

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2656
THE SOUTHERN PACIFIC COMPANY
REPORT IN RE ACCIDENT
AT CASMalia, CALIF., ON
DECEMBER 5, 1942

SUMMARY

Railroad: Southern Pacific

Date: December 5, 1942

Location: Caspar, Calif.

Kind of accident: Rear-end collision

Trains involved: Passenger : Passenger

Train numbers: First 75 : Second 69

Engine numbers: 4457 : 4456

Consist: 20 cars : 19 cars

Speed: Standing : 15 m. p. h.

Operation: Timetable, train orders and
automatic block-signal system

Track: Single; tangent; 1 percent
ascending grade westward

Weather: Foggy

Time: 2:50 a. m.

Casualties: 1 killed; 35 injured

Cause: Accident caused primarily by failure
to stop following train in accord-
ance with signal indications as a
result of excessive authorized speed
in view of the distance between the
automatic signals involved. A con-
tributing cause was the inadequate
manner in which the rules governing
flag protection for preceding train
were enforced and observed

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2656

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 3, 1910.

THE SOUTHERN PACIFIC COMPANY

February 9, 1945.

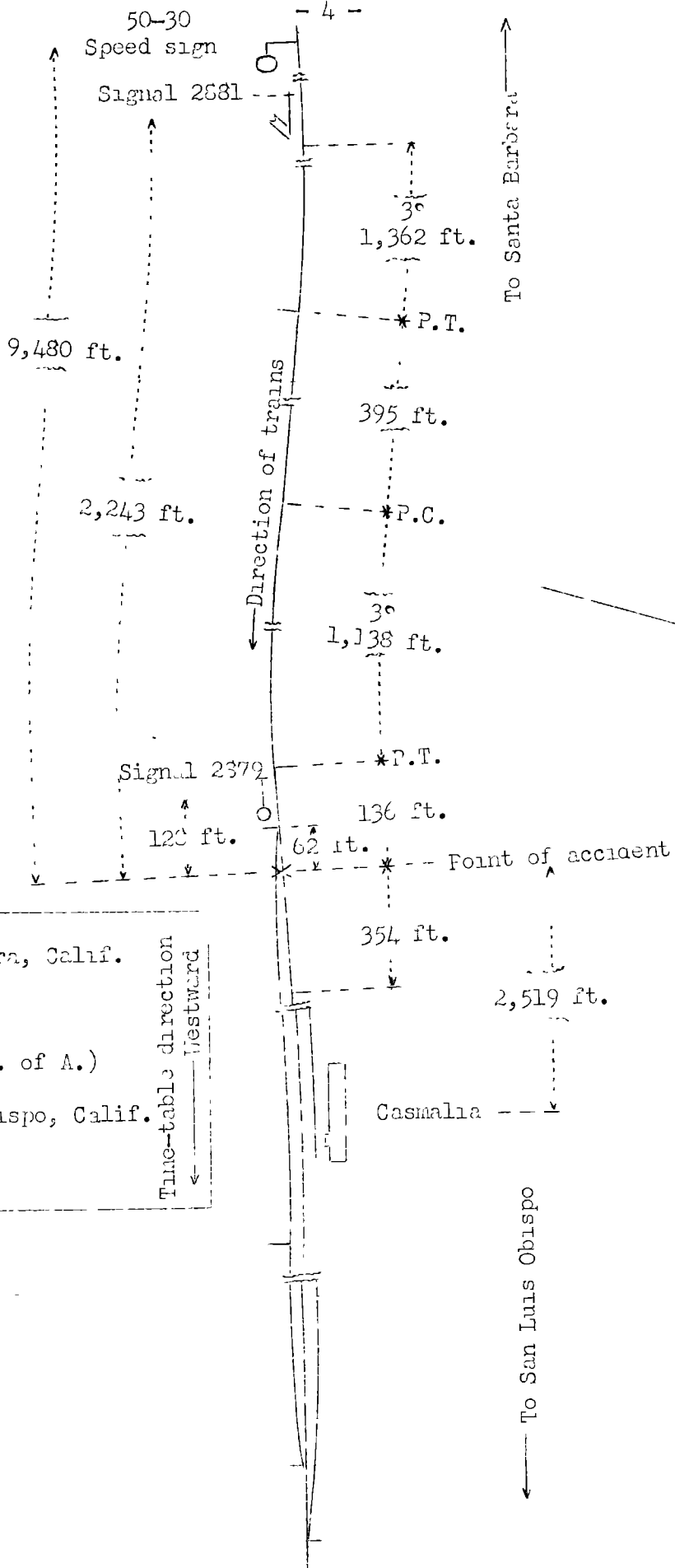
Accident at Casimolia, Calif., on December 5, 1942, caused primarily by failure to stop following train in accordance with signal indications as a result of excessive authorized speed in view of the distance between automatic signals involved. A contributing cause was the inadequate manner in which the rules governing flag protection for preceding train were enforced and observed.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On December 5, 1942, there was a rear-end collision between two passenger trains on the line of the Southern Pacific Company at Casimolia, Calif., which resulted in the death of 1 passenger, and the injury of 30 passengers, 2 Pullman employees and 1 train-service employee. This accident was investigated in conjunction with representatives of the Railroad Commission of California.

