

# National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials

Washington, DC 20594



RRD23FR015

## **TRACK**

Group Chair's Factual Report

April 1, 2024

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**A. ACCIDENT INFORMATION**

Accident Number: RRD23FR015  
Accident Type: Roadway Worker (Contractor) Fatality  
Fatalities: One  
Date: August 4, 2023  
Time: 10:05 a.m. EDT  
1405 UTC  
Location: Great Barrington, MA  
Milepost (MP) 58.7 - Berkshire Line  
Railroad Owner: Massachusetts Department of Transportation (MassDOT)  
Railroad Operator: Housatonic Railroad Company (HRRC)  
Contract Employer: Middlesex Corporation (Middlesex)  
Equipment Involved: Tie Drilling Machine #MS097

**B. TRACK GROUP**

Group Chair David Casaceli, PE  
National Transportation Safety Board  
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National Transportation Safety Board  
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Federal Railroad Administration  
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Middlesex Corporation  
Littleton, MA  
Group Member P.J. Bailly  
Housatonic Railroad  
Canaan, CT

**C. SUMMARY**

For a summary of this accident, refer to the *Accident Summary* report within this docket.

## D. ACCIDENT NARRATIVE

### 1.0 Parties Involved

The Massachusetts Department of Transportation (MassDOT) purchased the 36-mile-long Berkshire Line from the Housatonic Railroad (HRRC) in January of 2015. In the purchase agreement, MassDOT became the track owner and gained the rights to passenger service over the line and HRRC maintained rights to freight operations on the line.

MassDOT awarded to HDR, Inc. the design preparation of plans and specifications for staged rehabilitation of the line.<sup>1</sup> This rehabilitation includes work to track, bridges, culverts, turnouts, and crossings. On August 5, 2022, MassDOT awarded a contract to Middlesex Corporation (Middlesex) for rehabilitation between milepost (MP) 50.0 in Ashley Falls, MA and MP 59.0 in Great Barrington, MA. This contract includes installation of 8.1 track miles of 136RE continuous welded rail (CWR), one new turnout, replacement of two turnouts, track surfacing, replacement of five private crossings, replacement of bridge timbers on four bridges, bridge bearing work on five bridges, replacement of five culverts and cleaning of six culverts.

MassDOT separately contracted with AECOM to provide program management and contract oversight.<sup>2</sup>

HRRC provided roadway worker in charge (RWIC) services to establish on-track safety<sup>3</sup> for Middlesex employees under an agreement with MassDOT.

Throughout this factual report, the individuals directly involved in the accident are referred to as follows:

- Employee 1 - The fatally injured Middlesex employee. This employee, a laborer, was the operating the lagger prior to the accident and was operating a gas-powered leaf blower at the time of the accident.
- Employee 2 - The Middlesex employee working on the ground with Employee 1 at the time of the accident. This employee, a laborer, was removing ballast from tie plate holes with a screwdriver just prior to the accident.
- Employee 3 - The Middlesex employee, a laborer, riding on the driller with the Driller Operator at the time of the accident.

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<sup>1</sup> HDR, Inc. is a design and engineering company.

<sup>2</sup> AECOM is an infrastructure consulting firm.

<sup>3</sup> *On-track safety* is defined by 49 CFR Part 214 as a state of freedom from the danger of being struck by a moving railroad train or other railroad equipment, provided by operating and safety rules that govern track occupancy by personnel, trains and on-track equipment.

- Driller Operator - The operator of the tie drilling machine when it struck Employee 1.
- RWIC - The Housatonic Railroad employee acting as the roadway worker in charge (RWIC) of on-track safety on the day of the accident. The RWIC is often referred to as a EIC (Employee in Charge), flagger, or flagman.
- Middlesex Superintendent - The Middlesex employee acting as the Middlesex foremen's supervisor with the formal job title of Quality Control Manager. Superintendent is a distinct position from the quality control manager but on the day of the accident, the roles were being performed by the same person.

## **2.0 Circumstances Prior to the Accident**

At 4:30 a.m. local time on the day of the accident, the HRRC RWIC for the project that day held a job briefing at the Middlesex Yard near the Lanes switch at MP 57.3. There were about 27 individuals present for the job briefing, including the HRRC project engineer, the Middlesex superintendent and foreman, and the four-member work crew involved in the accident. The RWIC briefed the work group on the on-track safety provided via his Form D #H17 (track out of service) held between MP 50 and MP 59. The job briefing included safety information regarding the planned work at a bridge location. After the RWIC's briefing, the Middlesex employees further briefed<sup>4</sup> the details of the day's work and later split into two work groups, the four-member group involved in the incident that would be working north of the job briefing location performing drilling and lagging operations, and a larger work group working at a bridge to the south.

In interviews, attendees of the job briefing all recalled discussing the bridge work as it was the start of a large bridge project that would take multiple days. HRRC employees present at the job briefing stated that the drilling and lagging operation was not discussed at the job briefing and that they were not aware of this work until after the accident. Middlesex employees present at the job briefing recalled that the lagging and drilling operation was discussed that morning but gave varying statements whether it was discussed with the RWIC present during the job briefing or if it was discussed after the RWIC's job briefing had concluded and Middlesex employees further planned their work for the day. (Expanded interview notes are provided in Section 8.0 of this report.)

The larger work group departed in various highway vehicles to head south to the bridge work location on local roads. The four-member drilling and lagging work group needed to retrieve two on-track maintenance machines from the track at Lanes

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<sup>4</sup> This meeting is formally referred to by Middlesex as the daily huddle.

(MP 57.3) for their work. The two machines were a drilling machine (driller) and a lagging machine (lagger). The HRRC RWIC unlocked the main track switch at Lanes and later departed in his truck for the bridge work location as equipment started to move south down the tracks from Lanes. The driller and lagger were behind other on-track equipment at Lanes so Middlesex employees performed various switching moves, throwing the main track switch at Lanes multiple times, to position this equipment onto the main track, and north of the Lanes switch, so the driller and lagger could be moved north to the work location. The driller and lagger were facing south. The other machines were moved back into the track at Lanes.<sup>5</sup>

The four-member drilling and lagging work group then departed north, travelling in reverse with two employees on each machine. The work location was about 1.5 miles north of the Lanes switch. Work for the day included preparing ties for drilling by hand and with a gas-powered leaf blower, pre-drilling holes in the ties for lags with the driller and installing lags through the tie plates into the ties with the lagger. During this work, there would be one operator on each machine (the Driller Operator and Employee 1) and two employees on the ground preparing the ties (Employee 2 and Employee 3).

Shortly after beginning to drill holes in ties, the driller experienced a mechanical failure requiring repair. The Driller Operator contacted a supervisor to receive the phone number of the mechanic. The Driller Operator did not reach the mechanic on the phone. Since he believed the mechanic was in the yard near the Lanes switch, he departed south in the drilling machine at about 9:17 a.m., accompanied by Employee 3, leaving Employee 1 and 2 at the work location. The Driller Operator did not contact the RWIC to coordinate this move. Employee 1 could not lag ties that had not been drilled, so he joined Employee 2 distributing material and preparing the ties for drilling and lagging after completion of the repair to the driller.

After arriving at the Middlesex Yard, the Driller Operator met with the mechanic to have him troubleshoot and perform repairs. The machine was repaired and shortly after 10:00 a.m. local time the Driller Operator departed north with Employee 3 to resume work with the other members of the work group. The machine was observed on surveillance video of a local business passing MP 58.25 at about 10:04 a.m. local time travelling north toward the site of the accident. Figure 1 is a cropped still frame from that surveillance video, looking west, showing the striking vehicle proceeding north about 2,400 feet south of the accident location. The operator is seated on the near side of the machine and the machine is travelling from left to right.

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<sup>5</sup> The switch at Lanes faces south; that is to say, when traversing the main track northbound, it is a facing point move.



**Figure 1:** Cropped still frame from surveillance video.

### **3.0 Accident Sequence**

As the driller approached Employee 1 and 2 preparing ties, Employee 1 was operating a handheld, gas-powered leaf blower removing ballast from the surface of the tie and tie plates to prepare for drilling. Employee 2 was using a large screwdriver to manually remove any remaining ballast in the tie plate holes that was not removed by the blower. Employee 3 was riding in the driller in the right-hand seat and the Driller Operator was seated in the left-hand seat of the driller, operating the machine in reverse. Employees 1 and 2 had progressed 500 - 1,000 feet south from where they had been when the driller left for repairs.

As the driller approached the workers, Employee 2 stated he first saw the driller's strobe light approaching when it was near the Sheffield Farm Crossing, about ½ mile south of the accident location. He stated he again saw the machine as it passed a bridge, which investigators determined was about 230 feet south of the accident location, and it did not appear to have slowed. At this time, Employee 2 stated he jumped out of the way and yelled to alert Employee 1, who was about 10 feet north of him, but it did not appear he heard him over the noise of the gas-powered blower.

Employee 3 stated he was looking forward during the movement and saw Employee 2, who had jumped out of the way as they passed him. Employee 3 yelled at the Driller Operator to stop. Employee 3 stated the Driller Operator turned to look



in the direction of movement. Employee 1 turned to face the approaching driller and was fatally struck by the machine. The Driller Operator began braking at about the same time as the strike. Employee 1 was driven to the ground between the rails and underneath the driller. The machine proceeded over the employee coming to rest to the north of the fatally struck employee.

## **E. DETAILS OF THE INVESTIGATION**

### **4.0 Track Description**

The Massachusetts Department of Transportation (MassDOT) owned Berkshire Line consists of 36.22 miles of single main track between milepost BL 50.00 and milepost 86.22. The Housatonic Railroad Corporation (HRRC) operates this segment between the MA/CT State Line and the CSX Transportation, Inc. Berkshire Subdivision in Pittsfield, MA. On average there are 2 freight trains that operate daily over the Berkshire Line.

Generally, the main track leading up to the accident location was constructed with crossties that measured 9-inches by 7-inches by 8-feet 6-inch long spaced 19.5 inches on center (nominal). On the main track, the track is constructed of 136 RE continuous welded rail that was fastened to the crossties using Pandrol (elastic fastener) plates. The Pandrol plates were fastened to the crosstie with two cut spikes per plate. At the location of the accident, four (4) lags per Pandrol plate were in the process of being installed.

Travelling on the main track, mileposts increase travelling north. At the location of the accident, the main track was tangent with a northbound grade of 0.10% downhill.

### **5.0 Accident Scene**

The accident occurred at approximately MP 58.7 of the Berkshire Line on the HRRC which is located about 2,850 feet north of the private highway-rail grade crossing located at milepost 58.13, otherwise known as Lynings crossing. At this location, the railroad is surrounded by trees and farmland and is not immediately adjacent to any road.

Table 1 outlines the relative location of various fixed objects and evidence found at the scene of the accident. Positive numbers are distances to the north of the point of impact.

**Table 1:** Relative location of objects and evidence near the point of impact.

Station (Feet)	Description
-229.33	North end bridge abutment
-102.67	Joint on the right (east) rail, first joint north of bridge.
0.00	Point of Impact. The basis of this determination was it was the last clean tie and how it was positioned in the debris field.
6.67	Red plastic piece found under rock on tie plate right (east) rail gage side. (Presumed from blower)
17.58	Leaf blower air filter in gage.
20.08	Red plastic piece found in gage that matches leaf blower.
25.83	Leaf blower air filter cover in gage.
28.33	Field side right (east) rail plastic piece from leaf blower.
44.67	Last dropped lags right (east) rail gage and field side
45.17	South end scar mark on top of tie approximately 7.5 inches from the base of rail.
45.42	Location of CFE head, gage side left (west) rail.
53.92	Approximate location of resting point of front (south end) of machine. (Machine length 16' 9")
69.58	Bags of lags, drinks, tools in east ditch area.
71.42	North end scar mark on top of tie approximately 7.5 inches from the base of rail.

## 6.0 Tie Drilling Machine

The striking piece of equipment was a tie drilling machine (Quad Driller) number MS097. The machine was manufactured by Nordco as an M-3 Screw Spiker with serial number 450097. The machine is marked with a weight of 14,000 pounds, length of 16 feet 9 inches, width of 8 feet 2 inches, and a height of 10 feet 6 inches. This machine was rented by Middlesex from Railway Equipment Leasing and Maintenance, Inc. (RELAM).<sup>6</sup> The clearance between various parts of the frame and the track ballast is between 6 and 14 inches. The machine was equipped to travel and work in either direction on railroad tracks. Movement of the machine is controlled from the left side of the machine with controls to operate the drilling mechanisms from either side. The operators' seats are fixed facing forward and do not pivot. The machines forward and backward movement on the rail, as well as brakes, are controlled by foot pedals.

On an unknown date, the machine was modified from a screw-spiker to a tie driller. The visibility behind the machine when making a reverse move is unobstructed and a wide-angle mirror is provided when facing forward for visibility to the rear. Figure 2 shows tie drilling machine MS097. At the time of the accident, the

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<sup>6</sup> RELAM is a full-service leasing company that provides railway equipment for short- or long-term leasing. <https://relaminc.com/>

operator was seated in the left-hand seat in this picture and the machine was moving in reverse; from left to right.

Investigators performed an evaluation of the machine to determine its maximum operating speed. The maximum speed achieved during this evaluation was 20 mph as recorded by cell phone GPS and a radar gun, but the investigative team chose not to attempt to exceed this speed due to safety concerns.

Investigators noted the machine was not equipped active safety systems such as back up cameras/sensors or a collision avoidance system that would warn, alert, or assist the operator to avoid or reduce the severity of imminent collisions.



**Figure 2:** The tie drilling machine MS097.

## **6.1 Mechanical Examination of the Tie Drilling Machine**

Investigators performed an evaluation of the mechanical condition of the striking machine; machine number MS097. The evaluation included determining the machines compliance with federal regulations related to roadway maintenance machines outlined in CFR Part 214 Subpart D and the general mechanical condition of the brakes and other systems. With regards to compliance with FRA roadway maintenance machine regulations, investigators noted the 360-degree intermittent warning light was not visible to an observer standing in front of the machine.

With regards to the general mechanical condition, investigators noted the machine was in operable condition, with expected brake shoe contact and the brakes operated as would be expected.

## 6.2 Stopping Distance Observation of the Tie Drilling Machine

Investigators went to a location north of the Lynings private highway-rail grade crossing, where the grade is similar to the grade at the accident location. Investigators marked the rail in 20' stations from 0 - 100'. Investigators stood on either side of the track denoting the location to begin to apply the equipment brakes during the observation. Observations were conducted at various speeds (recorded by cell phone GPS) utilizing both the service (foot brake) and the emergency (red plunger) brake. The table below shows the recorded braking distance at various speeds using the service brake and emergency brake for the tie driller MS0097. (See table 1.)

**Table 2:** Drill MS0097 stopping distance evaluation results.

Observation #	Recorded Speed	Distance Traveled After Brake Application	Brake Type
1	13 mph	57 feet	service
2	15 mph	67 feet	service
3	17 mph	99 feet	service
4	15 mph	80 feet	emergency
5	15 mph	75 feet	service

## 7.0 Sight Distance Observation

Investigators developed an evaluation protocol to perform a sight distance observation at the scene, utilizing the equipment involved in the accident to determine when an investigator sitting in the operator's seat of the driller could first see investigators on the ground at the accident location and when investigators at the accident location could first see the approaching driller. The lagger and rail cart were placed on the tracks at the position they were most likely in at the time of the accident. Two investigators were placed on the ground wearing commensurate PPE including yellow high visibility vests and red hard hats.

Investigators then positioned the drilling machine, facing south, near the point of impact and began slowly moving the machine south while in radio contact with the members of the team at the point of impact. Investigators documented the GPS position when the investigator in the operator's seat could first see the team members on the ground and the lagger positioned north of the crew. Investigators also documented the location of the drilling machine when it was first visible to the ground team.

