

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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INVESTIGATION NO. 2506  
THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY  
COMPANY  
REPORT IN RE ACCIDENT  
NEAR JENNINGS, KANS., ON  
JUNE 2, 1941.

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## SUMMARY

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Railroad: Chicago, Rock Island & Pacific  
Date: June 2, 1941  
Location: Jennings, Kans.  
Kind of accident: Derailment  
Train involved: Passenger  
Train number: 6  
Engine number: 921  
Consist: 4 cars  
Speed: 15-20 m. p. h.  
Operation: Timetable and train orders  
Track: Single; tangent; 0.63 percent  
descending grade eastward  
Weather: Light rain  
Time: 4:50 a. m.  
Casualties: 1 killed.  
Cause: Accident caused by washout

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 2506

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS  
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY COMPANY

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July 23, 1941.

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Accident near Jennings, Kans., on June 2, 1941, caused by  
washout.

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

PATTERSON, Commissioner:

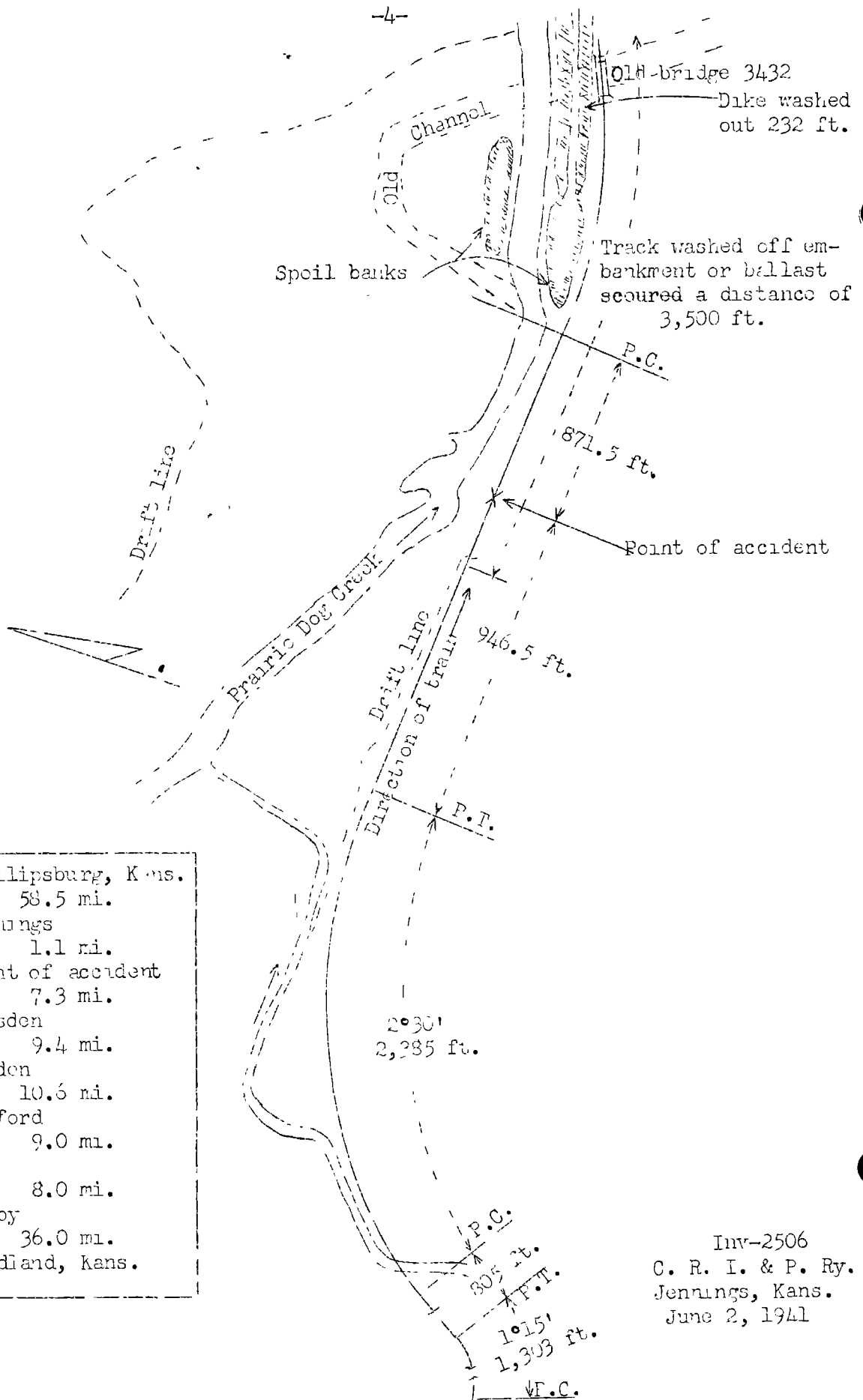
On June 2, 1941, there was a derailment of a passenger train on the Chicago, Rock Island & Pacific Railway near Jennings, Kans., which resulted in the death of one employee.

