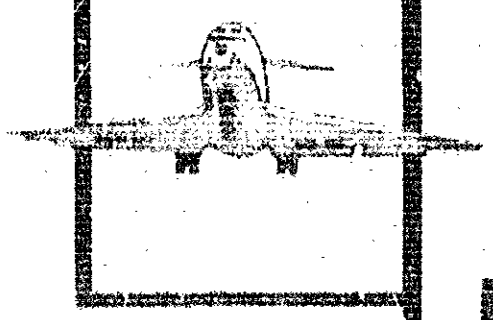
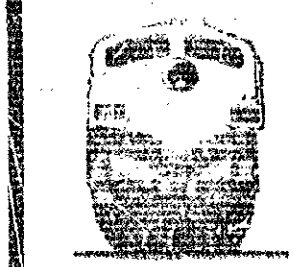
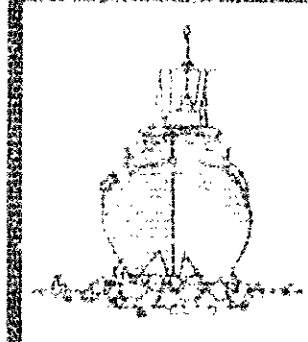
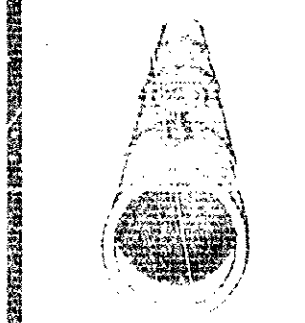
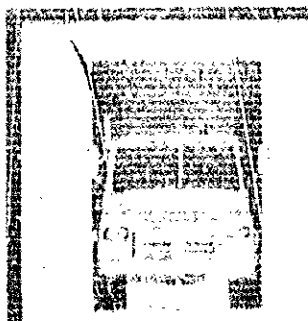
PB88-916302











NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

RAILROAD ACCIDENT/INCIDENT SUMMARY REPORTS

PHILADELPHIA, PENNSYLVANIA--DECEMBER 10, 1986
ARDMORE, PENNSYLVANIA--JANUARY 26, 1987

NTSB/RAR-88/01/SUM

UNITED STATES GOVERNMENT

TECHNICAL REPORT DOCUMENTATION PAGE

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7. Author(s)		8. Performing Organization Report No.
9. Performing Organization Name and Address National Transportation Safety Board Bureau of Accident Investigation Washington, D.C. 20594		10. Work Unit No. 4486B
		11. Contract or Grant No.
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12. Sponsoring Agency Name and Address NATIONAL TRANSPORTATION SAFETY BOARD Washington, D.C. 20594		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This publication is a compilation of two separate railroad accidents investigated by the National Transportation Safety Board. The accident locations and their dates are as follows: Philadelphia, Pennsylvania, December 10, 1986; and Ardmore, Pennsylvania, January 26, 1987.

17. Key Words Rear-end collision; slippery rail; drug and alcohol use.		18. Distribution Statement This document is available to the public through the National Technical Information Service Springfield, Virginia 22161	
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National
Transportation
Safety Board

Washington, D.C. 20594

RAILROAD ACCIDENT/INCIDENT SUMMARY

Accident:	NYC-87-F-R006
Location:	Philadelphia, Pennsylvania
Date and Time:	December 10, 1986, 5:27 p.m.
Railroad and Operator:	Southeastern Pennsylvania Transportation Authority
Type of Train:	Commuter
Persons on Board:	6 crewmembers and about 110 passengers
Injuries:	6 crewmembers and about 28 passengers
Damage:	$325,000
Other Damage and Injuries	None
Type of Occurrence:	Rear-end collision
Phase of Operation:	Train No. 0151 en route; train No 9843 standing, loading/unloading.

About 5:07 p.m. on December 10, 1986, Southeastern Pennsylvania Transportation Authority (SEPTA) train 0151, consisting of a single car, departed Newtown Siding southbound en route to Philadelphia International Airport. The weather was clear. Before departing, the crew tested the airbrakes and noted no problems. The train made stops at the North Broad, Temple U, and Market East Stations. The train departed the Market East Station with 8 to 10 passengers aboard on an approach (amber) signal aspect. An approach signal indicates that a train may proceed at a speed not to exceed 30 mph and should be prepared to stop at the next signal. Also, the speed reduction to 30 mph or less must commence before the train passes the approach signal.

The engineer of train 0151 knew that he usually followed train 9843 on this run. According to postaccident statements, the engineer of train 0151 said that he was operating the train at a speed of about 12 to 15 mph when it entered a left-hand curve outside the Suburban Station, at which time interlocking signal 6W (located 57 feet north of the station) came into view displaying a restricting (red over red over amber) signal aspect. The engineer said that it was normal to encounter a restricting aspect on this signal, which according to a special instruction requires that at signal 6W a train must stop and proceed at a restricted speed, "prepared to stop short of train, obstruction or switch not properly lined, prepared to stop within one-half the range of vision, not exceeding 20 mph, and looking out for broken rail." The engineer said that he applied the train brakes but the train began to slide. He said that he made two further brake applications during which the slip/slide decelostat activated and that when the train was about 1/2 car length (42 feet) from the signal, he put the train into emergency braking. Train 0151 continued to slide into the Suburban Station 267 feet beyond the signal and, about 5:27 p.m., struck the rear of train 9843, which was standing in the station loading and unloading passengers.

A passenger witness on the platform observed train 0151 enter the station and strike train 9843. He estimated the train speed to have been 10 to 15 mph. The witness heard three or four short airbrake applications as the train entered the station. The witness said that the emergency airbrakes were applied when train 0151 was about 1/2 car length from the rear of train 9843.

Immediately after the accident, SEPTA officials and the Philadelphia Fire Department responded and began rescue operations. About 8 passengers and 2 crewmembers on train 0151 and 20 passengers and 4 crewmembers on train 9843 were treated for minor injuries at area hospitals and were released.

The crew of train 0151 consisted of a locomotive engineer and conductor. Both went on duty at 2:57 p.m. at the Roberts Avenue Yard.

The engineer's SEPTA service started in January 1983. His last physical and rules examinations were in November 1986. His performance record disclosed two commendations, nine warnings for substandard attendance, four suspensions for substandard attendance, and a 5-day suspension for failure to make a brake test.

The conductor of train 0151 started with the Reading Railroad as a clerk on July 31, 1953. He transferred from a clerk to a trainman in June 1962 and was promoted to conductor in 1964. The conductor's last physical examination was in July 1985. His last rules examination was in July 1986.

