UNITED STATES INTERSTATE COMMERCE COMMISSION

REPORT NO. 3351

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

UNION PACIFIC RAILROAD

October 6, 1950

Accident at Cheyenne, Wyo., on August 3, 1950, caused by a runaway locomotive.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On August 3, 1950, about 9:22 p.m., at Cheyenne, Wyo., Union Pacific Railroad locomotive 820 while running light, unattended, at an estimated speed of 70 miles per hour, collided with a Diesel-electric locomotive which was moving slowly in switching service. An engineer, fireman, and a switchman were killed and a switchman was seriously injured. All casualties were members of the switching crew.

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[1]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

Union Pacific Railroad locomotive 820 was called to leave Cheyenne, Wyo., at 6:55 p.m., August 3, 1950, and was used as front end helper on a westbound passenger train to the top of Sherman Hill, 31 miles from Cheyenne, where it was detached from the train, turned around, and returned light to Borie, Wyo., 9.5 miles west of Cheyenne, arriving at approximately 9:00 p.m. The movements to this time were without any known unusual incident. At Borie, the locomotive was left on the eastbound track of the main line, unattended, when the engineer left to respond to a telephone message in the tower and the fireman went back to flag. After a short time, variously estimated from 5 to 10 minutes, the locomotive started to move forward and continued to increase speed on the descending main line until it struck the rear end of Union Pacific Diesel-electric locomotive unit 1149 while running at a speed of approximately 70 miles per hour. The Diesel unit was pushing a cut of cars eastward into the roundhouse lead of Old Yard in Cheyenne at the time it was struck.

The collision occurred on a double-arch stone bridge approximately 1/2 mile west of Cheyenne station. The Diesel switching unit, which was practically demolished, came to rest on its left side on the southeast bridge abutment with front end near the bottom of the bank. Locomotive 820 came to rest on its left side nearly crosswise of the tracks at the east end of the bridge with its front end wedged against the cab of the Diesel. It was also badly damaged. The tender was torn away and was lying on its left side on the bridge. Extensive damage to the track on and off the bridge and to the freight cars and lading also resulted.

At Borie, Wyo., where the locomotive was stopped and left unattended, the elevation was 6560 feet, the track was tangent, and the grade eastward was 1.3 percent descending. From Borie eastward to the point of collision, approximately 9 miles, the grades were descending, varying from a maximum of 1.55 percent to 0.076 percent. At point of the collision, the track was tangent, the grade 0.1137 percent descending, and the elevation 6061 feet.

The crushed bodies of the engineer and fireman of the Diesel unit were found in the cab of the unit and the body of one switchman, who had been at a switch near the bridge, was found at the foot of the fill at southwest corner of the bridge.

Another switchman, who was on the lead car of the cut being switched, incurred a broken left arm and bruises on his face and head. He was removed to a hospital.

DESCRIPTION OF LOCOMOTIVE

Locomotive 820, type 4-8-4, was built by the American Locomotive Company in August, 1939, cylinders were 25 x 32 inches; diameter of driving wheels with full tires 80 inches; weight of locomotive in working order 478,640 pounds; weight on driving wheels 265,520 pounds; tractive effort 63,800 pounds. All locomotive and tender wheels were equipped with Timken roller bearings. Locomotive was equipped with Walschaert valve gear, Franklin Type E reverse gear, Nathan 3-inch non-lifting injector on right side and Sellers improved exhaust feed water heater injector on left side, Type E superheater, front end multiple throttle, Franklin Type E radial buffer, Westinghouse No. 8-ET locomotive brake equipment, three-indication USS coded cab signals, and Chicago pneumatic 120-MPH speed recorder. Tender: Oil capacity 6,000 gallons; water capacity 23,500 gallons; loaded weight of tender 416,960 pounds.

