Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch

Accident Investigation Report
HQ-2016-1146

Union Pacific Railroad Company (UP)
Dermott, AR
July 15, 2016

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 July 15, 2016, at 5:53 p.m., CST, a Union Pacific Railroad (UP) freight train with 2 engines and 93 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 $500. The highway-rail grade crossing collision occurred near Dermott, Arkansas, at Milepost 414.5 on UP Railroad's McGehee Subdivision. There was no derailment. There was no release of hazardous material. There was no evacuation.

On the day of the accident, the weather was cloudy, the temperature was 92 F, and the pavement was dry.

The collision occurred at a private crossing outside the town of Dermott. The Engineer sounded the horn for a minimum of 15 seconds prior to impact with the automobile. There was no whistle board for this private crossing.

The vehicle was driven by a 39-year old female and also occupied by three children ages 15, 13, and 11 years old. The adult driver and all three children were fatally injured. There were no injuries to the crew. No other train and no other vehicles were involved in this collision.

This collision was caused by the automobile driver's inattentiveness (cause code M302) and subsequent failure to stop at a "Stop" sign.

U.S. Department of Transportation
Federal Railroad Administration

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File #HQ-2016-1146

TRAIN SUMMARY

1. Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Union Pacific Railroad Company	UP	0716LK010

GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Union Pacific Railroad Company	UP	0716LK010

2. U.S. DOT Grade Crossing Identification Number	3. Date of Accident/Incident	4. Time of Accident/Incident
438872D	7/15/2016	5:53 PM

5. Type of Accident/Incident: Hwy-Rail Crossing

6. Cars Carrying HAZMAT	7. HAZMAT Cars Damaged/Derailed	8. Cars Releasing HAZMAT	9. People Evacuated	10. Subdivision
24	0	0	0	McGhehee

11. Nearest City/Town	12. Milepost *(to nearest tenth)*	13. State Abbr.	14. County
Dermott	414.50	AR	CHICOT

15. Temperature (F)	16. Visibility	17. Weather	18. Type of Track
92 ˚F	Day	Cloudy	Main

19. Track Name/Number	20. FRA Track Class	21. Annual Track Density *(gross tons in millions)*	22. Time Table Direction
McGehee	Freight Trains-60, Passenger Trains-80	9	South

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OPERATING TRAIN #1

1. Type of Equipment Consist:	2. Was Equipment Attended?	3. Train Number/Symbol
Freight Train	Yes	QASLI14

4. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	5. Trailing Tons (gross exluding power units)	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
49 MPH	R	5938		0

6. Type of Territory

Signalization:
Signaled

Method of Operation/Authority for Movement:
Signal Indication

Supplemental/Adjunct Codes:
Q

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.)*	CSX 4721	1	no		0	0
(2) Causing *(if mechanical, cause reported)*				9. Was this consist transporting passengers?		No

10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	38	0	55	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0

12. Equipment Damage This Consist	13. Track, Signal, Way & Structure Damage
500	0

14. Primary Cause Code
M302 - Highway user inattentiveness

15. Contributing Cause Code

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: 5 Mins: 8	Hrs: 5 Mins: 8

Casualties to:	22. Railroad Employees	23. Train Passengers	24. Others	25. EOT Device?	26. Was EOT Device Properly Armed?
				Yes	Yes
Fatal	0	0	4	27. Caboose Occupied by Crew?	
Nonfatal	0	0	0		N/A

28. Latitude	29. Longitude
33.544351000	-91.428927000

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CROSSING INFORMATION

Highway User Involved		Rail Equipment Involved
1. Type: Van		5. Equipment: Train (Units Pulling)
2. Vehicle Speed *(est. mph at impact)*: 15	3. Direction *(geographical)*: 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	10. Signaled Crossing Warning	11. Roadway Conditions
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 8, 11		Dry

12. Location of Warning	13. Crossing Warning Interconnected with Highway Signals	14. Crossing Illuminated by Street Lights or Special Lights
Both Sides	N/A	No

15. Highway User's Age	16. Highway User's Gender	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train	18. Highway User
39	Female	No	Did not stop

19. Driver Passed Standing Highway Vehicle	20. View of Track Obscured by *(primary obstruction)*
No	Not Obstructed

Casualties to:	Killed	Injured	21. Driver was	22. Was Driver in the Vehicle?
			Killed	Yes
23. Highway-Rail Crossing Users	4	0	24. Highway Vehicle Property Damage *(est. dollar damage)*: 10000	25. Total Number of Vehicle Occupants *(including driver)*: 4

26. Locomotive Auxiliary Lights?	27. Locomotive Auxiliary Lights Operational?
Yes	Yes
28. Locomotive Headlight Illuminated?	29. Locomotive Audible Warning Sounded?
Yes	Yes

10. Signaled Crossing Warning

1 - Provided minimum 20-second warning
2 - Alleged warning time greater than 60 seconds
3 - Alleged warning time less than 20 seconds
4 - Alleged no warning
5 - Confirmed warning time greater than 60 seconds
6 - Confirmed warning time less than 20 seconds
7 - Confirmed no warning
N/A - N/A

