DCA15MR010
National Railroad Passenger Corporation (Amtrak)
May 12, 2015
Philadelphia, PA

National Transportation Safety Board

Operations Group Chairman Factual Report

Accident

NTSB Accident Number:	DCA15MR010
Date of Accident:	May 12, 2015
Time of Accident:	9:20 p.m. (EST)
Type of Train and No:	Passenger Train No. 188
Railroad Owner:	Amtrak (ATK)
Train Operator:	Amtrak Railroad
Crew Members:	1 Engineer, 1 Conductor, 2 Assistant Conductors, and on-board service attendant
Location of Accident:	Philadelphia, PA

Operations Group

David Bucher – OPS Group Chairman
NTSB

David Nichols
Chief Transportation Officer
Amtrak

Johnathan Hines
System General Road Foreman
Amtrak

Ed Mruk
System General Trainmaster
Amtrak

Mike Bull
Operating Practices Inspector
FRA

Jim Gee
Operating Practices Inspector
FRA

Carl Fields
BLET

Donald Hill
BLET

Willie Bates
SMART

Accident Summary:

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

Accident Synopsis:

Train 188:

On Tuesday May 12, 2015, an Amtrak (ATK) train crew, consisting of an engineer, conductor, assistant conductor and one or more on-board service attendants went on-duty in New York City, NY at 1:20 pm (EST) to operate Amtrak passenger train No. 2121 from New York City, NY, to Washington, DC. This train crew arrived at Washington, DC at 5:19 pm and waited until they signed up for the 188 train at 6:30 pm.

The train crew was re-called to duty at 6:30 pm to operate Amtrak passenger train No. 188 from Washington, DC to New York City, NY. Prior to departing Washington, the 188 train crew was joined by a second assistant conductor.

Leaving Washington, the train consisted of one locomotive and seven passenger cars with Amtrak locomotive No. 601 in the lead. The train crew boarded the train on No. 14 track at Washington's Union Station and performed all required air brake, mechanical and safety equipment tests. The train then boarded passengers and departed Washington at 7:15 pm. The engineer also properly completed the running brake test as the train departed Washington. The train departed Washington and made four stops before arriving at Wilmington, DE, arriving there at 8:46 pm and departing there at 8:48 pm. The 188 train made its last stop at Philadelphia, PA arriving at 9:06 pm and departing at 9:10 pm, approximately milepost 89, or about 9 miles south of the accident curve.

The 188 train arrived and departed on No. 4 station track at Philadelphia's 30th Street Station. Immediately upon departing the station, the train switched from No. 4 to No.1 main track.

Also upon departing Philadelphia, at milepost 1.5 (Phila./Wash. Main line), the train's speed initially increased to 30 mph. At North Penn interlocking milepost 1.0 (Phila./Wash. Main line), the train received a "approach medium" signal indication. At Girard interlocking, milepost 87.7 (New York/ Phila. Main line) the train received an "approach limited" signal indication, the train maintained a 30 mph train speed. Also at Girard the train received a "limited clear" signal indication and crossed over from No. 1 main track to No. 2 main track. At Mantua interlocking, milepost 87.2 the 188 train received a "clear" (maximum authorized speed) signal indication. After the 188 train

cleared Mantua interlocking, the train speed increased to 67 miles per hour. At milepost 86, the 188 train passed SEPTA passenger train No. 769, which was stopped on No. 1 main track, due to a damaged windshield. The 188 train continued east on No. 2 main track through North Philadelphia Station at approximately 60 miles per hour. The train received a "clear signal" (Maximum authorized speed) at the east end of the North Philadelphia station (Lehigh Interlocking). At approximately milepost 83.8 the train increased speed to approximately 65 miles per hour, to comply with a permanent 65 mile per hour speed restriction that began at milepost 83.8 and ended at milepost 83.5.

At the intermediate signal located at milepost 83.4 the train received a "clear" signal (Maximum authorized speed 80 MPH). Based on locomotive event recorder data, the 188 train speed continued to increase. At Shore Interlocking, milepost 82.2, the train received a "clear" (Maximum authorized speed) signal. Based on locomotive event recorder data, the 188 train speed continued to increase. At milepost 81.8 the train entered the beginning of the permanent 50 MPH speed restriction located between milepost 81.8 and 81.2 (the train speed had increased to 106 MPH). Locomotive event recorder data indicated that the locomotive engineer placed the train into an emergency air brake application at approximately milepost 81.7.

