

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3348

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION  
REPORTS UNDER THE LOCOMOTIVE INSPECTION ACT  
OF FEBRUARY 17, 1911, AS AMENDED

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CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD

September 28, 1950

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Accident at Edgebrook, Chicago, Illinois, on July 27, 1950,  
caused by lubricator failure.

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REPORT OF THE COMMISSION<sup>1</sup>

PATTERSON, Commissioner:

On July 27, 1950, about 7:18 p.m., at Edgebrook, Chicago, Ill., Chicago, Milwaukee, St. Paul & Pacific Railroad locomotive 102 straddled itself on the right side while hauling a passenger train at an estimated speed of 100 miles per hour, and badly damaged the road bed and street crossings. Two nonemployees were struck by flying debris; one sustained serious the other minor injuries. The accident was caused by the failure of a mechanical lubricator.

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<sup>1</sup>Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

## DESCRIPTION OF ACCIDENT

Chicago, Milwaukee, St. Paul & Pacific Railroad locomotive 102 was dispatched at Chicago, Ill., at 12:30 p.m., July 27, 1950, in passenger service to New Lisbon, Wis., 221 miles from Chicago, where it was turned and returned to Milwaukee, Wis., on train No. 2/6, arriving at 6:22 p.m., 27 minutes late. It departed from Milwaukee at 6:27 p.m., hauling eastbound passenger train No. 2/100, which was designated as the "North Woods Hiawatha" and consisted of one baggage car, one dining car, one parlor car and four coaches. The train proceeded without any known unusual incident to Edgebrook Station in Chicago, 73 miles from Milwaukee, where, at about 7:18 p.m., the overheated right main crosshead broke and dropped from guide while the train was running at an estimated speed of 100 miles per hour. The displaced crosshead caused extensive damage to the driving gear; parts of the gear were thrown from the locomotive and the roadbed and street crossings were considerably damaged. Two nonemployees were struck by flying debris, one of whom was seriously injured. The dragging and broken parts of the locomotive broke fifty or more ties and tore up the roadbed and street crossings. Parts of the driving gear were strewn along the right of way from the point where the crosshead key was found, 1000 feet west of Edgebrook Station, to a point 1400 feet east of Central Avenue where the rear portion of the main rod was found, a distance of 2435 feet. The locomotive remained attached to the train and ran a distance of 10,560 feet beyond Edgebrook Station before it came to a stop. The locomotive and train remained on the track.

When the train stopped the following parts were found missing from the right side of the locomotive: Front cylinder head, piston rod and piston, crosshead, crosshead key and wrist pin, main rod, piston rod gland box, a portion of the crosshead link, three of the four main crosshead guide ledges and top half of both eccentric crank arm bolts. The eccentric arm was detached from the crank pin and together with the eccentric rod, which was still attached to the lower end of the link, had been dragged on the roadbed. After the main rod broke, the flailing rear portion of the rod smashed the power reverse gear, knocked out a throat sheet washout plug, broke the train line, driving and trailing truck air brake supply pipes, injector delivery pipe, and sheared twenty-one flexible staybolt sleeves and caps on the combustion chamber.

The injured persons, nonemployees, were in an automobile on Devon Avenue near the Edgebrook Station waiting for the train to pass. When the train tore up the crossing, flying debris entered the automobile. The man who was operating the automobile received only minor injuries; his woman companion was seriously injured and was taken immediately to a hospital for treatment.

#### DESCRIPTION OF LOCOMOTIVE

Locomotive 102 was of the 4-6-4 type; built by the American Locomotive Company at Schenectady, N. Y., in August 1938. Cylinders were 23-1/2 inches in diameter with 30 inch stroke; driving wheels were 84 inches in diameter with new tires; weight on driving wheels 216,000 lbs; rated tractive effort 50,294 lbs; working steam pressure 300 lbs. per square inch.

The locomotive was equipped with roller bearings on all journals, Walschaert valve gear, Standard stoker, multiple bearing ledge type guides and crossheads, and two Nathan mechanical lubricators, one located on right side which distributed valve oil to the cylinders and valves and the other on the left side which distributed car oil for main crosshead guides and driving box pedestals.

#### DESCRIPTION OF PARTS INVOLVED

The left mechanical lubricator which supplied oil to crosshead guides and driving box pedestals was a Nathan, Type D.V., capacity 16 pints; had eight outlets, three of which were blanked off. The lubricator was actuated by an arm extending upward from the combination lever. A connecting link reached from the arm to a ratchet lever which was bolted to the ratchet shaft. The ratchet drive was provided with three driving pawls and three counter pawls and could be operated both mechanically and manually. The oil from this lubricator was pumped to five oil distributors, two supplying oil to the main crosshead guides and one to each pair of driving box pedestals.

The outlets of the guide distributors were crossed: one distributor furnished oil to the front of the right guide and rear of the left guide, and the other to the front of the left guide and the rear of the right guide.

