RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 4147

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NORFOLK AND WESTERN RAILWAY COMPANY

ABINGDON, VA.

JULY 17, 1968

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DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

WASHINGTON, D.C. 20591

## Summary

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| DATE: | July 17, 1968 | |
| RAILROAD: | Norfolk and Western | |
| LOCATION: | Abingdon, Va | |
| KIND OF ACCIDENT: | Collision | |
| EQUIPMENT INVOLVED: | Freight train | Motortruck |
| TRAIN NUMBER: | Extra 1550 East | |
| LOCOMOTIVE NUMBERS: | Diesel-electric units 1550, 382, 820, 1531 | |
| CONSISTS: | 60 cars, caboose | Tractor, semi-trailer |
| SPEEDS: | 42 m p h | 2-3 m p h |
| OPERATION: | Signal indications | |
| TRACK: | Single; 1°00' curve; 1.14 percent ascending grade eastward | |
| HIGHWAY: | Tangent; slightly ascending grade southward; crosses track at angle of 33° | |
| WEATHER: | Clear | |
| TIME: | 3:35 p m | |
| CASUALTIES: | 2 killed; 11 injured | |
| CAUSE: | Failure of the truck driver to stop his vehicle short of the rail-highway grade crossing and to remain standing until the train had passed, resulting in the train striking the rear of the truck | |

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

RAILROAD SAFETY BOARD

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## Synopsis

On July 17, 1968, a Norfolk and Western Railway freight train struck a motortruck loaded with gasoline at a rail-highway grade crossing in Abingdon, Va A train brakeman and the truck driver were killed The train engineer and fireman, and nine occupants of automobiles approaching and/or stopped near the crossing, were injured

The accident was caused by failure of the truck driver to stop his vehicle short of the rail-highway grade crossing and to remain standing until the train had passed, resulting in the train striking the rear of the truck Significant contributing factors were (a) restricted sight distances between trains and motor vehicles approaching this crossing (b) omission of the customary sounding of the locomotive whistle to warn motorists of the approaching train to comply with a municipal ordinance and, (c) the truck driver's apparent concentration on a difficult 120-degree turn with a long and heavy rig immediately prior to entering the crossing

## Location of Accident and Method of Operation

The accident occurred on that part of the Radford Division extending between Bristol and Glade Spring, Va , a distance of 28 1 miles This is a single-track line over which trains operate by signal indications of a traffic control system At Abingdon, 14.8 miles east of Bristol, the main track is crossed at grade by a short city thoroughfare, 2,333 feet west of the station. The intersection is known as Haney's Crossing For clarity purposes, the short city thoroughfare involved is hereinafter referred to as Haney's Road

The collision occurred on the main track at Abingdon, where the railroad is crossed at grade by Haney's Road

## Track

From the west on the main track there are, successively, a long tangent, and a 1°00' curve to the left 625 feet to Haney's Road and a short distance eastward The average grade for eastbound trains in this area is 1 14 percent ascending

## Haney's Road and Crossing

West Main Street runs along the north side of the railroad in the accident area, as shown in the sketch appended to this report A street runs along the south side of the railroad. It is designated as Colonial Road west of, and as Maple Avenue east of, Haney's Road. The latter road extends north and south over the railroad track and connects West Main Street to Colonial Road and Maple Avenue It is 110 feet long and crosses the track 65 feet south of its intersection with West Main Street and 45 feet north of its intersection with Colonial Road and Maple Avenue It is tangent and is surfaced with bituminous material to widths varying between 35 and 65 feet

Haney's Road crosses the track at an angle of 60 degrees It is 37 feet 2 inches wide at the crossing Planking is along both sides of each rail at the crossing The remaining area of the crossing is surfaced with bituminous material to the level of the tops of the rails

## Crossing Protection

Two automatic railroad-crossing warning signals of the flashing red-light type protect the crossing. One signal is adjacent to the west side of Haney's Road, 18 feet 4 inches north of the track centerline. The mast of this signal is approximately 12 feet high Attached near the top of the mast is a crossbuck bearing the words RAILROAD CROSSING in black letters on a white background About two feet below the crossbuck, two pairs of red lamps are attached to the mast back-to-back. They face northward and southward Immediately underneath, two additional pairs of red lamps are

attached to the mast back-to-back about eight feet above the surface of Haney's Road One pair faces northwestward, facing highway traffic moving eastward on West Main Street in approach to Haney's Road The other faces southeastward, toward highway traffic turning northward onto Haney's Road from Maple Avenue About two feet below these lamps, a sign reading STOP ON RED SIGNAL is fixed to the mast

The other crossing signal is similar to the one described above, except that three pairs of red lamps are attached to its mast This signal is in the southeast angle of the crossing One of its pairs of red lamps faces highway vehicles moving southward on Haney's Road in approach to the railroad crossing

The crossing signal circuits are so arranged that when an eastbound train reaches a point 2,220 feet west of the crossing, the red lamps of the signals start to flash and continue flashing until the train moves over the crossing

A railroad sign, reading NO WHISTLING, is posted on the south side of the main track, 4,045 feet west of the crossing

## Traffic at Crossing

During the 30-day period preceding the accident, the average daily railroad movement over the crossing was 7 8 trains.

