

THE PENNSYLVANIA RAILROAD

**SPECIAL INSTRUCTIONS
GOVERNING OPERATION OF
SIGNALS AND INTERLOCKINGS**

W09-A1-MAB

THE PENNSYLVANIA RAILROAD

SPECIAL INSTRUCTIONS

GOVERNING OPERATION OF

SIGNALS AND INTERLOCKINGS

TRAIN DISPATCHERS,

TRAIN DIRECTORS,

OPERATORS

AND

LEVERMEN

E F F E C T I V E

May 18, 1949

(Revised May 1, 1964)

THE PENNSYLVANIA RAILROAD

NOTICE

The instructions herein set forth became effective May 18th, 1949 (revised July 19, 1957). They relate to, and are coordinated with C.E. 223 (current issue), Special Instructions Governing Construction and Maintenance of Signals and Interlockings, and only govern the operation of signals and interlockings for movement of trains when failures of apparatus occur, while construction and maintenance work is being progressed by Communications and Signal Department employes, cars are being stored, heating devices used, or when notified of rusty or sanded rail, etc. They apply to train dispatchers, train directors, operators and levermen who will be furnished a copy and are required to understand and obey them.

All Operating, Signal and Interlocking Rules remain in force.

P. M. ROEPER,
Vice President Transportation
and Maintenance.

Approved:

A. M. HARRIS,
General Manager, Transportation.

C. J. HENRY,
Chief Engineer.

TABLE OF CONTENTS

	<i>Page</i>
General	3
Adjustments, Alterations, or Repairs to Apparatus	3
Releasing Electric Locks or Relays by Hand	4
Signal Indication Locks or Relays	4
Switch Indication Locks or Relays	4
Switch Lever Locks (Detector Locks)	4
Traffic Lever Locks	5
Failure of Apparatus	5
Failure of Power or Electrically Operated Switches	5
Changes in, Failure of, or Damage to Apparatus	5
Use of Snow-melting Oil or Other Heating Devices	6
Rusty or Sanded Rails	6
Stored Cars	6
Use of Switches and Signals by Communications and Signal Department Employees	7
Disconnecting Switches in Interlockings	8
Disconnecting Non-interlocked Switches	8
Air Pressure—Electro-Pneumatic Interlockings ..	8
Use of Jumpers	9
Dragging Equipment Detectors	11

GENERAL

1. When in these instructions, reference is made to "Supervisor Communications and Signals" it includes "Assistant Supervisor Communications and Signals"; when reference is made to "Inspector Communications and Signals" it includes "Foreman Communications and Signals".

A prospective operator or leverman is one who has not been qualified for duty at a given location.

2. Before being assigned to duty and thereby assuming responsibility for the operation at a block and/or interlocking station, a prospective operator or leverman must report at the station involved and post with the operator or leverman assigned to duty at that station for a period of time sufficient to enable him to thoroughly familiarize himself with the operation of all signals and interlocked switches, remote controlled interlockings, blocks and tracks for movement of trains, and all other appliances involved in the operation at that station. When the operator or leverman under whom the prospective operator or leverman has been posting, is satisfied that the prospective operator or leverman thoroughly understands the proper manipulation, characteristics and use of all of these appliances, blocks and tracks, he will certify by message to his superior officer that the prospective operator or leverman is qualified for duty at that station.

3. Placing any object not an essential part of signal or interlocking apparatus, in instrument cases or on interlocking machines is prohibited.

4. Power interlocking machine cabinets, cases on electro-mechanical machines, electric locks, and time releases are locked and must not be opened except by an authorized signal department employee. Any of these appliances found unlocked must be immediately reported by wire to the General Superintendent.

5. ADJUSTMENTS, ALTERATIONS OR REPAIRS TO APPARATUS.

Only the Supervisor of Communications and Signals or his representatives are responsible for and are permitted to make adjustments, apply experimental devices or unapproved material, or alter in any way

the mechanism or circuits of signals and interlocking apparatus, and then only when authorized by the General Superintendent when such adjustment or alteration will interfere with the safe and prompt movement of trains. When such adjustments or alterations are being made, train or engine movements must not be permitted over routes involved.

6. *RELEASING ELECTRIC LOCKS OR RELAYS BY HAND.*

(a) Electric locks or Locking relays on any type of interlocking machine or switch must not be released by hand except in emergency or when necessary account of repairs, and then only by a representative of the Supervisor Communications and Signals after he has been authorized by the General Superintendent or Supervisor Communications and Signals. After such authority has been received a notation must be made by the train dispatcher on "Dispatcher's Record of Movement of Trains" and by the train director and signalman on "Station Record of Train Movements" indicating what electric lock or relay was released, time released, by whom authorized and for what purpose.

