

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3645
THE ATCHISON, TOPEKA AND SANTA FE
RAILWAY COMPANY
IN RE ACCIDENT
AT CARDENAS, N. MEX., ON
JULY 5, 1955

SUMMARY

Date: July 5, 1955

Railroad: Atchison, Topeka and Santa Fe

Location: Cardenas, N. Mex.

Kind of accident: Head-end collision

Trains involved: Freight : Freight

Train numbers: Extra 241 West Extra 205 East

Engine numbers: Diesel-electric : Diesel-electric
units 241C, units 205,
241E, and 241A 205A, 205B, and
205C

Consists: 132 cars, caboose : 84 cars, caboose

Estimated speeds: 20 m. p. h. : 50-55 m. p. h.

Operation: Signal indications

Track: Single; 2° curve, 0.50 percent
ascending grade westward

Weather: Partly cloudy

Time: 12:36 a. m.

Casualties: 5 killed, 3 injured

Cause: Failure to operate west-bound
train in accordance with signal
indications

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3846

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

THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY

September 16, 1955

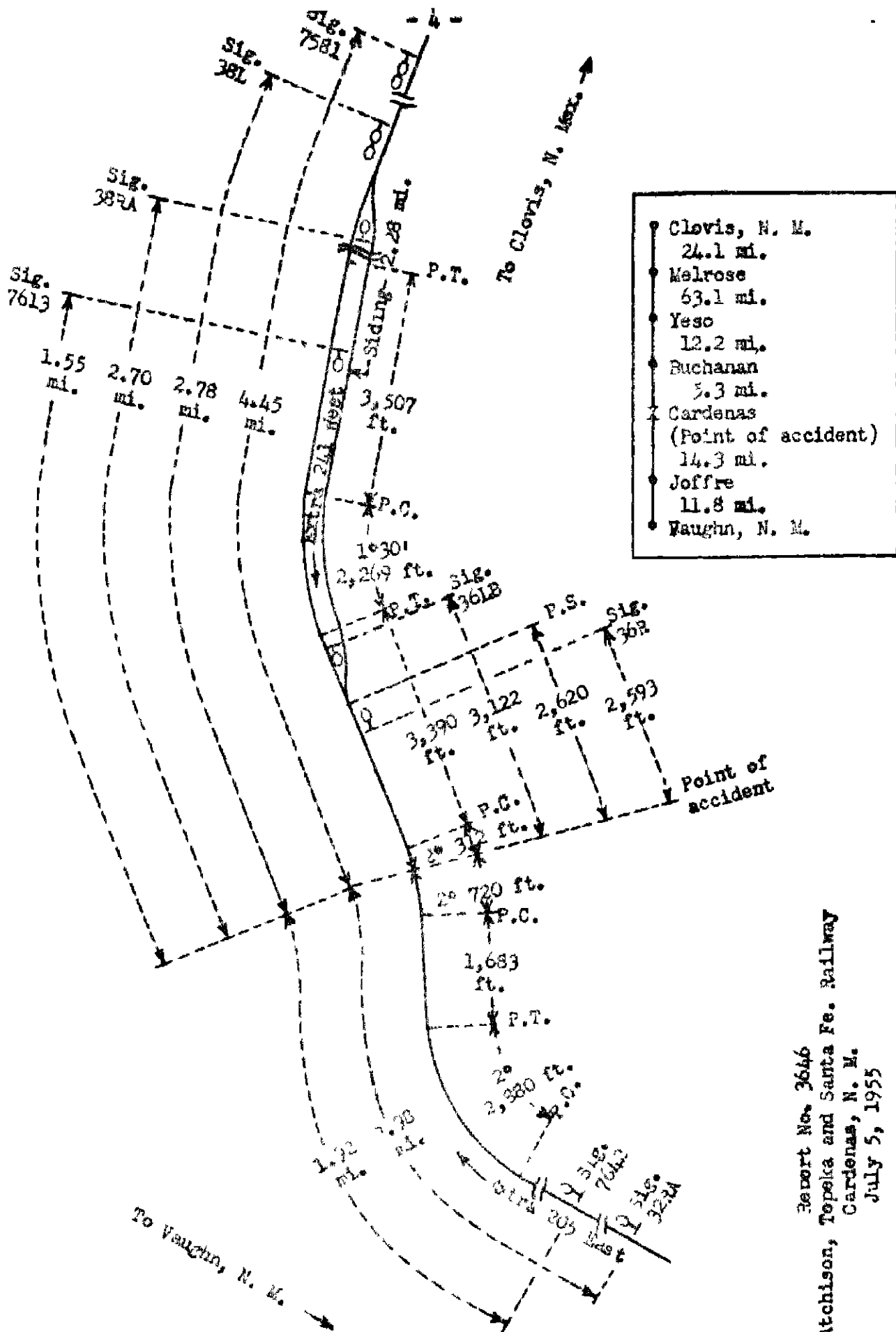
Accident at Cardenas, N. Mex., on July 5, 1955, caused
by failure to operate the west-bound train in
accordance with signal indications.

REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On July 5, 1955, there was a head-end collision
between two freight trains on the Atchison, Topeka and
Santa Fe Railway at Cardenas, N. Mex., which resulted
in the death of five train-service employees, and the
injury of three train-service employees.

¹ Under authority of section 17 (2) of the Interstate Com-
merce Act the above-entitled proceeding was referred by
the Commission to Commissioner Clarke for consideration
and disposition.



Report No. 3646
 Atchison, Topeka and Santa Fe. Railway
 Cardenas, N. M.
 July 5, 1955

Location of Accident and Method of Operation

This accident occurred on that part of the Pecos Division extending between Clovis and Vaughn, N. Mex., 130.8 miles. In the vicinity of the point of accident this is a single-track line, over which trains are operated by signal indications. At Cardenas, 104.7 miles west of Clovis, a siding 2.28 miles in length parallels the main track on the south. The accident occurred on the main track at a point 2,620 feet west of the west siding-switch at Cardenas. From the east on the main track there are, in succession, a tangent 3,507 feet in length, a 1°30' curve to the left 2,269 feet, a tangent 3,390 feet, and a 2° curve to the right 312 feet to the point of accident and 720 feet westward. From the west there are, in succession, a 2° curve to the right 2,880 feet in length, a tangent 1,683 feet, and the curve on which the accident occurred. Throughout a distance of 2 miles immediately east of the point of accident the grade varies between 0.33 percent and 0.60 percent ascending westward, and it is 0.50 percent ascending westward at that point. Throughout a distance of 2 miles immediately west of the point of accident the grade varies between 0.50 percent and 0.60 percent descending eastward.

Automatic signal 7581, governing west-bound movements on the main track, semi-automatic signal 38L, governing west-bound movements on the main track and from the main track to the siding at Cardenas, automatic signal 7613, governing west-bound movements on the siding, and semi-automatic signal 36LB, governing west-bound movements from the siding to the main track, are located, respectively, 4.45 miles, 2.78 miles, 1.55 miles, and 3,122 feet east of the point of accident. Semi-automatic signal 32RA, automatic signal 7642, and semi-automatic signals 36R and 38RA, governing east-bound movements on the main track, are located, respectively, 3.98 miles west, 1.97 miles west, 2,593 feet east, and 2.70 miles east of the point of accident. These signals are of the high searchlight type and are continuously lighted. Aspects applicable to this investigation and the corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
7501	Yellow-over-yellow	Proceed, approach next signal at medium speed, and be prepared to enter diverging route at prescribed speed.	Advance
38L	Red-over-green	Proceed through diverging route; prescribed speed through turnout	Diverging-Clear
7613	Yellow	Proceed preparing to stop at next signal; if exceeding medium speed, immediately reduce to that speed.	Approach
36LB	Red	Stop.	Stop.
32RA	Green	Proceed.	Clear
7642	Green	Proceed.	Clear