A traffic count revealed that in the 24-hour period beginning 12:01 a m , July 24, 1968, 1,702 automobiles and 394 trucks moved over the crossing No buses traversed the crossing during this period

## Time and Weather

The accident occurred at 3:35 p m , under clear weather conditions

## Maximum Authorized Train Speed

The railroad carrier's maximum authorized speed for freight trains in the Abindgon area is 50 miles per hour A section of the Code of Abingdon, however, restricts the speed of all trains moving through Abingdon to 25 miles per hour

## Crossing Environment

In the accident area, several one-story houses are along the south side of Colonial Road and Maple Avenue, at a distance of about 100 feet from the railroad A gasoline service station is on the south side of West Main Street, about 310 feet east of Haney's Road and 40 feet north of the track

Two billboards of considerable size are posted adjacent to the south side of West Main Street, about 285 and 310 feet west of the intersection of that street and Haney's Road Farther westward, small structures and trees are along the south side of West Main Street, in the area between the street and the railroad

As a highway vehicle moving in either direction on West Main Street turns southward onto Haney's Road, the driver's view of the main track westward is restricted to about 600 feet because of track curvature, two billboards, and the structures, trees and shrubbery between West Main Street and the railroad The driver's view westward along the track increases as the vehicle nears the automatic crossing signal for southbound traffic As the vehicle passes the signal, the driver may see any eastbound train approaching the crossing within approximately 1,000 feet

## Circumstances Prior to Accident

### Train Involved

Extra 1550 East, an eastbound freight train consisting of 4 road-switcher type diesel-electric units, 60 cars and a caboose, left Bristol at 3:00 p m the day of the accident, after its brakes were tested and found to be functioning properly Approximately 35 minutes later, it approached Abingdon The engineer was at the controls on the south side of the control compartment at the west, or rear, end of the first diesel-electric unit and the fireman was seated on the north side of that compartment The front brakeman was in the control compartment at the east, or front, end of the second locomotive unit The conductor and flagman were in the caboose According to both enginemen, the headlight was lighted

### Motortruck Involved

This vehicle consisted of a tractor and a tank-type semitrailer loaded with 8,500 gallons of gasoline After receiving its cargo at Warcer, Tenn , it left that point about 12:30 p m , the day of the accident Approximately 3 hours later, it entered the Abingdon city limits and proceeded eastward on West Main Street It then turned southward onto Haney's Road and neared the crossing where the accident occurred.

## The Accident

### Extra 1550 East

The train was moving at 45 m p h , as indicated by the speed-recording tape, when the front end passed the NO WHISTLING sign posted 4,045 feet west of the crossing. At that time, according to his statements, the fireman turned on the automatic bell of the locomotive The horn of the locomotive was not sounded, due to the NO WHISTLING sign and the enginemen being aware of a city code which

prohibits the sounding of train whistles in Abindgon As the train entered Abingdon and approached Haney's Road, the engineer took no action to reduce the speed to 25 m p h or less as required by another Abingdon code, because he was unaware of the existence of that code

The train decreased speed on the ascending grade and was moving at 43 m p h as it neared the 1000' curve to the left on which the accident occurred About that time, Haney's Crossing came into the fireman's view and he saw the gasoline truck approaching the crossing from the north on Haney's Road The engineer was unable to see the truck due to track curvature and his position on the south, or right, side of the control compartment behind the engine hood

The fireman statements indicate that he saw the truck reduce speed momentarily as it neared the track, and that he saw it enter the crossing in front of the train without stopping The fireman realized a collision was imminent and called a warning to the engineer, who applied the train brakes in emergency and began to sound the locomotive horn A few seconds later, before its speed could be reduced materially, the train entered the crossing at 42 m p h and struck the truck near the rear end of its semitrailer

Highway Vehicle

At the time of the accident a station wagon and two automobiles were stopped at the intersection of Haney Road with Maple Avenue and Colonial Road At the same time, one automobile and two pickup trucks were moving westward on Maple Avenue in approach to the intersection Some of the occupants of the aforesaid six vehicles witnessed the accident In essence, their statements indicate that they saw the train approach the crossing with its headlight lighted and that they heard its horn sounding Their statements further indicate that the gasoline truck either stopped or reduced speed momentarily, before it entered the crossing at an estimated speed of 2-3 m p h and was struck by the train None noticed or observed whether the red lamps of the crossing signals were flashing

## Damages

Extra 1550 East

The train stopped with the front end 1,050 feet east of Haney's Road None of its equipment was derailed. The front of the first diesel-electric unit was heavily damaged by the impact In addition, the sheeting under the window on the south side of the control compartment was indented heavily, apparently by contact with the front end of the tank of the truck semitrailer, when that end swung around after the rear end was struck

The impact ruptured the semitrailer tank, causing its gasoline cargo to be ejected against the sides of the locomotive units; over the tractor of the truck; onto the ground in the crossing area and the intersection of Haney's Road with Maple Avenue and Colonial Road, and on both sides of the railroad east of the crossing The gasoline ejected onto the truck tractor and the ground ignited immediately after the impact, causing a large fire in the general area of the crossing and along the railroad east of the crossing. Gasoline entered the engine compartments of the first three locomotive units and, as the train came to a stop, a series of low order explosions occurred in those engine compartments, causing all the locomotive units to catch on fire. In addition, several cars to the rear of these units caught on fire as a result of stopping in the midst of flames along the track

At the time of the accident, a local freight train was on an auxiliary track at Abingdon The crew members of this train coupled their locomotive to the front end of Extra 1550 East and pulled the locomotive units and the first 12 cars of the latter train free of the fire area along the track east of the crossing This commendable action minimized damage to the locomotive units and the first 12 cars