DESCRIPTION OF PARTS INVOLVED

Locomotive 820 was equipped with roller bearings on all driving and truck axles. The throttle was multiple front end type, with vertical throttle lever connected by rods and linkage along right side of boiler to cam shaft lever on smoke box. Quadrant had a hole and pin to secure lever in closed position. Reverse lever and quadrant controlling the Franklin Type E air reverse gear were mounted on right back corner of boiler ahead of engineer's cab seat. GP speed indicator and recorder was mounted ahead of engineer's seat and to left of independent brake valve. Headlight switch was mounted on inside of cab above right side window. Brake equipment was Westinghouse No. 8-ET, consisting of L-8 PA brake valves with automatic and independent portions mounted on a pedestal in the cab together with F-3 reducing valve and F-4 feed valve, 8-A distributing valve with E-7 safety valve under right back corner of cab, actuating a New York B-relay valve which supplied air to driver and trailer brakes. The distributing valve supplied air directly to tender brake cylinders only. Independent brake valve handle was 30 inches ahead of back rest to engineer's seat. There were two driver brake cylinders, two trailer brake cylinders, and seven tender brake cylinders with clasp type brakes on trailer and tender

wheels. A driver and trailer brake cutout cock was located on right inside wall of cab under the windows ahead of engineer's seat. Locomotive had two 8-1/2 inch cross compound air compressors mounted at front end of locomotive above frame. Main air reservoir was cast integral with locomotive bed.

EXAMINATION OF PARTS INVOLVED AND TESTS MADE

Within 30 minutes after the collision, the carrier's mechanical superintendent in charge of steam power made an examination of locomotive 820 and found the controls in the following positions:

Throttle lever closed and latched, but pin out of place.

Reverse lever 12 teeth forward of blanked portion near center, (blank extending from center to 35 percent cut-off.)

Automatic brake valve in running position.

Independent brake valve half-way between lap and slow application position.

Engine brake cutout cock open.

Steam operated cylinder cocks closed.

Both injector steam valves closed.

Tires warm from running, but brake shoes cool.

CP speed recorder hand at 120, due to locomotive lying on its left side.

When the locomotive was examined on August 5, after righting, the above positions were substantially as reported except speed recorder hand was at zero indication and front headlight switch was in "dim" position. All tender brake cutout cocks were open, and rear angle cock and signal line cock were closed. Throttle lever latch and quadrant teeth were in good condition, and latch spring was exceptionally stiff, precluding any possibility of accidental throttle opening. Lever was in closed position, and locking pin could easily be inserted if desired. Boiler pressure was raised to 100 pounds by direct steaming system to make a check of throttle leakage. At that pressure no

leakage could be detected at open cylinder cocks or relief valves. Because of strained condition of boiler and damaged steam headers and pipes steam pressure was not raised further. Throttle was dismantled and valves were removed. All valve seats, guides, and cams appeared to be in good condition, and throttle rigging operated freely. It was considered inadvisable to open throttle under steam pressure, because of the damaged condition of cylinders, valve motion, and foundation brake equipment.

Reverse lever, quadrant and latch were in good condition. Six teeth on quadrant just ahead of center had been experimentally blanked by bronze welding to prevent overheating of rod pins and bushings as result of excessively short steam cutoff. When reverse lever is latched back of the welded portion of quadrant, valve motion is supposed to be on center, and when latched ahead of welded portion, at 33 percent cutoff. The setting of reverse gear could not be checked because of the damage to the Walschaert valve gear.

Speed recorder tape, which was removed during investigation, showed the locomotive had been traveling at 45 MPH after moving one mile from Borie, 55 MPH after two miles, over 60 MPH after three miles, the speed then increased very slowly to a maximum of 74 MPH, six miles from Borie, and was maintained to point of collision. The speed recorder was removed from bracket in cab and tested on CP Speed Recorder Calibrating Machine of Chicago Pneumatic Tool Company. Slight errors were found which showed corrected speed at time of collision was probably slightly above 70 MPH.

The brake equipment was tested after several repairs were made. Brake pipe, brake cylinder pipe, and signal pipe, which were broken when the tender broke away, were plugged at rear end of locomotive. Brake pipe and signal line were plugged above right cylinder because entire front end of locomotive had been crushed. Supply pipe flange at distributing valve which had pulled loose and was distorted was renewed. Loose controlled emergency portion which had one stud sheared off was reapplied. The entire distributing valve and its brackets had been forced down at the back 5 degrees out of level, thus straining all connections. Main reservoir pipe and brake pipe connections under brake valve pedestal were leaking. After necessary repairs to pipes had been made the independent brake valve was used to set the brakes. It was noted they did not set up until independent brake valve handle was moved more than halfway from lap to slow

application position. Brake cylinder pressure held at between 43 to 45 pounds when independent brake valve was in application position but when the valve was moved to lap position the driver brakes leaked off completely in 2 minutes 15 seconds. An air leak was found at the top center stud which secured the valve portion of distributing valve to the pipe bracket portion. When this stud was tightened a whole turn or more, considerably tighter than normal on this class of work, the leak nearly stopped, and in independent lap the driver brake pressure fell from 43 to 23 pounds in 5 minutes. This leakage seemed to be principally at the safety valve ports. Then, to test maintaining feature of distributing valve, a considerable leak was made in brake cylinder pipe by opening the trailer brake cylinder cutout valve and exhausting through the severed armored hose which formerly connected to the trailer truck brake system. Independent lap then showed a pressure reduction in brake cylinders from 45 to 25 pounds in 5 minutes. During all these tests, the automatic brake valve handle was left in running position, as found after the collision and as the engineer stated he placed it.

