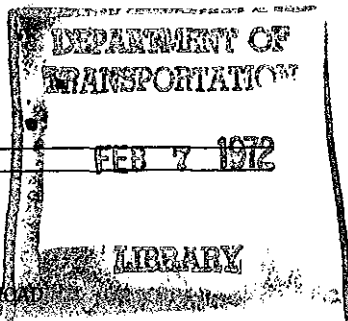


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RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 4163



ILLINOIS CENTRAL RAILROAD

RIVERDALE, ILL.

SEPTEMBER 26, 1969



FEDERAL RAILROAD ADMINISTRATION

BUREAU OF RAILROAD SAFETY

Washington, D C 20591

Summary

DATE:	September 26, 1969	
RAILROAD:	Illinois Central	
LOCATION:	Riverdale, Ill	
ACCIDENT TYPE:	Rear-end collision	
TRAINS:	Freight (Transfer)	Freight
TRAIN NUMBERS:	Extra 1214 North	Extra 5055 North
LOCOMOTIVES:	Diesel-electric unit 1214	Diesel-electric units 5055, 9086, 9239
CONSISTS:	13 cars, caboose	128 cars, ca- boose
SPEEDS:	Standing	60 m p.h
OPERATION:	Signal indications	
TRACKS:	Multiple-track; level; tangent	
WEATHER:	Clear	
TIME:	4:34 a m	
CASUALTIES:	3 killed; 3 injured	
CAUSE:	Engineer and front brakeman of the following train fall- ing asleep due to fatigue and the effects of alcohol, resulting in the train pass- ing stop-signals and colliding with the preceding train	

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DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
BUREAU OF RAILROAD SAFETY

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RAILROAD ACCIDENT INVESTIGATION
REPORT NO. 4163

ILLINOIS CENTRAL RAILROAD
SEPTEMBER 26, 1969

Synopsis

On September 26, 1969, a rear end collision occurred between two Illinois Central Railroad freight trains at Riverdale, Illinois. It resulted in death to three, and in injury to three, members of the train crews.

