



*Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch*

*Accident Investigation Report
HQ-2018-1276*

*Union Pacific Railroad Company (UP)
Tilton, AR
June 16, 2018*

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, 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.

SYNOPSIS

On June 16, 2018, at 5:29 p.m., CST, a Union Pacific Railroad (UP) freight train (ZG4MQB 16) with 3 engines and 73 cars traveling timetable south (geographical south) collided with a westbound automobile that drove across a private crossing, resulting in the death of all 4 occupants of the automobile. The train crew did not suffer any injuries.

Train equipment damages were estimated at \$2,000. The highway-rail grade crossing collision occurred near Tilton, Arkansas, at Milepost 167.4 on UP Railroad's Jonesboro Subdivision. There was no derailment, no release of hazardous materials and no evacuation. This accident was not Positive Train Control (PTC) preventable nor was this an AMTRAK route.

At the time of the accident, the weather was clear, the temperature was 96 °F and the pavement was dry.

FRA determined the probable cause of the accident to be M302, "Highway user inattentiveness." Additionally, FRA determined that a contributing factor in the collision was M301, "Highway user impairment because of drug or alcohol usage (as determined by local authorities, e.g., police)."

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Union Pacific Railroad Company	1a. Alphabetic Code UP	1b. Railroad Accident/Incident No. HQ-2018-1276
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GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Union Pacific Railroad Company		1a. Alphabetic Code UP	1b. Railroad Accident/Incident No. HQ-2018-1276	
2. U.S. DOT Grade Crossing Identification Number 787520J		3. Date of Accident/Incident 6/16/2018	4. Time of Accident/Incident 5:29 PM	
5. Type of Accident/Incident RR Grade Crossing				
6. Cars Carrying HAZMAT 1	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0	9. People Evacuated 0	10. Subdivision Jonesboro
11. Nearest City/Town Tilton		12. Milepost (to nearest tenth) 167.40	13. State Abbr. AR	14. County CROSS
15. Temperature (F) 96 °F	16. Visibility Day	17. Weather Clear	18. Type of Track Main	
19. Track Name/Number 1		20. FRA Track Class Freight Trains-80, Passenger Trains-90		21. Annual Track Density (gross tons in millions) 40.1
22. Time Table Direction South		23. PTC Preventable No		

OPERATING TRAIN #1

1. Type of Equipment Consist: Freight Train					2. Was Equipment Attended? Yes			3. Train Number/Symbol ZG4MQB-16			
4. Speed (recorded speed, if available) R - Recorded 70.0 MPH E - Estimated		Code R	5. Trailing Tons (gross excluding power units) 4894		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter					Code 0	
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: <u>N/A</u> Supplemental/Adjunct Codes: <u>Q</u>											
7. Principal Car/Unit		a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box			Alcohol	Drugs		
(1) First Involved (derailed, struck, etc.)		UP8554	1	yes				0	0		
(2) Causing (if mechanical, cause reported)		UP8554	1	yes	9. Was this consist transporting passengers?			No			
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train		Rear End		11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded		Empty		e. Caboose
		b. Manual	c. Remote	d. Manual	e. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.	
(1) Total in Train	3	0	0	0	0	(1) Total in Equipment Consist	73	0	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0
12. Equipment Damage This Consist 2000		13. Track, Signal, Way & Structure Damage 0									
14. Primary Cause Code M302 - Highway user inattentiveness											
15. Contributing Cause Code M301 - Highway user impairment because of drug or alcohol usage (as determined by local authorities, e.g., police)											
Number of Crew Members						Length of Time on Duty					
16. Engineers/Operators		17. Firemen	18. Conductors		19. Brakemen	20. Engineer/Operator		21. Conductor			
1		0	1		0	Hrs: 4 Mins: 14		Hrs: 4 Mins: 14			
Casualties to:		22. Railroad Employees	23. Train Passengers	24. Others		25. EOT Device?		26. Was EOT Device Properly Armed?			
Fatal		0	0	4		Yes		Yes			
Nonfatal		0	0	0		27. Caboose Occupied by Crew?		N/A			
28. Latitude 35.323985000			29. Longitude -91.013017000								