The crew of train 9843 consisted of a locomotive engineer, a conductor, and two passenger attendants. The locomotive engineer and conductor both went on duty at Chestnut Hill West at 3:26 p.m., one passenger attendant went on duty at Chestnut Hill West at 6:40 a.m., and the other passenger attendant joined train 9843 at the Suburban Station just before the accident.

The locomotive engineer started with the Reading Railroad on February 12, 1953. His last physical examination was in July 1986 and his last rules examination was in September 1986.

The conductor of train 9843 formerly was employed by the Penn Central Railroad on December 28, 1964, as an assistant conductor. His last physical examination was in February 1985, and his last rules examination was in August 1986.

The passenger attendant who went on duty at Chestnut Hill West started with SEPTA on June 17, 1984. His last physical examination was in June 1984. He was restricted and had no qualifying dates for rules examinations. His performance record disclosed six cautions and a 3-day suspension for substandard attendance.

The passenger attendant who joined train 9843 just before the accident was originally hired by the Consolidated Rail Corporation on August 19, 1977. His last physical and rules examinations were in November 1986. His personnel record disclosed one commendation, five admonishments for substandard attendance, and one suspension for not being current in the operating rules (he was reinstated 4 months later).

Toxicology testing was performed on all crewmembers following the accident. The conductor of train 0151 and the engineer and the conductor of train 9843 tested negative for drugs and alcohol.

The engineer of train 0151 supplied blood and urine samples about 2 1/2 hours after the accident; the samples were analyzed by the Civil Aeromedical Institute (CAMI). The testing screened for the following substances: cannabinoids, barbiturates, cocaine, benzodiazepines, amphetamines, opiates, pheniramines, methaqualone, phecyclidine, propoxyphene, and ethyl alcohol. The urine sample tested positive for cocaine with an indication of 2.6 mcg/ml benzoylecognine. The blood sample tested negative for drugs tested by the protocol. Due to questionable analytical procedures, the results from CAMI were not used.

Testing of blood and urine samples from the engineer were also performed by the Center for Human Toxicology (CHT) at the University of Utah. These test results showed 0.031 mcg/ml of cocaine and 0.035 mcg/ml of benzoylecognine in the blood sample and 0.705 mcg/ml benzoylecognine in the urine. Due to the low cocaine and benzoylecognine concentration in the blood, it could not be determined whether or not the engineer was impaired. However, the presence of drugs may have been a factor in the accident.

Both passenger attendents on train 9843 tested positive for drugs. Both attendents provided urine and blood samples within 3 hours after the accident, and the samples were tested by CAMI. The first attendent's samples showed 168 ng/ml carboxylic acid metabolite of THC (delta-9-tetrahydro-cannabinal) for urine, 14 ng/ml carboxylic acid metabolite of THC in the blood, and less than 5 ng/ml THC in the blood. An interpretative note indicates "Cannabinoid levels probably indicate chronic use or use 6 hours or more before samples taken." The other attendent's samples showed 92 ng/ml carboxylic acid metabolite of THC for urine, 32 ng/ml carboxylic acid metabolite of THC in the blood, and less than 5 ng/ml THC in the blood. Urine tested positive for cocaine and 1.5 mcg/ml benzoylecognine. An interpretative note indicates "Cannabinoid levels probably indicate chronic use or use at least 2 hours or more before samples were obtained. Cocaine usage probably 12 hours or more before samples were obtained."

In December 1985, SEPTA began toxicological testing of employees in cases where there was a reasonable suspicion that the employee was under the influence of alcohol or drugs. On April 1, 1986, in an effort to upgrade supervisor proficiency in recognizing the symptoms displayed by a person "under the influence" of drugs or alcohol, SEPTA sent 320 supervisors to a 2-day training session, entitled "Program for Drug and Alcohol Detection," at the Pennsylvania Institute. The last of SEPTA's supervisors completed the training on August 12, 1986. In January 1987, SEPTA instituted random toxicological testing of its employees. On the first day of this program, samples were collected from 11 railcar operators before labor unions representing SEPTA employees brought legal action to halt the program.

Train 0151 consisted of car 231, an electric multiple-unit (MU) Silverliner III built by the St. Louis Car Company in 1967 for the Pennsylvania Railroad. Car 231 was one of a series of 20 cars designed to run singly or in multiple-unit sets controlled from one control station. The car was 85 feet long, weighed 105,540 pounds empty, and was equipped with Westinghouse type 26R airbrakes and eight tread brake units using composition brake shoes. The car also had a Westinghouse Decelostat slip/slide protection system that is designed to quickly apply and release the brakes to reduce flat spots on the wheels. The car was equipped with a Futec-Fuji Flange Lubricator model B-7000 which was designed to coat the surface of the wheel flanges with lubricating oil to reduce flange wear. It was operating at the time of the accident. The car derived propulsion power from an overhead catenary wire carrying 11,500 volts a.c. The car had an operable two-way radio, cab signals, headlight, markers, and a speedometer. Postaccident testing using a radar gun determined that the speedometer was registering a speed 4 to 6 mph slower than the actual speed of the car. There was no evidence to show that the speedometer had been damaged in the accident. There was no speed or event recorder on board, and none was required.

Southbound trains on track 3 entering the Suburban Station pass through the Penn Center interlocking switches and signals which are under the control of Broad Tower. Train movements are governed by timetable, special instructions, train orders, the Book of Operating Rules, wayside and cab signal aspects, and dispatcher instructions. A postaccident inspection of the signal system revealed that it was functioning properly.

The accident occurred in the B-section platform area of track 3 at the Suburban Station. The track approaching the accident site is within the tunnel that connects Suburban Station with Market East Station (the last stop train 0151 made before the accident). Approaching the accident site from the north, track 3 is within the tunnel and tangent, rising on a 2.24-percent grade until the track passes over the Broad Street Subway tunnel. The track then enters an 8-degree curve to the right while descending on a 2.8-percent grade, followed by a tangent section of track roughly 66 feet long, and then a 9-degree curve to the left. The curve continues up to interlocking signal 6W; the track is then tangent through the Suburban Station. Interlocking signal 6W is 57 feet north of the Suburban Station.

Track 3 had two rail lubricators: one on the west rail 1,303 feet north of interlocking signal 6W and one on the east rail 1,582 feet north of the signal. The rail lubricators, which used Texaco 904 graphite lubricant, were adjustable to regulate the amount of grease dispensed. After the accident, a filmy black substance was found on top of both rails, extending from the accident site to the rail lubricators. This same substance was found on the splash guards of car 231 of train 0151. Braking marks were found on the rail head beginning 279 feet north of interlocking signal 6W. There were braking marks on the rail until 7 feet 1 inch north of the signal. Emergency braking slide marks were found beginning 7 feet 1 inch north of interlocking signal 6W and continuing south of the signal 259 feet to the point of impact. Track Department personnel examined the rail lubricators and found them both out of adjustment. The misadjustment would have allowed too much grease to be transmitted to the rail head. The grease could have been carried forward by the wheel treads of passing trains.

