NATIONAL TRANSPORTATION SAFETY BOARD

Office of Railroad, Pipeline and Hazardous Materials Investigations
Washington, DC

TRACK & ENGINEERING GROUP FACTUAL REPORT

Accident

NTSB Accident Number:	DCA17FR009
Date of Accident:	June 10, 2017
Time of Accident:	10:12 a.m. (EDT)
Railroad Owner:	Long Island Rail Road
Train Operator:	Long Island Rail Road
Revenue Passenger Train:	7623
Maintenance of Way Crew:	5 Roadway Workers
Fatalities:	1
Injuries:	0
Location of Accident:	Queens Village, New York

Synopsis

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

Activities Preceding the Accident

In support of increased track usage associated with the Belmont Stakes, roadway workers from the affected territories on the Long Island Rail Road (LIRR) were notified of an extra work opportunity for Saturday, June 10, 2017. The subject maintenance of way (MOW) work group consisted of three members of a welding crew and two members of a boom truck crew. An additional group of 12 MOW workers also worked on this assignment in conjunction with the subject group. The extra work shift was offered as stand by work; this allowed for workers to respond quickly in case there was an issue with the track infrastructure. The five members reported for work at Queens Freight yard at about 7:00 a.m. on June 10th. Queens Freight yard is located near Queens Interlocking. The additional 12 members reported for work at the Queens Section headquarters, located adjacent to Queens Interlocking.

At about 9:00 a.m. the foreman received instruction from the Assistant Supervisor of Track that the crew needed to conduct a walking inspection of the main tracks within Queens Interlocking on the LIRR Main Line Branch. The instruction was to focus on insulated rail joints in the interlocking. The foreman discussed the work with the crew and conducted a job briefing. The method of on-track safety discussed in the job briefing was described as watchman, referring to Train Approach Warning. Following the job briefing, some members of the work group collected hand tools and material to be used in minor

correction of track conditions that might be identified. At about 9:15 a.m. the work group began walking in an east direction toward Queens Interlocking from Queens Freight. The crew traversed the south passenger platform at Queens Village Station and went to track level at the east end. At about 9:25 a.m. the crew began walking and inspecting main tracks 4 and 2. They continued walking east in the interlocking until they met with additional workers near Signal Bridge No. 2 that were conducting the same type of work.

After a brief period of the two crews working in conjunction, the subject work crew turned and proceeded to walk and inspect main tracks 1 and 3 as they walked west toward the Queens Village station. As they walked an eastbound train passed on main track 4. As the rear of the eastbound passed the work group, train 7623 approached on main track 3 traveling westbound at approximately 78 miles per hour. As the train approached the work crew, the watchman reportedly gave audible warning using an airhorn and displayed a disc. The foreman and three maintenance of way employees were occupying main line track 1, one employee was clear of the tracks, keeping pace with the work group. Three maintenance employees remained in track 1, but the foreman stepped into the path of the train. At about 10:12 am the lead unit struck the foreman of the work group. The accident occurred at milepost (MP) 13.3 on the LIRR Main Line. Emergency responders were notified.

The striking train, 7623 was operating on tangent track through Queens Interlocking. Of the four surviving work crew members that were interviewed; all recalled seeing the train, two members recalled the train being very close to their location when they became aware of it. The work crew members had varying accounts of the number of

trains that passed them prior to the accident. All workers interviewed said that they typically clear the tracks completely to the field side of the right of way. They further stated that at times they felt it was safer for them to remain in the live track as a train passed on the adjacent track.

