

**RAILROAD ACCIDENT INVESTIGATION**

Report No. 4107

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**NORFOLK AND WESTERN RAILWAY COMPANY**

**NEWELL, ILL.**

**JANUARY 13, 1967**

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**DEPARTMENT OF TRANSPORTATION**

**Federal Railroad Administration**

**Washington**

*SUMMARY*

DATE.	January 13, 1967	
RAILROAD:	Norfolk and Western	
LOCATION.	Newell, Ill.	
KIND OF ACCIDENT:	Collision	
EQUIPMENT INVOLVED	Cut of cars	Freight train
TRAIN NUMBER.		Extra 3482 West
LOCOMOTIVE NUMBERS		Diesel-electric units 3482, 694, 544
CONSISTS:	5 cars, caboose	104 cars, caboose
SPEEDS.	Standing	37 m.p.h.
OPERATION.	Signal indications; yard-limit rules	
TRACKS	Double; tangent; 0.38 percent descending grade westward	
WEATHER.	Partly cloudy	
TIME	7:05 a.m.; dawn	
CASUALTIES	1 killed; 1 injured	
CAUSE:	Failure to operate a switching move- ment as required by rule governing crossover movements from one main track to another in automatic block- signal territory, and failure properly to control the speed of a train mov- ing within yard limits	
RECOMMENDATION	That the Norfolk and Western Railway Company immediately take the action necessary to enforce compliance with its operating rules, the Power Brake Law of 1958, and regulations governing the operation of elec- trically locked switches.	

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION  
RAILROAD SAFETY BOARD

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NORFOLK AND WESTERN RAILWAY COMPANY

JANUARY 13, 1967

SYNOPSIS

*On January 13, 1967, a Norfolk and Western Railway freight train collided with a cut of freight cars on the westward main track at Newell, Ill., resulting in the death of one train-service employee and in the injury of another.*

*The accident was caused by failure to operate a switching movement as required by rule governing crossover movements from one main track to another in automatic block-signal territory, and failure properly to control the speed of a train moving within yard limits*

LOCATION AND METHOD OF OPERATION

The accident occurred on that part of the Decatur Division extending between Tilton, Ill., and Peru, Ind., a distance of 101.3 miles. In the accident area this is a double-track line over which trains moving with the current of traffic operate by signal indications of an automatic block-signal system and by yard-limit rules. Newell, Ill., is 5.0 miles east of Tilton. Yard limits extend between Tilton and a yard-limit sign 2,869 feet east of the Newell station.

The collision occurred on the westward main track, within yard limits, 305 feet west of the Newell station.

An auxiliary track designated as the Hyster spur track diverges southward from the main track at Newell, as indicated in the sketch

appended to this report. The spur-track switch is trailing point for eastbound movements on the eastward main track and is 1,367 feet west of the Newell station. The switch is provided with electric locking.

A crossover which is trailing point for movements with the current of traffic connects the main tracks east of the Hyster spur-track switch. The west crossover-switch is 290 feet west of the Newell station. Another trailing-point crossover connects the main tracks at Newell. It is 1,813 feet west of the Hyster spur-track switch.

Eldan, Ill., is 2.6 miles east of Newell. Eastward from Eldan, the railroad is a single-track line over which trains operate by signal indications of a traffic control system. The switch connecting the east end of the double-track line to the single-track line is power operated and is controlled by the train dispatcher. A controlled signal, hereinafter referred to as the Eldan home signal, governs westbound movements from the single-track line to the westward main track of the double-track line. Its block extends westward to automatic signal 2988. The latter signal governs westbound movements on the westward main track and is 1,112 feet west of the collision point. It is approach lighted, becoming illuminated when the block of the Eldan home signal is occupied or when a switch of the crossover near the Newell station is moved to reverse position.

Details concerning the main tracks, signals, carrier's operating rules, timetable special instructions, train involved, damages, and other factors are set forth in the appendix.

#### DESCRIPTION AND DISCUSSION

At 11:30 p.m. the day before the accident, a yard-service crew consisting of an engineer, conductor and two brakemen went on duty at Tilton and began to perform switching operations with road-switcher type diesel-electric unit 2419. At 4:05 a.m., this yard locomotive, moving in reverse, left Tilton with four cars and a caboose and proceeded on the eastward main track for further switching operations on a roundtrip to Newell. Before leaving Tilton, the conductor received a verbal line-up of train movements. He said the line-up included the information that Extra 3482 West, a westbound freight train, was expected to pass Newell about 7:00 a.m. He further said he informed the engineer about the line-up. The engineer, however, said he received no line-up information from any source before the accident.