These signals form part of a traffic-control system which extends between Melrose, 24.1 miles west of Clovis, and Joffre, 119.0 miles west of Clovis. The control machine is located at Clovis. It is equipped with visual indicators which indicate track occupancy of each OS section and between OS sections, the position of each power-operated switch, and whether each controlled signal is displaying an aspect to proceed or an aspect to stop. The control circuits are so arranged that a controlled signal will not display an aspect to proceed when any opposing controlled signal or signal governing movements over a conflicting route is displaying

other than its most restrictive aspect, when the block between adjacent controlled points is occupied by an opposing train, or when a switch within the route governed by the signal is not in proper position and locked. Time, indication, and route locking are provided. If a controlled signal displays an aspect to proceed, the position of any switch within the route governed by the signal cannot be changed until the train for which the signal was displayed has passed through the route or until a predetermined time interval has elapsed after the signal has been caused to display an aspect to stop. The time locking at the west switch at Cardenas is set at 5 minutes 50 seconds. A traingraph records the time each controlled signal displays an aspect to proceed, the time each OS section is occupied, and the position of each power-operated switch during the time a signal governing movements over the switch is displaying an aspect to proceed or the OS section in which the switch is located is occupied.

This carrier's operating rules read in part as follows:

Definitions.

Medium Speed.--A speed not exceeding 40 miles per hour.

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

In the vicinity of the point of accident the maximum authorized speed for freight trains is 55 miles per hour. It is restricted to 40 miles per hour through the turnouts at each end of the siding at Cardenas.

Description of Accident

Extra 241 West, a west-bound freight train, consisted of Diesel-electric units 241C, 241B, and 241A, coupled in multiple-unit control, 132 cars, and a caboose. This train

departed from Clovis at 8 p. m., July 4. It passed signal 7541, which indicated Proceed-approach-next-signal-at-medium-speed, passed signal 38L, which indicated Proceed-through-diverging-route, entered the siding at Gardenas, passed signal 7613, which should have indicated Proceed-preparing-to-stop-at-next-signal, passed signal 36LB, which should have indicated stop, and entered the main track at the west siding-switch. While it was moving at an estimated speed of 20 miles per hour it collided with Extra 205 East at a point 2,620 feet west of the switch.

Extra 205 East, an east-bound freight train, consisted of Diesel-electric units 205, 205A, 205B, and 205C, coupled in multiple-unit control, 34 cars, and a caboose. This train departed from Vaughn at 12:10 a. m., passed signals 32RA and 7642, each of which indicated Proceed, and while moving at an estimated speed of 50 to 55 miles per hour it collided with Extra 241 West.

The locomotive and the first nine cars of Extra 241 West and the locomotive and the first 37 cars of Extra 205 East were derailed and stopped in various positions on or near the track. This equipment stopped within a distance of about 500 feet. A tank car loader with acetate became limited, and the three Diesel-electric units of Extra 241 West, the first Diesel-electric unit of Extra 205 East, and a number of cars in the immediate vicinity were destroyed by fire. The rear three Diesel-electric units of Extra 205 East were badly damaged, 38 of the derailed cars were destroyed, and the other derailed cars were considerably damaged.

The engineer, the fireman, and the front brakeman of Extra 241 West and the engineer and the front brakeman of Extra 205 East were killed. The conductor and the fireman of Extra 241 West and the fireman of Extra 205 East were injured.

The weather was partly cloudy at the time of the accident, which occurred at 12:36 a. m.

The locomotive of each train was equipped with 24-RL brake equipment. A safety-control feature was provided on each locomotive.

Discussion

The train dispatcher said that as Extra 241 West was passing Buchanan, 5.3 miles east of Cardenas, he lined the route for that train to enter the siding at Cardenas at the east siding-switch. Several minutes later he lined the route for Extra 205 East to proceed from signal 32RA to signal 38RA. After the rear end of Extra 241 West passed the east siding-switch he restored the switch to normal position and lined the route for Extra 205 East to proceed eastward. The indicators on the traffic-control machine indicated that the system functioned properly. A short time later he observed that the OS section at the west end of the siding at Cardenas was occupied and that the indication of signal 36R had changed to Stop. He also observed that the indicator lights for the west siding-switch had become extinguished, indicating that the position of the switch did not correspond with the position of the lever. He assumed that the front end of Extra 205 East had passed signal 36R and that the train had stopped before the front end had passed entirely through the OS section. He was not aware that a collision had occurred until he was so informed by the conductor of Extra 241 West. According to the traingraph of the traffic-control machine, the route was lined for Extra 241 West to enter the siding at Cardenas at 12:14 a. m., and the front of the train passed signal 36L between 12:27 a. m. and 12:28 a. m. The route was lined for Extra 205 East to proceed from signal 32RA to signal 38RA at 12:27 a. m., and the front of the train passed signal 32RA at 12:32 a. m. The locomotive of Extra 241 West passed 36LB at 12:34 a. m. At this time the west siding-switch was in normal position, and signal 36LB should have indicated Stop. The electric power was cut off as a result of the accident at 12:36 a. m.