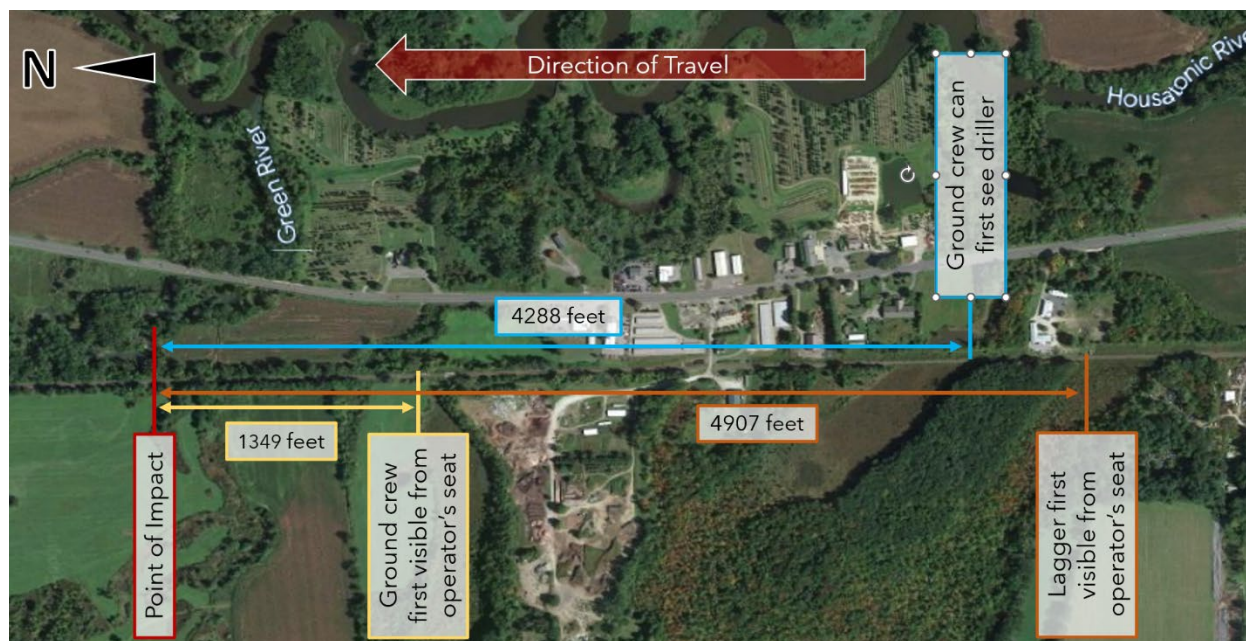
The sight distance observation team noted the following:

- It was possible for the investigators on the ground at the point of impact to first see the drilling machine when it was about 4,288 feet away.



- It was possible for the investigator in the operator's seat of the driller to first see the stationary lagger parked north of the point of impact when the machine was about 4,907 feet away from the point of impact.
- It was possible for the investigator in the operator's seat of the driller to first see the team members on the ground at the point of impact when it was about 1,349 feet away from the workers.

Figure 3 is a representation of the results of the sight distance evaluation displayed over aerial imagery of the accident site. Aerial imagery provided by Google Maps.



**Figure 3:** Sight distance observation results.

## 8.0 Interviews Conducted

Twelve investigative interviews were performed. The transcript of each is included within the docket of this investigation. Selected notes from each interview are included in this section. The details of each interview are below.

- On August 5, 2023, investigators interviewed three Middlesex employees: the operator of the striking machine (the Driller Operator), the rider on the striking machine (Employee 3), and the surviving worker on the ground at the accident location (Employee 2).
- On August 6, 2023, investigators interviewed the Middlesex foreman, the Middlesex Superintendent, and the HRRC RWIC.

- On August 7, 2023, investigators interviewed the Middlesex Site Safety Manager and the HRCC Associate Project Engineer.
- On September 6, 2023, investigators interviewed the MassDOT Project Manager.
- On September 7, 2023, investigators interviewed the HRRC Trainmaster, HRRC Superintendent of Operations, and the Middlesex Health, Safety, and Environment (HSE) Operations Director.

## 8.1 Driller Operator Interview

The Driller Operator stated he first was employed in railroad work in March 2023 when he took his current position with Middlesex. He stated he began operating equipment in late May 2023, after taking HRRC courses and on-site training with foreman and other operators.<sup>7</sup>

He stated he wakes up at 2:30 a.m. on work mornings, to leave home by 3:00 a.m. and has a 1 hour and 10-minute commute to the work location. He stated his normal work week is a 6-day work week with 8-to-10-hour workdays on Monday through Thursday and 12-to-14-hour workdays each Friday and Saturday. He stated his return commute is about 1 hour each day. On the day of the accident, he recalled being a little tired towards the end of the long week, but nothing he wasn't comfortable with.<sup>8</sup>

The Driller Operator described the job briefing that started at 4:30 a.m. the day of the accident that was received from the Housatonic RWIC and the smaller Middlesex group meeting, referred to by others as the daily huddle, that occurred after the HRRC job briefing. He stated during those briefings, which combine to about a half hour, the RWIC discussing the track limits, work locations, weather, hospital address, and the dispatcher's name. The safety portion of the briefing, performed by Middlesex, takes 10 to 15 minutes with a site safety manager. He stated that each worker signs a signoff sheet that acknowledges they understood the job briefing.<sup>9</sup>

The Driller Operator stated that he was equipped with a radio provided by Middlesex "that talks to . . . all the workers" as well as the RWIC. He stated he did not communicate the machine movements on the radio on the day of the accident from the time he left Lanes with the driller to the time of the accident, believing that he only needed to do so when "coming onto the rail with hi-rail equipment." The Driller

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<sup>7</sup> See Driller Operator interview page 5, lines 20 - 23; and page 6, lines 7 - 16.

<sup>8</sup> See Driller Operator interview page 6, line 20 to page 7, line 13.

<sup>9</sup> See Driller Operator interview page 7, line 14 to page 8, line 13; page 21, lines 6 - 12; page 22, line 15 to and page 23, line 13; page 24, lines 1-7; page 39, line 22 to page 41, line 10; and page 57, lines 12 - 23.

Operator stated he would normally contact his supervisors via cell phone rather than using the radio.<sup>10</sup>

On the day of the accident the Driller Operator stated he was “kind of in lead” of the four-member drilling and lagging work group. He stated he would gain authority to enter the track from his Middlesex foreman. Regarding switching the machines on the morning of the accident, he stated he did not know if anyone from Middlesex coordinated with the RWIC about what equipment would be moved from the yard. He stated the RWIC unlocks the switch at Lanes each morning and locks it again at the end of the day. He stated Middlesex employees are allowed to throw the switch at Lanes, and only that switch. He stated it took about an hour to switch the equipment at Lanes.<sup>11</sup>

When the driller broke down on the day of the accident, the Driller Operator stated he contacted the Middlesex Superintendent to receive a phone number for the mechanic. The mechanic did not answer his phone call, and knowing the mechanic was in the yard at the Lanes switch, the Driller Operator stated he informed the work group he would be heading to the yard and that he would contact them to let them know whether he was coming back to the work location or not, dependent on how intensive the necessary repairs were.<sup>12</sup>

After being in the yard for the repairs for about 40 minutes, the Driller Operator began to head back north toward the work location on the driller with Employee 3. He stated the backup alarm was functioning as intended. He stated he saw the lagger was in the same location it was when he had left earlier. The Driller Operator stated he then saw Employee 2 “a little ways up from the machine”, later stated when he first saw Employee 2, he was “a little more than 500 feet” from the lagger. He stated he saw Employee 2 clear the tracks as he approached. He stated he did not see Employee 1 at this time. He stated that as he passed Employee 2, he heard Employee 2 yelling “whoa, whoa, whoa” and hit the foot brake while turning to see Employee 1 moments before impact facing the machine and being struck.<sup>13</sup>

The Driller Operator stated he did know that Employee 1 and 2 would be “up there doing that”, referring to preparing ties that far in front of where he had left off before departing to repair the machine. Instead, he was “trying to go back to where we started”.<sup>14</sup>

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<sup>10</sup> See Driller Operator interview page 21, line 15 to page 22 line 6; page 24, lines 8 - 21; page 39, lines 3 - 14.

<sup>11</sup> See Driller Operator interview page 11, lines 7 - 18; and page 18, line 20 to page 21, line 14.

<sup>12</sup> See Driller Operator interview page 11, line 22 to page 12, line 15; and page 32, lines 20 - 24.

<sup>13</sup> See Driller Operator interview page 33, lines 9 - 21; page 38, lines 13 - 18; and page 52, lines 10 - 15.

<sup>14</sup> See Driller Operator interview page 38, line 20 to page 39, line 2.

The Driller Operator stated that Employee 3 was not observing the move prior to the accident though they “we’re required, if we’re riding along, you have to have eyes out too.”<sup>15</sup>

The Driller Operator also stated Employee 1 was wearing a high visibility vest, a red hard hat, a blue sweatshirt, and a blue head covering at the time of the accident.<sup>16</sup>

Regarding cellphone usage, the Driller Operator stated in addition to trying to get in touch with the mechanic, he used his cellphone while in the yard while the machine was being repaired. When asked about rules regarding cellphone usage, he stated “when you’re operating and then once you’re on track, like engaged, you can’t have your cellphone out. You have to be off track -- off to the side of the track if you use your phone” but the phone did not need to be turned off.<sup>17</sup>

## **8.2 Employee 2 Interview**

Employee 2 stated he has worked for five or six different companies performing railroad work as a laborer and foreman over the previous five or six years. He stated he been employed by Middlesex for two months.<sup>18</sup>

Employee 2 stated on the day of the accident his day began in Great Barrington at 4:05 a.m. when he rode together with Employee 1 to the location of the morning job briefing. He described the typical work week as 8-to-10-hour workdays on Monday to Thursday and 12-hour workdays on Friday and Saturday. He stated the work week prior to the accident was typical, working hours similar to the typical week he described. He stated he was getting good rest during the week.<sup>19</sup>

Employee 2 stated on the day of the accident they received a job briefing starting at 4:30 a.m. that lasted 20 to 25 minutes. from the RWIC. He stated the job briefing covered the limits from MP 50 to 59. He stated, “they were mainly talking about the bridge because not only the Housatonic people do the briefing, also the guy from Middlesex, like the safety guy.” He stated regarding the bridge “it was a bigger project”. He also stated that the lagging operation was not mentioned at the job briefing but was mentioned after. Employee 2 stated they sign a sheet after the job briefing in the morning. He stated after the job briefing, the foreman assigned “us to go do what we’re going to do and who’s going to go with us”. He stated they then

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<sup>15</sup> See Driller Operator interview page 52, lines 16 - 24.

<sup>16</sup> See Driller Operator interview page 51, line 23 to page 52, line 3.

<sup>17</sup> See Driller Operator interview page 48, lines 1 - 8; page 54, lines 1 - 18; and page 39, lines 9 - 10.

<sup>18</sup> See Employee 2 interview page 5, line 19 to page 6, line 8.

<sup>19</sup> See Employee 2 interview page 6, line 9 - 17; and page 39, line 17 to page 40, line 22.



split into groups with "12 or 13" people going to the bridge, and he was with the remainder of the four-member work group that would be lagging.<sup>20</sup>

Employee 2 stated the driller broke down shortly after beginning to drill holes, so the Driller Operator went back to Lanes for repairs and Employee 3 went with the Driller Operator. Employee 2 stated he and Employee 1 then began cleaning up rocks and spread lags until the machine got fixed. He stated the Driller Operator did not contact them or perform a job briefing before heading for repairs or after the repairs were complete before the driller travelled back to the work location.<sup>21</sup>

Employee 2 stated he saw the driller when it was at the Sheffield Farm crossing, backing toward the work location. He stated that the driller was still going fast when it was traversing a bridge located about 20 or 30 feet to south of his location, so he stepped out of the way. He stated he yelled to Employee 1, but he didn't hear him. He stated Employee 1 then turned around with "the machine in his face" and then he was stuck by the driller.<sup>22</sup>

Employee 2 stated he believed the Driller Operator was past him when he struck Employee 1, and he believed the Driller Operator started braking when it hit Employee 1. Employee 2 stated after striking the employee, it struck the pushcart on the rail which had been about 10 feet behind Employee 1.<sup>23</sup>

Employee 2 stated the driller's backup alarm was functional, but he could not hear it at the time of the accident because of the noise from the gas-powered blower being operated by Employee 1.<sup>24</sup>

Employee 2 stated he was not wearing hearing protection when using the leaf blower. He stated he was unsure if Employee 1 wore hearing protection as Employee 1 usually had a hood over his head.<sup>25</sup>

Employee 2 also stated Employee 1 operated the switch at Lanes in the morning while switching the equipment out and that the group did not talk to anybody on the radio before coming out onto the main track.<sup>26</sup>

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<sup>20</sup> See Employee 2 interview page 6, line 17 - 20; page 7, line 24 to page 8, line 25; page 14, line 6 to page 15, line 7; page 22, lines 11 - 25; page 24, line 25 to page 25, line 5; and page 43, lines 5 - 13.

<sup>21</sup> See Employee 2 interview page 6, line 23 to page 7, line 5; and page 38, line 19 to page 39, line 2.

<sup>22</sup> See Employee 2 interview page 7, lines 5 - 15; page 12, lines 5 - 19.

<sup>23</sup> See Employee 2 interview page 13, lines 8 - 25.

<sup>24</sup> See Employee 2 interview page 29, lines 11 - 25.

<sup>25</sup> See Employee 2 interview page 34, line 12 - 25 and page 35, lines 1 - 3.

<sup>26</sup> See Employee 2 interview page 35, lines 18 - 25; page 36, lines 1 - 6; and page 37, lines 2 - 5.

### 8.3 Employee 3 Interview

Employee 3 stated he first started working in the railroad industry 60 days before the accident with Middlesex as a laborer. He stated in that time he has worked drilling and lagging ties as well as core drilling on a bridge.<sup>27</sup>

Regarding travelling as a rider on a machine, not as an operator, he stated there was an informal expectation that the rider watches the surroundings, but the machine operator was responsible for the safe traveling of the machine looking out behind or in curves.<sup>28</sup>

Employee 3 stated that during the job briefing on the day of the accident, he was assigned to work on the drilling and lagging operation. He stated this took place "during the big meeting." He stated that he did not coordinate with the RWIC, that the Middlesex foreman would have performed that role.<sup>29</sup> At the job briefing, he later stated there was "at least 10, 5 to 10 minutes" where "hazards of the bridge" and other bridge work issues were discussed. He stated, "I don't recall specific safety being told to us in terms of lagging, but there was quite a bit done in other regards."<sup>30</sup> Employee 3 also stated, referring to the lagging operation, "I would be guessing whether or not . . . what [the foreman and RWIC] discussed . . . I don't remember hearing anything about [the foreman] telling . . . [the RWIC] where we were."<sup>31</sup> Regarding the morning job briefing, Employee 3 stated again "I don't recall any briefing on the lags."<sup>32</sup>

Employee 3 stated that after the drill broke down, the four-member work group discussed that the machine needed to go get fixed and that discussion did not include what Employee 1 and 2 would be doing while the Driller Operator and Employee 3 were gone.<sup>33</sup>

Just prior to the accident, Employee 3 stated he was sitting straight with his head "looking forward, kind of left" and wearing his hearing protection. He stated the machine was moving about 15 miles per hour. He stated he then saw Employee 2 off to the side and then quickly snapped his head back and saw Employee 1, about 15 feet behind Employee 2, inside of the gauge, with the leaf blower and a head scarf. Employee 3 stated he also heard Employee 2 yelling something at this time. Employee 3 stated he then looked at the Driller Operator at yelled "as loud as I could three times 'stop, stop, stop.'" Employee 3 stated the Driller Operator braked "as

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<sup>27</sup> See Employee 3 interview page 5, lines 15 - 24; page 7, lines 4 - 13.

<sup>28</sup> See Employee 3 interview page 7, lines 24 -45; page 8, lines 1 - 25; and page 9 lines 1 - 5.

<sup>29</sup> See Employee 3 interview page 9, line 16 to page 11, line 21.

<sup>30</sup> See Employee 3 interview page 22, line 4 to page 23, line 1.

<sup>31</sup> See Employee 3 interview page 36, lines 7 - 16.

<sup>32</sup> See Employee 3 interview page 40, lines 13 - 15.

<sup>33</sup> See Employee 3 interview page 37, lines 2 - 15.

soon as he was aware that something was going on” and later “I would guess that he hit the brakes right around the point [Employee 1] has hit” and that when the machine came to a rest, Employee 1 was in front of the machine on the ground.<sup>34</sup>

During the last reverse move from the yard to the accident location. Employee 3 stated he wasn’t watching the Driller Operator. He stated he had his own cell phone in his pocket, turned on, and did not see the Driller Operator use his cell phone.<sup>35</sup> Employee 3 stated the Driller Operator had a hoodie on with the hood up, partially covering the sides of his face.<sup>36</sup> Employee 3 stated he was also wearing a hood, because it was chilly.<sup>37</sup>

Employee 3 stated that Employee 1 “would never use [hearing protection], to my knowledge.”

