

Submission to the
National Transportation Safety Board

For the

SEPTA Trolley v. SEPTA Trolley Collision
at
Lancaster Avenue & Powelton Avenue,
Philadelphia, PA on 4 January 2017

Case #DCA17FR003

INTRODUCTION

The NTSB is conducting an investigation into the SEPTA trolley v. SEPTA trolley collision of 4 January 2017. SEPTA has prepared this submission based on facts collected and shared by NTSB to all parties.

EXECUTIVE SUMMARY

On January 4, 2017, at 12:47 p.m., eastern standard time, Southeastern Pennsylvania Transportation Authority (SEPTA) trolley car 9101, with 43 passengers, was traveling west on trolley route number 10 when it stopped at the northwest corner of Lancaster Avenue and Powelton Avenue, Philadelphia, Pennsylvania, to offload passengers. SEPTA trolley car 9085, with 5 passengers, traveling in the same direction, collided with the rear of the stopped trolley car at an estimated speed of 11 miles per hour (mph). Emergency responders transported both operators and 40 passengers to local hospitals for non-life-threatening injuries. SEPTA estimated damages at approximately \$60,000. The weather at the time of the accident was partly cloudy and 54°F.

Sequence of Events

Operator Christopher Smith, in Trolley 9101, had been running approximately 5 minutes behind schedule upon arrival westbound at the 36th Street Portal (12:40 p.m.) when he used the restroom facility at the Portal. Operator Smith departed the Portal at 12:43 p.m., approximately 8 minutes behind schedule. Operator Gary Anderson, in Trolley 9085, arrived at the Portal at approximately 12:43 p.m., two minutes ahead of schedule. Operator Anderson then pulled behind Operator Smith's vehicle and followed closely behind until impact. Operator Smith made service stops at 36th & Market, 36th & Lancaster, and 38th & Lancaster. Operator Smith also stopped for a traffic signal at 37th Street. Operator Anderson was following closely behind at all times with the exception of 36th & Market where a FedEx vehicle briefly separated the two trolleys.

Operator Anderson was observed violating Rail Division Rule 65 (Movement Over Facing Point Switches) westbound on 36th Street at Lancaster Avenue. Both vehicles were stopped at 37th Street & Lancaster Avenue prior to impact at the next city block.

FINDINGS AND ANALYSIS

Equipment

Both SEPTA trolleys originated in the Callowhill District in Philadelphia, Pennsylvania and received a pre-trip inspection on January 4, 2017. Trolley 9085 showed no discrepancies in the inspection record and Trolley 9101 showed body damage in its inspection record that consisted of scratches in the front and along both sides. Records for both trolleys indicated that the brakes passed the inspection with no defects noted. In his interview with investigators, Operator Anderson reported no problems with the brake system or the performance of Trolley 9085 on the day of the accident.

On January 5, 2017, investigators completed visual inspections of SEPTA Trolley 9085 in the Elmwood maintenance facility in Philadelphia, Pennsylvania. Investigators observed all wheels to be within their tolerance, and normal wheel tread wear. There were no flat spots observed on the wheels of Trolley 9085 that would be an indication of the wheel lock-up during braking. All brake discs appeared normal (no cracks, chips, bluing) and investigations measured all brake pads and discs and they were within tolerance.

The track brake assembly was inspected and investigators found the spring suspension linkage, wiring, transfer members and friction elements to be intact and within tolerance.

Qualified SEPTA inspectors completed post-accident brake performance tests and they were observed by investigators. Trolley 9085 was subjected to a series of performance tests consisting of accelerations from 0 to 20 mph and applying the brakes. An independent measurement system provided by SEPTA was used to measure deceleration rates and to verify each brake operation. Investigators verified the sanding system and all braking systems functioned properly and met their deceleration rates. Investigators noted no discrepancies with the braking system.

SEPTA takes no exceptions to the operation and maintenance of Trolley 9085.

SEPTA acknowledges and appreciates that SEPTA maintenance staff and NTSB investigators uncovered a failed electrical switch associated with the emergency brake push-button on Trolley 9085 during testing conducted on January 8, 2017. SEPTA has since identified the cause of the failure, developed an engineering solution, and has corrected the possible failure on its entire trolley fleet. It is important to note, however, that this failure was not at all a contributing factor to the incident of January 4, 2017, since the operator did not activate the emergency braking systems using the emergency brake push-button. Rather, the emergency braking systems had been activated using the brake pedal and functioned properly during the accident.

Human Performance

Investigators interviewed several people associated with the accident. Among those interviewed included the striking operator, Gary Anderson; the struck operator, Christopher Smith; the District Dispatcher, Efrain Rodriguez; and the Transportation Manager, Darryle Crawley.

Qualifications & Training

SEPTA Operator Gary Anderson had a CDL license Class B, which was due to expire on 1/2/2018. Vehicles included on the license were bus and “other rail.” The “Operator

Qualification Record” indicated that Mr. Anderson had been hired on 1/27/2014 for Suburban/Light Rail. He completed his new hire training on 4/4/2014 and was “qualified for position.” He recertified annually; last on 4/29/2016.

SEPTA takes no exception to the training administered to Mr. Anderson nor the frequency with which it had been delivered.

Performance & Safety

SEPTA records showed that 158 rules compliance tests had been performed on Mr. Anderson between 1/1/2016 and 12/1/2016 with one failure. The failure was for the bus mode and the description was “schedule maintenance.”