¹Under 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 | Santa Barbara, Calif. | 68.0 mi. |
| o | Surf | 15.2 mi. |
| X | Casmalia (P. of A.) | 35.4 mi. |
| o | San Luis Obispo, Calif. | |
- Time-table direction
↓
Westward

Inv-2656
 Southern Pacific Company
 Casmalia, Calif.
 December 5, 1942

Location of Accident and Method of Operation

This accident occurred on that part of the Coast Division designated as the Guadalupe Subdivision and extending between Santa Barbara and San Luis Obispo, Calif., a distance of 113.6 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and an automatic block-signal system. At Caswellia a siding 3,315 feet in length parallels the main track on the north. The east switch of this siding is 2,581 feet east of the station. The accident occurred at a point 62 feet west of the east siding-switch. Approaching from the east there are, in succession, a 3° curve to the right 1,362 feet in length, a tangent 395 feet, a 3° curve to the left 1,138 feet, and a tangent 153 feet to the point of accident and 354 feet beyond. The grade for west-bound trains is level 1.7 miles and then varies between 0.867 and 1.0 percent ascending a distance of 2,475 feet immediately east of the point of accident and is 1.0 percent ascending at that point.

The automatic block-signal system is arranged on the overlap principle and consists of intermediate signals between stations and double-location signals at sidings. At Caswellia a distant signal operates in conjunction with the westward home signal. Distant signal 2881 and home signal 2879, governing west-bound movements, are located, respectively, 2,243 and 128 feet east of the point of accident. Signal 2881 is of the two-indication, one-arm, lower-quadrant, semaphore type, and is approach-lighted. Signal 2879 is of the three-indication, search-light type, and is approach-lighted. The involved night aspects and corresponding indications of these signals are as follows:

	<u>Night Aspect</u>	<u>Indication</u>
Signal 2881	Yellow	Proceed with caution
Signal 2879	Red	Stop

Operating rules read in part as follows:

DEFINITIONS

With Caution--To run at reduced speed, according to conditions, prepared to stop short of a train, engine, car, displaced switch, derail, or other obstruction, or before reaching a stop signal. * * *

11. Within block system * * *, a train finding an unattended fusee burning on or near its track may proceed without stopping, but must run with caution not exceeding fifteen miles per hour, for a distance of three-fourths mile.

* * *

34. All members of train and engine crew must, when practicable, communicate to each other by its name the indication of all signals affecting the movement of their train.

35. The following signals must be used by flagmen:

* * *

Light signals--A red light,
a white light,
torpedoes and
fusees.

39. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure protection; one-fourth mile from rear of train, if such distance has been reached before being recalled, he must place one torpedo on the rail; three-fourths mile from rear of train, or at the point from which recalled if less than three-fourths and more than one-fourth mile, he must place two torpedoes on the rail three rail-lengths apart; if less than one-fourth mile, he must, if safety to train requires, leave a lighted fusee. If conditions, such as curves, foggy or stormy weather, or descending grade, require, he must continue back a greater distance, placing two additional torpedoes. He may then return to the single torpedo, where he must remain until relieved by another flagman or recalled by the whistle of his engine. When recalled he may remove the single torpedo and return, unless a following train be seen or heard approaching under conditions in which his train may be overtaken by such train, in which event he must go toward the approaching train displaying stop signals.

* * *

By night, or by day when conditions warrant, flagmen must leave a lighted fusee to protect his train while returning.

* * *

When a train is moving under circumstances in which it may be overtaken by another train, the flagman must take such action as may be necessary to insure protection. By night, or by day when the view is obscured, lighted fusees must be thrown off at proper intervals.

* * *

In the vicinity of the point of accident the maximum authorized speed for passenger trains is 50 miles per hour.