After further tests with approximately the same results, the brake equipment was removed from the locomotive and checked on Westinghouse test racks. The 8-A distributing valve passed all tests easily, except one pertaining to the equalizing portion, which had no effect on independent brake valve operation. The E-7 distributing valve safety valve, however, was found to be leaking excessively and to be very erratic. When dismantled the spring appeared to bind on the valve stem in several places. The valve seat seemed slightly dirty and had marks across it as though a reseating tool had chattered while refinishing the seat. The valve and seat were cleaned, lubricated, and lightly rubbed together. Then the safety valve was reassembled and tested with approximately identical results.

The L-8 PA brake valves were tested on a 4-B test rack; the automatic brake valve passed all tests easily; the independent brake valve passed all but Test No. 12, which required that application chamber pressure rise from 0 to 40 pounds in 5 to 9 seconds in slow application position. When the handle was held by hand against the shoulder on brake valve quadrant corresponding to slow application position, the test was passed, but the quick application return spring was so strong that when the handle was released after having been moved to slow application,

the spring returned the handle toward lap sufficiently to increase charging time to between 12 and 15 seconds. When moved to quick application and suddenly released, the spring did not throw the handle entirely to lap position, but the handle remained close enough to slow application position to keep application chamber pressure supplied.

The F-3 reducing valve and F-4 feed valve passed the rack test successfully, as did the New York air brake B-relay valve.

When the valve portion of distributing valve was removed from pipe bracket portion for testing, the cause of the serious leak around the center top stud was discovered. The gasket was in good condition, but the face of the pipe bracket portion had a core plug with a groove around its edge 1/32 inch deep and 3/64 inch wide at largest part. This plug was just at the top edge of the application piston and chamber A and near the top center stud, and the groove was so deep that the two beads on the gasket would not fill it, resulting in a direct passage back of the gasket from one side of the application piston to the stud opening and then to atmosphere under nut at end of stud, which did not make an air tight joint on face of casting. This leakage wasted application chamber air, and due to the small volume of 258 cubic inches, even slight leakage would be serious if independent brake valve were in lap position, under which condition application chamber pressure would not be maintained by reducing valve. A drop in application chamber pressure would automatically throw the distributing valve to release position and bleed off brake cylinder pressure when automatic brake valve was in running position. In the No. 8-ET equipment, the distributing valve safety valve is also connected to application chamber and limits its pressure except in automatic service lap; hence leakage at safety valve must be supplied from application chamber and would result in early reduction in brake cylinder pressure if the independent brake valve were lapped while automatic brake valve was in running position. The safety valve leak and the leak around the stud both came from the small application chamber.

To explore the possibility that the gasket on face of pipe bracket portion leaked due to blow or shock at time of collision, the distributing valve was reassembled on locomotive 820 with a new gasket by an experienced mechanic, and the studs were tightened as usual. The safety valve was removed and the opening was plugged so that leakage from that source would be avoided. When

an independent application of brakes was made, the same middle top stud leaked, and when the independent brake valve was lapped, brake cylinder pressure leaked off as follows:

Test	No.	1:	40	lb.	to	10	lb.	in	2	min.	43 sec.
"	"	2:	45	"	"	10	"	"	2	"	57 "
"	"	3:	45	"	"	10	"	"	2	"	23 "
"	"	4:	45	"	"	5	"	"	4	"	2 "
"	"	5:	45	"	"	10	"	"	2	"	50 "

Tests 3, 4, and 5 were made with a test gage which showed low pressures more accurately. It was noted that it required 4-pound air pressure to move driver brake pistons against release springs.

