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DEATH ON THE TRACKS

Questions Raised on Signals at Rail Crossings

By WALT BOGDANICH

It was late afternoon on July 14, 2002, when Amtrak train No. 391 pulled out of Union Station in Chicago, bound for Southern Illinois. Several hours later, the train began to run a gantlet of hazardous highway crossings where gates and warning lights malfunctioned, endangering both passengers and motorists.

The first problem arose at a crossing in Cumberland County. Eight miles down the track, it happened at another crossing. Then another. And another. By the time Amtrak 391 reached the small town of Odin, signals at seven crossings had failed to give drivers proper warning of at least 20 seconds, according to federal records.

And on the same day in the same general area, northbound Amtrak train No. 392 encountered "short warnings" at another four crossings. Two days later, the trains ran through a total of seven more short signals.

No one was injured on either day. But three years earlier, on the same track north of these crossings, 11 Amtrak passengers were killed and 89 injured when a train slammed into a truck loaded with steel at a crossing in the town of Bourbonnais. Federal investigators blamed the truck driver for ignoring a proper warning signal, but the state police, witnesses and most recently a judge concluded that a short warning was a factor in the crash.

The railroad industry and its overseer, the Federal Railroad Administration, have long maintained that signal malfunctions pose little danger and that accidents caused by them are "extremely rare."

But last week, after The New York Times began asking questions about signal problems, federal regulators disclosed that since a fatal accident in Michigan in the spring, they have been investigating whether a "type of Amtrak train" might be failing to trigger warning signals properly. And an examination of reported signal malfunctions indicates that they may constitute a wider problem, also involving freight trains.

A Times computer analysis of government records found that from 1999 through 2003, there were at least 400 grade-crossing accidents in which signals either did not activate or were alleged to have malfunctioned. At least 45 people were killed and 130 injured in those accidents, according to the records, although in most cases the role of signal malfunctions was unclear. Federal rules require that railroads maintain signals on tracks they own.

The accident reports, all prepared by the railroads, also raise questions in many cases about whether unsafe behavior by drivers contributed to the accidents. In addition, since 2000, railroads filed about 2,300 reports of the most serious types of signal malfunctions: short signals or no signals at all. Most of these malfunctions did not involve accidents.

"My concern is that this is just the tip of the iceberg," said James E. Hall, a former chairman of the National Transportation Safety Board. "If we had that type of record in aviation, it would be unacceptable."

In February, after a husband and wife were killed near Rochester, at a crossing where the signal had been disabled for maintenance, the Federal Railroad Administration inspected 199 area rail crossings maintained by the railroad company CSX. The agency found that nearly half had defects. Though most of the defects were deemed "relatively minor," they were found to be serious at 12 crossings, the agency said. CSX has since made major repairs to crossings in the area.

The railroad administration's investigation of Amtrak began after a woman and her 15-year-old daughter were killed by a train in Charlotte, Mich., in April when, the police say, a warning signal activated too late. The same railroad that owned the Illinois tracks in the 2002 incidents - Canadian National Railway - also owned the tracks in Charlotte and was responsible for maintaining the signals in both areas.

Canadian National said in a statement to The Times that it did not believe that the short signals in Illinois showed "a significant or persistent problem, or otherwise reflected systemic issues regarding CN signal performance, inspection, maintenance, or repair." The railroad declined to comment on the Charlotte fatalities until the railroad administration completed its investigation.

Warning signals are triggered when an approaching train causes an electrical current to pass from one rail to the other. Last week, the railroad administration said its preliminary investigation of the Charlotte crash had concluded that the warning signal malfunctioned, possibly because Amtrak's braking equipment and practices, along with accumulated material on the tracks, had impeded the electrical current.

The agency said there was no connection between the short signals in Illinois and the Charlotte accident, though both appear to have involved a buildup of different substances on the tracks.

"Passenger locomotives are generally lighter than freight locomotives and use different types of braking equipment," a government official involved in the Michigan investigation said. He added that the

problem was "very intermittent" and had been detected only "regionally."

In a statement, an Amtrak spokesman, William Schulz, said that all of its locomotives and most of its cars had the same kind of brakes, and that there have been "no instances" where Amtrak trains have been found to cause short signals. But with an "abundance of caution in mind," Mr. Schulz said, the passenger service changed some braking equipment and procedures on the Michigan line after the Charlotte accident.

The frequency of signal malfunctions is difficult to assess, because railroads do not have to report all malfunctions and because proving that an error occurred is often difficult after an incident.

According to government data, some 9,500 calls about signals were lodged in 2003 in Texas, which has the only statewide government hot line for problems at grade crossings. Several Texas crossings have been the subject of scores of complaints in recent years. Some callers were reporting the same problem.

Chronic signal malfunctions are not only hazardous, but also burdensome for police departments, especially smaller ones, because they must often send officers to safeguard motorists at problem crossings.

Peggy Wilhide, a spokeswoman for the Association of American Railroads, played down the significance of signal malfunctions, saying a recent federal report found that the great majority of crossing accidents were caused by unsafe drivers. Ms. Wilhide also emphasized that most of the reports of signal malfunctions could not be confirmed.

"I would put our safety record up against any industry," she said.

A spokesman for the Federal Railroad Administration, Steven W. Kulm, said his agency's efforts had "contributed to the dramatic decrease in the loss of life and injury at highway-rail grade crossings." The federal authorities "aggressively review" all reports of signal failures, Mr. Kulm said, adding, "More than 9 of every 10 accidents occurred when the grade crossing warning system was functioning properly."

