



**LIGHT TRAFFIC ETC**  
FOR THE  
**ROCK ISLAND LINES**

BETWEEN  
**TUCUMCARI, N.M. and DALHART, TEXAS**







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## EXISTING BLOCK SIGNALS EASILY CONVERTED TO CTC

A substantial proportion of the benefits of centralized traffic control can be obtained at relatively low cost by superimposing additional facilities on the existing 3-wire APB system between Tucumcari, New Mexico, and Dalhart, Texas.

### Minimum Additional Equipment

The following diagrams illustrate the additional devices required at the ends of sidings for the proposed conversion. A hand-throw switch location and a spring switch location are illustrated. These locations are arranged for light traffic cTc without respacing the existing block signals. All necessary facilities are provided for complete operation by signal indication, without timetable or train orders.

### No Additional Line Wire

The G-R-S Syncroscan cTc system proposed for this installation is designed for use on existing 2-wire line without interfering with present services, hence no additional line wire is required. In Syncroscan cTc, control of wayside apparatus is by relay circuits, similar to service-proven G-R-S Syncrostep. With complete controls for any field location transmitted in 1-1/2 sec-

onds, Syncroscan easily keeps up with the operator's decisions.

For indications, Syncroscan uses an electronic system which operates independently of controls--never has to wait its turn on the line. Indications are scanned continuously at a basic rate of 100 per second. Delay is negligible; the operator has complete up-to-the-second information.

### Future Expansion

The inherently high capacity of the Syncroscan system will handle any amount of expansion, such as power switch operation at existing locations, and even entirely new additional locations.

The G-R-S sectional type control machine permits ready modification of existing panels and addition of new panels to take care of any future changes in field installations.

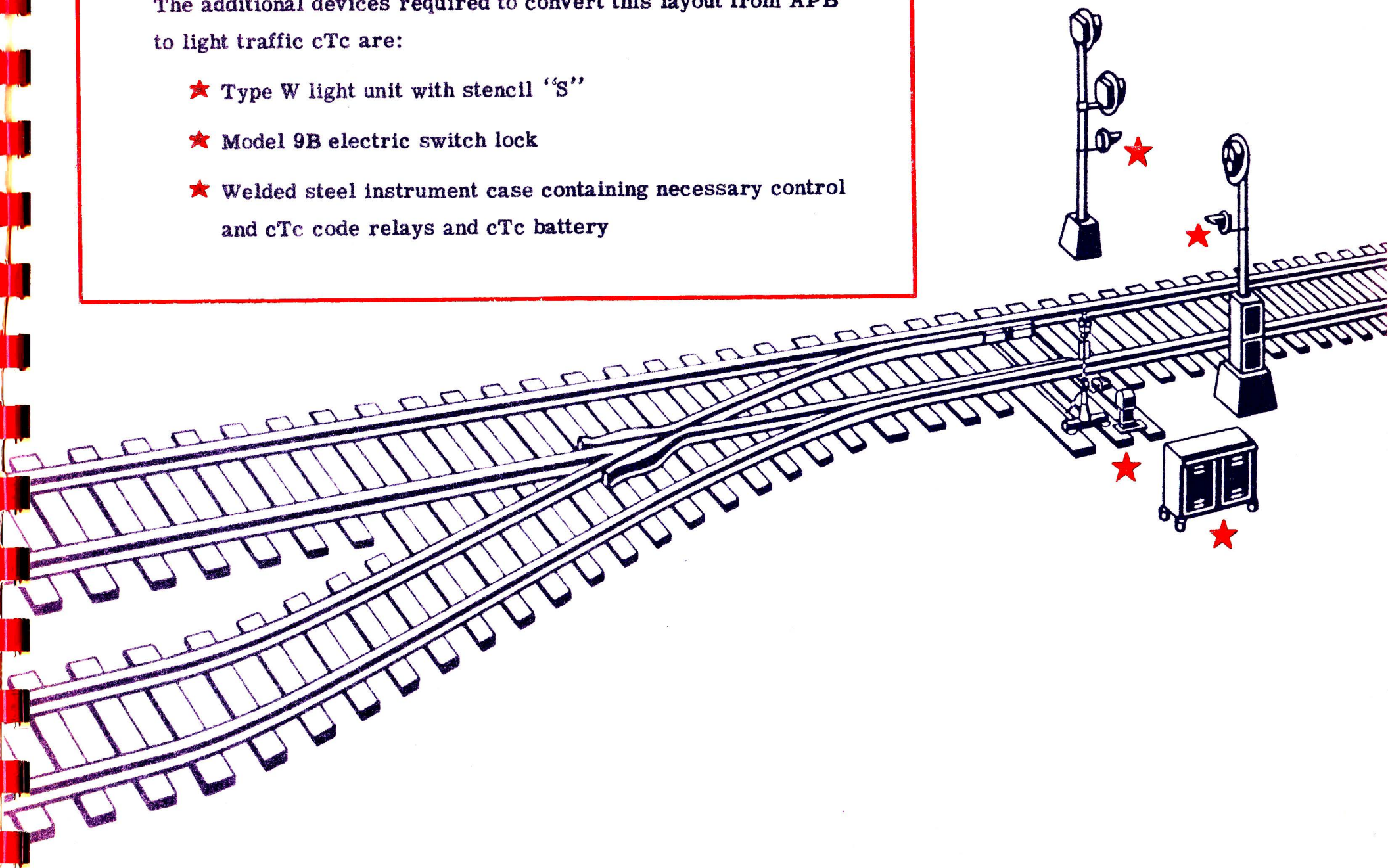
Thus this proposed arrangement provides the immediate benefits of operation by signal indication. It can be equipped with additional facilities or extended to include additional mileage--main line or interlockings--as desired.