On December 2, 8 days before the accident, a slippery rail condition on track 3 had been reported to the Broad Tower operator who broadcast a radio warning to trains until sometime in the afternoon of December 2. The slippery rail condition also was reported to the Track Department but no further action was taken. On the day of the accident, the slippery rail condition was again reported to the Broad Tower operator before the accident, but no radio message or corrective actions were taken.

Shortly after the accident, SEPTA employees conducted sight and stopping distance tests. It was determined that interlocking signal 6W first became visible 364 feet north of the signal, and that the rear of train 9843 became visible 115 feet north of where the rear car of the train was stopped in the station at the time of the accident. The track had not been cleaned after the accident, and the slippery conditions still existed. The test car was similar to car 231, except that it did not have a flange lubricator. The results of the tests were as follows:

Test Speed (mph)	Type of Braking	Result
15	15 lb at sighting signal; no decelostat action	Continued into station under control
20	8-10 lb at sighting signal; then full service (26 lb) at sighting signal; with decelostat action	Stopped north of signal

Test Speed (mph)	Type of Braking	Result
15	10 lb before sighting signal; then full ser vice (26 lb) at sighting signal; with decelostat action	Stopped 15 to 20 ft north of signal
20	10 lb before sighting signal; then full service (26 lb) at sighting signal; with decelostat action; emergency braking 5 to 10 ft north of signal	Stopped 40 ft south of signal, 227 ft north of collision point
30	10 lb at sighting signal; then full service (26 lb); with decelostat action; emergency braking 5to 10 ft north of signal	Stopped south of collision point
25	10 lb at sighting signal; then full service (26 lb); with decelostat action; emergency braking 5 to 10 ft north of signal	Stopped south of collision point

Three days after the accident, the test car was used to determine stopping distances on clean, dry rail. The results of the tests were as follows:

Test Speed (mph)	Type of Braking	Result
15	15 lb at sighting signal; no decelostat action	Stopped 180 ft north of signal
20	8 to 10 lb at sighting signal; then full service (26 lb) at sighting signal; no decelostat action	Stopped 143 ft north of signal
15	10 lb before sighting signal; then full service (26 lb) at sighting signal; no decelostat action	Stopped 248 ft north of signal
20	10 lb before sighting signal; then full service (26 lb) at sighting signal; no decelostat action; emergency braking 5 to 10 ft north of signal	Stopped 224 ft north of signal

Test Speed (mph)	Type of Braking	Result
30	10 lb before sighting signal; then full service (26 lb) no decelostat action; emergency braking 5 to 10 ft north of signal	Stopped 46 to 53 ft south of signal, 214 to 221 ft north of collision point
25	10 lb at sighting signal; then full service (26 lb); no decelostat action; then emergency braking	Stopped 37 ft north of signal

Five days after the accident, stopping distance tests on clean, dry rail were made with car 231, which had been repaired. The flange lubricator was operating during the tests. The results of the tests were as follows:

Test Speed (mph)	Type of Braking	Result
15	15 lb at sighting signal; no decelostat action	Stopped 155 ft north of signal
20	8 to 10 lb at sighting signal; then full service (26 lb) at sighting signal; no decelostat action	Stopped 65 ft north of signal
15	10 lb before sighting signal; then full service (26 lb) at sighting signal; no decelostat action	Stopped 237 ft north of signal
20	10 lb before sighting signal; then full service (26 lb) at sighting signal; no decelostat action; emergency braking 5 to 10 ft north of signal	Stopped 122 ft north of signal
30	10 lb before sighting signal; then full service (26 lb) at sighting signal; no decelostat action; emergency braking 5 to 10 ft north of signal	Stopped 51 ft south of signal, 216 ft north of collision point
25	10 lb at sighting signal; then full service (26 lb); no decelostat action; then emergency braking	Stopped 50 ft north of signal

Laboratory tests were performed on the filmy black substance found on the rail near the accident site and the splash guards of car 231. The substance resembled the Texaco 904 lubricant from the rail lubricator and not the Imperial Oil and Grease MW040 from the flange lubricator.

The engineer said that he was operating car 231 at a speed of 12 to 15 mph when signal 6W came into view and he applied the train brakes. Postaccident testing determined that the speedometer on car 231 was registering a speed 4 to 6 mph slower than the actual speed being traveled. Therefore, car 231 probably was moving at a speed of 16 to 21 mph when the engineer said that he applied the brakes. Although there was no speed recorder on board, braking and slip/slide marks on the rail verified the engineer's early braking efforts. However, the evidence shows that emergency braking was not initiated until the train was 7 feet north of the signal, not 1/2 car length (42 feet) north as the engineer stated. The witness who said the emergency airbrakes were not applied until train 0151 was about 1/2 car length from the rear of train 9843 may have heard the sound of the decelostat operating, which is similar to the sound of emergency braking. The postaccident examination of the rail lubricators located north of interlocking signal 6W disclosed that they were out of adjustment and were allowing too much grease to be transmitted to the rail head. Although excessive grease may have prevented train 0151 from achieving total braking performance, the postaccident stopping distance tests show that the train could have been stopped short of the collision, even on slippery rail at a speed of 20 mph, if the operator had initiated proper braking action when the signal first became visual. There is no evidence that the flange lubricator on car 231 malfunctioned and contributed to the accident.

Based on toxicological analysis, the Safety Board concludes that the engineer of train 0151 did use cocaine sometime before the collection of specimens. However, the concentration of cocaine in the blood was low, and it cannot be conclusively established that he was impaired.

The Safety Board believes that the toxicological analysis and the work/absentee record of the engineer of train 0151 suggests a cocaine dependency problem. The Safety Board is concerned that drug use by employees in safety-sensitive positions may be a problem in the SEPTA system based on the evidence of drug use by both the engineer of train 0151 and the two attendents of train 9843.

As a result of its investigation of a rear-end collision of two trains in Miami, Florida, on June 26, 1985, 1/ the Safety Board recommends that the Urban Mass Transportation Authority (UMTA):

R-86-34

Require that all employees involved in a rail rapid transit accident with a fatality, injury, or property damage be tested in a timely manner for alcohol and drugs.

1/ Railroad Accident Report--"Rear End Collision of Metro-Dade Transportation Administration Trains Nos. 171-171 and 141-142, Miami, Florida, June 26, 1985" (NTSB/RAR-86/03).

R-86-35

Require rail rapid transit systems to screen for drug and alcohol abuse all prospective and transferred employees prior to employment in safety-sensitive positions.

R-86-36

Require rail rapid transit systems to institute procedures and information systems to inform employees of the deleterious effects on work performance of some over-the-counter and prescription drugs on work performance.