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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.

- o Phillipsburg, Kans. 58.5 mi.
- o Jennings 1.1 mi.
- X Point of accident 7.3 mi.
- o Dresden 9.4 mi.
- o Selden 10.6 mi.
- o Rexford 9.0 mi.
- o Gem 8.0 mi.
- o Colby 36.0 mi.
- o Goodland, Kans.



Inv-2506  
 C. R. I. & P. Ry.  
 Jennings, Kans.  
 June 2, 1941

### Location and Method of Operation

This accident occurred on that part of the Western Division designated as Subdivision 8, which extends between Goodland and Phillipsburg, Kans., a distance of 139.9 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders; there is no block system in use. The accident occurred 1.1 miles west of the station at Jennings. As the point of accident is approached from the west there are, in succession, a  $1^{\circ}15'$  curve to the left 1,303 feet in length, a tangent 805 feet, a  $2^{\circ}30'$  curve to the right 2,385 feet, and a tangent 946.5 feet to the point of derailment and 871.5 feet beyond. The grade for east-bound trains varies between 0.07 percent and 0.84 percent descending a distance of 5,675 feet to the point of accident and is 0.63 percent at the point of accident.

Between Goodland and Jennings, a distance of 81.4 miles, the railroad for the most part is laid in the valley of Prairie Dog Creek, which flows in a northeasterly direction from its headwaters near Goodland. Between Colby and Jennings, a distance of 45.4 miles, the creek lies north of the track. At a point about 1-1/2 miles west of the point of accident, a dam about 500 feet long extends from north to south across the creek and valley and impounds water about 5 feet in depth and 30 acres in area. The creek extends in an easterly direction from the dam, then southeasterly toward the track at an angle of 30 degrees to a point 100 feet northwest of the point of accident and then parallels the track on the north for some distance. At the point of accident the track is 8.5 feet above the level of the south bank of the creek and 88 feet horizontally distant. The channel is approximately 32 feet wide and 8.5 feet deep. The area drained by this creek is about 430 square miles. In some places the terrain slopes in a steep gradient downward toward the creek. Formerly the channel crossed under the track at Bridge No. 3432, a trestle located 1,576 feet east of the point of accident; however, during 1929 a diversion channel was constructed parallel to the track at this point. An earthen dike formed the south bank of the creek along this new channel. Drainage ditches on each side of the track are provided.

In the vicinity of the point of accident the track is laid on a fill which varies between 6-1/2 and 8 feet in height, is 20 feet in width, and 1,850 feet in length. The track structure consists of 90-pound rail, 39 feet in length, laid in 1937 on an average of 22 treated ties to the rail length; it is fully tie-plated. On tangent track and light-degree curves the track is single-spiked and on heavy-degree curves it is double-spiked. It is equipped with 4-hole angle bars and is provided with an average of 8 rail anchors per rail length. The track is ballasted with slag, gravel and granite to a depth of 11 inches and is well maintained.

Because of a cut and track curvature, the view of the point where the accident occurred, from the right side of the cab of an east-bound engine, is restricted to about 700 feet.