SEPTA records revealed six performance incidents on the Striking Operator’s Performance Record in 2016. Three of these were in the category “Improper Operation,” one was in the category “Schedule Maintenance,” two were in the category “Other,” and one incident was not categorized.

SEPTA records revealed ten safety-related incidents on the Striking Operator’s Safety Record in 2016. In some of these incidents, the Striking Operator appeared to be at fault: for example, on 7/6/2016, the description was “contact with parked auto.” Other incidents did not appear to be the fault of the Striking Operator, such as the incident on 1/3/2016, described as “auto hit rear of trolley.” Non-collision incidents were reported as well, such as an 8/25/2016 report of “alleged reckless driving.”

SEPTA management has monitored Mr. Anderson’s records closely providing counseling and re-training where determined. The progressive discipline process had also been used where appropriate.

SEPTA takes no exception to the manner in which Mr. Anderson’s performance had been monitored and corrected, where needed.

Fatigue & Hours of Service

Operator Anderson reported for work at 11:30 a.m., on January 4, 2017, and was on duty for 1 hour and 26 minutes prior to the accident. He completed his previous work assignment at 9:16 p.m., on January 2, 2017. Anderson had been off duty for 38 hours and 14 minutes prior to coming on duty on January 4, 2017.

Mr. Anderson’s normal days off were Tuesday and Wednesday. He had volunteered to work an assignment on Wednesday, January 4, 2017. He had worked no overtime the seven days prior to the accident and took his regular days off the previous week (12/27 & 12/28/2016).

Anderson reported during his interview that he had not felt well on Tuesday, January 3, 2017, so he went to bed around 5:00 p.m. He woke around 2:00 a.m., and went back to sleep until around 8:00 a.m., giving him more than 12 hours of sleep. He stated that he “felt a lot better” upon waking the next morning.

Mr. Anderson claimed he took an over-the-counter cold and flu medication around 9:00 a.m., on the morning of January 4, 2017. He reported the medication as a CVS brand and stated he put it in some tea. Anderson stated he had not considered taking the day off sick. Upon reporting for work, Mr. Anderson never indicated to District Dispatcher Rodriguez that he was fatigued, ill, or otherwise unable to complete his work for the day. Rodriguez observed Mr. Anderson, spoke with him briefly, and noted nothing unusual.

After the accident, Transportation Manager Crawley interviewed Mr. Anderson briefly. Mr. Crawley stated that Anderson initially reported the cause of the accident as due to Anderson’s foot slipping off the brake pedal. Later, Anderson recanted that explanation and stated that he “blacked out” due to medication he had taken earlier in the day.

SEPTA rules state that, *“Employees must not perform any service while affected by any condition that could impair their ability to perform their duties properly. Such conditions include fatigue, use, and effect of over-the-counter medications, personal situations that affect alertness or one’s ability to concentrate, etc. Employees must notify the Authority Medical Department of any condition not already on record that could impair their ability to perform their duties...”*

The Collective Bargaining Agreement between SEPTA and the Transport Workers Union provides for employees to call off sick if they are unable to perform service due to illness. Employees may “turn in” sick to their District Dispatcher at any time prior to or during their shift. Employees accumulate 60 sick days per year that they may use when they are ill. An Attendance Point System had been negotiated between the parties to ensure fair and equitable treatment of employees with regard to attendance. Mr. Anderson had utilized the Attendance Process in the past and had no attendance deviations on his record at the time of the incident.

Neither Hours of Service nor fatigue, brought on by excessive activity or poor sleep habits, contributed to this accident. It is unclear whether Mr. Anderson had been fatigued or otherwise impaired by over-the-counter medications. Despite that uncertainty, SEPTA issued a Notice to all employees and managers advising them of the hazards associated with over-the-counter medication and the requirement for employees to refrain from taking medications that may impair their ability to perform their duties.

A. CAUSE

Probable Cause

SEPTA believes the probable cause of the incident to be the loss of situational awareness by Operator Gary Anderson that led to his failure to properly plan his stopping distance and bring his trolley to a stop in accordance with SEPTA's rules for LRV stopping distances while in street operation.

Contributory Causes

- A pattern of operating rule violations, by Operator Anderson as demonstrated earlier that, if followed, might have created spacing that could have prevented the collision.

B. RECOMMENDATIONS

Pursuant to the findings and causes referenced above, SEPTA proposes the following recommendations.

1. Include a review of Rail Division Rule 61 – Following Light Rail Vehicles in future re-certification classes to ensure that all Surface Train Operators are familiar with the spacing requirements associated for following trolleys in street operation.
2. Create an engineering modification for the trolley emergency brake push-button to correct the switch failure discovered during testing. Install the modification in both the single-end and double-end fleets.

Additionally, SEPTA proposes the following recommendations to further reduce the possibility of similar accidents occurring the future.

3. Issue a Notice to all employees reiterating SEPTA's requirements for being mindful of taking over-the-counter medication and its potential effects on safety-sensitive employees.
4. Modify the reporting windows at operator reporting locations so that District Dispatchers and/or Clerk Receivers can make observations of operators without a glass divider in place.
5. Train all Clerk Receivers in Drug & Alcohol recognition so that they may assist District Dispatchers in observing Operators as they report for duty.

6. Work with 3rd party vendors on the development of a collision warning system for the current street-running trolley fleet. Investigate the technology for future trolley procurements.