Brotherhood of Locomotive Engineers and Trainmen

A Division of the Rail Conference
International Brotherhood of Teamsters

Safety Task Force

Cleveland, Ohio

Before the National Transportation Safety Board

NTSB Accident Number: DCA-11-FR-004

Class: Major

May 24, 2011

Proposed findings, probable cause, and safety recommendations, in connection with the rear end collision of a northbound CSXT Railway freight train (Q19423) striking a standing northbound CSXT Railway freight train (Q61822) in Mineral Springs, North Carolina, resulting in two fatalities , a derailment, and subsequent fire.

William C. Walpert, BLET-Safety Task Force, National Chairman
Kimble L. Jackson, BLET-Safety Task Force, Party Spokesman

FINAL SUBMISSION

ACCIDENT SYNOPSIS

On May 24, 2011, at about 3:35 a.m., eastern daylight time, northbound CSX Transportation Monroe Subdivision train Q19423 struck the rear of northbound CSX Transportation train Q61822, which had stopped at milepost SG 314.0. The accident occurred in Mineral Springs, North Carolina, approximately eight miles south of the CSXT Monroe Yard. The striking train Q19423 consisted of twelve intermodal cars and the struck train Q61822 consisted of nine general merchandise cars. Each train had two crewmembers, a locomotive engineer and conductor, both located at the front of the lead locomotive. The engineer and conductor of the striking train were killed; the conductor and engineer of the struck train suffered minor injuries. The accident resulted in a fire of the two Q19423 locomotives and also included an equipment fire of the striking train. There were no hazardous materials in either trains consist. Total monetary damages were estimated at about $1.6 million.

THE ACCIDENT

The crew (engineer and conductor) of struck train Q61822 went on duty in Greenwood, South Carolina at 10:30 p.m. During this time the crew of train Q19423 had arrived at the train yard and both crews talked to one another. The crew of train Q61822 told investigators that the engineer and conductor of crew Q19423 seemed fit for duty and did not mention any concerns about working that night. Crew Q61822 departed Greenwood about 11:30 p.m. and operated their train northbound. They knew that train Q19423 was scheduled to depart and operate behind them, though they did not know their exact location during the trip.

The crew of train Q61822 told investigators that they did not think the accident territory (Monroe Subdivision) was a difficult territory to operate. They had no problems seeing the signals that evening, and had not come across any dark signals. They also stated that during their trip, per CSX rules, they used their radio to call out the type of signals they observed, their train number, engine number, and the direction they were headed. They had also heard other trains communicating this information; however, at times their radio reception was poor.

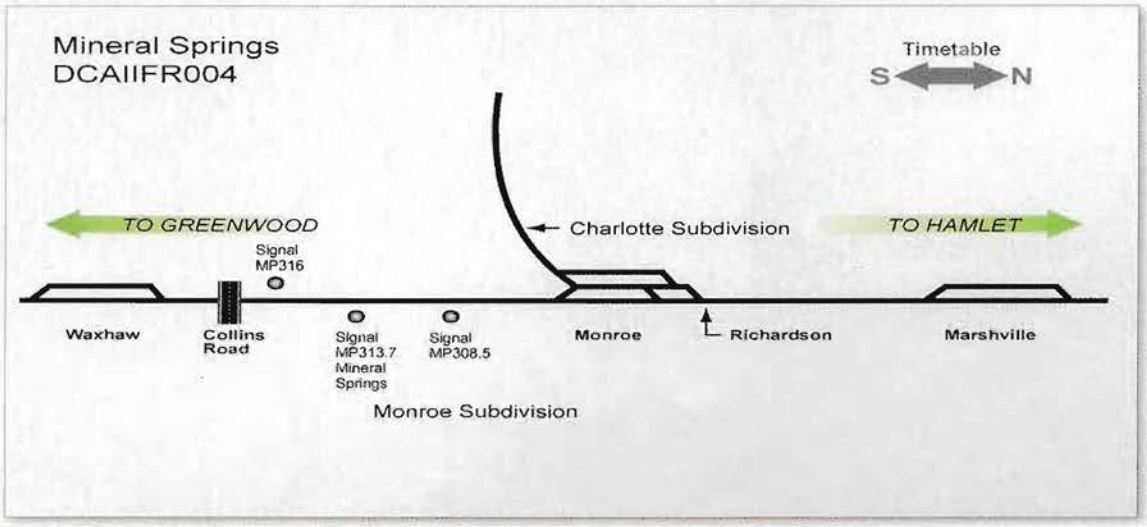
About 3:24 a.m. the crew of train Q61822 arrived at Mineral Springs and stopped their train at a red signal at MP SG 313.7. They also communicated their status over the radio.

The crew of train Q61822 heard the crew of train Q61623 (whom they were following) call over the radio their clear [green] signal and their intentions to proceed north. Train Q61822 soon received a clear signal and before they could move, northbound train Q19423 collided with the rear of their train at about 3:35 a.m.