The entire train derailed at approximately milepost 81.6 at a speed of about 103 MPH.

Operating Crews:

ATK Train No. 188

Engineer: 31 years of age
Hire: 6-26-2006
Current Engineer certification date: 7-1-2013

Conductor: 32 years of age
Hire: 8-14-2009
Current Conductor Certification: 3-19-2013

Assistant Conductor (#1) 38 years of age
Hire: 10-14-2011
Current Conductor Certification: 12-5-2013

Assistant Conductor (#2) 34 years of age
Hire: 5-7-2014
Current Conductor Certification: 5-7-2014

All 188 train crew members had current certifications under FRA regulations.

Train Consist:

Amtrak Train No. 188 consisted of 1 locomotive and 7 coaches. On the head end of the train (South end) was locomotive No. 601. The train lined-up, as follows:

ATK 601 (Locomotive)(East End)(Head End)
ATK 81528
ATK 82776
ATK 82644
ATK 43346
ATK 82761
ATK 82797
ATK 82981 (Rear End)

Crew On-Duty Times:

188 Train Crew – Previous trip

Engineer - on train No. 2121 on 5-12-2015, at 1:20 pm, New York City, NY. Arrived at Washington, DC, at 5:19 pm.

Conductor - on train No. 2121 on 5-12-2015, at 1:20 pm, New York City, NY. Arrived at Washington, DC, at 5:19 pm.

Assistant Conductor (#1) on train No. 171 on 5-12-2015, at 11:50 am, New York City, NY. Arrived at Washington, DC, at 4:31 pm.

Assistant Conductor (#2) on train No. 2121 on 5-12-2015, at 1:20 pm, New York City, NY. Arrived at Washington, DC, at 5:19 pm.

Method of Operation and Location:

The Amtrak train involved in the accident was governed and authorized by wayside and interlocking signals, as well as cab signals. Some of the wayside signals in the accident area are controlled from a centralized dispatching center located in Wilmington, DE. Others are automatic signals that display indications depending on the track condition ahead. The derailment occurred at Milepost 82 on the Mid-Atlantic Subdivision of Amtrak. The railroad at the accident location is Centralized Traffic Control, with interlocking track side signal indications and cab signals. Train operations, at the accident location, are conducted on a four track, main track. All four tracks are

capable of operating trains in both directions. The authorized timetable speed for "B" trains was 50 mph at the accident location[1].

Operating Rules:

Operating Rules governing employees at the time of the accident, were the Northeast Operating Rules Advisory Committee (NORAC) Operating Rules, effective 11/16/2011. Also governing train movements was Amtrak Timetable No.5 effective 11/5/2012. The latest General Order in effect was Order No. 504, effective 10/62014. Bulletin Orders in effect were NYW5-131(sum), effective 5/4/2015, NYW5-132, effective 5/11/2015. Also, Temporary Speed Restriction Bulletin effective 5/12/2015 (5:00 am).

Federal Oversight

Federal oversight of Amtrak Operations is provided by the Federal Railroad Administration (FRA), which is part of the Federal Department of Transportation (DOT). The FRA has multiple field inspectors which conduct field inspections on Amtrak property on a scheduled and random basis. FRA operational field inspectors monitor the railroad's compliance with Federal Department of Transpiration regulations per 49 CFR Parts 200 to 299. FRA also conducts periodic records reviews on Amtrak for various federal record keeping requirements. A review of FRA field inspection data showed that 180 operational inspections were conducted on Amtrak property during the 12 months period prior to the accident. Specifically, 64 operational inspections were conducted on Amtrak's Mid-Atlantic Division during the 12 month period prior to the accident.

Emergency Response

Federal regulations covered in 49 CFR Part 239 require that Amtrak have an established Emergency Response Plan for train related accidents and incidents, and that the plan is reviewed on a regular basis by the FRA. In addition, employees must be trained in the designated Emergency Response protocols outlined in the plan. A review of Amtrak's part 239 plan showed that it was current, and had been reviewed by the FRA. Based on employee interviews conducted after the accident, Amtrak train crew employees stated that that emergency response training that they had received prior to the accident was very useful immediately following the accident.

[1] "B" trains are Amtrak Regional trains. "A" trains are high speed trains and are allowed 60 MPH at this location.