CROSSING INFORMATION

Highway User Involved			Rail Equipment Involved		
1. Type Auto			5. Equipment Train (Units Pulling)		
2. Vehicle Speed (<i>est. mph at impact</i>) 10		3. Direction (<i>geographical</i>) West	6. Position of Car Unit in Train 1		
4. Position of Involved Highway User Moved over Crossing			7. Circumstance Rail Equipment Struck Highway User		
8a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? Rail Equipment			8b. Was there a hazardous materials release by Neither		
8c. State here the name and quantity of the hazardous material released, if any. N/A					
9. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (<i>spec. in narr.</i>) 3. Standard FLS 6. Audible 9. Watchman 12. None 7, 8			10. Signaled Crossing Warning		11. Roadway Conditions Dry
12. Location of Warning Both Sides		13. Crossing Warning Interconnected with Highway Signals N/A		14. Crossing Illuminated by Street Lights or Special Lights N/A	
15. Highway User's Age 44	16. Highway User's Gender Male	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train No		18. Highway User Did not stop	
19. Driver Passed Standing Highway Vehicle No		20. View of Track Obscured by (<i>primary obstruction</i>) Not Obstructed			
Casualties to:	Killed	Injured	21. Driver was Killed		22. Was Driver in the Vehicle? Yes
23. Highway-Rail Crossing Users	4	0	24. Highway Vehicle Property Damage (<i>est. dollar damage</i>) 10000		25. Total Number of Vehicle Occupants (<i>including driver</i>) 4
26. Locomotive Auxiliary Lights? Yes			27. Locomotive Auxiliary Lights Operational? Yes		
28. Locomotive Headlight Illuminated? Yes			29. Locomotive Audible Warning Sounded? Yes		

10. Signaled Crossing Warning

Explanation Code

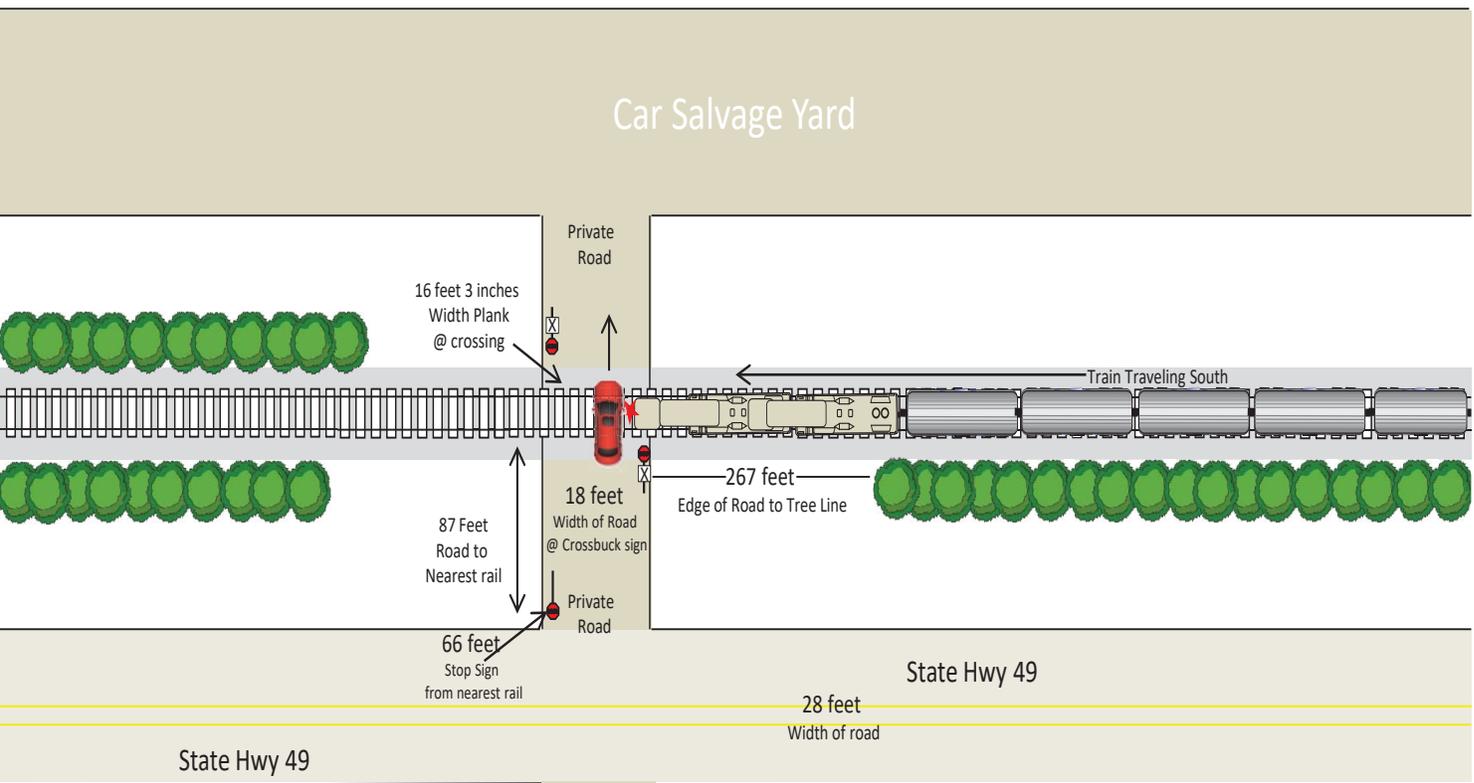
- | | |
|--|--|
| 1 - Provided minimum 20-second warning | A - Insulated rail vehicle |
| 2 - Alleged warning time greater than 60 seconds | B - Storm/lightning damage |
| 3 - Alleged warning time less than 20 seconds | C - Vandalism |
| 4 - Alleged no warning | D - No power/batteries dead |
| 5 - Confirmed warning time greater than 60 seconds | E - Devices down for repair |
| 6 - Confirmed warning time less than 20 seconds | F - Devices out of service |
| 7 - Confirmed no warning | G - Warning time greater than 60 seconds attributed to accident-involved train stopping short of the crossing, but within track circuit limits, while warning devices remain continuously active with no other in-motion train present |
| N/A - N/A | H - Warning time greater than 60 seconds attributed to track circuit failure (e.g., insulated rail joint or rail bonding failure, track or ballast fouled) |
| | J - Warning time greater than 60 seconds attributed to other train/equipment within track circuit limits |
| | K - Warning time less than 20 seconds attributed to signals timing out before train's arrival at the crossing/island circuit |
| | L - Warning time less than 20 seconds attributed to train operating counter to track circuit design direction |
| | M - Warning time less than 20 seconds attributed to train speed in excess of track circuit's design speed |
| | N - Warning time less than 20 seconds attributed to signal system's failure to detect train approach |
| | O - Warning time less than 20 seconds attributed to violation of special train operating instructions |
| | P - No warning attributed to signal systems failure to detect the train |
| | R - Other cause(s). Explain in Narrative Description |