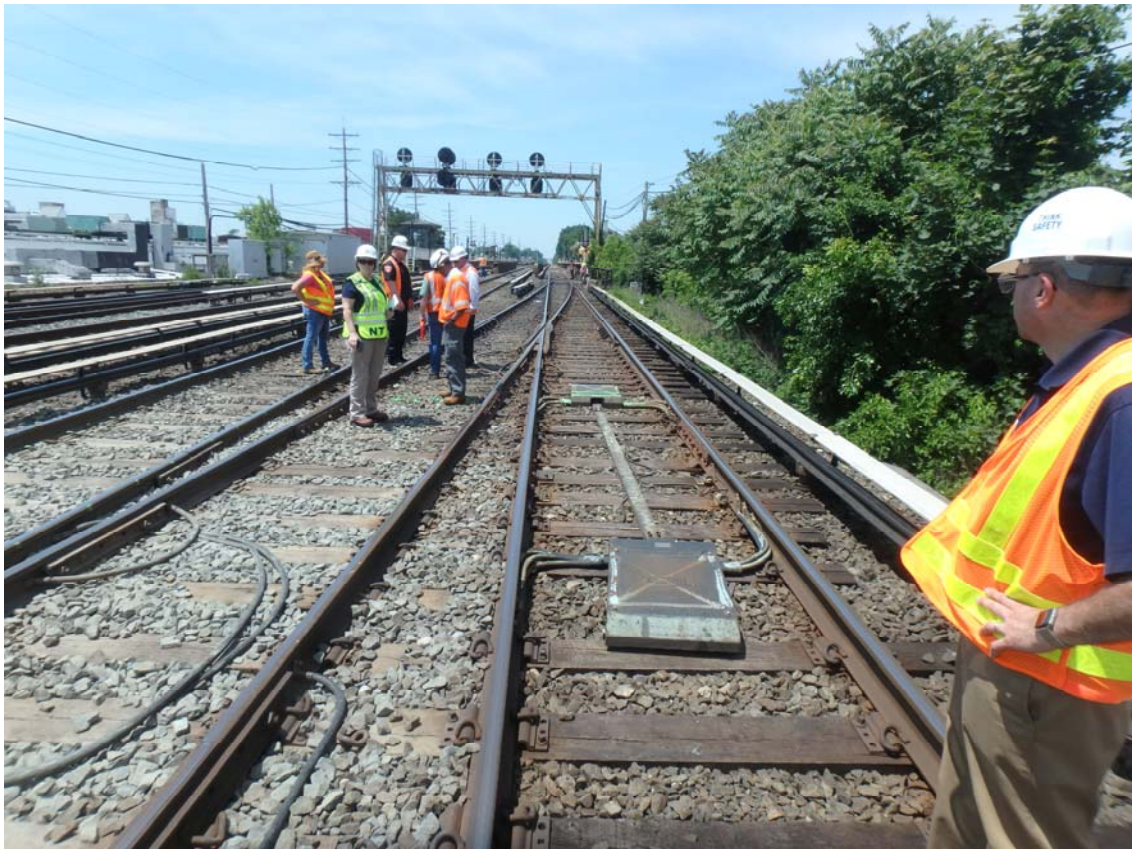

Figure 1. Photo showing NTSB investigator standing across from the approximate point of impact (MP13.3). Photo taken facing west toward Queens Village station. main track 3 is to the right of photo.

Figure 2. Photo showing accident location taken facing east toward direction of accident train approach.

Subdivision 2 Personnel

Queens Section	**Welding Crew**	**Boom Truck**
Assistant Supervisor of Track-1	Foreman-1	Maintenance Worker Utility-1
Foreman-1	Maintenance Worker Utility-1	Track Worker-1
Maintenance Worker Utility-1	Machine Operator- 1	
Machine Operator-1	Welder-1	
Track Worker-6	Track Worker-1	
Total-10	**Total-5**	**Total-2**

LIRR Roadway Worker Protection Requirements

LIRR engineering department employees are governed by the LIRR Roadway Worker Protection Program On-Track Safety Manual. This manual defines Roadway Worker Protection as follows: a state of freedom from the danger of being struck by a moving train or other railroad equipment. RWP is required by Code of Federal Regulations, Long Island Rail Road (LIRR) Operations Manual, and LIRR Corporate Safety Rules for Employees that govern track occupancy by employees, trains, and on-track equipment.

The following methods of on-track safety are available to roadway workers:

- Placing Track Out of Service
- Local Control (Signal Department Only)
- Foul Time
- Inaccessible Track (Non-Controlled Track Only)
- Train Approach Warning
- Individual Train Detection (Lone Worker)

The subject roadway work group, working on controlled tracks inside the interlocking, chose to use Train Approach Warning as their method of on-track safety.[1]

1 LIRR defines Controlled Track as- A location where signals and/or other functions of a traffic control system are controlled from the control machine

Train Approach Warning

Lookouts must adhere to the following:

Watchman/lookout - An employee who has been annually trained and qualified to provide warning to roadway workers of approaching trains or on track equipment. Watchmen/lookouts shall be properly equipped to provide visual and auditory warning such as whistle, air horn, white disk, red flag, lantern, or fusee. A watchman/lookout's sole duty is to look out for approaching trains/on-track equipment and provide at least fifteen seconds advanced warning to employees before arrival of trains/on-track equipment (change effective April 01, 2017).

Train Approach Warning (Watchmen/Lookout)

Watchman/Lookout provides RWP by warning roadway workers of approaching trains or on track equipment so that roadway workers can be in a position of safety after clearing the track. Roadway workers must be clear of the track(s) at least 15 seconds before the trains reach the work site.

A Watchman provides RWP for two or more workers. A Lookout provides RWP for one other worker.

NOTE: Watchmen/Lookout must also be able to clear on the approach of trains or equipment.

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in

accordance with the following provisions:

a. Train approach warning shall be given in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum authorized speed on that track can pass the location of the roadway worker.

b. Watchmen/lookouts assigned to provide train approach warning shall devote full attention to detecting the approach of trains and communicating a warning thereof. They shall not be assigned any other duties while functioning as watchmen/lookouts.

c. The means used by a watchman/lookout to communicate a train approach warning shall be distinctive and shall clearly signify to all recipients of the warning that a train or other on-track equipment is approaching.

d. Every roadway worker who depends upon train approach warning for on-track safety shall maintain a position that will enable him or her to receive a train approach warning communicated by a watchman/lookout at any time while on-track safety is provided by train approach warning.

e. Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.

f. Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained and qualified to do so.

g. Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties which the watchman/lookout will perform.

h. When an Advance Watchman signals the watchman/lookout of the approach of a train, or signals that a train is clear, the watchman/lookout must repeat the signal to the Advance Watchman and then signal the gang.

Signal roadway workers of an approaching train as follows:

a. Sound a warning whistle or horn.

b. Hold the Watchman's Disc at arm's length above your head.

c. Hold the Watchman's Disc horizontally at arm's length toward the place designated in the job briefing where roadway workers are to go to clear the tracks.

d. Hold Watchman's Disc at arm's length above head to signal train to blow rule 14 L.

Signal roadway workers that it is safe to resume work as follows:

a. Hold the Watchman's Disc horizontally at arm's length toward the work site.