R-86-37

Require the removal of employees from safety-sensitive positions if the rail rapic transit medical department determines that the employees' use of a prescription drug will affect their work performance.

R-86-38

Encourage the creation of effective employee assistance programs to detect and treat substance abuse among rail rapid transit employees in safety-sensitive positions.

In a letter to UMTA, dated November 3, 1987, the Safety Board stated:

> It is aware of UMTA's role and authority in regard to safety matters in the transit industry and that this authority is somewhat limited. If, in order to implement the intent of the Board's recommendations, particularly Safety Recommendations R-86-34 through -37, UMTA must seek the necessary legislation, the Board urges UMTA to do so. The Board feels strongly that the issue of alcohol and drug abuse in the transit industry is one that warrants Federal involvement. The Board notes that with respect to Safety Recommendation R-86-38, UMTA has indicated that it plans to undertake rulemaking to require recipients of UMTA funds to establish drug abuse programs and that UMTA is also considering seeking legislation from Congress to strengthen such a rulemaking. The Board, therefore, believes that UMTA could and should follow a similar course of action to implement Safety Recommendations R 86 34 through -37.
>
> The Board notes further UMTA's statement that 75 percent of the transit systems, responding to a survey indicated that they have written rules, procedures, policies, or directives addressing the drug and alcohol abuse issue. The Board interprets this statement as suggesting that UMTA feels that existing rules and policies within the transit industry are adequate and that, consequently, Federal regulations are not necessary. The Board points out, however, that many companies within the railroad industry had rules and policies addressing the alcohol and drug issue, but accidents involving alcohol and drugs continued to occur and, ultimately, Federal regulations, were necessary. If the Board's interpretation of

> UMTA's statement is correct, there appears to be some contradiction in UMTA's overall approach to this subject in that UMTA believes that rulemaking is necessary to require the establishment of alcohol and drug abuse programs but apparently does not believe there is a need to address the specific issues outlined in Safety Recommendations R-86-34 through -37.

On February 1, 1988, UMTA responded that:

> UMTA has developed and forwarded to the Department of Transportation's General Counsel's Office a draft Notice of Proposed Rulemaking on "Control of Drug Use in Mass Transportation Operations." Second, this initial draft of proposed rulemaking currently being circulated within the Department addresses recommendations R-86-34 through R-86-37 as well as recommendation R-86-38.
>
> Alternatives to the proposed safety demonstration project are being considered to approach the drug and alcohol abuse problem in the transit industry. Among the options under consideration are a "how to" manual, challenge grants, and a national task force to study the problem.

Pending the Safety Board's evaluation of UMTA's response, Safety Recommendations R-86-34 through -37 will remain in an "Open--Unacceptable Action" status. Safety Recommendation R-86-38 has been classified as "Open--Acceptable Action.

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the engineer of Septa Commuter Train 0151 to comply with the approach and stop signals and the slippery condition of the rail.

The attached brief of accident contains the Safety Board's findings.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JIM BURNETT
Chairman

/s/ JAMES L. KOLSTAD
Vice Chairman

/s/ JOHN K. LAUBER
Member

/s/ JOSEPH T. NALL
Member

March 29, 1988

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594
NYC-87-F-R006A
BRIEF OF ACCIDENT

File No. - 86-156 | 12/10/86 | PHILADELPHIA, PA | Time (Lcl) - 0527 EST

--Basic Information--

Reporting Railroad - SEPTA
Type of Accident - COLLISION, REAR
Operating Phase - STOPPING
Method of Operation - TIMETABLE
TRAIN ORDERS

Property Losses
Railroad - $200,000
Non-Railroad - $ 0

Fire
NO

	Injuries			
	Fatal	Serious	Minor	None
Employees	0	0	2	0
Passengers	0	0	10	0
Motorist	0	0	0	0
Other	0	1	25	15

--Railroad/Personnel Information--

Train Data
Railroad - SEPTA
Type of Train - COMMUTER
Train ID - 0151
Direction - SOUTH
Speed (Est.) - 12
Speed (Auth.) - 1

Train Consist/Damage
No. Loco. Units - N/A
No. Cars/Caboose - 1/0
End of Train Monitor - N/A
Length (Feet) - N/A
Trailing Tons - N/A
Loco. Damaged/Derailed - N/A
Cars Damaged/Derailed - 1/0

Crew Information
Front End - 1
Rear End - 1
Toxicology Performed - YES
Results - POSITIVE
Radio Communications
Radio Available - YES
Operational - YES

--Environment/Operations Information--

Weather Data
Weather Condition - CLEAR
Condition of Light - TUNNEL/ARTIFICAL ILL.
Sight Distance - 115 FT.

Itinerary
Last Departure Point
NEWTOWN, PA
Destination
PHILADELPHIA ARPT, PA

Hazardous Materials
Involved - NO
Evacuation - YES
Cars Involved - 0
Track Information
Owner - SEPTA
Type/No. of Tracks - MAIN/2
Gradient/Alignment - LEVEL/TANGENT

--Narrative--

COMMUTER TRAIN NUMBER 0151, CONSISTING OF ONE SILVERLINER CAR, STRUCK THE REAR OF STANDING COMMUTER TRAIN NUMBER 9843, CONSISTING OF 4 SILVERLINER CARS, IN SUBURBAN STATION. NUMBER 9843 WAS LOADING AND UNLOADING PASSENGERS. RAIL LUBRICATORS PRECEDING THE ACCIDENT SITE WERE OUT OF ADJUSTMENT AND HAD APPLIED EXCESSIVE LUBRICANT TO THE RAILS. WHEN THE ENGINEER OF NUMBER 0151 ATTEMPTED TO STOP, THE TRAIN BEGAN TO SLIDE UNTIL IT STRUCK NUMBER 9843. TOXICOLOGICAL TESTING OF THE ENGINEER OF NUMBER 0151 WAS POSITIVE FOR COCAINE. ON TRAIN NUMBER 9843, ONE PASSENGER ATTENDANT TESTED POSITIVE FOR MARIJUANA AND COCAINE, AND THE SECOND PASSENGER ATTENDANT TESTED POSITIVE FOR COCAINE.

