



***Federal Railroad Administration  
Office of Safety  
Headquarters Assigned  
Accident Investigation Report  
HQ-2008-20***

***Union Pacific (UP)  
Des Moines, IA  
February 15, 2008***

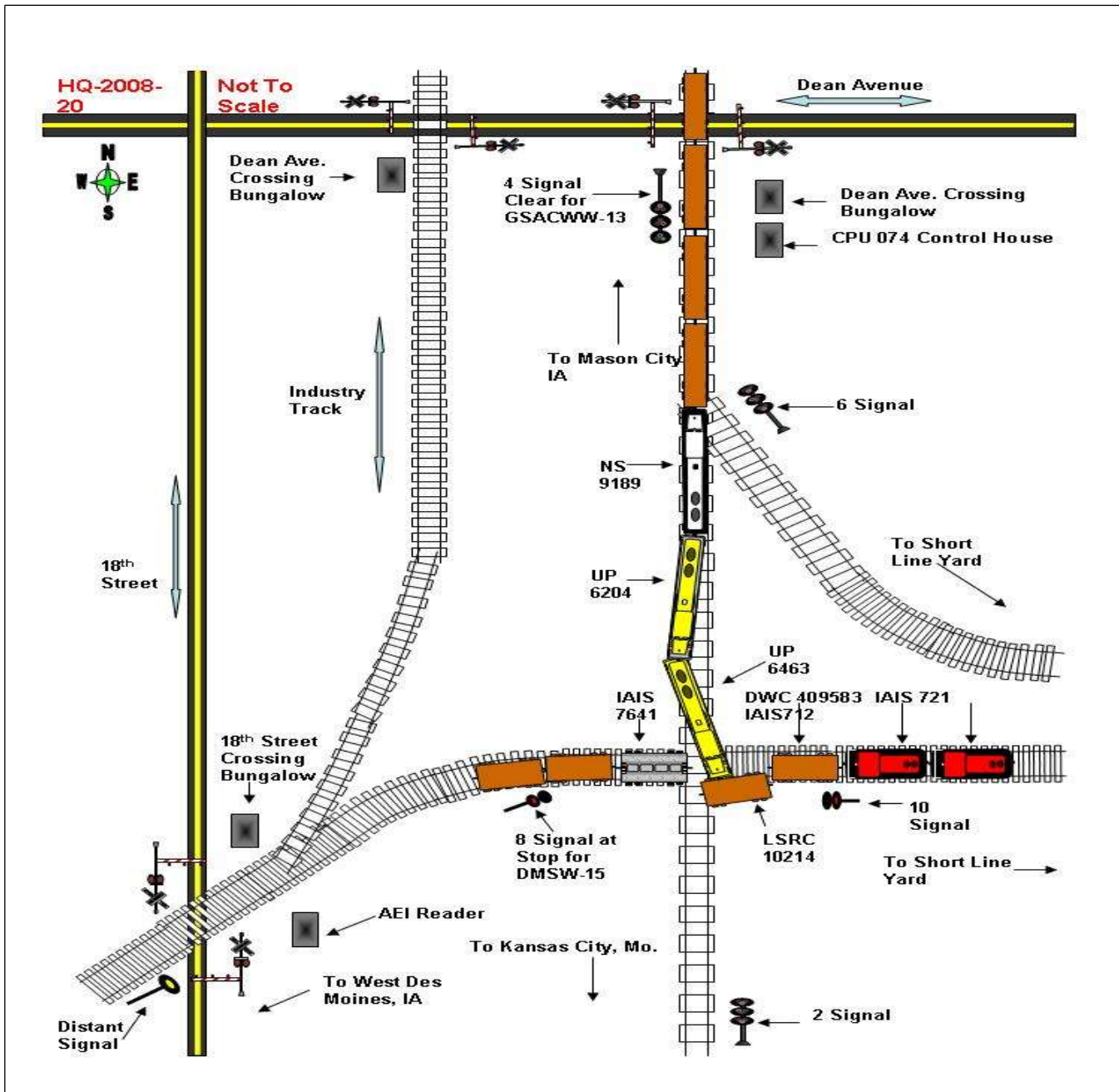
***Note that 49 U.S.C. §20903 provides that no part of an accident or incident report made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.***

