN-27 was operating at an estimated speed of 29 mph approaching the accident area. The locomotive engineer saw the headlight of the approaching eastbound train. The engineer initiated an

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emergency air brake application and laid down in the floor of the cab. The conductor does not remember if
he saw the train or any action he took prior to the collision.

Westbound Train No. HMESH-28 and Eastbound Train No. MSHCN-27 collided head on at MP 101.6 about 9:10 a.m., resulting in the derailment of two locomotives and 12 cars on Train No. MSHCN-27 and the derailment of seven cars on Train No. HMESH-28.

Analysis and Conclusion

Analysis

The lead locomotives on both trains, HMESH-28 and MSHCN-27, were equipped with speed indicators and event recorders as required. The relevant event recorder data was downloaded by the road foreman of engines at the accident site and analyzed. The analysis disclosed that the locomotive engineer on Train No. MSHCN-27 was in compliance with all applicable railroad operating and train handling requirements. Federal Railroad Administration (FRA) reviewed the results of the analysis and concurred with the conclusions.

Diesel fuel was spilled from the ruptured fuel tank of the lead locomotive on Train No. MSHCN-27 and fueled a small fire. Responding emergency personnel arrived within minutes of the accident, extinguished the fire, and removed the two crew members of Train No. MSHCN-27 from the wreckage. Although the crew members of Train No. HMESH-28 were injured, they were able to evacuate the wreckage without assistance. The injured crew members of both trains were transported to a local hospital. The crew members of Train No. HMESH-28 were treated for cuts and abrasions and released the same day. Both crew members of Train No. MSHCN-27 were seriously injured and admitted to a local hospital. They sustained bone fractures, lacerations, contusions, and bruises.

The train crew members of trains HMESH-28 and MSHC-27were tested under FRA Post Accident Toxicology Testing as required under Title 49 CFR, Part 219, subpart C and the results were negative.

Applicable KCS Operating Rules

The locomotive engineer did not comply with KCS Direct Traffic Control Rule 116.4 - Copying Directional Authority / Work and Time. The engineer failed to read and understand the DTC Authority after receiving a copy of the authority copied by the conductor.

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KCS Actions: Following the accident and on the same date at 5:44 p.m., KCS immediately issued
instructions by the general director to train dispatchers temporarily suspending issuance of Line No. 3, After Departure authorities in DTC territory.

On July 27, 2005, General Order No. 58 was issued changing KCS General Code of Operating Rule (GCOR) 116.2.2. Movement within Directional Authority.

Prior to this accident the rule read as follows: After receiving Directional Authority, unless otherwise restricted, a train may occupy the main track and proceed in the direction specified at maximum authority timetable speed. If a condition of the authority is the requirement to be met or passed by train(s) or track car(s), the words “After the departure of Engine(s) (direction) or track car number(s) (direction)” must be included in the issuance of authority.

As result of the accident KCS has changed the rule to read as follows: After receiving Directional Authority, unless otherwise restricted, a train may occupy the main track and proceed in the direction specified at maximum authorized timetable speed. If the conditions of the authority is the requirement to be met or passed by train (s) the following instructions must be complied with;

* The authority must not be issued to a train within Yard Limits (rule 6.27) or Restricted Limits (rule 6.14).
* The words “ After the departure of Engine (s) (directions)” must be included in the issuance of authority.
* The assigned engineer will be present and alert the entire time the crew member copies and activates the authority.
* Following the copying and issuance of the authority the assigned engineer will conduct a job briefing with the train dispatcher to confirm he or she has knowledge that the authority they received met or be passed by another train(s).
* Crew members are responsible to ascertain all requirements of KCS DTC rule 116.4, Copying Directional Authority/Work and Time and GCOR operating rule 6.2.1-Train Location are complied with before proceeding on this authority.

Due to the severity of injuries received by crewmembers of MSHCN-27, KCS has not completed their investigation of the accident. A formal hearing is pending.

Conclusion

A contributing cause of the accident was the failure of the locomotive engineer of westbound Train No. HMESH-28 to read and understand the DTC Authority after receiving a copy of the authority.

The FRA determined that the probable cause of the accident was the train crew members of westbound Train No. HMESH-28 moving the train without complying with the conditions of their authority.