File No. - 86-156 12/10/86 PHILADELPHIA, PA Time (Lcl) - 0527 EST

Occurrence #1 - COLLISION, REAR
Phase - STOPPING

Finding(s)

1. SIGNAL INDICATION - MISJUDGED - ROAD PASSENGER ENGINEER
2. PHYSICAL IMPAIRMENT (DRUGS) - ROAD PASSENGER ENGINEER
3. RAIL HEAD - CONTAMINATED
4. RAIL HEAD - SLIPPERY
5. TRACK MAINTENANCE - NOT CORRECTED - YARDMASTER

~~Probable Cause~~

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,4

Factor(s) relating to this accident is/are finding(s) 2, 5

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594
NYC-87-F-R006B
BRIEF OF ACCIDENT

File No. - 86-156 | 12/10/86 | PHILADELPHIA, PA | Time (Lcl) - 0527 EST

—Basic Information—

Reporting Railroad - SEPTA
Type of Accident - COLLISION, REAR
Operating Phase - STANDING
Method of Operation - TIMETABLE
TRAIN ORDERS

Property Losses
Railroad - $125,000
Non-Railroad - $ 0

Fire
NO

Injuries

	Fatal	Serious	Minor	None
Employees	0	0	4	0
Passengers	0	1	21	15
Motorist	0	0	0	0
Other	0	0	12	0

—Railroad/Personnel Information—

Train Data
Railroad - SEPTA
Type of Train - COMMUTER
Train ID - 9843
Direction - SOUTH
Speed (Est.) - 0
Speed (Auth.) - 0

Train Consist/Damage
No. Loco. Units - N/A
No. Cars/Caboose - 4/0
End of Train Monitor - N/A
Length (Feet) - N/A
Trailing Tons - N/A
Loco. Damaged/Derailed - N/A
Cars Damaged/Derailed - 1/0

Crew Information
Front End - 1
Rear End - 3
Toxicology Performed - YES
Results - POSITIVE
Radio Communications
Radio Available - YES
Operational - YES

—Environment/Operations Information—

Weather Data
Weather Condition - CLEAR
Condition of Light - TUNNEL/ARTIFICIAL ILL.
Sight Distance - 115 FT.

Itinerary
Last Departure Point
ROBERTS YARD, PA

Destination
CHESTNUT HILL WEST, PA

Hazardous Materials
Involved - NO
Evacuation - YES
Cars Involved - 0
Track Information
Owner - SEPTA
Type/No. of Tracks - MAIN/2
Gradient/Alignment - LEVEL/TANGENT

—Narrative—

COMMUTER TRAIN NUMBER 0151, CONSISTING OF ONE SILVERLINER CAR, STRUCK THE REAR OF STANDING COMMUTER TRAIN NUMBER 9843, CONSISTING OF 4 SILVERLINER CARS, IN SUBURBAN STATION. NUMBER 9843 WAS LOADING AND UNLOADING PASSENGERS. RAIL LUBRICATORS PRECEDING THE ACCIDENT SITE WERE OUT OF ADJUSTMENT AND HAD APPLIED EXCESSIVE LUBRICANT TO THE RAILS. WHEN THE ENGINEER OF NUMBER 0151 ATTEMPTED TO STOP, THE TRAIN BEGAN TO SLIDE UNTIL IT STRUCK NUMBER 9843. TOXICOLOGICAL TESTING OF THE ENGINEER OF NUMBER 0151 WAS POSITIVE FOR COCAINE. ON TRAIN NUMBER 9843, ONE PASSENGER ATTENDANT TESTED POSITIVE FOR MARIJUANA AND COCAINE, AND THE SECOND PASSENGER ATTENDANT TESTED POSITIVE FOR COCAINE.

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594
NYC-87-F-R006B
BRIEF OF ACCIDENT

File No. - 86-156 | 12/10/86 | PHILADELPHIA, PA | Time (Lcl) - 0527 EST

Basic Information

Reporting Railroad - SEPTA
Type of Accident - COLLISION, REAR
Operating Phase - STANDING
Method of Operation - TIMETABLE
TRAIN ORDERS

Property Losses
Railroad - $125,000
Non-Railroad - $ 0

Fire
NO

Injuries	Fatal	Serious	Minor	None
Employees	0	0	4	0
Passengers	0	1	21	15
Motorist	0	0	0	0
Other	0	0	12	0

Railroad/Personnel Information

Train Data
Railroad - SEPTA
Type of Train - COMMUTER
Train ID - 9843
Direction - SOUTH
Speed (Est.) - 0
Speed (Auth.) - 0

Train Consist/Damage
No. Loco. Units - N/A
No. Cars/Caboose - 4/0
End of Train Monitor - N/A
Length (Feet) - N/A
Trailing Tons - N/A
Loco. Damaged/Derailed - N/A
Cars Damaged/Derailed - 1/0

Crew Information
Front End - 1
Rear End - 3
Toxicology Performed - YES
Results - POSITIVE
Radio Communications
Radio Available - YES
Operational - YES

Environment/Operations Information

Weather Data
Weather Condition - CLEAR
Condition of Light - TUNNEL/ARTIFICIAL ILL.
Sight Distance - 115 FT.

Itinerary
Last Departure Point
ROBERTS YARD, PA

Destination
CHESTNUT HILL WEST, PA

Hazardous Materials
Involved - NO
Evacuation - YES
Cars Involved - 0
Track Information
Owner - SEPTA
Type/No. of Tracks - MAIN/2
Gradient/Alignment - LEVEL/TANGENT

Narrative

COMMUTER TRAIN NUMBER 0151, CONSISTING OF ONE SILVERLINER CAR, STRUCK THE REAR OF STANDING COMMUTER TRAIN NUMBER 9843, CONSISTING OF 4 SILVERLINER CARS AT SUBURBAN STATION. NUMBER 9843 WAS LOADING AND UNLOADING PASSENGERS. RAIL LUBRICATORS PRECEDING THE ACCIDENT SITE WERE OUT OF ADJUSTMENT AND HAD APPLIED EXCESSIVE LUBRICANT TO THE RAILS. WHEN THE ENGINEER OF NUMBER 0151 ATTEMPTED TO STOP, THE TRAIN BEGAN TO SLIDE UNTIL IT STRUCK NUMBER 9843. TOXICOLOGICAL TESTING OF THE ENGINEER OF NUMBER 0151 WAS POSITIVE FOR COCAINE. ON TRAIN NUMBER 9843, ONE PASSENGER ATTENDANT TESTED POSITIVE FOR MARIJUANA AND COCAINE, AND THE SECOND PASSENGER ATTENDANT TESTED POSITIVE FOR COCAINE.