TRAIN Q19423 LOCOMOTIVE EVENT RECORDER

Both locomotives (CSXT 7783 – 8429) were GE CW40-8 models. Mechanical inspections found no defects in either of these locomotives. The lead locomotive (7783) had a crew alerter that was in working condition. On January 28, 2010 the alerter was reported as defective, and fixed. Neither of these locomotives was equipped with cab signals.

Moments after passing Collins Road (MP 316.2) the engineer manipulated the throttle from throttle position 8. The speed of the train – due, in part, to the topography - continued to increase from about 31 mph and reached a maximum speed of 48 mph. Data indicates that during the 78 seconds before the accident the engineer made throttle control manipulations, applied the dynamic brakes, and activated the bell and horn. Data also indicated that there was an emergency brake application after the collision had occurred.



SIGNAL SEQUENCES AND SPEEDS - PRIOR TO THE ACCIDENT

At 03:26:43 train Q19423 passed an Approach signal (SG 318.4) at 21 mph. The next signal they encountered was a dark Grade (G) signal (SG 316.0) which allowed them to proceed without stopping; consistent with restricted speed (stopping short of obstructions, etc, not exceeding 15 mph) the crew passed this signal at 31 mph at 03:31:49 am (5 min 06 seconds elapsed since passing Approach indication). Train Q19423 collided with standing freight train Q61822 at 03:34:27 am (2 min 38 seconds elapsed since passing dark Grade signal), at approximately 46 mph. The total time of these events equaled seven minutes and 44 seconds (07:44).

On Board Video Recordings

The LocoCAM recorder captured GPS time of day, which was synchronized to the event recorder data by comparing the sound of the horn as heard on the LocoCAM recording, to the parametric data for the horn operation captured on the event recorder.

The recording is not continuous over this period. Most notably, the recording stops approximately 26 seconds (about 1840 feet) before the collision, based on the time synchronization with the event recorder. The recording then resumes about 1 hour and 4 minutes later. At the time the video resumes, the locomotive is on its side, and emergency responders can be seen walking in front of the locomotive.

With the exception of this interruption, the recording is continuous from 23:07:35 on May 23, 2011, until to the end of recording. Prior to this time, there are several interruptions in the recording ranging in length from about 1 hour, to 32 hours.

The video portion of the recording system captured a view through the windshield of the locomotive. The area in front of the locomotive could be seen, as illuminated by the locomotive headlight. Wayside signals and grade crossing equipment were visible. The audio included sounds from the locomotive's engines, pneumatic systems, as well as the horn and bell.

- The north end Waxhaw Approach signal was displaying a yellow aspect. The train passed this signal at video time 3:26:43.

- Approximately 50 seconds before passing the intermediate signal at milepost (MP) 316, the train began accelerating from 21 miles per hour (MPH). About 20 seconds prior to the signal, as the train approached the Collins Road grade crossing, the silver signal box (bungalow) was visible in the video. The signal was not illuminated. The train had reached approximately 31 MPH as it passed the signal at MP316 at video time 03:31:49.

- Acceleration continued up to about 46 mph, when the video recording was interrupted at video time 3:34:01.

- Based on the synchronization with the locomotive event recorder data the video recording ends about 26 seconds (about 1840 feet) prior to the collision.

PERSONNEL INFORMATION

Q19423 - Engineer
35 year old Hired – 7/3/2000 10 years 10 months service
From January thru May 24th, engineer made 44 trips on the Monroe Subdivision which included 3 deadhead trips.
Last 6 months averaged 4.3 O-test (total 13 tests) / No Failures
Last Video Contact – 5/11/11 – May Safety Focus
2011 F2F Rules class – 3/1/11
Operational Test done in the last 6 months (Dec 1, 2010 to May 24, 2011)
1 – Authority Test last one Jan 2011
1- Banner test last one Feb 2011
3- Signal test last one Jan 2011

Q19423 - Conductor
33 year old Hired – 7/31/2005 5 years 10 months service
Last 6 months averaged 7.5 O-test (total 30 tests) / No Failures
Last Video Contact – 5/11/11 – May Safety Focus
2011 F2F Rules class – 3/1/11
Operational Test done in the last 6 months (Dec 1, 2010 to May 24, 2011)
0 - Authority Test
2 - Banner test last one done April 2011
9 - Signal test last one done April 2011

WORK REST CYCLES

Train Q19423

The engineer went on duty on Monday May 23, 2011 at 9:45 p.m. and operated his train until the time of the accident at 3:35 a.m. on May 24, 2011. He had been on duty for 5 hours and 50 min. and eligible to work a full 12-hour tour of duty under the hours of

service laws. He had been off duty for 16 hrs 40 min since his preceding tour of duty. On Sunday, May 22, 2011 he had worked from 6:00 p.m. until 5:05 a.m. May 23, 2011. On Saturday May 21 he worked from 10:30 a.m. to 3:50 p.m. He was off duty on May 19 and May 20. On May 18 he worked from 0500 to 1410, after having been off duty for 10 hrs 25 minutes.