Special time-table instructions read in part as follows:

Trainmen and Enginemen

34a. All trains must run carefully during and after heavy storms, particularly when the track is liable to be affected. \* \* \*

Rules and Instructions for Maintenance of Way and Structures read in part as follows:

303. \* \* \* Track Foremen must go over their section during or after storms, either by day or night, and carefully examine all waterways, culverts, bridges, etc., and watch all other places where trouble may occur. If there is indication of a heavy rain on parts of their section, the track in such territory must be given special attention. \* \* \* In case of high water, or unusual conditions of any kind, they must, if in their judgment safety demands, detail men to watch points at which trouble may occur.

304. \* \* \* Track Foremen must report to the Superintendent, Chief Dispatcher and Roadmaster by wire all severe storms, stating whether or not damage has occurred on their sections.

The maximum authorized speed for passenger trains hauled by steam engines is 70 miles per hour. On the curve immediately west of the point where the accident occurred the maximum authorized speed for the train involved is 55 miles per hour.

It was daylight and a light rain was falling at the time of the accident, which occurred about 4:50 a. m.

Description

No. 6, an east-bound first-class passenger train, with Conductor King and Engineman Nichols in charge, consisted of engine 921, of the 4-6-2 type, one mail-baggage car, two baggage cars, and one coach, in the order named; all cars were of steel construction. This train departed from Goodland, Kans., at 2:40 a.m., according to the train sheet, 25 minutes late, left Selden, 17.8 miles west of Jennings and the last open office, at 4:30 a. m., 35 minutes late, and was derailed at a washout while moving at a speed estimated as 15 or 20 miles per hour.

The engine and the tender, remaining coupled, were derailed to the right and stopped with the front end of the engine 108 feet beyond the point of derailment and 35 feet south of the track. The rear end of the tender was 19 feet south of the track. The engine and the tender leaned to the right at an angle of 45 degrees and were submerged in the creek. The first car was derailed to the right and stopped behind the tender with its front end 20 feet and its rear end 16 feet south of the track and leaned to the right at an angle of 45 degrees. The second car was derailed to the right and stopped with its front end 18.5 feet and its rear end 12.5 feet south of the track and leaned to the right at an angle of 70 degrees. The third and fourth cars remained on the track, which was shifted off the roadbed to the right. The second, third and fourth cars remained coupled.

The employee killed was the engineman.

#### Summary of Evidence

Fireman Colbert stated that a terminal air-brake test was made at Goodland and the brakes functioned properly en route. Between Goodland and the point where the accident occurred no instructions concerning high water were received. Local showers had fallen at various points en route but there was no evidence of flood. At Dresden, located 8.4 miles west of Jennings, the weather was cloudy but no rain was falling. Between Dresden and the point where the accident occurred the speed was about 60 miles per hour. As the train was approaching the point where the accident occurred the engine was riding smoothly, the headlight was lighted, and the engineman and he were maintaining a lookout ahead. The engineman made a brake-pipe reduction to reduce speed on the curve west of the point where the accident occurred. The brake application was not released and speed was reduced to about 40 miles per hour. When the engine entered the tangent the fireman observed at a distance of about 350 feet that water was over the track and he called a warning to the engineman, who immediately placed the brake valve in emergency position. When the engine reached the point where water was over the track the speed was about 15 or 20 miles per hour. The engine appeared to force the track to the right and off the roadbed. The accident occurred about 4:50 a. m., at which time it was daylight.

Conductor King stated that a terminal air-brake test was made at Goodland and the brakes functioned properly en route. As his train was approaching the point where the accident occurred the speed was about 50 miles per hour. He was in the rear car and it was riding smoothly. As his train was moving on the curve west of the point where the accident occurred he felt an application of the brakes, which reduced the speed to about 20 miles per hour. The first he knew of anything being

wrong was when the brakes became applied in emergency and the train stopped abruptly. In his opinion the emergency application was made about the time of the derailment. It was drizzling when the train stopped. At that time there was no water over the track at the rear of the train, but within 6 or 7 minutes there was about 18 inches of water over the track. The engine was entirely submerged and the roof of the first car was about 1 foot above the level of the water. As he proceeded to the rear to report the derailment he found no indication of defective track or dragging equipment. He understood that the rules require trains to proceed carefully during stormy weather; however, in this instance nothing but local showers had been encountered en route. Since the drainage ditches did not indicate an excessive amount of rainfall, he was not alarmed concerning the safe passage of his train. This was the first instance of which he had knowledge that a flood had occurred in this territory. It was daylight at the time of the accident, which occurred about 4:50 a. m.