Efficiency Testing

Federal regulations covered in, 49 CFR Part 217 require that Amtrak have a program to periodically conduct operational tests and inspections to determine the extent of compliance with its code of operating rules, timetables, and timetable special instructions, by its employees.

Amtrak's operational testing program, is called "TESTS". The following is an overview of Amtrak's "TESTS" program.

Amtrak's TESTS Program :

- **"TESTS"** is Amtrak's program for conducting and recording federally mandated (49CFR217.9) operational tests and inspections documenting employee compliance with railroad operating rules and instructions. Amtrak's TESTS records are electronically stored in a database, making them readily available for inspection and analysis.
- Amtrak's TESTS program is detailed in the "Supervisor's Guide to Efficiency TESTS", which describes how to conduct each listed test, and outlines supervisor requirements and program oversight responsibility.
- The program's operational tests are based on railroad functions rather than railroad specific rules or instructions. This permits the same operational tests to be used throughout the Amtrak system, regardless of host railroad.
- The selection of available operational tests is keyed to employee craft.
- When recording an operational test non-compliance, supervisors are required to view any previous employee specific non-compliances.
- Four different types of observations are currently documented in TESTS:
  - 1872 Efficiency Tests – Operating rule / instruction compliance (all operating crafts).
  - 1875 Engineer Evaluations – On-the-job Locomotive Engineer train operating proficiency.
  - 1876 Student Engineer Evaluations – On-the-job Student Engineer train operating proficiency.
  - 1877 Conductor Evaluations – On-the-job Conductor proficiency in train operations & customer interactions.

During the 12 month period prior to the accident A total of 94,445 tests were recorded as conducted on 2477 different train and engine employees on the northeast corridor. This number also includes other railroads that Amtrak hosts on the northeast corridor.

Use of Personal Electronic Devices:

Based on an examination of personal items and electronic devices, NTSB has determined that electronic devices were not in use by the locomotive engineer, at the time of the accident. Detailed documentation is contained in associated NTSB reports.

Interviews:

The Operations and Human Performance Groups conducted seven interviews during the on-scene phase of the investigation. Interviews were also conducted later due to employee injuries. A summary of the interviews conducted are described below:

Locomotive Engineer of Amtrak Train No. 188.
(Interview conducted at Amtrak 30th street station on Friday May 15, 2015, from 1:40 p.m.– 3:00 p.m.)

Note. *The Amtrak engineer's injuries and memory loss following the accident*. During the interview with investigators, the engineer described his injuries as a result of the accident as a possible concussion (multiple stitches on forehead), a sprained right knee, stitches on his right knee, and multiple cuts and bruises on both legs. He mentioned they performed a CT scan and x-rays while at the hospital. The engineer told investigators that he was unable to recall events prior to the accident (approximately the last 3 miles / 3 minutes).

Summary of the Interview.

The engineer signed up for the 1:20 p.m. out of New York, had a job briefing with the crew of #2121 destined for Washington, D.C. The trip was uneventful until BWI location where they had some mechanical issues that delayed their arrival into D.C.

Upon arrival into D.C. they got off train, and he went to meet a friend (non-railroader) in the food court. He returned to the depot at 6:30 p.m. in order to depart on time, as him and his crew agreed to use the same temporary speed restriction bulletins (TSRB's) for the return trip to New York.

His return trip was on a different train (Amtrak Train No. 188) with the same crewmembers plus one additional (unknown at this time). He described the trip back as fairly "uneventful". One of his last memories was passing the station platforms in Philadelphia. The next thing he recalls is standing up in the cab of his locomotive after the train had derailed. He then grabbed his cell phone out of his backpack, powered it up,

walked by passengers outside the train, and turned off the "airplane" mode on his phone. He then called 911 explaining their train had derailed, but did not know the location. 911 told him they were already notified. He also leant his cell phone to a female passenger. He later saw the same woman in the hospital and again leant her his cell phone.

EMS was on the scene and gave him a "green tag." He was later taken to a hospital. After receiving treatment the Philadelphia Police department took him to their police station for questioning.

During NTSB interviews, the engineer was asked if he took exception to the locomotive or train set. He mentioned one minor issue, excessive wind noise when traveling above 70 mph, coming from the engineer's side window (originally said fireman's then recanted that to be engineer's side). He was going to write it up at the end of their trip.