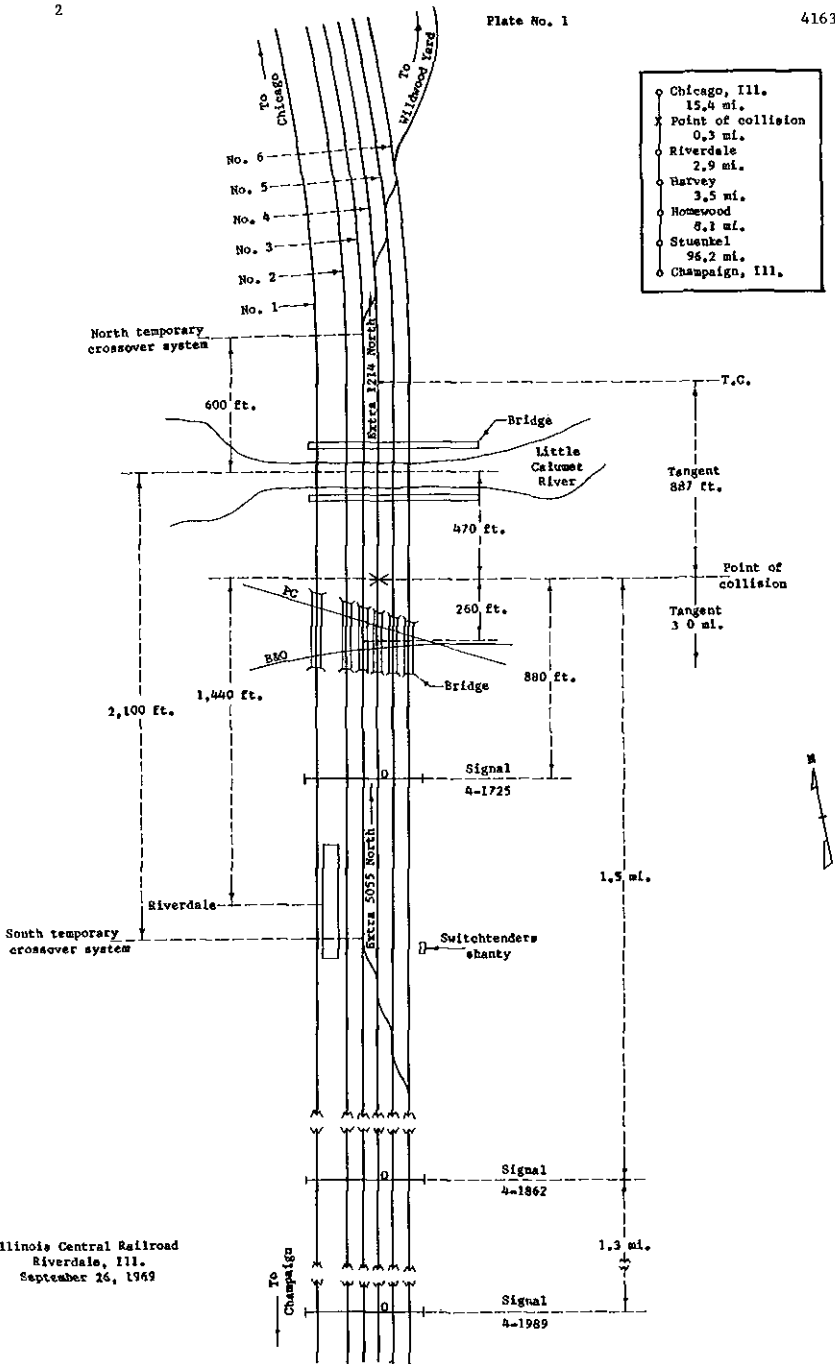
Cause

The accident was caused by the engineer and front brakeman of the following train falling asleep due to fatigue and the effects of alcohol, resulting in the train passing stop-signals and colliding with the preceding train.

Location and Method of Operation

The accident occurred on that part of the railroad extending northward from Champaign to Chicago, Ill., a distance of 126.4 miles. In the accident area this is a six-track line, with the tracks numbered one to six from the west. Trains operate in either direction on tracks No. 1 and 2 under a traffic control system. The current of traffic is southward on tracks No. 3 and 5; northward on tracks No. 4 and 6. Trains moving with the current of traffic on those four tracks operate by signal indications of an automatic block-signal system.

- | | | |
|---|--------------------|----------|
| o | Chicago, Ill. | 15.4 mi. |
| x | Point of collision | 0.3 mi. |
| o | Riverdale | 2.9 mi. |
| o | Harvey | 3.5 mi. |
| o | Homewood | 5.1 mi. |
| o | Stuenkel | 96.2 mi. |
| o | Champaign, Ill. | |



Illinois Central Railroad
 Riverdale, Ill.
 September 26, 1969

The collision occurred on track No 4, 110 7 miles north of Champaign and 1440 feet north of the station at Riverdale, a suburb of Chicago

Tracks

From the south, the main tracks are tangent about three miles to the collision point and 887 feet northward

The grade for northbound trains is, successively, an average of 0 25% descending 13 1 miles, 0 15% ascending 1 7 miles, and practically level 390 feet to the collision point

In the Riverdale area, the main tracks are on a fill about 23 feet in height. About 260 feet south and 470 feet north of the collision point, they are on bridges spanning the PC and B&O Railroads and the Little Calumet River, respectively

Temporary Crossovers

On the day of the accident and for quite some time previously, tracks No 5 and 6 were out of service in the Riverdale area, because of construction work on the Little Calumet River bridge. Two temporary crossover systems were installed to permit trains operating on tracks No 5 and 6 to move over the bridge via track No 3 or 4. One crossover system was located about 2100 feet south of the bridge; the other, about 600 feet north of the bridge (See Plate 1)