As Extra 241 West was approaching the point where the accident occurred the enginemen and the front brakeman were on the locomotive. The conductor and the flagman were in the caboose. The brakes of the train had been tested at Clovis and apparently had functioned properly when used en route. The conductor and the flagman said that the train approached Cardenas at a speed of approximately 20 miles per hour. The conductor saw the aspects of signals 7581 and 38L, but because of curvature of the track these employees did not see signals 7613 or 36LB before the front of the train passed them. After the front of the train passed, each signal displayed its most restrictive aspect. These employees said that the speed was uniform as the train entered the siding at the east siding-switch, moved through the siding, and entered the main track at the west siding-switch. They said that there was no brake application and no reduction in speed before the collision occurred.

As Extra 205 East was approaching the point where the accident occurred the enginemen and the front brakeman were maintaining a lookout ahead from the control compartment at the front of the locomotive. The conductor and the flagman were in the caboose. The brakes of the train had been tested at Vaughn. The fireman said that as the train approached signal 32RA, which indicated Proceed, he left the control compartment to patrol the units. He said that at this time the headlight was lighted and the speed was 52 miles per hour. None of the surviving employees observed the aspect of signal 7642. The fireman said that after he left the control compartment the engineer applied the dynamic brake, apparently to control the speed on the descending grade. As the train was closely approaching the point where the accident occurred the engineer made an emergency application of the brakes. The collision occurred almost immediately afterward and before the speed of the train had been reduced. The conductor and the flagman estimated that the speed was between 50 and 55 miles per hour at the time of the accident.

After the accident occurred it was found that the forward portion of the train of Extra 241 West had trailed through the west siding-switch at Cardenas while the switch was locked in

position for main-track movement. Inspection and tests of the signal system were begun by forces of the carrier's signal department about 7 hours after the accident occurred. No condition was found which would have caused an improper operation of the signal system. From the results of these tests it appears that signal 7613 indicated Proceed-preparing-to-stop-at-next-signal and signal 36LB indicated Stop at the time the locomotive of Extra 241 West passed them.

Apparently Extra 205 East passed signal 7642 before the locomotive of Extra 241 West passed signal 36LB. Signal 7642 would have been caused to display its most restrictive aspect after the locomotive of Extra 241 West passed signal 36LB. From the fact that the engineer of Extra 205 East did not make an emergency brake application until immediately before the collision occurred, it appears that signal 7642 indicated Proceed for the movement of his train.

After the accident occurred it was found that the employees on the locomotive of Extra 241 West were in the control compartment at the front of the locomotive at the time of the accident. The facts that none of these employees alighted and that no action was taken to reduce the speed before the collision occurred indicate that a lookout ahead was not being maintained in the vicinity of the point of accident. These employees were killed in the accident, and the conditions which existed on the locomotive immediately prior to the time of the accident are not known. The crew of this train reported for duty at Clovis at 7.15 p. m., July 4. Between Clovis and Cardenas the train was operated through five sidings, met five trains, and was passed by one train. The last point at which action was taken by the engineer in reducing the speed was at Yaso, 17.3 miles east of Cardenas. The train was stopped on the siding at this point and was passed by a west-bound passenger train. Extra 241 West then entered the main track at the west siding-switch at 11:37 p. m., 59 minutes before the accident occurred. The conductor and the flagman said they noticed nothing unusual in the handling of the train prior to the time of the accident.

Cause

This accident was caused by failure to operate the west-bound train in accordance with signal indications.

Dated at Washington, D. C., this sixteenth day of September, 1955.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD E. McCOY,
Secretary.