The statement of Flagman Miller added nothing of importance.

Division Engineer Brown stated that he arrived at the scene of accident at 11:20 a. m. At that time flood water had receded but throughout a distance of about 800 feet east of the point of accident it was still flowing beneath the track at a depth of from 2 to 3 feet below the base of the rail. At Bridge No. 3432 the fill was washed out and water was flowing southeasterly in the former channel of the creek. Starting at a point 189 feet west of the point where the accident occurred and proceeding eastward throughout a distance of 3,500 feet, water covered the track at heights which varied between 2.76 and 3.2 feet above the top of the rail. Progressing eastward from the western end of the section covered by water the ballast was scoured to a depth of 2 feet throughout the first 235 feet, for the next 865 feet the track was washed off the embankment, the ballast of the next 395 feet was scoured to a depth of 2 feet, for the next 805 feet the track was washed off the embankment a distance of 12 or 15 feet south of the roadbed, and the ballast of the last 1,200 feet was scoured to a depth of 2 feet. The indications disclosed that the track was washed off the embankment prior to the arrival of No. 6 and that the engine remained on the rails a distance of 218.5 feet and then proceeded down the embankment. At this point a kink in the south rail indicated that the weight of the engine shifted the track farther to the south. At a point 19.5 feet farther east marks on the south rail indicated that wheels mounted the rail and crossed the head of the rail in a distance of 10.75 feet. The engine continued a distance of 108.25 feet farther east before it stopped. The earthen dike forming the south bank of the new channel of the creek was washed out throughout a distance of 232 feet. This resulted in the water flowing in the original channel and washing out the railroad fill.



Between the hours of 11 p. m., June 1, and 7 a. m., June 2, at points located 11.5 miles and 7.4 miles west of the point of the washout, rain fell to a depth of between 7.5 and 8 inches; these points were within the drainage area of Prairie Dog Creek. At points along the railroad the heaviest rainfall was 1.87 inches. The concrete facing of the dam located about 1-1/2 miles west of the washout was partially broken away and the wooden piling were exposed. Highway U.S. 83, which parallels the railroad on the south, was washed out at points near the washout on the railroad. The terrain in the immediate vicinity of the washout is such that the run-off of water is rapid. He said that the diversion channel was constructed after a flood that occurred during 1927. At that time the high-water mark was 6.2 feet below the rails of the bridge over the old channel; however, it was the greatest rise of water during 33 years previous to 1927. He estimated that the new channel was capable of carrying about 60 percent of the water that was flowing at the time of the washout involved in this accident. Based on the amount of water during the flood which occurred in 1927, the diversion channel was originally constructed 32 feet wide and was considered adequate for drainage purposes. This was the first instance wherein a washout had occurred in the immediate vicinity of the point of accident. He had considered the ditches along the track capable of providing adequate drainage.

Track Supervisor Close, in charge of the territory involved, stated that on the day of the accident he rode on No. 6 between Goodland and Selden. En route between these points a drizzling rain fell; however, there was no heavy rainfall. At Selden he observed light clouds but there was no indication of storm; therefore, he was not alarmed concerning the safe condition of the track. He heard about the accident soon after its occurrence. He proceeded immediately to the scene and arrived there at 6:25 a. m. The water had receded about 2 feet, but was still about 1 foot above the base of the rail. The track had slid and the ties were on the edge of the fill. At the point where the washout occurred the main flow of the water was eastward but there was a flow of water southward over the track. After the water receded he inspected bridges but found no obstructions, such as driftwood, that could have restricted the flow of water. Between May 18 and 24, inclusive, all bridges were inspected and all drift was removed. On May 31 and again on June 1 he inspected from a motor car the track involved and it was in excellent condition. At that time the flow of water in the diversion channel was about normal. During 2 years in which he has been in charge of this territory the creek never overflowed its banks. At the point where the washout occurred water could overflow the channel to a depth of 8 or 9 feet before it would flow over the track. In his opinion the drainage facilities were adequate except for rains of cloudburst proportions. Because of light rainfall throughout this territory and in the absence of any warning of heavy rainfall in the drainage area of the creek, he did not consider it necessary to patrol the track.