The first locomotive unit of Extra 1550 East was heavily damaged by the impact, its engine compartment explosion, and fire The 2nd and 3rd units were considerably damaged by engine compartment explosions and fire The 9th, 11th, 13th and 33rd cars, were considerably damaged by fire The 4th locomotive unit, the first 8 cars, and the 10th, 12th and 32nd cars, were slightly damaged by fire. In addition, one other car was heavily damaged by fire Its location in the train could not be determined

The estimated total cost of damages to the train equipment was $33,900

Motortruck

Examination revealed that the train struck the truck immediately in front of the tandem axles at the rear of the semitrailer The impact cut the tank in two immediately above the rear axle of the semitrailer

The tractor stopped upright on Haney's Road a few feet south of the crossing The left rear portion of the cab frame sustained considerable impact damage and was bent slightly forward This portion of the cab apparently was struck by the left front end of the tank of the semitrailer, when the semitrailer was torn loose from the tractor

The front portion of the severed semitrailer and tank stopped on the south side of the track structure, about 40 feet east of the crossing The rear portion was found on the north side of the track structure, about 165 feet east of the crossing

The tractor, semitrailer, and tank were destroyed by the impact and fire

Other Damage

Three of the houses along the south side of Maple Avenue and Colonial Road in the accident area, as well as the gasoline service station on the south side of West Main Street 310 feet east of Haney's Road, were slightly damaged by the fire

The station wagon and two automobiles stopped at the intersection of Haney's Road with Maple Avenue and Colonial Road were destroyed by fire One of the pickup trucks moving westward on Maple Avenue at the time of the accident was slightly damaged by fire An automobile moving westward on Maple Avenue went out of control when the driver saw the accident It swerved across Maple Avenue, and struck an automobile parked at one of the residences on the south side of Maple Avenue, causing slight damage to both vehicles

The automatic crossing signal on the south side of the crossing was heavily damaged by fire Its red lamps, and those of the other crossing signal, were found to be flashing after the accident The estimated cost of damages to the south crossing signal, the track structure, and the telephone and electric power lines in the accident area was $14,000

Casualties

The truck driver was fatally burned and was found in the sleeping section of the tractor cab The reason why he did not escape from the cab was not determined It would appear that he was unable to do so because of being overcome by flames that enveloped the tractor, or due to being rendered unconscious when the rear of the tractor cab was struck by the front of the semitrailer tank

The front brakeman of the train was fatally burned Evidence disclosed by examination after the accident indicates that he was sitting on the south side of the control compartment of the second diesel-electric unit at the time of the accident, and that the side window at this location was open Some flaming gasoline evidently entered the control compartment at the time of the collision and fell on the front brakeman He left the control compartment and alighted from the second unit as the train was coming to a stop He was found, with burns covering almost 100% of his body, about 40 feet south of the main track and 650 feet east of Haney's Road

According to the engineer, the side windows of the control compartment of the first diesel-electric unit were open at the time of the accident Both enginemen were burned about the face and hands, when the first locomotive unit caught on fire as a result of the low order explosions in the engine compartments caused by gasoline entering those

compartments. Both enginemen left the control compartment via its north side and alighted from the locomotive as the train came to a stop.

In addition, nine occupants of the vehicles stopped at, or approaching, the intersection of Haney Road with Maple Avenue and Colonial Road were burned by flaming gasoline. One received serious burn injury

## Rescue Operations

Abingdon has a population of about 4,475 persons The accident occurred in an area surrounded by city streets, residences and business establishments Seven city fire companies comprised of fifteen fire engines and about 100 firemen were promptly dispatched to extinguish the fires resulting from the collision In addition, three rescue squads with five vehicles were promptly dispatched to the accident area, to transport the injured persons to Johnston Memorial Hospital in Abingdon Seven Virginia State Troopers also proceeded to the scene, to direct traffic and lend other needed assistance

When the local freight train crew removed the locomotive units and the first 12 cars of Extra 1550 East from the general fire area, the 13th car was left at the front of the train and in the midst of fire This car was a tank car loaded with 30,188 gallons of liquefied petroleum gas (propane) Abingdon city firemen played streams of water on the tank at considerable risk to themselves, keeping the contents cool and preventing an explosion or fire which would probably have resulted in further casualties and property damage The prompt response of the city firemen, rescue squads, and State troopers, to the emergency was undoubtedly an important factor in holding the scope of the disaster to a minimum

## Motortruck and Driver

### Motortruck

The truck was owned and operated by George T and George R. Hamilton, a partnership doing business from a plant on the north side of Colonial Road about 0 2 miles west of Haney's Road The business partnership was certified as a private carrier of petroleum products, and was engaged in the transportation of such products from Warcer, Tenn to its plant in Abingdon, a distance of about 133 miles. Thus, the truck and its driver were subject to the Motor Carrier Safety Regulations of the Federal Highway Administration

The truck consisted of a 1967 International tractor of the cab-over-engine type and a 1966 Fruehauf semitrailer of the tank type The tractor cab had a sleeping compartment behind the driver's compartment The tank of the semitrailer was built in accordance with specification MC-305 It was 39 feet 7¼ inches long, and had a nominal 8,350-gallon

capacity The tractor had a 250-horsepower diesel engine and tandem rear axles with dual wheels The wheel assembly at the rear of the semitrailer had tandem axles with dual wheels The total length of the truck was 48 feet 6 inches It was carrying 8,500 gallons of gasoline when the accident occurred, and its gross weight was about 74,000 pounds