Give full attention to detecting the approach of trains and warning roadway workers to clear the tracks. Do not perform any other duties, even momentarily.

Foul Time

LIRR defines foul time as follows: A method of establishing working limits on a main track, secondary track or siding in which a roadway worker is notified by the Train Dispatcher through the Block Operator that no trains will operate within the working limits established on that track until the roadway worker reports clear of that track.

Placing a Track Out of Service

LIRR defines Placing a Track Out of Service as follows: A Form L, General Notice or Form D will be issued when necessary to establish working limits by removing a track from service between interlockings, block stations, block-limit stations or any combination thereof unless otherwise specified.[2] In the accident location, LIRR operating rules require the use of a Form L to establish working limits.

2 Form L and Form D are a movement permit that can be used to grant exclusive track occupancy on controlled tracks.

FRA Roadway Worker Protection Requirements

Train Approach Warning

49 CFR214.7: Definitions

Watchman/lookout means an employee who has been annually trained and qualified to provide warning to roadway workers of approaching trains or on-track equipment. Watchmen/lookouts shall be properly equipped to provide visual and auditory warning such as whistle, air horn, white disk, red flag, lantern, fusee. A watchman/lookout's sole duty is to look out for approaching trains/on-track equipment and provide at least fifteen seconds advanced warning to employees before arrival of trains/on-track equipment. The track group was not able to identify the watchman /lookout "kit" utilized by the subject watchman.

49CFR214.329 Train approach warning provided by watchmen/lookouts. Amendment and published on June 10, 2016.

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in accordance with the following provisions:

(a) Train approach warning shall be given in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum authorized speed on that track can

pass the location of the roadway worker. The place of safety to be occupied upon the approach of a train may not be on a track, unless working limits are established on that track.

(b) Watchmen/lookouts assigned to provide train approach warning shall devote full attention to detecting the approach of trains and communicating a warning thereof, and shall not be assigned any other duties while functioning as watchmen/lookouts.

(c) The means used by a watchman/lookout to communicate a train approach warning shall be distinctive and shall clearly signify to all recipients of the warning that a train or other on-track equipment is approaching.

(d) Every roadway worker who depends upon train approach warning for on-track safety shall maintain a position that will enable him or her to receive a train approach warning communicated by a watchman/lookout at any time while on-track safety is provided by train approach warning.

(e) Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.

(f) Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained, qualified and designated in writing by the employer to do so in accordance with the provisions of §214.349.

(g) Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties which the watchman/lookout will perform.

LIRR Response to the Accident

In response to the accident, on Monday June 12, 2017, LIRR conducted a Safety Stand-Down with engineering department employees. The following instructions were given:

Prior to resuming normal work activities today, a thorough review of applicable Roadway Worker Protection rules is required for all Engineering employees (see attachment). Key points to be stressed include:

- Do not foul a live track without proper protection.
- Establish a Predetermined Place of Safety (PPOS) during the required job briefing.
- Everyone must be able to clear at least 15 seconds prior to the arrival of a train or other on-track equipment at their location.
- A PPOS cannot be in a track unless working limits (main track out of service, foul time, inaccessible track) are established.

A Red Alert containing this information was distributed to employees.

Track Description

The LIRR branch called Main Line is oriented geographically and by timetable in an East-West direction. It begins at Milepost (MP) 0.0 in Long Island City and continues east to MP 94.5 in Greenport, NY. Track Subdivision No. 2 begins at MP 8.2 and ends at MP 15.8. This subdivision is four main track territory between MP 8.2 and MP 14.3. Queens Interlocking is located within this section, with limits between MP 13.3 and MP 14.3.

Queens Interlocking consists of four main tracks which are designated from north to south as Main Line track 3, track 1, track 2, track 4. Located inside of this interlocking are yard tracks leading into Belmont Yard. The Belmont access tracks from track 4 are referred to as the "West Leg of the Wye" and the "East Leg of Wye".

Movements on tracks 1-4 through Queens Interlocking operate with a Maximum Authorized Speed (MAS) of 80 MPH. These speeds require the LIRR to maintain the track to Class 4 of the Federal Railroad Administration (FRA) Track Safety Standards (TSS).

The track through the accident area consists of steel Continuous Welded Rail (CWR) secured to Pandrol plates with elastic fasteners.[3] The tie plates are in turn fastened to treated wooden ties with lags and cut spikes. The CWR is comprised of 136 RE profile rail section. LIRR uses over-running electrified contact rail (third rail) power to provide

3 Pandrol is a manufacturer of elastic rail fastening systems.

electrical current to power some of their trains. This third rail is located parallel to the running rail at a distance of 26 ¼ inches from the field side of running rail. It is about 12 inches above the top horizontal plane of ties, protected by a fiberglass board that is placed above and parallel to the third rail approximately 16 inches above the top horizontal plane of the ties. Track gradient was 0.5 percent ascending from MP 13.9 to the point of impact at MP 13.3.

At the point of impact is a number 15 crossover comprised of 115 RE and 119 RE rail. The turnout at the accident location on Track No. 3 is designated the 131W switch of Queens Interlocking.

Investigators took no exception to the condition of the track in the accident area.