Description of Accident

First 75, a west-bound first-class passenger train, consisted of engine 4457, one baggage car, one mail car, seven Pullman sleeping cars, one kitchen-dormitory car, one dining car, one lounge car, seven Pullman sleeping cars and one Pullman observation car, in the order named. The first two cars were of all-steel construction. The tenth, eleventh and twelfth cars were articulated and operated as a triple unit, which was of the light-weight type and had truss side-frames of high-tensile steel and sheathing of stainless steel. The Pullman cars were of the light-weight type and were equipped with girder side-frames and high-tensile steel side sheets. After a terminal air-brake test was made at Santa Barbara, 33.2 miles east of Casmalia, this train departed at 12:14 a. m., according to the dispatcher's record of movement of trains, 30 minutes late, and passed Surf, 15.2 miles east of Casmalia, at 2:22 a. m., 1 hour 9 minutes late. Because the train-order signal at Casmalia displayed stop and the operator at that station gave flagging signals, the train stopped about 2:45 a. m. with the rear end standing 128 feet west of signal 2379. About 2:50 a. m. the rear end was struck by Second 39.

Second 39, a west-bound first-class passenger train, consisted of engine 4456, two baggage cars, sixteen coaches and one Pullman tourist car, in the order named. All cars were of steel construction. At Santa Barbara a terminal air-brake test was made, the brakes were used to control the speed of the train at various points en route and they functioned properly. This train departed from Santa Barbara at 12:31 a. m., according to the dispatcher's record of movement of trains, 2 hours 21 minutes late, passed Surf at 2:27 a. m., 2 hours 41 minutes late, passed signal 2881, which displayed yellow, passed signal 2879, which displayed red, and, while moving at a speed of 15

miles per hour, as indicated by the tape of the speed-recorder with which engine 4456 was equipped, it collided with the rear end of First 75.

The rear car of First 75 was derailed to the right and stopped across the main track and the siding. This car was demolished. The thirteenth to nineteenth cars, inclusive, were derailed, but remained upright and in line with the track. The engine-truck wheels and the Nos. 1 and 2 pairs of driving wheels of engine 4456 of Second 69 were derailed, and the front end of the engine was considerably damaged. Both rails were overturned beneath the rear five cars of First 75.

It was foggy at the time of the accident, which occurred about 2:50 a. m.

The train-service employee injured was the flagman of Second 69.

Discussion

The rules governing operation on the line involved provide that when a train stops under circumstances in which it may be overtaken by another train the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection. When a train is moving under circumstances in which it may be overtaken by another train the flagman must take necessary action to insure protection. Under the rules governing operation in automatic block-signal territory, when a distant signal displays proceed-with-caution, a train must be operated at reduced speed and be prepared to stop at the next signal. All members of both crews involved understood these requirements.

Because an opposing train was entering the siding at Caswellia and the train-order signal was displaying stop, First 75 stopped about 2:45 a. m., with its rear end 128 feet west of home signal 2879. About 5 minutes later the rear end was struck by Second 69. The speed of Second 69 was about 15 miles per hour at the time of the accident. The brakes on this train had been tested and had functioned properly en route. After the accident, marks indicating a severe brake application were found on the heads of the rails at a point 1,149 feet west of signal 2881.

Flag protection for First 75 was required when the speed was being reduced to make the stop at Caswellia and during the 5-minute period it was standing at that point prior to the accident. A few miles west of Santa Barbara First 75 had been delayed because of receiving stop indications at two signals and being required to flag through the blocks. During this time

Second 69 closed up on First 75, was flagged and stopped. When First 75 again proceeded at normal speed, Second 69 closely followed it. Before this train reached Caswellia, fog which materially restricted the range of vision was encountered. The conditions prevailing at that time required that every precaution be taken to provide adequate protection.

The flagman of First 75 said that when the speed was being reduced as his train was approaching Caswellia he dropped off a lighted 5-minute fusee in the vicinity of signal 2881, and after his train stopped he immediately proceeded to the rear to provide flag protection. He had gone about 300 feet, during a period of about 3 minutes, when he was recalled. As he did not hear the following train, he placed two torpedoes on the rail, left a lighted 10-minute fusee, returned to the rear of his train and gave a proceed signal. Shortly afterward he heard Second 69 approaching. He started back again and had reached a point about 75 feet to the rear of his train when Second 69 passed him. The engineer of First 75 sounded the whistle signal to recall the flagman when the opposing train was into clear on the siding, but his train was not ready to depart when the flagman gave the signal to proceed as he had not received a clearance from the operator. From the time First 75 was stopped until the collision occurred, at least 5 minutes elapsed. The 5-minute fusee which had been dropped near signal 2881 apparently had burned out before Second 69 passed that point, and as a result the only flag protection which was then provided consisted of torpedoes and the 10-minute fusee which the flagman left about 300 feet from the rear of his train. The engineers of Second 69 said they did not hear any torpedoes exploded, and when the fusee, signal 2879 and the markers on First 75 came into view at practically the same time, it was too late to prevent the accident. Unless flag protection had been provided some distance east of signal 2881, the flag protection would not have been adequate under the circumstances surrounding this accident.