National
Transportation
Safety Board

Washington, D.C. 20594

RAILROAD ACCIDENT/INCIDENT SUMMARY

Accident:	NYC-87-F-R009
Location:	Ardmore, Pennsylvania
Date and Time:	January 26, 1987, 8:29 p.m.
Railroad and Operator:	Southeastern Pennsylvania Transportation Authority
Type of Train:	Two transit cars and one work car
Persons on Board:	3 operators, 23 passengers
Injuries:	18 passengers received minor injuries
Damage:	$148,000
Other Damage and Injuries:	None
Type of Occurrence:	Rear-end collision
Phase of Operation:	En route on main track

At 7:47 p.m. on January 26, 1987, Southeastern Pennsylvania Transportation Authority (SEPTA) bullet car 207 departed the 69th Street Terminal, Upper Darby, Pennsylvania, northbound for Norristown, Pennsylvania, via SEPTA's Red Arrow Division, Norristown High Speed Line track. The movements of cars on the line are controlled by an automatic block signal system. The weather was clear. Car 207 passed the Ardmore Junction Station and about 7:55 p.m. arrived at the Ardmore Avenue Station, where it stopped to discharge passengers. After departing the station, the operator stopped at signal 19, located 378.9 feet north of the station, which was displaying a stop (red) aspect. He called the SEPTA Control Center to report that a work car was stopped in front of him.

The work car had departed the 69th Street Terminal northbound at 7:31 p.m. to clear snow around the third rail. It broke down and stopped north of signal 19. Because the operator of the work car was having difficulty communicating with the control center, the control center instructed car 207 to proceed with caution up to the work car to help maintain radio contact with the work car. The rear of car 207 was about 213 feet north of signal 19.

At 8:17 p.m., car 202 departed the 69th Street Terminal for Norristown. About 8:29 p.m., car 202 passed the Ardmore Junction Station. Signal 17, which was 141.7 feet north of the station, was displaying an approach (amber) aspect. The amber aspect indicates to a car operator that he should "Approach the next signal at a medium speed, not to exceed 25 mph; prepare to stop short of the next signal," which in this case was signal 19 located north of the Ardmore Avenue Station. Since car 202 was not required to stop at the Ardmore Avenue Station, the operator proceeded past the station. As the car continued around a right curve, the operator saw signal 19 displaying a stop (red) aspect, and he applied the car brakes but went past the signal. The operator of car 202 said that after passing signal 19, he saw the red marker light on the rear of a car ahead. He said he slapped at the brake handle and ran toward the rear of car 202.

At 8:29 p.m, car 202 collided with the rear of car 207 and pushed it into the rear of the work car. The operator of the work car called the control center via radio and reported an emergency. The control center called for emergency service. Of the 23 passengers and 3 operators on board the cars, 18 passenger were taken to hospitals, treated for minor injuries, and released. Damage to the equipment was estimated to be $148,000.

The B-end sheet of car 202 was crushed 1 1/2 feet at the anticlimber, and two seatbacks were dislodged. The A-end exterior skin of car 207 was severely bent, its anticlimber was crushed inward 2 1/2 feet, and the coupler and radial bar carrier was broken off. The A-end roof was deformed upward and splintered. The work car received minor damage.

The 21-year-old operator of car 202 was hired by SEPTA on June 3, 1985. His service record showed eight disciplinary actions for rules violations for reporting late for work. He had been involved in three accidents, for which he was suspended each time. The last accident occurred November 11, 1986, when he passed a red flag, endangering the lives of a supervisor and others. On the day of the accident, he had reported for duty at 2:38 p.m. at the 69th Street Terminal and had made six trips in car 202 before starting the 8:15 p.m. trip to Norristown.

The 25-year-old operator of car 207 was hired by SEPTA on June 16, 1986. His service record showed 10 rules violations for reporting late for work. On the day of the accident, he had reported for duty at 4:30 p.m. and had made two trips to Norristown, one in car 207.

Postaccident toxicology testing was performed on the operator of car 202 and the operator of car 207. Analysis was carried out by the SmithKline Bio-Science Laboratories and the National Medical Services, Inc., in Willow Grove, Pennsylvania. Tests were performed to screen for the presence of ethyl alcohol and 25 drugs classified under the headings of amphetamines, barbiturates, benzodiazepines, narcotics and basic drugs, and tricyclic anti-depressants.

The operator of car 202 provided samples of urine and blood for toxicological analysis about 1 1/2 hours after the accident. The urine analysis indicated the presence of 26 ng/ml of carboxylic acid metabolite of THC, 1 mcg/ml of cocaine, and 82 mcg/ml of the cocaine metabolite benzoylecognine. An analysis of a blood clot indicated no unchanged cocaine (with a reporting cocaine limit of 0.05 mcg/ml) and "at least" 0.3 mcg/g of benzoylecognine.

The operator of car 207 provided toxicology samples about 3 1/2 hours after the accident. The urine analysis indicated the presence of 26 ng/ml of carboxylic acid metabolite of THC. The blood sample tested negative for THC and its metabolites.

In December 1985, SEPTA began toxicological testing of employees in cases where there was a reasonable suspicion that the employee was under the influence of alcohol or drugs. On April 1, 1986, in an effort to upgrade supervisor proficiency in recognizing the symptoms displayed by a person "under the influence" of drugs or alcohol, SEPTA sent 320 supervisors to a 2-day training session, entitled "Program for Drug and Alcohol Detection," at the Pennsylvania Institute. The last of SEPTA's supervisors completed the training on August 12, 1986. In January 1987, SEPTA instituted random toxicological testing of its employees. On the first day of this program, samples were collected from 11 railcar operators before labor unions representing SEPTA employees brought legal action to halt the program.

SEPTA classified cars 202 and 207, built by the Brill Company in 1931 and 1935, respectively, as type 200. Constructed of aluminum and steel, with a canvas-covered, wooden plank roof, each car was 55 feet long, 9 feet wide, 10 feet high from top of rail to top of roof, and weighed 52,000 pounds. Each car had 26 bench-type seats with a seating capacity of 52.

Both cars were propelled by four 100-hp d.c. electric motors, each driving two-wheel, axle-mounted two-wheel trucks on 37-foot 8-inch centers. Each wheel had a two-shoe, cast-iron clasp brake; braking pressure was applied via levers and rods from a brake cylinder mounted on the car body. Braking was controlled by MD-33 brake valves, one located at each operating position at each end of the car. The brakes also could be applied by a handbrake located at each operating position. There were no speedometers on the cars. Radiotelephones were installed in each car.

The cars were also equipped with sand hoppers, two at each end of the car, which supplied sand via a hose to the rails in front of the lead wheels when the operator either operated a button to release sand or made an emergency brake application. Each car received a twice-weekly company preventive maintenance inspection and a twice-yearly State-required inspection.

When car 202 was last inspected on January 24, 1987, all defects were noted and repaired and two brake shoes were replaced. Postaccident tests of the brake system of car 202 showed the brakes were functioning as intended.

The Ardmore Avenue Station is 2,197 feet north of the Ardmore Junction Station. The tracks between the two stations are tangent for 1,097 feet, then enter into a 3-degree right-hand curve until 113.9 feet north of the Ardmore Avenue Station, where the track becomes tangent again up to and past the accident site. The track has a 0-.03 ascending grade through the Ardmore Avenue Station and past the accident site.