#### **8.4 Housatonic Railroad Roadway Worker In Charge Interview**

In an interview with the parties, the RWIC stated his railroad work experience began in 1993 and includes work at Conrail, CSX, and the Housatonic railroad and roles of brakeman, engineer, conductors, dispatcher, RWIC Flagman, and RWIC.<sup>38</sup>

Speaking about his role as an RWIC, in general, the RWIC stated in the morning we have a job briefing where they cover safety and ensure the employees have qualification cards. He stated “then they have a job briefing when I’m done. They do their briefing. Then I have people sign my sheet . . . it’s a job briefing sheet.”<sup>39</sup> When asked if the job briefing sheet was signed after the RWIC’s briefing or after everybody speaks, the RWIC stated that “It’s signed after my briefings. Sometimes after everybody’s done” and that on the day of the accident, it was signed after Middlesex had talked to the foreman.<sup>40</sup> When asked if anybody goes over the job briefing form to explain what the job briefing form is, and what the bullet points on the form mean, the RWIC said “it’s in their hands, they can read . . . I go through most of the stuff there. Now I think they’re responsible. They’re signing it and you have to know what you’re signing.”<sup>41</sup>

The RWIC stated “my duties as RWIC is to actually protect the interest of the railroad, the Housatonic Railroad, and to make sure these people work within our

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<sup>34</sup> See Employee 3 interview page 25, lines 4 - 25; page 26 lines 1 - 3; page 31, lines 17 - 25; page 32, lines 1 - 25; page 33, lines 1 - 6; page 35, lines 1 - 9; page 35, lines 10 - 15.

<sup>35</sup> See Employee 3 interview page 30, lines 21 - 25 and page 31 lines 1 - 16.

<sup>36</sup> See Employee 3 interview page 33, lines 7 - 22.

<sup>37</sup> See Employee 3 interview page 34, lines 14 - 25.

<sup>38</sup> See RWIC interview page 5, lines 16 - 19.

<sup>39</sup> See RWIC interview page 6, lines 2 - 17.

<sup>40</sup> See RWIC interview page 27, lines 2 - 10.

<sup>41</sup> See RWIC interview page 50, lines 14 - 25 and page 51, lines 1 - 17.

rules and the RWIC rules that they're going by, and everybody's being safe and watching out for everybody that something like this does not happen."<sup>42</sup>

He stated he would typically communicate with Middlesex face to face or via the radios, issued by Middlesex.<sup>43</sup> The RWIC stated he would regularly directly communicate via radio with machine operators in his role.<sup>44</sup> When asked if he would require Middlesex employees to tell him exactly what type of equipment they were using and transporting any given day, the RWIC state "When people are hopping on and off the tracks, they usually tell me who they are and what machine they're on."<sup>45</sup>

Speaking about the job briefing on the morning of the accident, the RWIC stated he knew what work Middlesex would be doing from conversations the previous day and from a conversation with a Middlesex employee ("the dirt guy"); but it was not specifically addressed at the job briefing, though safety about bridge work was discussed.<sup>46</sup> The RWIC stated it was "a big briefing because they were working by the bridge."<sup>47</sup> The RWIC stated that it was not discussed which machines would be utilized that day.<sup>48</sup> When asked if Middlesex briefs him during that job briefing on the type of work for the day, the RWIC stated "It depends what's going on."<sup>49</sup> He stated that on the day of the accident, the Middlesex Site Safety Manager spoke about safety during the job briefing and the Middlesex Superintendent spoke as well.<sup>50</sup> The RWIC stated that "there was nothing mentioned about lagging" at the job briefing.<sup>51</sup>

The RWIC stated he unlocked the switch at Lanes in the morning so that Middlesex "could take the machines out to start heading south" to the bridge.<sup>52</sup> He state he was nearby when the machines were being switched out at Lanes after the switch was unlocked. When asked if he saw the logger and driller out of the siding in a work configuration, he stated "I can't answer that question. However they are lining their equipment up, I ain't paying attention. . . I don't know what they need . . . That's their job."<sup>53</sup> The RWIC could not confirm exactly which machines would be taken from

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<sup>42</sup> See RWIC interview page 29, lines 18 - 22.

<sup>43</sup> See RWIC interview page 8, lines 7 - 20.

<sup>44</sup> See RWIC interview page 9, lines 2 - 17.

<sup>45</sup> See RWIC interview page 23, lines 2 - 8.

<sup>46</sup> See RWIC interview page 47, lines 19 - 25 and page 48, lines 2 - 14.

<sup>47</sup> See RWIC interview page 19, lines 15 - 19.

<sup>48</sup> See RWIC interview page 19, lines 18 - 25 and page 10, lines 1 - 2.

<sup>49</sup> See RWIC interview page 19, lines 10 - 13.

<sup>50</sup> See RWIC interview page 23, lines 16 - 24 and page 24, lines 4 - 7.

<sup>51</sup> See RWIC interview page 24, lines 8 - 9 and page 26, lines 5 - 10.

<sup>52</sup> See RWIC interview page 33, lines 8 - 17.

<sup>53</sup> See RWIC interview page 35, lines 16 - 25 and page 36, lines 1 - 7.

Lanes, south to the bridge to work that day,<sup>54</sup> however he stated that when he left the switch at Lanes, some of the equipment was starting to head south.<sup>55</sup>

The RWIC stated he first learned there were employees on the tracks lagging after the accident had already occurred.<sup>56</sup>

## **8.5 Middlesex Foreman Interview**

In an interview with the parties, the Middlesex Foreman stated he had about 12 years of railroad work experience working positions as a laborer, operator, and foreman, including work for a short line railroad and multiple contractors.<sup>57</sup> He stated he had been employed by Middlesex as a foreman since August of 2022.<sup>58</sup> As a foreman, he stated his job duties included preparing and overseeing work and work crews consisting of between 2 and 22 employees.<sup>59</sup> The Foreman stated he takes direction from the Middlesex Superintendent.<sup>60</sup>

The Foreman stated that on the day of the accident, the workday began at 4:30 a.m., when they had the briefing.<sup>61</sup> Regarding the job briefing, he stated that the RWIC was present and providing the on-track safety.<sup>62</sup> He stated the RWIC discussed the track limits, then the Middlesex Site Safety Manger and the Middlesex Superintendent spoke, covering safety and read the Job Hazard Analysis.<sup>63</sup> When asked what was discussed at the job briefing, the Foreman stated "Well, I'm not sure what was discussed" but did elaborate that safety hazards were discussed during the briefing.<sup>64</sup> He stated he could not recall if the details of having two work groups versus one was discussed at the job briefing.<sup>65</sup> The Foreman stated multiple times that safety items specific to the lagging operation were discussed in the briefing and he believed everyone knew lagging would be occurring that day.<sup>66</sup>

The Foreman stated "they did say they unlocked the main line" referring to the main track switch at Lanes.<sup>67</sup> He stated he was "90 percent sure" the RWIC said

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<sup>54</sup> See RWIC interview page 50, lines 1 - 12.

<sup>55</sup> See RWIC interview page 35, lines 8 - 12.

<sup>56</sup> See RWIC interview page 27, lines 16 - 25 and page 29, lines 1 - 4.

<sup>57</sup> See Job Foreman interview page 5, lines 6 - 14.

<sup>58</sup> See Job Foreman interview page 5, lines 15 - 21.

<sup>59</sup> See Foreman interview page 5, lines 20 - 25 and page 6, lines 1 - 11.

<sup>60</sup> See Foreman interview page 6, lines 17 - 22.

<sup>61</sup> See Foreman interview page 7, lines 4 - 5.

<sup>62</sup> See Foreman interview page 7, lines 20 - 25.

<sup>63</sup> See Foreman interview page 8, lines 1 - 7.

<sup>64</sup> See Foreman interview page 13, lines 16 - 25 and page 11, lines 1 - 5.

<sup>65</sup> See Foreman interview page 21, lines 4 - 7 and page 27, lines 20 - 25.

<sup>66</sup> See Foreman interview page 44, lines 1 - 10; page 56, lines 23 - 25; and page 57, lines 1 - 6.

<sup>67</sup> See Foreman interview page 14, lines 19 - 20.

Middlesex employees could throw the Lanes switch as needed. He stated this was the general practice throughout the project.<sup>68</sup>

Regarding work on the Housatonic project, he stated that the RWIC provides the limits of on-track safety and does not delegate specific segments of track to specific work groups. He stated "They just tell us the limits and that's it . . . It's never like this group's here, this group's there, you're not allowed to enter this group or something like that. . . Normally, it's on us, they've told us it's on us to coordinate between ourselves."<sup>69</sup>

The Foreman also stated, regarding a change to the safety briefing process that occurred approximately 2 weeks before the accident "Housatonic wanted the superintendent to give the briefing and to harp more on safety compared to - so when I would give the briefing, I'd state what I was doing, wherever we were going and who was going where, and then [the Site Safety Manager] would give the safety briefing of going over safety and all that - all that aspect of it because he's a safety guy. But from what I was told, Housatonic did not agree with that and they wanted superintendents to do it and to harp more on safety, they felt that my briefing was not informative enough on safety, but again, I left that to the safety guy to do, whereas I focus more on what was going on there in the day, any hazards that I knew of that could be brought up, but as far as I know, that's what I was told as to why it changed." The Foreman stated that the railroad was only there to discuss the track limits, "but they felt . . . our briefing was still not informative enough."<sup>70</sup> When asked if this change to the job briefing process was an improvement, he stated "No, not in my opinion". He stated that if the job briefing on the day of the accident had followed the procedure before the change the RWIC "definitely would have known" about the separate lagging crew.<sup>71</sup>

When asked if the RWIC was always present during the portion of the job briefing where Middlesex is "divvying out everybody's job" the Foreman stated "when I was giving the briefing, that's how it was because I'd give it before . . . all the safety stuff went. . . [S]ince [the superintendent] started doing it . . . normally you'd pass the [job briefing] book around, once it was signed the flagger would walk away of they'd be around, but not necessarily involved in it . . . so it's got a little more lax as of this past 2 weeks."<sup>72</sup>

The Foreman stated after the briefing, everyone dispersed with the employees going to the bridge leaving in trucks, and the employees that were lagging and

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<sup>68</sup> See Foreman interview page 17, lines 9 - 24.

<sup>69</sup> See Foreman interview page 10, lines 20 - 25 and page 11, lines 1 - 12.

<sup>70</sup> See Foreman interview page 22, lines 16 - 25 and page 23, lines 1 - 16.

<sup>71</sup> See Foreman interview page 52, lines 8 - 25 and page 53, lines 1 - 14.

<sup>72</sup> See Foreman interview page 27, lines 2 - 19.

drilling moving equipment around to get their machines needed for the day.<sup>73</sup> He stated that at the bridge work location, there were two pieces of equipment on track: a Pettibone gravel truck and a crew truck and that the Pettibone traveled down the main track after being let out at the Lanes switch and the crew truck set on the rail and traveled to the bridge on track.<sup>74</sup> He stated he was not present at the yard when the Pettibone left Lanes.<sup>75</sup>

When asked if he would say that the Driller Operator was qualified to lead his work group, the Foreman stated it "would not be my first choice."<sup>76</sup> When asked the reason, he stated that, the Foreman stated, "as far as years of experience and qualifications, it's not - - he doesn't meet the quota, in my opinion." He stated that he believed this of all four-members of the work group.<sup>77</sup> The foreman stated he had watched the driller operator in the past operating the drill and "he was doing perfectly okay".<sup>78</sup> He stated he didn't see anything obvious that would prohibit the Driller Operator from leading a work group, if he did he would have "shut it down", but he would like a more experienced person in the lead than the Driller Operator.<sup>79</sup>

Regarding operator training, the foreman stated that he, among others at Middlesex, qualifies employees as equipment operators. This is done in the field, on the equipment and involves reviewing the manual as well as one-on-one instruction on the machine. This process can take between one and three weeks depending on the machine and the individual being qualified. He stated if additional training is needed, Middlesex would allow for it.<sup>80</sup>

The Foreman stated, "there was a lot of need for production" and that his task load "gets high", including on the day of the accident at the bridge location.<sup>81</sup> Regarding the lagging work, he stated there was no production goals, they did not need to perform a certain amount of work per day. He described it as "it was 'take your time, do it safe, get it done when you get it done' and that's what you get at the end of day, there was no, like, you have to reach this number."<sup>82</sup>

## **8.6 Middlesex Superintendent Interview**

The Middlesex Superintendent reviewed his railroad experience with multiple contractors and stated he's worked for Middlesex for about six or seven years. He

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<sup>73</sup> See Foreman interview page 7, lines 5 - 10.

<sup>74</sup> See Foreman interview page 31, lines 20 - 25 and page 32, lines 1 - 9.

<sup>75</sup> See Foreman interview page 53, lines 15 - 18.

<sup>76</sup> See Foreman interview page 22, lines 5 - 7.

<sup>77</sup> See Foreman interview page 29, lines 24 - 25 and page 30, lines 1 - 8.

<sup>78</sup> See Foreman interview page 44, lines 14 - 22.

<sup>79</sup> See Foreman interview page 37, lines 6 - 14.

<sup>80</sup> See Foreman interview page 37, lines 1 - 25 and page 38, lines 1 - 23.

<sup>81</sup> See Foreman interview page 40, lines 10 - 22.

<sup>82</sup> See Foreman interview page 41, lines 22 - 25 and page 42, lines 1 - 20.

stated he started with Middlesex as a foreman and worked his way up to Superintendent and two weeks before the accident he became the quality control manager for the Housatonic project.<sup>83</sup>

The Superintendent stated that on the day of the accident, "We started 4:30 a.m. with our Housatonic briefing, which then led into our safety briefing on what we're going into, which then broke into our crew briefing as to where they're going, what they're doing, responsibilities for the day, and kind of who's going where."<sup>84</sup> He stated that at the job briefing, the site safety manager went over the Job Hazard Analysis for the bridge work. He stated "there was a very extensive safety briefing that morning."<sup>85</sup> He stated the job briefing on the day of the accident was longer than most because of the change to bridge work happening that day and the new hazards that work entailed.<sup>86</sup> When asked if the RWIC was present during the job briefing when he [the superintendent] talked to the bridge crew and the lagging crew, he stated "I can't say if I did see him, or I didn't see him." He stated "we had our briefing ... we do our stretches for the company, and we broke with them."<sup>87</sup> He stated he could not remember exactly when in the morning he had discussed the two separate work groups for the day: "I can't remember at what point it was discussed, was [it] with the safety topics that I discussed in the morning or right after that with the foreman's meeting."<sup>88</sup> The Superintendent was asked if there was a separate job briefing either before or after the primary briefing and he stated, "So our briefing rolls from a track briefing with our EIC, that then is also our briefing -- our safety briefing as we go. And then that briefing just continues on into the foreman briefing, where everybody's going, where they're going, who's responsible, you're going here, you're going here. That's kind of distributed . . . It's all in the same area. Nobody leaves."<sup>89</sup>

The Superintendent stated that over the past "couple of months, it was brought up that our morning briefing could be a little better." As a result, he stated he "took the reins" and ensured the briefings were a little longer on the safety hazards of the day. He stated that each day they would "religiously" cover the hazards of the day and that "everybody tells me . . . you'll just be beating a dead horse. Make sure everybody hears it every day."<sup>90</sup>

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<sup>83</sup> See Middlesex Superintendent interview page 5, lines 14 - 25 and page 6, lines 1 - 9.

<sup>84</sup> See Middlesex Superintendent interview page 7, lines 9 - 19.

<sup>85</sup> See Middlesex Superintendent interview page 7, lines 20 - 25 and page 8, lines 1 - 6.

<sup>86</sup> See Middlesex Superintendent interview page 8, lines 18 - 22.

<sup>87</sup> See Middlesex Superintendent interview page 11, lines 21 - 25 and page 12, lines 1 - 6.

<sup>88</sup> See Middlesex Superintendent interview page 31, lines 21 - 25 and page 32, lines 1 - 10.

<sup>89</sup> See Middlesex Superintendent interview page 37, lines 13 - 25 and page 38, lines 1 - 2.

<sup>90</sup> See Middlesex Superintendent interview page 8, lines 7 - 17.



The Superintendent stated that the job briefing form was generally signed by the briefing attendees after the RWIC discusses that track limits, during the portion of the job briefing that Middlesex is discussing site safety portion of the briefing.<sup>91</sup>

The Superintendent stated that after the job briefing the RWIC unlocked the Lanes switch for Middlesex to shuffle equipment for the lagging operation and, at that point, he departed for the bridge location.<sup>92</sup> He stated that no equipment came out of the switch at Lanes to go south to the bridge.<sup>93</sup>

The Superintendent stated that on the morning on the accident he received a text message from the driller operator who was looking for the mechanic's contact information to repair a problem with the driller.<sup>94</sup> He stated he did not believe the Driller Operator was required to contact the RWIC to inform him of the move that occurred back to the Lanes switch to repair the machine.<sup>95</sup>

The Superintendent stated he had received training in roadway worker protection for various railroads including CSX, Pan Am, Keolis, Amtrak and MBTA. He stated he was trained in continuous welded rail installation through MBTA and Pan Am Railways.<sup>96</sup>

The Superintendent stated it was normal for Middlesex to be working in two or three different locations performing separate tasks within the track limits provided by a single RWIC. When Middlesex does work in multiple locations, he stated the RWIC would bounce between the locations throughout the day.<sup>97</sup> He stated that on the Housatonic project, they had always had a single RWIC.<sup>98</sup>

The Superintendent stated that when getting on or off the rail, crews contact the RWIC, and they do not get on the track until the RWIC confirms.<sup>99</sup>

The Superintendent stated he does not get involved with training or roadway maintenance machine operator qualifications.<sup>100</sup>

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<sup>91</sup> See Middlesex Superintendent interview page 47, lines 17 - 25 and page 48, lines 1 - 7.