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION		FRA FACTUAL RAILROAD ACCIDENT REPORT				FRA File # <u>HQ-2008-20</u>	
1. Name of Railroad Operating Train #1 Iowa Interstate RR [IAIS]			1a. Alphabetic Code IAIS		1b. Railroad Accident/Incident No. 2008F019		
2. Name of Railroad Operating Train #2 Union Pacific RR Co. [UP ]			2a. Alphabetic Code UP		2b. Railroad Accident/Incident No. 0208TC006		
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: Union Pacific RR Co. [UP ]			4a. Alphabetic Code UP		4b. Railroad Accident/Incident No. 0208TC006		
5. U.S. DOT_AAR Grade Crossing Identification Number			6. Date of Accident/Incident Month 02   Day 15   Year 2008		7. Time of Accident/Incident 02:42: <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM		
8. Type of Accident/Incident (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)
9. Cars Carrying HAZMAT 0			10. HAZMAT Cars Damaged/Derailed N/A		11. Cars Releasing HAZMAT N/A		12. People Evacuated 0
14. Nearest City/Town Des Moines			15. Milepost (to nearest tenth) 355.5		16. State Abbr Code N/A   IA		17. County POLK
18. Temperature (F) (specify if minus) 4 F		19. Visibility (single entry) 1. Dawn 3. Dusk 2. Day 4. Dark		20. Weather (single entry) 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow		21. Type of Track 1. Main 3. Siding 2. Yard 4. Industry	
		Code 2		Code 1		Code 1	
22. Track Name/Number Main Track No. 10			23. FRA Track Class (1-9, X) 1		24. Annual Track Density (gross tons in millions) .153		25. Time Table Direction 1. North 3. East 2. South 4. West
						Code 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 1	
27. Was Equipment Attended?		1. Yes 2. No		Code 1		28. Train Number/Symbol DMSW15	
29. Speed (recorded speed, if available) R - Recorded E - Estimated 7 MPH   R		30. Trailing Tons (gross tonnage, excluding power units) 4790				31. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) e. Traffic k. Direct traffic control Code(s) f. Interlocking l. Yard limits	
						31a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable 2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter	
						0	
32. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)	
(1) First involved (derailed, struck, etc)		LSRC10214		4		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			
		0		0			
34. Was this consist transporting passengers? (Y/N)						N	
35. Locomotive Units		a. Head End		Mid Train		Rear End	
		b. Manual		c. Remote		d. Manual c. Remote	
(1) Total in Train		2		0		0	
(2) Total Derailed		0		0		0	
36. Cars		a. Freight		b. Pass.		c. Freight d. Pass. e. Caboose	
(1) Total in Equipment Consist		37		0		9	
(2) Total Derailed		0		0		1	
37. Equipment Damage		This Consist		\$21,512.00		38. Track, Signal, Way, & Structure Damage \$0.00	
39. Primary Cause Code		H221		40. Contributing Cause Code		N/A	
Number of Crew Members				Length of Time on Duty			
41. Engineer/Operators 1		42. Firemen 0		43. Conductors 1		44. Brakemen 0	
45. Engineer/Operator Hrs 8 Mi 12		46. Conductor Hrs 8 Mi 12					
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	
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 1	
54. Was Equipment Attended?		1. Yes 2. No		Code 1		55. Train Number/Symbol GSACWW13	
56. Speed (recorded speed, if available) R - Recorded E - Estimated 6 MPH   R		57. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track				58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable	
						0	
						1	