A switchtender was stationed at the south temporary crossover system

The north temporary crossover system connected with an auxiliary track on the east side of the main tracks. The auxiliary track led to the carrier's Wildwood Yard. Switches of the north temporary crossover system were operated by crew members of train and yard movements

Time and Weather

The collision took place at 4:34 a m , under clear weather conditions

Authorized Speeds

The maximum authorized speed for freight trains in the accident area is 50 m p h. Trains with consists of 50% or more loaded coal cars, however, are restricted to 40 m p h

Signals

Automatic signals 4-1989, 4-1862 and 4-1725, governing northbound movements on track No 4, are 2 8 miles, 1 5 miles and 880 feet south of the collision point, respectively. They are of the continuously lighted color-light type and are mounted on signal bridges. The aspects applicable to this report, and the corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
4-1989	Yellow	Proceed preparing to stop at next signal Train exceeding medium speed must at once reduce to that speed	Approach
4-1862 4-1725	Red	Stop; then proceed at restricted speed	Stop and Proceed

The controlling circuits are so arranged that when the block of signal 4-1989 is unoccupied, a switch within the block of signal 4-1862 is in reverse position, and the block of signal 4-1725 is occupied, signal 4-1989 displays an Approach aspect and the other two signals display Stop-and-Proceed aspects.

Carrier's Operating Rules

- Restricted Speed - Proceed prepared to stop short of trains *** but not exceeding fifteen miles per hour
- Medium Speed - A speed not exceeding thirty miles per hour

99 ***

NOTE: When trains *** are operating under automatic block signal *** system rules, protection against following trains or engines on the same track is not required

Bulletin orders issued by the carrier about one month before the accident notified employees of the installation of the two temporary crossover systems at Riverdale. One order also notified employees that all trains and locomotives were required to approach the south temporary crossover system prepared to stop and were not to proceed until a proper hand signal was received from the switchtender on duty.

Circumstances Prior to Accident

Extra 1214 North

This was a northbound freight (transfer) train consisting of 1 diesel-electric unit, 13 cars and a caboose. It left Harvey 2.9 miles south of Riverdale, at 4:00 a.m. the day of the accident and proceeded northward on track No. 6, enroute to Wildwood Yard. Soon afterward, it stopped short of the south temporary crossover system at Riverdale. Approximately four minutes later, after receiving a proceed signal from the switchtender, the train moved via the south temporary crossover system to track No. 4; proceeded northward on that track in the block of signal 4-1862; passed

signal 4-1725; proceeded over the Little Calumet River bridge, and stopped on track No 4 in the block of signal 4-1725 with the front end about six feet beyond the crossover-switch connecting track No 4 to the north temporary crossover system. It then moved backward about 16 feet, stopping clear of the switch and with the rear end 880 feet north of signal 4-1725. Immediately afterward, the front brakeman began to line the switch for movement of the train onto the crossover system and toward the auxiliary track leading to Wildwood Yard. At that time, the engineer and a management trainee were in the control compartment of the locomotive. The conductor and flagman were in the caboose.

Extra 5055 North

This train, consisting of 3 road-switcher type diesel-electric units, 128 cars loaded with coal, and a caboose (18,020 tons), arrived at Champaign a crew-change point, at 12:30 a m the day of the accident. Its brakes had been tested and had functioned properly when used en route to Champaign. The locomotive radio equipment had also functioned properly.

The engineer of the incoming crew stopped the train at Champaign by use of the automatic brakes and left them applied. Soon afterward he informed the engineer of the outbound crew that the automatic brakes of the train had been left applied.

The outbound crew took charge of the train at 1:00 a m, after having been off duty at Champaign for 11 hours 55 minutes. About 15 minutes later, Extra 5055 North left Champaign without any change in its consist, and proceeded northward en route to a yard a short distance beyond Wildwood Yard at Riverdale. The engineer and front brakeman were in the control compartment at the front of the first diesel-electric unit. The conductor and flagman were in the caboose.

The train made no stops between Champaign and the collision point.

