National Transportation Safety Board
Office of Railroad Safety
Washington, DC

Operations Group Factual Report

Accident Number DCA 01 MR 003
Derailment Amtrak No.05-17
March 17, 2001
Nodaway, IA

Investigation Team - Operations Group Chairman,
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II. SUMMARY

On March 17, 2001, approximately 11:40 p.m. central standard time, westbound National Railroad Passenger Corporation (Amtrak) train No. 5-17, the California Zephyr, en route from Chicago, Illinois to Oakland, California, derailed near Nodaway, Iowa. At the time of the derailment, the train was being operated at a recorded speed of 52 miles per hour (mph). A broken rail was discovered at the point of derailment.

Amtrak train No. 5-17 was operating over the Burlington Northern Santa Fe Railway (BNSF) Creston Sub-Division at the time of the derailment. The engineer indicated that he was operating his train under the authority of a clear signal indication when he felt the train "tug" in resistance. He subsequently initiated an emergency brake application, and shortly thereafter realized that his train had derailed.

Amtrak train No. 5-17 consisted of two locomotive units and 16 cars. All but the rear five cars derailed. There was no fire, nor hazardous materials involved in the accident.

The Amtrak operating train crew consisted of an engineer and two conductors with 13 "on-board" service personnel. In addition, there were 241 passengers on board the train. As a result of the derailment, there were 78 injured persons, which included one fatality.

The weather conditions were clear and about 21° Fahrenheit. The wind was calm.

III. THE ACCIDENT

On March 17, 2001, about 11:40 p.m., Amtrak Train No. 05-17, derailed at milepost 419.92 near Nodaway, IA. The train consisted 2 locomotives and 16 cars. The conductor stated that the train crew had boarded the train in Chicago, IL, where he observed a brake test. The locomotive engineer out of Chicago had changed at the regular locomotive engineer's crew change point in Ottumwa, IA. The engineer out of Ottumwa made a running brake test and the brakes functioned as desired. According to the locomotive engineer as the train approached the derailment area near Nodaway, it had been operating normally and he was not aware of any problems in the train. However, just as the derailment occurred, he felt a tugging motion on the locomotive and he immediately placed the train into emergency braking. When the train stopped 13 of the 18 pieces of equipment were derailed. When the train stopped, the event recorder data indicated that it was traveling about 52 mph when the brakes were applied. The timetable-authorized maximum speed limit for passenger trains on the Nebraska Division is 79 mph.

According to the engineer, the train was operating slower than the 79 mph track speed, because of a locomotive whistle irregularity. The whistle had stopped sounding several miles prior to the accident and the engineer had slowed his operations on that account. The conductor had left the train and boarded the locomotive to assist the engineer in protecting the crossings as they moved. When the emergency brake application was made the train had not reached maximum operating speed after slowing for a crossing. According to the crews, the only operational effect from the whistle failure was the slower movement of the train while approaching highway grade crossings and subsequent acceleration afterwards.

The interviews with the locomotive engineer and the conductor revealed that the train was operating in centralized traffic controlled territory, and they were moving about 50 mph on clear block signals. They had been operating with no problems in the train, until the locomotive engineer felt a tug, and placed the train into emergency braking near Nodaway, IA. According to the engineer the movement within the train triggered an alarm in him to stop the train. He stated that the tugging action in the train indicated to him that the train had derailed and he stopped as soon as possible.

Immediately after the train stopped in emergency braking near Nodaway, IA, the engineer notified the train dispatcher that the train had derailed and requested that local EMS personnel be dispatched. The conductor headed back to check the train and to help the passengers. When the conductor got back to the train, he and the assistant conductor using flashlights started caring for the passengers. They passed out emergency lighting, glow sticks, to the passengers and led them to a level place in the track until the EMS arrived to move them from the accident site. According to the conductor, the passengers stated that they felt safe and secure, because the glow sticks provided light for them as they waited to be evacuated.