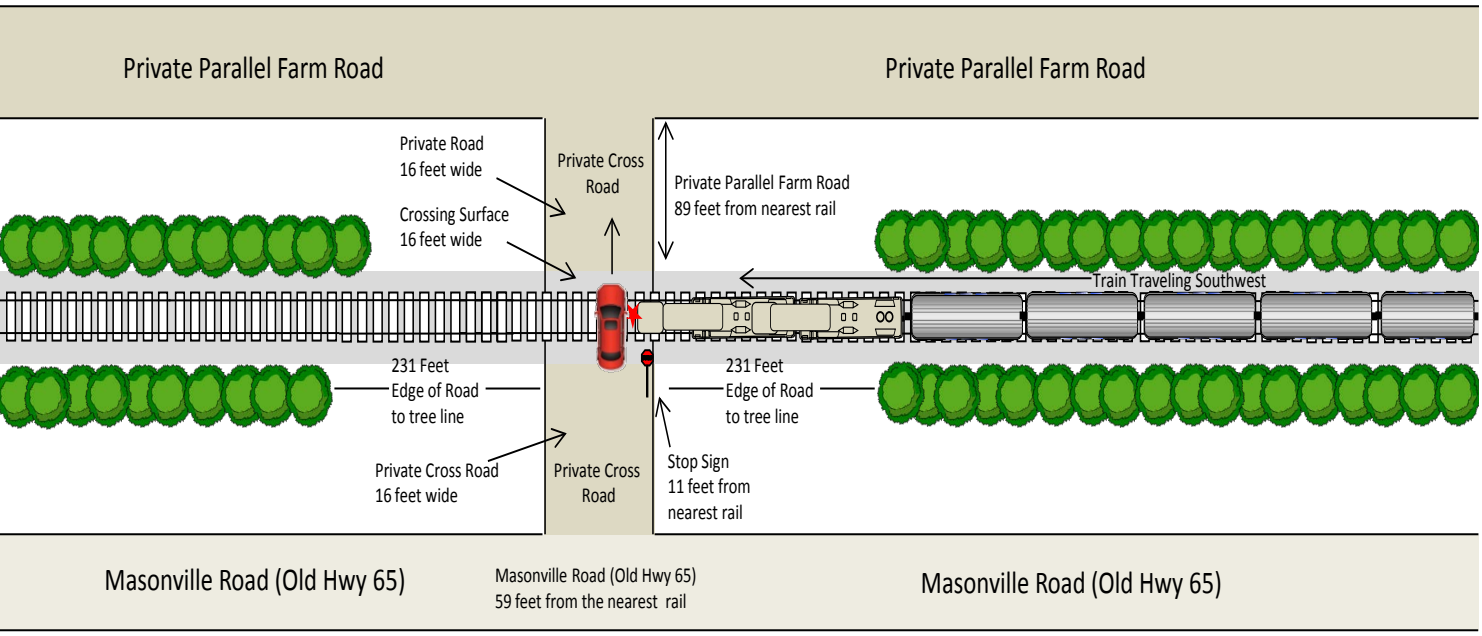
Explanation Code

A - Insulated rail vehicle
B - Storm/lightning damage
C - Vandalism
D - No power/batteries dead
E - Devices down for repair
F - Devices out of service
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
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

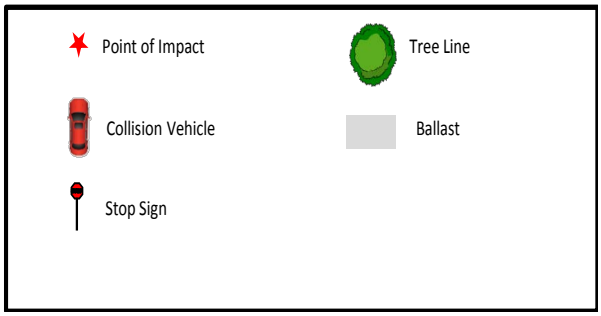
SKETCHES

Sketch, UP, 2016-1146

Sketch, Dermott, Arkansas Collision, HQ 2016-1146 (Quadruple Fatality)



LEDGER



**Not to Scale

NARRATIVE

Circumstances Prior to the Accident

On the train's approach (traveling timetable/geographical south) to the level at-grade private crossing near Dermott, Arkansas (Milepost (MP) 414.5), the track is straight and has a level grade. Approaching the crossing, the train crew's visibility is not obstructed. As the train approached the private crossing at MP 414.5, the Engineer was seated at the controls on the right-hand side of the locomotive cab and the Conductor was seated in the fireman's seat on the left side. The Engineer first saw the driver driving on the parallel road (Masonville Road/Old Hwy 65) 2 miles prior to arriving at the crossing.