<sup>92</sup> See Middlesex Superintendent interview page 9, lines 16 - 19.

<sup>93</sup> See Middlesex Superintendent interview page 46, lines 16 - 25 and page 47, lines 1 - 11.

<sup>94</sup> See Middlesex Superintendent interview page 11, lines 1 -20.

<sup>95</sup> See Middlesex Superintendent interview page 51, lines 12 - 25 and page 51, lines 1 - 6.

<sup>96</sup> See Middlesex Superintendent interview page 6, lines 10 - 20.

<sup>97</sup> See Middlesex Superintendent interview page 34, lines 1 - 25 and page 35, lines 1 - 25 and page 36, lines 1 - 4.

<sup>98</sup> See Middlesex Superintendent interview page 48, lines 10 - 25 and page 49, lines 1 - 16.

<sup>99</sup> See Middlesex Superintendent interview page 41, lines 7 - 22.

<sup>100</sup> See Middlesex Superintendent interview page 14, lines 11 - 19; page 17, lines 15 - 21; and page 24, lines 13 - 18.

When asked about operations monitoring at Middlesex, the Superintendent stated Middlesex has a stop card program, which he described as an employee assessment. He described as part of the stop card program managers periodically stop and watch work groups and review their performance with them including making things safer. He stated stop cards are completed daily and are something that makes Middlesex safer. He stated managers are required to perform at least one stop card per week, and all employees can enter stop cards on other employees.<sup>101</sup>

## **8.7 Middlesex Site Safety Manager Interview**

The Site Safety Manager stated he has held his role with Middlesex for seven years and has worked on and off railroad projects throughout that time. As a site safety manager, he stated his duties include employee training, site safety inspections, creating job hazard analyses, and planning for future projects with regards to safety.<sup>102</sup>

The Site Safety Manager stated his department does not train equipment operators nor perform proficiency testing or evaluations of operators, which is conducted by the operations side of the company.<sup>103</sup> He stated he did not know who did the actual qualifications, has never observed an operator being qualified, and does not know how long it takes to qualify someone.<sup>104</sup> He stated he could verify if a specific employee was qualified to operate a machine but would have to call someone from operations to do so and it would not be a normal task he performed as the Site Safety Manager.<sup>105</sup>

The Site Safety Manager stated the Health, Safety, and Environment Department employees of Middlesex typically do not enter stop cards as they instead complete a safety inspection report.<sup>106</sup> When performing site safety inspections, he stated he looks for anything that has potential to injure a team member or create property damage. He stated his role is not production related and he is not concerned with production goals, only safety.<sup>107</sup> He stated he could perform between 2 and 20 of site safety inspections per day, with five or six per day being typical, and these would cover 30 to 40 employees on average including subcontractors.<sup>108</sup>

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<sup>101</sup> See Middlesex Superintendent interview page 15, lines 7 - 23; page 20 line 6 to page 23, line 13.

<sup>102</sup> See Site Safety Manager interview page 5, lines 19 - 25 and page 6, lines 1 - 18.

<sup>103</sup> See Site Safety Manager interview page 6, lines 19 - 23; page 30, lines 24 - 25 and page 31, lines 1 - 10.

<sup>104</sup> See Site Safety Manager interview page 8, lines 8 - 21.

<sup>105</sup> See Site Safety Manager interview page 26, lines 5 - 13.

<sup>106</sup> See Site Safety Manager interview page 9, lines 12 - 25 and page 10, lines 1 - 7.

<sup>107</sup> See Site Safety Manager interview page 11, lines 3 - 23.

<sup>108</sup> See Site Safety Manager interview page 11, lines 24 - 25 and page 12, lines 1 - 13.

The Site Safety Manager explained Job Hazard Analyses (JHAs) as being task specific, breaking down tasks into specific elements and identifying and mitigating the hazards involved with each element. He stated that no JHA was created for the lagging work because they are specific to “high intensity tasks that involve more than general work.”<sup>109</sup> He stated that all Middlesex employees have access to the JHAs and each applicable JHA is read before the task involved is performed.<sup>110</sup> He stated there would be similar discussions of hazards or risks for minor work that does not have a JHA during the daily huddle.<sup>111</sup> He stated that the daily huddle was conducted by the foreman and goes over the work tasks for the day, the team members involved in that task and any hazards associated with those tasks.<sup>112</sup>

The Site Safety Manager he did not regularly have contact with a railroad’s safety department when working on railroad property and has never had a railroad send a safety team out to any of his job sites.<sup>113</sup> When questioned further, he did recall the Housatonic Trainmaster discussing safety related issues at morning job briefings.<sup>114</sup> Regarding roadway worker protection training, he stated the training is not provided by Middlesex but by the railroad they are working on.<sup>115</sup> He stated that if a railroad had specific safety requirements or operating rules “they would have to tell us.” He stated that if he had questions on a specific safety topic for a railroad, he would ask questions, and has done so in the past, “but generally, safety rules are safety rules”.<sup>116</sup>

The Site Safety Manager stated that on the day of the accident he arrived at the job site at about 4:00 a.m. to prepare for the JHA to be read that morning. He stated they “held the job briefing from the Housatonic at 4:30 at which point we moved into, after the job briefing, we moved into the JHA”.<sup>117</sup> He stated that he then read a JHA in that was specific to the bridge work to be performed that day.<sup>118</sup> He stated that the Middlesex Superintendent then talked about the work activities for the day to add his own input to the hazards.<sup>119</sup> He stated he was aware of the lagging work crew on the day of the accident and became aware of it through the morning briefing and the five-week work schedule produced the week prior.<sup>120</sup> He stated he recalled the Superintendent discussing the lagging operation in the morning but could not recall if the RWIC was present for that discussion or if the RWIC had left before the briefing

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<sup>109</sup> See Site Safety Manager interview page 7, lines 2 - 15.

<sup>110</sup> See Site Safety Manager interview page 13, lines 6 - 25 and page 14, lines 1 - 4.

<sup>111</sup> See Site Safety Manager interview page 20, line 25 and page 21, lines 1 - 3.

<sup>112</sup> See Site Safety Manager interview page 8, lines 2 - 5.

<sup>113</sup> See Site Safety Manager interview page 15, lines 7 - 19.

<sup>114</sup> See Site Safety Manager interview page 19, lines 8 - 12.

<sup>115</sup> See Site Safety Manager interview page 16, lines 2 - 7.

<sup>116</sup> See Site Safety Manager interview page 16, lines 8 - 19.

<sup>117</sup> See Site Safety Manager interview page 22, lines 1 - 9.

<sup>118</sup> See Site Safety Manager interview page 15, lines 1 - 19.

<sup>119</sup> See Site Safety Manager interview page 22, lines 9 - 13.

<sup>120</sup> See Site Safety Manager interview page 18, lines 12 - 17.

was over to open the switch.<sup>121</sup> He stated he had signed the RWIC's job briefing form before the Middlesex's daily huddle was complete.<sup>122</sup>

Regarding job briefings, the Site Safety Manager stated that Middlesex discussed the safety elements of working around on track machines or safe travelling speeds, including on the day of the accident, but it was not normal for a Housatonic RWIC to discuss similar safety items in the job briefing; they would be discussed by Middlesex during the briefing.<sup>123</sup> He stated that, in addition to the RWIC's job briefing form, Middlesex has a form for their daily huddles that is completed electronically via an app and the foreman selects each crew member present and the foreman will take and save a photo of either a sign in sheet or of the crew members themselves.<sup>124</sup>

The Site Safety Manager stated that after the morning briefing and the daily huddle was completed, the work group broke into their separate work groups to go their separate ways and he soon went to the bridge himself where he reviewed the bridge safety with the crew on site.<sup>125</sup> He stated he did not recall hearing the lagging crew notifying the RWIC that they were occupying the track.<sup>126</sup>

The Site Safety Manager stated he did not recall being provided with a copy of the Housatonic's rules and had never sought out those rules for review.<sup>127</sup> He stated that he did not recall ever seeing an on-track safety manual.<sup>128</sup> He stated he was not familiar with MassDOT safety programs or requirements for operating on their land or their tracks.<sup>129</sup>

The Site Safety Manager stated Middlesex's stop card system is a system available to all Middlesex employees to provide positive or negative feedback of work processes, whether production or safety based, and to make suggestions for improvements. He stated each stop card is recorded, and the information is analyzed to provide him and other visuals on how many stop cards are being recorded and what they are being recorded on.<sup>130</sup>

## **8.8 Housatonic Railroad Associate Project Engineer Interview**

The Housatonic Railroad Associate Project Engineer (Engineer) stated he first worked for the Housatonic Railroad in 2016 when he worked for 15 months as a

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<sup>121</sup> See Site Safety Manager interview page 23, lines 2 - 17 and page 37, lines 6 - 8.

<sup>122</sup> See Site Safety Manager interview page 37, lines 3 - 20.

<sup>123</sup> See Site Safety Manager interview page 39, line 16 to page 41, line 18.

<sup>124</sup> See Site Safety Manager interview page 45, lines 2 - 25.

<sup>125</sup> See Site Safety Manager interview page 22. Lines 13 - 22.

<sup>126</sup> See Site Safety Manager interview page 25, lines 12 - 18.

<sup>127</sup> See Site Safety Manager interview page 21, lines 14 - 21.

<sup>128</sup> See Site Safety Manager interview page 26, lines 23 - 25 and page 27, lines 1 - 14.

<sup>129</sup> See Site Safety Manager interview page 35, lines 23 - 25, page 36, lines 1 - 3.

<sup>130</sup> See Site Safety Manager interview page 31, lines 16 - 25, and page 32, lines 1 - 20.

laborer. He continued to perform summer work as a laborer for the Housatonic until 2020 and had two internships, in the summers of 2018 and 2019, with Norfolk Southern Railroad. He stated after graduating college he joined Housatonic full-time in December 2020 as an Associate Project Engineer.<sup>131</sup> In that role, he stated he performs track inspection, project engineering, estimations, procurement, daily recordkeeping, and acting as a foreman or supervisor of work involving continuously welded rail, among other tasks.<sup>132</sup>

The Engineer stated he is qualified on NORAC rules and holds Housatonic's roadway worker protection (RWP), RWIC, roadway maintenance machine (RMM), RMM equipped with a crane, CWR, and hazmat qualifications.<sup>133</sup> He stated Housatonic performs RWP and NORAC rules training in house for Housatonic employees and utilized computer-based training through RailPros for RWP, CWR, and RMM training.<sup>134</sup> He stated that to be qualified on a machine, Housatonic employees would take the computer-based training to be qualified in general as a machine operator and then would be qualified in the field on each individual machine they were to operate, in a controlled environment.<sup>135</sup> He stated that a contractor would be responsible for training and qualifying their own employees; they would take the railroad specific training for Housatonic via RailPros, but qualification on specific machines would be done by the contractor.<sup>136</sup>

The Engineer stated that AECOM was hired by MassDOT as a Project Manager and served as a consultant to oversee their interests in the project and acted as a liaison between the railroad and the state.<sup>137</sup>

Regarding job briefings, the Engineer stated the Housatonic had recently brought to Middlesex's attention that the briefings were inadequate and needed to be more thorough.<sup>138</sup> He stated he was not aware until the day of the interview of the "additional Middlesex briefing that was allegedly signed", referring to the Middlesex daily huddle.

The Engineer stated that relating to safety on projects like the one Middlesex was contracted for, the Housatonic's role in safety was to provide the training for RWP and RMM, provided through RailPros. He stated additionally an RWIC would be provided each day, and they would touch on safety topics in the job briefing and

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<sup>131</sup> See Associate Project Engineer interview page 5, lines 14 - 25.

<sup>132</sup> See Associate Project Engineer interview page 6, lines 1 - 13.

<sup>133</sup> See Associate Project Engineer interview page 6, lines 14 - 25; page 7, lines 1 - 10; and page 13, lines 8 - 12.

<sup>134</sup> See Associate Project Engineer interview page 11, lines 3 - 23.

<sup>135</sup> See Associate Project Engineer interview page 21, lines 2 - 21.

<sup>136</sup> See Associate Project Engineer interview page 22, lines 2 - 7.

<sup>137</sup> See Associate Project Engineer interview page 14, lines 10 - 25 and page 15, lines 1 - 4.

<sup>138</sup> See Associate Project Engineer interview page 12, lines 7 - 25 and page 13, lines 1 - 2.

cover any safety issues identified on previous days.<sup>139</sup> He stated Housatonic employees do not perform formal safety observations on contractors; formal observations are conducted on Housatonic employees.<sup>140</sup>

The Engineer stated on the morning of the accident, he attended the job briefing provided by the RWIC where the RWIC discussed the track limits, various safety items for the day including for the bridge work.<sup>141</sup> He stated after the RWIC finished, the Middlesex Foreman and Superintendent spoke; the Foreman spent quite a while on bridge safety and the Superintendent added some additional points on the bridge work.<sup>142</sup> He stated that then Middlesex broke to do their stretches and he and the RWIC walked back to their vehicles. He stated that after the stretches they would break up into individual work groups.<sup>143</sup>

The Engineer stated he first learned of the accident when he overheard the Middlesex Superintendent on the phone, when the Superintendent was first notified of the accident.<sup>144</sup> He stated that at the time of the accident it was cloudy, not raining, and visibility was clear.<sup>145</sup>

The Engineer stated that in his opinion Middlesex had a questionable safety culture on the project before the accident. He relayed previous incidents of unsafe actions that had occurred. He stated he believed these were a result of a "lack of experience and knowledge and understanding of the gravity of how serious railroad work is."<sup>146</sup> He stated most of the laborers and some of the foreman at Middlesex were "very, very, very inexperienced when it comes to railroad work."<sup>147</sup>

## **8.9 MassDOT Project Manager Interview**

The MassDOT Project Manager stated he had 30 years of experience with the Providence-Worcester Railroad in roles such as track supervisor, engineer, manager, vice president of engineering, and as President. He stated he also had experience working at a contractor performing railroad work for 8 years. He stated he has worked for MassDOT since 2018.<sup>148</sup>

The Project Manager stated MassDOT purchased the Berkshire Line of the Housatonic Railroad in 2018 and began extensive rehabilitation of the entire 36-mile

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<sup>139</sup> See Associate Project Engineer interview page 18, lines 5 - 25 and page 19, lines 1 - 13.

<sup>140</sup> See Associate Project Engineer interview page 19, lines 14 - 23.

<sup>141</sup> See Associate Project Engineer interview page 28, lines 6 - 25 and page 29, lines 1 - 3.

<sup>142</sup> See Associate Project Engineer interview page 29, lines 3 - 9.

<sup>143</sup> See Associate Project Engineer interview page 29, lines 10 - 18 and page 30, lines 4 - 16.

<sup>144</sup> See Associate Project Engineer interview page 25, lines 11 - 25 and page 26, lines 1 - 14.

<sup>145</sup> See Associate Project Engineer interview page 24, lines 15 - 24.

<sup>146</sup> See Associate Project Engineer interview page 50, lines 15 - 25 and page 51, lines 1 - 13.

<sup>147</sup> See Associate Project Engineer interview page 54, lines 2 - 7.