Signal 17 is 141.7 feet north of the Ardmore Junction Station. Signal 19 is 378.9 feet north of the Ardmore Avenue Station and 2,154 feet north of signal 17. Postaccident tests of the signal system control relays and cables and track circuits of signals 17 and 19 showed the system to be operating as intended. Therefore, signal 17 would have been displaying an approach (amber) aspect as car 202 passed.

Sight and stopping distance tests were conducted with cars similar to those involved in the accident. In the tests, the brakes were applied at the south end of the 50-foot-long platform at the Ardmore Avenue Station when signal 19 first came into view. The tests produced the following results:

Speed (mph)	Stopping Distance (feet)	Type of Braking
23	120	Full service
23	140	Full service
35	317	Full service
46	525	Full service
56	819	Full service
52	718	Deadman brake application
57	805	Deadman brake application

Based on conservation of momentum, the Safety Board estimated the impact speed to be 22 mph. Calculations indicate that if car 202 was traveling at 25 mph and collided at 22 mph, the brakes were not applied until it was 37 feet from impact which is 654 feet and 17.8 seconds from the point of possible perception; this is a considerable delay in perception. Had car 202 been traveling at 45 mph and impacted at 22 mph, the

pre-impact braking distance would have been 406 feet, which would have allowed a maximum of 285 feet and 4.3 seconds for perception and reaction.

Based on stop distance computations and the passenger's statement that the operator of car 202 was "cutting up" with a few female passengers that were standing around him, the Safety Board believes the operator did not comply with the yellow and red railroad signals. He either substantially exceeded the maximum 25 mph speed mandated by the yellow signal, or he had an exorbitant delay in perception and did not perceive the red signal and stop the car beyond the normal stopping distance. In either case, the operator's levels of alertness and behavior were a gross deviation from that normally expected from an operator of a public conveyance.

Based on the toxicological analysis, the Safety Board concludes that the operator of car 207 had been exposed to cannabis (marijuana) at some time before the accident. The Safety Board also concludes that the concentrations of the cocaine metabolite benzoylecogonine in the blood and urine of the operator of car 202 indicate cocaine usage and usage of a significant dosage before the accident. Based on this toxicological data and his work/absentee record the Safety Board believes that the operator of car 202 had a chemical dependency problem. Furthermore, the Board believes that the level of alertness and the behavior of the operator of car 202 were probably impaired by his use of cocaine and/or marijuana.

The Safety Board is concerned that drug use by employees in safety-sensitive positions may be a problem in the SEPTA system based on the evidence of drug use by the operators of cars 207 and 202.

As a result of its investigation of a rear-end collision of two trains in Miami, Florida, on June 26, 1985, 1/ the Safety Board recommended that the Urban Mass Transportation Authority (UMTA):

R-86-34

Require that all employees involved in a rail rapid transit accident with a fatality, injury, or property damage be tested in a timely manner for alcohol and drugs.

R-86-35

Require rail rapid transit systems to screen for drug and alcohol abuse all prospective and transferred employees prior to employment in safety-sensitive positions.

R-86-36

Require rail rapid transit systems to institute procedures and information systems to inform employees of the deleterious effects on work performance of some over-the-counter and prescription drugs on work performance.

1/ Railroad Accident Report--"Rear End Collision of Metro-Dade Transportation Administration Trains Nos. 171-171 and 141-142, Miami, Florida, June 26, 1985" (NTSB/RAR-86/03).

R-86-37

Require the removal of employees from safety-sensitive positions if the rail rapid transit medical department determines that the employees' use of a prescription drug will affect their work performance.

R-86-38

Encourage the creation of effective employee assistance programs to detect and treat substance abuse among rail rapid transit employees in safety-sensitive positions.

In a letter to UMTA, dated November 3, 1987, the Safety Board stated:

> It is aware of UMTA's role and authority in regard to safety matters in the transit industry and that this authority is somewhat limited. If, in order to implement the intent of the Board's recommendations, particularly Safety Recommendations R-86-34 through -37, UMTA must seek the necessary legislation, the Board urges UMTA to do so. The Board feels strongly that the issue of alcohol and drug abuse in the transit industry is one that warrants Federal involvement. The Board notes that with respect to Safety Recommendation R-86-38, UMTA has indicated that it plans to undertake rulemaking to require recipients of UMTA funds to establish drug abuse programs and that UMTA is also considering seeking legislation from Congress to strengthen such a rulemaking. The Board, therefore, believes that UMTA could and should follow a similar course of action to implement Safety Recommendations R-86-34 through -37.
>
> The Board notes further UMTA's statement that 75 percent of the transit systems, responding to a survey indicated that they have written rules, procedures, policies, or directives addressing the drug and alcohol abuse issue. The Board interprets this statement as suggesting that UMTA feels that existing rules and policies within the transit industry are adequate and that, consequently, Federal regulations are not necessary. The Board points out, however, that many companies within the railroad industry had rules and policies addressing the alcohol and drug issue, but accidents involving alcohol and drugs continued to occur and, ultimately, Federal regulations, were necessary. If the Board's interpretation of UMTA's statement is correct, there appears to be some contradiction in UMTA's overall approach to this subject in that UMTA believes that rulemaking is necessary to require the establishment of alcohol and drug abuse programs but apparently does not believe there is a need to address the specific issues outlined in Safety Recommendations R-86-34 through -37.

On February 1, 1988, UMTA responded that:

> UMTA has developed and forwarded to the Department of Transportation's General Counsel's Office a draft Notice of Proposed Rulemaking on "Control of Drug Use in Mass Transportation Operations."

Second, this initial draft of proposed rulemaking currently being circulated within the Department addresses recommendations R-86-34 through R-86-37 as well as recommendation R-86-38.

Alternatives to the proposed safety demonstration project are being considered to approach the drug and alcohol abuse problem in the transit industry. Among the options under consideration are a "how to" manual, challenge grants, and a national task force to study the problem.

Pending the Safety Board's evaluation of UMTA's response, Safety Recommendations R-86-34 through -37 will remain in an "Open--Unacceptable Action" status. Safety Recommendation R-86-38 has been classified as "Open--Acceptable Action.

The National Transportation Safety Board determined that the probable cause of the accident was the failure of the engineer/operator of Septa Commuter Train 0202 to comply with the approach and stop signal due to physical impairment caused by drug use.