The conductor went on duty Monday, May 23, 2011 at 9:45 p.m. and worked until the time of the accident. He had been off duty for several days prior to that. He had worked on May 16, 2011 from 5:00 p.m. to 03:10 a.m. May 17, 2011. Due to both crewmembers being fatally injured, their activities during off-duty periods were not able to be documented.

MEDICAL FACTORS

The CSX medical records for the engineer of train Q19423 indicated that his last hearing and vision tests were on May 22, 2009. The results indicated that his vision and hearing were normal. No medical conditions or medications were mentioned in these records.

The CSX medical records for the conductor of train Q19423 indicated that his last hearing and vision tests were on September 16, 2009. The results indicated that his vision and hearing were normal. No medical conditions or medications were mentioned in these records.

POST ACCIDENT TOXICOLOGICAL TESTS

In accordance with Federal Regulations, following the accident blood and urine specimens were taken from the conductor and the engineer of train Q19423. The results for all the crewmembers were negative for both drugs and alcohol.

EMERGENCY RESPONSE

According to a computer-aided dispatch report, the first call to 911 was at 3:38 a.m. from a home on Springview Drive. The Mineral Springs Volunteer Fire and Rescue Department was dispatched at 3:39 a.m. They began arriving on scene at 3:46 a.m.

The first responder arrived at the first locomotive of train Q19423, he saw the conductor sitting upright inside of the overturned locomotive. He tried to pull the conductor out, but could not because of a wedged electrical panel cover. After additional emergency responders arrived, the conductor was removed from the cab and flown to a hospital.

METEOROLOGICAL INFORMATION

The weather at the time of the accident was dark, clear skies, light winds of 5 to 6 knots, and a temperature of 68° F. Visibility was 10 miles. This information was recorded by the National Weather Service official weather reporting location was from Charlotte-Monroe Executive Airport (KEQY), Monroe, NC, located approximately 4 miles northeast of Mineral Springs, NC.

SIGNAL INFORMATION

(Signal SG 316.0 revealed it was dark during post-accident investigation)

The signal testing reviewed it had a burnt out bulb and was not displaying any signal aspect when it should have been displaying a red aspect.

Cellular/Wireless Device Recordings

According to cellular phone records and NTSB analysis, neither crewmember of the train Q19423 had talked on his cellular phone during the accident trip. But the NTSB analysis did determine that the conductor had sent eight (8) text messages and received eight (8) text messages during this trip; the last outgoing text message was sent at 2:36 a.m., and the last incoming text message was received at 3:02 a.m.

MECHANICAL INFORMATION

Train Q19423 locomotive and cars, as well as the end-of-train (EOT) device of struck train Q61822 performed as designed, and was not a contributing or a causal factor to this incident.

TRACK INFORMATION

The track leading up to and including the accident area was not a contributing or causal factor to this incident.

OPERATIONS

The operations of the CSXT leading up to and including the accident area were not a contributing or causal factor to this incident.

SIGNAL

The burnt out bulb in the signal aspect of SG 316.0 is a contributing factor in this accident. The photograph of the signal demonstrates that there was no ambient lighting in the area, and raises a question whether the crew of the striking train realized they had passed the signal governing entrance to the block in which the struck train was stopped. Had the signal been performing as designed, it should have heightened the awareness of the operating crew as they passed it.

HUMAN PERFORMANCE

The lack of action by the operating crew of train Q19423 to stop short of an obstruction (rear-end of train Q61822) is a contributing factor in this accident.

PROBABLE CAUSE

The Brotherhood of Locomotive Engineers and Trainmen conclude the probable cause to this accident was the crew members on board CSXT train Q19423 operating their train inconsistent with restricted speed[1], e.g. failing to stop short of an obstruction (train Q61822). The dark signal at SG 316.0 was a contributing factor in that had it performed as designed and was illuminated, it would have heightened the awareness to the operating crew as to the territory they were about to enter may have been occupied. Another likely contributing factor is the fact that the conductor of CSXT train Q19423 worked an overnight shift after having been off duty for several days prior to the accident.

[1] CSXT definition of Restricted Speed: A speed that will permit stopping within one-half the range of vision, it will also permit stopping short of a train, a car, an obstruction, a stop signal, a derail or an improperly lined switch. It must permit looking out for broken rail. It will not exceed 15 MPH.