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57. Trailing Tons ( <i>gross tonnage, excluding power units</i> )		c. Auto train stop		i. Time table/train orders		o. Positive train control		2 = Remote control tower		3 = Remote control transmitter - more than one remote control transmitter		0	
13705		d. Cab		j. Track warrant control		p. Other ( <i>Specify in narrative</i> )							
		e. Traffic		k. Direct traffic control		Code(s)							
		f. Interlocking		l. Yard limits		e f N/A N/A N/A							
59. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded(yes/no)		60. If railroad employee(s) tested for drug/alcohol use,		Alcohol		Drugs	
(1) First involved ( <i>derailed, struck, etc</i> )		UP6463		1		N/A		enter the number that were positive in the appropriate box.		N/A		N/A	
(2) Causing ( <i>if mechanical cause reported</i> )		0		0		N/A		61. Was this consist transporting passengers? (Y/N)				N	
62. Locomotive Units		a. Head End		Mid Train		Rear End		63. Cars		Loaded		Empty	
		b. Manual		c. Remote		d. Manual		c. Remote		a. Freight		b. Pass.	
(1) Total in Train		3		0		0		0		0		0	
(2) Total Derailed		2		0		0		0		0		0	
64. Equipment Damage		65. Track, Signal, Way, & Structure Damage		66. Primary Cause Code		67. Contributing Cause Code							
This Consist		\$209,685.00		\$9,728.00		H221		N/A					
Number of Crew Members		Length of Time on Duty											
68. Engineer/Operators		69. Firemen		70. Conductors		71. Brakemen		72. Engineer/Operator		73. Conductor			
1		0		1		0		Hrs 2 Mi 12		Hrs 2 Mi 12			
Casualties to:		74. Railroad Employees		75. Train Passengers		76. Other		77. EOT Device?		78. Was EOT Device Properly Armed?			
Fatal		0		0		0		1. Yes 2. No 1		1. Yes 2. No 1			
Nonfatal		2		0		0		79. Caboose Occupied by Crew?		1. Yes 2. No		N/A	
OPERATING TRAIN #3													
80. Type of Equipment		1. Freight train		4. Work train		7. Yard/switching		A. Spec. MoW Equip.		Code		81. Was Equipment Attended?	
Consist ( <i>single entry</i> )		2. Passenger train		5. Single car		8. Light loco(s).				N/A		1. Yes 2. No N/A	
		3. Commuter train		6. Cut of cars		9. Maint./inspect.car						82. Train Number/Symbol	
83. Speed ( <i>recorded speed, if available</i> )		Code		85. Method(s) of Operation ( <i>enter code(s) that apply</i> )		85a. Remotely Controlled Locomotive?							
R - Recorded		N/A MPH		a. ATCS		g. Automatic block		m. Special instructions		0 = Not a remotely controlled			
E - Estimated		N/A		b. Auto train control		h. Current of traffic		n. Other than main track		1 = Remote control portable			
84. Trailing Tons ( <i>gross tonnage, excluding power units</i> )		N/A		c. Auto train stop		i. Time table/train orders		o. Positive train control		2 = Remote control tower			
				d. Cab		j. Track warrant control		p. Other ( <i>Specify in narrative</i> )		3 = Remote control transmitter - more than one remote control transmitter		N/A	
				e. Traffic		k. Direct traffic control		Code(s)					
				f. Interlocking		l. Yard limits		N/A N/A N/A N/A N/A					
86. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded(yes/no)		87. If railroad employee(s) tested for drug/alcohol use,		Alcohol		Drugs	
(1) First involved ( <i>derailed, struck, etc</i> )		N/A		N/A		N/A		enter the number that were positive in the appropriate box.		N/A		N/A	
(2) Causing ( <i>if mechanical cause reported</i> )		N/A		N/A		N/A		88. Was this consist transporting passengers? (Y/N)				N/A	
89. Locomotive Units		a. Head End		Mid Train		Rear End		90. Cars		Loaded		Empty	
		b. Manual		c. Remote		d. Manual		c. Remote		a. Freight		b. Pass.	
(1) Total in Train		N/A		N/A		N/A		N/A		N/A		N/A	
(2) Total Derailed		N/A		N/A		N/A		N/A		N/A		N/A	
91. Equipment Damage		92. Track, Signal, Way, & Structure Damage		93. Primary Cause Code		94. Contributing Cause Code							
This Consist		N/A		N/A		N/A		N/A		N/A			
Number of Crew Members		Length of Time on Duty											
95. Engineer/Operators		96. Firemen		97. Conductors		98. Brakemen		99. Engineer/Operator		100. Conductor			
N/A		N/A		N/A		N/A		Hrs N/A Mi N/A		Hrs N/A Mi N/A			
Casualties to:		101. Railroad Employees		102. Train		103. Other		104. EOT		105. Was EOT Device Properly			
Fatal		N/A		N/A		N/A		1. Yes 2. No N/A		1. Yes 2. No		N/A	
Nonfatal		N/A		N/A		N/A		106. Caboose Occupied by Crew?		1. Yes 2. No		N/A	
Highway User Involved													
Rail Equipment Involved													
107. C. Truck-Trailer. F. Bus J. Other Motor Vehicle Code		111. Equipment		3. Train ( <i>standing</i> )		6. Light Loco(s) ( <i>moving</i> )		Code					
A. Auto D. Pick-Up Truck G. School Bus K. Pedestrian		1. Train( <i>units pulling</i> )		4. Car(s) ( <i>moving</i> )		7. Light(s) ( <i>standing</i> )							
B. Truck E. Van H. Motorcycle M. Other ( <i>spec. in narrative</i> )		2. Train( <i>units pushing</i> )		5. Car(s) ( <i>standing</i> )		8. Other ( <i>specify in narrative</i> )		N/A					
108. Vehicle Speed ( <i>est. MPH at impact</i> )		N/A		109. geographical Code		112. Position of Car Unit in		N/A					
				1. North 2. South 3. East 4. West		N/A							

