

• What's the Answer? •

Power Cut-Off On Switch Machines

"From the standpoint of safety, what means do you provide on power switch machines to enable maintainers to cut off the power when they are working on the machines?"

Wood Block Between Stock Rail and Point Should Always Be Used

By C. E. PINKSTON
Signal Supervisor
Nashville Terminals
Nashville, Tenn.

IN the Nashville Terminals, we have in service U.S.&S. Model 14, A-1 and A-5 electro-pneumatic and M-2 110-volt d.c. switch movements, and G.R.S. Model 5-A 110-volt d.c. and 5-D low-voltage d.c. switch movements. The electric movements have a motor cut-out switch that opens the motor-control circuit by inserting the crank. The electro-pneumatic movements do not have a cut-out, so it is necessary to remove the lock-valve armature from the Style-CP switch valve, or remove the control wire from the lock magnet. This

is usually the practice when work to be done requires any length of time.

However, a 4-in. by 4-in. block of oak wood, with an 8-in. piece of old broom handle inserted 2 in. in the center of the block, can be inserted between the stock rail and switch point when working on switches. This affords ample protection, and does not require the opening of any circuits. In my opinion, the block of wood should always be used when working on power switches where more than one man is doing the work, as some one might accidentally restore the control circuit to normal. The wood block is preferable to spike mauls, etc., as its removal might be overlooked for a train movement, resulting in derailment.

Approach Train Indicators

"Do you use approach train indicators in yards or elsewhere to warn switch engines when main-line trains are on the approach? If so, what type of indicators do you employ, and how are they controlled? Do you recommend the use of such indicators, and what are their specific advantages in your opinion?"

Installed in The Past

By G. K. THOMAS
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Topeka, Kan.

In the past, the Santa Fe has installed approach train indicators at some locations in automatic block signal territory, where considerable switching is done on main tracks in yard areas. These are designated as "Train Signs", and their purpose is to notify yard crews engaged in switching operations, when main-line trains are approaching. As additional communications facilities are provided, or signals are installed where they will serve the purpose, the need for train signs decreases, with the result that many have been removed, and no additional ones have been installed during recent years. However, there may be conditions on various railroads where

train signs would be of value and, consequently, the following description is given for the benefit of those who find a need for them:

The "Train Sign" is intended to provide a visible indication to yard crews switching on the main line, when a train is about to arrive, so that they can get into the clear in ample time to avoid delaying the approaching train. In order to accomplish this, the sign has to be large enough to be seen for a considerable distance, and must be illuminated at night. It is controlled by a line circuit extending far enough to take in three or more blocks outside of the yard territory. The necessary length of the control circuit depends upon the speed of approaching trains, and it must not include any of the track circuits which are occupied by the switch

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To Be Answered In a Later Issue

(1) How do you test hermetically-sealed telegraph relays, such as the W. E. Type 275-C, to determine if they are in good operating condition?

(2) Do you use precast or poured concrete foundations for supporting talk-backs and their masts on yard loudspeaker jobs? In either case, is a passage provided for running the wires or cables up out of the ground through the foundations and into the speaker masts, or are the cables or wires brought up on the outside of the foundations, and thence into the masts or up to the speakers in a separate conduit? Please explain your construction standards, the reasons therefore, and the advantages thereof.

(3) What is your road's practice in determining the number of communications line gangs required? Can a general average of a certain number of miles of line with an average of two crossarms and wires be arrived at?

(4) At interlockings or in large communications offices, where motor generator-storage battery standby power facilities are installed, have you ever experienced motoring of the generator by the battery during an a.c. failure? How is this prevented?

(5) What lubricant do you use on the slide plates under the points of power operated switches? Is graphite satisfactory, and have you had any experience with its use for this purpose? Would you recommend the use of graphite on slide plates?