PROPOSED RECOMMENDATIONS

To the CSXT RAILROAD:

1. Positive Train Control (PTC): As mandated by the Rail Safety Improvement Act of 2008 (RSIA), our Organization understands you will be installing PTC on the Monroe Subdivision at a later date. We recommend you revisit your tentative system and:

    a. Set the enforceable soft targets (audible warning) from three (3) mph (+) over the locomotives on-board brake algorithms predicted speed of the language designated by the wayside track signal, to the actual speed of the language designated by the wayside track signal e.g.; 15 mph for a speed requirement of 15 mph (not 18 mph for a 15 mph requirement).

    b. Set the enforceable hard targets (forced brake application) from five (5) mph (+) over the locomotives on-board algorithms predicted speed of the language designated by the wayside track signal, to two (2) mph (+) over the actual speed of the language designated by the wayside track signal e.g.; 17 mph for a speed requirement of 15 mph (not 20 mph for a 15 mph requirement).

    c. Incorporate setting the enforceable hard target with the locomotives on-board algorithms predicted speed (forced brake application) for train speed as detected by a train's rear End-of-Train device (EOT).

2. Revisit and decline to entertain increasing the speed to your restricted speed definition from 15 mph to 20 mph (to become effective May 1, 2012)

3. Embrace the science of human attention-related errors. Design a program to heighten the awareness to the operating crafts.

4. Review available accident/incident data to determine whether a correlation between backward rotating starting times by operating crews and accident/incident frequency can be identified, and whether a correlation can be identified between accident/incident frequency and a crew member working during the circadian trough after having not worked for several days.

Labor Organizations:

1. Work in conjunction with the railroad carriers on developing training tools related to heightening awareness regarding fatigue and sleep deprivation.

2. Continue supporting the science of human attention-related errors and heightening the awareness of this to the Organization's members.

To the Federal Railroad Administration (FRA):

1. Revisit the language set forth in Safety Advisory 2012-02; Restricted Speed, and incorporate the following recommendations into your recommended railroad action:
    a. Revise the language in 49 C. F. R. Section 214.7 and amend the definition of restricted speed by requiring that a train must stop and wait for five minutes before entering a restricted speed block between the hours of 8:00 a.m. and 8:00 p.m.; and/or

    b. Revise the language in 49 C. F. R. Section 214.7 and amend the definition of restricted speed by prohibiting trains from entering a restricted speed block between 8:00 p.m. and 8:00 a.m.; and

    c. Revise the language in 49 C. F. R. Section 214.7 and amend the definition of restricted speed to permit the locomotive engineer to exercise discretion to decline to enter a restricted speed block any time that weather materially restricts vision

2. Recommend all locomotive manufacturers to immediately design and install in all existing and newly built locomotives, an upgrade to their software system regarding the cognitive alerter systems currently in place to require more frequent responsive action during the circadian trough.

3. Review available accident/incident data to determine whether a correlation between backward rotating starting times by operating crews and accident/incident frequency can be identified, and whether a correlation can be identified between accident/incident frequency and a crew member working during the circadian trough after having not worked for several days.

4. Embrace the science of human attention-related errors, recommending the railroads support it as well.

To the National Transportation Safety Board:

1. Recommend all locomotive manufacturers to immediately design and install in all existing and newly built locomotives, an upgrade to their software system regarding the cognitive alerter systems currently in place to require more frequent responsive action during the circadian trough.

2. Issue recommendations to the Carriers and the FRA that they revise the language and application in the field when trains are to be operating in a restricted speed block by:

    a. Requiring that a train must stop and wait for five minutes before entering a restricted speed block between the hours of 8:00 a.m. and 8:00 p.m.; and/or
    b. Prohibiting trains from entering a restricted speed block between 8:00 p.m. and 8:00 a.m.; and
    c. Permitting the locomotive engineer to exercise discretion to decline to enter a restricted speed block any time that weather materially restricts vision.

3. Embrace the science of human attention-related errors, recommending the railroads support it as well.

CERTIFICATE OF MAILING

I certify that I have on this date electronically forwarded to Mr. Wayne Workman (c.wayne.workman@ntsb.gov), a full and complete copy of the "Proposed findings, probable cause, and safety recommendations" with regard to the May 24, 2011, rear end collision of a northbound CSXT Railway freight train (Q19423) striking a standing northbound CSXT Railway freight train (Q61822) in Mineral Springs, North Carolina, resulting in two fatalities, a derailment, and subsequent fire. NTSB Docket No.: DCA 11 FR 004, submitted by the Brotherhood of Locomotive Engineers and Trainmen's Safety Task Force to the National Transportation Safety Board. A hard copy was also forwarded addressed to the party of interest as required by 49 CFR § 845.27 (Proposed findings).

National Transportation Safety Board
c/o Mr. Wayne Workman
Investigator In Charge, DCA11FR004
490 L' Enfant Plaza
Washington, DC 20594

Sincerely yours,

William C. Walpert
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