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION		FRA FACTUAL RAILROAD ACCIDENT REPORT				FRA File # <u>HQ-2008-20</u>	
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 1. Gates 4. Wig Wags 7. Crossbucks 10. Flagged by crew Crossing 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (spec. in narr.) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None				116. Signaled Crossing (See instructions for codes)		117. Whistle Ban 1. Yes 2. No 3. Unknown	
Code(s) N/A N/A N/A N/A N/A N/A N/A				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	
120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown				Code N/A		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	
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		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 3. Passing Train 5. Vegetation 7. Other (specify in narrative) 2. Standing Railroad Equipment 4. Topography 6. Highway Vehicle 8. Not obstructed	
Casualties to:				Killed		Injured	
127. Driver 1. Killed 2. Injured 3. Uninjured				Code N/A		128. Was Driver in the Vehicle? 1. Yes 2. No	
129. Highway-Rail Crossing Users				N/A		N/A	
130. Highway Vehicle Property Damage (est. dollar damage)				N/A		131. Total Number of Highway-Rail Crossing Users (include driver) N/A	
132. Locomotive Auxiliary Lights? 1. Yes 2. No				Code N/A		133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	
134. Locomotive Headlight Illuminated? 1. Yes 2. No				Code N/A		135. Locomotive Audible Warning Sounded? 1. Yes 2. No	
136. 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

On February 15, 2008, at 2:42 p.m. CST, a side impact collision occurred between the Iowa Interstate Railroad Ltd.'s (IAIS) Train DMSW-15 and Union Pacific Railroad Company's (UP) Train GSACWW-13. The IAIS train was operating on the UP Twin Cities Service Unit, Iowa Area, Perry Subdivision at milepost (MP) 355.50 and the UP train was operating on the Twin Cities Service Unit, Iowa Area, UP Mason City Subdivision at MP 73.60. The collision occurred at Control Point (CP) U074, a UP manual interlocking in Des Moines, Polk County, Iowa. The head two locomotives of UP Train GSACWW-13 and the second car of IAIS Train DMSW-15 were derailed. Damage estimates from the UP are \$209,685 to locomotive equipment and \$9,728 to track damages. IAIS damage estimates are \$21,512 to equipment and no in track, signal, way, and structure damage.

Injuries were reported by the UP engineer and conductor. There were no hazardous materials involved and this is not an Amtrak route. At the time of the collision, the weather conditions were sunny and clear, and the temperature was 4 °F with winds out of the west at 4 mph. Timetable direction and compass orientation in this report is north to south for UP train movement and west to east for the IAIS.