(6) Where dragging - equipment detectors have been installed on your railroad what means are used to inform an engineman that a detector has been tripped by his train, e.g., (a) special wayside indicators not tied in with track circuit control, (b) special aspects on existing signals, or (c) the regular Stop aspect on existing signals?

(7) Between pole lines and instrument housings in C.T.C. or automatic block territory, do you use underground or overhead drops? What are the advantages of your particular standards of construction?

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engines or cars during switching operations.

The sign is constructed in the form of a long, shallow, rectangular sheet-steel box, with a spindle run through it lengthwise and pivoted in bearings at each end, so that the sign can rotate through an angle of 90 deg. It is mounted on a steel signal post, with an angle-iron supporting frame, or between two separate posts. The minimum size of signs which have been used is 14 in. wide and 4 ft. 2 in. long, painted black, with the raised word "TRAIN" in 11-in. letters on both sides painted white. The letters are 2 1/4 in. wide, made of No. 16 gage sheet steel, spot-welded to the front and rear faces of the sign.

A second-hand semaphore signal mechanism may be used to rotate the sign through an angle of 90 deg. When the approach circuit is unoccupied, the mechanism is energized and holds the sign in a hori-

If you have a question, answer or Kink you think would be of interest and help to others in the field, please write.

zontal position, so that the word "TRAIN" cannot be seen by switching crews. When the approach circuit is occupied, the mechanism is automatically released, and the sign is rotated to a vertical position by a heavy counterweight, which is provided for that purpose. At the same time, three electric reflector lamps become automatically lighted at each side of the sign for illumination at night. Thus, the word "TRAIN" can be observed from either direction by switching crews, both by day and by night, indicating to them that a main-line train is approaching, and warning them to get into the clear if they are occupying the main track, and not to enter the main track if they are already in the clear.

Prescribed Form

By G. R. PFLASTERER
Signal Engineer
Bessemer & Lake Erie
Greenville, Pa.

MONTHLY field inspections of gate and flashing-light highway crossing protection installations are made on the Bessemer & Lake Erie, and recorded on our Form 823MW, both sides of which are shown herewith. We find these particularly helpful in accident cases.

Division, System Records

By W. W. WELSH
Signal Engineer
Baltimore & Ohio
Baltimore, Md.

RELAYS, batteries and other apparatus are tested regularly the same as other signal equipment, and records are filed in division and system offices. Gates are given torque and operating tests each two years.

In addition, maintainers make weekly operating tests to insure that the equipment and circuits are functioning as intended. A running record is kept on a card filed in the instrument cases. These cards are sent to division offices for file at the (Continued on page 478)

Crossing Protection Test Records

"What practice do you follow to make a record of the tests of highway crossing protection facilities, and to keep these records on file for ready reference in case of accidents at the crossings involved?"

FORM 823 MW
BESSEMER AND LAKE ERIE RAILROAD COMPANY
SIGNAL DEPARTMENT

MONTHLY FIELD INSPECTION OF GATE AND FLASHING LIGHT HIGHWAY CROSSING PROTECTION

LOCATION _____ DATE OF THIS INSPECTION _____

TRACK CIRCUITS

Track Circuit Number																				
Voltage of Battery																				
Amps at Track Relay																				
Battery Renewed (Date)																				
Condition of Track																				
Condition of Insulated Joints, Switch Rods and Gage Plates																				
Condition of Wiring and Bootlegs																				
Condition of Bonding																				

Were Connections on Track Wiring and Batteries cleaned, checked and tightened? _____
Were battery wells cleaned? _____ Are ties under insulated joints properly tamped? _____
Remarks: _____

POWER BATTERY AND RECTIFIER

Storage Battery—Type _____ Case Temperature _____ Solution Temperature _____

Note: Specific Gravity on Edison Storage to be taken only in October and April

Cell No.	Voltage	Sp. Gr.	Sol. Level
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

