TESTIMONY OF
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BEFORE THE SUBCOMMITTEE ON SURFACE TRANSPORTATION
OF THE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION
UNITED STATES SENATE
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Mr. Chairman. This has proven to be a very timely hearing.

Twenty-four hours ago I returned from New York City, where I'd gone at Secretary Dole's request to personally direct the investigation into the cause of the collision on Hellgate Bridge. It's the third time I've undertaken that difficult responsibility in the last thirty days. But this most recent accident struck closer to home, because until a few hours before it departed, I was scheduled to be aboard the northbound train involved in the Hellgate collision. Only a last minute change in a scheduled meeting put me on the immediately preceding train.

It's difficult to conceive of a more important railroad topic than the issue now before this Committee. I have often spoken to the Committee about the overall excellence of Amtrak's safety record, and it is excellent. At the same time, I cannot remember a series of passenger accidents comparable to these occurring over such a short span of time. This morning, I would like to contribute to your efforts in three ways.

First, I intend to summarize as succinctly and objectively as I can the facts as we know them in each of the Amtrak accidents. The purpose is to give this Committee an opportunity to draw its own conclusions on their implications.

Second, I want to review Amtrak's overall safety record--a review I think is essential to place the events of the last few weeks in context.

Third, I will spell out for the Committee the role that FRA has played and will continue to play in enforcing safe operations on the nation's rail passenger system.

Finally, I have brought the key FRA officials responsible for safety and for Amtrak's operations with me this afternoon, and we will remain as long as the Committee desires to answer questions on those accidents, or on any aspect of Amtrak's operations.

SUMMARY OF MAJOR AMTRAK ACCIDENTS

Elgin, South Carolina. On July 4, 1984, a southbound Amtrak train struck a pickup truck at a rail-highway crossing in Elgin, South Carolina, killing both occupants of the truck. No train passengers or crew members were injured. The crossing is equipped with automatic flashing lights that were working as intended at the time of the accident. Based on our investigation, we have concluded that the collision was caused

by the truck driver's failure to stop short of the crossing. We found no evidence that Amtrak's conduct had played any role in causing the accident.

McBee, South Carolina. On July 11, 1984, a northbound Amtrak train struck a tractor/tank truck transporting gasoline at McBee, South Carolina, on track owned by the Seaboard Coast Line. The collision and resulting explosion and fire fatally injured the locomotive engineer and truck driver, and seriously burned the locomotive fireman. No passengers were injured.

The rail/highway crossing where the accident took place is equipped with passive protection consisting of standard roadway signs. The tractor/tank truck was diverted from a nearby crossing equipped with flashing lights and gates because of ongoing highway repair work. Freight cars stored on parallel auxiliary tracks may have obstructed the truck driver's view of the approaching train, as well as the train crew members' view of the approaching truck. The train was moving at 62 miles per hour, below authorized speed for the location, at the time of impact and was being properly operated.

Our ongoing investigation of this accident is focusing on two issues: why the tractor/tank truck entered the track, and the Seaboard Coast Line's decision not to place a slow order on the track in light of the freight cars being stored on nearby tracks. No allegations have been made that Amtrak's actions played any role in the causation of the collision.

As a result of this accident and the Elgin mishap, FRA has initiated an assessment of all rail/highway grade crossing warning devices within 50 miles of McBee.

Williston, Vermont. On July 7, 1984, an Amtrak train derailed on a track wash-out at Williston, Vermont, while operating at 59 miles per hour. Although our investigation is still in progress, the evidence gathered to date indicates that the wash-out occurred when a culvert under the track failed shortly before the approach of the train, after a severe rain storm.