Post-Accident Signal System Examination and Testing

Queens interlocking is an automatically controlled interlocking in Queens Village, New York. Investigators conducted a post-accident examination of the signal system and found the signal equipment and appurtenances in Queens 1, locked and secured with no signs of tampering or vandalism. All the track circuits in the route were verified and there were no exceptions. The proper route was lined and verified. The signal aspects for the intended route were properly displayed. The trailing point switch in the route of the train was inspected, and no exceptions were taken to the switch. No exceptions were taken to the signal system in relation to the movement of the accident train.

Sight Distance Observation

On September 16, 2017, members of the investigative team met at the LIRR Jamaica Station to conduct a sight distance observation. This observation was conducted to assess the amount of sight distance that the subject roadway work group and the operator of the accident train had on the day of the accident. At about 9:00 the group discussed the sight distance observation protocol and LIRR representatives conducted an on-track safety briefing.

As described in the written protocol, the team was divided into two smaller teams; a ground team and a train team. LIRR representatives provided on-track safety in the form of foul time on track 1 for the ground team.

After each team was in place, the test train departed, traveling eastward from the point of impact (POI) MP 13.3. The test train engineer determined when the work group was no longer visible, and the GPS position was noted. The test train continued to move east, away from the ground team; when the ground team lost visibility of the train, this GPS location was noted. The ground team also made observations of the train horn. When the required information was recorded for the eastbound movement, the test train returned to the POI and the team made the same observation as the train traveled westbound. The investigative team observed the following sight distances:

Sight Distance Description	Distance for Train Approaching from East	Distance for Train Approaching from the West
Test Engineer Sees Ground Team	4490 Feet	4020 Feet
Ground Team Sees Test Train	8020 Feet	7680 Feet
Ground Team Hears Test Train Horn	2990 Feet	Not Observed

Investigators determined that the roadway work group could have cleared all tracks to the north right of way in under 15 seconds. Federal Regulations and LIRR rules require roadway workers clear the track 15 seconds before a train arrives at the work location when using TAW. Based on this information, the minimum required sight distance for this location with maximum authorized train speeds of 80 MPH is 5280 feet.

LIRR RWP Training for Subject Work Group

All the employees in the subject work group had completed the required annual Roadway Worker Protection training. The Foreman had also completed Roadway Worker in Charge Training.

Subject Work Group	**Roadway Worker Protection Training Date**
Welding Crew Foreman	05/15/2017 *Roadway Worker in Charge 09/13/2016
Welding Crew Maintenance Worker Utility (Driver)	03/02/2017
Welding Crew Track Worker (Watchman)	05/05/2017
Boom Truck Maintenance Worker Utility (Driver)	01/18/ 2017
Boom Truck Track Worker	03/02/2017

LIRR Operational Testing Summary

LIRR's operational testing is done under a program named Situational Awareness for Efficient Railroading (SAFER). The SAFER program establishes the guidelines and directions for LIRR managers conducting operational testing. In the SAFER manual for Engineering Department employees it states-- The Code of Federal Regulations mandates each railroad conduct operational tests and inspections to determine the extent of compliance by its employees with its operating rules and instructions. Our SAFER program is designed to prevent train accidents/ incidents and personal injuries by improving employee operating and safety habits. In addition to the requirements

mandated by the FRA, we have enhanced our system to include Maintenance of Way (MofW) employees not previously covered under the SAFER program. This program can also be used as a tool in evaluating promotional and probationary employees.

Supervisors whose routine duties afford them the opportunity to observe the performance of employees must take corrective action in the form of personal instruction upon noting an instance of non-compliance. Supervisors must take disciplinary action when a violation is a repetitive action on the part of the employee. This policy contains a description of MofW tests, which may be made under this program and assigns a special code number to each test.

Investigators reviewed SAFER testing records for the LIRR Track Department from June 2016 through June 2017. Data provided indicated that 3666 total observation were made. Managers reported 22 cases of non-compliance; of the non-compliance noted 4 were RWP related. Investigators further learned that of the 4 cases of RWP non-compliance noted, no areas of non-compliance were reported with four critical rules regarding proper use of TAW. The rules that were looked at were:

- RWP25- Timely warning of approaching trains is provided
- RWP28- Roadway workers properly clear to predetermined place of safety
- RWP29- Predetermined place of safety is unobstructed
- RWP30- Work stops after warning and tracks are cleared 15 seconds before train arrives in work location

Regulatory Inspection History

FRA inspection records from January 2017 up to the day of the accident were reviewed. Investigators learned that an FRA inspector had made twenty RWP observations of LIRR engineering department employees. In addition, the inspector made six observations of LIRR RWP rules. No exceptions were documented during these observations.

LIRR Employee Interviews

Welding Crew Track Worker (Watchman)

The Watchman began employment with the LIRR in 2000. He was familiar with Queens Interlocking. He had worked as a Track Worker and normally acts as the Watchman when Train Approach Warning (TAW) on-track safety is utilized. He recalled reporting to Queens Freight at about 8:00 a.m., and that the Foreman received a call informing him to have the work group walk the Queens Interlocking at about 8:30 a.m. He said that the work group started walking east, meet up with another work group, and then turned and began walking west. The Watchman did not recall the numbers of trains that passed prior to the accident.

The Watchman stated that he saw the accident train approaching when it was at Bellerose Station. He said that he blew the horn twice and "told my guys, I got a westbound on the outside". He stated, "we stayed in track one because we knew it was coming on

three". The Watchman recalled that he was positioned the furthest away from the Foreman. He said he saw the train's lights and gave warning to the work group. He could not recall how the Foreman acknowledged the warning. When asked about the details of the Queens Interlocking, he said that he thought the train speed was "like 70 miles per hour"; he could not give a number for the required sight distance for trains speeds in the interlocking.