The Accident

Extra 1214 North

After lining the switch for movement of his train from track No 4 to the north temporary crossover system at Riverdale, the front brakeman gave the engineer a proceed signal and stationed himself on steps at the front of the locomotive. Immediately afterward, at 4:34 a m, the train was struck from the rear by Extra 5055 North while standing on track No 4. Best information available indicates that none of the crew members of Extra 1214 North was aware of anything being wrong before the collision.

Extra 5055 North

About 4:18 a m, Extra 5055 North passed Steunkel, 14.5 miles south of Riverdale, where it entered a descending grade extending a considerable distance northward. The engineer of a southbound train stopped at Steunkel stated that the head-

light of the northbound train was on bright, and that he repeatedly dimmed his headlight in an unsuccessful effort to signal the engineer of Extra 5055 North to dim his headlight. He then called the engineer of the northbound train by radio, but heard no response. He said the northbound train passed Steunkel at a speed of approximately 30 to 35 m p h, and that its horn was not sounded in approach to a rail-highway grade crossing there.

Extra 5055 North increased speed on the descending grade and passed Homewood, 6 4 miles south of Riverdale, at 4:27 a m, as indicated by an entry made in the Dispatcher's Record of Movement of Trains. Soon afterward, while moving northward on track No. 4, it passed Harvey, 2 9 miles south of Riverdale. A yardmaster, car department employees and crew members of a transfer train saw Extra 5055 North pass Harvey, recognized it as a coal train, and noticed that it was moving at an unusual rate of speed. Their estimates of the speed ranged from at least 40 m p h to 70 m p h.

As Extra 5055 North passed Harvey and neared signal 4-1989, the switchtender for the south temporary crossover system at Riverdale was in the process of lining switches of the crossover for movement of a southbound transfer train from track No. 3 to track No. 5. Inasmuch as he began to take this action shortly after Extra 1214 North moved through the crossovers from track No. 6 to track No. 4 and entered the block of signal 4-1725, it is apparent that at least one of the crossover switches associated with track No. 4 was in reverse position at the time. Thus, it is further apparent that as Extra 5055 North passed Harvey, signal 4-1989 was displaying an Approach aspect, and signals 4-1862 and 4-1725 were displaying Stop-and-Proceed aspects.

Extra 5055 North passed signal 4-1989 and, soon afterward, passed signal 4-1862 without stopping as required by the Stop-and-Proceed aspect displayed by that signal. By this time, the switchtender at Riverdale had almost completed lining the crossover switches for movement of the southbound transfer train from track No. 3 to track No. 5. He had not yet moved the crossover switch in track No. 3 to reverse position, but was about to do so when he saw the headlight of Extra 5055 North approaching on track No. 4 at a distance of one-half to one mile. Moments later, realizing the train was approaching at a speed which would prevent it from stopping short of the south temporary crossover system, the switchtender ran to the crossover switches in track No. 4, and restored the switch leading to track No. 3 to normal position. After doing this, he called the approaching train by radio, but heard no response. He then gave it stop signals with his lighted lantern, but neither saw nor heard any acknowledgement of those signals.

A few seconds later, Extra 5055 North ran through the crossover switch in track No. 4 leading to track No. 5; passed signal 4-1725, which displayed a Stop-and-Proceed aspect, and struck the rear end of Extra 1214 North while moving at an estimated speed of approximately 60 m p h.

The engineer of the southbound transfer train on track No 3 heard the locomotive of Extra 5055 North operating under power in approach to the collision point. He and the switchtender said they neither saw nor heard any indication of the brakes of Extra 5055 North having been applied before the collision.

The conductor and flagman of Extra 5055 North were in the cupola of the caboose as their train approached Riverdale. Both stated the train was moving between 30 and 35 m.p.h. at that time, and its brakes had been applied about one mile from Riverdale. The conductor said he looked at the air gauge in the caboose when he felt the brakes being applied, and the gauge showed a 10-pound reduction in brake pipe pressure. Shortly thereafter, according to their statements, the conductor and flagman heard the air brakes apply in emergency. Both said they did not know their train was involved in a collision before it stopped at Riverdale.

