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RAILROAD ACCIDENT INVESTIGATION,

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REPORT NO. 4154

PENN CENTRAL COMPANY

NEW CARLISLE, INDIANA

NOVEMBER 11, 1968

DEPARTMENT OF
TRANSPORTATION

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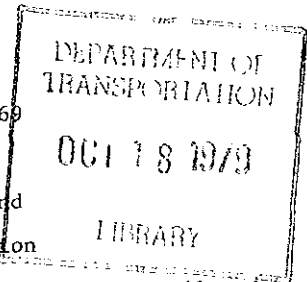
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Summary



DATE:	November 11, 1969	
RAILROAD:	Penn Central	
LOCATION:	New Carlisle, Ind	
KIND OF ACCIDENT:	Rear-end collision	
TRAINS:	Freight	Mail and Express
TRAIN NUMBERS:	Extra 2372 East	6
LOCOMOTIVE NUMBERS:	2372, 2337, 3007, 2370	4069, 4025, 4043, 4015
CONSISTS:	137 cars, caboose	30 cars
SPEEDS:	Standing	50 m p h
OPERATION:	Signal indications for trains moving with current of traffic; train orders and manual block-signal system for trains moving against current of traffic	
TRACKS:	Double; 0°40' curve; level	
WEATHER:	Clear	
TIME:	3:20 p m	
CASUALTIES:	1 killed; 2 injured	
CAUSE:	Failure of the conductor and flagman of the preceding train to provide protection against following trains, and failure of the engineer and fireman to operate the following train in accordance with a permissive-manual-block signal indication	

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
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RAILROAD ACCIDENT INVESTIGATION
REPORT NO. 4154

PENN CENTRAL COMPANY
NOVEMBER 11, 1969

Synopsis

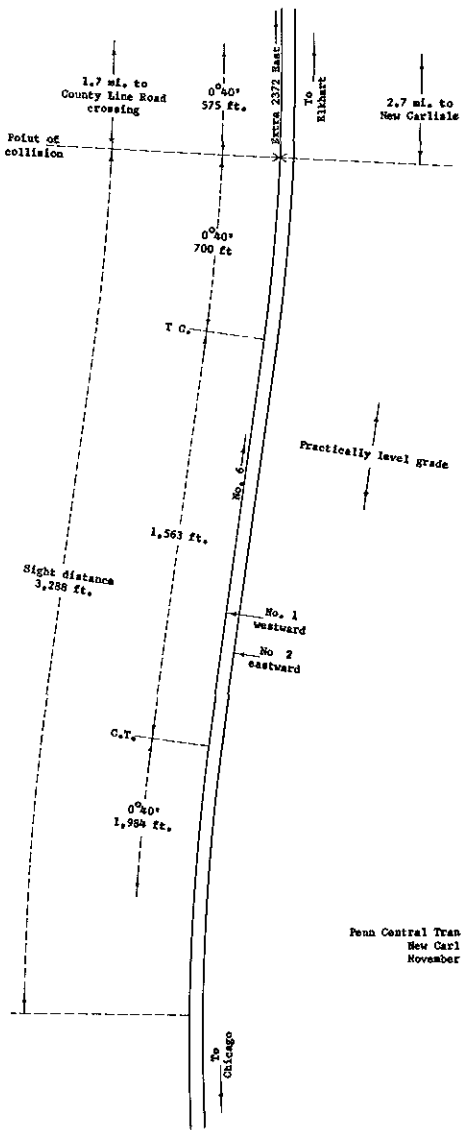
On November 11, 1969, a rear-end collision occurred between a freight train and a mail-and-express train of the Penn Central Company near New Carlisle, Indiana, resulting in death to one, and in injury to two, train-service employees

The accident was caused by failure of the conductor and flagman of the preceding train to provide flag protection against following trains, and failure of the engineer and fireman to operate the following train in accordance with a permissive-manual-block signal indication

Location and Method of Operation

The accident occurred on that part of the Chicago Division extending eastward from Division Post, Chicago, Illinois, to Elkhart, Indiana, a distance of 94 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, supplemented by an automatic train-stop system. Trains moving against the current

- o Elkhart, Ind. 28.5 mi.
- o New Carlisle 2.7 mi.
- x Point of collision 11.0 mi.
- o JD Interlocking 18.4 mi.
- o PO Interlocking 3.5 mi.
- o Burns Harbor, Ind. 29.9 mi.
- o Division Post, Chicago, Ill.