## TYPICAL SIDING END WITH HAND-THROW SWITCH

The additional devices required to convert this layout from APB to light traffic cTc are:

- ★ Type W light unit with stencil 'S'
- ★ Model 9B electric switch lock
- ★ Welded steel instrument case containing necessary control and cTc code relays and cTc battery



## TYPICAL SIDING END WITH SPRING SWITCH

The additional devices required to convert this layout from APB to light traffic cTc are:

- ★ Type W light unit with stencil "S"
- ★ Type ME two-position dwarf signal
- ★ Welded steel instrument case containing necessary control and cTc code relays and cTc battery

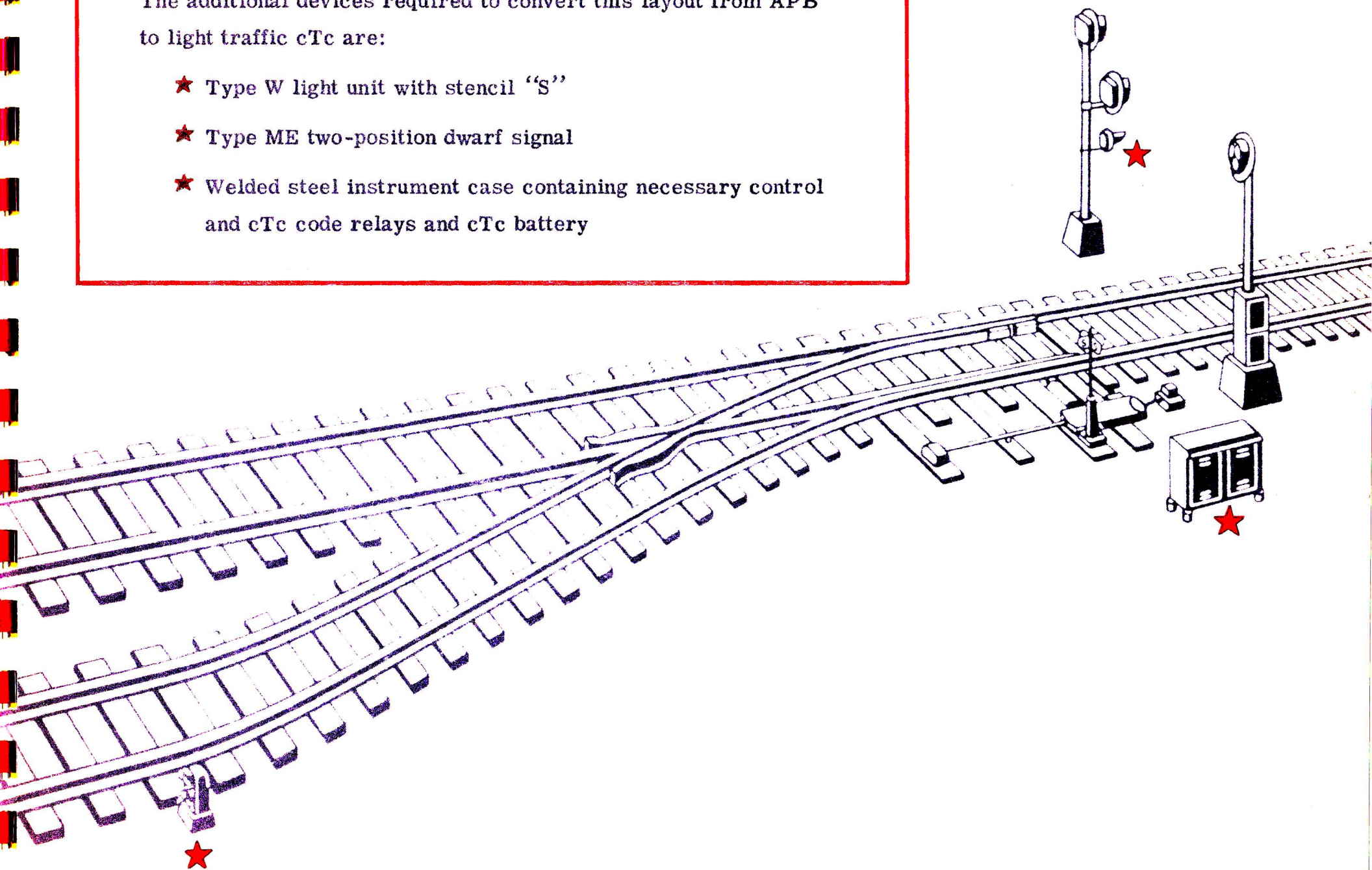
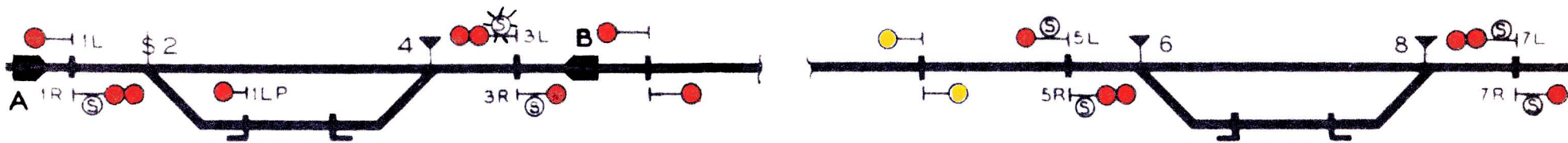




DIAGRAM 1.



### CLEARING SIGNAL 3L

1. Eastbound train A arrives on approach to signal 1R. Westbound train B arrives on approach to signal 3L.
2. To put train B on siding, operator:
  - (a) positions switch lever 4 reverse, illuminating out-of-correspondence light in barrel of switch lever,
  - (b) moves signal lever 3 to the left.
  - (c) presses code start button.\*
3. cTc control illuminates S marker on signal 3L, directing train to take siding.
4. cTc code indicates back to operator that:
  - (a) S marker is illuminated on signal, by lighting green indication lamp L.
  - (b) signal 3L will clear for a move to the left (when switch is thrown), by lighting left track occupancy light on main line between siding limits.
  - (c) switch 4 can be thrown reverse, by the extinguishing of the out-of-correspondence light.

