

Inv-2336

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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REPORT OF THE DIRECTOR  
BUREAU OF SAFETY

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ACCIDENT ON THE  
UNION PACIFIC RAILROAD  
AND  
NORTHERN PACIFIC RAILWAY

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ATTALIA, WASH.

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FEBRUARY 27, 1939

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INVESTIGATION NO. 2336

SUMMARY

Inv-2536

Railroads: Union Pacific : Northern Pacific

Date: February 27, 1939

Location: Attalia, Wash.

Kind of accident: Side collision

Trains involved: U. P. freight : N. P. passenger

Train numbers: 252 : 348

Engine numbers: 3803 : 2084

Consist: 81 cars and cabooses : 3 passenger cars,  
: 6 freight cars  
: and cabooses

Speed: 15 m. p. h. : 20-25 m. p. h.

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

Crossing governed by automatic interlocking

Track: Single; tangent; 0.5 : Single; 6°45'  
percent ascending grade: curve to right;  
: 1.04 percent de-  
: scending grade

Weather: Clear

Time: 8:25 p. m.

Casualties: 2 killed and 4 injured

Cause: Failure of the N. P. train properly to  
observe and obey interlocking signal in-  
dications governing movement of the train  
over a railroad crossing.

April 26, 1939

To the Commission:

On February 27, 1939, there was a side collision between a freight train of the Union Pacific Railroad and a passenger train of the Northern Pacific Railway at Attalia, Wash., which resulted in the death of two employees and the injury of three employees and one person carried under contract. The investigation of this accident was made in conjunction with a representative of the Department of Labor and Industries of the State of Washington.

#### Location and Method of Operation

The accident occurred at the intersection of that part of the Washington Division of the Union Pacific Railroad designated as the Sixth Subdivision and that part of the Idaho Division of the Northern Pacific Railway designated as the Walla Walla Branch. The Sixth Subdivision of the U. P. extends between Umatilla, Ore., and Spokane, Wash., a distance of 184.5 miles, and in the vicinity of the point of accident is a single-track line over which trains are operated by timetable, train orders and an automatic block-signal system. The Walla Walla Branch of the N. P. extends between Pasco and Dayton, Wash., a distance of 98.1 miles, and is a single-track line over which trains are operated by timetable and train orders, no form of block-signal system being in use. Movements over the crossing are governed by an automatic interlocking. The crossing is located 1,741 feet west of the N. P. station and is within yard limits on both roads. The tracks cross at an angle of  $35^{\circ}26'$ ; approaching this point the tracks of both railroads extend north and south according to compass directions; however, time-table directions, which are used in this report, are east and west on both railroads, and both trains involved were east-bound but approached the crossing from opposite directions.