In order to duplicate as nearly as possible the conditions existing when locomotive 820 moved off at Borie, another locomotive of the same class was used in order to determine brake pressure at which locomotive movement would occur. On August 8, locomotive 830 helped a passenger train to top of Sherman Hill. On return trip to Cheyenne, the locomotive stopped at Borie and spotted with cab at Borie interlocking tower platform, throttle closed and all steam released from cylinders. Throttle leakage was negligible. Cylinder cocks were closed and brake cylinder pressure was slowly reduced to 10 pounds when locomotive moved approximately 18 inches, then stopped and started moving again. Locomotive was stopped and backed to same starting point to repeat the test. Brake cylinder pressure was reduced to 8 pounds and locomotive started to move, but due to misunderstanding was stopped by application of brakes made by road foreman. Locomotive was then backed up to same starting point and brake cylinder pressure reduced to 12 pounds, but locomotive did not move with this pressure; then pressure was reduced to 10 pounds, and after waiting 10 to 15 seconds locomotive started moving and continued to increase speed gradually. Independent brake valve was then placed in running position, releasing air from brake cylinders, and speed of 45 MPH was attained in 4 minutes from start. When locomotive attained a speed of 45 MPH, brakes were applied and locomotive stopped. (UP speed limit for locomotive running light on this grade is 40 MPH). From this point to Cheyenne, UP officials made tests with reverse lever in different positions to determine what effect the position of the reverse lever would have in retarding a locomotive on the grade. Results were as follows: Reverse lever was placed on center, brakes were released, and locomotive started moving slowly and gradually picked up speed to 37 MPH in 4 minutes 10 seconds; then brakes were applied and locomotive stopped after which reverse lever was placed 12 notches back of center, brakes released and locomotive started moving slowly and gradually attained speed of 30 MPH in 5 minutes 10 seconds. Without stopping locomotive, reverse lever was slowly moved to full back-up position and locomotive stopped in one-

fourth mile plus two pole lengths in 2 minutes 30 seconds. After locomotive had come to stop, due to compression in cylinders, it moved backward up grade approximately 20 feet. On arrival at Cheyenne, the speed recorder tape was removed. It showed that UP 830 attained 35 MPH within one mile from a standing start at Borie, and a speed of 45 MPH at a point 1.9 miles from Borie. Higher speeds could not be checked due to speed restrictions.

INSPECTION AND REPAIR REPORTS

Last classified repairs were made at Omaha, Nebr., on July 1, 1950. At this time locomotive received class 2 repairs, which included new firebox. No monthly inspection had been made from that date to time of accident, August 3. Mileage since classified repairs, 13,588 miles.

Daily inspection and repair reports from all points at which the locomotive had been inspected since July 1 were examined at Cheyenne. The following list includes all items which might have a bearing on this accident. All items were signed off as repaired except as noted otherwise:

July 1, Council Bluffs, Iowa, engineer reported: "Throttle works very hard. Both air pumps squealing." Inspector reported: "Take up tank brake piston travel. Adjust driver and trailer brakes." Report approved by foreman.

July 2, Grand Island, Nebr., engineer reported: "Main throttle works hard." Inspector reported: "Oil choke stopped up air end R air pump." Report approved by foreman.

July 2, North Platte, Nebr., engineer reported: "Main throttle takes both hands to move." Inspector reported: "Adjust dr. brake piston travel." Report approved by foreman.

July 3, Cheyenne, Wyo., inspector reported: "Adjust driver brakes. Oil air pumps." Report approved by foreman.

July 4, Green River, Wyo., engineer reported: "Throttle works very hard. Reversing gear works very hard." Inspector reported: "Adjust dr. and tank brakes." Report approved by foreman.

July 6, Cheyenne, Wyo., engineer reported: "Main throttle works very hard." Inspector reported: "Oil air pumps." Report approved by foreman.

July 7, Ogden, Utah, engineer reported: "Take out some tension of latch spring in main throttle works too hard." Report approved by foreman.

July 8, Denver, Colo., engineer reported: "Throttle works very hard." Inspector reported: "Throttle lever operates hard. Tank brake piston travel long." Report approved by foreman.

July 9, Green River, Wyo., engineer reported: "Lubricate throttle can hardly move it." Inspector reported: "Adjust driver and tank brakes. Tighten packing nuts on air pumps." Report approved by foreman.

July 10, Cheyenne, Wyo., engineer reported: "Throttle handles hard. Spring too heavy in throttle latch." Report approved by foreman.

July 12, Ogden, Utah, engineer reported: "Grease throttle shaft." Report approved by foreman.