Section Foreman Smith stated that he had been in charge of the territory involved during the past 22 years. His residence is located in Jennings and about 2-1/2 blocks from the track. He last inspected this section of track on May 31, and it was in good condition. On June 1 the weather was clear and no rain fell prior to 9 p. m., at which time he retired. At midnight and again at 2 a. m. he heard light rain falling, but it was not sufficient to require the patrolling of the track. At 5 a. m. he was awakened by the roar of water in the creek. Water was over both the highway and the track. This was the greatest flow of water he had ever witnessed in this vicinity. The last neavy rainfall in the vicinity of Jennings was about 2 years previously when a 3-inch rainfall within 30 minutes caused the water to overflow the banks of the creek, but it was not sufficiently high to endanger the track. The last flood that resulted in a washout was in 1927, at which time water was over the track; however, the water did not rise so high as it did in the instance involved. After the high water of 1927 the channel of the creek was changed, and there had been no washout in this territory since that time.

Train Dispatcher Benton stated that he was on duty between midnight and 8 a. m., June 2. He did not receive from open telegraph offices or the maintenance-of-way forces any report concerning high water or excessive rainfall. After information concerning neavy rainfall is received it is customary to issue orders instructing the crews of trains to operate carefully throughout the territory affected. In this instance the first he knew of flood conditions was when the accident was reported about 6 a. m.

Agent Hutchins, at Dresden, stated that about 8 p. m., June 1, a shower lected about 5 minutes, then cleared away. About 12:20 a. m., June 2, he heard a light rainfall but it was not sufficient to warrant reporting to the dispatcher. The first he knew of the washout was at 5:40 a. m., when the conductor of No. 6 wakened him to report the accident.

Engineman Long, of No. 7, a west-bound passenger train, which was the last train to pass over the track involved, stated that light rain fell while his train was en route from Phillipsburg to Gouldand. At 3:45 a. m. his train passed over the track involved at a speed of 70 miles per hour. At that time there was no indication of high water or defective track.

Road Foreman of Engines Dempsey stated that on the morning of June 2 he was on the engine of No. 7 as it passed over the track involved. At that time there was neither high water nor defective condition of the track. He arrived at the scene about 6 hours after the accident occurred. After the water receded he

examined the engine and found the throttle in closed position, the automatic brake valve in emergency position, the independent brake valve in application position, the sander valve closed, and the reverse lever in position for forward motion.

Superintendent Nugent stated that he was in the rear car of No. 7 as it passed Jennings at 3:47 a. m. En route there were scattered showers but the rainfall was not sufficient to cause alarm concerning high water. As No. 7 passed over the track where the washout later occurred he observed that the water was about 1 foot below the top of the banks of Prairie Dog Creek. The train rode smoothly over the territory involved. Heavy rains had fallen during the week preceding the day of the washout but they did not cause the creek to overflow. During 1927 the track was washed out in the vicinity of Bridge 3432. In order to provide adequate drainage a diversion channel was constructed north of the track and parallel to it. This new channel started at a point about 1,200 feet east of the point where the accident occurred and extended eastward throughout a distance of 2,900 feet. The channel was considered adequate to drain off the amount of rainfall that fell in 1927; however, on June 2 the water reached a stage higher than in 1927.