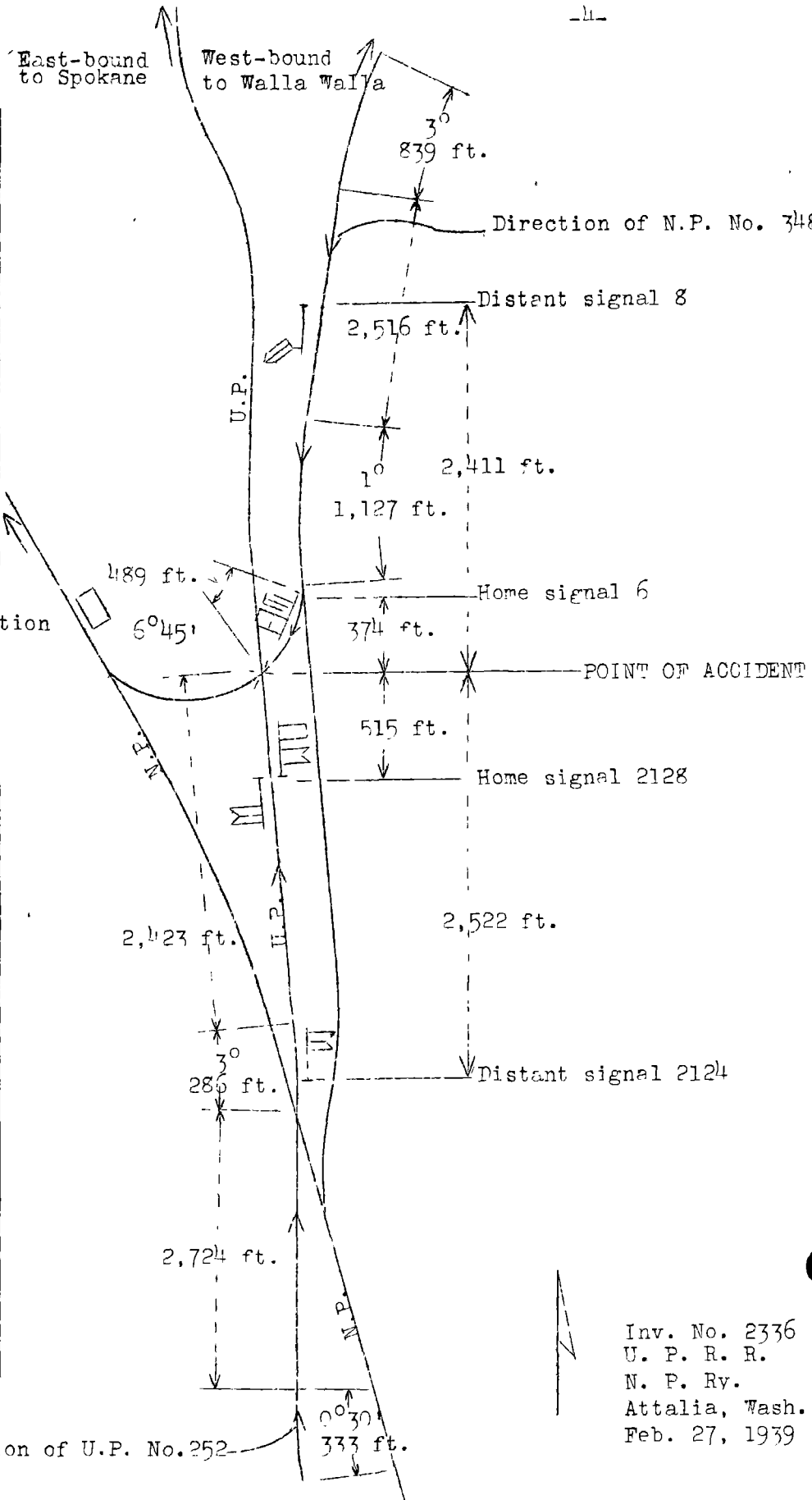
Approaching the crossing from the west on the U. P. there is a tangent 2,724 feet in length, a  $3^{\circ}$  curve to the left 226 feet in length, followed by a tangent 2,423 feet to the point of accident and 644 feet beyond. The grade for east-bound trains from the north siding-switch at Wallula to the point of accident, a distance of 1.5 miles, varies from 0.25 to 0.5 percent ascending and is 0.5 percent at the point of accident. Approaching from the west on the N. P. there is a  $3^{\circ}$  curve to the left 839 feet in length, a tangent 2,516 feet in length, a  $1^{\circ}$  curve to the left 1,127 feet in length, followed by a  $6^{\circ}45'$  curve to the right 2,230 feet in length; the accident occurred on this last-

Union Pacific

o	Spokane, Wash.
	154.6 mi.
o	Attalia
x	Point of accident
	2.6 mi.
o	Wallula
	27.3 mi.
o	Umatilla, Oregon

Northern Pacific

o	Pasco, Wash.
	12.5 mi.
o	Attalia
x	Point of accident
	8.7 mi.
o	Slater
	12.2 mi.
o	Eureka
	30.9 mi.
o	Walla Walla
	33.8 mi.
o	Dayton, Wash.



Direction of U.P. No. 252

Inv. No. 2336  
 U. P. R. R.  
 N. P. Ry.  
 Attalia, Wash.  
 Feb. 27, 1939

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mentioned curve at a point 489 feet from its western end. Extending from Slater, a distance of 7.2 miles, the grade for east-bound trains is approximately 1 percent descending; it then varies from 0.37 to 0.69 percent approximately 1 mile, followed by 1.04 percent descending a distance of 338 feet to the crossing.