According to the conductor and engineer on Amtrak No. 05, the operating bulletins were addressed to them and they had no restrictions or bulletins effecting the trains operations in the accident area. Amtrak's California Zephyr had originated in Chicago, IL and was en-route to the Oakland, California area when the accident occurred near Nodaway, IA. The train crew was rested in compliance with the Federal Hours of Service Laws. Their interviews indicated that they had more than 8 hours rest prior to reporting for duty, and they had been on duty less than 12 hours, in compliance with the regulations, when the derailment occurred. In addition, the crews were tested after the accident for compliance with the FRA Drug and Alcohol regulations and no exceptions were noted.

A unit coal train, Train No. C-NAMMEAO-72A passed the accident site about 57 minutes before the Nodaway derailment. The BNSF train passed the site with no indications of track or signal problems. This train had a crew of an engineer and a conductor and consisted of two locomotives and 130 loaded coal cars. The crew stated they were operating on clear signals and that the track was normal as their train passed

through the accident area. In addition, they met Amtrak Train No. 5, observing no defects in the passenger train as they passed.

After the accident the event recorders from Amtrak locomotives AMTK 140 and 141 were down loaded. The recorders indicated that the train was moving about 52 mph when it was placed into emergency braking.

IV. METHOD OF OPERATIONS

The accident occurred on the BNSF Nebraska, Division, and the train was operating on the Creston Sub-division. General Code of Operating Rules (GCOR), rules, timetable special instructions and bulletins control the method of operation for trains on the BNSF. GCOR rule 10 for Centralized Traffic Control (CTC) authorizes train movements in this area. A train dispatcher located in the BNSF dispatchers control center in Dallas/Ft Worth, Texas, controls the territory. The train dispatcher using the traffic control system with intermediate automatic block signals located in between, routs trains at the CTC signals and control points.

According to the GCOR rules, and BNSF Railroad's, timetables and bulletins, train crews are required to comply with the rules. In addition, the crews must keep a copy of the rules in their possession while on duty. These rules stated that safety is the most important element in performing their duties. Obeying the rules is essential to job safety and continued employment, and when train crews are in situations of doubt or uncertainty; the employees are to take the safe course.

Both the BNSF and Amtrak rules require that the conductor and engineer are responsible for the safety and protection of their train and for the observance of the operating rules. If any conditions are not covered by the rules, they must take every precaution for the protection of the train. In addition the locomotive engineer is responsible for safely and efficiently operating of his locomotive or train. The engineer had a current locomotive engineer's certification certificate. According to 49CFR240 regulations, a working locomotive engineer is responsible to have a current locomotive engineer certification in his possession.

According to Amtrak, Train No. 05-17 the California Zephyr, originated in Chicago, IL and was en-route to the Oakland, California area. There were no slow orders or restrictive bulletins in effect on this track near the derailment area. The operating bulletins were addressed to the conductor and engineer.

The train crew boarded the train in Chicago, IL. The locomotive engineer changed in Ottumwa, IA. The accident engineer had been efficiency tested for compliance with operating rules on three occasions in the year 2000. He had two checks for train speed and one check for sounding a grade crossing signal. In each case the engineer complied with the efficiency tests. The efficiency testing records for the conductor and the assistant

conductor do not show a test in the year 2000. In addition, the train crews had no record of failure to comply with the Federal Hours of Service Laws. Interviews with the crews indicated they were rested in compliance with the regulations. In addition, the train crew records indicate that they are current on the operating rules examinations, and the crews were tested after the accident for compliance with the FRA Drug and Alcohol regulations.

According to the crew on Train No. 05-17 the radio communications between the train and the train dispatcher functioned as desired. The crew on Train No. 05-17 stated that the train dispatcher was notified of the derailment and emergency response personnel were dispatcher to the accident site immediately. They had no problems with the radio and the dispatcher talked with them, as he needed.

V. POST ACCIDENT INTERVIEWS

After the accident the Safety Board Operations Group took recorded interviews on Monday, March 19, 2001 at the Berning Motor Inn in Creston, IA. The crew of Amtrak Train No. 05-17 consisted of an engineer, conductor and an assistant conductor. The engineer and conductor were on the leading locomotive when the derailment occurred. In addition, statements were taken from the BNSF coal train crew, an engineer and a conductor, that passed the derailment site about 1 hour prior to the derailment.