Joseph Carroll stated that he lives south of the track in the vicinity of the point where the accident occurred. On the morning of the accident he arose at 4:20 a. m. and at that time it was raining slightly. The water in Prairie Dog Creek was high and rising, and soon overflowed its banks. About 4:40 a. m. the water flowed across the railroad track from the northwest to the southeast. He estimated that throughout a distance of about 700 or 800 feet water covered the track to a depth of about 3 feet. He observed No. 6, moving at a speed of 20 miles per hour, rounding the curve west of the washout. He heard the brakes screech as the engineman attempted to stop the train.

Chris Norton, U. S. Mail Carrier at Jennings, stated that about 4:10 or 4:15 a. m., June 2, he arrived at the station to get mail from No. 6. About 4:30 or 4:40 a. m. he heard water roaring and, looking westward, saw water flowing along the south side of the track.

Master Mechanic Cosgrove stated that on June 7 he inspected engine 921 at the scene of accident, and again after it was moved to Jennings. It was his opinion that prior to the accident the engine was in suitable condition for service.

According to information furnished by weather observers, the rainfall at various points within the area drained by Prairie Dog Creek was as follows: Jennings, between 11 p. m., June 1, and 7 a. m., June 2, 1.28 inches; Dresden, between 11:30 p. m., June 1, and 6 a. m., June 2, 3.84 inches; Selden, between 11:30 p. m.,

June 1, and 6 a. m., June 2, 1.87 inches; at a farm 7.4 miles west of the point of the washout, 7.50 inches; and at a farm located 11.5 miles west of the point of the washout, 8 inches.

#### Observations of the Commission's Inspectors

Inspection of the track by the Commission's inspectors disclosed conditions to be as previously described. Throughout a considerable distance immediately west of the washout the track was in good condition. The surrounding terrain was of such nature that it provided a run-off of surface water quickly. The extent of the flood was evident in that the highway parallel to the track was badly damaged by water. Numerous roads and bridges in the vicinity of Jennings were washed out.

#### Discussion

According to the evidence, No. 6 was moving at a speed of about 40 miles per hour when the fireman saw water on the track about 350 feet ahead of the engine. He warned the engineman, who placed the brake valve in emergency position. The engine moved through water a distance of about 200 feet and then seemed to force the track structure southward and off the fill. When the engine stopped at the foot of the fill it was submerged in water. The maximum authorized speed for this train at the point of accident was 70 miles per hour and on the curve immediately west of the point involved it was 55 miles per hour. The train had been riding smoothly and there was no defective condition of the engine or cars that would cause the derailment or contribute to the cause of it. The track west of the territory covered by water was in good condition.

A small stream that closely paralleled the track on the north had suddenly overflowed its banks and when the water reached its crest a section of track 3,500 feet in length was covered with water. Throughout nearly all this distance water was about 3 feet above the top of the rail. Within a period of 6 or 7 minutes immediately after the train stopped, the water rose about 18 inches. Within a period of 20 minutes a resident near the point of accident observed water rise above the banks of the stream and then rise more than 8.5 feet above the banks and flow across the railroad. The derailment occurred about 10 minutes after water started to flow across the track. The crew had no information about the high water, as the train left the last open office 10 minutes before water began to flow over the track. The fireman was the first railroad employee to observe the water on the track, but because of track curvature and an embankment he could not see the water until the engine was within a few hundred feet of it.

During the investigation it was disclosed that the rainfall along the railroad had not been particularly heavy; however, on two farms, located a few miles from the track and in the basin drained by the stream involved, about 8 inches of rain had fallen a few hours before the accident occurred. The basin drained by the stream covered approximately 400 square miles. That the terrain in the basin was such that the run-off of water was rapid is indicated by testimony to the effect that the water near the railroad rose at least 10 feet in 20 minutes.

In 1927, high water caused some damage in the vicinity of the point of accident; however, the water in that instance was several feet lower than at the time of the accident. In 1929, the course of the stream was changed so that the channel would lie to the north of the track. Since that time the channel has been of sufficient capacity to conduct the water and no trouble from high water has been experienced except in the instance involved in this accident.

#### Cause

It is found that this accident was caused by a washout.

Dated at Washington, D. C., this twenty-third day of July, 1941.

By the Commission, Commissioner Patterson.

W. P. BARTEL,

(SEAL)

Secretary.