Federal rules define signal malfunctions as those that give drivers a warning of less than 20 seconds, or that activate when no train is approaching. The latter, called a false activation, is potentially dangerous because drivers may be led to ignore signals that they believe are not working. False activations are the most common signal problem, officials say.

"Americans are impatient, they are only going to sit for so long," said George Gavalla, a former top safety official with the railroad administration. "They will say the gates or lights are not functioning, and they are just going to go."

For that reason, Mr. Gavalla said, after accidents the agency requires railroads to report any possible or

confirmed signal that lasts more than 60 seconds without a train entering the crossing. "That's outside what is considered to be a reasonable time frame," Mr. Gavalla said.

Mike Stead, who oversees rail safety for the Illinois Commerce Commission, said he was unaware of any warning system in his state that was designed to operate longer than 60 seconds with no train present.

Warning signals can fail for various reasons, experts say. Salt, dirt, heavy rain and other substances can interfere with electrical conductivity and wiring. Poor maintenance by the railroads contributes to the problem. So does aging equipment, said Tom Woll of the railroad administration.

In some cases, records show, railroad workers have accidentally disconnected the warning system, or disabled signals during maintenance without providing alternate ways to warn drivers, like flagging them at the crossing. The latter issue was the subject of a 2002 agency advisory.

Even so, the problems have continued. In the crash near Rochester this year, CSX disabled a signal while trying to learn why it was malfunctioning. With no warning signal, trains were supposed to stop at the crossing, then have crews flag motorists, but on the morning of Feb. 3, a CSX train failed to stop, striking the car of John O'Connor and his wife, Jean, killing them.

Of the grade-crossing accidents in the Times analysis, roughly 17 percent involved rail maintenance or inspection equipment that, according to the rail industry, is not designed to activate the warning signals. Most of this equipment, the railroad administration said, weighs too little and has too few wheels to trigger the warning signal. Nearly 30 people were injured in these collisions from 1999 through 2003, government records show.

Proving that a signal malfunctioned can be difficult. In the more than 400 accidents in the Times analysis, 30 percent of the signal problems were listed as confirmed. The rest were listed as "alleged," meaning that a technician checked the signal later and found no problem, said Ms. Wilhide, the spokeswoman for the Association of American Railroads.

But determining what happened at the time of an accident is possible only at those signals equipped with devices to record when a warning is activated and the position of the gates when the crash occurred. Most signals lack such devices. More often, the determination comes down to what witnesses say, and their accounts may differ.

Even when no accident occurs, the Federal Railroad Administration requires railroads to report to a separate database when signals fail to give drivers a sufficient warning. The required 20 seconds are necessary because gates do not descend instantly. They typically begin to lower four to five seconds after signal activation and take about five seconds to be fully deployed. The reports in this federal database, however, often provide few or no details on the signal malfunctions.

This database does not reflect every signal that fails to operate properly. The most common problems, false activations, are not included. Also, according to the rail industry, if a malfunctioning signal is taken out of service so it can be worked on, it does not have to be reported separately to the signal problem database - even if an accident occurs - because the signal did not technically fail; it was simply out of service.

In the summer of 2002, 27 short signals on the Canadian National tracks in Illinois were reported to the federal database. Some signals were short by only a second or two, but most reports did not specify the length of time. Records show that after the malfunctions were discovered, Canadian National temporarily lowered the allowable train speed for all railroads using the affected tracks. The railroad administration said the problems "were primarily related to deposits from freight spillage that caused a buildup of material on the rail surface." Since then, it said, steps have been taken to improve the sealing of railroad cars that carry grain.

An Amtrak spokesman said he was unaware of the Illinois short signals until The Times asked about them. The passenger service, he added, does not keep records of signal malfunctions that involve its trains. Amtrak's president, David L. Gunn, said in an interview that he believed that freight railroads tried their best to maintain warning signals.

Even so, Mr. Gunn said he found the apparent breakdown in Illinois troublesome.

"Absolutely," he said. "Any failure like that will put somebody in danger."

In the Michigan crash last April, that danger proved fatal to Melanie Pouch and her daughter, Meghann, according to witness accounts. Ten people said the train had entered the crossing when the warning gates began to descend. About a month later, the police officially concluded that the signal malfunctioned.

Nonetheless, Canadian National's accident report still states that the signal is only alleged - but not proved - to have malfunctioned.

"It's clearly inappropriate of the railroad to call this an alleged malfunction," said Bryan J. Waldman, a lawyer representing Mrs. Pouch's estate. "Corporations speak about how injured people need to take responsibility for their own actions, and corporations need to take responsibility for their actions."

In several fatal accidents, signal problems were reported before and after the accidents. For example, at the Bourbonnais crossing where 11 Amtrak passengers died, four false activations were confirmed in the year before the crash and two short signals occurred within a month afterward, records show. (Canadian National Railway did not, at the time, own that track, so it had no maintenance responsibility for that signal.)

The Rochester-area crossing where two people were killed had also been the subject of repeated complaints. And in the month after the Michigan crash, the police received two reports of Amtrak trains

going through the crossing without the gates being properly lowered, records show. In that same period, two other crossings with signals on the Amtrak line in the area were reported to have malfunctioned.

A Canadian National spokesman denied that those malfunctions occurred.

Jenny Nordberg, Jo Craven McGinty and Tom Torok contributed reporting for this article.

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