When they reported for duty at Champaign, the conductor and flagman obtained a portable radio from a crew caller. The conductor said it was the same radio he had used the day before and it had not been functioning properly then. He further said that he found the radio was inoperative after leaving Champaign on the day of the accident, and that he had made unsuccessful attempts to communicate with the engineer while en route northward. The conductor alleged that he attempted to call the engineer by radio shortly after passing Harvey to inquire as to the conditions ahead, but received no response. According to his statements, he then assumed the switchtender at Riverdale had advised the engineer by radio that the train had verbal permission to proceed, or would be given a hand signal to proceed, on track No 4 at the south crossover system at Riverdale.

Both the conductor and flagman stated that the engineer and front brakeman appeared to be in normal condition at the time the crew reported for duty at Champaign.

Damages

Extra 1214 North

The force of the impact propelled this train 185 feet northward. The caboose and five last cars (9th to 13th, inc.) were derailed. The caboose stopped diagonally across track No 2, about 90 feet north of the collision point. The 11th, 12th and 13th cars stopped diagonally across tracks No 2 and 3, on the bridge over the Little Calumet River. The 10th car, a tri-level car loaded with automobiles, stopped upright on and in line with track No 4 at the north side of the bridge. Its north, or front, truck was not derailed. The rear, or south, end of the car overrode the underframe of the first diesel-electric unit of Extra 5055 North and stopped on top of that unit (See Photo, Plate 2). The 9th car stopped upright on and in line with the structure of track No 4, immediately north of the 10th car. The caboose was destroyed. The five derailed cars were damaged considerably.

PLATE NO. 2

Ninth car of Extra 1214 North on top of first diesel-electric unit of Extra 5055 North.



Locomotive units of Extra 5055 North on the Little Calumet River bridge. First unit is on the right.

Extra 5055 North

This train stopped with the front of the first diesel-electric unit on the Little Calumet River bridge and 553 feet north of the collision point. All three diesel-electric units and the first 66 cars were derailed, some as a result of buckling action. The derailed cars stopped in various positions on that portion of the main tracks extending from the center of the bridge spanning the PC and B&O Railroads to the south end of the bridge over the Little Calumet River. All six main tracks were blocked by the wreckage. The bridge over the PC and B&O Railroads was heavily damaged, and some wreckage and spilled coal fell onto the PC tracks, blocking that railroad.

The three diesel-electric units stopped upright, in leaning positions, on and in line with the structure of track No 4 (See Photo, Plate No 2). The control compartment at the front of the first unit was demolished as a result of the rear end of the 10th car of Extra 1214 North over-riding the underframe at the front of the unit, striking the control compartment, and stopping on top of the unit after also striking the engine compartment.

The first diesel-electric unit was destroyed, and the other two were damaged considerably. Of the 66 derailed cars, 65 were destroyed and one was somewhat damaged.

Cost of Damages

The monetary damage to the equipment of both trains, track structures, bridges and signal equipment totaled \$1,306,350, according to the carrier's estimate.

CasualtiesExtra 1214 North

The rear brakeman was killed and the conductor was seriously injured. The engineer and front brakeman were slightly injured.

Extra 5055 North

The engineer and front brakeman were killed.

Signal Test

Signals 4-1989, 4-1862 and 4-1725 were tested after the accident and were found to be functioning properly.

Service RecordsEngineer - Extra 5055 North

The engineer, age 44, was first employed by the carrier as a fireman in March 1946, and was promoted to engineer in February 1955. His last periodic rules and physical examinations were in February 1966. The carrier's records indicate

he passed both examinations. They further indicate that since his promotion to engineer he was subjected to disciplinary action in 1958, 1960 and 1967 for his responsibility in connection with rules infractions resulting in personal injury to two yardmen and a collision with a track motorcar.

