National Transportation Safety Board
Office of Railroad, Pipeline and Hazardous Materials
Washington, DC 20594

RRD23FR002

SYSTEM SAFETY

Group Chair's Factual Report

April 12, 2023

TABLE OF CONTENTS

A. ACCIDENT

Location:	Beaumont, TX
Date:	October 28, 2022
Time:	12:02 a.m. local time
	5:02 a.m. universal time
Train:	C3 Shift

B. SYSTEM SAFETY

A single working group was established that consisted of the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), operations investigator, and system safety investigator, as well as party members. See the Combined Factual report in the docket for information on the party members.

C. SUMMARY

See the Combined Factual report in the docket for a summary of the accident.

D. FACTUAL INFORMATION

1.0 Work History

1.1 Engineer

The engineer indicated that he had about 12 years of experience working as an engineer before joining PSC Group.[1] He was hired by PSC Group on 4/2/2018.[2] He completed training on the General Code of Operating Rules (GCOR) on 4/4/2018, and training on switching fundamentals on 4/5/2018.[3] His most recent recertification as a locomotive engineer occurred on 4/15/2021.

Skills test records show that the engineer's skills[4] and operational performance[5] were examined on 11/19/2018 (initial certification), 11/4/2019 (annual check ride), 11/4/2020 (annual check ride), 10/22/2021(annual check ride), and 10/21/2022 (annual check ride).[6] These examinations involved a designated supervisor of locomotive engineers (DSLE) monitoring the engineer's operational performance for about 1-3 hours while the engineer was at the controls of the type of train normally operated on the railroad. The engineer followed the correct procedures for all observations, including use of radio, knowledge of safety rules, train handling, and braking. No failures were noted on any of the tests.

[1] Document: Engineer Interview
[2] Document: Date of Hire
[3] Document: Engineer Training
[4] See 49 CFR § 240.127
[5] See 49 CFR § 240.129
[6] Document: Engineer Skills Tests

1.2 Conductor

PSC Group indicated that the conductor had about 9 years of rail switching experience when he joined PSC Group.[7] He was hired by PSC Group on 5/29/2018.[8] He completed training on switching fundamentals on 6/5/2018, and training on the General Code of Operating Rules (GCOR) on 6/6/2018.[9] His most recent recertification as a conductor occurred on 12/8/2020.

Operations testing records show that a supervisor observed the conductor on 12/8/2020 and 12/3/2021. On both dates, multiple tests were performed, and the conductor passed each successfully. Included on both occasions was Test 105 - Shoving or Pushing Movements (crew). The following is a description of the test:

- Switchman positioned to protect the move
- Proper communication; distance, direction, countdown to crossings
- Engineer responds appropriately to commands; stops in ½ distance of last command

[7] Document: PSC Group Email (4.13.2023)
[8] See again: Date of Hire
[9] Document: Conductor Training & Ops Tests

2.0 Work Schedule

The engineer and conductor worked the same schedule in the weeks preceding the accident.[10] In the days before the accident, their shifts started at 6:00 pm and ended at 6:00 am (12 hours). However, they alternated working nights and days. From 10/21/2022 to 10/23/202, their shifts started at 6:00 am, whereas from 10/14/2022 to 10/17/2022 their shifts started at 6:00 pm.

Military	Local Clock Time	Local Date												
		10/15/2022	10/16/2022	10/17/2022	10/18/2022	10/19/2022	10/20/2022	10/21/2022	10/22/2022	10/23/2022	10/24/2022	10/25/2022	10/26/2022	10/27/2022	10/28/2022
0:00	12:00:00 AM														12:02 AM
1:00	1:00:00 AM														
2:00	2:00:00 AM														
3:00	3:00:00 AM														
4:00	4:00:00 AM														
5:00	5:00:00 AM														
6:00	6:00:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM			6:00 AM	6:00 AM	6:00 AM			6:00 AM	6:00 AM	
7:00	7:00:00 AM														
8:00	8:00:00 AM														
9:00	9:00:00 AM														
10:00	10:00:00 AM														
11:00	11:00:00 AM														
12:00	12:00:00 PM														
13:00	1:00:00 PM														
14:00	2:00:00 PM														
15:00	3:00:00 PM														
16:00	4:00:00 PM														
17:00	5:00:00 PM														
18:00	6:00:00 PM	6:00 PM	6:00 PM	6:00 PM				6:00 PM	6:00 PM	6:00 PM		6:00 PM	6:00 PM	6:00 PM	
19:00	7:00:00 PM														
20:00	8:00:00 PM														
21:00	9:00:00 PM														
22:00	10:00:00 PM														
23:00	11:00:00 PM														
	Time (hh:mm)		12:00	12:00	12:00			12:00	12:00	12:00			12:00	12:00	6:02
	Time Away (hh:mm)		12:00	12:00	12:00			72:00	12:00	12:00			48:00	12:00	12:00

Table 1. Engineer and Conductor Work Schedule Preceding the Accident. Hours worked are generally shown in green/outlined blocks that correspond to the 24 hours of the day (y-axis). The specific shift start and end times are written at the top and bottom of the green/outlined blocks. The estimated accident time (12:02 a.m.) is shown in orange. At the bottom of the table, 'Time' indicates the total shift time, and 'Time Away' indicates the total time between shifts.

[10] Document: Timesheet

3.0 Angle Cock Valve

After the accident, the angle cock valve on the last rail car (at the front of the shove movement) was found to be in the open position.