Boom Truck Crew Track Worker

This Track Worker began employment with the LIRR in 2004. He was familiar with Queens Interlocking. He has worked as a Track Worker, Machine Operator, and was assigned to the Boom Truck at the time of the interview. This Track Worker said that the job briefing covered the safety rule of the day and the job that they were going to perform. He had a track wrench to tighten bolts during the inspection of the interlocking. He said that his work group met with the Track Supervisor (identified to be the Assistant Track Supervisor) in the interlocking and was told to switch (from track two and four) to one and three.

The work group that he was with were all in Track 1 walking back toward Queens Village Station. As the group was walking in Track 1, he recalled two trains passing. He stated that the Boom Truck Driver was outside of the tracks to the south. As an eastbound train passed, the work group stayed in Track 1. A westbound train (accident train) approached on Track 3. He recalled the Watchman blew his horn and the group acknowledged. He stated that the Foreman was ahead of other in the group and that he

leaned into Track 3. He said "sometimes we have trains coming, double headers, both directions, which it would be safer to actually stay in the track you're in. And it's really, we're following the watchman's order at that point, and it's known by the Foreman, we will follow, we'll clear whichever is safest, shortest". He went on to say, "there were a lot of trains and, fortunately, we did not have to clear a lot of times" and "there was a lot of train movement, but not on our track".

The Track Worker recalled that no one in the work group had requested foul time (working limits) that day. When asked how often they don't use working limits in the tracks he said, "we always, usually do working—we always have working limits when we're doing work in the track (examples were given) but when walking track, no."

Boom Truck Crew Maintenance of Way-Utility (Driver)

The Boom Truck Driver began employment with the LIRR in 2006. He was familiar with Queens Interlocking. He has spent most of his time with the railroad as a driver, but also is a qualified machine operator. This Driver said that the job briefing was held at about 9:00 or 9:15; he signed the job briefing card. He remembered the form of on-track safety as watchman protection and said there was no request for foul time. He was carrying a bucket that contained track material that the work group may have needed during the inspection. At the time of the accident, this employee was clear in the right of way, to the south side of the tracks. He recalled that after the accident he attempted to use his cell phone to call for help and was unable to. He stated that the Watchman called the Supervisor.

The Driver stated that there were a lot of trains because of Belmont. He recalled about nine trains passing the work group as they walked. He stated that the work group remained in another track for one or two of the other trains that passed them. When asked about railroad training regarding clearing tracks when using TAW, the employee said, "you're supposed to clear all the way out". The Driver was asked if he remembered the warning from the watchman; he said "I heard it, yeah. I mean I heard him yell out and I heard him honk the horn". He recalled hearing a horn from the accident train as well. Investigators asked about how long it was after he heard those things before the accident occurred; he answered, "oh I don't know, 10, 15 seconds, around there".

Welding Crew Maintenance of Way-Utility (Driver)

The Welding Truck Driver began employment with the LIRR in 2008. He was familiar with Queens Interlocking. He has spent most of his time with the railroad as a trackman, and normally was assigned to a Grapple truck. On the day of the accident he was working as the driver of the welding truck. This Driver said that the job briefing was held at about 9:30. After the briefing, he went to get some tools for the job and the Foreman put his name on the job briefing card. When asked if during the job briefing any other form of on-track safety protection was discussed, he said "no, he said watchman". He stated that the work group did not use foul time that day.

This Driver was carrying a sledge hammer to be used to knock on rail clips or drive down spikes. At the time of the accident, he thought that the Foreman was about 25 feet in

front of him. He recalled that an eastbound train had passed their location about two or three minutes before the accident. He remembered that as the accident train approached the Watchman said – westbound, outside. When asked if he noticed the accident train before he got the warning, he said no. This Driver thought that the train was in the interlocking when warning was given. Investigators asked about staying in a track, if a track can be determined to be a place of safety; the interviewee stated, "probably need to clear on the north side". Investigators asked, "clear out of the tracks?" he said yes.

Subdivision 2 Assistant Supervisor of Track

The Assistant Supervisor of Track (AST) began employment with the LIRR in 2004. He was familiar with Queens Interlocking. He worked as a track worker, track foreman and had been the AST for about 6 years. The AST worked the night before the accident removing fouled ballast and replacing crossties in the track structure; the Foreman who was struck also worked this night. At about 9:00 a.m., he received all call with instructions to uncover stops signs in the Belmont Yard. Shortly after 9:00 a.m., he received a text from the Supervisor of Track with instruction to inspect the Queens Interlocking. After receiving the text, he relayed the message to the Foreman at Queens Freight. He also informed the Queens Freight work group to walk tracks two and four down to Belmont. He said that he then participated in a job briefing with his work group comprised of about eight workers.

At about 9:20 or 9:30, his work group had completed the work with the stop signs. His work group and the Queens Freight work group met near Bridge No. 2 in the

interlocking. At this location the workers used a rail saw to crosscut a joint, then both work groups started walking west. When both work groups got to 222nd Street, the work groups split up. The subject work group continued inspecting as they walked back west, towards Queens Freight. He recalled that about five minutes after the work groups split up, he received a phone call from the Watchman informing him of the accident. He then went to the location to try and help; he was told by the Watchman there was nothing he could do to help the Foreman. He then called and reported the accident at about 10:15 a.m.