After arriving at Newell, the yard locomotive entered the Hyster spur track with a few cars and the caboose for switching at industrial plants, and the spur-track switch was restored to normal position. When the required switching was completed, the yard locomotive with the caboose and five cars, in that order, returned on the Hyster spur track toward the eastward main track and, shortly before 7:00 a.m., stopped clear of the eastward main track. At this time, Extra 3690 East, an eastbound 93-car freight train, was passing the spur-track switch at slow speed, while approaching the end of double track at Eldan. When the caboose of the train passed, the front brakeman of the yard locomotive removed the padlock of the spur-track switch stand from its keeper, automatically actuating the electric-lock release mechanism which was set for 5 minutes 30 seconds. Immediately afterward, he operated the electric lock emergency-release feature, which was not sealed as required, and thereby released the electric lock. He then moved the spur-track switch to reverse position. At this time, the yard locomotive with the caboose and five cars entered the eastward main track and began to follow Extra 3690 East. The front brakeman restored the spur-track switch to normal position and remained in the vicinity of the switch.

After following Extra 3690 East to the crossover near the Newell station, the yard movement stopped on the eastward main track with the rear end a few feet east of the east crossover-switch. The conductor and rear brakeman then moved both crossover switches to reverse position without making any effort to determine the whereabouts of Extra 3482 West, and without noticing whether signal 2988 was illuminated and thereby indicating the approach of a westbound train in the block of the Eldan home signal. Soon afterward, evidently without waiting three minutes as required by rule, the yard locomotive pushed the caboose and five cars through the crossover and stopped on the westward main track, in the block of the Eldan home signal, with the east end of the caboose 15 feet west of the west crossover-switch. The rear brakeman detached the yard locomotive from the caboose, and the locomotive returned through the crossover to the eastward main track. It then proceeded westward toward the crossover located west of the Hyster spur-track switch, to re-enter the westward main track where it would be coupled to the west end of the cut of five cars and caboose. The front brakeman boarded the locomotive as it moved in the vicinity of the Hyster

spur-track switch. At that time, the engineer observed the headlight of Extra 3482 West approaching Newell from the east. This did not cause him concern, however, as he thought the approaching train would stop short of the cars standing on the westward main track. The yard locomotive continued on the eastward main track and stopped at the crossover west of the Hyster spur-track switch. Soon afterward, while it was at this crossover, Extra 3482 West struck the caboose coupled to the east end of the cut of five cars on the westward main track. While the yard locomotive was operating in the Newell area, the headlight at the east end remained lighted brightly.

According to statements of the rear brakeman of the yard crew, he restored the west switch of the crossover near the Newell station to normal position after detaching the yard locomotive from the caboose. He then boarded the caboose and went inside. The conductor walked toward the caboose from the east crossover-switch as the yard locomotive proceeded westward to the other crossover. According to his statements, he looked eastward as he neared the caboose and first saw Extra 3482 West closely approaching on the westward main track. He said the headlight of Extra 3482 West was extinguished at this time and said he thought at first that the train was stopped. He said he then realized the train was moving and began running toward it while displaying stop signals with a lighted electric lantern. He stated that he saw the headlight of Extra 3482 West flash on and off as he ran eastward and he assumed from this that the engineer had seen his stop signals. However, he realized soon afterward that the approaching train was not going to stop short of a collision and he called a warning to his rear brakeman, who promptly alighted from the caboose. A few moments later, at approximately 7:05 a.m., the caboose and cars which were standing on the westward main track, were struck by Extra 3482 West, 305 feet west of the Newell station.

The fireman of Extra 3482 West was killed, and the engineer of that train was injured.