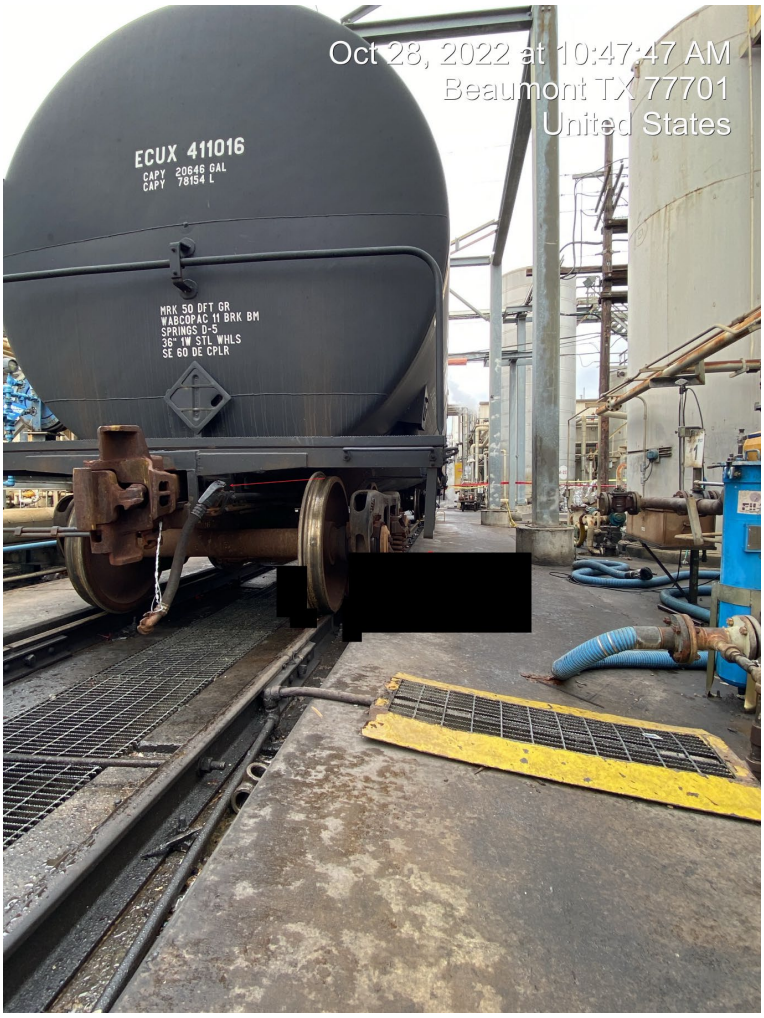

Figure 1. In the above photo, the angle cock valve (pointed to with a thin red arrow) is shown in the open position. The body of the conductor is redacted.

4.0 Communication

Near the time of the accident, the conductor had been protecting (spotting) the train movement from the ground to position the rear tank car near the end of track 7 for product loading. The last communication heard in the cab (based on the inward facing video) was 3 cars to breezeway at 12:02:23 am. At 12:02:53 am (30 seconds later), the angle cock (air brake valve) on the rear end of the shove movement can be heard opening (placing the train into emergency braking). Immediately thereafter (12:02:54 am), the engineer placed the train into emergency, and then the train stopped (12:02:59 am).

In the seconds preceding the accident, the engineer indicated that he "*lost radio communication*" with the conductor.[11] He did not recall the last communication that he heard from the conductor. He said that he realized that "the radio on the engine… tripped the fireman's breaker."[12] He said that he addressed the issue by turning "the switch back on." That is, he "reset" the radio when he "flipped up" the "breaker." After doing so, he was able to communicate with the brakeman over the radio. The engineer indicated that "*this happened to me before… breaker's tripped."* On those prior occasions, employees "working ground with the handhelds" could hear him, but he could not hear them.

The brakeman said that the last communication he recalled hearing the conductor say over the radio was "*three cars*,"[13] and then the radio began producing a "static" sound and he could not "*key in*."[14] He said at that point, he could hear the engineer, but "I couldn't talk, like somebody keyed the radio." He indicated that when he tried to use the radio, "it just beeped on every time," and he could not communicate. After the train went into emergency (the air brakes applied), the brakeman indicated that the engineer "fixed the radio," and he was able to communicate with him.

[11] Document: Engineer Interview
[12] See the Combined Factual report for a description of post-accident testing of the radio equipment.
[13] When protecting (spotting), conductors typically specify distances using car lengths.
[14] Document: Brakeman Interview

5.0 Walking Conditions

The brakeman described the walking conditions in the area of the accident as "unsafe." He said that there were "*hoses everywhere*," and "*stuff all over the ground*." He indicated that there was oil present in the area, which tended to accumulate on his boots and create a slipping hazard. He said that "*they spray that foam stuff and it does eat the oil, but they don't do it all the time*." He added that "*you can't get that all off your boots"* as "*there's nothing to really rub it on*." He indicated that it was "*very dangerous*" to climb "*up on the cars*" and "*tie brakes*" under those conditions. He said that "*what would help would be a brake stick to help you tie brakes so you don't have to climb on the cars*," and also "*if the hoses were picked up or our walking path was easier*."

6.0 Cell Phone Usage

After the accident, investigators found the conductor's cell phone in his lunch box. It was not on his person at the time of the accident.

The engineer's actions at the time of the accident are shown in the video recorded from the inward facing locomotive camera. Investigators reviewed this video and saw that he was not using his cell phone near the time of the accident.

7.0 Toxicology

Please refer to the NTSB Medical Factual report in the docket for toxicological information.

E. CHIEF REVIEW

Submitted by:

Mike Hoepf, Ph.D.
System Safety Investigator

/s/ April 12, 2023

Approved by:

Bob Beaton, Ph.D., CPE
Chief, System Safety Division

/s/ April 12, 2023