INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2594

THE SOUTHERN PACIFIC COMPANY

REPORT IN RE ACCIDENT

NEAR McARTHUR, CALIF., ON

JUNE 8, 1942

SUMMARY

Railroad:	Southern Pacific
Date:	June 8, 1942
Location:	McArthur, Calif.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	551
Engine numbers:	4038 and 4032
Consist:	53 cars, caboose
Speed:	30 m. p. h.
Operation:	Timetable and train orders
Track:	Single; tangent; practically level
Weather:	Clear
Time:	About 6:25 a. m.
Casualties:	1 killed; 1 injured
Cause:	Accident caused by irregularity in surface and alinement of track which rendered it unsafe for authorized speed

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2594

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

THE SOUTHERN PACIFIC COMPANY

August 4, 1942.

Accident near McArthur, Calif., on June 8, 1942, caused by irregularity in surface and alinement of track which rendered it unsafe for authorized speed.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On June 8, 1942, there was a derailment of a freight train on the line of the Southern Pacific Company near McArthur, Calif., which resulted in the death of one employee and the injury of one employee.

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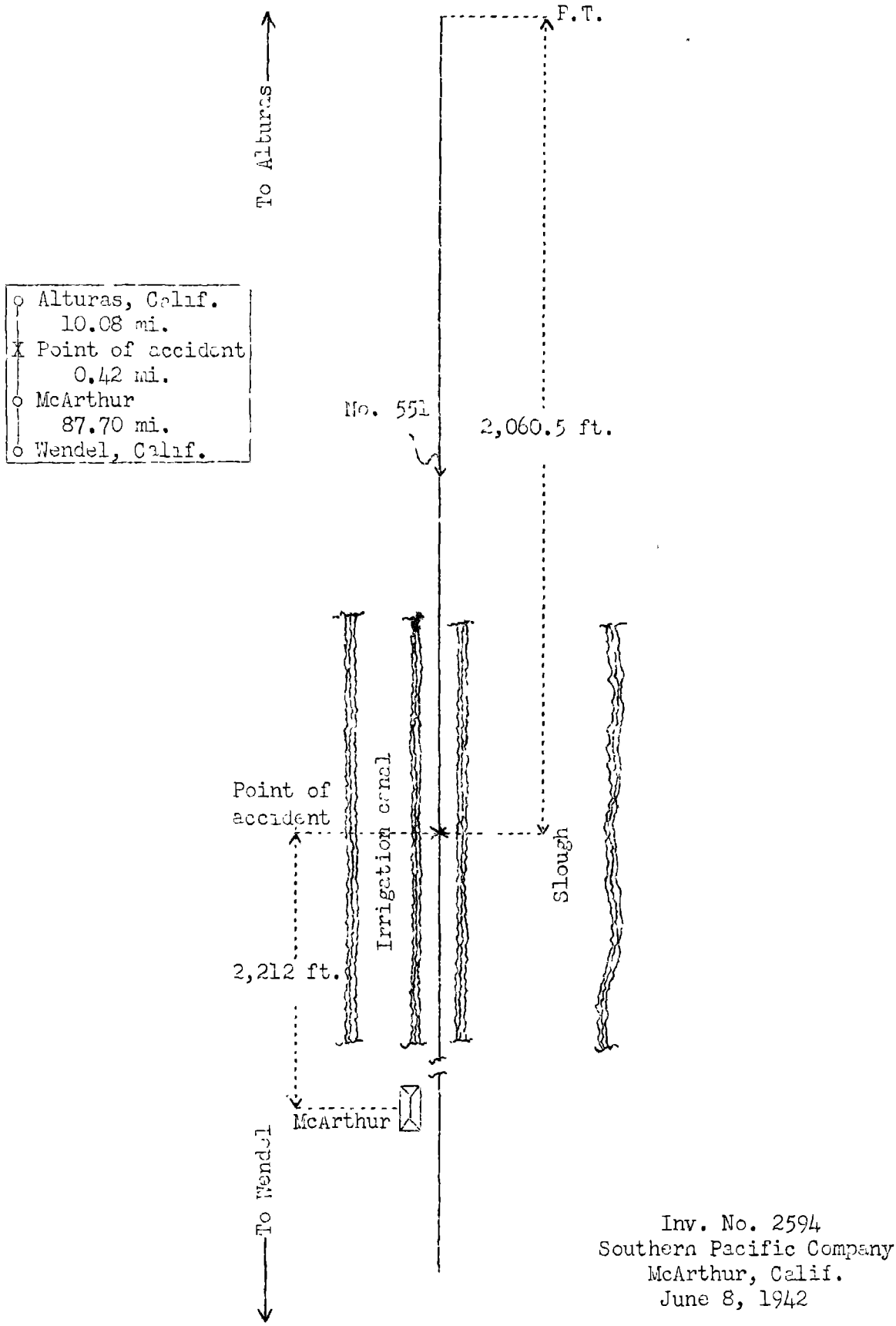
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 2594
Southern Pacific Company
McArthur, Calif.
June 8, 1942