The culvert had carried the run-off from its watershed for over 100 years. It had been inspected by an inspector of the Central Vermont Railway, the owner of the track involved, on June 20, 1984, and a Central Vermont track inspector had inspected the track over the culvert on the day before the accident. Neither inspector was aware, however, of a series of beaver dams located more than one-half mile up stream from the culvert. The dams could not be seen from the vicinity of the track. Between 6:00 p.m. and 11:00 p.m. on the night of the accident, a local storm deposited an estimated six inches of rain on the watershed drained by the culvert. The culvert carried the runoff during the storm, and a southbound train that crossed the culvert at approximately 10:35 p.m. did not encounter any problems. Sometime after the southbound train

passed, one of the beaver dams apparently failed, flooding the remaining dams and causing the rest to fail in succession. The resulting surge of water caused the failure of the culvert and washed out the subgrade. The resulting gap was 50 feet long and 23 feet deep, with the unbroken track suspended above. The track had been twice inspected, and it's a matter of chance whether the conditions that caused this mishap could have been detected by any practical inspection system. We are, however, very carefully evaluating whether the railroad owning and maintaining the track--the Central Vermont--complied with an FRA track regulation (49 C.F.R. § 213.239) requiring a special inspection of track in the event of a severe storm that might damage track structure.

Hellgate Collision. On July 23, two Amtrak passenger trains collided on a viaduct in Astoria, Queens. One passenger was killed and 125 were injured in the accident.

The railroad on which the accident occurred consists of two main tracks equipped with automatic signals governing westward bound trains (Track 1) and eastward bound trains (Track 2). Track 1 had been removed from service shortly before the accident to permit routine maintenance of the catenary system, the overhead wires that transmit electric power to the trains.

Track 1 had been removed from service from a point in the Bronx called "Market" to a point in Queens called "Gate." At both locations there are systems of crossover tracks that permit trains to move from one track to another, and signals that govern train movements. Market is controlled by an operator at that location, and Gate is remotely controlled by an operator in Queens. Both operators receive directions from a train dispatcher in New York.

Amtrak Train 151, a westward bound train, received a train order at Market directing the train to operate against the current of traffic from Market to Gate on Track 2, the eastward track, with priority over opposing trains. Train 151 then entered Track 2.

Shortly thereafter, Amtrak Train 168 approached Gate, operating eastward from New York on Track 2. This train should have been stopped at Gate by a "Stop" signal until Train 151 had crossed from Track 2 to Track 1 at Gate, at which point the signal would display an aspect permitting Train 168 to proceed.

Instead of stopping at Gate, however, Train 168 entered Track 2 and proceeded east, where it collided head-on with Train 151 about one-quarter mile east of Gate.

Our investigation is centering on the reason that Train 168 passed Gate. We are investigating whether or not the signal at Gate was properly set by the control operator, and we

are looking to see if Train 168 might have passed a signal requiring the train to stop.

We have already conducted exhaustive tests of the signal system, and have found nothing indicating that the system did not operate properly at the time of the accident.

Other Major Accidents

In addition to the four accidents discussed above, there are two more--a non-fatal accident in Philadelphia, Pennsylvania, and last year's fatal accident in Woodlawn, Texas--that merit comment.

Philadelphia. On June 8, 1984, a southbound Amtrak train derailed the rear six of its nine cars two miles south of Philadelphia's 30th Street Passenger Station while traveling 57 miles per hour over Track No. 3. Thirty-three persons received medical treatment as a result of the derailment. The accident was caused by rail buckling beneath the train. In our investigation, we found that Amtrak had failed to take steps that might have prevented this mishap.

Two pieces of 35-foot rail were welded into Track No. 3 in January 1984. The ambient temperature at that time was 22 degrees Fahrenheit, but the two pieces of rail were not adjusted to compensate for temperature variation, nor were rail anchors applied to either 35-foot rail piece. In addition,

existing rail anchors were ineffective because they were not bearing against the track ties. Amtrak's track forces apparently failed to recognize that sufficient compressive forces existed within the rails to require rail adjustment and/or rail anchor tightening. On June 4, and again on June 7, an Amtrak track inspector reported "tight rail" about 1.4 miles north of the derailment, but nothing was done.

FRA is devoting about $500,000 of our safety research funding to studying methods for measuring thermal forces in rail and attempting to devise methods for detecting operating conditions and areas where track is likely to buckle. On July 17 and 18, we conducted a workshop on the results of our work in Cambridge, Massachusetts. Sixteen domestic and two foreign railroads participated in that meeting.

Marshall, Texas. On November 12, 1983, an Amtrak passenger train operating over Missouri Pacific track derailed near Marshall, Texas while traveling at about 72 miles per hour, killing four passengers and injuring 145 persons.