Driver

The driver, a resident of Abingdon, was 51 years old and held a valid Virginia chauffeur's license A physician's certificate dated January 4, 1967, showed him physically qualified to drive in interstate commerce He had been employed by George T and George R Hamilton as a truck driver since January 15, 1966 Prior thereto, he had been employed for three years as a driver for DeBusk Petroleum Company, Abingdon Records of Virginia and Tennessee State vehicle departments disclosed the driver had no history of accidents or traffic violations

The driver was an ordained Baptist minister and was regarded as an outstanding citizen of the Abingdon community, as well as an excellent employee of George T and George R Hamilton

## History of Truck Movement

The driver reported for duty at the Hamiltons' place of business in Abingdon at 7:00 a m , the day of the accident He then drove the truck to Bristol, 15 miles southward, and stopped for minor repairs that had no bearing on the accident The truck left Bristol about 8:35 a m and continued southward to the Warcer, Tenn plant of the Sinclair Refining Company, where it was loaded with 8,500 gallons of gasoline It left the plant about 12:30 p m for the return trip to Abingdon, a distance of approximately 133 miles northward

About three hours after leaving Warcer, while it was moving northeastward on U S Highway 58, the truck entered the western outskirts of Abingdon and neared a street intersection located a short distance south of the railroad track The intersection is also located one block from the point where Colonial Road begins to extend eastward, on the south side of the railroad, to the Hamiltons' place of business and Haney's Road In the past, the driver customarily turned his vehicle to the right at this intersection and drove eastward on Colonial Road to the Hamiltons' place of business, without crossing the railroad track in Abingdon However, since June 4, 1968, his vehicle was barred from using this route due to the posting of 5-ton limit signs at a bridge where Colonial Road crosses Wolf Creek a short distance west of the Hamiltons' place of business Consequently, on the day of the accident, the truck proceeded straight ahead at the aforesaid street intersection, crossed the railroad track at a viaduct, and turned eastward onto West Main Street Soon afterward, it neared the point where Haney's Road intersects West Main Street It then turned southward onto Haney's Road, to recross the railroad track and proceed

westward on Colonial Road to the Hamiltons' place of business Soon after turning onto Haney's Road, the truck moved onto the railroad crossing and was struck by the train

## The Truck Route in Abingdon

The truck driver selected to recross the railroad via Haney's Road Two alternate routes were available for him to recross the track One was via a gate-protected crossing located about three city blocks east of Haney's Road; the other via a bridge located about five city blocks farther eastward

## Post-Accidents Tests

Test disclosed that the automatic railroad-crossing warning signals were functioning properly

A test was made with a truck similar to the one involved in the accident to determine the characteristics of its movement from the eastward lane of West Main Street onto Haney's Road and to the railroad crossing It revealed that due to the angle of the intersection of West Main Street and Haney's Road, the truck was required to move over to the westward lane of West Main Street when it reached a point about 60 feet from Haney's Road, so that it would be in a position to negotiate a sharp turn to the right, or south, onto the latter road The test truck was entirely within the westward lane of West Main Street when it commenced the turn southward As the vehicle entered Haney's Road and throughout its approach to the track, the tractor and the front portion of the tank semitrailer occupied the northward lane of Haney's Road. The tractor was facing the crossing when it passed the crossing signal for southbound vehicles Immediately thereafter, it was facing diagonally toward the southward lane of Haney's Road on the other side of the track and slightly toward the track west of the crossing, affording the driver a view of the track westward through the windshield The tractor continued diagonally toward the southward lane of Haney's Road, entering that lane after traversing the crossing and while the tank semitrailer was moving over the crossing

In negotiating the turn onto Haney's Road, the driver was required to watch for opposing highway traffic before and after his vehicle entered the westward lane of West Main Street, then watch for opposing traffic on Haney's Road before and after his vehicle entered and occupied the northward lane of that road in approach to the crossing

## Train Crew's Hours of Service

All the crew members had been on duty 1 hour 5 minutes at the time of the accident, after having been off duty 12 hours 30 minutes or more

Truck Driver's Hours of Service

Best information available indicates that the driver had been on duty about 8 hours 35 minutes at the time of the accident.

Code of Abingdon, Virginia

Sec 10-32, Noises

***

(e) Blowing Whistle ***No steam whistle on any steam locomotive shall be sounded in the town, except in cases of emergency to transmit signals

Sec 16 84 Speed limit

Railroad trains passing through the town shall not run at a greater rate of speed than twenty-five miles per hour

Sec 16 85 Operation of vehicles at crossings ***

Whenever any person driving a vehicle approaches a railroad grade crossing *** the driver of such vehicle shall stop within fifty feet but not less than fifteen feet from the nearest rail of such railroad, and shall not proceed until he can do so safely The foregoing requirements shall apply when:

(1) A clearly visible electrical *** signal device gives warning of immediate approach of a railroad train; ***

Federal Highway Administration
Motor Carrier Safety Regulations

Section 392 10 (Title 49 Code of Federal Regulations), railroad grade crossing; stopping required

(a) *** The driver of any motor vehicle described in subparagraphs (1) through (6) of this paragraph, before crossing at grade any track or tracks of a railroad, shall stop such vehicle within 50 feet, but not less than 15 feet from the nearest rail of such railroad, and while so stopped shall listen and look in both directions along such track for any approaching train, and shall not proceed until such precautions have been taken and until he has ascertained that the course is clear