The probable cause of this incident was failure of the IAIS crew of Train DMSW-15 to comply with the signal indication of eastbound Interlocking Signal No 8 which governs movement to the railroad crossing at grade, at CP U074 (Cause Code H221).

## 138. NARRATIVE

## CIRCUMSTANCES PRIOR TO THE ACCIDENT

## IAIS TRAIN DMSW-15

The IAIS Des Moines Yard switch crew for IAIS Train DMSW-15 included a locomotive engineer with 22 years of railroad service and a conductor with 9 years of service. They first went on duty at 6:30 a.m., CST, on February 15, 2008, at the IAIS Des Moines Yard. This was the home terminal for both crewmembers and was their regularly assigned job. Both crewmembers received more than the required statutory off-duty rest period prior to reporting for duty.

The locomotive engineer reported a sleep episode of good quality previous to reporting for duty and he considered himself alert at the time of the collision. The conductor reported a sleep episode of fair quality prior to reporting for duty and he considered himself relatively alert at the time of the collision. The crewmembers reported not suffering from any sleep disorders, nor had they recently taken any prescription or over-the-counter medications. The conductor reported occasionally taking naps after completing his tour of duty.

In the area of the collision on the UP Perry Subdivision, the IAIS operates on a single Main Track that runs primarily east and west. Approaching the eastbound home signal on the IAIS, there is a 1-degree curve with one and one-half inches of super elevation in advance of the eastbound interlocking signal. There is a 0.12-percent ascending grade approaching the interlocking from the west. The maximum authorized speed in the area of the collision is 10 mph on the IAIS.

The crew took charge of IAIS Train DMSW-15, with Locomotive No. IAIS 712 as the lead and controlling locomotive and trailing locomotive No. 721 at approximately 7:15 a.m., on February 15. Locomotive IAIS 712 and locomotive IAIS 721 were operated with the long nose forward. The engineer was positioned in the left seat at the controls of Locomotive IAIS 712; the conductor was positioned in the right front seat. They had conducted several set-outs and pick-ups, and left Track No. 29 at MP 357.6 with 37 loads and 9 empty rail

cars of various types. At 2:22 p.m., the crew received a track warrant from the IAIS train dispatcher to proceed from East Des Moines to Newton, Iowa; but first needed to make a set-out at UP Short Line Yard. At MP 356, the conductor contacted the UP Manager of Yard Operations (MYO) for instructions for their set-out at the UP's Short Line Yard. The MYO instructed them to stay west of 18th Street (MP 356) because they needed 24 cars of headroom for a switching movement out of the west end of Short Line Yard.

The crew waited approximately 15 minutes, and then the conductor communicated to the engineer that they had a lunar signal indication at the interlocking. The engineer could not see the signal because of the curvature of the track and the direction the locomotive was facing (long nose forward). The engineer contacted the MYO and advised him that they had a proceed aspect at the interlocking signal. The MYO instructed them to continue in yard limits and proceed to Track No. 10 to make their set-out. The last time the conductor observed the eastbound interlocking signal, IAIS Train DMSW-15 was approximately 5 cars west of the signal.

#### UP TRAIN GSACWW-13

The UP Kansas City, Missouri-based road crew of UP Train GSACWW-13 consisted of a locomotive engineer with 30 years of railroad service and a conductor with 4 years of railroad service. They first went on duty at 12:30 p.m., at the Des Moines Short Line Yard Office. This is not the home terminal for either crewmember; both received more than the required statutory off-duty rest period prior to reporting for duty.

The locomotive engineer reported a previous sleep episode of good quality and he considered himself relatively alert at the time of the collision. The conductor reported a previous sleep episode of good quality and she considered herself very alert at the time of the collision. The crewmembers reported not suffering from any sleep disorders. The conductor had recently taken prescription drugs consisting of Tylenol No. 3 and Cephalixin. The crewmembers received a standard 2-hour call; the crew took no naps prior to reporting for duty.