Penn Central Transportation Company
 New Carlisle, Ind
 November 11, 1969

of traffic are governed by train orders and a manual block-signal system. From the north, the main track are designated as No 1 westward and No 2 eastward

The collision occurred on track No 1, 62 8 miles east of Division Post, Chicago and 2 7 miles west of New Carlisle, Indiana

Time and Weather

The collision took place about 3:20 p m , under clear weather conditions

Track No. 1

From the west on track No. 1 there are, successively, a $0^{\circ}40'$ curve to the right 1984 feet, a tangent 1563 feet, and a $0^{\circ}40'$ curve to the left 700 feet to the collision point and 575 feet beyond. The grade in this area is practically level

Authorized Speed

The maximum authorized speed for all trains moving against the current of traffic in the collision area is 50 m p h

Train Equipment

The locomotives of Extra 2372 East and No 6 were equipped with radios. The caboose of Extra 2372 East and the coach of No 6 had no radio equipment

Sight Distance

Because of track curvature and trees alongside the railroad, a caboose standing at the collision point cannot be seen from an approaching eastbound locomotive at a distance greater than 3288 feet. See Plate No 2 below

Plate No. 2



3288 feet from collision point (arrow)

Carrier's Operating Rules

Slow Speed - not exceeding 15 m.p h

34 ***

If a train or engine is not operated in accordance with the signal indication, or other condition requiring speed be reduced, other members of the crew must communicate with crew members controlling the movement at once and if necessary stop the train.

99 ***

When a train stops under circumstances in which it may be overtaken by another train, a member of the crew must go back immediately with flagging equipment a sufficient distance to insure full protection, placing two torpedoes, and when necessary, in addition, displaying lighted fuseses

When a train is moving under circumstances in which it may be overtaken by another train, a member of the crew must take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fuseses must be dropped off at proper intervals.

Manual Block Signal System

- 289 Name: Permissive-block
Indication - Block occupied: *** proceed prepared to stop short of a train or obstruction, but not exceeding 15 miles per hour.
- 317 *** the operator in charge of the block station may permit a train *** to follow a train *** into the block by displaying a Permissive-block signal for the train to be admitted to the block.

334. *** A train approaching a block station on a track for which there is no fixed block signal must stop and ascertain from the operator the condition of the block ahead unless a signal to proceed is given by the operator with a green or yellow flag by day ***

Note: Green flag *** indicates Clear-block (Rule 280). Yellow flag *** indicates Permissive-block (Rule 289). ***

- 716 *** A train moving under Permissive Block signal may be authorized to proceed through the remainder of the block as though Clear Block signal were displayed, when the operator knows that the remaining portion of the block to be occupied by the train is clear

Carrier's General Order

- 1103-A3. Train or engines moving against the current of traffic must proceed at slow speed over the following crossings:

New Carlisle ----- County Line Road

Circumstances Prior to Accident

JD Interlocking is 13.7 miles west of a crossover connecting tracks No. 1 and No. 2 at New Carlisle

On October 30, 1969, a derailment occurred between JD and the crossover at New Carlisle. On the day of the accident, railroad personnel were clearing up the wreckage and track No. 2 was out of service. To move eastbound trains against the current of traffic on track No. 1, a manual block was established between JD Interlocking and the crossover at New Carlisle. The dispatcher issued a train order establishing a temporary block station at the New Carlisle crossover.

JD Interlocking does not have a fixed manual-block signal. Consequently, the operator at that point used green and yellow flags to signal eastbound trains as to the condition of the manual block on track No. 1 between JD Interlocking and the New Carlisle crossover.

The Accident

Extra 2372 East

Extra 2372 East, an eastbound freight train consisting of 4 diesel-electric units, 137 cars and a caboose, left Burns Harbor, Indiana, 29.9 miles east of Division Post, Chicago, at 1:30 p.m. the day of the accident. At 2:50 p.m., the train passed JD Interlocking, where it crossed over from track No. 2 to track No. 1. The operator at JD Interlocking gave the crew members a clear-block signal by displaying a green flag, and delivered to them a train order authorizing the movement of Extra 2372 East against the current of traffic on track No. 1 in the manual block extending from JD Interlocking to the crossover at New Carlisle.