***

(3) Every motor vehicle which, in accordance with the regulations of the Department of Transportation, is required to be marked or placarded with one of the following markings:

***

IV Flammable

***

(Note: Under Section 177 823 (b) (2) of the Department of Transportation's Hazardous Material Regulations, (Title 49 Code of Federal Regulations), the aforesaid motor vehicle, if carrying gasoline, may be placarded or marked "Gasoline" in lieu of "Flammable")

## Analysis of Accident

This is a complex accident due to several causal factors being involved These factors are discussed in the following:

### Abingdon Codes

A code restricts speed of trains through Abingdon to 25 m p h or less The train, after entering the city limits, approached the crossing at 43 to 45 m p h , apparently due to the engineer being unaware of the speed restriction imposed by the city code. The investigation found no record of Abingdon city authorities having ever informed the railroad carrier about enactment of the speed-restriction code Consequently, it appears that the engineer did not control the speed of his train, as required, due to lack of communication between Abingdon city authorities and the railroad carrier Had the engineer been aware of the 25 m p h speed restriction and operated his train accordingly, the train would have taken a few extra seconds to reach the crossing after entering the Abingdon city limits Those extra seconds would have provided the truck with sufficient time to clear the track before the train entered the crossing Thus, the accident would have been averted had the speed of the train been controlled in accordance with the Abingdon code

Another city code prohibited the train engineer from sounding the customary crossing-whistle signal while approaching the crossing In view of the environmental conditions and the volume of highway traffic at the crossing, a question arises as to the wisdom of applying this code to eastbound trains approaching Haney's Crossing, regardless of their speeds Had the train engineer sounded the customary crossing whistle signal while approaching the crossing, and had the truck driver heard the signal and thereby been alerted to the close approach of the train, it is possible the accident would have been averted

### Crossing Environmental Conditions

Because of track curvature, and the billboards, shrubbery, trees and structures between West Main Street and the railroad, the view between an eastbound train approaching Haney's Crossing and a southbound highway vehicle nearing the crossing is restricted considerably (see photo) The restricted view at the crossing apparently was an important causal factor in the accident Since removal of the billboards and

some shrubbery between West Main Street and the railroad would increase sight distance and enhance safety at the crossing, consideration should be given by proper authorities to taking such action

Because of the crossing environmental conditions and the city code restricting the sounding of train whistles, safety of highway movements over the crossing depends to a large extent upon drivers' observance of the automatic flashing-light signals. Recognizing that drivers may fail to observe or notice such signals, and taking into consideration the environmental conditions at Haney's Crossing, as well as the city code governing train whistles and the volume of highway traffic over the crossing, it would appear that Haney's Crossing should be provided with protection in addition to that afforded by the automatic flashing-light signals Installation of crossing gates would increase the safety of both rail and highway movements over the crossing

Alternate Highway Routes

After arriving at Abingdon the day of the accident and crossing to the north side of the railroad by means of a viaduct, the truck had to recross the railroad to get to its destination The driver had the option of recrossing the track at (a) Haney's Crossing (b) a gate-protected crossing about three blocks east of Haney's Crossing (c) or via a bridge about eight blocks east of Haney's Crossing Apparently because it entailed the shortest route to his destination, the driver selected Haney's Crossing to recross the track

The automatic flashing-light signals provided considerable protection for the truck to recross the track at Haney's Crossing It is interesting to note, however, that in 1967 railroad carriers reported 959 rail-highway accidents at crossings protected by automatic audible and visible signals Much greater protection would have been afforded the truck had the driver selected to recross the track at the gate-protected crossing, as evidenced by the fact that in 1967 railroad carriers reported only 135 rail-highway accidents at such crossings Full protection would have been afforded the truck had the driver selected to recross the railroad at the bridge located about eight blocks east of Haney's Crossing The accident at the latter crossing serves to illustrate that in the interest of preventing catastrophic rail-highway collisions, drivers of vehicles such as commercial passenger buses, school buses, and trucks transporting hazardous materials should, whenever it is reasonable to do so, select to cross railroads at grade-separated or gate-protected crossings

Train Movement

According to the enginemen, the train approached the crossing with its headlight lighted and the locomotive bell ringing The customary crossing-whistle signal was not sounded due to restrictive provisions of an Abingdon Code

The train reduced speed from 45 m p.h to 43 m p h during its approach to the crossing, and this was below the maximum speed prescribed by the railroad carrier It was, however, in excess of the 25 m p.h maximum speed permitted by an Abingdon Code According to the engineer, he was unaware of the existence of that code The fireman apparently first saw the truck when the train was about 1,000 feet from the crossing Soon afterward, he saw the truck move onto the crossing in front of the train and called a warning to the engineer The latter engineman then applied the train brakes in emergency and began to sound the locomotive horn However, because of its proximity to Haney's Road at that time, there was insufficient braking distance for the train to reduce speed significantly before it entered the crossing and struck the motortruck Hence, under the circumstances, the train could not avoid the accident after the truck was seen to be moving over the crossing ahead

Truck Movement

While the truck was turning southward onto Haney's Road, its tractor passed the automatic crossing signal located 18 feet 4 inches north of the track centerline At that time, the tractor was moving in the northward lane of the road and was facing a pair of red lamps on the crossing signal south of the track At the same time, Extra 1550 East was evidently approaching the crossing within a distance of 1,000 to 2,200 feet and was occupying the track circuit associated with the crossing signals Hence, the red lamps of the crossing signals were flashing as the truck neared the track The train, however, was not visible to the truck driver due to his range of vision along the track west of the crossing being restricted to about 1,000 feet