In the area of the collision on the Mason City Subdivision, UP Crews operate on a single main track which is geographically north and south. The track is tangent in advance of the interlocking. There is a curve previous to the tangent track that is a 3-degree 8-minute 52-second curve with one and three-fourths inches super elevation. There is a slight descending grade from the north toward the interlocking. The maximum authorized speed in the area of the collision is 20 mph.

The crew of UP Train GSACWW-13 was picked up by a crew van from their hotel at approximately 12:30 p.m., February 15. After a quick stop for food at a grocery store, they arrived at Short Line Yard Office, received their paperwork, and were transported to Hull Avenue Yard. At 2:10 p.m., they boarded the assigned train located on the departure track. The engineer then conducted an inspection of the three locomotives. After completing the inspection, the engineer preformed a train air brake test, and then notified the UP train dispatcher that UP Train GSACWW-13 was ready to depart. At approximately 2:25 p.m., the crew of UP Train GSACWW-13 received a clear (green) southbound signal indication at CP U075 Easton, MP 74.60, and while operating at approximately 19 mph, observed a clear (green) signal indication at CP U074.

#### THE ACCIDENT

##### UP TRAIN GSACWW-13

Approaching the accident scene, UP Train GSACWW-13 was being operated eastbound on the UP Perry Subdivision Main Track in throttle position No. 3, at 6 mph. The speed and throttle position were recorded by the lead locomotive event recorder. The IAIS Engineer heard a train horn from the north and noticed a southbound UP train approaching the Dean Avenue highway-rail grade crossing located just north of the interlocking. The engineer thought the UP train was going into Short Line Yard via a power-operated, dual-control switch located in the interlocking near southbound Signal No. 4. This movement is executed regularly at the interlocking. When IAIS Train DMSW-15 was approximately one and one-half cars from the railroad crossing (the diamond), the engineer noticed that the southbound UP train was heading for the diamond. He hesitated for an instant, and then made an emergency application of the train's air brake system, coming to a stop after being struck by UP Train GSACWW-13.

##### IAIS TRAIN DMSW-15

UP Train GSACWW-13 was being operated southbound on the Mason City Subdivision with a gradual increase from throttle position No. 1 to position No. 5, then backing off to position No. 4, reaching a speed of 19 mph. The speed, horn, and throttle position were recorded by the locomotive event recorder. The engineer was providing audible warning for the Dean Avenue highway-rail grade crossing intersection when he observed a green (clear) signal at the interlocking. After passing the clear southbound signal at CP U074, the engineer noticed an IAIS train approaching the interlocking from the west. When the engineer realized the IAIS train was not going to stop at the eastbound interlocking signal, he began to sound the horn, and then applied an emergency application of the train's air brake system. UP Train GSACWW-13 was traveling approximately 7 mph when it impacted the west end of rail car LSRC 10214 which was the second car from the head end of ISIA Train DMSW-15. The head locomotive was equipped with a digital video recorder that captured the subject collision.

## ANALYSIS AND CONCLUSIONS

### ANALYSIS - TOXICOLOGICAL TESTING:

The crew of ISIA Train DMSW-15 was tested under Federal Railroad Administration (FRA) post-accident authority. The post-accident forensic toxicology results indicated the two employees tested had negative results. The crew of UP Train GSACWW-13 was not tested.

### CONCLUSION:

Intoxication was not a factor for this collision.

### ANALYSIS - TRAIN CONTROL SYSTEM:

The subject railroad crossing is classified as a manual interlocking, with controls from a GRS Vital Processor Interlocking (VPI) unit. The VPI controls indications of color light wayside signals that are continuously lit. This unit does not have the card installed to provide event-recording capabilities. The east and westbound signal masts have color light signal heads that are capable of providing a stop (red) indication, or proceed restricting (lunar) indication. The north and southbound signal masts also have color light signal heads. These color light signals provide the cognate signal aspects for the main track, and for trains entering and exiting the Short Line Yard. The control circuits consist of dc non-coded track circuits on all approaches to and within the limits of, the manual interlocking. The interlocking is remotely controlled by UP train dispatchers at the UP Harriman Dispatching Center in Omaha, Nebraska. The interlocking signal requests and indications are recorded by the UP dispatching system.