\* for simplicity, this action is omitted in succeeding description.

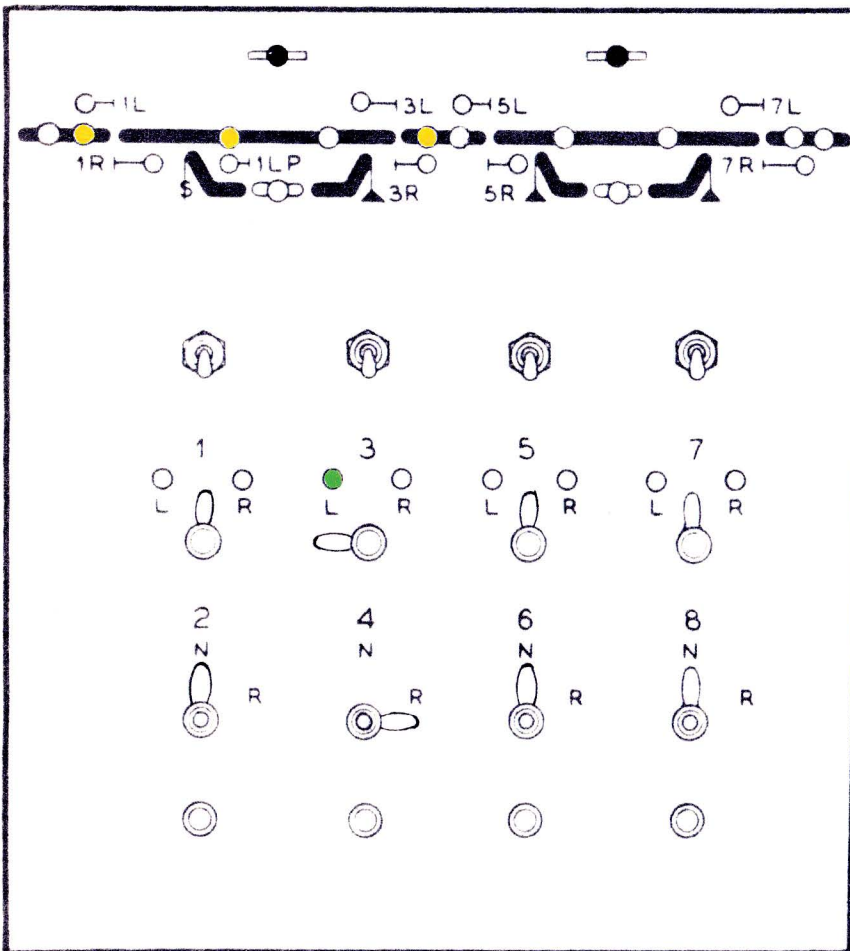
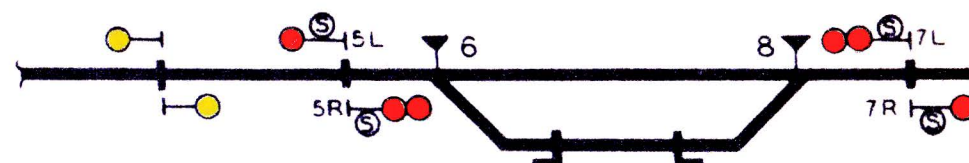


DIAGRAM 2.