Location of Accident and Method of Operation

This accident occurred on that part of the Salt Lake Division designated as the Alturas Subdivision and extending between Alturas and Wendel, Calif., a distance of 98.2 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 at a point 2,212 feet east of the station at McArthur. As the point of accident is approached from the east the track is tangent 2,060.5 feet to the point of accident. At the point of accident the grade is practically level.

The track structure consists of 75-pound rail, rolled in 1905 and 1906, 33 feet in length, laid on 19 ties to the rail length; it is fully tieplated, single-spiked, and is provided with an average of 9 rail anchors per rail length. The track is ballasted with gravel to a depth of 4 inches. At the point of accident the gage was 4 feet 9 inches.

In the immediate vicinity of the point of accident the track is laid on a fill about 5 feet in height and about 35 feet in width. An irrigation canal parallels the track on the north and a slough lies south of the track.

In the vicinity of the point of accident the maximum authorized speed for passenger trains is 40 miles per hour and for freight trains, 30 miles per hour.

Description of Accident

No. 551, a west-bound second-class freight train, consisted of engine 4038, 51 loaded and 2 empty cars, engine 4032 and a caboose, in the order named. After an air-brake test was made this train departed from Alturas, 10.5 miles east of McArthur, at 6:05 a. m., according to statements of the crew, 7 hours 5 minutes late, and while moving at an estimated speed of 30 miles per hour the engine was derailed to the right at a point 0.42 mile east of McArthur.

Engine 4038 stopped, considerably damaged, on its right side in the canal at a point 427 feet west of the first mark of derailment. The front and rear ends of the engine were, respectively, 10 feet and 23.4 feet north of the center-line of the track. The tender, remaining coupled to the engine, stopped practically parallel to the track. The first thirteen cars were derailed and stopped, badly damaged, on both sides of the track and at various angles to it. The front truck of the fourteenth car was derailed.

It was clear at the time of the accident, which occurred about 6:25 a. m.

The employee killed was the fireman of engine 4038, and the employee injured was the engineer of engine 4038.

Mechanical Data

After the accident, an inspection of engine 4038 disclosed that no condition existed prior to the accident that might have contributed to the cause of the derailment. All flanges were of good contour and the tread wear was less than the maximum permitted. The back-to-back measurements of all pairs of wheels were within the prescribed limits. The springs, spring-hangers and equalizers were in place and in good condition. The lateral motion of all wheels was within the prescribed limits.

Engine 4038 is of the articulated single-expansion 2-8-8-2 type, and the cab is at the front end. The total weight in working order is 481,200 pounds, distributed as follows: Engine truck, 23,100 pounds; driving wheels, 440,800 pounds; and trailer truck, 17,300 pounds. The diameters of the engine-truck wheels, the driving wheels, and the trailer-truck wheels are, respectively, 30, 57, and 30 inches. The tender is rectangular in shape and has two four-wheel trucks. The weight of the tender loaded is 229,200 pounds. The wheelbase of each driving unit is 15 feet. The distance between the engine truck and the front driving unit is 8 feet 3 inches, and between the front driving unit and the rear driving unit, 9 feet 4 inches. The total length of the engine wheelbase is 56 feet 7 inches. The total length of the engine and tender is 103 feet 10-3/16 inches. Class 3 repairs were completed at Eugene, Oreg., on June 17, 1941, and the last monthly certificate was filed at Dunsmuir, Calif., on May 10, 1942. The accumulated mileage since the last class repairs was 40,000 miles. At the time of the accident engine 4038 was en route to Sparks, Nev., for Class 4 repairs.

