

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, DC 20594

October 10, 2017

Security Video

Group Chairman's Factual Report
By Bill Tuccio, Ph.D.

1. EVENT

Location: Queens Village, New York
Date: June 10, 2017
Operator: Long Island Rail Road (LIRR)
NTSB Number: DCA17FR009

For a description of this event, see the public docket for this investigation.

2. GROUP

A security video group convened on August 2, 2017:

Chairman: Dr. Bill Tuccio
Aerospace Engineer
National Transportation Safety Board (NTSB)

Member: Tomas Torres
Investigator-in-Charge
NTSB

Member: Joe Gordon
Rail Accident Investigator
NTSB

Member: Don Wilson
Acting Track Specialist
Federal Railroad Administration (FRA)

Member: William Bates
Investigator
International Association of Sheet Metal, Air, Rail and
Transportation Workers (SMART)

Member: Donald Hill
Vice General Chairman – Division 71
Brotherhood of Locomotive Engineers and Trainmen (BLET)

Member: Dr. Lori Ebbighausen
Vice President – Corporate Safety
LIRR

Member: Glenn Greenberg, PE
Deputy Chief Engineer
LIRR

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received nine security files, three of which contained overlapping content.

3.1. Recorder Description

The videos were low resolution, low frame rate, color video and timestamped. No sound was recorded.

Timestamps were reviewed and confirmed to be time synchronized between all recordings to within one second.

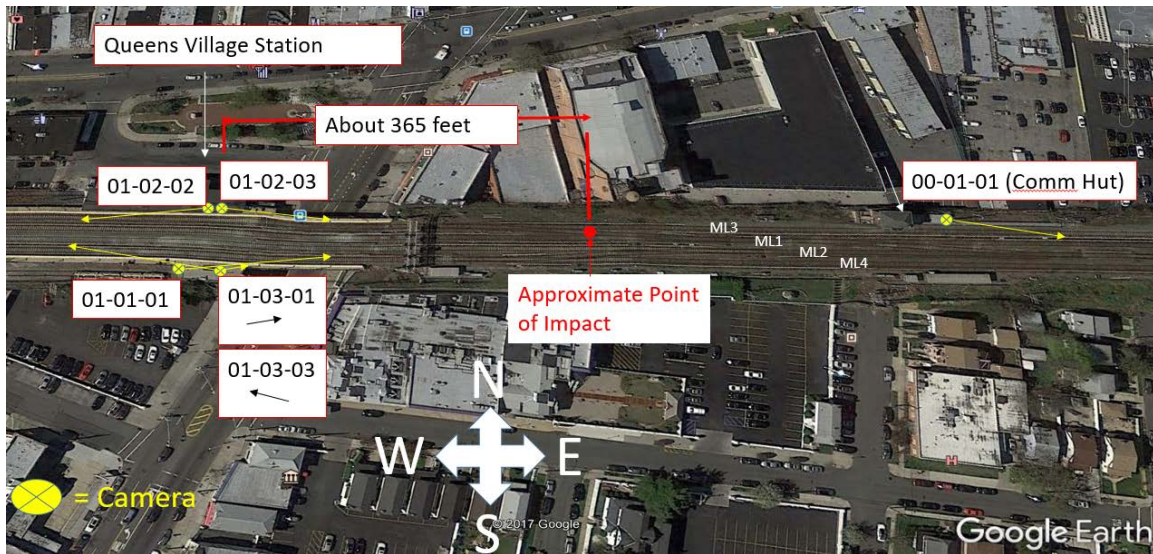
3.2. Video Files

Table 1 provides a summary of the video files received, after removal of the three files with overlapping content. All times are the timestamps as recorded on the video recorder.

Identifier	Start Time	End Time	Description
00-01-01 (Comm Hut)	09:20	10:30	Looking east from Queens Tower.
01-01-01	09:50	10:20	Looking east from the south platform.
01-02-02	09:50	10:20	Looking west from the north platform.
01-02-03	09:20	10:30	Looking east from the north platform.
01-03-01	09:20	10:30	Looking east from the south platform.
01-03-03	09:50	10:20	Looking west from the south platform.

Figure 1 shows the location and orientation of each camera.

Figure 1. Position and vantage point of all cameras.