The automatic interlocking at this crossing was installed in 1929 by the U. P. and is maintained by that company. The signals are electrically operated. On each line there are two home signals of the semaphore type governing movements over the crossing; approach indications for these home signals are given by distant signals, also of the semaphore type. The automatic block system on the U. P. is carried through the interlocking. On the U. P. the eastward distant and home signals are continuously lighted, and the westward distant and home signals are approach lighted. On the N. P. both distant signals and the westward home signal are continuously lighted, and the eastward home signal is approach lighted. Distant signal 2124 and home signal 2123, governing eastward movements on the U. P., are located 2,522 feet and 515 feet, respectively, west of the crossing. Distant signal 2124 is fixed in horizontal position and displays a yellow aspect indicating "approach next signal prepared to stop." Home signal 2123 is a 2-position, 2-arm, lower-quadrant semaphore signal; the top arm governs movements over the crossing; the bottom arm is an approach signal for an automatic signal located east of the plant; this signal displays a red-over-yellow aspect for "stop," green-over-yellow for "approach next signal prepared to stop," and green-over-green for "proceed." Distant signal 8 and home signal 6, governing eastward movements on the N. P., are located 2,411 feet and 374 feet, respectively, west of the crossing. Distant signal 8 is inoperative and fixed in the upper-quadrant approach position and displays a yellow aspect indicating "proceed prepared to stop before reaching the home signal." Home signal 6 is a 2-position, 2-arm, upper-quadrant semaphore signal, with the top arm operative and the bottom arm fixed in horizontal position; it displays a red-over-red aspect for "stop" and a green-over-red aspect for "proceed." All home signals normally display stop indications.

The interlocking is so arranged that when an approaching train on either road passes its respective distant signal, provided there are no conflicting train movements and the tracks within the home signals on both lines are unoccupied, the home signal automatically displays a proceed indication for the movement of the train over the crossing. As all home signals normally display stop indications, the home signals on

the conflicting route and the opposing home signal on the same line continue to display stop indications. The home signal which is displaying a proceed indication for the approaching train continues to display that indication until the engine passes it, when it assumes the stop position. When the rear end of the train has passed the opposing home signal, an approaching train on the conflicting line will automatically clear its home signal in the same manner. The first train to pass the distant signal and to enter the approach section will establish priority over any other movement, and a second train will not receive a proceed signal for movement over the crossing until the first train has completed its movement through the interlocking. The second train will not take the route away from the first train and a proceed signal cannot be displayed on both lines simultaneously. Provision is made so that in the event a route has been lined and a movement through the interlocking has not been made, the route for the other line may be set up only after the second train has stopped at the stop home signal and a member of the crew proceeds to the crossing and operates a time release located in a housing at the crossing. After an interval of 2 minutes, during which time the home signals on all lines are at stop, the new route will be set up for a movement over the crossing. After completion of this second movement, the route will automatically revert to the first train. The circuits are so arranged that if N. P. and U. P. trains simultaneously pass their distant signals preference will be given to the N. P. train, and the N. P. home signal will clear, and the U. P. home signal will remain at stop until the N. P. train has made a movement through the interlocking.

The following U. P. rules govern:

Rule 93. - Within yard limits the main track may be used, protecting against first-class trains. All trains and engines must move within yard limits prepared to stop unless the main track is seen or known to be clear.

Rule 98, in part: Trains must approach the end of double track, junctions, railroad crossings at grade, and drawbridges, with caution. Where required by rule or by law, trains must stop.

The following N. P. rules govern:

Rule S-93. - Within yard limits the main track may be used, protecting against first-class trains. Second and third class and extra trains must move within yard limits prepared to stop unless the main track is seen or known to be clear.

Rule 98. - Trains must approach the end of double track, junctions, railroad crossings at grade, and draw-bridges, prepared to stop, unless the switches are properly lined, signals indicate proceed, and track is clear. When required by law, trains must stop.