(b) *Signal Indication Locks or Relays*

If a signal lever cannot be restored to its normal position, releasing the lock or relay is prohibited until it is known that all signals directly controlled by the lever display "Stop" indication and all signals governing approach to these signals display their normal or a more restrictive indication.

When it is known that the home signals controlling the affected lock or relay display "Stop" indication, an arrangement may be made to have the General Superintendent notify all trains governed by the distant signal controlling the lock or relay affected, that the distant signal is out of order and to proceed as though the most restrictive indication is displayed.

(c) *Switch Indication Locks or Relays*

Switch indication locks or relays may be released by hand after the switches have been properly secured on the ground by the Signal Department employee.

(d) *Switch Lever Lock (Detector Locks)*

Electric switch lever locks may be released by hand after it is known that no train or engine is on or approaching the switches controlled by the levers affected.

(e) *Traffic Lever Locks*

Arrangements must be made with the General Superintendent to safeguard the movement of trains in the territory affected before traffic lever locks or traffic relays are released by hand.

7. *FAILURE OF APPARATUS.*

(a) If any unit of an interlocking becomes inoperative in any way or becomes disconnected, the controlling lever or levers for that unit must be immediately secured by applying the approved blocking devices and the General Superintendent and signal maintainer notified. When necessary to apply blocking devices on electro-mechanical machines, they must be applied on both the large and small levers.

(b) When notified that automatic highway crossing protection fails to properly indicate approach of trains or that an accident has occurred at a crossing protected by automatic highway crossing protection, the operator must immediately report the condition to the General Superintendent and signal maintainer so that manual protection may be promptly provided until the automatic highway crossing protection has been restored to normal operation.

8. *FAILURE OF POWER OR ELECTRICALLY OPERATED SWITCHES.*

On power operated switches the operator must restore the lever which after several trials has failed to move to the desired position, as far as possible towards the original starting position and leave it in that position, except on electrically operated switches where the ammeter indicates excessively heavy current the lever must be placed and left in center position, until instructions are received from the signal maintainer. If maintainer is not available, operator must notify General Superintendent.

9. *CHANGES IN, FAILURE OF, OR DAMAGE TO APPARATUS.*

When making changes in, or when failure of, or damage to signals or interlocking apparatus, or auto-

matic highway crossing apparatus occurs, the employe in charge of making repairs or changes will give the operator full information concerning the apparatus affected and make such arrangements with him as are necessary for the safe movement of railroad traffic until the apparatus has been restored to normal operation.

10. USE OF SNOW-MELTING OIL OR OTHER HEATING DEVICES.

When snow-melting oil or any other heating device for melting snow and ice in switches is in use, the operator must be alert and if any evidence of damage to apparatus, wireways, wires, insulation at switches, or other equipment appears, the General Superintendent and the signal maintainer must be notified immediately. The operator and signal maintainer must then take necessary action to prevent any irregular operation of switches and signals that may result. Electric or other switch heating equipment controlled by operator, must be manipulated as weather conditions require.

11. RUSTED OR SANDED RAILS. (Rev. 2-1-64)

The track circuit indication lights and the switch lever indication lights involved cannot be depended upon and must not be accepted as indicating that track sections are clear when the operator has been notified by the signal maintainer that the head of the rail in track circuit territory is covered with rust, sand, coal or any other substance that may interfere with the proper shunting of track circuits. The signal maintainer must secure the switch levers involved with approved blocking devices and attach "Rusty Rail" signs.

If such condition is recognized by the operator or reported by an employe other than the signal maintainer or by the signal maintainer from a remote point, the operator must:

- (1) Immediately apply blocking devices and affix "Rusty Rail" signs to the switch levers involved.
- (2) Record on Station Record of Train Movements the time notified, from whom such information was received and the switches involved.

- (3) Notify the signal maintainer and the General Superintendent.

This record requirement under (2) must be carried over on each succeeding transfer record until the "Rusty Rail" Notice (Form CT-405-11) is changed to include all switches involved.

The operator, or employe in charge, on assuming duty, must:

- (1) Assure himself the Rusty Rail signs and the blocking devices are applied to all levers listed on the "Rusty Rail" Notice (CT-405-11).
- (2) Assure himself the "Rusty Rail" signs and blocking devices are applied to all levers listed on the transfer record of Station Record of Train Movements.
- (3) Certify to above conditions listed in Numbers 1 and 2 on the Station Record of Train Movements.
- (4) In case of conflict between the "Rusty Rail" Notice or the transfer record and the actual application of "Rusty Rail" signs with corresponding blocking devices, see that all levers involved have "Rusty Rail" signs and blocking devices applied until the conflict is corrected by a qualified employe.
- (5) In case of conflicts noted in Number 4 above, immediately communicate with the General Superintendent for instructions.

