ACCIDENT ON THE UNION PACIFIC RAILROAD BRIGHAM, UTAH.
NOVEMBER 18, 1937.
INVESTIGATION NO. 2224

SUMMARY
Railroad: Union Pacific
Date: November 18, 1937.
Location: Brigham, Utah.
Kind of accident: Derailment
Train involved: Freight
Train number: Extra 5311 West
Engine number: 5311
Consist: 83 cars and caboose
Speed: 8-15 m.p.h.
Track: Tangent; 0.72 percent descending grade.
Weather: Slightly foggy
Time: 8:20 a.m.
Casualties: 2 injured
Cause: Break-in-two followed by run-in of rear portion.
December 15, 1937.
To the Commission:
On November 18, 1937, there was a derailment of a freight train on the Union Pacific Railroad, as a result of a break-in-two and a run-in, at Brigham, Utah, which resulted in the injury of two employees.

Location and method of operation
This accident occurred on the Sixth Subdivision of the Utah Division, which extends between Ogden, Utah, and McCammon, Idaho, a distance of 111.2 miles. This is a single-track line over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred at a point approximately 1,250 feet west of the station at Brigham, where the track extends approximately north and south; however, timetable directions, west and east, are used in this report. A siding lies on the south side and parallel to the main track, the east switch being 4,264 feet east of the station and the west switch 4,081 feet west of the station at Brigham. A trailing-point crossover for west-bound trains from the siding to the main track is located opposite the station. Approaching the scene of the accident from the east switch on the siding, the track is tangent for a distance of 3,430 feet, followed by a 5 degrees curve to the left 686 feet in length and then 200 feet of tangent track to the crossover. From the crossover westward the main track is tangent 1,250 feet to the point of accident and for about 6,000 feet beyond. The grade for west-bound trains is 0.70 percent ascending for a distance of 2,100 feet, then there is a vertical curve 200 feet in length, followed by 700 feet or 0.77 percent ascending grade, and a vertical curve 800 feet in length, then level track a distance of 500 feet to the crossover. Continuing westward on the main track from the crossover, the track is level for a distance of 200 feet, followed by a vertical curve 800 feet in length, and 2,500 feet of 0.72 percent descending grade. The accident occurred on this grade at a point approximately 270 feet from its eastern end. This latter grade is followed by a vertical curve 400 feet in length and 500 feet of 0.60 percent descending grade.
The track is laid with 90-pound rails in 33 foot lengths on 18 ties to the rail length. It is

single-spiked and fully tieplated and ballasted with gravel to a depth of 8 inches under the ties. The maximum authorized speed for freight trains is 30 miles per hour.
It was slightly foggy at the time of the accident, which occurred at 8:20 a.m.

Description
Extra 5311, a west-bound freight train, consisting of 83 cars and a caboose, hauled by engine 5311, was in charge of Conductor Estes and Engineman Haslam. This train arrived at Brigham at 8:00 a.m. and headed into the siding at the east switch to meet No. 42. After the departure of the latter train, Extra 5311 headed out upon the main track through the crossover opposite the station. When the rear of the train was a short distance west of the station, and while running at a speed estimated to have been between 8 and 15 miles per hour, the train parted between the ninth and tenth cars. The emergency application of brakes which followed the break-in-two resulted in a severe run-in of the rear portion of the train, and caused the derailment of tank car U. T. L. X. 11665, the sixty-third car in the train. The forward and rear portions of the train stopped about one car length apart. The rear truck of U. T. L. X. 11665 was derailed to the right and the rear end of the car was forced upward and mounted the platform of the sixty-fourth car, P. X. 76213. The fifty-eighth car sustained a broken train line and a broken oil box, and on the tenth car, D. & R. G. W. 18196, the coupler was broken through the key-way at the back end of shank on west end of car. The caboose was partially knocked off center. The employees injured were the conductor and rear brakeman.

Summary of evidence
Engineman Haslam stated that his train consisted of 23 loaded and 60 empty cars, 2,663 tons. A terminal test of the brakes was made at Salt Lake City, 57.4 miles east of Brigham, and this showed a five-pound leakage, which is not excessive. Main-reservoir pressure of 130 pounds and train-line pressure of 70 pounds were maintained without difficulty. The feed valve on the locomotive operated properly. No difficulty was experienced in starting the train at Salt Lake City and nothing unusual occurred between Salt Lake City and Ogden. The train brakes were not used until making the stop at Ogden, where they operated properly. At this point the engine was cut off but the make-up of the train was not disturbed. Nothing unusual occurred between Ogden and Brigham, a distance of 21.1 miles. In making the stop at the east switch to head into the siding at Brigham for the purpose of meeting No. 42 he used the train brakes. Due to slippery rail and the ascending grade of about 0.75 percent, the engine slipped some in entering the siding but although the slipping was not excessive he thought there was something sticking or dragging in the train. After the departure of No. 42 he had to take slack several times to start the train and the engine stalled three times due to the slippery rail and the ascending grade. After the train moved 6 or 8 car lengths it proceeded without difficulty as the grade begins to descend near the station. The train proceeded at a speed of about 3 miles per hour and as the engine and forward part of the train were on the descending grade he kept the slack bunched by using the driver brakes. As the caboose neared the crossover he eased off on the driver brakes in order to stretch the train a little and to adjust the slack. The rear end passed over the crossover at a speed of about 6 miles per hour and he received a proceed signal from the rear, given with a yellow fusee. He whistled a proceed signal, hooked up the reverse lever to about 25 percent cut-off, and worked the throttle lightly. After moving 12 to 15 car lengths he thought he had all slack out of the train and about then the brakes were applied in emergency. Although he thought the application had been made on the rear end,