<sup>148</sup> See Project Manager interview page 7, lines 6 - 25.

line to a level that could potentially accommodate future passenger service.<sup>149</sup> He stated that MassDOT divided the rehabilitation into three geographic segments with plans to award a contract for each segment. He stated a 12-mile segment was previously awarded to, and completed by, RailWorks and that Middlesex was awarded the second contract in August 2022 for work on an 8.1-mile segment; work began on that contract around January of 2023.<sup>150</sup>

The Project Manager stated MassDOT contracted HDR, Inc. for the design and specification of the contract and that the contract includes significant description of the safety requirements of the contractor, Middlesex.<sup>151</sup> He stated that HDR also administers document controls and submittals throughout the project and provides field oversight regarding specific design and construction issues around bridge work.<sup>152</sup> He stated that when those specifications and contract documents are developed, the railroad, in this case HRRC, would have input to include requirements specific to their railroad.<sup>153</sup>

He stated Middlesex has “full responsibility of on-the-job safety”. He stated MassDOT is not an operating railroad, so HRRC provides “all of the FRA guidance for on-the-job safety”, and HRRC has their own safety plan that must be followed by the contractor. He stated HRRC also provides the RWIC for the contractor to work on the property.<sup>154</sup> He stated Middlesex is responsible for qualifying machine operators. He stated multiple time that Middlesex is responsible for safety oversight, not HRRC.<sup>155</sup>

When asked for more details on HRRC’s role in site safety, the Project manager stated HRRC sets the work limits for the day and “if they see something unsafe . . . they’re going to bring it up . . . but realistically, Middlesex has those responsibilities for all” day to day work.<sup>156</sup> He stated HRRC is the operating freight railroad and have control over all operations and routine maintenance without MassDOT input.<sup>157</sup> He stated part of the role of the contractually required site safety managers would be to oversee adherence to roadway worker protection rules and working safely around on-track machines. He stated he would expect these site safety managers to be familiar with the railroad’s rules regarding working around machines and would expect them to have a copy of the railroad’s RWP plan.<sup>158</sup>

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<sup>149</sup> See Project Manager interview page 8, lines 1 - 14.

<sup>150</sup> See Project Manager interview page 8, lines 15 - 25 and page 9, lines 1 - 9.

<sup>151</sup> See Project Manager interview page 9, line 22 to page 10, line 15.

<sup>152</sup> See Project Manager interview page 12, lines 23 - 25, and page 13, lines 1 - 17.

<sup>153</sup> See Project Manager interview page 26, lines 8 0 25 and page 27, lines 1 - 13.

<sup>154</sup> See Project Manager interview page 10, lines 16 - 25 and page 11, lines 1 - 3.

<sup>155</sup> See Project Manager interview page 29, lines 20 - 25; page 30, lines 1 - 15; page 42, lines 11 - 25; page 45, line 15 - 25; and page 46, lines 1 - 13.

<sup>156</sup> See Project Manager interview page 11, lines 18 - 25 and page 12, lines 1 - 6.

<sup>157</sup> See Project Manager interview page 13, lines 18 - 25 and page 14, lines 1 - 5.

<sup>158</sup> See Project Manager interview page 52, lines 13 - 25.

The Project Manager stated MassDOT also contracted with AECOM and the AECOM employee onsite oversees administrative tasks such as invoicing time and materials and monitoring completion of each pay item.<sup>159</sup>

The Project Manager stated that the contracts between the parties allows for HRRC to be reimbursed for the services they provide in support of MassDOT projects, such as providing one or more RWIC each day. He stated the number of RWICs required would be handled by HRRC and the contractor and HRRC could invoice MassDOT for however many were necessary without question.<sup>160</sup>

The Project Manager stated he had worked with multiple contractors while with MassDOT and stated, "the experience level is light with Middlesex." He stated that this light experience existed in the labor force and Middlesex had a "lack of quantity of supervision."<sup>161</sup>

## **8.10 Housatonic Railroad Trainmaster Interview**

The Housatonic Railroad Trainmaster stated he started railroading in 1996 and had first had roles as a conductor and engineer. He stated in 2002, he first started with the HRRC doing track work and held roles as a conductor and engineer as well, becoming a trainmaster, the position he currently holds, in 2012.<sup>162</sup>

Regarding his roles as a trainmaster, he stated he is a DSLE (Designated Supervisor of Locomotive Engineers) and performs all the training for the engineers and conductors at HRRC, as well as performance testing. The Trainmaster stated after the HRRC roadway worker fatality in 2020, he began conducting most of the in-house Part 214 training for their track employees as well. He stated he considered himself a senior manager responsible for RWP.<sup>163</sup>

The Trainmaster stated that regarding the Middlesex contract, the HRRC's role was "basically here . . . to provide protection, track time."<sup>164</sup> He stated he has been working closely since Middlesex when they arrived on the project and has witnessed minor safety issues that were communicated to Middlesex throughout the project, such as machine operators not using their machine's beacons or properly sounding

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<sup>159</sup> See Project Manager interview page 12, lines 7 - 22.

<sup>160</sup> See Project Manager interview page 15, line 22 to page 17, line 12 and page 22, line 23 to page 24, line 6.

<sup>161</sup> See Project Manager interview page 51, lines 5 - 25 and page 52, lines 1 - 13.

<sup>162</sup> See Trainmaster interview page 5, lines 17 - 25.

<sup>163</sup> See Trainmaster interview page 6, lines 3 - 17.

<sup>164</sup> See Trainmaster interview page 6, lines 18 - 25, and page 7, line 1.



the horn.<sup>165</sup> He stated there was an incident early in the contract involving an excavator getting into overhead electrical lines.<sup>166</sup>

The trainmaster also recalled two visits from FRA inspectors during the project. During the first, the FRA didn't find any exceptions other than Middlesex employees not writing things down, and the issue was addressed. He stated during the second FRA visit, the inspector informed them of a "horn issue" and though the FRA did not note the issue on a report, he addressed it the next day with Middlesex at the job briefing.<sup>167</sup>

The Trainmaster stated there was a "safety shutdown" in May 2023 resulting from Middlesex employees in a second work group entering the track that was not allowed to be in the limits.<sup>168</sup> At that time, he stated HRRC took all Middlesex employees off the track and informed MassDOT they wanted additional training required before they returned.<sup>169</sup>

The Trainmaster stated HRRC currently employs five full time roadway workers.<sup>170</sup> He stated HRRC performs audits for rules compliance on those employees and keeps records of those activities.<sup>171</sup> When asked if HRRC does the same for contract employees, he stated "normally, yeah" and explained that contractors would get compliance checks if they were present when HRRC was performing audits of HRRC employees; that they would documented checking the contract employees as well.<sup>172</sup> The trainmaster stated HRRC has a testing plan that includes RWP rules and outlines minimum tests per year.<sup>173</sup>

When asked if HRRC feels their program includes the monitoring of contract employees, the Trainmaster stated he did not feel it was and that "the contractor has to come in with it" and "their managers should be doing most of that stuff."<sup>174</sup>

When asked what the duties and responsibilities of an RWIC are on this project, the Trainmaster stated he was there to perform the on-track protection, resolve good-faith challenges, and do periodic proficiency checks.<sup>175</sup> He stated

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<sup>165</sup> See Trainmaster interview page 7, line 4 to page 8, line 13.

<sup>166</sup> See Trainmaster interview page 8, lines 11 - 13.

<sup>167</sup> See Trainmaster interview page 8, line 13 to page 9, line 2.

<sup>168</sup> See Trainmaster interview page 8, lines 8 - 11.

<sup>169</sup> See Trainmaster interview page 37, line 12 - 25 and page 38, lines 1 - 18.

<sup>170</sup> See Trainmaster interview page 9, lines 3 - 9.

<sup>171</sup> See Trainmaster interview page 10, line 22 to page 11, line 4.

<sup>172</sup> See Trainmaster interview page 11, lines 5 - 20; page 12, lines 16 - 25; and page 13, lines 1 - 8.

<sup>173</sup> See Trainmaster interview page 12, lines 2 - 14.

<sup>174</sup> See Trainmaster interview page 13, lines 9 - 18.

<sup>175</sup> See Trainmaster interview page 14, lines 4 - 15.

during the job briefing, the scope of work should be discussed as well as the need for additional flagman.”

The Trainmaster stated if Middlesex wanted to perform work not discussed in the job briefing, the work group would be required to talk to the RWIC and he stated that scenario has occurred in the past and he had to come out to flag for a second work group.<sup>176</sup> He stated that HRRC gets paid to provide additional flagman and the rules state that if it is not the same task, the second group needs its own flagman.<sup>177</sup> The Trainmaster stated that two EIC’s were necessary for the two work groups on the day of the accident.<sup>178</sup>

When asked a hypothetical question, the trainmaster stated a machine operator would need to contact the RWIC to make an unexpected move from the bridge work location to the Middlesex yard. He stated Middlesex was instructed that anytime they occupy the track, they need to communicate that with the RWIC and get permission before occupying.<sup>179</sup> He stated that for equipment to enter in and out of exclusive track occupancy, they need to get permission from an EIC and this includes entering at a switch within the limits.<sup>180</sup> He stated that on the day of the accident, the RWIC deemed it okay for Middlesex employees to throw the main track switch which the RWIC unlocked after discussing it in the job briefing.<sup>181</sup> He stated no contract employees have switch keys.<sup>182</sup>

The Trainmaster stated that HRRC did not verify if Middlesex had a compliant Part 243 program. He stated the Middlesex contract is through HDR and Mass Rail and HRRC was under the impression that Middlesex had their own 243 program, training, and oversight. He stated HRRC would not have been copied on document submittals.<sup>183</sup> He stated that for HRRC employees, they are designated into categories by job function (conductors, engineers, RWIC, etc.) and many people perform all of those roles.<sup>184</sup>

When asked “Who is the proper authority” to deem machine operators qualified as outlined in the RailPros training which Middlesex employees took, the Trainmaster stated that was referring to the contractor training officer and HRRC would not deem contractors qualified as machine operators.<sup>185</sup> The Trainmaster stated he does not get to review the qualifications of Middlesex foreman and HRRC is

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<sup>176</sup> See Trainmaster interview page 15, line 20 to page 16, line 6.

<sup>177</sup> See Trainmaster interview page 16, lines 7 - 14.

<sup>178</sup> See Trainmaster interview page 33, line 18 - 24.

<sup>179</sup> See Trainmaster interview page 16, line 18 to page 17, line 23.

<sup>180</sup> See Trainmaster interview page 30, line 14 to page 31, line 9.

<sup>181</sup> See Trainmaster interview page 32, line 11 to page 33, line 11.

<sup>182</sup> See Trainmaster interview page 32, lines 12 - 14.

<sup>183</sup> See Trainmaster interview page 19, line 20 to page 20, line 16.

<sup>184</sup> See Trainmaster interview page 20, line 14 to page 21, line 8.

<sup>185</sup> See Trainmaster interview page 24, line 12 to page 25, line 2.

“under the assumption that . . . with this contract, that they’re deemed qualified to do what they’re supposed to do”.<sup>186</sup> The Trainmaster stated he trains HRRC employees on the NORAC operating rules and performs the testing as well.<sup>187</sup>

When asked if the accident fatality and the prior 2020 HRRC employee fatality were related, the Trainmaster stated, “neither one of those were, at all, ... could be related in any way.”<sup>188</sup>

When asked who is responsible for overall safety when a contractor comes on HRRC property, the Trainmaster stated the site safety guys from the contractor with HRRC providing track protection.<sup>189</sup> When asked if he felt HRRC’s hands are tied with contractors and they can’t say ‘it’s going to go this way’ he stated he did not believe that and that HRRC will go by the regulations and when they see non-compliance stop the contractor and correct it; but HRRC was not part of the contract and that contractor is required to be trained and qualified.<sup>190</sup> He stated in this instance, HRRC was contractually to provide flaggers and if the contract was different and HRRC was to oversee safety, HRRC would have their safety people out there.<sup>191</sup>

### **8.11 Housatonic Railroad Superintendent of Operations Interview**

The HRCC Superintendent stated he began his railroad career in 1992 as track laborer and held positions including conductor, engineer, and trainmaster before taking his current role as superintendent in 2015.<sup>192</sup> As superintendent, he stated his responsibilities include “Day-to-day operations of the railroad, you know, with trains, train crews, scheduling, work to be done, how it’s to be done, scheduling flag protection for the different projects, and inspections and bridge inspections and so forth over the entire railroad. On a short line you wear many hats”.<sup>193</sup> He stated that he is involved in operational testing and RWP.<sup>194</sup> The Superintendent stated that the Trainmaster was “90% involved” in decisions related to creating operational testing programs, creating RWP manuals, selecting Part 243 training programs and similar duties.<sup>195</sup>

When asked what his understanding was of the responsibilities of the three parties (referring to Middlesex, HRRC, and MassDOT) regarding worksite safety and compliance with federal regulations, he stated the RWIC would “offer up...track

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<sup>186</sup> See Trainmaster interview page 34, lines 1 - 7.

<sup>187</sup> See Trainmaster interview page 26, line 14 - 25 and page 27 line 1.

<sup>188</sup> See Trainmaster interview page 45 line 16 to page 46, line 11.

<sup>189</sup> See Trainmaster interview page 52, line 24 to page 53, line 16.

<sup>190</sup> See Trainmaster interview page 53, line 17 to page 55, line 3.

<sup>191</sup> See Trainmaster interview page 55, line 8 to page 56, line 9.

<sup>192</sup> See HRRC Superintendent interview page 6, lines 2 - 16.

<sup>193</sup> See HRRC Superintendent interview page 7, lines 7 - 18.

<sup>194</sup> See HRRC Superintendent interview page 7, line 19 to page 8, line 3.

<sup>195</sup> See HRRC Superintendent interview page 8, lines 4 - 14.

limits” and have knowledge of the physical characteristics and operating rules. He stated, “The contractor, I would say is, you know, in control of their own -- their own people, they're doing the work and doing it safely.” He stated the state, MassDOT, would be the “overseer of the project.”<sup>196</sup> When asked what services HRRC is required to provide for Middlesex, he stated “just track limits, basically. We really have no part of any of the rest of it ... as far as how things are done and who’s doing them or any of that, that’s nothing to do with the Housatonic.”<sup>197</sup>

The Superintendent later stated that the contract is “between the state and Middlesex. The Housatonic Railroad’s just to provide track protection, nothing to do with us. Contract, all of that is nothing to do with the Housatonic.”<sup>198</sup> He stated HRRC does not see the pre-bid specifications of the contract before it goes out for bid.<sup>199</sup> He stated MassDOT does not solicit HRRC at all for the contractor they select and that HRRC does not receive a copy of the contract after it is awarded. He stated that at the time of the interview he had never seen the contract between MassDOT and Middlesex.<sup>200</sup> When asked if MassDOT gives HRRC any requirements related to training of observation of vendors operating on HRRC property, the Trainmaster stated they do not.<sup>201</sup>

The Superintendent was asked about previous safety issues with Middlesex and he recalled an incident where they hit power lines on one of their first projects, a time in May when they were on the tracks without authority, and “several other small safety things that ... you see out there”.<sup>202</sup> He stated that after the incident where Middlesex was on the track without authority, there “was a safety stand-down and they were removed from the property at that time until retraining with RWP.” He stated that retraining was provided by the HRRC Trainmaster in-person that included RailPros representatives.<sup>203</sup>

He stated that prior to the accident he was not frustrated with safety issues at Middlesex but that he was “more frustrated with practices ... always taking the long way to do things, never listened to what we had to say to offer up anything that would help them, but it was more frustration than anything.”<sup>204</sup>

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<sup>196</sup> See HRRC Superintendent interview page 6, line 18 to page 7, line 6.

<sup>197</sup> See HRRC Superintendent interview page 8, lines 15 - 21.

<sup>198</sup> See HRRC Superintendent interview page 15, lines 15 - 21.

<sup>199</sup> See HRRC Superintendent interview page 15, lines 22 - 24.

<sup>200</sup> See HRRC Superintendent interview page 16, line 18 to page 17, line 2.

<sup>201</sup> See HRRC Superintendent interview page 17, line 23 to page 18, line 5.

<sup>202</sup> See HRRC Superintendent interview page 9, lines 8 - 19 and page 18, lines 6 - 13.

<sup>203</sup> See HRRC Superintendent interview page 18, lines 13 - 22.

<sup>204</sup> See HRRC Superintendent interview page 10, lines 7 - 17.

Comparing Middlesex to a prior contractor he had experience with on similar projects, the Superintendent stated, "Safety issues between the two, yeah, there was definitely more with Middlesex than there was with" the other contractor.<sup>205</sup>

When asked if he was aware of HRRRC providing multiple RWICs on this or prior projects, the Superintendent stated that with the prior contractor they "sometimes had three, we'd have an RWIC and two flaggers under that RWIC." With Middlesex he only recalled one RWIC. He stated the number of RWIC's required was dependent on the nature of the work and the length of the project and some projects had "so many machines . . . that there was just no way [for a single person] to keep track of them all."<sup>206</sup> He stated HRRRC has the staffing to support multiple RWICs but if they didn't, the contractor would just not be able to do the work.<sup>207</sup>

The Superintendent stated he was very familiar with the HRRRC 217 testing plan and stated that agreed the plan required testing of contractors that are subject to the operating rules. He stated he did not know offhand how many tests were conducted on Middlesex employees and that he had not performed any himself.<sup>208</sup>

The Superintendent stated contract employees take training through RailPros that is specific to HRRRC's rules and manuals.<sup>209</sup> He stated for HRRRC employees, they perform the training themselves.<sup>210</sup> When asked how HRRRC verifies that contractors have completed their required training, he stated they get a list through RailPros, the training provider, and that list includes contract employees who have started, but not yet completed the training. He stated RailPros would qualify them, they would pass the test through them. When asked what documentation HRRRC would need to see to determine if a machine operator was qualified, he stated he would need to see the card from RailPros that they took the course and nothing in addition to the card.<sup>211</sup>

When asked about the statement in the training RailPros provides: "that the proper authority determines qualifications of a [machine] operator", the Superintendent stated he did not know who that proper authority was.<sup>212</sup> He stated he was aware that HRRRC has a periodic testing program that was required under Part 243.<sup>213</sup>

When asked what HRRRC's responsibility is when a contractor performs work on a railroad they have full operations over, the Superintendent stated HRRRC's

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<sup>205</sup> See HRRRC Superintendent interview page 10, lines 17 - 19.