For stations in service part time (where actual transfer between operators cannot be made) the operator, prior to closing such station, must report the "Rusty Rail" conditions on the transfer record to the General Superintendent who will maintain written record in the Train Order Book (CT-22) until the part time station reopens. At this time the recorded information must be transferred to the operator opening such station who must record the information on the transfer record of his Station Record of Train Movements.

Blocking devices must remain applied and removed only during actual operation of the levers, then immediately reapplied. After a signal has been displayed for a movement, the blocking device must not be removed or the levers operated until the operator

has verified that the entire movement is clear of the signal governing a movement in the opposite direction by either.

- (1) Positive visual observation.
- (2) Communication with a member of the crew involved or other qualified employee.
- (3) Communication with the operator in charge of the next manned block station.

Signed Certification of Station Record of Train Movements to include: "Requirements of Rule 11, CT-405 fulfilled (Rusted or Sanded Rails)."

12. STORED CARS.

(a) When cars are stored on a track on which Automatic Block System rules apply, the operator handling the movement must notify the signal maintainer and advise him of the limits of the track occupied by the stored cars so that the necessary control circuits may be disconnected. When it is known that stored cars are to be removed and before moving them the signal maintainer must be notified so that he may immediately restore all circuits to normal operation or make such other arrangements as are necessary to protect the movement until normal operation of circuits is restored.

(b) When cars are stored within the limits of an interlocking or on a track where the switch leading to that track is remote controlled, or where automatic highway crossing protection, approach locking, annunciators, or other equipment will be affected, the operator handling the movement must notify the signal maintainer as promptly as possible so that the necessary control circuits may be disconnected, and the switches leading to the track obstructed may be properly secured on the ground. Immediately after the cars are stored the operator must restore all switches and signals governing movement to the track or tracks involved, to their normal position and secure all levers controlling the units so affected, by applying the approved blocking device to insure that a signal governing movement on a route leading to the track or tracks obstructed, cannot be given.

When stored cars are to be removed the operator must notify the signal maintainer so that after the cars have been removed he may assure himself that

normal operating conditions have been restored and so report them to the General Superintendent. After being notified by the signal maintainer that conditions are normal, the blocking devices may be removed. The General Superintendent when so requested will arrange for sufficient movement over the bonded section of track to insure proper shunting of circuits.

(c) To avoid improper operation due to false track circuit indications resulting from rusty wheels when stored cars are being removed, and the switch leading to track on which cars are stored is interlocked or located near an interlocking, all levers controlling the switches and signals for the movement involved must be secured by applying the approved blocking devices which must not be removed until the movement is completed.

13. USE OF SWITCHES AND SIGNALS BY COMMUNICATIONS AND SIGNAL DEPARTMENT EMPLOYES.

Communications and Signal Department employees are required to have permission from the operator for use of switches and signals and a full understanding with him as to interference with working units, before making or testing circuit changes or disconnecting locks or other safeguards and the operator must secure authority from the General Superintendent before such permission is given. After permission has been given Communications and Signal Department employees to proceed with any such work, movement over switches affected is prohibited unless authorized by the Communications and Signal Department employee in charge.

14. DISCONNECTING SWITCHES IN INTERLOCKINGS.

Before disconnecting an interlocked switch in any type of interlocking, Communications and Signal Department employees are required to have the controlling lever placed in position corresponding to the position of the switch. After placing the lever in such position when so requested, the operator must secure it by applying the approved blocking device which must not be removed, nor the lever operated, until after authority to do so has been received from the

Communications and Signal Department employe making the request that the lever be so secured.

15. DISCONNECTING NON-INTERLOCKED SWITCHES.

When necessary to disconnect any part of a non-interlocked switch, unless the switch is wedged and spiked in its normal position, or when such a switch is open for inspection, adjustment or repair, the signal department employe in charge of the work is required to set the signals governing approach of trains or engines to such switch, so they will display their most restrictive indication and when telephone facilities are available he also is required to arrange with the operator for necessary protection to train movements. Where telephone facilities are not available flag protection in both directions must be provided.

16. AIR PRESSURE—ELECTRO-PNEUMATIC INTERLOCKINGS.

(a) Electro-pneumatic interlockings are equipped with a low air pressure alarm located in the interlocking station. When this alarm is actuated it indicates the air pressure is being depleted. As soon as possible after actuation of this alarm, all switches must be lined to normal position or for the route most likely to be used, after which the General Superintendent and the signal maintainer must be notified. After the switches have been so lined they must not again be changed until either the air pressure has been restored to normal or authority to do so has been received from the signal maintainer on the ground.