The AST discussed the process of crosscutting a joint. He described a gasoline powered rail saw being used to shave the metal over flow from the rails ends at insulated joints. He remembered previous trains that passed the workers sounding the train horns as they approached. Investigators asked about clearing the tracks on the approach of trains and he answered as follows:

"It's usually, you're only clearing on an interior track when you're on an interior track. If I'm on an exterior track, I will not clear onto an interior track. I'd just obviously clear out. So, typically if you're -- if I'm on Main Line 2, for example, and I see a train on 4, you might not want to cross front of that train to clear. So, you might get stuck clearing into Main Line 1. You just -- you know, it's not typical, but you might have to do that sometimes. You want to be realistic, you know."

The AST was asked about visibility and sight distance on the day of the accident and he said "The flagman blows well in advance because you could see – it was a very clear day. He could see far down, miles down the track, and that wasn't an issue that

morning. The AST told investigators that the type of work being conducted that day—routine inspection, minor correction—is typically done using watchman protection. This interview was conducted on June 13th, after the LIRR had a safety stand down to heighten awareness of aspects of TAW on-track safety. The AST was asked "to your knowledge, anything changed with that --not common circumstance, but where you guys would have to just stay in one of the inside tracks? Has anything changed since the accident as far as you know right now?" He replied, "Not that I know -- like I said, I completely haven't been in the loop."

At the end of the interview the AST was asked if he had any potential safety improvements that he would like to discuss with the investigation team. He said "Track time basically. We'd love to get as much track time as we can so, you know, guys aren't rushing to try to get a job done." He continued "And I'm not saying they don't work with us. But it's just -- that's the way it is. There's, you know, there's so many trains just the schedule doesn't work.

Subdivision 2 Supervisor of Track

The Supervisor of Track (ST) began employment with the LIRR in 2002. He was familiar with Queens Interlocking. He worked in the Signal Department and Structures Department before going to the Track Department. He had been in the ST position for about four years. He is responsible for the inspection and maintenance of approximately 200 track switches and 106 miles of track. The ST has between 64 and 68 engineering

department employees that he supervises. He was not on-scene the day of the accident.

Investigators asked the ST if he had any safety concerns with Queens Interlocking, he answered “When doing Queens interlocking, yes, there is a safety concern there, and it has to do with the speed of trains. Trains cross over in that interlocking at 80 miles an hour. They do not slow down going through that interlocking. Obviously, with that being said, the proper protection needs to be put in place to protect yourself when you're on an 80 mile an hour track. And, you know, in -- it's a very complex interlocking because of the fact that trains for the most are going 80 miles an hour, other than pretty much when the Hempstead trains come across and they cross across the whole interlocking, those are the only trains that are going slow through there. He said that he had not received any Good Faith Challenges from employees working in his Subdivision.

The ST was asked about the Foreman that was killed, he stated “He has spent a lot of time in Sub 2. He would come and go as, you know, construction jobs in the track department have come up. He would go over there for a little while, then he would come back to Sub 2. So, you know, he -- but he spent -- he was definitely not a newbie to the Sub 2 area. When asked if the Foreman was safety conscious, he replied “I found him to be a safety conscious foreman. You know, I never had any issues from a safety perspective with him. I also can tell you that none of his guys have ever come to me and said to me that they've had a problem or a safety issue with (the Foreman).

When the ST was asked how the decision was made on what type of on-track safety protection would be used at a job location, he stated “That's typically a decision done with

the men. I mean, provided whether we take track out of service, track out of service is usually requested by me through what we call our track outage meeting. That happens every week. And I organize that and then it's the RWIC or the foreman that's out there to perform the task in that out of service track that's going to take the track out of service. When asked how difficult it would be if an RWIC requested to take a track out of service, he said "And I'm glad that you brought that up, because it's – it puts a lot of people at risk, especially when we do request foul time often. I mean, when we -- if, you know, if we find something and we want to do something on an interior track and my foreman asks for foul time, he should be able to get it within a reasonable amount of time. Not, oh, yeah, call me back in 25 minutes; call me back in an hour and a half. And that's where we're at right now on this railroad. And I think it's – it causes a lot of people to work unsafe. It's just not -- it's not necessary. You know, I think a lot of time you could stand there and you could be on main line 1, for argument's sake, and you want to ask them -- you could stand there, and you could stand there for 20 minutes and you won't see a train go by, but they can't give you foul time. Oh, no, we can't give you foul time. Why? Because it's more work for somebody else. And that puts the people in the field or on the ground, my men, myself, whoever, at risk." He went on to say "You know, it's -- you know, this puts people in very bad positions. And the reality of it is, I can't speak for what happened on Saturday, but I can assure you that if it was easier to get a shot of foul time on this railroad, I am sure that (the Foreman) would have said, you know what? Let me pick up the phone and get a shot of foul time, if it was that easy. But it's not. It's not. And that is what puts my guys and any other person that is a roadway worker at jeopardy."