Extra 3482 West, consisting of 3 diesel-electric units, 104 cars and a caboose, left Peru at 3:45 a.m. About 3 hours 10 minutes later, while proceeding westward on the single-track line, it moved onto an ascending grade in approach to the Eldan home signal and its speed was reduced to 34 miles per hour, as indicated by the speed-recording tape. As the train approached the Eldan home signal, the engineer and fireman saw the headlight of Extra 3690

East approaching Eldan on the eastward main track of the double-track line. Both engineers said they dimmed their respective headlights at this time and left them on dim until the locomotives of the trains passed on the double-track line. Extra 3482 West increased speed as it neared the summit of the ascending grade and was moving at 37 miles per hour when the locomotive passed the Eldan home signal and entered the westward main track of the double-track line. The engineer said that the Eldan home signal displayed a Clear aspect for his train and after the locomotive passed this signal, he saw that signal 2988, the next westward signal, was displaying an Approach aspect.

Shortly after it entered the westward main track, Extra 3482 West moved onto a descending grade and its speed began to increase further. It then neared a rail-highway grade crossing located 1.5 miles east of the collision point. The locomotives of Extra 3482 West and Extra 3690 East passed in the immediate vicinity of the crossing. The engineer of Extra 3482 West said he then switched his headlight to bright and, at the same time, saw the headlight of another locomotive on the eastward main track to the rear of Extra 3690 East. This headlight was that of the yard locomotive, and at this time the yard locomotive was apparently on the eastward main track in the vicinity of the crossover west of the Hyster spur-track switch. However, the engineer assumed the headlight was that on an eastbound train closely following Extra 3690 East on the eastward main track.

According to the statements of the engineer of Extra 3482 West, he dimmed his headlight several times while his locomotive was passing Extra 3690 East as a signal for the opposing headlight to be dimmed, but received no response. In the meantime, the front of Extra 3482 West passed the yard-limit sign located 2,869 feet east of the Newell station. The engineer said that the glare of the opposing headlight restricted his range of vision, and that as his locomotive was about to pass the caboose of Extra 3690 East he again dimmed his headlight for the benefit of the crew members in the caboose. Soon afterward, as Extra 3482 West neared the Newell station at 47 miles per hour, the locomotive of this train passed the caboose of Extra 3690 East, and the engineer again changed his headlight beam to bright for maximum visibility. At this time, he saw the caboose and five cars occupying the westward main track a short distance ahead. He immediately applied the train brakes in emergency. Shortly

afterward, when its speed had been reduced to 37 miles per hour, as indicated by the speed-recording tape, Extra 3482 West struck the caboose at the east end of the five cars occupying the westward main track. The engineer stated that he did not see any one in the vicinity of the caboose, or see any stop signals being displayed, before the collision.

The front brakeman and swing brakeman were in the control compartment of the second diesel-electric unit as Extra 3482 West approached Newell, and the conductor and flagman were in the caboose. They did not observe the aspect displayed by the Eldan home signal and were unaware of anything being wrong before the train brakes were applied in emergency.

The conductor of Extra 3690 East stated that after his caboose passed the Hyster spur-track switch, he looked back and saw the yard movement involved closely following on the eastward main track. He said that as the rear of his train passed the crossover near the Newell station, he noticed signal 2988 was displaying an Approach aspect, indicating that Extra 3482 West had already entered the block of the Eldan home signal, before the yard locomotive pushed the caboose and five cars through the crossover to the westward main track.

According to the train dispatcher's statements, as Extra 3482 West approached Newell he established the route for that train to proceed from the single-track line to the westward main track of the double-track line, and caused the Eldan home signal to display a Clear aspect.

Tests after the accident revealed that the signals involved functioned properly.

Examination of the equipment of Extra 3482 West after the accident disclosed that the air brake of the 36th car was inoperative and that the air brake of the 68th car was cut out. The train apparently departed from its initial terminal with the brakes of these cars inoperative, in violation of provisions of the Power Brake Law of 1958.

The front brakeman of the yard crew entered the service of the carrier on November 28, 1966. He stated that other yard service employees had instructed him how to operate the emergency release feature of the electrically-locked Hyster spur-track switch, and that because of these instructions he always operated the emergency release feature on the occasions when he operated the Hyster spur-track switch. Examination of the Hyster spur-track switch on January 20 and February 2, 1967, disclosed that the



emergency release feature of the electric lock was not sealed. According to a signal supervisor of the carrier, electrically locked switches in the Newell area are often found with the seals of the emergency release features broken. He stated that the broken seals are replaced during monthly signal inspections, indicating that the emergency release features are operated under non-emergency conditions and remain unsealed for various periods of time. Under the foregoing circumstances, it is evident that the carrier has not maintained seals on emergency release features of electrically locked switches as required by our Rules, Standards and Instructions for Signal Systems (Ex Parte No. 171).