(b) When the low air pressure alarm at interlockings so specified by instructions posted over the low air pressure alarm, indicates that the air pressure is below 45 pounds, operation of switch levers is prohibited unless the signal maintainer is on the ground to assist in moving the switches. When the air pressure is below 20 pounds, trains and engines must be stopped before being permitted to proceed, unless it is known that the signal maintainer on the ground has safely secured the switches. When it is known that the switches have been safely secured by the signal maintainer on the ground, signal to proceed may be displayed without stopping train or engine movements.

(c) When the low air pressure alarm at interlockings so specified by instructions posted over the low air pressure alarm, indicates the air pressure is below 80 pounds, operation of the switch levers is prohibited unless the signal maintainer is on the ground to assist in moving the switches. When the air pressure is below 35 pounds, train or engine movement over the switches is prohibited unless it is known that the signal maintainer on the ground has safely secured the switches. When it is known the switches for the route involved have been safely secured by the signal maintainer on the ground, signal to proceed may be displayed without stopping train or engine movements.

17. USE OF JUMPERS.

(a) Communications and Signal Department employes are prohibited from using jumpers to bridge the contacts on the electrical apparatus of switch and signal appliances except in cases of absolute necessity and then only to avoid unnecessary delay to trains and after authority to do so has been secured from the General Superintendent.

(b) Supervisors and Assistant Supervisors Communications and Signals, and Inspector Communications and Signals only are permitted to authorize the use of jumpers in the following territory after receiving authority from the General Superintendent.

NEW YORK REGION

From "Harold" Interlocking, LIRR., to and including "Union" Interlocking.

"Jacy" Interlocking to "Hudson" Interlocking, both inclusive.

PHILADELPHIA REGION

"Broad" Interlocking to "North Philadelphia" Interlocking, both inclusive.

Penna. Sta.-30th Street to "Overbrook" and "Brill" Interlockings inclusive.

PITTSBURGH REGION

Terminal area, "PITT" Interlocking.

(c) Supervisors or Assistant Supervisors Communications and Signals only, are permitted to authorize the use of jumpers in other than the territory indi-

cated above after receiving authority from the General Superintendent.

(d) Before jumpers are applied either within or outside of interlocking limits, Communications and Signal Department employes are required to give full information to the train dispatcher and to operator or leverman, and each interlocking switch and signal affected thereby must be immediately secured by applying the approved blocking device. The operator must then make a message memorandum addressed to the leverman explaining the condition, and post it in a conspicuous place. If going off duty while this abnormal condition exists, he must fully explain the condition to the operator and leverman relieving him. This message memorandum must not be filed until after the signal department employee who was authorized to use the jumpers has reported that normal conditions have been restored. In addition train dispatchers, train directors and operators must make notation on "Dispatcher's Record of Movement of Trains" and "Station Record of Train Movements."

Before jumpers are applied in territory outside interlocking limits, Communications and Signal Department employes are required to give full information to the train dispatcher, train director and the operator on each side of the location affected and they must make notation on "Dispatcher's Record of Movement of Trains" and "Station Record of Train Movements."

(e) When a signal department employee is instructed to place jumpers, he is required to remove them immediately after the emergency ceases to exist, and then report to the person authorizing him to place the jumpers that they have been removed and that normal conditions have been restored. The employee securing authority from the General Superintendent for the application of the jumpers is then required to notify the train dispatcher or train director, and any other interested employee, that the jumpers have been removed and the switch and signal circuits are restored to normal condition. After being so advised the train dispatcher, train director and the operators must make notation on "Dispatcher's Record of Movement of Trains" and "Station Record of Train Movements", that the jumpers have been removed.

(f) At some locations a jumper indication light is provided to indicate that jumpers, when not in use, are stored in their proper place. Where these lights are used they must be observed by train directors, operators and levermen and if not displayed the General Superintendent must be notified immediately.

18. DRAGGING EQUIPMENT DETECTORS.

(a) When detector is actuated, the operator will promptly notify the General Superintendent, and will restore the signal control lever involved to normal position. He will not break the seal on controlling devices or restore signal affected to normal operation until directed by General Superintendent to do so.

Notation must be made by the train dispatcher on "Dispatcher's Record of Movement of Trains" and by the train director and operator on "Station Record of Train Movements" indicating location, time actuated, time restored and cause.

(b) Fixed Arm Type—Require manual replacement after each actuation. The signal maintainer should be notified as promptly as possible after each actuation to restore the detectors to normal condition.

(c) Self-Restoring Type—Automatically restores to normal position after each operation, and when it is known, or any reasonable doubt exists, that the nature of train defect causing the actuation warrants patrol of the tracks to insure against potential dangerous conditions, or serious delays due to damage to track or signal facilities, the signal maintainer or track foreman should be notified as promptly as possible after the actuation to patrol the track.