## EXAMINATION OF PARTS INVOLVED

The condition of the main crossheads and guides on both sides of the locomotive indicated excessive overheating. All of the bearing metal had been lost from the crosshead on the left side and much of the molten bearing metal had been deposited on the back head of the left steam cylinder. Bearing metal in the right crosshead had fused and the crosshead broke between the lower ledges and the body. The right front cylinder head was missing, fourteen of the twenty-eight studs were pulled out of the threaded holes in the cylinder and the remainder had been broken off. All of the broken studs had new fractures.

The piston head, the piston rod and gland box, the crosshead key and main rod were missing. These parts were subsequently found along the right-of-way. The piston and piston head were apparently in good condition prior to the accident and the keyway and crosshead fit showed no indication of working. The piston rod was bent at an angle of 30 degrees. The main rod was broken in two pieces. The front piece which was 49 inches long from the center of the wrist pin hole was found attached to the lower half of the broken crosshead, with wrist pin in place. The rear piece, which was 80 inches long from the center of the crank pin hole, was found badly bent but no evidence of any defect prior to the accident was found. The crosshead key which was found intact, straight and not shouldered, indicated that it was serving its purpose prior to the accident. The 3/8 inch rivet used in the lower end of the key was found sheared flush on both sides of the key. The eccentric crank arm was pulled from the main crank pin, both bolts were broken and it had been dragged by the eccentric rod which remained attached to the link. The crosshead link was broken from the crosshead and remained attached to the combination lever.

Examination of the mechanical lubricator on the left side of the locomotive which supplied oil to the main crosshead guides disclosed that the connecting link rear pin had lost out and permitted the link to separate from the combination lever to which it was attached, thus rendering the lubricator inoperative.

## INSPECTION AND REPAIR REPORTS

The locomotive received last Class 3 repair, May 17, 1948, at Milwaukee, Wis. The lagging was last removed January 26, 1949, at Minneapolis, Minn., last annual inspection was made March 2, 1950, at Milwaukee, Wis., last quarterly inspection on June 7, 1950, at Minneapolis, Minn., last monthly inspection including heavy repairs July 22, 1950, at Minneapolis, Minn. and last daily inspection on July 25, 1950, at Chicago, Ill., Western Avenue.

Daily inspection and repair reports from Minneapolis, Minn., Milwaukee, Wis., and Chicago, Ill., for the months of June and July, 1950, prior to the accident, were examined and the following items were found reported which may have a bearing on the accident:

July 22, 1950, at LaCrosse, Wis. and Chicago, Ill., Western Avenue, reported by engineers: "Mechanical lubricator left side out of commission, arm is in cab." Repairs shown made, with notation: "Replaced missing parts." Report approved by foreman.

July 24, 1950, at Chicago, Ill., reported by engineer: "Replace arms on both oil pumps." Repairs shown made, with notation: "Repaired left side." Report approved by foreman.

## SUMMARY OF EVIDENCE

The engineer stated that locomotive 102 had been operating normally prior to the accident. On approaching Edgebrook Station he prepared to reduce speed to 70 miles per hour as required by operating rules at which time he heard heavy pounding on the right side of locomotive; brakes were immediately applied and train came to a stop. There was no jerking of the reverse lever until the pounding started. After stopping he inspected the locomotive and found the right main rod, piston and piston rod, and the right front cylinder head were missing, some of the jacket and lagging was gone from right side of boiler and there was a hole in the front throat sheet where a washout plug had been knocked out. He stated that he had inspected the locomotive in Milwaukee, in company with the engineer whom he relieved, at which time the lubricator was working and the engine was in good condition as far as he could ascertain.

## DISCUSSION

From appearance of the track at the point of accident and the location of parts, as found, and marks on the parts of locomotive, it would appear the events occurred in somewhat the following order: When the pin lost out of the connecting link, lubrication to the main crosshead guides stopped. The crosshead and guide on the right side overheated and fused the bearing metal; the crosshead broke at guide ledges permitting the crosshead to fall and the piston knocked out the front cylinder head. The crosshead key was simultaneously loosened and sheared the key rivet and the key flew out. The pounding driving gear loosened the piston rod fit in the crosshead and the piston rod was then thrown from the cylinder. The remaining loose portions of the driving gear which included the main rod, crosshead and wrist pin continued thrashing ahead of the main pin until these parts went into the ground, breaking the main rod. The front portion of the main rod and crosshead remained at this point and the back portion whipped around until the eccentric arm bolts failed and permitted the remaining portion of the main rod to disengage. This locomotive was streamlined and the shrouding hid the lubricator, its linkage and many other parts from casual view.

Inasmuch as difficulty had previously been experienced with the lubricator actuating mechanism it would appear that repairs, construction or design of the arm and link and connections may not have been suitable for the speeds at which the locomotive was operated.

## CAUSE OF ACCIDENT

It is found that this accident was caused by the failure of a mechanical lubricator actuating mechanism.

Dated at Washington, D. C., this 28th day  
of September, 1950.

By the Commission, Commissioner Patterson.

SEAL

W. P. BARTEL,  
Secretary.