#### FINDINGS

Shortly after Extra 3482 West entered the block of the Eldan home signal, which displayed a Clear aspect, the yard locomotive pushed the caboose and five cars through the crossover and onto the westward main track in the block of the Eldan home signal without waiting three minutes as required by rule. Had the yard locomotive waited as required, it is probable that one of the crew members would have seen Extra 3482 West approaching before expiration of the three-minute period and would have taken appropriate action to prevent the yard locomotive from placing the caboose and five cars on the westward main track in front of the approaching train. Thus, the accident would have been avoided. Although the Eldan home signal displayed a Clear aspect for Extra 3482 West, that train was required to be operated in such manner that it could be stopped within range of vision after the locomotive passed the yard-limit sign located 2,869 feet east of the Newell station. It is evident that Extra 3482 West was not operated as required after entering the yard limits involved, resulting in the accident.

Appropriate action has been initiated with respect to the violations of the Power Brake Law and our Rules, Standards and Instructions for Signal Systems (Ex Parte No. 171) as disclosed in this case.

#### CAUSE

This accident was caused by failure to operate a switching movement as required by rule governing crossover movements from one main track to another in automatic block-signal territory,

and failure properly to control the speed of a train moving within yard limits.

#### RECOMMENDATION

It is recommended that the Norfolk and Western Railway Company immediately take the action necessary to enforce compliance with its operating rules, the Power Brake Law of 1958, and regulations governing the operation of electrically locked switches.

*Dated at Washington, D C , this 19th  
day of May 1967*

*By the Federal Railroad Administration,  
Railroad Safety Board*

Bette E Holt  
*Acting Executive Secretary*  
Federal Railroad Administration

## APPENDIX

*Tracks*

The main tracks are tangent a considerable distance east and west of the accident point.

Westward on the main tracks from the summit near Eldan, the grade is 0.11 percent descending to a point 15 feet east of the collision point, and is 0.38 percent descending throughout a considerable distance westward.

*Signals*

The Eldan home signal and signal 2988 are of the color-light type and are approach lighted. The aspects applicable to this investigation and the corresponding indications and names are as follows:

<i>Signal</i>	<i>Aspect</i>	<i>Indication</i>	<i>Name</i>
Eldan home signal	Green-over-red Red-over-red	Proceed Stop, ***	Clear Stop
2988	Yellow	Proceed preparing to stop at next signal; ***	Approach

The circuits are so arranged that when the route has been established by the train dispatcher for a westbound train on the single-track line to proceed on the westward main track of the double-track line, and the blocks of signal 2988 and the Eldan home signal are clear and all main track switches associated with those blocks are in normal position, the Eldan home signal displays a Clear aspect for the westbound train and signal 2988 displays an Approach aspect when the train enters the block of the Eldan home signal. If the block of the Eldan home signal is occupied or one of the switches of the crossover near the Newell station is in reverse position, the Eldan home signal displays a Stop aspect.

*Carrier's Operating Rules*

93. Within yard limits the main track may be used, protecting against first class trains.

Second and third class and extra trains (including engines and passenger extras) must move within yard limits prepared to stop unless the main track is seen or known to be clear.

D-93. \*\*\*

NOTE. - Interpretation placed on "seen or known to be clear" is that trains or engines affected will be operated within yard limits to stop within range of vision.

## AUTOMATIC BLOCK SYSTEM RULES

513. Before a train or engine enters on or fouls a main track, or crosses from one main track to another, at hand operated switches, the trainman will operate the switch and wait three minutes at the switch before making engine or train movement, \*\*\*

*Timetable Special Instructions*

## 10. SIGNAL RULES DECATUR DIVISION

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## (b) Operation of Electrically Locked Switches in A,B,S. Territory

Hand throw switches equipped with electric switch locks must be operated as follows:

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B - Train or engine desiring to leave switch must stop clear of track to be entered and trainman must proceed as follows:

1. Remove padlock, wait until electric lock is released and then switch can be handled in regular manner.

\*\*\*

C - When electric lock is out of order, inform the dispatcher and secure authority to break seal. Remove padlock and wait 5 minutes, then lift cover, insert switch key and turn to release electric lock, then switch may be lined and movement made.