### REVERSING SWITCH 4

1. Trainman throws switch 4 reverse.
2. Signal 3L clears to red over yellow and S marker goes out.

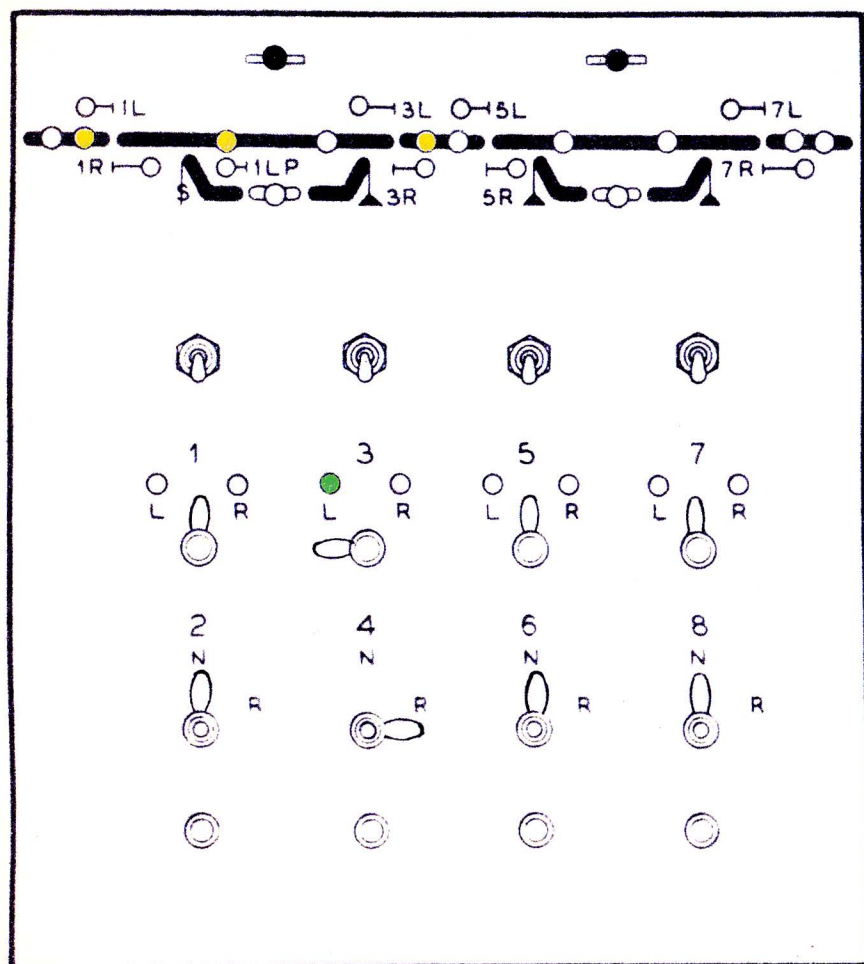
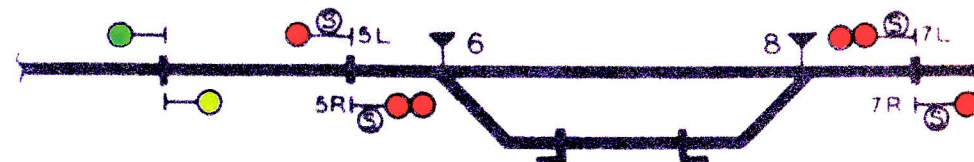
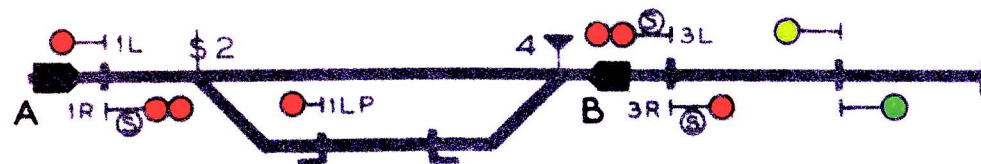


DIAGRAM 3.



### TRAIN B PASSES SIGNAL 3L

1. Train B passes signal 3L, putting it to stop.
2. cTc code indicates back to operator that:
  - (a) signal 3L is at stop, by extinguishing green indication lamp L.
  - (b) train has passed the signal, by lighting the right track occupancy light on the main line between siding limits, and extinguishing the track occupancy light in approach to signal 3L.
3. Operator moves signal lever 3L to the stop position and switch lever 4 to normal.