The engineer, fireman and front brakeman were in the control compartment of the first diesel-electric unit and the swing brakemen was in the control compartment of the second unit. The conductor and flagman were in the caboose.

About 20 minutes after passing JD Interlocking the train approached the County Line Road crossing, 4972 feet west of the New Carlisle crossover. The engineer initiated a service application of the brakes to reduce speed over the crossing, as required by the carrier's General Order No. 1103-A3. After reducing speed, he decided not to attempt a running release of the brakes. As a result, the train stopped short of the crossing with the rear end 2.7 miles west of the crossover at New Carlisle. After stopping, the engineer released the brakes. Immediately thereafter, about 3:20 p.m., while it was standing on track No. 1, the train was struck from the rear by No. 6.

The conductor and flagman of Extra 2372 East did not drop a lighted fusee onto the track structure to provide protection against following trains while their train was reducing speed in approach to the County Line Road crossing. After the train stopped short of the crossing, the flagman went back about 100 feet from his caboose to provide protection against following trains on track No. 1. He returned to the caboose soon afterward, when he heard the brakes of his train being released. As he entered the caboose, the flagman observed the headlight of No. 6 come into view on the curve to the rear of his train, but thought the approaching train was moving on track No. 2. A few moments later, he realized the approaching train was on track No. 1 and moving at a speed which would prevent it from stopping short of a collision. He immediately shouted a warning to the conductor, and alighted from the caboose. The conductor jumped from a side window of the caboose. Very shortly thereafter, No. 6 struck the rear end of Extra 2372 East.

No. 6

No. 6, an eastbound first-class mail-and-express train, consisted of 4 car-body type diesel-electric units, 29 flat cars loaded with highway trailers, and a coach. The train left Chicago at 1:40 p.m. the day of the accident, after having received the prescribed brake test. At 2:30 p.m., it entered track No. 1 at PO Interlocking, 33.4 miles east of Chicago, and proceeded eastward toward JD Interlocking. A traffic control system is in use between the aforesaid interlockings.

As No. 6 approached JD Interlocking, the operator at that point radioed the engineer and informed him that the train order signal at the interlocking station was displayed. Soon afterward, No. 6 stopped on track No. 1 because of a Stop aspect displayed by an eastward home signal at JD Interlocking. When the interlocking operator caused the home signal to display a proceed aspect, the train entered the interlocking and approached its station. At that time, according to his statements, the engineer's attention was

directed toward vehicular traffic moving over a rail-highway grade crossing east of the interlocking station. He stated that he saw the operator coming from the interlocking station to deliver copies of a train order, but did not notice the color of the flag that the operator was displaying.

As No. 6 passed the interlocking station, the operator delivered a copy of a train order to the fireman on the left side of the locomotive. At that time the operator was beyond the range of vision of the engineer at the controls on the right side. After the order was delivered, the engineer, according to his statements, asked the fireman about the condition of the manual block between JD Interlocking and New Carlisle, as indicated by the flag displayed by the operator. He said the fireman answered "CLEAR BLOCK," indicating that the operator had been seen to be displaying a green flag. The engineer then read the copy of the train order, which authorized No. 6 to move against the current of traffic on track No. 1 in the manual block between JD Interlocking and the crossover at New Carlisle.

After passing the JD Interlocking station, No. 6 accelerated to a speed of 60 m.p.h. within three miles. Approaching the collision point, it was moving on a 0°40' curve to the right at a speed of 57 m.p.h., as indicated by the speed-recording tape. The engineer and fireman were in the control compartment at the front of the first diesel-electric unit. The conductor, flagman and front brakeman were in the coach at the rear of the train.

As No. 6 neared the east end of the curve to the right, the fireman observed the caboose of Extra 2372 East standing on track No. 1 and called a warning. The engineer promptly initiated an emergency application of the brakes. He then left the control compartment and ran back into the engine room through the engine room door on the right side of the control compartment. The fireman went into the engine room via the door on the left side of the control compartment. Shortly afterward, when its speed had been reduced to 50 m.p.h., as indicated by the speed-recording tape, No. 6 struck the rear end of Extra 2372 East.

The flagman of No. 6 was on the rear platform of the coach when he received the conductor's copy of the train order delivered by the JD Interlocking operator. He stated that the operator displayed a yellow flag while delivering the train order, and that he called out "YELLOW FLAG" to the other crew members on the coach. This indicated to those crew members that their train had permissive-block signal authority to move against the current of traffic on track No. 1 in the manual block extending from JD Interlocking to the New Carlisle crossover.