When seal has been broken report must be made to dispatcher.

### *Train Involved*

Extra 3482 West consisted of diesel-electric units 3482, 694 and 544, coupled in multiple-unit control, 104 cars and a caboose. The first and third diesel-electric units were of the road-switcher type and the second unit was of the car-body type. The train brakes had been tested and no exceptions had been taken. However, examination after the accident revealed that the air brake of the 36th car was inoperative and that the air brake of the 68th car was cut out.

### *Damages*

The caboose of the yard movement and the first 3 cars west of the caboose were derailed. The caboose and the car which was coupled to it overturned and stopped on opposite sides of the main tracks. The remaining four cars were pushed westward by Extra 3482 West and stopped with the east end of the easternmost car against the front of the train locomotive. The caboose was destroyed and the three derailed cars were slightly damaged.

Extra 3482 West stopped with the front of the locomotive 480 feet west of the collision point. The three diesel-electric units and the first five cars were derailed. They stopped upright on and in line with the westward main-track structure. The underframe at the east end of the yard caboose overrode the underframe and platform at the west end of the first diesel-electric unit of Extra 3482 West and demolished the short hood compartment and control compartment of the unit. The first diesel-electric unit was heavily damaged, the other two units were considerably damaged, and the five derailed cars were slightly damaged.

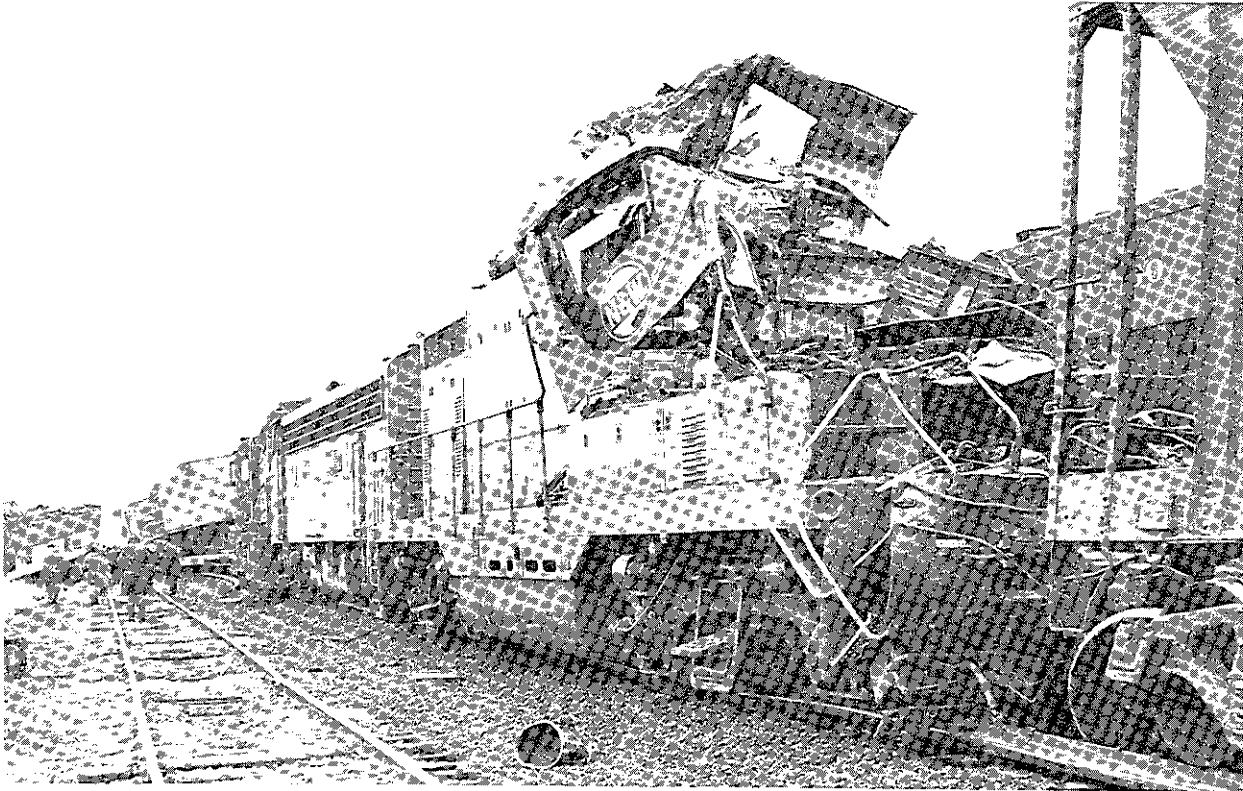
### *Other Factors*

The accident occurred about 7:05 a.m., in partly cloudy weather.