<sup>206</sup> See HRRRC Superintendent interview page 10, line 23 to page 11, line 24.

<sup>207</sup> See HRRRC Superintendent interview page 12, lines 3 - 7.

<sup>208</sup> See HRRRC Superintendent interview page 13, lines 4 - 15.

<sup>209</sup> See HRRRC Superintendent interview page 23, lines 4 - 20.

<sup>210</sup> See HRRRC Superintendent interview page 23, lines 15 - 20.

<sup>211</sup> See HRRRC Superintendent interview page 13, line 25 to page 14, line 18.

<sup>212</sup> See HRRRC Superintendent interview page 14, lines 19 - 24.

<sup>213</sup> See HRRRC Superintendent interview page 15, lines 1 - 5.

“responsibility would be to provide on-track safety” and would inspect the track before returning to service, depending on the work done. He stated HRRC would not have full responsibility over the safety of the contractors and that the contractor is in charge of their own safety.<sup>214</sup>

When asked what could be done to prevent a similar accident from occurring in the future, the Superintendent stated “I just don't think that the people are trained that are out there doing this work and I think the bottom line is that the work -- it's more important to get the work done than to have the people properly trained.” He continued “I think contractors need to be trained on the operating rules just like regular railroad employees, physical characteristics, they need to know where they are, they need to know the rules and they need to have an understanding of the rules and how they -- how they impact the job that they're to do.”<sup>215</sup>

## **8.12 Middlesex HSE Operations Director**

The Middlesex HSE Operations Director (HSEOD) stated he's worked in safety for about 25 years with experience in heavy civil, marine, tunnels, and highway. He stated his first rail experience was about seven years ago. He stated he has worked on various projects in Florida and New England including recent Massachusetts Bay Transportation Authority (MBTA) projects. He stated he has worked for Middlesex for 21 years, working as a site safety manager, safety director, and his current position of HSE Operations Director.<sup>216</sup>

The HSEOD stated his duties and responsibilities on the HRRC project include managing the project from operations as well as safety and he is a back-up site safety manager when needed. He stated his regular duties as HSEOD include managing all the safety managers throughout New England and Florida as well as supporting critical work activities on projects throughout that area. He stated he also runs safety meetings throughout his territory. Regarding employee training, he stated he did not schedule training, but his duties include making sure qualified employees are available for projects as required by contracts.<sup>217</sup>

The HSEOD stated on this project, MassDOT is the owner of the railroad, Middlesex is a contractor to them, and HRRC is responsible for on-track safety. He stated Middlesex takes direction from HRRC while on the project in regard to track protection.<sup>218</sup> He described HRRC as the “liaison” to MassDOT on the project with responsibility to ensure the contractor is adhering to safety rules, ensuring track

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<sup>214</sup> See HRRC Superintendent interview page 22, lines 6 - 25 and page 23, lines 1 - 3.

<sup>215</sup> See HRRC Superintendent interview page 25, line 20 to page 26, line 16.

<sup>216</sup> See Middlesex HSE Ops. Director interview page 6, line 8 to page 7, line 19.

<sup>217</sup> See Middlesex HSE Ops. Director interview page 7, line 22 to page 9, line 17.

<sup>218</sup> See Middlesex HSE Ops. Director interview page 9, line 18 to page 10, line 18.

protection, and to make note of deficiencies regarding safety or quality and bring those to Middlesex.<sup>219</sup>

The HSEOD described the process for qualifying machine operators as identifying potential employees for those roles and having experienced operators “take people under their wings” to teach them and ensure they understand the safe operation of that machine. He stated this was not a formal outlined process and relied on the people experienced with the equipment. He stated Middlesex has proficiency cards on each operator that are kept in the project files under training and that would be available to operations to refer to see which employees were qualified on which machines.<sup>220</sup> The HSEOD stated that the Middlesex Foreman and Middlesex Superintendent were responsible for operator qualifications on the project.<sup>221</sup>

The HSEOD described Middlesex’s observation process conducted by HSE operations directors or site safety managers. He stated how observed behaviors, positive or negative, are recorded on observation forms. He stated “you won’t see a person’s name [on observation cards] ... we try to discourage putting people’s names in particular things.” He stated he reviews these observations reports and if trends are noticed, they are addressed with employees, such as at Monday morning safety meetings or in daily huddles.<sup>222</sup>

The HSEOD provided an overview of additional observation programs including a “stop card” program available to all employees. He stated managers have a minimum number of stop card observations required but no maximum, and craft employees are highly encouraged to submit their observations and employees will not be retaliated against for negative observations. He stated stop cards can be submitted through the company phone app or via written forms. He stated Middlesex also has a near-miss program to track close calls. He stated all of these programs are in a single “Beekeeper” app for all employees and this app also includes accident incident forms, daily huddle forms, JHAs, and company communicator topics.<sup>223</sup>

The HSEOD stated he was familiar with HRRC’s RWP manual having reviewed it and referenced it in the past.<sup>224</sup> When asked who monitors Middlesex employees’ compliance with RWP rules, the HSEOD stated everyone on the project include Middlesex and HRRC as it is a “joint effort” to make sure everyone is looking out for safety.<sup>225</sup> With regards to “stop tests” to test machine operators being able to stop in

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<sup>219</sup> See Middlesex HSE Ops. Director interview page 10, line 19 to page 11, line 9.

<sup>220</sup> See Middlesex HSE Ops. Director interview page 13, line 7 to page 16, line 17 and page 17, line 24 to page 18, line 13.

<sup>221</sup> See Middlesex HSE Ops. Director interview page 75, lines 17 - 21.

<sup>222</sup> See Middlesex HSE Ops. Director interview page 19, line 6 to page 22, line 25.

<sup>223</sup> See Middlesex HSE Ops. Director interview page 63, line 15 to page 69, line 6.

<sup>224</sup> See Middlesex HSE Ops. Director interview page 18, line 14 to page 15, line 5.

<sup>225</sup> See Middlesex HSE Ops. Director interview page 23, lines 1 - 19.

the appropriate distance, he stated he had not performed such a test with a physical object but has had to wave down an operator to talk to them.<sup>226</sup>

When asked about the responsibilities of an RWIC, the HSEOD stated they grant the limits, go over track rules and other safety issues, "they're supposed to be with us ... when we're physically doing the work to ensure we're not going outside ... [the] track limits."<sup>227</sup> He stated he believed a machine operator could move within the track limits "but they should be calling the EIC, for sure."<sup>228</sup> The HSEOD stated that when he was on site at the HRRC project, there had always been one RWIC.<sup>229</sup>

The HSEOD stated Middlesex employees would be subject to HRRC operations rules and received training in RWP and the track safety standards.<sup>230</sup> He stated that, prior to the accident, he was not aware that Middlesex employees were handling switches and did not recall Middlesex employees being authorized to throw switches on any project.<sup>231</sup>

Regarding training and qualification, the HSEOD stated they use a model program under Part 243 and for OJT they use proficiency cards. For the Driller Operator involved in the accident, he stated the OJT portion of the training was completed but the recordkeeping was not done for the OJT training.<sup>232</sup>

The HSEOD stated that Middlesex equips machine operators with radios to communicate with each other and with the RWIC and on the day of the accident the machine operators would have each had radios.<sup>233</sup>

The HSEOD described the typical morning job briefing he experienced on this project stating the RWIC would do their briefing, talking about the Form D (the track limits). He stated Middlesex employees all record the Form D limits in individual briefing books. He stated the RWIC would usually cover a couple safety topics. He stated, "the whole briefing itself for Housatonic would probably be about ... 3 to 5 minutes." He stated, "then Middlesex, ... we go from the briefing to our daily huddles, that's a company requirement." He stated the daily huddles cover the day's work, work assignments, ensuring employees are equipped with the right safety gear, and discuss things that may have occurred the day before on the project or rail issues from elsewhere in the company. He stated relevant JHA's are discussed as well as other hazards for the work to be performed. He stated they also discuss stop card

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<sup>226</sup> See Middlesex HSE Ops. Director interview page 25, line 4 to page 26, line 11.

<sup>227</sup> See Middlesex HSE Ops. Director interview page 26, line 12 to page 27, line 3.

<sup>228</sup> See Middlesex HSE Ops. Director interview page 27, line 21 to page 28, line 12.

<sup>229</sup> See Middlesex HSE Ops. Director interview page 28, lines 13 - 18.

<sup>230</sup> See Middlesex HSE Ops. Director interview page 30, lines 12 - 21.

<sup>231</sup> See Middlesex HSE Ops. Director interview page 31, lines 3 - 15.

<sup>232</sup> See Middlesex HSE Ops. Director interview page 35, line 1 - 16 and page 25, line 21 to page 36, line 8.

<sup>233</sup> See Middlesex HSE Ops. Director interview page 42, line 4 to page 43, line 3.



issues or site observations. He stated daily huddles take between 10 and 25 minutes. He stated the daily huddles are not just for Middlesex employees and others such as project owners or third-party project engineers are all welcome to attend. He stated HRRC had made contributions in daily huddles at time.<sup>234</sup>

## **9.0 Evidence Collected**

The track working group placed an investigative hold on Driller MS097, Lager 050 and a rail cart. Investigators performed examinations of Driller MS097 as outlined above. On August 7, 2023, NTSB investigators released the investigative hold on both pieces of equipment with the concurrence of all parties.

Additionally, investigators located a security camera that captured the machines coming and going from the work location before and after the accident. This camera was located on a local business building adjacent to MP 58.25 on the Berkshire Line north of the Sheffield Farms crossing. The business address is 1939 N Main Street, Sheffield, MA. The portion of the video showing the Driller Operator travelling northbound just prior to the accident was sent to NTSB's Research and Engineering department for further analysis to determine the vehicle's speed. The surveillance video time stamp is incorrect; it is offset ahead of local time by about 11 hours and 7 minutes.

Investigators copied the form used by the RWIC to document the job briefing on the day of the accident and a written statement completed by the RWIC on the day of the accident.

Select additional photographs obtained during the investigation are included in the appendix of this report.

## **10.0 Document Collection**

This accident's docket contains copies of material records obtained during the investigation. The following is a summary of documents and records obtained and examined by NTSB investigators.

### **10.1 Middlesex Corporation Documents**

NTSB investigators requested and reviewed documents and records from the Middlesex Corporation applicable to this accident. These included copies of company safety rules and policies, employee qualification records, employee work history records, internal safety oversight records, records related to employee

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<sup>234</sup> See Middlesex HSE Ops. Director interview page 51, line 5 to page 53, line 21 and page 70, line 15 to page 71, line 12.

training programs, machine operator's manuals, machine maintenance and inspection records, and records of post-accident actions taken by Middlesex.

## **10.2 Housatonic Railroad Documents**

NTSB investigators requested and examined documents and records from HRRC applicable to this accident. These included copies of rule books, timetables, track charts, employee qualification records, safety oversight testing records, dispatching records, employee work history records, records related to employee training programs, written statements provided by employees on the day of the accident, and records of post-accident actions taken by HRRC.

## **10.3 MassDOT Documents**

NTSB investigators requested and examined documents and records from MassDOT applicable to this accident including plans and contract documents related to the project awarded to Middlesex on the Berkshire Line.

## **10.4 FRA Interrogatories and Documents**

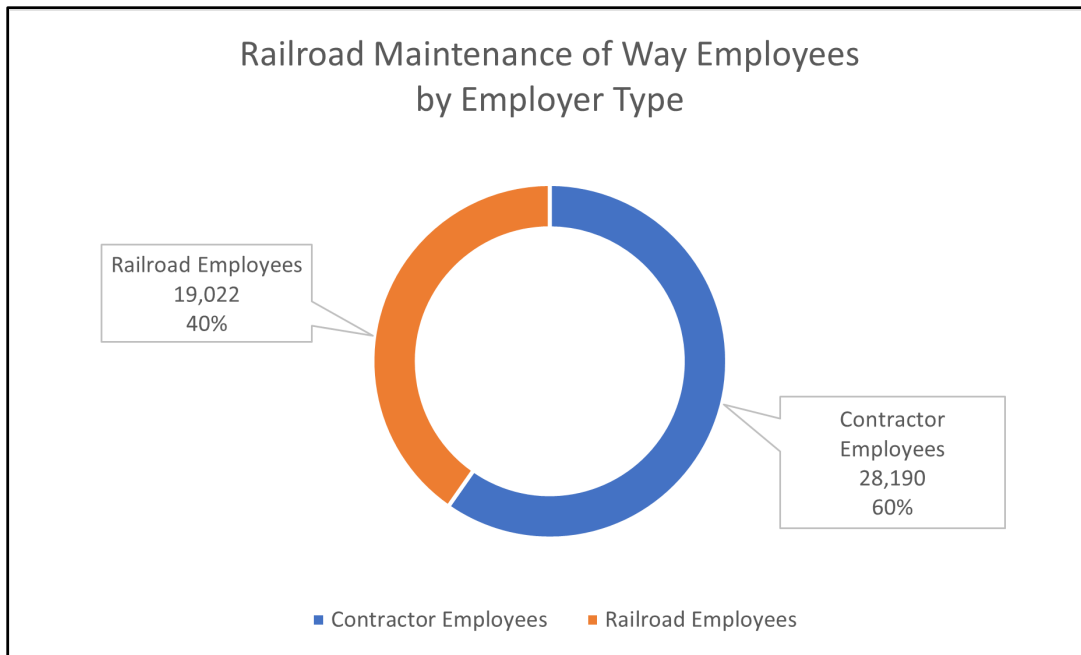
NTSB investigators sent formal written questions to the FRA. These included inquiries into FRA inspection activities that took place before the accident, details on FRA compliance programs in relation to short line railroads and contractors, records regarding the number of railroad contract employees in the industry, and the proper application of FRA regulations to the entities involved in this accident. These interrogatories and FRA's responses are included in this accident's docket.<sup>235</sup>

As part of these interrogatories, investigators inquired if FRA had data from their control of alcohol and drug use regulations that would assist in quantifying the number of railroad contactor employees in the industry.<sup>236</sup> In response, FRA started that from their data, they estimated that in 2022 there were about 47,212 maintenance of way employees in the industry, of which 28,190 were contractor employees. The figure below depicts the number of maintenance of way employees in the railroad industry by employer.

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<sup>235</sup> See FRA Interrogatories in the accident docket.

<sup>236</sup> These regulations are in [Title 49 CFR Part 219 -- Control of Alcohol and Drug Use](#).



**Figure 4:** Chart of railroad maintenance of way employees by employer type.

Additionally, FRA provided NTSB with records of post-accident regulatory inspections performed on HRRC, Middlesex, and MassDOT.

## 11.0 Previous NTSB Investigations

### 11.1 Housatonic Railroad Employee Fatality

On October 14, 2020, about 2:50 p.m. local time, a Housatonic Railroad Company (HRRC) employee working as the roadway worker-in-charge (RWIC) of a group of track workers was struck and killed by a rail-mounted track excavator that was traveling on an out-of-service track in North Canaan, Connecticut.<sup>237</sup>

NTSB investigated this accident and determined the probable cause of the roadway worker-in-charge's fatal injuries was his walking into a close-clearance location between the switch panel and the moving track excavator where he was struck.

### 11.2 Port Authority Transit Corporation Contractor Fatalities

On October 14, 2022, about 9:21 pm local time, Port Authority Transit Corporation (PATCO) train Westbound #1 struck and killed two contractor employees

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<sup>237</sup> NTSB Investigation ID RRD21LR002. <https://www.nts.gov/investigations/Pages/RRD21LR002.aspx>

from JPC Group, Inc. on track 2 on the Benjamin Franklin Bridge in Camden, New Jersey.<sup>238</sup>

The NTSB investigation into this accident is ongoing and the information above is preliminary, subject to change, and may contain errors. Any errors will be corrected when the final report has been completed.

