

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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R-477

ISSUED: June 28, 1985

Forwarded to:

Mr. J. A. Darling
Chairman and Chief Executive Officer
Chicago, South Shore and South Bend
Railroad
307 North Michigan Avenue
Chicago, Illinois 60601

SAFETY RECOMMENDATION(S)

R-85-75

About 7:50 p.m. on May 18, 1984, Chicago, South Shore and South Bend Railroad (CSS&SB) commuter train No. 20, consisting of two self-propelled electric cars, derailed at the switch at the east end of Olive siding 3 miles east of New Carlisle, Indiana. The cars came to rest in upright positions. Of the 35 passengers and 2 crewmembers on board, 3 passengers were injured. The remaining passengers were transferred to another train and continued to Chicago, train No. 20's destination.

The train derailed at a facing point switch and destroyed about 200 feet of main and siding track, knocked down five poles carrying electric lines that supplied the 1,500-volt d.c. power for train movement, and knocked down one wayside signal. Electrical components under the cars and stainless steel side and end panels were damaged. Passengers were bused around the derailment site for 2 days while repairs were being made. Total costs, including bus transportation and clearing costs, exceeded \$630,000.

Train No. 20 was making a facing-point westward movement over the hand-operated switch at the east end of Olive siding when it derailed. The operating rod of the switch was connected to the switch stand by a forged, "non-breakable two-way crank" manufactured of S.A.E. 1020 steel at an unknown date by the Pettibone-Mulliken Corporation (now Pettibone Corporation). The end of the crank to which the connecting rod was attached failed because of an internal transverse defect that extended through 90 percent of the cross section. The crank probably failed as the first truck of the lead car passed over it. The trailing truck of the lead car and both trucks of the second car derailed when the wheels split the switch because the switch point, which was no longer secured against the stock rail, gapped open sufficiently to allow the wheel flanges to pass between the switch point and the stock rail.

The track foreman, who had inspected the switch earlier on the day of the accident, could not have seen the area of the switch crank that failed without removing the crank, which was not required by CSS&SB rules. While an accumulation of oil and dirt on the crank obscured visual inspection of the crank, the defect probably could not have been detected without removing the crank and testing it for internal flaws.

CSS&SB Time Table No. 5, effective October 31, 1982, indicates that 195 scheduled trains operate to and from Chicago from Gary, Michigan City, and South Bend, Indiana, each week. These trains pass over 100 switches, including 56 hand-operated switches. None of the hand-operated switches has switch point locks. Although the signals of the automatic block signal system will indicate when a switch is not facing properly, there is no protection on the hand-operated switches to prevent the switch points from gapping open if a critical component of the switch fails while a train is passing over the switch.

CSS&SB allows passenger trains to move at a maximum speed of 70 mph over the single track from Michigan City (Shops) to Gary and at 65 mph from South Bend to Michigan City (Shops). Train No. 20, operating with a 65-mph speed limit, derailed while traveling about 60 mph. A derailment at 60 mph could have resulted in overturning of the cars and more severe injuries.

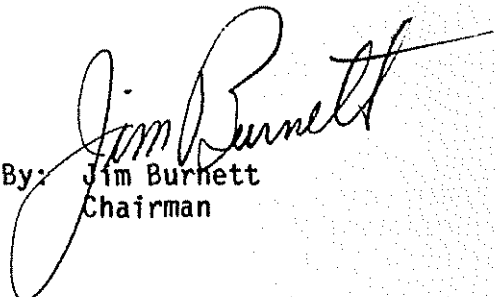
Numerous incidents over the years, in which the failure of critical components of switches and switch stands have resulted in train derailments, demonstrate the necessity of mechanically locking switch points of hand-operated switches, particularly in the case of facing-point switches in high-speed, dense-traffic territory. The simplest switch-point lock is made of steel plates that are designed to mechanically bind the switch point to the stock rail; and it can be locked with a padlock. In operation, closed switch points held by switch-point locks will not open until the holding mechanism of the switch-point lock is released. Such a switch-point lock can be installed for less than \$200 at current prices and wage rates. The prevention of this derailment would have paid for switch-point locks on all of the 56 hand-operated switches on the CSS&SB main track.

Therefore, the National Transportation Safety Board recommends that the Chicago, South Shore and South Bend Railroad:

Install a switch-point lock on each hand-operated switch over which passenger trains make facing-point movements. (Class II, Priority Action) (R-85-75)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in this recommendation.

By: 
Jim Burnett
Chairman