Front Brakeman - Extra 5055 North

This employee, age 30, was first employed by the carrier as a car inspector in 1964. After receiving and passing rules and physical examinations, he began service as a brakeman in June 1966. In 1968, he was subjected to disciplinary action twice for rules infractions resulting in single-car derailments.

Post Mortem Examination

Engineer - Extra 5055 North

Tests of blood samples taken from the body of the engineer disclosed blood alcohol concentration of 107 mg (milligrams) per 100 ml (milliliters). Since the engineer weighed 224 pounds and blood alcohol concentration may dissipate at a rate as high as about 50 mg per 100 ml hourly in a person of that weight, it appears that when the engineer went on duty at Champaign, 3 hours 34 minutes before the accident, his blood alcohol content at that time may have been as high as about 282 mg per 100 ml. In this connection, some authorities and States, including Illinois, consider blood alcohol concentration of 100 mg per 100 ml in the driver of a highway vehicle as presumptive evidence of the driver being under the influence of intoxicating liquor.

Front Brakeman - Extra 5055 North

Because of the condition of the body of the front brakeman, no blood sample could be taken for blood alcohol tests.

Crew Layover at Champaign

The crew members of Extra 5055 North went on duty in Champaign at 1:00 a.m., September 26, the day of the accident, and had been on duty 3 hours 34 minutes when the collision occurred. They had arrived at Champaign the day before, and had gone off duty there at 1:05 p.m., after having been continuously on duty 13 hours 30 minutes. Thus, their off-duty period prior to the accident trip was 11 hours 55 minutes.

After going off duty at Champaign, the engineer, front brakeman, and conductor registered at a hotel having a bar and cocktail lounge. The flagman went to a place where he has a room for his layovers in Champaign. Best information available indicates the conductor and flagman remained in their rooms, except for short periods, until they were called for the accident trip at approximately 11:45 p.m.

The hotel records contain no information as to when the engineer and front brakeman checked in and out of their rooms.

In view of the lengthy tour of duty they had just completed and the time they went off duty, one can surmise that both retired to their hotel rooms about 2:00 or 3:00 p m , possibly after having visited a restaurant. One can also surmise, in the light of witness statements, that they subsequently left their rooms rather early in the evening, perhaps about 8:00 p m. The investigation, however, was unable to determine whether the engineer and front brakeman actually retired to their rooms for rest.

The consensus of statements made by several witnesses is as follows: Both the engineer and front brakeman went into the hotel bar about 8:00 or 8:30 p m and remained there until approximately midnight. One of them received a telephone call while at the bar (about 11:45 p m), and was informed his crew was called for duty at 1:00 a m. Both were seen at various times to be served with bottles of beer, but the number of bottles served is unknown. Neither appeared to be under the influence of alcoholic beverages. One witness, however, was firm in alleging the engineer was served mixed drinks and appeared highly intoxicated.

Analysis

The investigation revealed the signal system, and brake system of Extra 5055 North, functioned properly. It further revealed information indicating that the engineer, and apparently the front brakeman also, consumed a considerable amount of alcoholic beverages over a 3- or 4-hour period immediately before reporting on duty for the accident trip. Taking this and other factors disclosed by the investigation into consideration, it is quite apparent both the engineer and front brakeman fell into deep sleep some time after leaving Champaign as a result of the effects of alcohol combined, perhaps, with fatigue due to their not having obtained sufficient sleep after their previous lengthy tour of duty. Consequently, after entering the descending grade beginning in the vicinity of Stuenkel, Extra 5055 North gradually accelerated to excessive speed in approach to Riverdale, and failed to stop as required at signals 4-1862 and 4-1725, and the south temporary crossover at Riverdale, resulting in the collision. From all indications, the engineer and front brakeman were still asleep when the collision occurred.