SKETCHES

Sketch - Sketch (HQ 2018-1276)



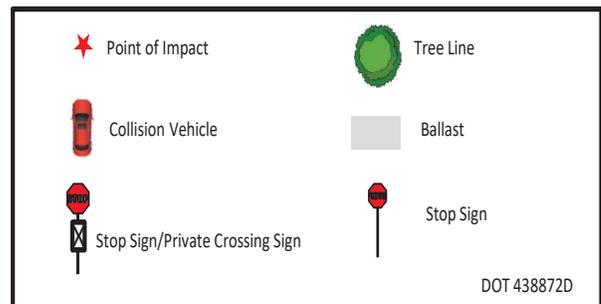
Cross County, Arkansas Sketch
(HQ-2018-1276, UP, Cross County, DOT 787520J)



**Not to Scale

AR-364

LEDGER





NARRATIVE

Circumstances Prior to the Accident

Union Pacific Railroad (UP) Southbound Freight Train ZG4MQB-16 (the train) consisted of 3 locomotives and 73 cars, and measured 6,217 feet with 4,894 trailing tons. The train received an air brake test, and Locomotives UP8554, UP8770 and UP7550 were mechanically inspected prior to the train departing the terminal.

On June 16, 2018, at 1:15 p.m., CST, the crew of the train, consisting of one engineer and one conductor, went on duty near Tilton, Arkansas. The crew received more than the statutory off-duty period prior to reporting for duty.

The accident occurred near Tilton, Arkansas on the UP's Jonesboro subdivision, at private Highway-Rail Grade Crossing located at Milepost (MP) 167.4 (US DOT Crossing # 787520J). Approaching the area of the accident, the track is tangent and on a level grade, with an unobstructed visibility. This private crossing is equipped with a stop sign, private crossing, and Emergency Notification System (ENS) signs on both sides of the crossing. The annual average daily traffic count for the private crossing is 30 vehicles, with 10-percent of the vehicles being trucks.