Our investigation of the accident is continuing, but the information developed thus far indicates that the derailment occurred when a rail shattered under the train. The rail that failed, made of chrome-vanadium alloy steel, had been installed about three weeks prior to the accident. About two hours before the accident, that rail had been cut with a torch to

permit a temporary repair to a joint. It appears that the rail failure was initiated by a discontinuity in the torch-cut rail end.

No practical program of safety inspections, whether by FRA, Amtrak, or the Missouri Pacific, could have prevented this accident. The condition that apparently caused the derailment simply did not exist until two hours before the accident.

This rail failure was atypical in that it did not develop over time from an internal rail flaw. Most rail defects grow from small internal flaws that eventually cause rail failure. Those flaws commonly form completely hidden within the rail, but can be detected by electronic or magnetic inspection devices. We are now studying the sources and growth rates of rail flaws with the objective of formulating a model rail flaw inspection schedule based on track usage. In addition, we are pursuing detection capability improvements in electronic methods of rail flaw detection.

Shortly after the accident, when the nature of the rail failure became apparent, I established a Technical Task Force on Rail Failure Evaluation to investigate the matter. The task force included experts from FRA, the railroad and steel industries, the Association of American Railroads, and DOT's Transportation Systems Center.

The task force has completed its work and is ready to issue its report, which will include significant findings and

recommendations regarding alloy rail. The report will be released on August 3, 1984, at a discussion session scheduled for that date.

The Committee can draw its own conclusion from these accidents, but I'd like to take a moment to share some of my own views.

First, it is apparent to me that there is no causal relationship among these accidents--no "common strain" of events that would suggest a safety or managerial problem common to the Amtrak system.

Second, in each of the fatal accidents other than the New York City accident, Amtrak was as much a victim as its passengers. It is very difficult to construct an argument that Amtrak played any causal role whatsoever in those accidents.

Third, at the same time, it is essential to recognize that there are crucial lessons to be drawn from each of these accidents. The Vermont accident, for example, has focused attention on the degree to which the nation's freight railroads--particularly those with contracts to carry passenger service--tie in with national weather service forecasts. Philadelphia and Marshall focus on highly specific track issues, and FRA has initiated task force and targeted research programs directed at resolving these issues to ensure that accidents of this type will never recur. The grade crossing accidents were the focus of a national conference on

controlling grade crossing fatalities that FRA sponsored one week ago in Minneapolis.

In the end, this kind of case by case analysis and response is the key to improving railroad safety. As much as we would like to believe otherwise, operational accidents rarely stem from deteriorated track or defective operating practices that appear on an industrywide basis. And in a sense, that's a frustrating fact, because that kind of causation is easy to isolate and resolve.

Instead, accidents normally stem from highly specific causes. The case by case elimination of those causes has been the key to the improvement we've made in rail safety over the past five years, and we are pursuing that process on the current accidents even as we meet this afternoon.

AMTRAK SAFETY RECORD

As we talk about records and safety improvement, I think it is essential to place the events of the past month in the context of Amtrak's overall safety performance. That performance has been outstanding, and there is no form of passenger transportation that can claim a better one.

Earlier this year I had the privilege of announcing the railroad industry's safety statistics for 1983. By any standard, it was the finest safety performance in the history of the railroad industry. The total number of reported accidents was the lowest ever recorded--a remarkable 14 percent below the second best year we'd ever experienced. That improvement tracked through all categories of the reported statistics, and continued a trend of consistent safety improvements by the railroad industry that began in 1979. During the five years 1979 through 1983, train accidents decreased 60 percent, railroad fatalities declined 25 percent, and railroad injuries dropped 53 percent.

Placed in the context of these industry-wide improvements, Amtrak's safety performance over the same period is particularly impressive. Amtrak's accident rate per million train miles for 1983 is 233 percent better than the industry average. For the five years 1979-1983, Amtrak's accident rate per million train miles is almost three times better than the industry's rate. Amtrak's 1983 results in each category of accident causes significantly betters the industry average. For example, the number of track-caused accidents on Amtrak per million train miles in 1983 is over four times lower than the industry average. From 1979 to 1983, Amtrak's rate of track-caused accidents per million train miles improved by 33 percent. During the same five years, the number of collisions

and derailments reported by Amtrak has fallen consistently; its 1983 results are 65 percent lower than the figure for 1979.