### **11.3 Caltrain Passenger Train Collision with Hi-rail Maintenance Vehicles**

On March 10, 2022, about 10:33 a.m. local time, southbound Caltrain train 506 struck three stationary on-track (or hi-rail) maintenance vehicles at milepost (MP) 11.6 on main track 2 near San Bruno, California. The train's locomotive derailed, and all three maintenance vehicles were destroyed. Released fuel from the construction vehicles fed a fire that spread to one of the passenger railcars. Eight people were transported to local hospitals. One railroad construction employee sustained serious injuries. One train crewmember was treated and released at a local hospital. Six passengers were treated for minor injuries and subsequently released.<sup>239</sup>

NTSB investigated this accident and determined the probable cause of this accident is the roadway worker-in-charge releasing exclusive track occupancy protection leaving workers and construction equipment unprotected on the main track due to his degraded performance from excessive workload.

### **11.4 Norfolk Southern Railway Contract Roadway Worker Fatality**

On December 8, 2021, about 11:20 a.m. local time, a National Salvage and Service Corporation worker who was part of a Norfolk Southern Railway (NS) work gang was struck and killed by a roadway maintenance machine (RMM) on a main track in Reed, Pennsylvania.<sup>240</sup>

NTSB investigated this accident and determined that the probable cause of the Reed, Pennsylvania, accident was the inability of the spiker operator to see the contract worker behind the spiker and the contract worker not being alerted by the spiker's nonfunctional horn and change-of-direction alarms. Contributing to the accident was (1) NS's preshift inspection that did not check the audibility of the spiker's alerts above ambient noise; (2) Nordco Inc. allowing the spikers to leave the factory without assuring the change-of-direction alarm was working; and (3) insufficient standoff distance chosen by Norfolk Southern Railway that did not provide adequate visibility behind the spiker.

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<sup>238</sup> NTSB Investigation ID RRD23FR001. <https://www.nts.gov/investigations/Pages/RRD23FR001.aspx>

<sup>239</sup> NTSB Investigation ID RRD22MR007. <https://www.nts.gov/investigations/Pages/RRD22MR007.aspx>

<sup>240</sup> NTSB Investigation ID RRD22LR003. <https://www.nts.gov/investigations/Pages/RRD22LR003.aspx>

NTSB recommended that the Federal Railroad Administration require all new and all rebuilt and remanufactured RMMs to be equipped with backup cameras. We also recommended that all Class I railroads equip new and existing RMMs with backup cameras and that the American Short Line and Regional Railroad Association advise its members of this accident and of the importance of adding backup cameras to new and existing RMMs. Furthermore, we recommended that the Federal Railroad Administration inform railroads of the need to determine the appropriate standoff distance for all RMMs.

### **11.5 Union Pacific Railroad Contractor Employee Fatality**

On September 22, 2021, about 2:40 p.m. local time, a W.T. Byler Company contract equipment operator was struck and killed by a suspended load of steel grating material that he was transporting with the boom and stick of a roadway maintenance machine on the Union Pacific Railroad Del Rio Subdivision near Castroville, Texas.<sup>241</sup>

NTSB investigated this accident and determined that the probable cause of the September 22, 2021, equipment operator fatality was the use of a roadway maintenance machine to move a load of steel grating panels suspended in front of the machine with a clamping work head attachment that was not designed for use with such a load.

### **11.6 Continental Rail Incorporated Contractor Fatality**

On November 17, 2020, about 2:26 p.m. local time, Canadian National (CN) train A-48871-16 operated by an Alabama Export Railroad (ALE) engineer collided with on-track maintenance equipment belonging to a Continental Rail Incorporated (CR) maintenance-of-way work group near milepost (MP) 3.7 on the Beauregard track in Prichard, Alabama. ALE had contracted CR to install railroad ties for ALE. The on-track maintenance equipment included a full-sized, heavy-duty flatbed truck (boom truck) equipped with a telescopic crane and a backhoe designed to operate on the rails. As a result of the collision, one contractor was killed and three were injured.<sup>242</sup>

NTSB investigated this accident and determined that the probable cause of the Prichard, Alabama, collision of an Alabama Export Railroad freight train and on-track maintenance equipment was the failure of the engineer to operate his train in accordance with restricted speed requirements and stop before colliding with the equipment because he was engaged in the prohibited use of a personal electronic device. Contributing to the collision was Alabama Export Railroad track protection which did not meet the minimum safety standards in Title 49 Code of Federal

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<sup>241</sup> NTSB Investigation ID RRD21LR016. <https://www.nts.gov/investigations/Pages/RRD21LR016.aspx>

<sup>242</sup> NTSB Investigation ID RRD21LR005. <https://www.nts.gov/investigations/Pages/RRD21LR005.aspx>

Regulations Part 214. Also contributing to the collision was the Continental Rail Incorporated roadway work group's removal of portable derails used for on-track safety protection before they cleared the track.

### **11.7 Metropolitan Atlanta Rapid Transit Authority Train 401 Strike of On-Track Equipment**

On June 3, 2018, about 8:46 p.m. eastern daylight time, Metropolitan Atlanta Rapid Transit Authority (MARTA) northbound train 401 struck on-track equipment (OTE) about 120 yards north of the Medical Center Station, near Sandy Springs, Georgia. The train had departed the MARTA Medical Center Station just prior to the accident. The Cleveland Electric Company, a MARTA contractor, owned and operated the OTE. A contract employee, who was the operator of the OTE, died from injuries sustained during the collision.<sup>243</sup>

NTSB investigated this accident and determined that the probable cause of this collision was the primary flagperson moving the on-track equipment outside of the restriction area without authority and on-track protection. Contributing to the accident was the rail operator's failure to make a visual check of the immediate track area ahead of the train before commencing movement from the Medical Center Station and a failure to maintain a constant visual check of track conditions as far ahead as possible.

## **F. FEDERAL REGULATIONS AND RAILROAD RULES**

Following is a brief description of rules and regulations applicable to this accident. Full-text excerpts of applicable individual rules are included in the appendix of this report.

### **12.0 FRA Roadway Worker Protection Regulations**

The FRA has regulations in 49 CFR Part 214 *Railroad Workplace Safety* intended to prevent accidents and casualties to employees involved in railroad inspection, maintenance, and construction activities. The stated purpose of Subpart C - *Roadway Worker Protection* includes preventing accidents and casualties caused by moving railroad cars, locomotives or roadway maintenance machines striking roadway workers or roadway maintenance machines. Additionally, this subpart prescribes safety standards related to the movement of roadway maintenance machines where such movements affect the safety of roadway workers.<sup>244</sup>

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<sup>243</sup> NTSB Investigation ID RRD18LR008. <https://www.nts.gov/investigations/Pages/RRD18LR008.aspx>

<sup>244</sup> See [Title 49 CFR Part 214, Subpart C, Section 301 Purpose and scope.](#)

Full text of select regulations in Part 214 relevant to this accident are included in the appendix of this report.

### **13.0 FRA Risk Reduction Program Regulations**

On February 18, 2020, FRA published the final rule Part 271 - *Risk Reduction Program*. The stated purpose of this part, as noted in Title 49 CFR Part 271, Section 1 *Purpose and scope* is "to improve railroad safety through structured, proactive processes and procedures developed and implemented by railroads. Each railroad subject to this part must establish a Risk Reduction Program (RRP) that systematically evaluates railroad safety hazards on its system and manages the risks associated with those hazards to reduce the number and rates of railroad accidents/incidents, injuries, and fatalities."<sup>245</sup>

As part of this final rule, FRA required all Class I railroads to establish and fully implement an RRP meeting the requirements of the part. Additionally, railroads the FRA determines to have inadequate safety performance are also required to establish and implement an RRP. FRA outlines in § 271.13 the methodology for determining which railroads shall establish an RRP because they have inadequate safety performance. This consists of a two-phase annual analysis, comprised of both a quantitative analysis and qualitative assessment.

The first phase of FRA's annual analysis is a statistically based quantitative analysis of each railroad within the scope of the analysis, using historical safety data maintained by FRA for the three most recent full calendar years. The purpose of the quantitative analysis is to make a threshold identification of railroads that possibly have inadequate safety performance. The quantitative analysis consists of a preliminary selection and a rate-based analysis. Only railroads that the preliminary selection identifies will proceed to the rate-based analysis.

In the preliminary selection, the FRA's methodology identifies railroads as possibly having inadequate safety performance if they had one or more worker on duty fatalities in the previous three years. The second phase of FRA's analysis is a qualitative assessment of railroads identified in the quantitative analysis as possibly having inadequate safety performance.

Between the publication of the final rule on February 18, 2020, and the time of the accident on August 4, 2023, FRA did not conduct this annual analysis as described in 49 CFR Part 271.<sup>246</sup> As noted elsewhere in this report, HRRC had a

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<sup>245</sup> See [Title 49 CFR Part 271 - Risk Reduction Program](#).

<sup>246</sup> See FRA Interrogatories in the Docket.

railroad employee on duty fatality on October 14, 2020, which was investigated by the NTSB.<sup>247</sup>

Railroad's subject to Part 271 are required to establish, and implement within 36 months, a Fatigue Risk Management Program (FRMP) that systematically identifies, evaluates, and manages fatigue related railroad safety hazards on its system.<sup>248</sup> FRMP plans require contractors and subcontractors to be included within the scope of a railroad's FRMP.<sup>249</sup>

## 14.0 FRA Accident/Incident Reporting Requirements

The purpose of FRA Part 225 - *Railroad Accidents/Incidents: Reports Classification, and Investigations* "is to provide FRA with accurate information concerning the hazards and risks that exist on the Nation's railroads. FRA needs this information to effectively carry out its regulatory responsibilities ... FRA also uses this information for determining comparative trends of railroad safety and to develop hazard elimination and risk reduction programs that focus on preventing railroad injuries and accidents."<sup>250</sup>

Part 225 includes requirements for railroads to report certain railroad accidents and incidents such as derailments, train collisions, grade crossing accidents, deaths, injuries, and occupational illnesses that occur to railroad employees, railroad contractors, and other persons.

These requirements include, among other requirements, (1) immediately reporting to FRA the "death of an employee of a contractor to a railroad performing work for the railroad on property owned, leased, or maintained by the contracting railroad", and (2) monthly summaries of deaths, injuries, and occupational injuries to any person, including railroad contractors, that meet established criteria.

## 15.0 Housatonic Railroad Rules

Railroad Operating and On-Track Safety Rules in effect at the time of the accident include NORAC (Northeast Operating Rules Advisory Committee) 11th edition, the Housatonic Railroad Timetable, the Housatonic Railroad On-Track Safety Manual and Bridge Worker Safety Program Effective 01/01/2023, and special instructions.

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<sup>247</sup> The October 2020 HRRC fatality is [NTSB Accident ID RRD21LR002](#).

<sup>248</sup> The FRMP requirement was established June 13, 2022 and required FRMP plans to have an effective date before June 13, 2023.

<sup>249</sup> See Fatigue Risk Management Programs for Certain Passenger and Freight Railroads, 87 Fed. Reg. 35,665 (June 13, 2022). <https://www.federalregister.gov/d/2022-12614/p-66>

<sup>250</sup> See [FRA Part 225 - Railroad Accidents/Incidents: Reports Classification, and Investigations](#).



Full text of select Housatonic Railroad rules applicable to this accident are included in the appendix of this report.

### 15.1.1 Method of Operations

The Sheffield Line is designated as a single Main track with a timetable direction of North to South and extends from a timetable milepost of 0 to milepost 89. This track is considered as Non-Signaled DCS track with authority for movement controlled by the issuance of a NORAC Form D for authorized movement.

During the day of the accident, the Housatonic Rail Supervisor had received a FORM D Line 4 authority to take the track out of service on the Berkshire Line between Milepost 50 and Milepost 59 to conduct track work.

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## APPENDICES

### Appendix A - Applicable FRA Roadway Worker Protection Regulations

Included below are relevant portions of various FRA regulations from Title 49 CFR Part 214 that are related to this accident.<sup>251</sup> The definitions below are applicable throughout this report. The formatting has been modified for consistency and easier reading.

- 214.7 Definitions -
  - *Employee* means an individual who is engaged or compensated by a railroad or by a contractor to a railroad to perform any of the duties defined in this part.
  - *Employer* means a railroad, or a contractor to a railroad, that directly engages or compensates individuals to perform any of the duties defined in this part.
  - *Exclusive track occupancy* means a method of establishing working limits on controlled track in which movement authority of trains and other equipment is withheld by the train dispatcher or control operator...
  - *Fouling a track* means the placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within four feet of the field side of the near running rail.
  - *Controlled track* means track upon which the railroad's operating rules require that all movements of trains must be authorized by a train dispatcher or a control operator.
  - *On-track roadway maintenance machine* means a self-propelled, rail-mounted, non-highway, maintenance machine whose light weight is in excess of 7,500 pounds, and whose purpose is not for the inspection of railroad track.
  - *On-track safety* means a state of freedom from the danger of being struck by a moving railroad train or other railroad equipment, provided by operating and safety rules that govern track occupancy by personnel, trains and on-track equipment.
  - *On-track safety manual* means the entire set of on-track safety rules and instructions maintained together in one manual designed to prevent roadway workers from being struck by trains or other on-track equipment.

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<sup>251</sup> See [49 CFR Part 214 - Railroad Workplace Safety](#).

These instructions include operating rules and other procedures concerning on-track safety protection and on-track safety measures.

- *Qualified* means a status attained by an employee who has successfully completed any required training for, has demonstrated proficiency in, and has been authorized by the employer to perform the duties of a particular position or function.
- *Roadway maintenance machine* means a device powered by any means of energy other than hand power which is being used on or near railroad track for maintenance, repair, construction or inspection of track, bridges, roadway, signal, communications, or electric traction systems. Roadway maintenance machines may have road or rail wheels or may be stationary.
- *Roadway work group* means two or more roadway workers organized to work together on a common task.
- *Roadway worker* means any employee of a railroad, or of a contractor to a railroad, whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track or with the potential of fouling a track, and flagmen and watchmen/lookouts as defined in this section.
- *Roadway worker in charge* means a roadway worker who is qualified under § 214.353 to establish on-track safety for roadway work groups, and lone workers qualified under § 214.347 to establish on-track safety for themselves.
- *Working limits* means a segment of track with definite boundaries established in accordance with this part upon which trains and engines may move only as authorized by the roadway worker having control over that defined segment of track. Working limits may be established through "exclusive track occupancy," "inaccessible track," "foul time" or "train coordination" as defined herein.
- 214.303 Railroad on-track safety programs, generally.
  - (a) Each railroad subject to this part shall maintain and have in effect an on-track safety program which complies with the requirements of this subpart...
- 214.309 On-track safety manual
  - (a) The applicable on-track safety manual (as defined by § 214.7) shall be readily available to all roadway workers. Each roadway worker in charge responsible for the on-track safety of others, and each lone worker, shall be provided with and shall maintain a copy of the on-track safety manual.

- 214.311 Responsibility of employers.
  - (a) Each employer is responsible for the understanding and compliance by its employees with its rules and the requirements of this part.
- 214.313 Responsibility of individual roadway workers.
  - (a) Each roadway worker is responsible for following the on-track safety rules of the railroad upon which the roadway worker is located.
- 214.315 Supervision and communication.
  - (a) When an employer assigns a duty to a roadway worker that calls for that employee to foul a track, the employer shall provide the employee with an on-track safety job briefing that, at a minimum, includes the following:
    - (1) Information on the means by which on-track safety is to be provided for each track identified to be fouled;
    - (2) Instruction on each on-track safety procedure to be followed;
    - (3) Information about any adjacent tracks, on-track safety for such tracks, if required by this subpart or deemed necessary by the roadway worker in charge, and identification of any roadway maintenance machines that will foul such tracks;
    - (4) A discussion of the nature of the work to be performed and the characteristics of the work location to ensure compliance with this subpart; and
    - (5) Information on the accessibility of the roadway worker in charge and alternative procedures in the event the roadway worker in charge is no longer accessible to the members of the roadway work group.
  - (b) A job briefing for on-track safety shall be deemed complete only after the roadway worker(s) has acknowledged understanding of the on-track safety procedures and instructions presented.
  - (c) Every roadway work group whose duties require fouling a track shall have one roadway worker in charge designated by the employer to provide on-track safety for all members of the group. The designated person shall be qualified under the rules of the railroad that conducts train operations on those tracks to provide the protection necessary for on-track safety of each individual in the group. The responsible person may be designated generally, or specifically for a particular work situation.
  - (d) Before any member of a roadway work group fouls a track, the roadway worker in charge designated under paragraph (c) of this section shall inform each roadway worker of the on-track safety procedures to be used and followed during the performance of the work at that time and location.