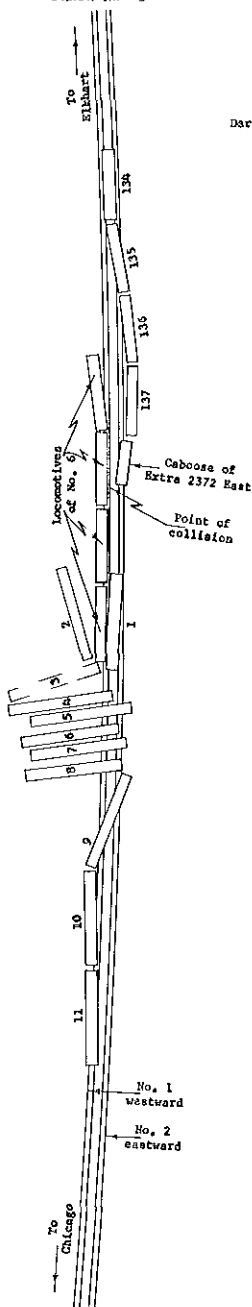
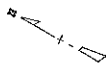
The crew members in the coach did not take any exception to the speed at which their train moved under permissive-block signal authority after leaving JD Interlocking. According to their statements, they assumed the JD Interlocking operator had radioed the engineer and notified him that the remainder of the manual block extending from JD Interlocking

Derailed cars of No. 6

1st car	=	MEVX-9700
2nd "	"	-5744
3rd "	"	-6777
4th "	"	-6808
5th "	"	-9641
6th "	"	-9625
7th "	"	-9789
8th "	"	-6905
9th "	"	-6753
10th "	"	-9666
11th "	"	-6972

Derailed cars of Extra 2372 East

134th car	=	PALE-42918
135th car	=	NWC-749910
136th car	=	NWC-749896
137th car	=	PALE-42940



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New Carlisle, Ind.
November 11, 1959

to the crossover at New Carlisle was now clear and, therefore, their train could proceed at its maximum authorized speed. They said that they were unaware of anything being wrong until the brakes of their train applied in emergency shortly before the collision.

JD Interlocking Operator

The operator stated that he displayed a permissive-block signal indication by use of a yellow flag, when he delivered copies of the train order to the fireman and flagman of No. 6.

Damages

Extra 2372 East

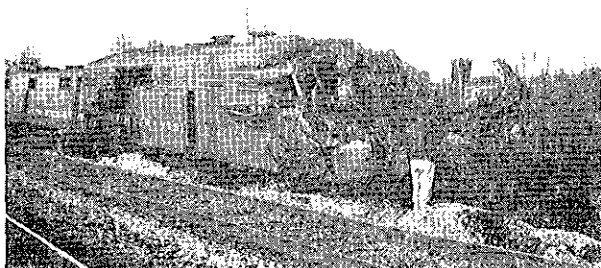
The caboose and four rear cars of Extra 2372 East were derailed. They stopped in various positions on or near the structure of the main tracks, as indicated in Plate No. 3. The caboose and the last two cars were destroyed. The third and fourth cars ahead of the caboose were moderately damaged.

No. 6

No. 6 stopped with the front end about 115 feet east of the collision point. The four diesel-electric units and first 11 cars were derailed. The locomotive units stopped upright and in line on the north side of track No. 1, adjacent to and paralleling that track. The derailed cars stopped in various positions on or near the structures of the main tracks (See Plate No. 3). The first locomotive unit was destroyed (See Plate No. 4 below) and the other three units were heavily damaged. Of the 11 derailed cars, six were substantially damaged; three moderately damaged, and two slightly damaged.

The cost of damages to both trains and the track structures was \$285,300, according to the carrier's estimate.

Plate No. 4



Casualties

Extra 2372 East

The conductor jumped from a side window of the caboose shortly before the collision, and was pinned under wreckage of the caboose. He sustained a fractured ankle, and abrasions and contusions.

No. 6

The engineer was lying on the floor on the right side of the engine room of the first locomotive unit at the time of the impact. He sustained minor bruises and burns to the legs.

The fireman was killed. His body was found on the ground on the left side of the second locomotive unit. The nature of the damages to the first locomotive unit suggests that at the time of the impact, the fireman was in the vicinity of the door about midway on the left side of the engine room compartment, and was thrown to the ground via the doorway as a result of the impact.

