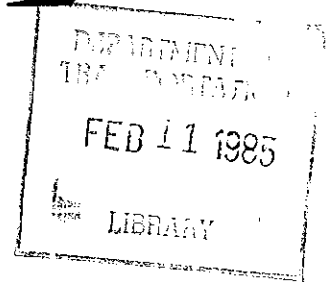


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railroad accident investigation reports



REPORT NO. 80-6
UNION PACIFIC RAILROAD COMPANY
HOYA, NEVADA
DECEMBER 4, 1978



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
Office of Safety

FEDERAL RAILROAD ADMINISTRATION

OFFICE OF SAFETY

RAILROAD ACCIDENT INVESTIGATION

ACCIDENT REPORT NO. 80-6

UNION PACIFIC RAILROAD COMPANY

HOYA, NEVADA

DECEMBER 4, 1978

Synopsis

On December 4, 1978, at approximately 9:00 p.m., an eastbound Union Pacific Railroad Company freight train collided with track machinery and occupied maintenance-of-way cars on an auxiliary track at Hoya, Nevada. At the time of the accident, weather conditions were dark and partly cloudy.

Casualties

In the collision and subsequent fire, a track machine operator of the tie gang was fatally injured. A material clerk, rodman, two laborers and power-tool operator were also injured. There were no injuries to train crew members.

Cause

The accident was caused by the improper alignment of a auxiliary track switch.

Location and Method of Operation

The accident occurred on that portion of the railroad extending from Las Vegas, Nevada, to Milford, Utah, a distance of 242.5 miles. This is a single track line over which trains are operated by signal indications of a traffic control system controlled by the train dispatcher at Salt Lake City, Utah. Sidings are strategically located for the passing of trains. Train movements into and out of the sidings are governed by signal indications.

The collision occurred at Hoya, Nevada, approximately 1,880 feet east of the west end of the siding.

Track

In the accident area, there is a main track and siding which parallel at 13-foot track centers. The west switch of a 1,369 foot auxiliary track is positioned 1,325 feet east of the west end of the siding. A split-point derail is located at the clearance point on the auxiliary track 255 feet east of the west point of the switch.

From the west there are in succession, a tangent of 6,100 feet, a 1°0" curve to the right of 2,200 feet, and a tangent 2,100 feet to the point of accident and for 6,600 feet beyond. The average grade in the mile approaching the point of collision is 0.03% ascending. The grade is 0.66% ascending at the point of collision.

Sight Distance

Because of track curvature and the ascending grade, the maximum range of vision at the point of the accident is restricted to 4,000 feet for an approaching eastbound train on the main track.

Maximum Authorized Speed

The maximum authorized speed for main line freight trains in the accident area is 50 m.p.h. The authorized speed for train movement on the siding is restricted speed.

Applicable Rules

Rule 240N Aspect: Lunar light on any signal.
 Name: Restricting.
 Indication: Proceed on route indicated at
 restricted speed.

Definition of
 Restricted Speed

Proceed prepared to stop short of train, engine, obstruction, or switch not properly lined, and be on lookout for broken rail or anything that may affect movement of train or engine, but a speed of 20 MPH must not be exceeded.

(Union Pacific Railroad Company
 Operating Rules)

Rule 762

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Those authorized to handle switches must see that they are properly lined for route to be used. It must be seen that switch point is closed against stock rail and that indication of target or lamp corresponds with position of switch.

Hand operated switches must be left in proper position.

(Union Pacific Railroad Company
 Maintenance of Way and Signal Rules)

Circumstances Prior to the Accident

Extra 8034 East

Extra 8034 East consisted of one SD40-2 locomotive unit, two DD40X locomotive units, 52 cars and a caboose. After receiving the proper air brake test, the train left Las Vegas, Nevada, at 7:13 p.m. on the day of the accident. The crew was called on duty at 5:20 p.m., after having completed the required off-duty period.

The train proceeded eastward and approached the point of collision at approximately 8:59 p.m.

The engineer and the front brakeman were in the cab at the front of the first locomotive unit. The conductor and the flagman were in the caboose.

Tie Gang No. 4812

The carrier system tie replacement gang consisted of 32 employees who were using 17 maintenance-of-way cars and 16 pieces of on-track machinery. The maintenance-of-way cars were set-off on the auxiliary track, parallel to and north of the siding, with switches on both ends.

The gang and the maintenance-of-way cars had moved to Hoya on December 1, 1978. The accident occurred on the tie gang's first work day in the Hoya area. The tie gang worked their regularly assigned work period from 8:00 a.m. to 5:00 p.m. At about 5:00 p.m., the track machinery was secured for the night by placing the machines on the auxiliary track at each end of the maintenance-of-way cars. There was not adequate room to place the machinery behind the derail, and the machinery was extended westward on the auxiliary track to a point which allowed just enough physical clearance for a train to pass on the siding. The machines obscured the view of the derail target. Several moves were made through the west auxiliary track switch as the machines were maneuvered into the auxiliary track. The acting assistant foreman was operating the west switch. The tie gang foreman and the roadmaster were assisting with the operation by dropping couplers on some of the machines to obtain better track clearance. At approximately 5:15 p.m., the tie gang workmen retired to the maintenance-of-way cars outfitted as living quarters.

At the time of the accident, the first maintenance-of-way car on the west end, No. 905998, was occupied by the material clerk and the rodman. The second maintenance-of-way car from the west, No. 906410, was occupied by a track machine operator, power-tool operator, and two gang laborers. The remaining 26 gang employees were in the other maintenance-of-way cars.