Rule 36 of the Air Brake Instruction Book No. 1 provides: With passenger trains, make a running brake test when two miles from meeting points, railway crossings, draw-bridges, and other points where failure of the brakes to operate properly would result in extra hazard.

Within yard limits on the Sixth Sub-division of the U. P., the maximum authorized speed for freight trains is 25 miles per hour; east-bound freight trains are limited to 20 miles per hour over the crossing involved.

The maximum authorized speed for passenger trains on the N. P. on the subdivision involved is 40 miles per hour; the speed for all trains over the crossing is limited to 30 miles per hour.

The weather was clear at the time of the accident, which occurred about 8:25 p. m.

#### Description

No. 252, an east-bound second-class U. P. freight train, consisted of 52 loaded and 29 empty cars and a caboose, hauled by engine 3803, and was in charge of Conductor Richert and Engineman Johnson. This train departed from Wallula, 2.6 miles west of Attalia, at 8:10 p. m., according to the train sheet, 2 hours 40 minutes late, received a green aspect on home signal 2128 and proceeded over the crossing at a speed of 15 miles per hour; the second car was struck by N. P. No. 348.

No. 348, an east-bound first-class N. P. passenger train, consisted of one baggage-mail car, one coach, one tourist sleeping car, six freight cars and a caboosc, hauled by engine 2084, and was in charge of Conductor Wilkins and Engineman Riley. This train departed from Walla Walla, 51.8 miles west of Attalia, at 6:50 p. m., according to the train sheet, 10 minutes late, passed Slater, 8.7 miles west of Attalia, at 8:13 p. m., according to the statement of the conductor, on time, and collided with U. P. No. 252 while traveling at a speed estimated to have been between 20 and 25 miles per hour.

The engine of the U. P. train stopped with its front end about 400 feet beyond the crossing; the rear end of the first car was off its center; the second car was struck about its center and thrown to the left and stopped with one end across the N. P. track; the third car stopped at right angles to the U. P. track with one end on the crossing; the fourth car stopped across both tracks; the front truck of the fifth car was derailed; the second, third and fourth cars were so badly damaged that they were destroyed later. N. P. engine 2084 was overturned on its right side down an embankment just beyond the crossing and stopped practically upside down and parallel to the N. P. track with its rear end about 10 feet beyond the U. P. track; the tender remained coupled to the engine and stopped on its right side across the U. P. track, slightly damaged. The first car in this train stopped on the track with its right front corner touching the rear of the tender; it was slightly damaged.

The employees killed were the engineman and the fireman of the N. P. train, and those injured were the conductor, the middle brakeman and the flagman of the U. P. train.

#### Summary of Evidence

Engineman Johnson, of U. P. No. 252, stated that the proper air-brake test was made before leaving Wallula and it was 8:10 p. m. when he received a release signal. His train was standing with the engine near the east end of the siding. He started at a low rate of speed. He called the various signal indications en route and they were acknowledged by the fireman and the head brakeman. He observed and called the caution indication of distant signal 2124. The cab windows were open and he had a clear view of home signal 2128. He saw this signal change from a red to a green aspect and it was still green when he last saw it just before passing it. He was operating his train at a speed of about 15 miles per hour, and immediately after passing the home signal he started sounding the crossing whistle signal for the highway located a short distance beyond the railroad crossing. As his engine had practically reached the N. P. crossing he saw the headlight



of the N. P. train which he judged to be west of its home signal. He was not alarmed as he thought that train had either stopped or would stop. He completed the crossing whistle signal and at that time the engine was over the N. P. crossing; his attention was then attracted to fire flying from the driving wheels of the N. P. engine which indicated that the engine-man was trying to stop and he thought the approaching train was about 3 or 4 car lengths from the crossing at that time. He immediately placed his brake valve in emergency position, looked back and saw the N. P. engine strike his own train. He was unable to state the speed of the N. P. train but he thought it was about 25 miles per hour. The head brakeman called his attention to the time the accident occurred, which was at 8:25 p. m. Engineman Johnson stated that he did not hear the N. P. train sound the whistle signal for the highway crossing and he did not see any one in the cab of that engine, however, he thought it was not possible for him to do so.