3.3. Timing and Correlation

The times used in this report are expressed using the timestamps recorded on the video files. These times appeared to be Eastern Daylight Time; however, times were not aligned with other investigative sources, such as the rail event recorder or the LIRR Movement Bureau.

3.4. Methodology

Each video was opened and viewed at high speed to identify pertinent portions; thereafter, pertinent portions were viewed in detail by the group.

Video content described in this report used a saturation point approach,¹ meaning that each additional piece of content was described to the extent it added new information to the investigation.

3.5. Summary of Recording Contents

Given the low resolution and positioning of the cameras, details of persons (such as, clothing, head movement, body position) were not discernible unless otherwise noted. All video recordings at the time the worker was struck were daylight conditions, partly cloudy skies, and visibility greater than 10 miles.

Low screen resolution did not make it possible to factually identify persons as “workers;” accordingly, workers are only referred to as such when they could be positively identified, otherwise the generic terms person/persons/people are used.

¹ See Vogt, W. P., D. C. Gardner, and L. Haeffele M. 2012. *When to use what research design*. New York, NY: Guilford Press.

3.5.1. Camera 00-01-01 (Comm Hut)

Figure 2 shows the vantage point of this security camera.

Figure 2. Camera 00-01-01 (Comm Hut) vantage point.



From 09:20:00 until 09:35:00, four trains passed the camera.

At 09:36:07, an eastbound electric train entered the Belmont Wye. At 09:36:19, this train stopped on the Belmont Wye.

At 09:36:23, a person first entered the field of view of the camera from the west.

By 09:36:48, more people had entered the field of view from the west, and congregated on the south right-of-way (ROW).

By 09:37:25, the aforementioned eastbound electric train started to move again on the Belmont Wye.

At 09:40:32, a westbound electric train on Main Line (ML) 1 passed in front of the people on the south ROW (obscuring the view of these people from this camera).

At 09:42:08, a westbound electric train on ML2 passed in front of the people on the south ROW (obscuring the view of these people from this camera).

By 09:44:08, two people proceeded north, across the foul of all tracks, from the south ROW.

At 09:45:37, a westbound diesel train on ML1 passed in front of the people on the south ROW (obscuring the view of these people from this camera).

By 09:47:05, an eastbound electric train on ML4 passed in front of the people on the south ROW (obscuring the view of these people from this camera).

At about 09:48:08, additional people entered the field of view of the camera west of the aforementioned workers on the south ROW; these additional people were travelling east on the south ROW.

By 09:48:32, two people proceeded south, across the foul of all tracks, from the north ROW.

At 09:53:16, an eastbound diesel train travelling on ML4, passed in front of the people on the south ROW.

By 09:54:32, the people began walking east on the south ROW.

By 09:55:15, an eastbound electric train travelling on ML2, passed in front of the people walking east on the south ROW.

At 09:57:30, a westbound electric train entered the camera field of view on the Belmont Wye.

By 10:06:01, about a dozen roadway workers were walking westbound in the foul of all tracks. The workers were wearing high visibility vests. Headwear was not discernible.

At about 10:08:54, about half of the roadway workers exited the field of view of the camera by the north ROW.

At 10:09:05, the last roadway worker, who appeared to be holding a watchman's disc, began to exit the field of view of the camera as he walked westbound in the foul of ML1, as shown in figure 3.

Figure 3. Image at 10:09:05.



By 10:09:25, five roadway workers had proceeded west, in the foul of multiple tracks, out of the field of view of the camera.

At 10:14:41, roadway workers began to enter the field of view of the camera from the north ROW. The workers walked westbound on the foul of ML3. There were about 11 workers.

By 10:18:53, about a dozen roadway workers congregated at the base of the ramp beneath the Queens Tower.

By 10:19:02, the aforementioned roadway workers began to walk east on the ML3.

Content after 10:20 was not pertinent to the investigation.

3.5.2. Camera 01-01-01

Figure 4 shows the vantage point of this security camera.

Figure 4. Camera 01-01-01 vantage point.



At 10:10:42, an eastbound electric train on ML4 passed the platform without stopping (this was the last train to pass this camera before the incident train). At 10:11:38, the eastbound train left the field of view of the camera.

At 10:13:06, the westbound electric train (incident train) on ML3 came into view without stopping. As the train entered the field of view, a small low-resolution pixelated image, consistent with at least two persons, was barely discernible. One of the persons was struck by the train.