According to information developed in the investigation, the truck either reduced speed or stopped momentarily before it entered the crossing, and presumably the driver looked for an approaching train. Computations indicate that at this time the train had just come within the truck driver's view or was about to come into view, depending upon the exact location and the speed of the truck when and if the driver looked for an approaching train In any event, the driver apparently did not see the approaching eastbound train and proceeded to drive his vehicle over the crossing at 2 or 3 m p h Witness statements indicate that he first became aware of the train while traversing the crossing, possibly from hearing the train horn being sounded in emergency, and that he then attempted to clear the crossing for the train by increasing speed The truck, however, was unable to clear the track before the train reached the crossing, resulting in the collision

In view of the positions of the red lamps on the crossing signal north of the track and his position in the tractor cab while negotiating the turn onto Haney's Road, the truck driver would have experienced difficulty in determining whether the red lamps of the north crossing signal were flashing as he neared the track. However, a pair of red lamps on the crossing signal south of the track was plainly

visible to him, and the red lamps were flashing as his vehicle neared and entered the crossing The reason why the driver failed to heed the flashing red lamps, which indicated the close approach of a train, could not be determined It is possible that he did not notice they were flashing due to being preoccupied with negotiating the turn onto Haney's Road, and watching for oncoming traffic while his vehicle occupied the northward lane during its approach to the track It is further possible that he saw the flashing red lamps and, after looking for and not seeing an approaching train, decided he could safely drive over the track before the train reached the crossing

## Findings

1 The train approached the crossing in accordance with applicable rules and regulations, except that it was moving in excess of the maximum speed prescribed by a city code, due to the engineer being unaware of that code The customary crossing-whistle signal was not sounded by the train during its approach to the crossing, because of restrictive provisions of another city code

2 The train brakes were applied in emergency and the locomotive horn was sounded when the truck was seen to be entering the crossing in front of the train

3 Because of its speed and proximity to the crossing when the truck was seen to move onto the track, the train was unable to reduce speed materially before it entered the crossing and struck the truck

4 The automatic crossing signals were indicating the close approach of a train as the truck approached the crossing

5 The truck either reduced speed or stopped momentarily before entering the crossing It is not known whether the driver looked and listened for an approaching train or whether the train was visible to him at that time.

6 Immediately before the truck entered the crossing, the train was approaching within a distance of about 1,000 feet and was, therefore, visible to the truck driver.

7 The truck driver apparently did not see the closely approaching train before driving onto the track while the crossing signals were functioning

8 The primary cause of the accident was failure of the truck driver to stop his vehicle short of the track and remain standing while the crossing signals were indicating the close approach of a train

9 The reason why the truck driver failed to heed the crossing signals could not be determined

## Cause

The accident was caused by failure of the truck driver to stop his vehicle short of the rail-highway grade crossing and to remain standing until the train had passed, resulting in the train striking the rear of the truck Significant contributing factors were (a) restricted sight distances between trains and motor vehicles approaching this crossing (b) omission of the customary sounding of the locomotive whistle to warn motorists of the approaching train to comply with a municipal ordinance and, (c) the truck driver's apparent concentration on a difficult 120-degree turn with a long and heavy rig immediately prior to entering the crossing

## Recommendations

It is recommended that ——

1 Sight distance be improved at Haney's crossing by removal of billboards and shrubbery restricting the view between trains and highway vehicles.

2. Consideration be given by Abingdon city authorities to revoking the code which prohibits locomotive horns being sounded in approach to Haney's Crossing, unless other action is taken to increase safety at the crossing

3 The Norfolk and Western Railway take action, in the light of the Abingdon speed-restriction code, to ensure trains approach Haney's Road crossing at speeds commensurate with the environmental conditions involved and the protection afforded at the crossing

4 Consideration be given by railroad and governmental authorities to increasing protection at Haney's Crossing by the installation of automatic gates.