Train Crews' Hours of Service

Extra 2372 East

All the crew members had been on duty 14 hours 50 minutes at the time of accident, after having been off duty 8 hours.

No. 6

The engineer and fireman had been on duty 2 hours 50 minutes. The conductor, front brakeman and flagman had been on duty 2 hours 35 minutes. Prior to going on duty, the engineer had been off duty 6 hours and the fireman 6 hours 10 minutes, following previous tours of duty of 4 hours 20 minutes, and 4 hours 10 minutes respectively. The conductor, flagman, and front brakeman had been off duty 9 hours or more.

No. 6 Enginemen

The engineer, age 62, was first employed by the carrier as a locomotive fireman in October 1926, and was promoted to engineer in 1946. His record was clear, except for disciplinary action taken against him in June 1968 for violation of a bulletin order governing restriction of speed when moving past track equipment. He passed a periodic physical examination on November 19, 1968.

The fireman, age 50, was first employed by the carrier as a locomotive fireman in November 1945, and was promoted to engineer in February 1954. His record, relating to the

operation of locomotives and trains, was clear. He passed a periodic physical examination on February 8, 1966, which included vision and color-perception tests.

Findings

1. As Extra 2372 East reduced speed in approach to the County Line Road crossing, it evidently was moving under circumstances in which it could be overtaken by another train. Neither the conductor nor the flagman, however, dropped lighted fusees to the track structure for protection against following movements, as required by the carrier's rules when a train is moving under the aforesaid circumstances. This was a causal factor in the accident.

2. After Extra 2372 East stopped short of the County Line road crossing, the flagman had insufficient time to go back a sufficient distance to insure full protection against following trains, as required by the carrier's rules, before No. 6 closely approached from the rear. However, had either he or the conductor dropped lighted fusees to the track structure as the train reduced speed before stopping short of the County Line Road crossing it is probable that No. 6 would have stopped to extinguish the fusees and would have then proceeded at Reduced Speed, as required, prepared to stop short of a train ahead. Thus, the engineer of No. 6 might have been alerted to the fact that a train was occupying track No. 1 a short distance ahead and might taken action which would have averted the accident.

3. As No. 6 passed the JD Interlocking station, the crew members received copies of a train order authorizing their train to move against the current of traffic on track No. 1 in the manual block extending between JD Interlocking and the New Carlisle crossover. Since the preponderance of evidence so indicates, we find that the JD Interlocking operator was displaying a yellow flag when he delivered the order, to signal the crew members that No. 6 had permissive-block authority to proceed in the manual block.

4. No. 6 accelerated to a speed of 60 m p h within 3 miles after passing JD Interlocking. The speed was 57 m p h as it moved on a curve and neared the collision point.

5. No. 6 moved in the manual block at excessive speed and had insufficient braking distance to stop short of a collision after the fireman saw the caboose of Extra 2372 East and called a warning to the engineer. Inasmuch as the caboose could have been seen from a distance of 3288 feet and the speed of No. 6 was not reduced significantly before the collision, it is evident the fireman of No. 6 first saw the caboose ahead at a distance considerably less than 3288 feet.

6. The reason given by the engineer of No. 6 for the operation of his train at excessive speed in the manual block was that he had not noticed the flag displayed by the JD Interlocking operator, due to concentrating his attention on a rail-highway grade crossing ahead, but had been informed by the fireman that the operator had given their train

clear-block signal authority to operate in the manual block. This would have indicated to the engineer that the fireman had seen the JD Interlocking operator displaying a green flag and that their train was authorized to move at a speed of not more than 50 m p h in the manual block. In view of their record and long experience, it does not seem likely that the engineer and fireman would have operated No 6 at the speed it moved in the manual block, unless both believed the train had been given a clear-block signal by the JD Interlocking operator. Consequently, it appears that the fireman mistook the yellow flag displayed by the operator for a green flag and, as a result, erroneously informed the engineer that their train had clear-block signal authority to proceed in the manual block.

Although this suggests that the fireman may have been color blind, it is noted here that he passed a color perception test during a physical examination conducted by the carrier in February 1966. It is possible, however, the fireman perceived that the flag displayed by the operator was yellow, but for some reason or other misconstrued the yellow flag as indicating the train had clear-block authority to proceed in the manual block and so informed the engineer.