At 10:13:08, one of the persons moved away (south) from the incident train.

At 10:13:18, the incident train left the field of view of this camera.

At about 10:17:15, a person became visible towards the top of the field of view of the video. The person walked west (towards the point of impact), then walked east at about 10:17:56.

3.5.3. Camera 01-02-02

Figure 5 shows the vantage point of this security camera.

Figure 5. Camera 01-02-02 vantage point.



At 10:10:25, an eastbound electric train on ML4 entered the field of view of the camera and passed the Queens Village Station without stopping. The train exited the field of view of the camera at 10:11:14.

At 10:13:10, the westbound electric train (incident train) on ML3 entered the field of view of the camera. At about 10:13:31, the westbound incident train stopped towards the top of the field of view of the camera.

3.5.4. Camera 01-02-03

Figure 6 shows the vantage point of this security camera.

Figure 6. Camera 01-02-03 vantage point.



By 09:28:16, the roadway workers were no longer discernible (having proceeded east from Queens Station).

At 09:53:23, an eastbound diesel train, on track ML4 entered the field of view of the camera. This train exited the field of view of the camera at 09:54:04.

At 09:55:12, an eastbound electric train, on track ML2 entered the field of view of the camera. This train exited the field of view of the camera at 09:55:47.

At 09:58:02, a westbound train from Belmont Wye entered the field of view of the camera. By 10:00:31, this train had crossed over onto ML1 and continued westbound. This train was initially moving slowly (less than 10 mph) and then accelerated. The train exited the field of view of the camera at 10:02:07.

At about 10:10:24, a person entered the field of view east of where the roadway worker was eventually struck.

At 10:10:45, an eastbound electric train, on track ML4 entered the field of view of the camera, moving slowly (about 15 mph). At 10:11:23, persons were visible north of the passing eastbound train (east of where the roadway worker was eventually struck), and they appeared to remain in the foul of adjacent tracks, as shown in figure 7. By 10:11:55, the eastbound train had moved far enough east, that a person on the south ROW became visible ("Person A"); Person A was moving west on the ROW. By 10:12:22, this train had further slowed and entered the Belmont Wye. The persons (in the foul of the adjacent tracks) moved westbound towards the Queens Village Station.

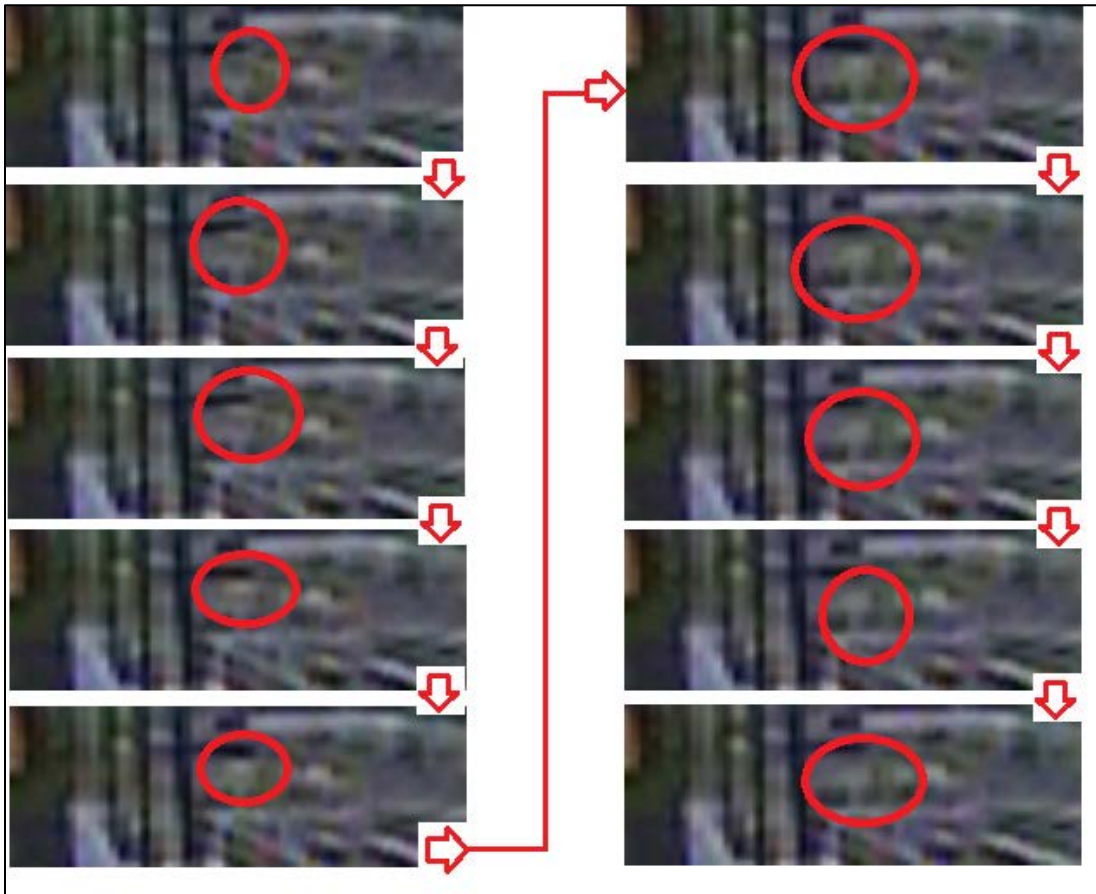
Figure 7. Image at 10:11:23.