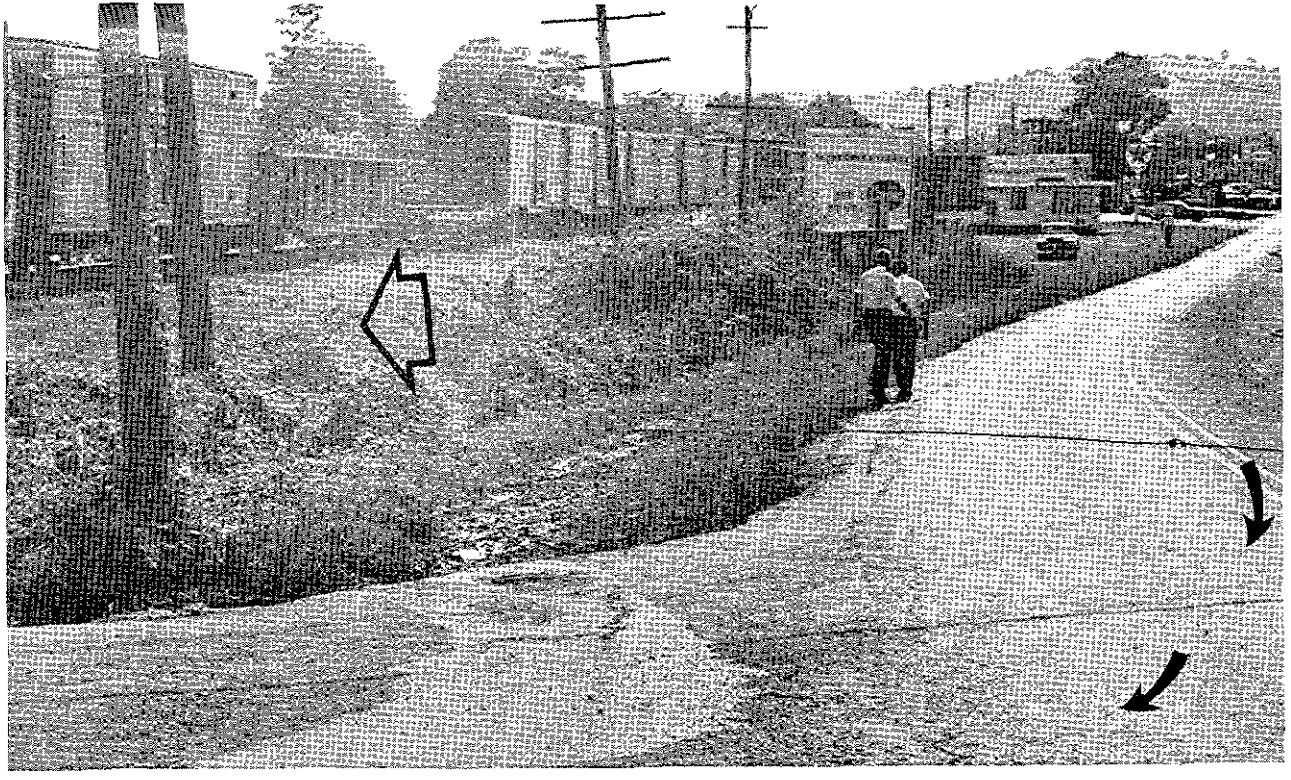
5 The Norfolk and Western Railway Company and all other railroad carriers inform locomotive crew members of the desirability of closing control compartment windows, if time permits, whenever it appears that their locomotives might collide with a tank-type vehicle at a rail-highway grade crossing Such action might prevent flaming gasoline or other flammable substances from entering control compartments, as was the case in the accident at Haney's Crossing, and thereby reduce the risk of injury or death to locomotive crew members involved in crossing accidents

Dated at Washington, D.C , this 8th day of August 1969
By the Federal Railroad Administration,

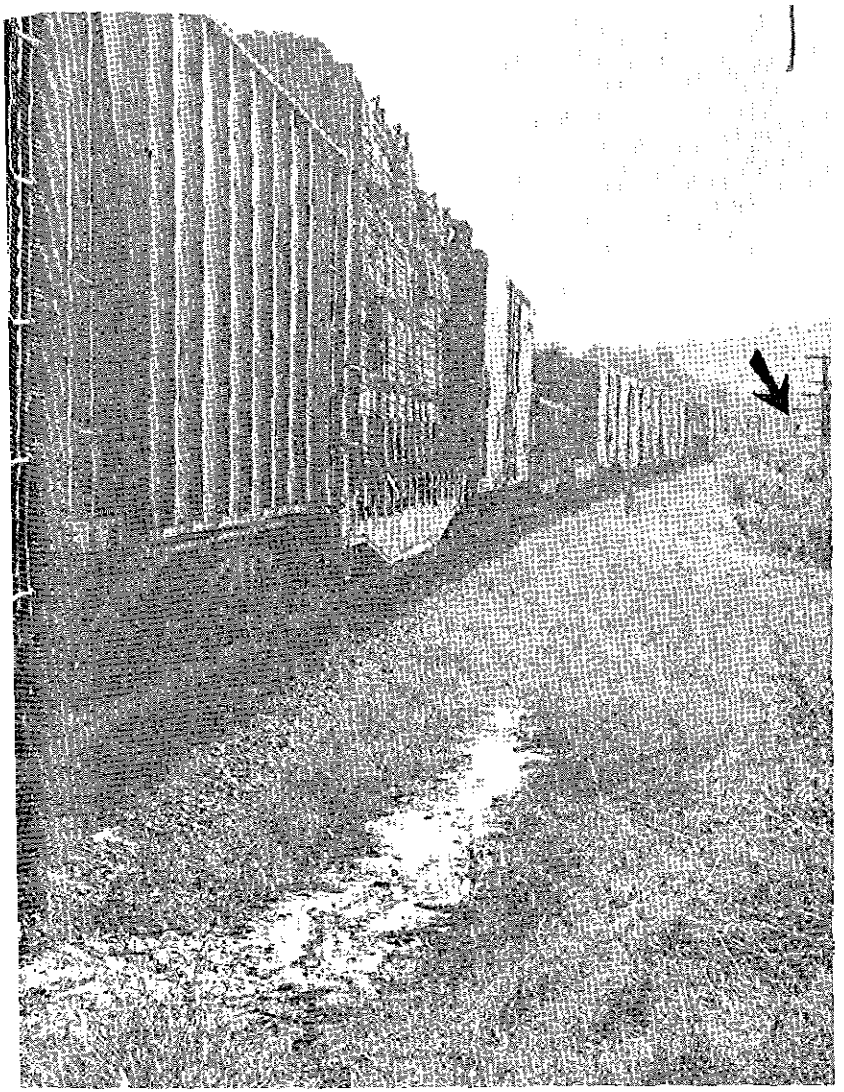
Mac E. Rogers, Chairman
Railroad Safety Board