The statements of Fireman Swauger, of U. P. No. 252, corroborated those of the engineman in practically all essential details, except that he did not see the N. P. train and did not know anything was wrong until his engineman applied the air brakes in emergency. He was on his seatbox, the side window was open and the head brakeman was sitting behind him. After passing distant signal 2124 he saw home signal 2128 change from a red to a green aspect and it still displayed a green aspect when he last saw it when about 4 car lengths distant. As soon as the train stopped the head brakeman looked at his watch and it was exactly 8:25 p. m. The fireman and the engineman also looked at their watches and they showed the same time.

Head Brakeman Dryden, of U. P. No. 252, stated that after the engineman called the signal indications he observed and called the indications, and home signal 2128 displayed a green aspect when he observed it.

Conductor Richert, of U. P. No. 252, stated that after receiving the train orders at Wallula he compared time with the engineman and participated in the air-brake test which was conducted by the members of the crew, and the train departed at 8:12 p. m. He was sitting at his desk at the time of the accident and was thrown from his chair and the flagman was knocked down from the cupola. He estimated the speed of his train to have been about 15 miles per hour at the time of the accident.

Middle Brakeman LePage, of U. P. No. 252, stated that he stood at the east siding-switch at Wallula as the train pulled by him and as he boarded the caboose the speed was about 10 miles per hour and a normal rate of speed, 10 or 12 miles per hour, was maintained to the crossing.

Flagman Fryer, of U. P. No. 252, stated that leaving Wallula he was in the cupola on the left side and that the aspects of the signals he observed were green.

Conductor Wilkins, of N. P. No. 348, stated that he compared time with the engineman at Walla Walla, their initial terminal, and delivered the train orders, and the engineman appeared to be normal in all respects. A terminal air-brake test was made and a test of the communicating signal system was also made. Several stops were made en route and the brakes functioned properly. Their train arrived at Eureka, 20.9 miles west of Attalia, on time, left there 2 minutes late, passed Adkins, 5.3 miles beyond Eureka, on time, and passed Slater, 8.7 miles west of Attalia, at 8:13 p. m., on time. He noted nothing unusual in the operation of the train between Slater and the point of accident. He could not recall the various applications of the air brakes but the speed was not excessive; it is the usual procedure to apply the brakes in that territory on account of the curves and the steep descending grade. His train was traveling at a speed of 40 miles per hour and the reduction in speed called his attention to the fact that they were approaching Attalia. He felt an application of the air brakes when in the vicinity of the distant signal, and the speed was reduced to 20 or 25 miles per hour. He was sitting at his desk in the coach at that time and he put his work away and was intending to get up and go forward when the collision occurred. The brakes were partially released but he did not know whether the brakes had been fully released; he did not feel a further reduction and estimated the speed to have been 20 or 25 miles per hour at the time of the accident. As soon as the train stopped he walked through the car and jumped off, looked at his watch and mentally noted that it was 3 minutes before they were due out of Attalia, which is 8:29 p. m., and thus would place the time of accident at 8:26 p. m. No emergency application of the brakes was made at any time and there was no indication that the engineman made any unusual effort to stop at the home signal or approaching the crossing. Conductor Wilkins thought that the brake application in the vicinity of the distant signal could be classified as complying with the N. P. operating rule requiring a running test of the air brakes be made when 2 miles from a railway crossing. He thought the engineman sounded the station whistle signal, but he was not sure. The usual procedure is to sound the station whistle and then the road crossing signal, but he did not recall hearing the road crossing whistle on the night of the accident.

Head Brakeman Starr, of N. P. No. 348, who was in the second car, stated that approaching Attalia their train was traveling at the usual speed of 40 miles per hour. When passing under the overhead crossing, located 527 feet east of the

distant signal, he felt an application of the air brakes but he could not tell whether the brakes were released or not. The speed was reduced to between 20 and 25 miles per hour and he did not feel a further reduction. He did not hear the highway-crossing whistle signal sounded. The accident occurred between 8:25 and 8:26 p. m.