The maximum authorized speed for freight trains in the accident area is 60 miles per hour.

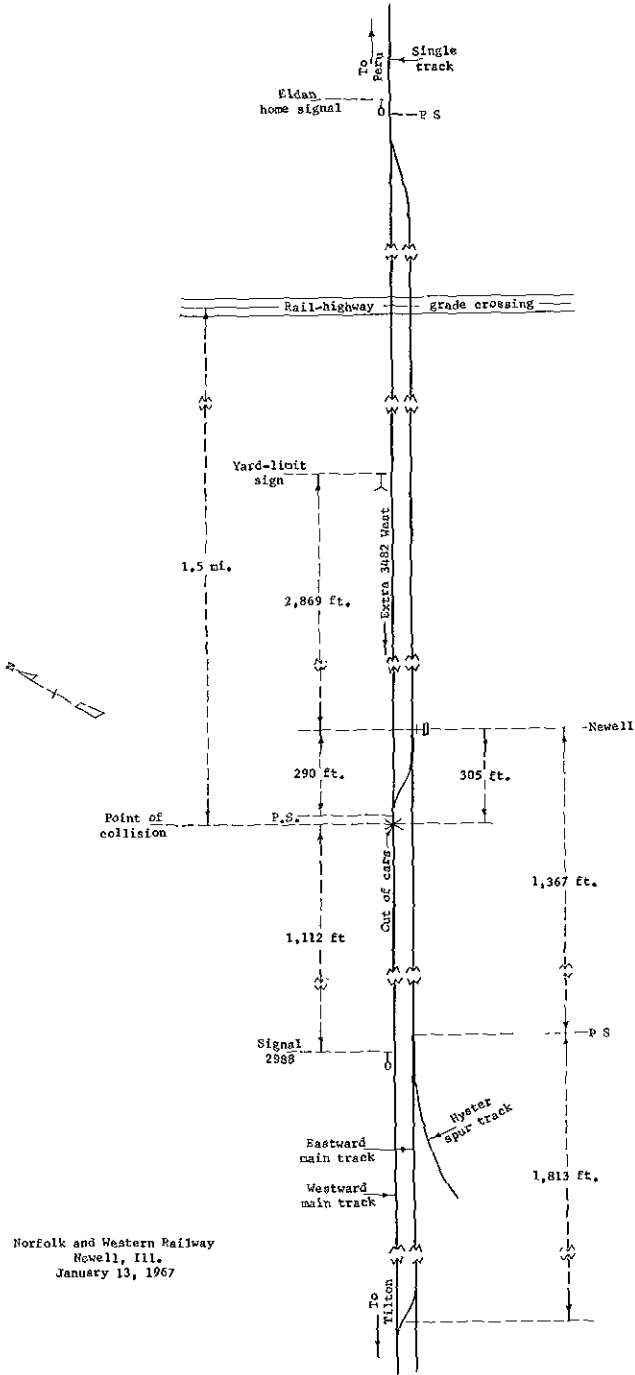
The members of the yard-service crew had been on duty 7 hours 35 minutes at the time of the accident. The engineer, conductor and rear brakeman were previously off duty 16 hours, and the front brakeman had been off duty 8 hours.

The engineer and fireman of Extra 3482 West had been on duty 5 hours 5 minutes at the time of the accident, after having been off duty 38 hours 15 minutes. The conductor, front brakeman, swing brakeman, and flagman had been on duty 4 hours 45 minutes at the time of the accident after having been off duty 18 hours, 18 hours, 14 hours and 24 hours, respectively.



Front end of locomotive of Extra 3482 West. Overturned caboose of yard movement shown at extreme left.

- Peru, Ind.  
93.7 mi.
- Eldan, Ill.  
2.6 mi.
- × Newell  
(Point of collision)
- Tilton, Ill.  
5.0 mi.



Norfolk and Western Railway  
Newell, Ill.  
January 13, 1967