The engineer also recalled hearing (about 5 minutes prior to the accident) a SEPTA train call on the radio to the Dispatcher about a shattered windshield on his SEPTA train (possibly the result of an object being thrown at it). The Amtrak engineer recalled calling the SEPTA crew on the radio as a heads-up as he was approaching / about to pass them. He was concerned approaching the area where SEPTA windshield had been struck, but was mainly concerned for the SEPTA crew. (Investigators learned that that in that same areas trespassers had been known to throw rocks and other objects at passing trains).

Note: Operations and Human Performance group members reviewed the audio tapes of the radio conversations related to this incident between train dispatchers and train crews. Several radio broadcasts occurred between the SEPTA engineer (first radio transmission occurred at 9:13:11pm) and a train dispatcher up to the time of the train 188 accident. Investigators also reviewed radio communication between Amtrak train 2173 and the train dispatcher discussing whether a stone or shot had stuck a window in car ATK 5311(3rd car from the rear of the train). This conversation occurred at 9:17 pm, when the train was stopped at 30th Street station.

Additional Information

- The Amtrak engineer had been operating trains (eastbound) over the accident territory for approximately 3 years.

- The engineer had been working on this job for about 2 weeks.

- He would normally begin braking for the 50 mph curve at the SEPTA "EL" (elevated) bridge, or at the Shore signal. He does not look for speed restriction signs

(such as the 50 mph posted sign approaching the eastbound catenary structure), because he stated that sometimes they are missing and/or wrong.

- He felt comfortable operating the newer style of locomotive (ACS-64), and estimated that he had operated this type of unit about 24 times.

- He told investigators that his engineer training "could have been better" but he felt that he was fully qualified.

- It is his regular run 5 days a week (Wednesday & Thursday are his days off). The day of the accident was the fifth consecutive day he had worked.

- His train crew usually has 90 minutes off on the turn at D.C., but since the inbound train he was arriving on at D.C.'s Union Station was late, his break time was reduced to about 1 hour.

Amtrak Engineer's Railroad Experience:

2003-2005: Columbia Terminal Railroad, Columbia, Missouri (while in college for 2 years) as an office assistant, then brakeman
2006: Amtrak, Assistant Conductor, St. Louis, MO
2008: Caltrain, San Francisco, CA
2009: Caltrain, Engine School. Then Caltrain cut service, so he went to Oakland, CA for more training
2009-2010: Student Engineer in Oakland, Certified in 2010
2011: Amtrak – Caltrain
2012: Amtrak lost Caltrain, moved to New York
2012-2013: Spent about a year qualifying in NY
2013-present: Has worked out of New York for Amtrak

Amtrak Train Dispatcher, Section 5
(Telephone interview Thursday May 14, 2015 from 2:10 p.m. – 2:25 p.m.):

The dispatcher controls the 30th street station into Philadelphia. This area consists of 10 Main tracks and about 2 miles of territory, handling approximately 40-45 trains per shift (15 N/B to NY, 15 S/B to DC, + misc. trains. He was working the day of the accident 3:30 – 11:30 p.m. (by himself no trainee), Sunday and Monday days off. He has worked for Amtrak roughly 35 years, 13 years as a Train Dispatcher, 22 years as a block operator, 30 years in some capacity with *Centralized Electrification Traffic Control* (CETC) which is a type of dispatching center.

On the day of the accident, he sat next to Section 6 train dispatcher, and saw their

Board (computer screen) "light up like a Christmas tree." He stated that this event occurred during a signal outage or a loss of power in the field.

- Normally - and as was on the day of the accident - Train #188 comes into 30th street on Station track 4, and departs on Station track 4.
- The last time the dispatcher heard of an incident occurring in the vicinity of Frankford curve was in the 1940's
- The term "on-time" was asked and what is "tolerated" to be late. He answered 10 minutes.

Phone Interview of Amtrak Train Dispatcher, Section 6
(Telephone interview on Thursday May 14, 2015 between 2:35 p.m. – 3:10 p.m.)

The dispatcher controls MP 76 to Girard (approximately MP 87.7), there are four (4) Main tracks in this location, with 60-80 trains per shift. He was working as a fill-in (due to recently taking an office position) 3:30 – 11:30 p.m., with no student trainee.

At the time leading up to the derailment, he was occupied handling a SEPTA train No. 769 who was stopped on Main #1 at MP 86 (approximately 4 miles from the derailment site MP 82) due to their front windshield being "blown out" and causing glass to strike the Engineer in the face requesting EMS. He thought the damage was caused by either rocks or gunshot (unsure).