July 13, Green River, Wyo., engineer reported: "Speed recorder hand keeps jumping. Throttle very stiff." Inspector reported: "Adjust dr. and tank brakes." Report approved by foreman.

July 13, Salt Lake City, Utah, engineer reported: "Throttle very stiff." Report approved by foreman.

July 13, Pocatello, Idaho, engineer reported: "Take up driver and trailer piston travel." One inspector reported: "Pack air end of air pump." Another inspector reported: "Oil air pumps." Report approved by foreman.

July 17, Pocatello, Idaho, engineer reported: "Throttle very hard to operate." Inspector reported: "Adjust dr. and tank brakes." Report approved by foreman.

July 18, Cheyenne, Wyo., engineer reported: "Throttle hard to open." "Throttle leaking." (Repairs for last item not signed for.) Inspector reported: "Oil air pumps. Adjust trailer brakes." Report approved by foreman.

July 19, Council Bluffs, Iowa, inspector reported: "Adjust tank, driver, and trailer brake travel. Tighten packing nuts to pistons of air pumps." Report approved by foreman.

July 19, Cheyenne, Wyo., inspector reported: "Adjust driving brake piston travel." Report approved by foreman.

July 20, Council Bluffs, Iowa, inspector reported: "Adjust tank, dr. and trailer brakes." Report approved by foreman.

July 21, Cheyenne, Wyo., engineer reported: "Speed recorder not working. Adjust driver brakes. Tighten packing nuts to air pump pistons." Report approved by foreman.

July 22, Green River, Wyo., engineer reported: "Throttle and reverse lever work very hard." Inspector reported: "Adjust dr. and tank brakes." Report approved by foreman.

July 23, Ogden, Utah, engineer reported: "Throttle lever works too stiff." Report approved by foreman.

July 24, Cheyenne, Wyo., engineer reported: "Oil air pumps. Tighten packing nuts to air pump pistons." Report approved by foreman.

July 25, Green River, Wyo., inspector reported: "Adjust dr. and tank brakes." Report approved by foreman.

July 27, Cheyenne, Wyo., inspector reported: "Pack R air pump." "Check for air leaks." (Repairs for last item not signed for.) Report approved by foreman.

July 28, Council Bluffs, Iowa, engineer reported: "Alemite main throttle bearings." Inspector reported: "Adjust tank, driver and trailer brake travel." Report approved by foreman.

July 31, Green River, Wyo., engineer reported: "Throttle very stiff." Inspector reported: "Throttle leaks." "Adjust driver and tank brakes." (Repairs to first two items were not signed for.) Report approved by foreman.

Aug. 1, Ogden, Utah, engineer reported: "Packing nut gone off low pressure end of right air pump." Report approved by foreman.

Aug. 3, Grand Island, Nebr., engineer reported: "Speed recorder 5 MPH slow, hand vibrates too much." (Repairs not signed for, but notation "In extended service" was signed by foreman.) Report approved by foremen.

Aug. 3, Cheyenne, Wyo., road foreman reported: "Main throttle hard to unlatch also hard to handle either shutting off or pulling out." (Repairs not signed for and report not approved.) Engineer reported: "Throttle valves work too hard." (No repairs shown. Notation "Throttle examined and found safe for service" signed by foreman.) Inspector reported: "Oil and pack air pumps." Engineer's and inspector's reports approved by foreman.

SUMMARY OF EVIDENCE

The engineer stated he was called to leave Cheyenne at 6:55 p.m., August 3, on locomotive 820, the helper locomotive of westbound passenger train 1st No. 5, and the train reached Sherman, Wyo., at the top of Sherman Hill and 31 miles west of Cheyenne, without incident. The air brakes were used at least three times and found normal in operation. The locomotive was cut off the train at Sherman, turned on the wye, and started the return trip light to Cheyenne at approximately 8:15 p.m. Brakes were used intermittently as required to prevent the speed from exceeding the speed limit of 40 MPH, and no irregularities were noted. Throttle was opened to get the locomotive moving at Sherman, then closed and left closed until arrival at Borie, 21.5 miles east. Cylinder cocks were opened several times while drifting eastward and a normal amount of steam noted after which they were then closed. Air compressors held main reservoir pressure at 130 pounds, and brake pipe pressure was 110 pounds.