Investigators asked about adjacent track on-track safety, the ST answered saying "Once again the railroad that we have here, it's very hard to take -- if you have two-track territory and you're on this track and take this track out of service, it usually never happens. It will almost never, ever happen. Because now you've shut down a whole branch and inconvenienced a ton of commuters. So that's the challenges that we have on this railroad. We don't have a whole lot of redundancy, in my opinion. You know, so it becomes a little bit more challenging here, unlike possibly at a lot of other railroads where you may have a lot more area to work. The other thing is we have very tight track centers. And in Queens interlocking everything is -- I'm sure you guys have taken a walk out there. Everything is very tight, you know, so the track centers are very tight. So, you know, whenever possible in those type of areas you want to clear all the way out, you know, all the way out off of the track completely. Especially being that the tracks are in service."

At the end of the interview, the ST was asked if he had any potential safety improvements he would like to offer to the investigative team, he said "I'd like to discuss overtime, the issue of overtime and the amount of hours that our guys are working, I feel is -- could potentially be a safety hazard. You know, nobody will ever know, but, you know, (the Foreman) did work the night before and he was going to work all the way up to 11 p.m. that Saturday night. And, you know, could fatigue have played a part in this? I'm sure a lot of people may not feel the same. A lot of people may not be happy that I say something about the overtime. But that's reality. And I'm only doing it -- and I'm saying it here because I don't want to see this happen to anybody else again, anybody. Forget about just track department. I don't want to see any roadway worker on the Long

Island Rail Road or any other railroad die because of fatigue. It's just not -- it's just -- it just doesn't make sense to me."

Additional LIRR Employee Interviews

Investigators returned to Jamaica, NY to conduct three additional interviews on September 15, 2017.

Track Foreman

The Track Foreman began employment with the LIRR in 2004. He was familiar with Queens Interlocking. He had been working as a foreman since 2008 and works as an RWIC. The Foreman stated that his work groups typically use TAW for routine inspection and minor correction inside the Queens Interlocking. When asked "how easy or difficult is it to get foul time in Queens interlocking?", the Foreman replied "Queens interlocking is not easy due to the trains that come off the Hempstead and all the main lines; then you have race trains occasionally; especially at rush hours, and generally throughout the day in Queens it's not very easy to get foul time. You've got the high-speed crossovers they're using continuously and they're not easy. Investigators asked if the difficulty getting foul time dissuaded him from requesting foul time in Queens Interlocking. He said, "At times, I would say it might."

Investigators asked if he identifies the predetermined place of safety. The Foreman said "It would be being determined as we would move along. So, if I see a safer place than the last place I told them about, that would be the new place." When asked if this practice

causes confusion the Foreman stated “Not in my practice. I tell my men where I want them. And when the whistle blows, if I have to make a split decision and make sure everybody hears me and I have to change my mind because I see something that they don't see, I will do it. But I have a small gang, generally, right now, with what I do. So for me, it's very simple to tell my men before the job starts where I want them, and if it has to change at the spur of the moment, I can change it, and they'll know way before they're in any kind of a situation”. Investigators asked “Okay. Then do you use live track to stay put or –” he answered, “Not generally speaking, we don't, but I have.”

The Foreman was asked if after the accident, anything changed regarding clearing tracks when using TAW. Question “After the June accident has anything -- has there been any more focus on, to your knowledge, on, as opposed to staying in a track, like staying in an inside track while a train passes on the outside track, do you remember any discussion about clearing to the field side?

He answered “I have discussed it with some of the other men and we have to make a determination do I want my men walking over three live third rails where the potential is for them to trip every time I walk in and out carrying, let's say, a whacker, or their forks, or their lining bars, or whatever tools that we can't lay down on the track? Or do I have 3 miles of sight in each direction, or 2 miles of sight in each direction and I can determine that it's going to be safer just to keep my men right where I am and, if I see a train coming on another track, at that point I'll have more than enough time and I'll be able to make the determination to get everybody into a clear where, you know, where I have two trains coming and I just can't be where I am.”

Investigators asked how he received work assignments, “What level of supervisor do you talk to every morning that tells you what your work is for the day?” He answered, “Either my assistant supervisor, or right above him is his -- I mean, my immediate supervisor.” Investigators asked “And when they assign a task, do they talk to you about this is the work that you're doing, and do they have any other discussion with you, safety – “He replied “I’m always asked to be as safe as I can. If I ever have a problem, as far as my bosses are concerned, any problems I've ever had with not being comfortable doing anything until I had more protection or material that I needed, they've never forced me into a position I was uncomfortable with.” He was asked, “so do they ever have a discussion with you, say, you know, we're sending you out to such-and-such interlocking, we want you to go in there and, you know, walk this location, just make an inspection, and this is how we expect you to protect yourself? Do they ever tell you what form of on-track safety they would expect you to use, or is that left up to you to make that –” He responded, “Not unless the job's been set up -- Not unless the job's been set up ahead of time and they let me know what they've already determined we're going to do, whether it be track out of service or somebody's going to be getting us some foul time. At that point we'll have an EIC.”

Switch Inspection Foreman

The Switch Inspection Foreman began employment with the LIRR in 1996. He was familiar with Queens Interlocking. He had been working as a foreman for the past twelve years and in his current position for about five years. He worked with signal department personnel, inspecting switches; this work required the use of foul time and TAW. In his

current position a signal maintainer acts as the RWIC. When asked if the work group he works with always has foul time when working in Queens Interlocking, he said “Work? You know, you have to, I guess, define what you mean by work. I mean, if we're walking from one switch to another, we walk under flag protection. But when we're actually doing the work that we're doing, they're doing -- I guess, they use foul time because they are taking control of the switch. If we are, say, waiting for that foul time, I may still be looking at certain things that I have to be -- I'm responsible for, with flag protection.”