Flagman Dysart, of N. P. No. 348, stated that the speed of his train was between 35 and 40 miles per hour as they approached the distant signal, which displayed a yellow aspect. When passing that signal he felt an application of the air brakes; he looked at the air gauge in the caboose and it showed that a 20-pound reduction from a brake-pipe pressure of 90 pounds had been made. The brakes were released about one-half minute later and he did not feel a further reduction. He then left the cupola to get ready for the stop at Attalia and he did not see the home signal. He estimated the speed of his train to have been 20 or 25 miles per hour at the time of the accident; it occurred at 8:25 p. m. After the accident he saw the home signal displaying a red aspect. He did not hear a whistle signal sounded when approaching the crossing, however, it is only occasionally such signals can be heard when in the caboose.

Express Messenger Clark, of N. P. No. 348, stated that he was in the first car when the accident occurred. The headlight was burning and when approaching Attalia he heard one long blast of the whistle. There was nothing unusual in the operation of the train and after he heard the station whistle signal he felt an application of the air brakes which reduced the speed about one-half. He estimated the speed to have been 20 miles per hour at the time of the accident.

Section Foreman DeLoss, of the N. P., who was in the N. P. station at Attalia, stated that he heard one long blast on the engine whistle sounded by N. P. No. 348. He saw the train after it passed the overhead bridge; the headlight was burning and the train was traveling at its usual speed of about 25 miles per hour.

Car Foreman Dale, of the N. P., stated that he inspected the equipment of No. 348 at the scene of accident and found all the brakes set and in good operative condition. He stated that the first two cars were equipped with L-3 type brake equipment, the third car, with UC type, the six freight cars and caboose with K triple valves.

Assistant Trainmaster Wood, of the N. P., stated that he arrived at the scene of accident at 9:05 p. m.; he inspected No. 348 on both sides and found all angle cocks open except the one on the rear end of the caboose; all pistons were in applied position.

Conductor Billings, of N. P. No. 908, arrived at the scene of accident at 11:25 p. m. His engine was cut off and coupled to the rear end of No. 348, none of these cars being derailed. An air-brake test was made and the brake-pipe line was found to be in good condition; there were no defects of any kind in the brake equipment. After coupling to his own train, another test of the air brakes was made and the brakes were found to be working properly; the air gauge in the caboose registered 90 pounds pressure.

This train was given a further inspection by Car Inspector Miles, of the N. P., at Pasco, and no defects were found in the brake equipment.

Road Foreman of Engines Kerr, of the N. P., stated that he inspected the cab of N. P. engine 2084, but the damage was such that it was impossible to determine the position of the throttle, the reverse lever or the brake valve at the time of the accident. He was of the opinion that a train traveling 40 miles per hour and a 20-pound brake-pipe reduction being made at the distant signal, and without a release being made, the train would stop possibly 300 feet beyond the home signal. At a speed of 40 miles per hour, and a 20-pound reduction being made, it would take from 2,500 to 3,000 feet in which to stop.

Master Mechanic Gallagher, of the N. P., stated that it was his opinion that the brakes had been released on No. 348 after having been applied at the distant signal, as he thought that when there was a 20-pound reduction and no release made, the train would have stopped before reaching the crossing; in another statement he said it would take about 2,500 feet in which to stop. However, if the brakes were released after the reduction was made at the distant signal, the train would proceed a considerable distance beyond the crossing. He stated that with a 20-pound reduction the engineman did not have the brakes fully applied from a 90-pound brake-pipe pressure. In order to get the brakes fully applied from 90 pounds brake-pipe pressure he would have to draw off possibly 30 pounds, then if he discovered the home signal against him and made an emergency application he would have the advantage of this braking power in addition to the original reduction which would increase the holding power of the brakes from that point to the crossing. A graduated release could not be had with the K type triple valves and if a partial release was obtained on the coach in which the conductor was located, the cars with the K triples would have gone to release and would not be recharged with the brake valve in lap position. He examined the driving wheels on engine 2084 and did not find any indications of flat spots.

Superintendent Brastrup, of the N. P., stated that surprise tests covering automatic signals at crossings and at other points are made, and Engineman Riley had been given four such tests since March, 1937, and in each test his response was good.