According to an authoritative blood-alcohol chart, a 220 pound person probably reaches the staggering point when his blood alcohol content exceeds approximately 153 mg per 100 ml. In this connection, the investigation revealed evidence indicating that the 224-pound engineer of Extra 5055 North had a blood alcohol content well over 200 mg per ml at the time the crew members reported for duty at Champaign, and that the front brakeman probably also had a high blood alcohol content at that time. Neither the conductor nor the flagman took exception to the condition of the other two crew members, although they rode in the same taxi with them to the on-duty point at Champaign and, therefore, apparently could not help but know the engineer and front brakeman were under the influence of alcohol. Had they taken appropriate action

at that time to prevent the engineer and front brakeman from performing service on Extra 5055 North, as dictated by safety considerations for their train, fellow employees and themselves, the accident probably would have been averted

The conductor's and flagman's statements concerning their action and observations in approach to the collision point are of a dubious nature, being similar to those commonly given by crew members after accidents in explanation of failures to take action for safety of their trains when the enginemen failed to do so. In this accident case, Extra 5055 North attained a speed of about 60 m p h , 20 m p h in excess of its maximum authorized speed, in territory where it was required to reduce speed so as to be prepared to stop short of the temporary crossover system at Riverdale. The circumstances were such that the conductor and flagman should have been alerted to the fact that something was amiss and to the necessity of taking appropriate action for the safety of the train. Assuming the portable radio in the caboose was inoperative as alleged, the conductor or flagman could have taken such action by applying the train brakes by means of the air brake valve in the caboose. Had they done so, the accident would have been averted or minimized.

In connection with the foregoing, full recognition has been given to the problems faced by a train employee when a fellow crew member appears to be under the influence of alcohol, or in arriving at a decision to take appropriate action for the safety of a train when the engineman apparently has failed to do so. The fact remains, however, that the employee imperils the safety of himself, fellow crew members, his train, and the public unless he takes the appropriate action dictated by the circumstances. This is evidenced by our previous accident investigation reports, which are replete with instances wherein accidents may have been averted had employees taken appropriate action for the safety of their trains when a fellow crew member has failed to take such action.

Findings

1 Extra 1214 North was standing on the main track, in the block of signal 4-1725, in accordance with applicable rules of the carrier.

2 Signal 4-1989 displayed an Approach aspect for Extra 5055 North; signals 4-1862 and 4-1725 displayed Stop-and-Proceed aspects.

3 Extra 5055 North was required to approach the temporary crossover system located a short distance south of Extra 1214 North prepared to stop, and was restricted from proceeding unless a proper hand signal was received by the switchtender for the crossover system.

4 During their off-duty period at Champaign after a lengthy tour of duty, the engineer and front brakeman did not avail themselves of the opportunity to obtain adequate rest before reporting on duty for the accident trip.

5 During a 3-or 4-hour period immediately before going on duty for the accident trip, the engineer, and apparently the front brakeman also, consumed a large quantity of alcoholic beverages

6 Some time after Extra 5055 North left Champaign, both the engineer and front brakeman fell asleep in the locomotive control compartment. It is evident the engineer fell asleep due to fatigue and the effects of alcohol, and apparently the front brakeman fell asleep for the same reasons

7 As a result of the engineer and front brakeman being asleep, the train did not approach the south crossover system at Riverdale or conform with the aspects displayed by signal 4-1989, 4-1862 and 4-1725, as required. Instead, the train passed the aforesaid crossover system and signals at high speed and collided with Extra 1214 North

8 The accident was a result of Extra 5055 North not being operated in accordance with signal indications and the carrier's regulations relating to the south temporary crossover system at Riverdale, due to the crew members on the locomotive falling asleep because of fatigue and the effects of alcohol

9 Causal factors in the accident were failure of the conductor and flagman of Extra 5055 North to take appropriate action for the safety of their train when the engineer and front brakeman reported for duty under the influence of alcohol, and when the train approached the south temporary crossover at Riverdale at excessive speed

Dated at Washington, D C , this 18th
day of January 1971
By the Federal Railroad Administration

Mac E. Rogers, Director
Bureau of Railroad Safety