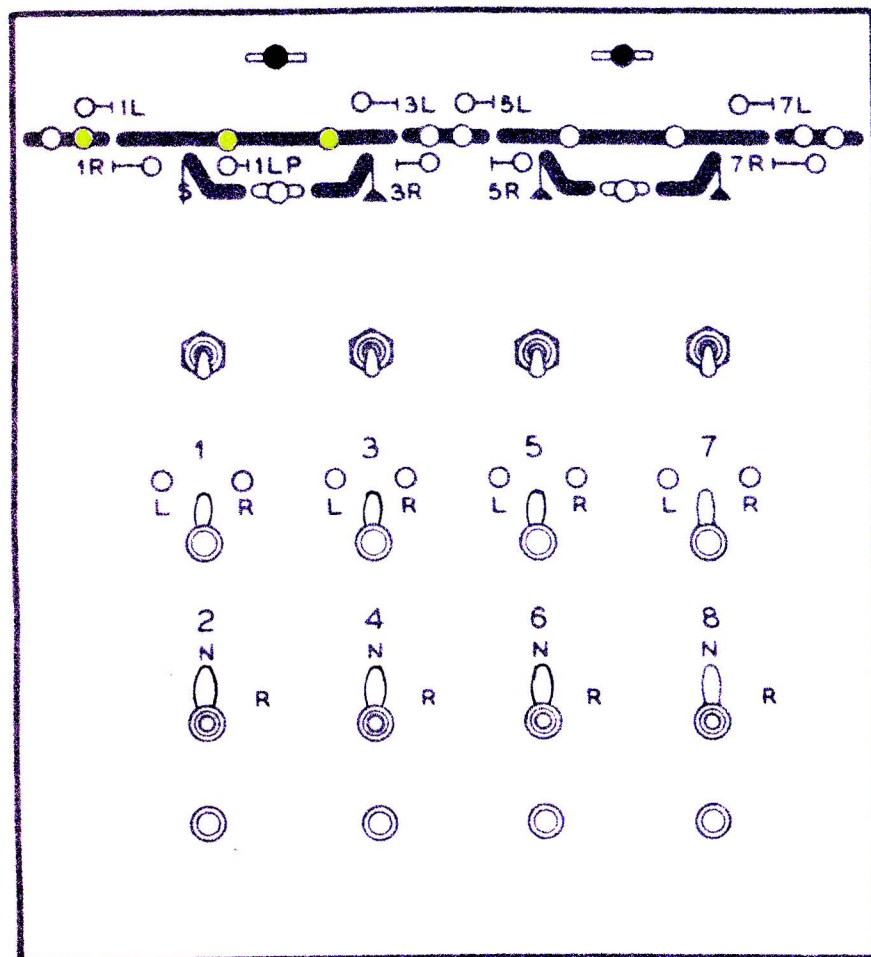
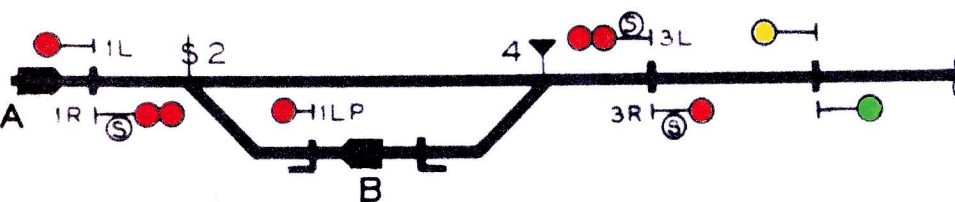




DIAGRAM 4.



### TRAIN B TAKES SIDING

1. Train B pulls into clear on siding track, and trainman returns switch 4 to normal.
2. cTc code indicates to the operator that the train is in the clear by extinguishing the track occupancy lights on the main line between siding limits.
3. Operator moves key switch to left, thus indicating the presence of a train on the siding and the direction of its movement.