As we reported to Congress last January in our report on passenger safety, rail passenger service providers in the United States have compiled a remarkable safety record. This is confirmed by the passenger casualty statistics reported to FRA by all railroads, including Amtrak and the commuter authorities. During the period 1979 through 1983, the rail passenger industry transported 1.5 billion passengers while suffering only 27 passenger fatalities and 2,892 passenger injuries. Fourteen of those fatalities and 524 of the injuries occurred on Amtrak trains in that five-year period, during which Amtrak carried about 101 million passengers.

The chart below, which is taken from our January report to Congress on rail passenger safety and based on Department of Transportation statistics, illustrates that the passenger fatality rate of rail passenger operators is fully comparable to scheduled domestic airlines and other public carrier modes.

Passenger Fatalities Per 100 Million

Passenger Miles 1976-1980

Air Carrier (Scheduled Domestic)	.04
Railroad Passenger Trains	.06
All Buses	.15
Class I Intercity Buses	.04
Passenger Auto and Taxi	1.32

Comparable statistics for years after 1980 cannot be shown because total passenger mile figures for buses, automobiles, and taxis are no longer gathered by the Department of Transportation.

The bottom line is that a passenger on an Amtrak train has a one in forty million chance of becoming a passenger fatality, and that is at worst comparable to any other form of transportation.

FRA'S AMTRAK SAFETY PROGRAM

FRA Compliance Activities

As with all railroads, FRA's safety inspectors closely monitor Amtrak's compliance with Federal safety requirements. Amtrak receives heightened attention from our inspection forces, however, because of its unique status as the nation's only intercity rail passenger carrier.

In 1981, FRA identified a 92,000-mile track network over which all Amtrak service is performed and 95 percent of all hazardous materials are hauled. Federal and state track forces inspect, at least once a year, that entire 92,000-mile network for compliance with FRA's track regulations. FRA's track rules require, at a minimum, twice weekly carrier inspections of all main track over which Amtrak operates.

In 1983, FRA conducted two track geometry car surveys of portions of the Northeast Corridor, covering about 2,800 miles of track. During 1984, we project that approximately one-third of the track miles (about 7,300) surveyed by our track geometry vehicle will involve Amtrak routes. I should mention that, with the exception of the Northeast Corridor, Amtrak operates largely over track owned by other railroads pursuant to contractual arrangements.

In the Northeast Corridor, we have recently completed field activities in a multi-discipline task force assessment in which we evaluated, in a representative sampling, the safety of Amtrak's operations. In addition, we have increased the frequency of our Northeast Corridor inspections.

In the course of our inspections, we've found that the condition of Amtrak's track and equipment has improved markedly, as the accident statistics suggest. We have discovered no systematic problems or trends that would require immediate remedial action by management. Isolated problems were found and documented, however, and brought informally to Amtrak's attention. In response, Amtrak took several initiatives. The frequency of operating efficiency tests was increased in order to emphasize adherence to authorized train speed limits. Amtrak substantially improved its maintenance program for on-board hot box detectors on Amfleet cars. This equipment, which detects overheating of wheels, is an

invaluable aid in preventing derailments from wheel failure. In addition, Amtrak took steps to clarify responsibilities within its Maintenance of Way Department to ensure that track defects are reported and corrected expeditiously.

Amtrak has experienced some cracking in the concrete ties used in the Northeast Corridor. After analyzing the problem, our research and development office discovered the cause of the cracking and provided a technical solution. Through various studies, that office also determined conditions under which Amtrak trains could be safely operated at higher speeds over curves in the Corridor.

In conclusion, while there are important lessons to be learned from the accidents recounted above--and we are already taking actions based on those lessons--FRA does not believe that the accidents demonstrate systemic safety deficiencies on the Amtrak system.

I appreciate the opportunity to come before the Committee this afternoon, and Joe, Lou, and I would be pleased to answer any questions the Committee may have.