The attached brief of accident contains the Safety Board's findings.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JIM BURNETT
Chairman

/s/ JAMES L. KOLSTAD
Vice Chairman

/s/ JOHN K. LAUBER
Member

/s/ JOSEPH T. NALL
Member

March 29, 1988

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594
NYC-87-F-R009B
BRIEF OF ACCIDENT

File No. - 87-10 | 01/26/87 | ARDMORE, PA | Time (Lcl) - 2029 EST

---Basic Information---

Reporting Railroad - SEPTA
Type of Accident - COLLISION, REAR
Operating Phase - STANDING
Method of Operation - ABS

Property Losses
Railroad - $100,000
Non-Railroad - $ 0

Fire
NO

Injuries	Fatal	Serious	Minor	None
Employees	0	0	0	1
Passengers	0	0	9	4
Motorist	0	0	0	0
Other	0	0	9	2

---Railroad/Personnel Information---

Train Data
Railroad - SEPTA
Type of Train - COMMUTER
Train ID - 207
Direction - NORTH
Speed (Est.) - 0
Speed (Actual) - 0

Train Consist/Damage
No. Loco. Units - N/A
No. Cars/Caboose - 1/0
End of Train Monitor - N/A
Length (Feet) - N/A
Trailing Tons - N/A
Loco. Damaged/Derailed - N/A
Cars Damaged/Derailed - 1/0

Crew Information
Front End - 1
Rear End - 0
Toxicology Performed - YES
Results - POSITIVE
Radio Communications
Radio Available - YES
Operational - YES

---Environment/Operations Information---

Weather Data
Weather Condition - CLEAR
Condition of Light - DARK, ARTIFICIAL ILL.
Sight Distance - 500 FT.

Itinerary
Last Departure Point
UPPER DARBY, PA

Destination
NORRISTOWN, PA

Hazardous Materials
Involved - NO
Evacuation - YES
Cars Involved - 0
Track Information
Owner - SEPTA
Type/No. of Tracks - MAIN/2
Gradient/Alignment - DESCENDING/TANGENT

---Narrative---

TRANSIT CAR 202 STRUCK THE REAR OF STANDING TRANSIT CAR 207, WHICH IN TURN STRUCK STANDING WORK CAR 401 THAT WAS BROKEN DOWN. HAD MOVED UP BEHIND WORK CAR 401 TO HELP MAINTAIN RADIO CONTACT. CAR 202 HAD PASSED AN AMBER SIGNAL ADVISING THE OPERATOR TO P TO STOP AT THE NEXT SIGNAL. THE OPERATOR SAW THE NEXT SIGNAL WHICH WAS RED, AND APPLIED THE BRAKES. HE WENT PAST THE RED SIGN THEN SAW THE RED MARKER LIGHTS ON THE REAR OF CAR 207. HE THEN RAN TO THE REAR OF HIS CAR BEFORE IT STRUCK THE REAR OF CAR 207 TOXICOLOGICAL TESTING OF THE OPERATOR OF CAR 202 WAS POSITIVE FOR COCAINE AND MARIJUANA, AND TESTING OF THE OPERATOR OF CAR 207 POSITIVE FOR MARIJUANA.

File No. - 87-10 01/26/87 ARDMORE, PA Time (Lcl) - 2029 EST

Occurrence #1 - COLLISION, REAR
Phase - SLOWING

Finding(s)

1. SIGNAL INDICATION - NOT COMPLIED - ENGINEER OF OTHER TRAIN
2. PHYSICAL IMPAIRMENT (DRUGS) - ENGINEER OF OTHER TRAIN

---**Probable Cause**---

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 2

Factor(s) relating to this accident is/are finding(s) 1

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594
NYC-87-F-R009A
BRIEF OF ACCIDENT

File No. - 87-10 | 01/26/87 | ARDMORE, PA | Time (Lcl) - 2029 EST

---Basic Information---

Reporting Railroad - SEPTA
Type of Accident - COLLISION, REAR
Operating Phase - EN ROUTE
Method of Operation - ABS

Property Losses
Railroad - $48,000
Non-Railroad - $ 0

Fire

Injuries	Fatal	Serious	Minor	None
Employees	0	0	0	1
Passengers	0	0	9	1
Motorist	0	0	0	0
Other	0	0	9	5

---Railroad/Personnel Information---

Train Data
Railroad - SEPTA
Type of Train - COMMUTER
Train ID - 202
Direction - NORTH
Speed (Est.) - 22
Speed (Auth.) - 25

Train Consist/Damage
No. Loco. Units - N/A
No. Cars/Caboose - 1/0
End of Train Monitor - N/A
Length (Feet) - N/A
Trailing Tons - N/A
Loco. Damaged/Derailed - N/A
Cars Damaged/Derailed - 1/0

Crew Information
Front End - 1
Rear End - 0
Toxicology Performed - YES
Results - POSITIVE
Radio Communications
Radio Available - YES
Operational - YES

---Environment/Operations Information---

Weather Data
Weather Condition - CLEAR
Condition of Light - DARK, ARTIFICIAL ILL.
Sight Distance - 500 FT.

Itinerary
Last Departure Point
UPPER DARBY, PA

Destination
NORRISTOWN, PA

Hazardous Materials
Involved - NO
Evacuation - YES
Cars Involved - 0
Track Information
Owner - SEPTA
Type/No. of Tracks - MAIN/2
Gradient/Alignment - DESCENDING/TANGENT

---Narrative---

TRANSIT CAR 202 STRUCK THE REAR OF STANDING TRANSIT CAR 207, WHICH IN TURN STRUCK STANDING WORK CAR 401 THAT WAS BROKEN DOWN. HAD MOVED UP BEHIND WORK CAR 401 TO HELP MAINTAIN RADIO CONTACT. CAR 202 HAD PASSED AN AMBER SIGNAL ADVISING THE OPERATOR TO P TO STOP AT THE NEXT SIGNAL. THE OPERATOR SAW THE NEXT SIGNAL WHICH WAS RED, AND APPLIED THE BRAKES. HE WENT PAST THE RED SIGN THEN SAW THE RED MARKER LIGHTS ON THE REAR OF CAR 207. HE THEN RAN TO THE REAR OF HIS CAR BEFORE IT STRUCK THE REAR OF CAR 207 TOXICOLOGICAL TESTING OF THE OPERATOR OF CAR 202 WAS POSITIVE FOR COCAINE AND MARIJUANA, AND TESTING OF THE OPERATOR OF CAR 207 POSITIVE FOR MARIJUANA.

File No. - 87-10 01/26/87 ANDMORE, PA Time (Lcl) - 2029 EST

Occurrence #1 - COLLISION, REAR
Phase - SLOWING

Finding(s)

1. SIGNAL INDICATION - NOT COMPLIED - ROAD PASSENGER ENGINEER/MOTORMAN
2. PHYSICAL IMPAIRMENT (DRUGS) - ROAD PASSENGER ENGINEER/MOTORMAN

---**Probable Cause**---

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 2

Factor(s) relating to this accident is/are finding(s) 1

* U.S. GOVERNMENT PRINTING OFFICE 1988-203-