He overheard in the office Amtrak Train #2173 they reported a window on their train was broken as well. He then heard over the radio the Engineer of Train # 188 traveling east on Main #2, to call out to the stopped SEPTA on Main #1, that they were approaching and about ready to pass them. Approximately 3-4 minutes later, the Dispatchers board went to RED.

He then heard the Female Assistant Conductor (A. Henry) report over the radio that their train had derailed and her car was on its side. He couldn't get the exact location from her – just heard initial emergency call, then requesting EMS multiple injuries. The Dispatcher then contacted the Assistant Chief to inform him of the call, and to dispatch emergency personnel.

A Conrail freight job working in their yard adjacent to the accident site contacted the Amtrak Train Dispatcher by radio of their findings as well.

- We asked him if there are radio calls in the area of the derailment regarding rock and/or gunfire - - he responded yes.

- He has been a Train Dispatcher for Section 6 for about 9 months (4 years overall on Amtrak)

- He never personally spoke to the Engineer on Train No.188 (tried multiple times)

Assistant Conductor (1) of Amtrak Train No. 188.
(Interview conducted at Amtrak 30th street station on Friday May 15, 2015, from 10:00 a.m.– 11:30 a.m.)

Note. *The Amtrak assistant conductor suffered from injuries as a result of the derailment*. During the interview with investigators, the assistant conductor stated she suffered from a concussion.

The assistant conductor stated that she was working in the café car at the time of the derailment.

- She said she made a safety announcement leaving Washington and 30th St. station

- She said that there was nothing unusual about the train trip from Washington through to Philadelphia

- She said they made a normal stop at Philadelphia

- She said she heard the locomotive engineer of 188 on the radio about 4 or 5 minutes later

- She feels the locomotive engineer of the 188 train is a great engineer

- She said that at the time of the derailment, everything was happening at the same time

- She said that she was sitting on the left side at the time of derailment, but ended up on the right side of the car, hanging out of the window.

- She did initiate an emergency announcement to CTEC.

Assistant Conductor (2) of Amtrak Train No. 188.
(Interview conducted at Amtrak 30th street station on Friday May 15, 2015, from 11:45 a.m.– 12:30 p.m.)

Note. *The Amtrak assistant conductor suffered from injuries as a result of the derailment*. During the interview with investigators, the assistant conductor stated he suffered from a dislocated shoulder and neck injuries.

- He said that the other asst. conductor did all of the announcements
- He said at the time of the derailment, he felt shaking, then two major impacts
- He said he was located in the 7th car, and that there were approximately 40 passengers in the car at the time of the derailment
- He said that everything was thrown around in the car at the time of the derailment, and that seats disconnected
- He said he had a working radio, but it seemed to work only sporadically
- He said the radio did not work very well in the last car but he could hear the other assistant conductor
- Said he called CETC, but did not get a response.
- Said that he feels the emergency training he received, was adequate.

Off-duty Amtrak Train Dispatcher riding on Amtrak Train No. 188.
(Interview conducted by phone at Sheraton Hotel, Philadelphia, PA, Monday May 18, 2015, from 9:40 a.m.– 10:30 a.m.)

Note. *The interviewee suffered from injuries as a result of the derailment*. During the interview with investigators, he stated that he was still feeling the effects of his injuries, but did not give any details of his injuries.

- He said that he boarded the café' car on train 188 at 30th Street Station
- He said at the time of the derailment, he felt a huge shaking, and he felt the train derail
- He said as a result of the derailment, he ended up wedged between a table and the wall of the car.
- He said that everything was thrown around in the car at the time of the derailment
- He said that he initially assisted the Asst. conductor who was stuck as a result of

the derailment.

- He said that a short time later, emergency personnel came into the car, and he was evacuated through a side window.

- He said he was instructed by emergency personnel to walk to an adjacent street and wait for medical assistance.

- He said when he was waiting on the adjacent street, he noticed another Amtrak employee sitting on the ground (he know this person was an Amtrak employee by his Amtrak ID tag).

- He said he noticed this employee had a cell phone, and asked to borrow it to make a call to his family

- He said he made his call then returned the phone, and ask the employee who he was.

- The employee said that he was the engineer of the train

- He said that he asked the employee his name, and was told that it was Brandon.

- He stated that the engineer has pretty beaten-up, with head injuries.

- He asked him what happened. Brandon responded that he did not know what happened.

- He stated that during the entire conversation, Brandon sat on the ground.