NOTE. *The Federal Railroad Administration has no jurisdiction over railroad operating rules; track structures;

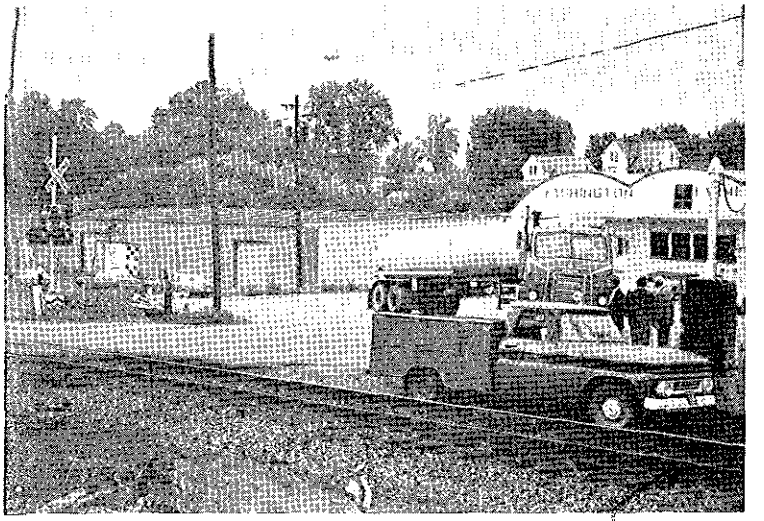
bridges; rail-highway grade crossing protection; track clearances; consist of train crews; qualifications or physical condition or railroad employees; running and draft gear on cars, or the construction of cars except those appurtenances within jurisdiction of the Safety Appliance Acts and the Power Brake Law of 1958



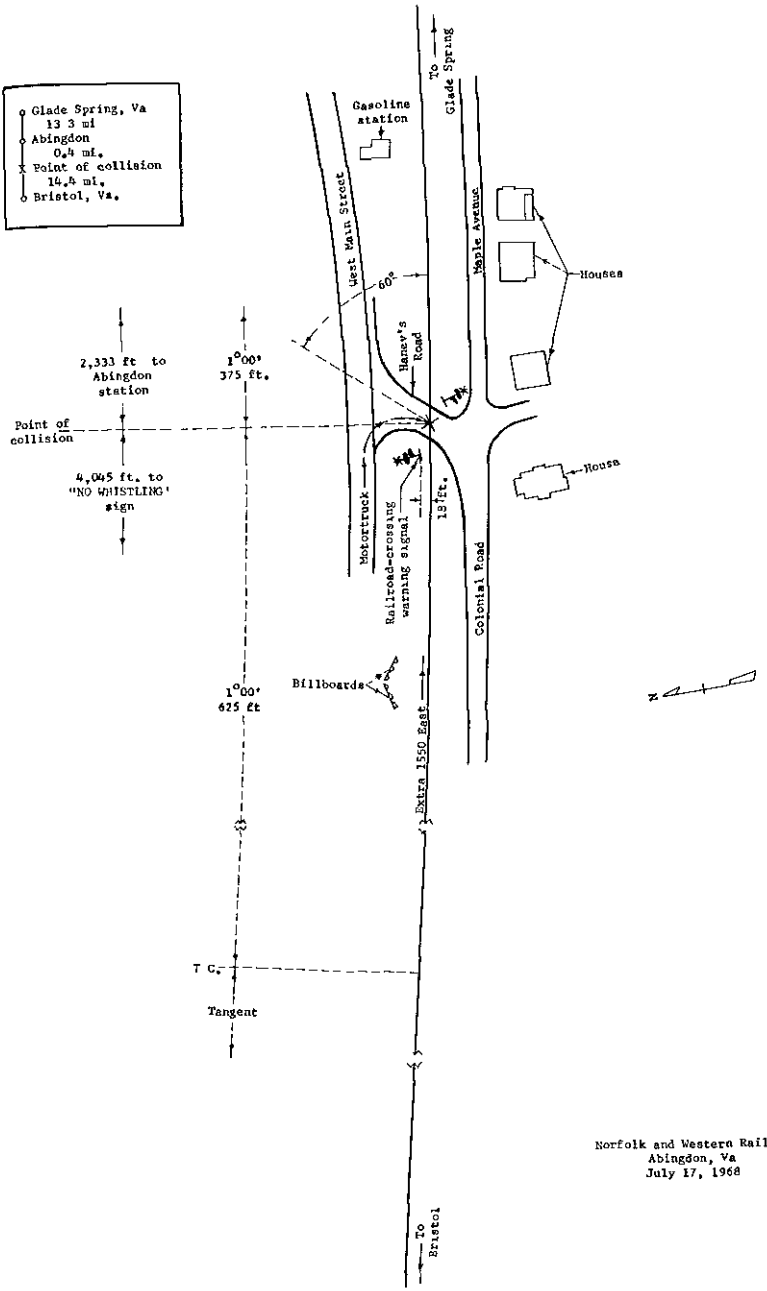
Arrows show directions of train and truck. Note restricted view caused by billboards, structures and trees.



Truck driver's view in direction from which train approached crossing. Arrow points to approximate location where headlight of approaching train becomes visible.



Photos showing truck similar to that involved, as it negotiates turn onto Haney's Road and nears crossing.




Norfolk and Western Railway
Abingdon, Va
July 17, 1968