he lapped his brake valve arid whistled a "broke-in-two" signal. The head brakeman went toward the rear and then returned to the engine with the information that there was a broken train line and a broken drawbar shank on the tenth car. Engineman Haslam then went to the rear and found a Major drawbar on car D. & R. G. W. 18196 with the shank broken next to the yoke rivets and through the key-way. This break disclosed a flaw on the top and another flaw on the right-hand bottom corner; there were also rusty sand holes resembling an ant bed. Including the sand holes he estimated that more than 50 percent of the break was old. The carrier iron was down about one inch below normal on the right side; one bolt was missing, and the other bolts were old and rusty. On going further to the rear he found three damaged tank cars in a group, the sixty-second, sixty-third and sixty-fourth cars. The rear truck of the sixty-third car was derailed; this car and the sixty-fourth were telescoped, with the rear end of the former mounted on the platform of the latter, and tile drawbar of the former car had punctured the tank of the latter car. Later he examined the fifty-eighth car and found a bad connection at the angle-cock nipple and a broken oil box at the left No. 1 wheel. After the bad order cars were disposed of, the train proceeded to Pocatello, Idaho, without experiencing further trouble, the brakes performing properly and there was no excessive slack. Engineman Haslam said this was the first break-in-two he had experienced in over three years.

Fireman Paul and Head Brakeman Kandt corroborated the statement of Engineman Haslam relative to the movement of the train from the siding to the main track; they said the slack was taken out of the train in an easy manner and they observed no jerking of the train. The head brakeman was of the opinion that the drawbar in the tenth car received more strain at the time of pulling out of the siding than at the time the train broke in two.

Rear Brakeman Moody corroborated the statement of Engineman Haslam concerning events up to the time of passing over the crossover. He estimated the speed at 8 miles per hour when he closed the crossover switches and said that after he boarded the caboose he gave a proceed signal with a yellow fusee at which time the speed was between 10 and 15 miles per hour. The brakes were applied in emergency and when the train stopped the caboose was about 300 feet west of the station.

Conductor Estes was badly injured in the accident and was not available for questioning.

Acting General Car foremen Kreger stated that he was in charge of the wrecking outfit which arrived at Brigham at 1:00 p.m. He made an inspection of the damaged cars and it was his opinion that the breaking of the coupler shank on D. & R. G. W. car 18196, the tenth car in the train, was the initial cause of the accident. He said this was a major coupler with a 5" by 5" shank, cast in 1911, and that it was the smallest size permitted in freight car service. He said the broken coupler revealed about ten percent old break in the top part of the shank and some sand holes in the bottom portion. He corroborated the statement of the engineman concerning the positions of the sixty-third and sixty-fourth cars and added that the rear drawbar of the sixty-second car was on top of the tank platform of the forward end of the sixty-third car. He found nothing about these three cars that would have caused or contributed to the accident. He stated that he had not been experiencing a great deal of trouble with free slack in draft gears, and that repairs were made on system and foreign cars whenever 1 1/2 inches or more free slack was found.

Car Inspectors Nielson and Patterson stated that they made class "A" inspection of D. & R. G. W. 18196 about 6:00 p.m., November 17, and said they took no exceptions. After the accident they examined the broken shank and in their opinion the fracture showed about five percent old break at the top and said it would he impossible to see this defect unless the coupler was removed from the car.

Observations of the Commission's inspectors

All equipment involved in the accident had been moved before the arrival of the Commission's inspectors. The inspection of the track disclosed nothing that would have contributed to the cause of the accident. The fifty-eighth, sixty-second, sixty-third and sixty-fourth cars were inspected at Ogden and nothing was found that would have caused or contributed to the accident. D. & R. G. W. 18196 was inspected at Salt Lake City and was found to have an old type Major coupler with a 5" by 5" shank broken off through the key-way. An old flaw, or partial fracture, of about ten percent of the cross section, and numerous sand holes in the casting, were revealed. These would materially reduce the strength of the shank and were of such nature and so located that they could not reasonably be expected to be found by ordinary inspection with the coupler in place in the car. This car is a steel gondola built in 1901 and was rebuilt in December, 1926. It is 37 feet 6 inches in length, had a capacity of 80,000 pounds, and weighs 33,300 pounds. It is equipped with twin spring draft gears.

Discussion

The evidence is to the effect that the train was moved in a normal manner from Salt Lake City to the point of accident. There was no excessive slack action and no rough handling. There was no warning of any defect prior to the break-in-two and the resultant emergency application of the brakes. The train broke in two between the ninth and tenth cars and the evidence is to the effect that the telescoping of the three tank cars, and the derailment of one of them, was caused by the sudden run-in which resulted when the brakes were applied in emergency. Not only was the coupler which failed the minimum in size permitted by A. A. R. rules, but it was defective due to an old partial fracture and sand holes in the casting. Couplers with 5" by 5" shanks, on cars built new after November 1, 1920, or rebuilt after July 1, 1928, are not permitted by A. A. R. rules. This size of coupler is therefore obsolete, and the results of this accident point to the need of eliminating such couplers from service on all cars as quickly as possible.

Conclusion

This accident was caused by a break-in-two of the train due to the failure of a coupler shank.