# Railroad Accident Investigation Report



**Report No. 80-3**

**National Railroad Passenger Corporation**
**Seaboard Coast Line Railroad Company**
**McIntosh, Georgia**

**February 11, 1979**

**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL RAILROAD ADMINISTRATION**
**Office of Safety**

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OFFICE OF SAFETY

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## Synopsis

On February 11, 1979, at approximately 6:15 a.m., 13 rear cars of a National Railroad Passenger Corporation (Amtrak) passenger train operated by the Seaboard Coast Line Railroad Company (SCL) derailed at McIntosh, Georgia. At the time of the accident, the weather was clear.

## Casualties

Thirty-eight (38) people were admitted for treatment at a local hospital. All but one passenger and an Amtrak employee were treated and released. The passenger, who was wearing a pacemaker, was admitted to a hospital for observation. The Amtrak employee was treated for facial lacerations.

The flagman and the baggageman requested medical attention on the day following the accident. The flagman was treated for a muscle strain, and the baggageman suffered a neck strain.

## Cause

The derailment was caused by a broken wheel on the third car of the train.

## Location and Method of Operation

The derailment occurred on that part of the Nahunta Subdivision, Waycross Division, of the SCL extending from Ogeechee, Georgia to Jacksonville, Florida, a distance of 133.4 miles. In the accident area this is a single track line over which train movement is governed by a traffic control signal system.

The initial derailment occurred 2.2 miles north of McIntosh, Georgia, about 27 miles south of Savannah, Georgia. The general derailment occurred 427 feet south of the station sign at McIntosh.

From the north, the main track is tangent for about 20 miles to the point of the accident and for a considerable distance beyond. The grade in the accident area is practically level.

## Maximum Authorized Speed

The maximum authorized speed for passenger trains in the accident area is 79 m.p.h.

## Circumstances Prior to the Accident

Amtrak No. 81, a first-class passenger train, consisted of two diesel-electric locomotive units (EMD SDP-40F), two baggage cars, two sleeper cars, one dining car and ten coaches. The engine crew operating the train at the time of the derailment went on duty at Savannah, Georgia. The train departed that point at 5:45 a.m., on February 11, 1979. The train crew had previously been on duty as the train departed Columbia, South Carolina at 3:06 a.m., on the day of the accident. A hot box and dragging equipment detector, located about 21 miles south of Savannah, did not indicate any defective conditions when the train passed.

As the passenger train approached McIntosh, the fireman, a qualified engineer, was seated at the operating controls of the front locomotive unit. The engineer was seated at the fireman's seat. The baggageman, the conductor and the flagman were in the third, ninth and 12th cars, respectively. The passenger train had a total of 419 passengers and 11 crew members.

