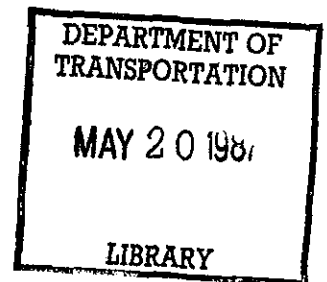


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Railroad Accident Investigation Reports



REPORT No. 79-2

NATIONAL RAILROAD PASSENGER CORPORATION
(AMTRAK)
WASHINGTON, D.C.
FEBRUARY 15, 1978



U.S. Department of Transportation
Federal Railroad Administration
Office of Safety

RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 79-2

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(AMTRAK)

WASHINGTON, D. C.

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FEDERAL RAILROAD ADMINISTRATION

OFFICE OF SAFETY

WASHINGTON, D. C. 20590

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Synopsis

On February 15, 1978, at 7:18 p.m., an Amtrak passenger train consisting of one locomotive unit, one power car and eight Amfleet coaches, derailed in Washington, D. C. The weather was clear. A total of 34 people were treated for minor injuries.

Cause

The subsidence of the ballast and embankment underneath the track caused the derailment.

Location and Method of Operation

While the geographical direction of the railroad at the point of derailment is predominantly east and west, the direction for railroad operating purposes is southward toward Union Station, and northward toward Philadelphia.

This accident occurred on that part of the Baltimore Subdivision of the Baltimore Division extending between Washington, D. C. and Baltimore, Maryland, a distance of 40.1 miles.

In the vicinity of the accident, the railroad line consists of two main tracks operated under automatic block signal system rules, with self-propelled cars and locomotives equipped with cab signals and speed control. An overhead catenary provides an electrical power source of 11,000 volts, 25 cycle alternating current for multiple-unit passenger cars and electric locomotives.

The two main tracks are signalled to permit the operation of trains in either direction on either track. However, the current of traffic is designated in the operating timetable as No. 2 - Northbound and No. 3 track - Southbound.

The derailment occurred on No. 3 track (opposite the Holiday Inn), 2.6 miles north of Union Station, Washington, D. C., within the city limits.

From the south on the main track there are, successively, a 1° curve to the right, then a tangent of about 550 feet to the point of derailment and for two miles northward. In the vicinity of the derailment the grade is approximately 0.72% ascending northward.

The Diplomat Motel is opposite No. 3 track and located approximately 885 feet south of the Holiday Inn.

Authorized Speed

Maximum authorized speed in the accident area is 70 miles per hour for passenger trains hauled by E-60-CP type locomotive units.

Circumstances Prior to the Accident

On February 15, 1978, No. 2 track adjacent to the point of derailment was out-of-service due to reconstruction work in connection with the Northeast Corridor Improvement Project.

At approximately 6:45 p.m., on the same day, a trainman on a southbound Amtrak passenger train No. 171, upon arrival at Washington, D. C., reported to the train dispatcher via the crew dispatcher in Washington, a rough spot on No. 3 track - New York Avenue opposite the Diplomat Motel. After receipt of the message the dispatcher then instructed

the operator at Landover Tower (7 miles north of Washington Union Station) to have No. 90 look at No. 3 track because of that reported rough spot opposite the Diplomat Motel.

At about 7:00 p.m., ConRail block operator at Landover Tower contacted the operator of K Tower (Washington Union Station) by loud speaker and requested that they instruct the engineer on Amtrak train No. 90 to look out for "rough rail" in the vicinity of the Diplomat Motel. The train director at K Tower then contacted the engineer on train No. 90 and relayed the message, which was acknowledged.

Amtrak No. 90, a northbound passenger train, consisting of one electric locomotive unit (ATK 962, E-60-CP), one power car and eight Amfleet coaches, was to operate from Washington, D. C. to New York, New York. The crew was called at 6:10 p.m. for departure from Washington Union Station at 7:10 p.m. The engineer received a radio call from K Tower and was instructed to determine track conditions in the area of the Diplomat Motel.

The Accident

Train No. 90 departed Union Station at 7:10 p.m. on time, after having received the prescribed road air brake test. The engineer and fireman were in the control compartment at the front of the unit, and the train crew members were in various cars throughout the train.

According to the fireman, a qualified engineer, who was at the controls of the locomotive, the speed of the train was 70 miles per hour approaching the Diplomat Motel. The throttle was in the off position and the headlight and oscillating light were on bright. Passing the Diplomat Motel no irregularities of track was noticed. Shortly thereafter, at 7:18 p.m. the engine crew felt a sudden drop of the train opposite the Holiday Inn. The fireman applied the train brakes in emergency and notified Landover Tower that a derailment had occurred.

Casualties and Damages

Five Amtrak employees and twenty-nine passengers sustained a variety of minor injuries, bruises and abrasions.

The entire train derailed and each piece of equipment remained upright and in line with the track structure.

The locomotive unit, power car and eight Amfleet coaches were substantially damaged. According to carrier's estimate, damage to the track plus labor to repair it totaled \$49,000. Damage to the locomotive and cars totaled \$102,400.

Post-Accident Examination

Soil/Subsurface Analysis

Shortly after the accident Amtrak arranged for an investigation of the soil and subsurface conditions at the location of initial derailment. The investigation was conducted by an engineering firm which performed a thorough inspection and study at the site, and submitted a report to Amtrak on March 30, 1978. The report disclosed that since the line was built in 1907, the embankment which has a three horizontal to one vertical configuration had slid to the east and downward many times.