While the engineer apparently was a conscientious and capable employee, the reason he gave for not seeing the flag displayed by the operator is somewhat flimsy, since his duties and responsibilities for the safety of his train dictate that he maintain a vigilant lookout for signals affecting the movement of his train, and he merely had to glance toward the operator to see the color of the flag being displayed.

7. Although the crew members at the rear of No 6 were aware that the JD Interlocking operator had displayed a yellow flag, indicating their train had permissive-block signal authority to proceed in the manual block at not exceeding 15 m p h, they took no exception to the speed at which the train moved in the block. The reasons given by them for not taking such exception were that the coach had no radio equipment, and they assumed the JD Interlocking operator had radioed the engineer without their knowledge after passing the interlocking station and informed him the train could proceed through the remainder of the manual block as though a clear-block signal were displayed, as provided for in the carrier's operating rule No. 716. While there is some basis for these reasons, they are open to question in view of the fact that the train increased speed to 60 m p h. within three miles after passing JD Interlocking station. Since the train moved at increasing speed immediately after leaving JD Interlocking, the crew members in the coach should have promptly recognized something was amiss and taken action to stop the train, as required by the carrier's operating rule No 34. Had they taken such action, the collision would have been averted. In this connection, we note that failure of other crew members to take appropriate action to stop, or reduce the speed of, a train when the engineman fails to do so because of oversight or incapacitation has been a contributing factor in a high percentage of the collisions we have investigated, and in some derailment cases also.

8 Under the carrier's rule 716 and common practice, an operator may radio the engineer of a train moving in a manual block under permissive-block signal authority, and authorize him to operate the train through the remainder of the block as though a clear-block signal were displayed, without so informing the crew members at the rear of the train due to their lack of radio equipment. Thus, should a train enter a manual block under a permissive block signal and increase speed to over 15 m p h , the crew members without a radio at the rear end have no means of knowing whether the speed increase has been authorized, or whether they should take action to stop the train as prescribed by Rule 34. Considering that the safety of a train movement in a manual block depends to a large extent on all the crew members being fully informed as to the condition of the block, the carrier's rules and practice should be amended in such manner to ensure that all crew members of a train moving in a manual block are fully informed of the condition of the block, or a change in the block condition. It is possible that if the crew members on the coach of No 6 did not have some reason to believe their engineer had received clear-block signal authority by radio after entering the manual block at JD Interlocking, they would have recognized that their train was moving in the block at excessive speed and taken the required action to stop it, preventing the accident.

Cause

This accident was caused by failure of the conductor and flagman of the preceding train to provide flag protection against following trains, and failure of the engineer and fireman to operate the following train in accordance with a permissive-manual-block signal indication.

Recommendations*

It is recommended that the Penn Central Company ---

1 Take the action necessary to ensure that all crew members of a train are fully informed of all verbal or written instructions affecting the movement of their train.

2 Institute a comprehensive program designed to (1) educate its employees as to the necessity for adherence to rules governing the operation of train and yard movements (2) familiarize its employees thoroughly with the proper interpretation and/or application of the rules, and (3) to educate its employees as to the necessity of taking appropriate action to stop a train, or reduce its speed, when circumstances require and the engineman fails to take such action through oversight or for other reason.

3 Initiate a comprehensive review of procedures being followed by its employees subject to operating rules, to determine whether such procedures are safe and in conformity with applicable rules or regulations.

4 Institute a program which provides for continual checks on the proficiency of all employees subject to its operating rules

We further recommend that the Penn Central and other railroad carriers require its train and yard-service employees not to call to each other the indications of signals affecting their respective train and yard movements, but to call instead the aspects of such signals. For example, Red; Yellow; Green; Yellow-over-Red; Green-over-Green; Red Flag; Yellow Flag; Green Flag; Red Train Order Signal; etc. If this were done, the employee calling the signal would be providing other train-crew members with exact information as to what has been seen ahead and there would be less likelihood of the employee imparting erroneous information, as apparently was done by the fireman of No. 6 after seeing the yellow flag displayed by the operator at JD Interlocking

Dated at Washington, D C., this 24th
day of July 1970

By the Federal Railroad Administration

Mac E Rogers, Director
Bureau of Railroad Safety

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 of physical condition of 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, and those cars used to transport hazardous materials as defined by the explosives and dangerous articles law of 1961 Public Law 86-710