High Rate Charge of Rectifier _____ Found at— _____ Left at— _____
Low Rate Charge of Rectifier _____
Load in Amps. when (a) Gates are down _____
(b) Gates are clearing _____
Date batteries and trays last cleaned and painted _____

Primary Battery—Type _____ Voltage after 2 min. of operation _____ Current after 2 min. of operation _____
Condition of Battery _____ Solution Level _____ Date of Renewal _____
Condition of battery shunt, switch and wiring _____
Was battery shunt applied? _____ How many minutes? _____
Remarks: _____

LAMPS AND REFLECTOR BUTTON SIGNS

Signal A	Signal B	Signal C	No Turn Signals												
N Side	S Side	N Side	N Side	S Side	S Side	Signal D	Signal E	Signal F							
P	R	F	R	F	R	F	P	S	T	O	P	S	T	O	P

Bulb Renewed _____

Gate Lamps				Pilot	Illuminated Stop Sign										
Gate A		Gate B			Signal A		Signal B		Signal C						
B	P	N	P	S	P	N	P	S	P	N	P	S	P	N	P

Bulb Renewed _____

Voltage of Lamp Circuit at Sig. A _____ Sig. B _____ Sig. C _____ Sig. D _____ Sig. E _____
Flashes per minute _____ Were Reflectors and Lenses cleaned and polished? _____
Were Reflector Button Signs cleaned and polished? _____ Any Dead Buttons? _____ If so, state location _____
Remarks: _____ Were they replaced? _____

GATES

Time between initial operation of Signal and initial movement of Gates _____ Secs. Actual dropping or snubbing time of Gates _____ Secs. Total time from initial operation of Signal until gates reach horizontal position _____ Secs. Clearing time _____ Secs. Torque measured on gate arm at 5' 0" from center line of gate shaft _____ (Gate in horizontal position) _____ (Clear Torque measurement to be taken in April and October only) _____ (Gate in raised position) _____

Condition of Motor, Commutator and Brushes _____ Condition of Flexible Coupling _____ Condition of Friction Clutch _____ Condition of Slot _____ Are armature and pole faces of slot magnet clean and free of grase? _____ Date of last lubrication _____ (To be lubricated once every 2 yrs. (Dec., Mar., Jun., Sept.). See lubricating instructions on P. B. R. Supply Co. Instruction form 100-10, page 4, dated 1931)

Veeder Count, Gate A _____ Gate B _____ Are Gates clear of all obstructions in raised position? _____ Are Gate Arms level when down? _____ Are Gates locking properly? _____ Condition of Compressor _____ Condition of Control Levers _____
Remarks: _____

RELAYS

Relays removed _____ Model and Style _____ Pc No _____ Serial No _____
Relays placed _____ Model and Style _____ Pc No _____ Serial No _____
Reason for changing relays _____
Does Power Off relay function properly when AC supply is cut off and restored? _____ Was AC power supply OK when inspection was finished? _____ Do Track and XR relays drop freely when test switch is opened? _____
Remarks: _____

INSTRUMENT CASES AND JUNCTION BOXES

Were leads inspected? _____ Terminals inspected and tightened? _____
Were terminals cleaned and polished? _____ Batteries, Relays, etc. cleaned? _____
Were cases cleaned out and painted on inside where necessary? _____
Do doors shut and lock properly? _____ Condition of test switches _____
Remarks: _____

ANNUNCIATORS

Voltage at Bell	S. Approach	N. Approach	Remarks

CONTROL PANEL

Condition of Panel _____ Was panel cleaned? _____ Connections checked and tightened? _____
Lamps renewed (state which) _____
Remarks: _____

GENERAL

Condition of Crossing Icell _____
Condition of Line Wires and Drops _____
Condition of Cables _____
Any irregular operations of any kind? _____
Dates of weekly inspections: _____
Remarks: _____

Signed _____ Inspector _____
Title _____

Front (left) and rear (right) of Form 823 MW used on the B.&L.E. for crossing protection test records