The initial derailment occurred directly behind the Holiday Inn (not the Diplomat) which was built in 1965 (Fig. 1). During construction of the Holiday Inn the railroad embankment subsided for a distance of about 100 feet under tracks 2 and 3. Estimates of the movement of both tracks were four inches horizontally and eight inches vertically. The track repair that followed required extensive reballasting.

Catenary Pole No. 3326 (E 705), which is directly opposite the derailment site on the east side, is about two feet outside the alignment of adjacent catenary poles, and the arm supporting the catenary lines has been extended. This is due to the slide/slippage of the upper part of the embankment toward the east (Fig. 2).

Equipment

An examination of the equipment of train No. 90 revealed nothing which could cause or contribute to the derailment.

Track Structure

Track notes taken by carrier officials following the derailment revealed no excessive cross-level, profile or gage variations on track No. 3 approaching the accident site from the south.



Fig. 1
The point of initial derailment. The Holiday Inn is in the background.

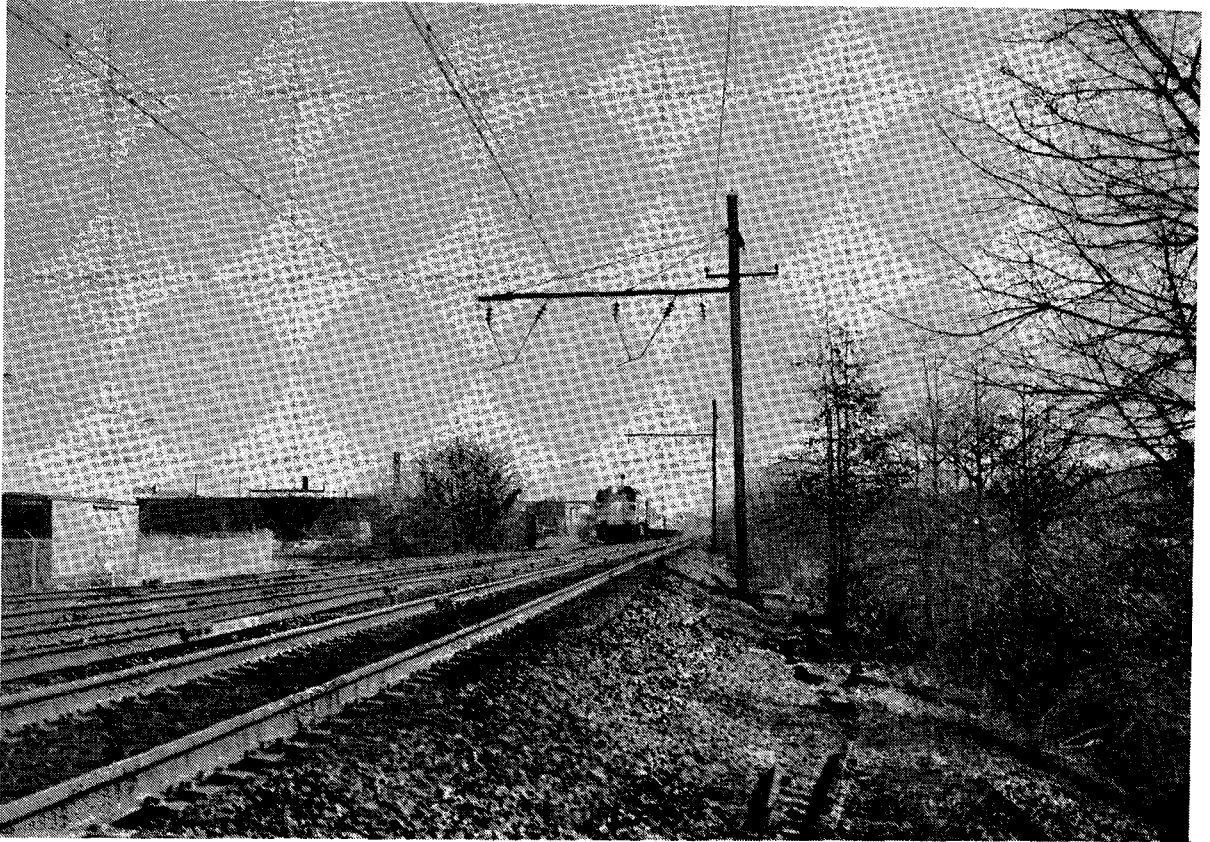


Fig. 2
The right-of-way looking north. The initial derailment occurred opposite the catenary pole which is out of line with the others on the tangent track.

Findings

1. The trainman who had reported a rough spot on No. 3 track apparently used the wrong name of the motel.

2. The engineer and fireman of Train 171 did not feel any unusual ride characteristics, although employees riding in the train reported that they felt severe lateral motion.

3. The engineer of Train 90 approached the area on the "look-out," as instructed, but was travelling at the authorized maximum speed of 70 m.p.h. because no definite information had been relayed to him on this "rough rail," and no speed restriction was imposed by carrier officials.

4. An inspection of all rolling equipment including measurements of the locomotive wheels did not disclose any information which would indicate an equipment failure.

5. Track measurements taken by carrier officials indicate conditions comply with FRA Track Safety Standards for authorized speed.

6. The subsidence of the ballast and embankment underneath the track caused the derailment of Amtrak No. 90.

Dated at Washington, D. C., this 23rd
day of April 1979
By the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board