At Borie, the engineer stopped at a red signal a short distance above the tower. In a few minutes, he was told that the dispatcher at Cheyenne wished to talk to him by telephone, and he moved the locomotive to the tower and stopped with gangway at tower platform at about 9:00 p.m. He set independent brake valve in slow application position, left the automatic brake valve in running position, and had throttle in closed position but not pinned. Cylinder cocks were left in closed position and reverse lever remained somewhat forward of center. Locomotive had brake cylinder pressure of 47 pounds, boiler pressure 270 to 280 pounds, two-thirds glass of water, and a spot fire. After stopping, the fireman went back to flag as required by operating rules, and the engineer climbed up to the second floor of tower to the telephone. He had difficulty in conversing with dispatcher, due to oversensitive button on telephone hand set, and held his hand over his other ear to subdue locomotive noises from the open window. After about 5 minutes, the operater notified him that locomotive 820 was moving. He raced down the 20 steps and attempted to catch the locomotive. He got within about 20 steps of tender when in the darkness he stumbled and fell over the interlocking rods at side of tracks. On regaining his feet, the locomotive was beyond reach so he returned to tower to notify dispatcher of the emergency, but operator had already done so. Then he and the fireman went to a nearby highway, hoping to flag a passing automobile. Since none was in sight, the operator's wife hauled them down at high speed in her automobile to Tower A near Cheyenne. They hoped to reach the tower in time to catch or derail the runaway locomotive, but on arrival were advised it had already passed.

The engineer was questioned with regard to possibility that he brushed against independent brake valve handle, which was 30 inches ahead of seat back rest, when leaving seat on right side of cab, but he seemed positive that handle was left in slow application position and stated he was wearing no bulky outer clothes or gloves.

The fireman's statement agreed in substance with that of the engineer. After stop at Borie tower, he took flagging equipment and walked back along the tracks, placing a lighted red fusee 100 feet from the tender. As he continued he met a crew member of the work train which was standing on the passing track who said that locomotive 820 appeared to be moving. The two men ran back to the fusee and extinguished it to afford better vision. By that time they saw that the locomotive had moved from the tower. When they reached the tower they saw the

engineer returning from his unsuccessful chase. He then looked at his watch and noted that the time was 9:04 p.m. He accompanied the engineer to Tower A, west of Cheyenne, and estimated they arrived there at 9:20 p.m.

The operator at Borie estimated that locomotive 820 was stopped at the tower at 8:56 or 8:57 p.m. While the engineer was telephoning, he noted that locomotive 820 was moving slowly; it rolled 6 to 7 feet, then stopped. In a few seconds, he noticed the locomotive moved a foot or more and stopped, then moved slightly and stopped again. When it started again and kept moving, he realized something was wrong. He called twice to the engineer at the telephone without getting a response, then touched him on the arm to draw his attention. The engineer then did his utmost to catch the locomotive. He (operator) immediately called the dispatcher at Cheyenne. He estimated that movement occurred between 9:05 and 9:07 p.m.

The engine foreman, in charge of Diesel-electric switching unit 1149 in Cheyenne on the evening of August 5, stated the switcher, headed east and handling 7 cars at the front end, had backed out of freight house track, across westbound main line and up on eastbound main. Then switch was lined to third main and from there to roundhouse lead. The switcher and cars had moved eastward only a short distance when he noticed the runaway locomotive approaching. In a few seconds the collision occurred.

The switchman who was injured stated he was riding on the right side of lead car as the switcher was pushing cars eastward into enginehouse lead. He saw the headlight of UP 820 a short time before the collision and again a second or two before the accident, and realized then that its speed was excessive and that the switcher crew and equipment would be involved, but had no opportunity to get in the clear. He was unconscious for a few minutes after the accident and was soon removed to the hospital. He seemed quite certain the headlight was dim.

DISCUSSION

This accident primarily resulted from a defective core plug in the valve portion of the distributing valve. The plug was chamfered and formed a circumferential groove with the valve body which was not filled by the gasket and permitted the loss of air pressure in the application chamber to extent that the distributing valve moved to release position, bled

the brake cylinder pressure with the automatic brake valve in running position, released the brakes on the locomotive and thus initiated the chain of events which culminated in the collision.

CAUSE OF ACCIDENT

It is found that this accident was primarily caused by a hidden defect in a distributing valve which resulted in release of brakes on an unattended locomotive that was standing on descending main line track.

Dated at Washington, D. C., this 6th day of October, 1950.

By the Commission, Commissioner Patterson.

SEAL

W. P. BARTEL,

Secretary.