Highway-Rail Grade Crossing:

The private crossing is equipped with a "Stop" sign east of the crossing. There is a "Stop" sign and "Private Crossing" sign west of the crossing. Masonville Road (Old Hwy 65) runs parallel to the tracks. There is no "Advanced Warning" or "Pavement Markings" on Masonville Road (Old Hwy 65). The Annual Average Daily Traffic count for the Private Crossing is one with zero percent of that number being trucks.

UP Freight Train QASLI14:

UP QASLI14, was a freight train and consisted of two locomotives and 93 cars. On July 15, 2016, the crew went on duty at 12:45 p.m., CST, in Little Rock, Arkansas. The train received an air brake test, and Locomotives CSX 4721 and CSX 5298 were mechanically inspected prior to the train departing the terminal. The crew received more than the statutory off-duty period prior to reporting for duty.

Vehicle:

The vehicle involved in this incident was a full-size 1997 Ford Econoline passenger van. The vehicle was traveling west across the crossing at approximately 15 mph when it was struck. There was one driver and three passengers.

The Accident

The train was traveling at 49 mph at the time it collided with the vehicle. The approach speed of the train was 49 mph. The maximum authorized speed for this train on this track is 60 mph. The event recorder download from the lead locomotive, CSX 4721, was used to determine the speed of the train. Both the Engineer and Conductor saw the automobile moving slowly across the crossing and the Engineer immediately placed the train into emergency prior to impact.

The train impacted the front right side of the automobile behind the front passenger door while the automobile was still on the tracks. The impact caused the automobile to become airborne and spin in a counterclockwise rotation. The front of the automobile made contact with the ground facing a northeast direction. The automobile then rolled onto its roof with the vehicle facing north. After impact, the train continued southwest on the tracks and the engine came to rest approximately 1/3-mile south of the area of impact.

Personnel from the Arkansas State Police Department, Chicot County Coroner's Office, Elite EMS Service, McGehee EMS Service, Dermott Fire Department, Dermott Police Department, Chico County Sheriff's Department, Wayne Edwards Towing Service, and Chicot County OEM responded to the scene. The Chicot County Coroner pronounced the driver and one passenger dead on the scene. McGehee EMS Service and Elite EMS Service each transported one occupant to separate hospitals.

Both occupants transported to the hospitals succumbed to their injuries the same day of the collision, July 15, 2016. The train crew did not suffer any injuries.
The damage to the rail equipment was $500 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: Drugs or alcohol 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 Train QASLI14.

Conclusions: FRA concluded fatigue was not probable for the Engineer nor the Conductor assigned to Train QASLI14. Information for these two employees are as follows:

1. Locomotive Engineer assigned to train one:
Sleep setting - Good
Overall effectiveness = 93 percent
Lapse Index = 1.0
Reaction Time = 108 percent
Chronic Sleep Debt = 5.96
Hours of Continuous Wakefulness = 10.88
Time of Day 1753
BAC Equivalent = < 0.05
Conclusion: Fatigue was not probable for this employee.

2. Conductor
Sleep setting - Good
Overall effectiveness = 96 percent
Lapse Index = 0.6
Reaction Time = 105 percent
Chronic Sleep Debt = 5.64
Hours of Continuous Wakefulness = 12.88
Time of Day 1753
BAC Equivalent = < 0.05
Conclusion: Fatigue was not probable for this employee.

Conclusion: Having obtained fatigue-related information, including a 10-day work history, for both employees (Conductor 1, Engineer 1) involved in this highway-rail grade crossing quadruple fatality, it was determined that both crew members had adequate rest prior to reporting to duty and that employee fatigue was not a factor in this event.

Analysis-Train Crew Performance: Investigative interviews with members of 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.

Conclusion: The actions of the train crew were not a factor in this event.

Analysis – Motive, Power and Equipment: Region's Motive, Power, and Equipment Inspector obtained/reviewed locomotive inspection reports for both locomotives engines (CSX 4721 and CSX 5298) involved in the collision. According to the event recorder, the horn and brakes were working and used appropriately.

Conclusion: Motive, Power, and Equipment was not a factor in this event.

Analysis – Active Warning Devices: This event occurred at a private crossing with no active warning devices.

Conclusion: Active Warning Devices were not a factor in this event.

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.

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 event.

Analysis- Driver Toxicology: According to the Arkansas State Police Department Toxicological Report on the vehicle driver, no ethyl alcohol was detected in the driver's sample. The driver's sample contained an unspecified amount of Methamphetamine, Cannabinoids, Cyclobenzaprine, and Tramadol.

Conclusion: Driver's toxicology was considered a probable contributing factor in this event.

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, advance warning, pavement markings, and sight distance was not considered a factor in this event. The police report indicated the driver was inattentive and disregarded the stop sign at the crossing.

Probable Cause

The probable cause of the accident is the driver's inattentiveness (cause code M302) and failure to stop at the crossing.

Probable Contributing Cause

The driver's toxicological report identified an unspecified amount of Methamphetamine, Cannabinoids, Cyclobenzaprine, and Tramadol present during testing. Since these amounts were not referenced to legal impairment guidelines a contributing cause code cannot be assigned. However, the driver's toxicology test results indicate them as a probable contributing factor.