The interviews revealed that the crews were operating under normal conditions, with clear signals. When the locomotive engineer on the Amtrak train placed the train into emergency braking, the engineer felt movement within the train that triggered an alarm in him to place the train into emergency. He stated that from the way the train reacted, that it was derailed and he should stop as soon as possible. Then he placed the train into emergency and stopped.

Amtrak No. 5's Engineer; -According to the engineer, he had attended operating rules classed in February 2001. He stated that Amtrak provided training on radio use, and covered all the operating rules in the classes, including the rulebook and timetable. The engineer stated that because of whistle problem, they were moving only about 50 mph when they went into emergency. He stated that he immediately made an emergency radio broad cast and dialed 911. The train dispatcher in Ft. Worth, TX at control center answered immediately.

The accident engineer stated that he reported for duty on March 17, 2001 at 7:54 p.m. at Ottumwa, IA. He was the lone engineer on the Amtrak Inter City Zephyr, Train No. 5 of the 17th. He was scheduled to operate Train No. 5 from Ottumwa, IA to Lincoln, NE, a distance of 208 miles when he reported for duty. He was rested in accordance with the hours of service act, having 8 hours and 51 minutes off duty. His train was operating on the BNSF Nebraska Division, operating on Creston Subdivision and he had been on duty for 3 hours and 46 minutes when the derailment occurred. He stated that the train was operating in CTC territory on clear block signals all the way. After leaving Ottumwa at milepost 280, he made a running brake test and the brakes functioned as designed. The

train had operated the 140 miles from Ottumwa, to near milepost 420 at Nodaway with out problems. According to the engineer, the train was operating in CTC territory with a track speed of 79 mph. Neither he nor the train dispatcher had found any indication of problems with the train, signals or the track prior to the accident.

At Murray, IA the whistle on the leading locomotive ceased to function. After checking the rules and discussing the problem with the train dispatcher the engineer resumed track speed. The conductor came up from the train to the second locomotive, and was sounding the whistle from the second unit. The engineer and conductor stated that the whistle was sounding adequate signals from that position. However, the train dispatcher's territory changed at Corning, and the new dispatcher requested that the conductor go to lead locomotive and too assist the engineer in observing crossings from the lead locomotive.

The dispatchers had discussed the whistle operations and a decision was made at Corning that the train approach each crossing prepared to stop before crossing a roadway crossings. This procedure required that the train to reduce speed and it would take time for the train to resume track speed after each crossing. The train was accelerating to track speed and was moving about 52 mph when the derailment occurred. The accident occurred about 4 miles after conductor boarded the leading locomotive. At last crossing the train slowed to about 15 mph for the crew to ensure that they could see any vehicle that might be approaching before resuming speed. The train accelerated in run 8 after clearing the crossing. The train would have been moving 79 mph had the whistle been functioning as designed.

The engineer stated that he looked the train over in all curves and had seen no exceptions in the train. We were operating on single track when the derailment occurred. In addition, about 12 miles prior to the derailment, the train passed over a hotbox and dragging equipment detector at milepost 398, and no defect were noted. The detector reported 72 axels in the train with no defects. The engineer stated that the weather was clear, and the detector reported it was 27 degrees F. The train had 2 locomotives and 16 cars.

The engineer stated that he did not see any problems with train prior to accident, and he felt that it was a normal procedure to place train into emergency when he felt the tugging on his seat. He said that the ride did not feel right; he heard a noise and placed train into emergency, stopping as soon as possible. We had just entered a left hand curve from tangent track when the derailment occurred. The signals were clear and were operating as well as it could be. The only slow order near the accident site was a 60 mph restriction located about 6 miles prior to the accident site. We had not detected any defects in track and did not feel the engine drop down, we just knew something was not right and placed the train in emergency. The ride quality was smooth where the accident occurred, and there were no slow orders or bulletins restricting the track speed in the area.

The engineer called the assistant conductor to find out what was going on back in