The engineer of Second 69 said he experienced no difficulty in stopping his train when it was flagged near Hope Ranch, west of Santa Barbara, and again when it stopped for a block signal west of that point. Several of the block signals subsequently displayed yellow aspects, which indicated that First 75 was only a short distance ahead. West of Surf his train stopped for another stop signal. From that point to the distant signal at Caswellia the signals indicated proceed. As the train approached Caswellia heavier fog was encountered and he did not see signal 2881 until his engine was only a short distance east of it. He said he immediately placed

the brake valve in service position and closed the throttle. As the train did not seem to be reducing speed in the first 700 or 800 feet, he placed the brake valve in emergency position. When the fusee, signal 2879 and the markers on First 75 came into view, everything possible had already been done but it was then impossible to stop his train in time to avert the accident. The engineer said that if flag protection had been provided east of signal 2381, or if signals 2881 and 2879 had been spaced far enough apart to provide proper stopping distance, the accident would not have occurred.

As Second 69 was approaching Caswalla the speed was 56 miles per hour, as indicated by the tape of the speed recorder with which the engine was equipped. The engineer of Second 69 made a full-service application of the brakes when his engine was a short distance east of signal 2381, which was displaying proceed-with-caution. At a point from 800 to 1,200 feet beyond, he placed the brake valve in emergency position. Notwithstanding this, however, Second 69 overran signal 2879, which was displaying stop, a distance of 128 feet, and its speed was approximately 15 miles per hour when the collision occurred. It is clearly shown, therefore, that the distance between signals 2381 and 2879 was not adequate stopping distance for Second 69.

Section 204 of the Commission's rules, standards and instructions for the installation, inspection, maintenance and repair of automatic-block signals, prescribed by order of April 15, 1939, provides as follows:

Signals shall be spaced at least stopping distance apart, or where not so spaced, an equivalent stopping distance shall be provided by two or more signals arranged to display restrictive indications approaching signal where such indications are required.

The signals involved in this accident, and the signals at many other locations on the lines of the Southern Pacific, are not installed in conformity with this requirement. At some locations signals have been respaced so as to provide increased stopping distances, and at other locations speed-limit signs have been provided to restrict maximum authorized speed in conformity with stopping distances provided by the existing spacing of signals. At the location involved, maximum authorized speed for passenger trains previously was 55 miles per hour; however, on March 7, 1942, a speed sign was provided to restrict the speed of passenger trains in the territory involved.

to 50 miles per hour. This maximum speed authorization was determined by means of a chart based on a series of braking tests, which indicated that a passenger train of 16 standard steel cars could be stopped short of signal 2879 from a speed of 54 miles per hour at signal 2831 by a full-service application of the brakes. But in the case here under investigation, notwithstanding a full-service application followed by an emergency application of the brakes, Second 69, with 19 standard steel cars, moving at a speed of about 56 miles per hour at signal 2831, was not stopped before it passed signal 2879.

The Commission's order of April 13, 1939, provided a period from that date until September 1, 1941, within which carriers were required to bring existing installations of signal systems into conformity with the prescribed rules, standards and instructions, including Section 204 above referred to. Upon application of the Southern Pacific, the Commission has since extended the effective date of this section, as it applies to the signals involved in this accident, to January 1, 1944. The accident here under consideration and the results of this investigation again direct attention to the fact, which has been pointed out frequently in previous reports, that reliance cannot safely be placed upon the preview of a signal to supplement the stopping distance provided by signal spacing. Preview of a signal, or the distance it can be seen from a train approaching it, is a variable factor which is materially affected by weather conditions, as in this case. Under Section 204, signals are required to be respaced or rearranged where necessary to insure that a train will be stopped from authorized speed, when action to stop the train is initiated at the first restrictive signal, before it reaches the signal where the stop is required. This provision is prescribed as a necessary minimum safety requirement and all existing signal installations which do not now comply should be brought into conformity therewith as promptly as possible. Until that is done, the speed at which trains are operated should be so restricted that they can be stopped within the distances provided by the existing spacing of signals.

Cause

It is found that this accident was caused primarily by failure to stop the following train in accordance with signal indications as a result of excessive authorized speed in view of the distance between the automatic signals involved. A contributing cause was the inadequate manner in which the rules governing flag protection for the preceding train were enforced and observed.

Dated at Washington, D. C., this ninth
day of February, 1943.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.