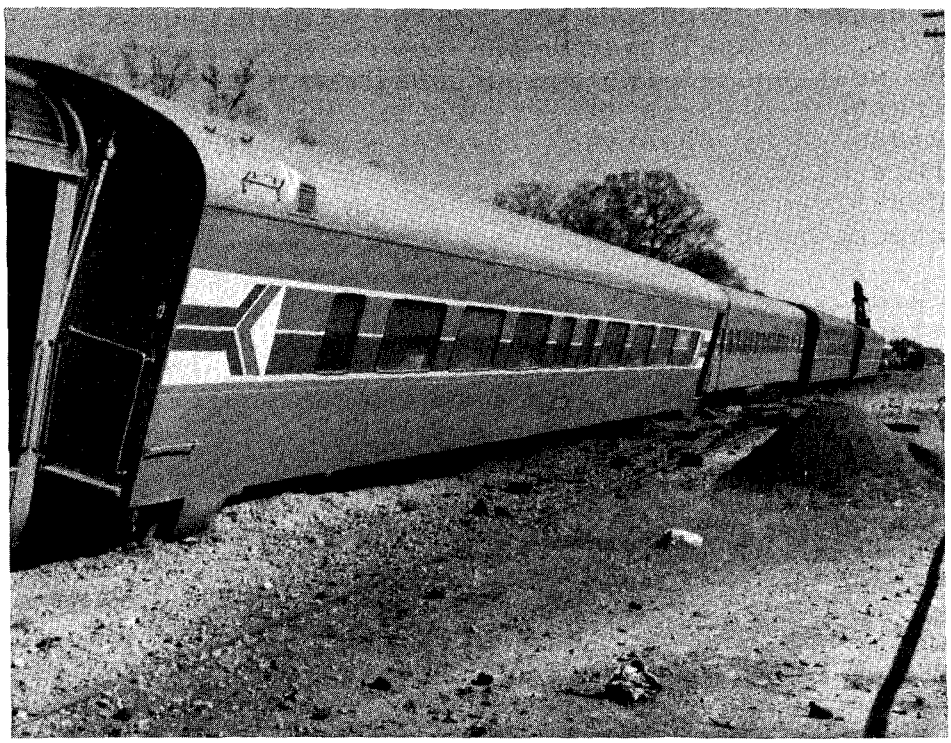
## The Accident

The train was traveling southward at a speed of 81 m.p.h., as recorded by the tape in the speed recorder of the second locomotive unit when the lead wheel of the trailing truck on the east side of the third car (ATK 2766) dropped inside of the east rail. The general derailment occurred 2.2 miles south, at a switch on the north end of the McIntosh House Track. This house track is east of and parallel to the main track. The front end of the train stopped 2,817 feet south of this point.

## Damages

The two locomotive units and the first two cars did not derail. The rear truck on the third car, a sleeping car, and the following 12 cars derailed. The 10th and 11th cars were separated by a distance of 871 feet. All other cars remained coupled. The 13th derailed car remained nearly upright and in line with the track structure. Only two of the 13 derailed cars were substantially damaged.

The carrier's estimate of damage to equipment, track and signals was $325,059.



View of the derailed cars

## Hours of Service

The train crew had been on duty four hours and 25 minutes at the time of the derailment, after having been off duty for a period of more than 20 hours. The locomotive crew had been on duty one hour and 20 minutes, after having been off duty for more than 16 hours.

## Post-Accident Examinations and Tests

### Amtrak Car 2766

Examination of the lead wheels of the trailing truck of the first derailed car revealed that the wheel on the west end of the axle was broken from the wheel seat outward. This wheel had moved toward the opposite end of the axle 3-3/4 inches. The opposite wheel had a section of plate and rim broken off. This broken section was found east of the track about 600 feet south of the McIntosh station sign. The tread of the wheel had two adjoining flat spots near the outside. Two grooves were worn into the front face of the rim of this wheel by contact with the gage side of the east rail. These grooves did not allow the wheel to rotate. The flat spots on this wheel were caused by contact with spike heads and rail anchors after the initial derailment.

The Federal Railroad Administration (FRA) requested that tests be conducted on the two broken wheels of Amtrak car 2766. An analysis of the tests concluded that the wheel on the west end of the axle sustained its fracture first. The fracture propagated through the rim, plate and hub, as evidenced by observed lines of crack propagation. The fracture allowed the wheel to loosen on the axle initiating the derailment. The hardness of the rim of the two wheels was checked and both were found to be within specifications.

A cross-section sample of the rim of one wheel and from the hub of the other was etched, and no noticeable internal material defects were detected. The overall sulfur content of the samples indicates that inclusions of manganese sulfide were within specifications. No localized areas of significant inclusions were found.

In conclusion, the report stated that thermal damage was obvious on both wheels. The wheels met Class B specification on chemistry and hardness, with no observed gross quality control deficiencies.

## Speed Recorders

The first locomotive unit had a malfunctioning speed recorder. The second locomotive unit had an operative speed recorder. The tape from this unit was analyzed and calibrated.

## Track

The main track was constructed of 132-pound continuous welded rail laid new in 1968. An examination of the track in the accident area revealed that the base of the east rail was marked on the gage side. From this point south, for approximately two miles, there were numerous wheel marks on the crossties. Rail anchors were displaced and spike heads on the gage side were damaged by the wheel. The facing point switch to a spur track also showed indications of damage. The toe of the frog was damaged as the wheel was temporarily rerailed at this point. Wheel flange marks were next found on the crossties on the field side of the east rail and on the gage side of the west rail. These marks continued to the frog at the north end of the house track which is located 1,217 feet south of the spur track switch, where a section of the west wheel was found after the accident. From this point south, the main and house tracks were damaged for a distance of 2,400 feet.

View of wheel markings on the rail adjacent to the frog at the north end of the house track

## Findings

1. Except for the fact that train speed at the time of the accident was two m.p.h., in excess of the maximum authorized speed of 79 m.p.h., passenger train No. 81 was operated in accordance with carrier rules.

2. The derailment was caused by the failure of the lead wheel of the trailing truck on the west side of the third car.

3. The fracture of this wheel began in an area of heavy shelling and propagated through the rim, plate and hub.

4. As Amtrak car (ATK 2766) derailed, the east wheel of the rear truck came in contact with the track structure and fractured.

5. No internal material defects were detected in the composition of the wheels.

Dated at Washington, D. C., this 7th day of March 1980
By the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board