The Accident

Extra 8034 East

As the train approached the west end of the Hoya siding, the eastbound controlled wayside block signal displayed a red over lunar aspect. This indicated that the train was lined into the siding and could proceed at restricted speed. The train speed was reduced to about 22 m.p.h. as the train entered the siding. The front brakeman and the engineer noticed that the auxiliary set-out track was occupied with cars and machinery. Approximately 900 feet west of the set-out track switch, the front end crew observed a red target which they assumed was the derail target.

At about 400 feet west of the point of collision, the front brakeman noticed the improper alignment of the auxiliary track switch, and shouted a warning to the engineer. The engineer immediately placed the train brake controls into the emergency position. The train then entered the auxiliary set-out track and collided with the track machinery and occupied maintenance-of-way cars at a speed of 21 m.p.h.

Damages

Tie Gang No. 4812

As the train collided with the track machinery, many of the machines were propelled to either side. Some of the machines piled up in front of the lead locomotive unit and burst into flames. The impact lifted the first two occupied maintenance-of-way cars off the track and overturned them. In the second maintenance-of-way car, a burning fuel oil stove overturned and spread fire and smoke throughout the car.

Fourteen track machines and two maintenance-of-way cars were destroyed by the collision and fire. The remaining maintenance-of-way cars and track machinery were not seriously damaged.

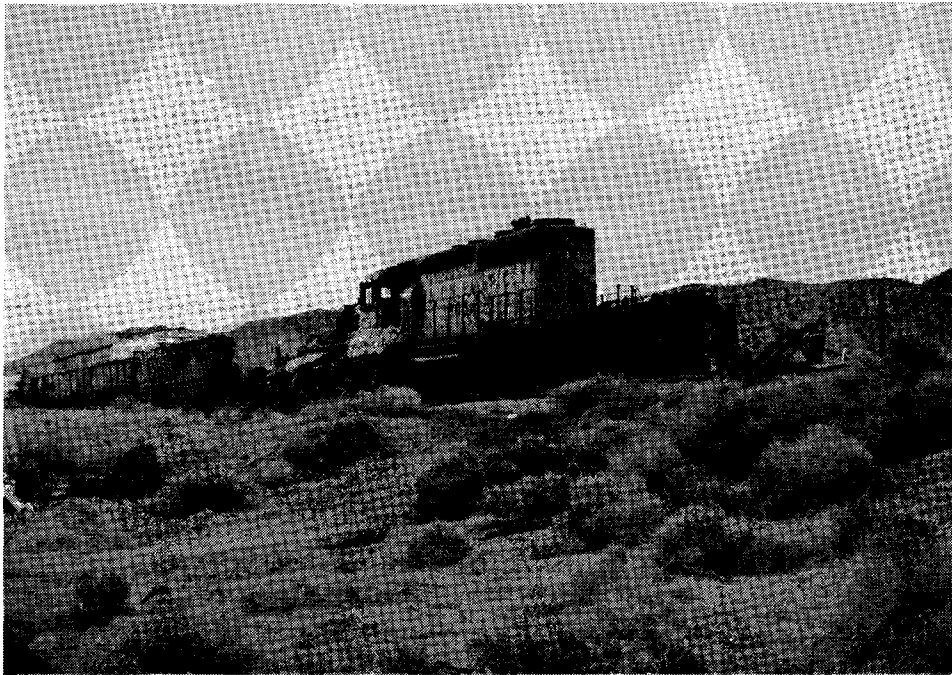
Extra 8034 East

The lead locomotive unit, No. 8034, stopped 220 feet east of the point of collision. The locomotive units and all the cars remained on the track. The lead locomotive unit sustained minor damage.

The estimated cost of damages to the track structure, track machinery, maintenance-of-way cars and train equipment is \$648,250.



View of the accident site from the East



View of the accident site from the South

Post-Accident Examination and Tests

The hand-operated switch connecting the west end of the auxiliary set-out track to the siding was lined for movement into the auxiliary track and padlocked.

The auxiliary track switches controlling movement to the siding are not equipped with circuit controllers. The turn-out sections of the switches are also not bonded. Therefore, trains, engines or cars, or in this case track machinery, can occupy the turn-out section of the auxiliary track switches, or the switches could be misaligned, with no effect on the Restricted Speed aspect displayed by the block signal governing movement into the siding.

The misaligned switch target did not have a good reflective quality. The target had 19 old scars from rifle bullets, and the paint was oxidized. The target could not be clearly distinguished at night beyond a distance of 700 feet.

Train tests, conducted by the carrier with FRA observation, determined that a train consist similar to Extra 8034 East, operating in a normal manner and traveling at maximum restricted speed, could not have stopped short of a misaligned switch.

A speed recorder on the lead locomotive unit indicated that the train approached the accident area at 22 m.p.h., and was traveling at 21 m.p.h. when the collision occurred.

Findings

1. The crew of Extra 8034 East did not operate the train at restricted speed as required by carrier rule.
2. The track machinery extended into the turn-out section of the west auxiliary track switch beyond the normal clearance point, obscuring the derail switch target.
3. Responsible carrier personnel failed to check the west auxiliary set-out track switch to ensure that the switch was left properly lined.
4. The front end crew members of Extra 8034 East did not correctly identify the red switch target. By assuming that this target was that of the derail, the front end crew members were not prepared to stop the train before it reached the misaligned switch.

Dated at Washington, D. C., this
9th Day of June 1980
by the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board