Assistant Signal Supervisor Larson, of the U. P., arrived at the scene of accident at 12:50 a. m., February 28, and, inspecting the distant and home signals on both lines, found the lights burning and displaying the proper aspects; the distant signals were at approach and the home signals were at stop.

Signal Supervisor Charlton and Assistant Signal Supervisor Larson, of the U. P., and Section Signal Supervisor Peters, of the N. P., made an inspection and check of the interlocking at 7:15 a. m., February 28. This inspection included a check of the electric lights, operation of the control relays, bonding, pole line, wiring, and cables. The check of the interlocking consisted of clearing a home signal by shunting the rails of its approach circuit and then shunting the rails of the opposing approach circuits to determine if a conflicting signal could be cleared or the entering of a train on the approach section of a conflicting signal would cause the home signal which indicated "proceed" to go to stop. All home signals of the interlocking were given this test and were found to be operating as intended.

On March 1, Signal Supervisor Charlton and Assistant Supervisor Larson, of the U. P., and Signal Supervisors Peters and Hansen and Signal Engineer Law, of the N. P., checked the interlocking in detail. The field installation was checked with the blue print and all apparatus was found to be installed according to the plan. Further checks on the operation of the interlocking showed that it operated as intended and all agreed that the findings of the check of February 28 were correct. Except for a 0.4 volt negative reading, the interlocking was clear of crosses and grounds.

Signal Supervisor Charlton stated that an annual inspection and test is made which includes a test of each relay, signal and associated apparatus with respect to its operating characteristics. The last annual test was made in May, 1938, at which time all relays and signals were found to be within their proper limits and operating properly. The assistant supervisor makes frequent operating tests and the signal maintainer passes through the interlocking daily and has opportunity to make tests as required. There has been no change in the interlocking since its installation and there have not been any false proceed indications at any time. He considered that the interlocking was safe for the passage of trains prior to the accident, and said

that no changes have been made since, and that the interlocking is now safe for the operation of trains through it. Signal Engineer Law of the N. P. concurred as to the safety of the interlocking.

Signal Supervisor Peters, of the N. P., stated that he makes operating tests of this interlocking quarterly and that on his last inspection on December 7, 1938, it was operating properly and no conflicting signal could be displayed.

Signal Maintainer Blanch, of the U. P., who has had charge of the maintenance of this interlocking for the past two years, stated, that he arrived at the scene of accident about an hour after its occurrence. All home signals displayed stop and all relays governing the crossing were de-energized. The time releases were in their normal positions and all relay housings were locked. Except for the breakage of several bond wires and bootleg wires, caused by the accident, there was no damage to the signal equipment. He had experienced trouble at this interlocking on only one previous occasion when the time release stuck or broke.

Superintendent McCarthy, of the U. P., stated that since the installation of the automatic interlocking at Attalia, from August 24, 1929, to January 31, 1939, there has been a total of 201 tests made on the operation of Union Pacific trains and 8 tests on the operation of N. P. trains by the U. P. officials, and of the total of 209 tests, there were only 7 failures and all were on the U. P. line; two involved enginemen running by signals displaying stop and the other five failures were minor infractions of the rules.

#### Observations of Commission's Inspectors

On March 1, between 9 and 11 p. m., tests were conducted by the Commission's inspectors, together with officials of both railroads, for the purpose of determining the range of visibility approaching the crossing involved. Practically the same class of engines as those involved in the accident were used.

The following tests were conducted from an N. P. engine on the N. P. track:

The fireman's view of distant signal 8 extends 2,229 feet, and the view had by the engineman is limited to 1,870 feet. The fireman's view of home signal 6 through the overhead bridge bents is 2,060 feet, while the engineman's view is limited to 994 feet.

From the center line of the viaduct, 1,884 feet from the crossing, the headlight of a U. P. engine at the crossing is unobstructed; when 1,535 feet from the crossing the engineman can see the westward distant signal on the U. P. governing the Pendleton crossing, located opposite home signal 2128 and 515 feet from the crossing, and when 1,472 feet from the crossing, the headlight of a U. P. engine standing at home signal 2128 can be seen. The engineman's view of the crossing is limited to 240 feet.