Each roadway worker shall again be so informed at any time the on-track safety procedures change during the work period. Such information shall be given to all roadway workers affected before the change is effective, except in cases of emergency. Any roadway workers who, because of an emergency, cannot be notified in advance shall be immediately warned to leave the fouling space and shall not return to the fouling space until on-track safety is re-established.

- (e) ...
- 214.319 Working limits, generally.
  - Working limits established on controlled track shall conform to the provisions of § 214.321 Exclusive track occupancy, § 214.323 Foul time, or § 214.325 Train coordination...
  - (a) Working limits established under any procedure shall, in addition, conform to the following provisions:
    - (1) Only a roadway worker in charge who is qualified in accordance with § 214.353 shall establish or have control over working limits for the purpose of establishing on-track safety.
- 214.321 Exclusive track occupancy.
  - ... (d) Movements of trains and roadway maintenance machines within working limits established through exclusive track occupancy shall be made only under the direction of the roadway worker in charge of the working limits. Such movements shall be at restricted speed unless a higher authorized speed has been specifically authorized by the roadway worker in charge of the working limits.
- 214.355 On-track safety procedures for roadway work groups, general.
  - ... (b) No roadway worker who is a member of a roadway work group shall foul a track without having been informed by the roadway worker in charge of the roadway work group that on-track safety is provided.
- 214.341 Roadway maintenance machines.
  - (a) Each employer shall include in its on-track safety program specific provisions for the safety of roadway workers who operate or work near roadway maintenance machines. Those provisions shall address:
    - (1) Training and qualification of operators of roadway maintenance machines.
    - (2) Establishment and issuance of safety procedures both for general application and for specific types of machines.

- (3) Communication between machine operators and roadway workers assigned to work near or on roadway maintenance machines.
  - (4) Spacing between machines to prevent collisions.
  - (5) Space between machines and roadway workers to prevent personal injury.
  - (6) Maximum working and travel speeds for machines dependent upon weather, visibility, and stopping capabilities.
- 214.343 Training and qualification, general.
  - (a) No employer shall assign an employee to perform the duties of a roadway worker, and no employee shall accept such assignment, unless that employee has received training in the on-track safety procedures associated with the assignment to be performed, and that employee has demonstrated the ability to fulfill the responsibilities for on-track safety that are required of an individual roadway worker performing that assignment.
- 214.345 Training for all roadway workers.
  - (a) Recognition of railroad tracks and understanding of the space around them within which on-track safety is required.
  - (b) The functions and responsibilities of various persons involved with on-track safety procedures.
  - (c) Proper compliance with on-track safety instructions given by persons performing or responsible for on-track safety functions.
  - (d) ...
  - (e) The hazards associated with working on or near railroad tracks, including review of on-track safety rules and procedures.
  - (f) ...
- 214.353 Training and qualification of each roadway worker in charge.
  - (a) The training and qualification of each roadway worker in charge, or any other employee acting as a roadway worker in charge (e.g., a conductor or a brakeman), who provides for the on-track safety of roadway workers through establishment of working limits or the assignment and supervision of watchmen/lookouts or flagmen shall include, at a minimum:
    - (1) All the on-track safety training and qualification required of the roadway workers to be supervised and protected...
    - (2) The content and application of the operating rules of the railroad pertaining to the establishment of working limits.
    - (3) ...

- (4) The relevant physical characteristics of the territory of the railroad upon which the roadway worker is qualified.
    - (5) The procedures required to ensure that the roadway worker in charge of the on-track safety of group(s) of roadway workers remains immediately accessible and available to all roadway workers being protected under the working limits or other provisions of on-track safety established by the roadway worker in charge.
  - (b) Initial and periodic (as specified by § 243.201 of this chapter) qualification of a roadway worker in charge shall be evidenced by demonstrated proficiency.
- 214.355 Training and qualification of each roadway worker in on-track safety for operators of roadway maintenance machines.
  - (a) The training and qualification of roadway workers who operate roadway maintenance machines shall include, as a minimum:
    - (1) Procedures to prevent a person from being struck by the machine when the machine is in motion or operation.
    - (2) Procedures to prevent any part of the machine from being struck by a train or other equipment on another track.
    - (3) Procedures to provide for stopping the machine short of other machines or obstructions on the track.
    - (4) Methods to determine safe operating procedures for each machine that the operator is expected to operate.
  - (b) Initial and periodic (as specified by § 243.201 of this chapter) qualification of a roadway worker to operate roadway maintenance machines shall be evidenced by demonstrated proficiency.

## Appendix B - Applicable Housatonic Railroad On-Track Safety Rules

Included below are relevant portions of *Housatonic Railroad's Roadway Worker On-Track Safety Manual and Bridge Worker Safety Program* that was in effect at the time of the accident. The formatting has been modified for consistency and easier reading.

- 1.1.1 Program Objectives
  - Protect roadway workers from being struck by moving locomotives, cars and roadway maintenance machines.
  - Prevent accidents and casualties caused by collisions between roadway maintenance machines and moving locomotives, cars and/or other maintenance machines.
  - Ensure roadway workers have a safe working environment.
  - Prevent accidents and casualties caused by operation of on-track roadway maintenance machines and hi-rail vehicles.
- 1.2 Monitoring
  - A person qualified on Chapter One of this program and the railroads operating rules will conduct periodic monitoring, with a minimum of one observation annually per roadway worker, to ensure compliance. These observations will place emphasis on job briefings, protection provided (e.g., exclusive track occupancy, foul time, train coordination, inaccessible track, etc.) and unnecessary fouling.
- Training and Qualification - General
  - All roadway workers must be qualified on the current edition of the Operating Rules specific to their duties and On-track Safety Rules and Procedures.
  - Housatonic Railroad shall not assign an employee to perform the duties of a roadway worker and no employee shall accept an assignment, unless that employee has received training in the on-track safety procedures associated with the assignment to be performed, and that employee has demonstrated the ability to fulfill the responsibilities for on-track safety that are required of an individual roadway worker performing that assignment.
  - Roadway Worker training will include a written examination on the railroad operating rules specific to their duties and the On-Track Safety Rules. Employees must score a minimum of 85% on the written test to be considered roadway worker qualified...
- 1.3.2 Training and Qualifications of an RWIC



- The training and qualification of each RWIC who provides on-track safety of roadway workers through establishment of working limits or the assignment and supervision of flagmen or watchmen/lookouts shall include:
  - All the on-track safety training and qualification required of the roadway workers to be supervised and protected, including the procedures governing good faith challenges.
  - The content and application of the operating rules of the railroad pertaining to the establishment of working limits.
  - ...
  - The relevant physical characteristics of the territory of the railroad upon which the roadway worker is qualified.
  - The procedures required to ensure that the RWIC of the on-track safety group(s) of roadway workers remains immediately accessible and available to all roadway workers being protected under the working limits or other provisions of on-track safety established by the roadway worker in charge.
  - Initial and periodic qualification of a RWIC shall be evidenced by demonstrated proficiency.
- 1.3.8 Training and Qualifications of Roadway Maintenance Machine (RMM) Operator
  - 1.3.8.1 General Training Requirements

No employee may operate a RRM without first:

- Having been trained in accordance with the rules,
- Having been informed of the safety procedures applicable to persons working near the machine and
- Acknowledging full understanding of those safety procedures.

- 1.3.8.2 RMM Specific Training and Qualification Requirements

Training and qualification of operators of RMMs:

- An employee will not be considered qualified to operate a RMM without having been trained to be competent in the operation of that RMM. This training may be accomplished on the job through peer instruction or through a combination of classroom training and peer training.
- Operators must have demonstrated proficiency on any RMM that the operator is qualified.
- Operators will be trained in the following:

- Procedures to prevent fellow employees from being struck by the operating RMM,
  - Procedures to prevent any part of the RMM being operated from being struck by a train or equipment on another track,
  - Procedures to prevent one RMM from running into another RMM or other track obstruction,
  - Methods to determine the safe operating procedure for each RMM to be operated (i.e., ensuring the operator's manual is available to the operator).
  - Initial and periodic qualification of an operator of a RMM shall be evidenced by demonstrated proficiency.
- 1.4 Job Briefings
    - A job briefing must be conducted prior to any roadway worker fouling any track. A job briefing is complete only when each roadway worker acknowledges understanding of the on-track safety procedures and instructions.
    - 1.4.1 Job for Roadway Work Group
      - The RWIC must conduct a job briefing that includes all information related to on-track safety. This Job Briefing is given to every roadway worker who will foul the track. If the RWIC cannot provide a briefing to all roadway workers in advance of a change to on-track safety, all roadway workers must immediately leave the foul of the track. In addition to other safety issues, the minimum on-track safety information must include:

NOTE: When a RWIC uses multiple flagmen he/she must determine who will cover what area of the RWIC's working limits.

- Designated RWIC and information on the accessibility of the RWIC with alternative procedures in the event the RWIC is no longer accessible to the members of the roadway work group.
- Type of on-track safety provided.
- Track and time limits of track authority.
- Track(s) that may be fouled.
- Nature and characteristics of the work to be performed, to determine if adjacent track protection is necessary.
- Information about any adjacent tracks, on-track safety on adjacent tracks, if required or deemed necessary by the RWIC,

and identification of any roadway maintenance machines that will foul such tracks.

- Procedure to arrange for on-track safety on other tracks, if necessary.
- Method of warning when on-track safety is provided by a Watchman/Lookout.
- Designated place of safety where workers clear trains.
- Designated work zones around machines.
- Safe working/traveling distances between machines.

The RWIC must give a follow-up job briefing whenever:

- Working conditions or procedures change,
- Other workers enter the working limits,
- On-Track Safety is changed or extended or
- The main track has been cleared and on-track safety or track authority is to be released.

- 1.5 On-Track Safety Procedures

On-Track Safety can be provided for roadway workers by the following methods:

- Exclusive Track Occupancy
- Track Removed from Service (NORAC Rule 133)
- Foul Time (NORAC Rule 140)
- Inaccessible Track (NORAC Rule 141)
- Individual Train Detection (ITD)
- Train Approach Warning (TAW)
- Train Coordination (NORAC Rule 142)
- NOTE: Employee(s) should Immediately attempt to contact the railroad dispatcher to obtain an authority in the event of an emergency, if possible.

The RWIC of the roadway work group, or the Lone Worker, determines the type of on-track safety to be used. Only one RWIC shall have control over working limits on any one segment of track. The authority must be issued by the dispatcher and must be written, oral, or on a data transmission and must be on the proper form. The authority must be given to a qualified RWIC and must list his title and full last name on the authority (First initials may be required for RWIC's with same last name). When authorities are transmitted the authority must be written and repeated by the RWIC before

effective. The RWIC must maintain possession of the form of the authority while the authority is in effect. The type of on-track safety must comply with these provisions, as well as:

- Railroad Operating Rules.
- Timetable.
- MOW Rules.
- General Orders.
- Special Instructions.

If the track is to be fouled with equipment or the track made unsafe for the passage of trains, working limits must be established. If work is in tunnels or on bridges that cannot be cleared within the time provided by the available sight distance, working limits must be established...

- 1.5.1.1 Track Removed from Service (NORAC Rule 133)

Removing a Track from Service

- Whenever Form D line 4 or line 13 is issued to remove a track from service, the following procedures will apply:
  - A. ...
  - D. Operation Within Out-of-Service Limits

The employee named in Form D line 4 or line 13 is in charge of the out-of-service limits. DCS do not apply within the out-of-service limits.

All movements must operate at Restricted Speed. Interlocked switches, derails, movable point frogs and movable bridges within the out-of-service limits must not be operated without permission of the employee in charge...

- 1.6.3 Maintenance Machine Horn Signals

All RMM operators will use the following horn signals while operating any machine equipped with a horn. RMM's will use the signals illustrated by "o" for short sounds and "-" for long sounds.

"o o" to signal forward movement

"o o o" to signal reverse movement

" - o - o " signal for when operating over grade crossing

" - o " signal for when passing other RMM or RWs

“succession of sounds” to alert others of emergency

- 1.7 Operating and Working Near Roadway Maintenance Machines (RRM)
  - 1.7.1 RMM Operator Training and Qualifications
    - 1.7.1.1 General Training Requirements

No employee may operate a RMM without first:

- Having been trained in accordance with the Rules,
  - Having been informed of the safety procedures applicable to persons working near the machine, and
  - Acknowledging full understanding of those safety procedures.
- 1.7.1.3 Qualifications
    - An employee will not be considered qualified to operate on-track equipment without having been trained to be competent in the operation of that RMM. This training may be accomplished on-the-job through peer instruction or through a combination of classroom training and peer training.
    - Competency must be established prior to operating an RMM. New or relief operators, who have not within the past year operated the RMM to which they will be assigned, must be deemed competent by the proper authority. When approved to begin operation, such operators will be observed by the designated manager for a period extensive enough to determine the operator’s competency level.
- 1.7.2 Working with RMMs
    - When working with RMMs spacing guidelines must be followed to prevent contact between machines and prevent machines from contacting roadway workers. When work or travel conditions dictate the machine spacing must be less than the guidelines require the operators and the RWIC must have a thorough understanding of the specific task, the conditions under which the task is to be done and how the task is to proceed. In addition, the operator of a RMM approaching workers who are foul of the track must communicate with the workers before getting closer than 15 feet to them.
    - Before a reverse move of more than 15 feet is made, the operator must ascertain that a backup alarm is activated and/or the appropriate horn or signal is provided. In addition, the operator must

observe that the track is clear of men and RMMS before the reverse movement is made...

- Definitions (selected definitions)
  - Employee
    - An individual who is engaged or compensated by a railroad or by a contractor to perform any of the duties defined in this part.
  - On-track Safety
    - A state of freedom from the danger of being struck by a moving railroad train or other railroad equipment, provided by operating and safety rules that govern track occupancy by personnel, trains and on-track equipment.
  - Roadway Maintenance Machine
    - A maintenance machine used on or near the track for maintenance, repair, construction or inspection of track, bridges, roadway, signal and communications systems. Roadway Maintenance Machines may be on-track, off-track or both. The maintenance machines include hi-rails, motor cars, Roadway Maintenance Machines, work equipment and other forms of track cars.
  - Roadway Worker in Charge (RWIC)
    - A roadway worker who is qualified under § 214.353 to establish on-track safety for roadway work groups, and lone workers qualified under § 214.347 to establish on-track safety for themselves.

## Appendix C - Housatonic Railroad Operating Rules

Included below are relevant portions of *Housatonic Railroad's Operating Rules, NORAC 11<sup>th</sup> Edition*, that were in effect at the time of the accident. The formatting has been modified for consistency and easier reading.

- NORAC Rule 133, Paragraph D - Operation Within Out-of-Service Limits
  - The employee named in Form D line 4 or line 13 is in charge of the out-of-service limits. ABS, CSS, DCS, and Interlocking rules do not apply within the out-of-service limits. All movements must operate at Restricted Speed. Interlocked switches, derails, movable point frogs and movable bridges within the out-of-service limits must not be operated without permission of the employee in charge.
- NORAC Rule 133, Paragraph E - Additional Equipment Entering Out-of-Service Limits
  - 1. Additional equipment may enter the out-of-service limits after:
    - a. The person in charge of the additional equipment has received permission from the employee in charge of the out-of-service limits. The employee in charge of the out-of-service limits must show or read his copy of the Form D line 4 or line 13 to the person in charge of the additional equipment unless the limits are published by Bulletin Order.
  - 2. The employee in charge of the out-of-service limits must make a written record, which includes:
    - a. The name of the person in charge of the additional equipment, or train identification.
    - b. Time permission to enter is given.
    - c. Time determined the additional equipment is clear of limits.
- NORAC Rule 80 - Movement at Restricted Speed
  - Movements made at Restricted Speed must comply with the following requirements:
    - A. Controlling The Movement

The movement must be controlled to permit stopping within one half the range of vision short of:

      - Other train or railroad equipment occupying or fouling the track,
      - Obstructions on or fouling the track,
      - Switches not properly lined for movement,
      - Derails set in the derailing position,

- Employees working in the foul of the track,
- The end of track,
- Any signal requiring a stop.



## Appendix D - Photographs



**Figure 5:** Photograph of Driller MS0097 from the rear. (Provided by FRA).



**Figure 6:** Photograph of the leaf blower used by Employee 1 at the time of the accident. (Provided by FRA).





**Figure 7:** Photograph of the accident location, looking south from near the point of impact. (Provided by FRA).



**Figure 8:** Photograph of the Lagger while being examined by investigators.



**Figure 9:** Photograph of typical view in mirror from the operator's seat of the Driller. (Provided by FRA).





**Figure 10:** Photograph of the switch at Lanes taken August 6, 2024. (Provided by FRA).

## **SUBMISSION NOTE**

Submitted by:

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NTSB Railroad Accident Investigator