Track Data

Track levels taken throughout a distance of 202.8 feet immediately east of the first mark of derailment were as follows:

Distance east of first mark of Derailment	Gage		Deflection		Variation in surface before deflection
	Feet	Inches	North rail	South rail	
Feet			Inch	Inch	Inches
202.8			3/16	9/16	0
189.3			9/16	5/16	3/8
168.1	4	8-5/8	5/16	7/16	5/8
156.9	4	9	9/16	1/8	1-0/0
134.8	4	8-5/8	1/4	3/16	7/8
123.5	4	8-1/2	1/2	1/8	1/4
102.3	4	8-3/4	3/8	5/8	1/4
90.7	4	8-5/8	3/8	5/16	1/4
70.4	4	8-3/4	3/8	3/8	1/8
58.0	4	8-7/8	3/8	1/8	1-3/8
37.6	4	8-1/2	5/16	5/16	5/8
irst mark 25.0	4	8-3/4	3/8	5/16	1/8
on rail-17.2	4	9	5/16	1/4	1/4
Point of derailment					

Discussion

No. 551 was moving on tangent track at a speed of 30 miles per hour when the No. 1 pair of driving wheels became derailed to the left. The maximum authorized speed was 30 miles per hour. After the No. 1 pair of driving wheels became derailed, the engine continued forward about 400 feet and then overturned down the embankment to the right. There was no defective condition of the engine, and there was no indication of dragging equipment or of any obstruction having been on the track.

According to the statements of the surviving members of the crew who were on the first engine, as No. 551 was approaching the point where the accident occurred the engine was riding normally. The engineer said that the throttle was open sufficiently to maintain a pressure of 60 pounds and the reverse lever was in position for a 35-percent cut-off in forward motion. Suddenly the engine swung and rolled to the left, then to the right, and the engineer placed the brake valve in emergency position and closed the throttle. Immediately afterward the engine swung to the left, and then became derailed. The engineer said that on the preceding day he had passed over the track involved and at that time he felt no abnormal condition of the track. The road foreman of engines said that about 9:40 p. m., June 7, he was on an engine which was hauling a passenger train and which was of the same class as engine 4038. As this train passed over the track involved the speed was about 40 miles per hour, and the engine rode roughly but the condition of the track did not appear to be dangerous.

The first abnormal mark on the track structure was a flange mark which started on the top of the inner edge of the head of the left rail and extended diagonally across the head of the rail a distance of 17.2 feet to the outside edge. From this point westward throughout a distance of about 400 feet flange marks appeared intermittently on the ties outside the left rail and on the inside base of the right rail. The angle-bar bolts and nuts were sheared on the inside of the right rail. At a point 28.7 feet west of the point of derailment, the left rail was kinked, and at a point 141 feet farther west the right rail was kinked. The outside face of the right Nos. 1, 2 and 3 driving wheels were scored and rivets were sheared; however, the right No. 1 driving wheel was marked considerably greater than other wheels. The engine-truck wheels were unmarked. The marks on the track structure and on the wheels of the engine indicated that the No. 1 pair of driving wheels were the first to become derailed. Several rails were found broken, but there was no transverse fissure.

Measurements of the track throughout a distance of 202 feet immediately east of the point of derailment disclosed that the gage varied between 4 feet 8-1/2 inches and 4 feet 9 inches. The surface of the track varied between level and 1-3/8 inches. The

deflection under load varied between 1/8 inch and 5/8 inch. At a station 70.4 feet east of the point of derailment, the variation in surface was 1/8 inch and the gage was 4 feet 8-3/4 inches; at a station 58 feet east, the surface varied 1-3/8 inches, and the gage was 4 feet 8-7/8 inches; at a station 37.6 feet east, the surface varied 5/8 inch, and the gage was 4 feet 8-1/2 inches; at a station 25 feet east, the surface varied 1/8 inch and the gage was 4 feet 8-3/4 inches; at a station 17.2 feet east, the first mark appeared on the head of the south rail and the surface varied 1/4 inch and the gage was 4 feet 9 inches.

According to the statement of the roadmaster, in the vicinity of the point of accident the fill is composed of muck dredged from a canal near the track and about 4 inches of gravel ballast superimposed on the muck. Previous to April 23, 1942, the maximum authorized speed for freight trains was 20 miles per hour. During April, 1942, ties were renewed so that not more than 2 defective ties per rail length remained; also, spot surfacing was done where it was deemed needed. He said that it is difficult to maintain regular alinement and surface in this territory. New ballast had been spread, but since it had been difficult to obtain a sufficient number of employees the track had not been raised and surfaced. He was on the engine of a passenger train which passed over the point involved about 9:40 p. m., June 7, and at that time he felt no abnormal condition of the track. He said that since there was a variation in surface an engine would have a tendency to roll.

Considering the statement of the engineer that the engine swung laterally several times, together with the irregularities in surface and alinement, undoubtedly the engine pivoted and rolled laterally with sufficient force to cause the left No. 1 driving wheel to climb to the head of the left rail.

Cause

It is found that this accident was caused by irregularity in surface and alinement of track which rendered it unsafe for authorized speed.

Dated at Washington, D. C., this fourth day of August, 1942.

By the Commission, Commissioner Patterson.

W. P. BARTEL,
Secretary.

(SEAL)