Observations conducted on the U. P. line showed that both the engineman and the fireman of a U. P. engine had a clear view of distant signal 2124, a distance of 2,751 feet, and when passing that signal the engineman can see the home signal change from red to green.

Tests were also made at the interlocking to determine its operation and it was found that it functioned as intended and as shown by the plans of the railroad. Except for the repair of broken bond wires, the interlocking was in the same condition as on the day of the accident.

Careful inspection was made of the tires and wheels of N. P. engine 2084 and there was no evidence of flat spots caused by the wheels sliding or burns caused by severe use of the air brakes.

#### Discussion

The automatic interlocking at the crossing involved is so arranged that a proceed signal is displayed for the train which first enters upon the controlling track circuits, and proceed signals cannot be displayed simultaneously for conflicting movements. The circuits are so arranged, however, that if two trains pass their distant signals simultaneously, preference will be given to the N. P. train and the N. P. home signal will clear and the U. P. home signal will remain at stop until the N. P. train has made the movement through the interlocking.

The evidence indicates that U. P. No. 252 was traveling at a speed of 15 miles per hour, and when passing distant signal 2124 the home signal was seen by the engine crew to change from red to green, and the train continued to the crossing where it was struck by the N. P. train.

The statements of the surviving members of the crew of the N. P. train indicate that their train approached Attalia at a speed of 40 miles per hour and an application of the air brakes was made in the vicinity of distant signal 8; the head brakeman, who was in the coach, stated that the application was made about 500 feet beyond the signal, and the flagman, who was

in the caboose, stated he felt the application when passing the signal and that about one-half minute later the brakes were released. The others did not know whether the brakes were fully released. No further reduction was felt, however, and the train continued at a speed of 20 or 25 miles per hour to the crossing where it collided with the U. P. train. The engine crew were killed as a result of the accident and none of the train crew saw the signal indications except the flagman who saw the yellow aspect of the distant signal, and there is no direct evidence to indicate the aspect of the home signal. However, it appears that the U. P. train entered the track circuit controlling their home signal prior to the time the N. P. train entered the track circuit on their line. If the U. P. train were traveling at 15 miles per hour from the distant signal to the crossing, a distance of 2,522 feet, it would have traveled that distance in 1 minute 54 seconds. With the N. P. train passing the distant signal at 40 miles per hour and at the time of the accident moving at the rate of 20 miles per hour, 30 miles per hour may be considered the average speed for the distance, 2,411 feet traveled from distant signal 8 to the crossing; then it follows that approximately 55 seconds were consumed in traveling this distance. It therefore appears that the U. P. train entered the controlling circuit approximately 1 minute prior to the time the N. P. train entered its circuit, consequently, home signal 6 must have displayed a red aspect. After the accident, the signals displayed the proper indications, and a thorough check of the interlocking made by the officials of the railroads and the Commission's inspectors disclosed that the interlocking was in good operative condition and that the signals functioned as intended.

N. P. distant signal 8 can be seen by the engineman a distance of 1,870 feet; it is a fixed signal and displays an approach indication requiring a train to approach the home signal prepared to stop. Home signal 6 is located 2,037 feet beyond; it is approach-lighted and while the engineman's view is restricted to 994 feet, the fireman can see this signal through the overhead bridge bents a distance of 2,060 feet, or a short distance after passing the distant signal. The evidence indicates that the N. P. engineman had been operating his train at approximately the maximum authorized speed, or possibly slightly in excess of that speed, and in view of the descending grade in that vicinity he should have had his train under control so that he could stop short of the home signal. The engineman appeared to be in normal condition when leaving his initial terminal approximately 1½ hours prior to the accident; he sounded the station whistle signal approaching Attalia, made a reduction in speed, but apparently failed to take the proper action to bring his train under control in accordance with the signal indications. The brakes functioned properly en route and after the accident they were found to be in good operative condition.



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Conclusion

This accident was caused by the failure of the N. P. train properly to observe and obey interlocking signal indications governing movement of the train over a railroad crossing.

Respectfully submitted,

W. J. PATTERSON,

Director.