- He also stated that he estimated the conversation took place approximately 15 to 20 minutes after the accident.

- He said shortly after this conversation, he was transported to medical treatment and had no more contact with Brandon.

Locomotive Engineer on Conrail. Working in Frankford Junction Yard at the time of the derailment.

(Interview conducted by phone at the Sheraton Hotel, Philadelphia, PA, on Monday May 18, 2015, from approximately 3:15 p.m.– 4:00 p.m.)

Note. *Conrail's Frankford Junction Freight Yard is located adjacent to the Amtrak Main Line and the site of the derailment.* During the interview with investigators, the Conrail engineer stated that he could not actually see the derailment site due to geography of the yard's location. However, the main track immediately west of the derailment site was visible.

- The engineer said that he had just secured his locomotive, after finishing his working shift at the west end of the yard (the derailment happened at the east end of the yard)
- He said he heard and saw an Amtrak passenger train go by eastbound.
- He said he said it made an unusual "cracking" sound.
- He said he also saw what he thought was unusual sparking from the catenary as the train went by.
- He said he heard 2 or 3 explosions as he walked to the yard office.
- He said he suspected something had happened because he saw a lot of dust.
- Said shortly later, people (some were injured) came walking up through the yard toward the yard office.
- He said he then got his radio and called CETC
- He said that he and his conductor assisted with helping with the injured passengers. They put several in the yard office and gave them water. He said he and his conductor also assisted with evacuating passengers from the train.
- He said he also directed emergency vehicles to the site of the accident

Conductor of Amtrak Train No. 188.
(Interview was conducted at the law offices of the interviewee's legal representative in Roseland, NJ on Wed. Sept. 9, 2015 from 3:15 p.m.– 4:30 p.m.)

Note. *The Amtrak conductor suffered from multiple injuries as a result of the derailment.* During the interview with investigators, the conductor stated he suffered from multiple fractures and a concussion.

Mr. Fonseca stated that he was working in the first car behind the locomotive at the time of the derailment.

- Stated that he started the day in New York City, had a job briefing there with the entire train crew

- Stated that from NYC the crew's first run was an Acela train from NYC to DC. The train operated about an hour late due to mechanical problems with the train in-route to departure, otherwise it was a normal run to DC

- Stated that the crew had a break before the departure of the 188 train from DC

- Stated that he had plenty of time for a crew briefing before leaving DC with the 188 train. All crew members attended the crew briefing and he went over all applicable restrictions

- Stated that he remembers the engineer making a running brake test leaving DC

- Stated that the train operated normally after leaving DC

- Stated that he remembered all of the radios being tested (including the locomotive radio) before leaving DC

- He said he had his own personal portable radio with him

- Stated that the station stop at 30th Street Station in Philadelphia was a normal stop.

- Stated that upon departing 30th Street Station, he collected tickets in the first car, (does not remember if he collected tickets from the second car) then entered the men's bathroom in the first car. Shortly thereafter the derailment occurred.

Sight Distance Train:

As planned, a Sight Distance Observation train was operated on May 18, 2015, at approximately the time of the accident train. The observation train followed the first run of the newly resumed No. 188 train eastbound out of 30th Street station.

Equipment

As requested Amtrak supplied an exemplar locomotive and one cab-control car.
The equipment lined up as follows:

ATK 609 (east end)(lead)(ACS-64 locomotive)
ATK 9638 (west end)(rear car)(cab control car)
The train ID No. was KP-716

Staff

Amtrak provided the following qualified train crew to operate the train:
Engineer / Conductor / Brakeman
The train crew was called for duty at 7:00 pm.

The NTSB OPS Group rode in the Cab of the locomotive of the observation train. The group boarded the train at 30th Street Station at approximately 9:00 pm. A safety briefing was conducted upon boarding the train.

Train Operation

The train departed eastbound from the 30th Street at approximately 9:10 pm. As planned the train operated on the same track as the accident train. Signals were lined in the same manners as the day of the accident.

The train proceeded to all locations where signals were displayed for the accident train. And notes and photos (as possible) were taken. At the last three signal locations foot measurements were made from the location where the signal first became available. The details for these three locations are as follows:

Clearfield Interlocking : 3490 feet from point of first visibility to the signal location

Intermediate Signal No. 83.4 : 1384 feet from point of first visibility to the signal location

Shore Interlocking : 2730 feet from the point of first visibility to the signal location

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