At 10:13:03, a person ("Person B") near the point where the roadway worker was eventually struck, made a rotating movement, similar to moving a visual warning device from a high to low position, as shown in the image sequence in figure 8.² At this same time, the headlight of the incident train first became visible from this camera's field of view. Person A continued to move west on the south ROW, passing a hut on the south ROW.

² Although the images are of low resolution, the group concluded there was sufficient resolution to unequivocally state a visual warning device moved from a high to low position.

Figure 8. Image sequence, 10:13:03.



At 10:13:06, the roadway worker was struck by the incident train on track ML3.

At 10:13:09, the head end of the incident train exited the field of view of this camera as it continued westbound (during this time, the view of the location where the roadway worker was struck was obscured by the incident train). By 10:13:20, the incident train fully exited the field of view of this camera.

By 10:13:25, Person A was moving east on the south ROW.

By 10:13:33, persons began moving north in the vicinity of where the roadway worker was struck.

By 10:16:40, Person A began to move north across the tracks towards ML1.

By 10:14:12, the slow moving, electric eastbound train (mentioned earlier), had exited the field of view of the camera, onto the Belmont Wye.

At 10:19:52, an eastbound electric train entered the field of view of the camera on ML4 and stopped, with the head end of the train near the east end of the south Queens Village platform.

At 10:25:01, first responders first entered the field of view.

3.5.5. Camera 01-03-01

Figure 9 shows the vantage point of this security camera.

Figure 9. Camera 01-03-01 vantage point.



At 09:24:01, roadway workers first entered the video from the west, walking east on the south platform.

By 09:24:22, a total of five roadway workers had passed in front of this camera on the platform. All were wearing high visibility vests. The second worker was carrying a watchman's bag with the watchman disc exposed. This group of five roadway workers was the subject group (that is, it contained the worker who was struck by the train).

By 09:24:53, one of the five roadway workers had exited the platform and was walking east on the foul of ML4.

By 09:25:08, the entire subject workgroup (that is, the aforementioned five workers), had exited east end of the south platform and were dispersed on the ROW, ML4, and other tracks.

By 09:25:19, one of the workers of the subject workgroup, had proceeded north across multiple tracks. By 09:25:33, this worker proceeded back south and rejoined with the rest of the workgroup.

By 09:25:47, the subject workgroup continued to proceed east on the foul, primarily in the foul of ML2 and ML4.

By 09:26:38, the subject workers were no longer discernible.

By 09:30:47, a westbound electric train on ML3 passed Queens Village Station.

By 09:33:43, an eastbound electric train on ML4 passed Queens Village Station.

By 09:41:14, a westbound electric train on ML1 passed Queens Village Station.

By 09:43:11, a westbound electric train on ML3 passed Queens Village Station.

By 09:46:19, a westbound diesel train on ML1 passed Queens Village Station.

By 09:47:22, an eastbound electric train on ML4 passed Queens Village Station.

3.5.6. Camera 01-03-03

Figure 10 shows the vantage point of this security camera.

Figure 10. Camera 01-03-03 vantage point.



The incident train stopped by 10:13:33.