The vehicle involved in this incident was a four-door 2009 Hyundai Sonata car. The vehicle was traveling at an estimated 10 mph westward when it was struck. There was one driver and three passengers in the car.

As the train approached the private crossing, the Engineer was seated at the controls on the right side of the locomotive cab and the Conductor was seated on the left side of the locomotive.

At the time of the accident, the weather was clear, the temperature was 96 °F and the pavement was dry.

The Accident

As the train was approaching the crossing, the Engineer first saw the vehicle driving very slowly west approaching the crossing at approximately 1,000 to 1,200 feet north of the crossing. The train was traveling at a recorded speed of 70 mph, per the event-recorder of lead locomotive UP 8554, when the Conductor and Engineer saw the vehicle moving slowly into the crossing. The Engineer responded immediately by making an emergency application of the train's air brakes.

The train impacted the vehicle at the front passenger door while the vehicle was still on the tracks. After impact, the train continued south on the tracks and the engine came to rest 6,210 feet south of the area of impact.

Personnel from the Arkansas State Police Department, Cross County Coroner's Office, Cross County

Sheriff's Office Deputies, Southern Care EMS Service, Cross County EMS, Fair Oaks Fire Department, and the Wynne Fire Department were on the scene. The Cross County Coroner pronounced all occupants of the vehicle deceased on the scene. The train crew did not suffer any injuries.

The damage to the rail equipment was \$2,000 with no damage to the signal equipment or track structure. The damage amount to the automobile was \$10,000. There was no derailment, hazardous material release or evacuation.

Analysis and Conclusions

Analysis – Toxicological Testing: This accident did not meet the criteria for Title 49 Code of Federal Regulations Part 219, Subpart C, Post Accident Toxicological Testing. The train crew was not tested under Federal Railroad Administration (FRA) guidelines or company authority for reasonable cause for the use of alcohol or drugs.

Conclusion: Drug or alcohol use by the train crew were not considered a factor in this event.

Analysis - Fatigue Analysis: FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is equivalent to a blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses the default software settings.

FRA obtained fatigue-related information, including a 10-day work history for the Locomotive Engineer and the Conductor assigned to the train. The results of FRA's analysis was that fatigue was not probable of either employee on the train.

Conclusion: FRA concluded fatigue did not contribute to the cause or severity of this accident.

Analysis-Train Crew Performance: Post-accident interviews with the train crew, view of lead locomotive video, and analysis of event recorder data from the lead and controlling locomotive, found the Engineer's actions to be consistent with safe practices and proper train-handling procedures.

Per the event recorder on the lead locomotive, the train horn and brakes were operated as required.

Conclusion: FRA determined the actions of the train crew did not contribute to the cause or severity of this accident.

Analysis – Motive, Power and Equipment: An FRA motive, power, and equipment inspector reviewed locomotive inspection reports for all three locomotives (UP8554, UP8770 and UP7750) involved in the collision. **Conclusion:** FRA determined the motive power, and equipment did not contribute to the cause or severity of this accident.

Analysis – Advanced Warning: At the time of the collision, there was no “Advance Warning” sign or “Advance Warning” pavement markings, as this was a private crossing on a private road. There is a stop sign present on both approaches to the highway-rail grade crossing.

Conclusion: Due to this being a private road, advance warning is not being considered a factor in this event.

Analysis – Sight Distance: As this was a private crossing on a private road with a Stop sign, there was no requirement for a sight distance study.

Conclusion: Driver’s sight distance was not a factor in this accident.

Analysis- Driver Toxicology: According to the Arkansas State Crime Laboratory test results, the vehicle driver tested positive for cannabinoids and methamphetamines.

Conclusion: Toxicological evidence indicates that drug use by the vehicle driver was likely a contributing factor in this accident.

Overall Conclusion

The actions of the train crew were not a factor in this event. This was a private crossing on a private road, therefore, advanced warning, pavement markings, and sight distances were not considered a factor. The police report indicated the driver was reckless, inattentive, and failed to yield the right-of-way. Additionally, the Arkansas State Crime Laboratory reported positive toxicological test results for cannabinoids and methamphetamines.

Probable Cause

FRA determined the probable cause of the accident to be M302, “Highway user inattentiveness.”

Probable Contributing Cause

FRA determined that a contributing factor in the collision was M301, “Highway user impairment because of drug or alcohol usage (as determined by local authorities, e.g., police).”