Investigators asked about clearing a track “are you clearing out to the field side of the tracks?”. The Switch Inspection Foreman stated “We generally do. It's not always. If the train -- if we're on, you know, the track on, say, like main line 3, which is on the north side, and the trains come on main line 4, which is three tracks over on the south side, we may -- I may continue looking at it, you know, with my TAW.” Investigators asked if the Switch Inspection Foreman felt that 15 seconds that is required for roadway workers to be in the clear was sufficient, he answered “Well, the 15-second rule is you have to be in the clear 15 seconds before the train arrives at where you are. I mean, yeah, I think that is sufficient.” The Forman was asked “if they're just using train approach warning, no foul time involved, say, they're working on one of the inside tracks and a train passes on the outside track, is that something that it would be okay for them to stay in that inside track?”. He responded, “I say I believe it is as long as you can -- the train that's passing is not obstructing your view to the track that you're in or, you know, the tracks between you and your predetermined place of safety.” Investigators attempted to determine if the Foreman was familiar with the LIRR Safety Alert that was issued in response to the accident; “And

do you remember, following the June 10th accident, do you remember any discussion or focus on that point from Long Island Rail Road?". He answered" Specifically no. We do have the RWP and RWIC classes annually. It's covered pretty extensively during that time, and we have the opportunity to ask any questions."

Engineer of Track

The Engineer of Track began employment with the LIRR in 1988. He was familiar with Queens Interlocking. He had worked varying jobs in the Structures Department and the Engineering Department. He had been in his current position since January 2015.

The Engineer of Track was asked about the work assignment. The work was established to be able to respond immediately to any problems with the LIRR tracks. Before the event, there was an insulated joint failure on the LIRR system. This prompted LIRR supervision to require the stand by work groups to walk the tracks and inspect insulated joints. The Engineer of Track described it as a preemptive inspection. He discussed the process of canvassing employees to work extra hours, protecting the Belmont race events. Investigators asked "earlier on you were talking about the canvassing and seniority based, and I get that. I was a union guy myself for a lot of years. And is there ever any consideration of the fatigue worked into that? Like, I don't know, two shifts in a row and you can't get the next shift, or something like that, whatever mechanism? Is there any mechanism to take into consideration how many shifts the person has worked?" He answered "That is a -- you know, that's something that's been a challenge here. The union

rules don't necessarily allow us even as supervisors to put some of that in check. We've at times exercised our own initiative to try and adjust for that by overlapping start times on work and such. But the nature of the union rules and such gives us limited ability to deal with –".

Investigators asked, "If you were out doing an observation of a work group doing similar type of work in Queens interlocking, would you take any exception to them using train approach warning for the type of work that they were doing?", he said he would not. When asked about conducting inspections using TAW, he replied "So that could put an onus on them to be on that actual track. By rights, though, they should not stay in the track if there's a train coming. The safest route for them to do is to clear and clear all the way. Or, in fact, take foul time if they're going to be on the track and they know to the next -- you know, after going out there for a number of years or a number of months or whatever the case may be, that from here to here I can get there, or from here to here I should take a foul time shot till I get to the next point where I can easily clear. I know that train is going to go by at that point in time because I know that routine, and then, you know, take it on again from that point."

Investigators asked if he had any issues regarding how the Track Supervisors in Subdivision 2 deal with safety issues and he said he did not. When asked about the compliance of the deceased foreman, the Engineer of Track said that he never had an event with RWP. When asked "Is it prohibited on Long Island Rail Road in the rules? Are they prohibited from remaining in a live track when a train's passing on an adjacent track under train approach warning?", he said "It's stated that you should clear, you should clear the

tracks."

Other Information

FAMES: Fatal Accidents Under Train Approach Warning (Watchman/Lookout)

Following the implementation of the Roadway Worker Protection (RWP) Rule in 1997, there have been a total of 42 fatal RWP accidents, in which 44 roadway workers have perished, as of January 1, 2012. The FAMES Committee was able to obtain data to analyze 39 fatal RWP accidents, which accounted for 41 of the 44 fatalities. The FAMES Committee analysis is based on the available data. One form of On-Track Safety for Roadway Work Groups is "Train Approach Warning" (TAW) provided by Watchmen/Lookouts. See Attachment 1 for the entire Fames Report.

- TAW (often referred to as Watchman/Lookout) does not require trains to get authorization from the Roadway Worker in Charge (RWIC) to move on any track(s).
- When using TAW, a warning must be given in sufficient time to enable each Roadway Worker to occupy a previously arranged place of safety at least 15 seconds prior to a train passing the Roadway Worker's location.
- Watchmen/Lookouts must be trained, qualified, and properly equipped to provide warning to Roadway Workers of approaching trains or on track equipment.
- Of the 41 Roadway Worker fatalities analyzed by FAMES, 10 accidents resulting in 11 fatalities occurred where TAW was being used.

[End of Report]

Parties to the Investigation - Acknowledgment Signatures

The undersigned designated *Party to the Investigation* representatives attest that the information contained in this report is a factually accurate representation of the information collected during the investigation, to the extent of their best knowledge and contribution in this investigation.

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Reviewed____Date_10/17/17
Don Wilson

Reviewed_____Retired
Raymond Persaud

Reviewed_____Date_10/17/17
Glenn Greenberg

Reviewed_____Date_10/17/17
John Swanson