At approximately 2:30 a.m., on February 16, post-collision signal testing of the manual interlocking signal system began after repairs were made to the track structure. There were no defective conditions noted.

It was alleged by IAIS officials that there were alleged two signals cleared at the interlocking simultaneously; however, signal testing proved this to be false. A copy of the signal system control logs from the UP Dispatching System revealed the last signal requested for a movement east or west movement across the interlocking was at 2:10 p.m., and.; this request was for Signal No. 810, a westbound interlocking signal at MP 355.70

A recreation of the events leading up to the collision was conducted on the same time line the following afternoon. Weather conditions during the recreation were the same as the previous day. At no time did the sun shine on the subject signal head. It was also alleged by IAIS officials that a locomotive headlight in Short Line Yard could have been mistaken for a lunar signal at the interlocking. The locomotive movements within Short Line Yard proved not to be a factor.

An inspection of the signal records for the interlocking revealed that all tests were current previous to the day of the incident collision.

FRA conducted a visual inspection of all color light signals on all routes and signal junction boxes. Evidence of rodents was visible in the bottom of Signal No. 8, the eastbound color light signal on the IAIS. This had no effect on the operation of the signal system, and was noted on an FRA Form 6180.96 Inspection Report.



**CONCLUSION:**

The signal system operated as intended and was not a factor in this collision.

**ANALYSIS - EMPLOYEE OPERATIONAL EFFICIENCY TESTING:**

Employee Operational Efficiency Test Records were reviewed for March 1, 2007 to March 10, 2008, for the crew of IAIS Train DMSW-15. The conductor was tested 35 times on various operating rules and passed all 35 tests for a failure rate of 0 percent. The engineer was tested on 76 items and failed 16, for a failure rate of 21.05 percent. The engineer had 1 investigation pending for rules non-compliance and 15 verbal admonishments for rules non-compliance.

**CONCLUSION:**

The engineer's operational efficiency failure rate indicates he is at risk for an accident.

**ANALYSIS - LOCOMOTIVE OPERATION:**

The lead and controlling locomotive for IAIS Train DMSW-15 was equipped with a speed indicator and an event recorder, as required. The relevant event recorder data was downloaded by an IAIS officer at the accident site and taken to IAIS headquarters in Cedar Rapids, Iowa, to be analyzed.

**CONCLUSION:**

The locomotive engineer was in compliance with all operating rules and instructions until he proceeded past the eastbound stop (red) signal indication at CP U074.

**ANALYSIS - VIDEO CAPTURED BY UP TRAIN GSACWW-13:**

The video captured by UP Train GSACWW-13 was reviewed by the FRA, and clearly shows a clear (green) signal aspect was viewed by UP Train GSACWW-13 prior to entering the Interlocking.

**CONCLUSION:**

UP Train GSACWW-13 was operating with a proceed indication at the time of the collision.

**ANALYSIS - FATIGUE**

FRA obtained fatigue related information, for the 10-day period preceding this incident including the 10-day work history (on duty/off duty cycles) for all of the employees involved.

**CONCLUSION:**

Upon analysis of that data information FRA concluded that fatigue was not probable for any of the employees.

**OVERALL CONCLUSIONS:**

The train crews were the only witnesses to the accident. The crew from IAIS Train DMSW-15 had no information that could be used to determine the cause of the accident. The UP dispatcher's signal logs indicate IAIS Train DMSW-15 did not have a lunar signal at CP U074.

**PROBABLE CAUSE AND CONTRIBUTING FACTORS:**

The Federal Railroad Administration's investigation determined that the probable cause of this incident was the IAIS crew of Train Symbol DMSW-15 failed to comply with the signal indication of eastbound Interlocking Signal No 8 which governs movement to the railroad crossing at grade, at CP U074. The probable cause is identified as Cause Code H221, Automatic block or interlocking signal displayed a stop indication - failure to comply.