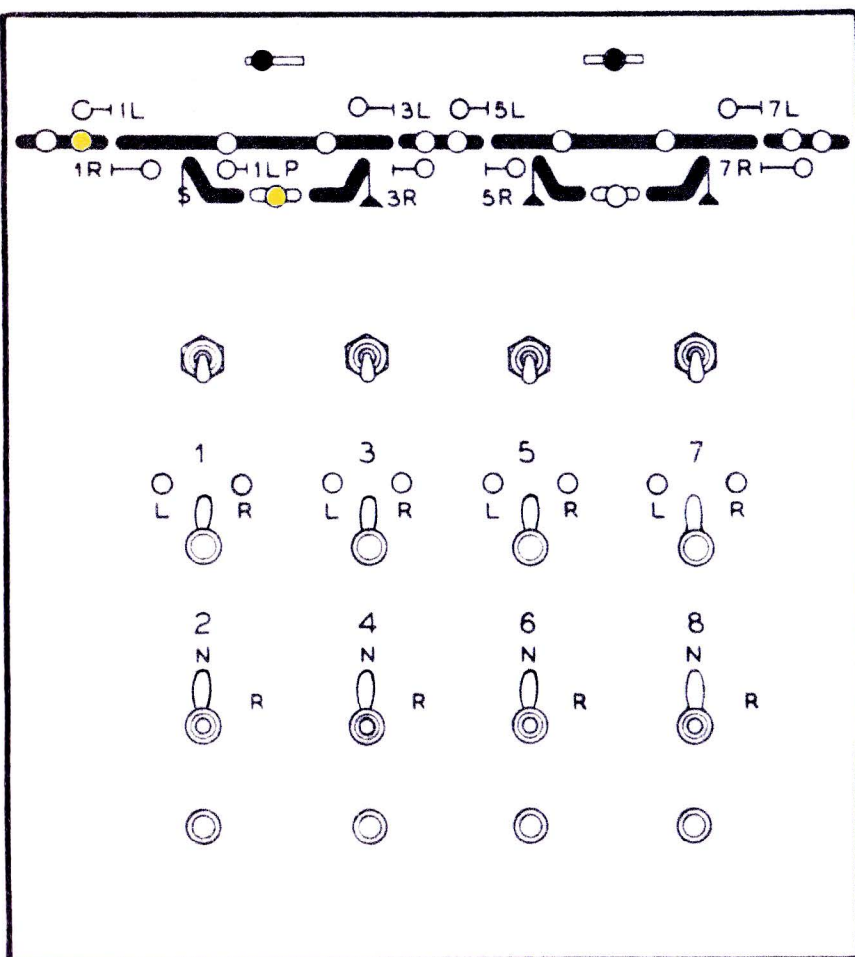
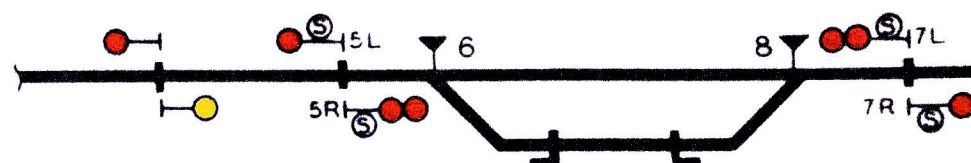
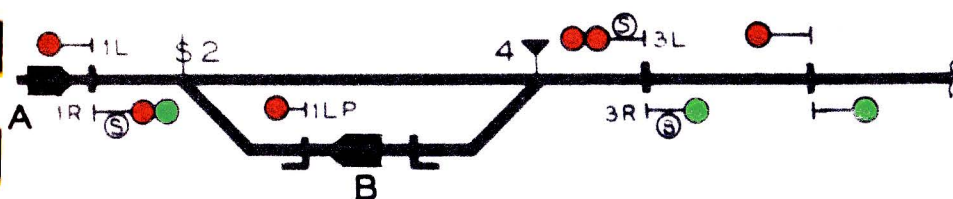
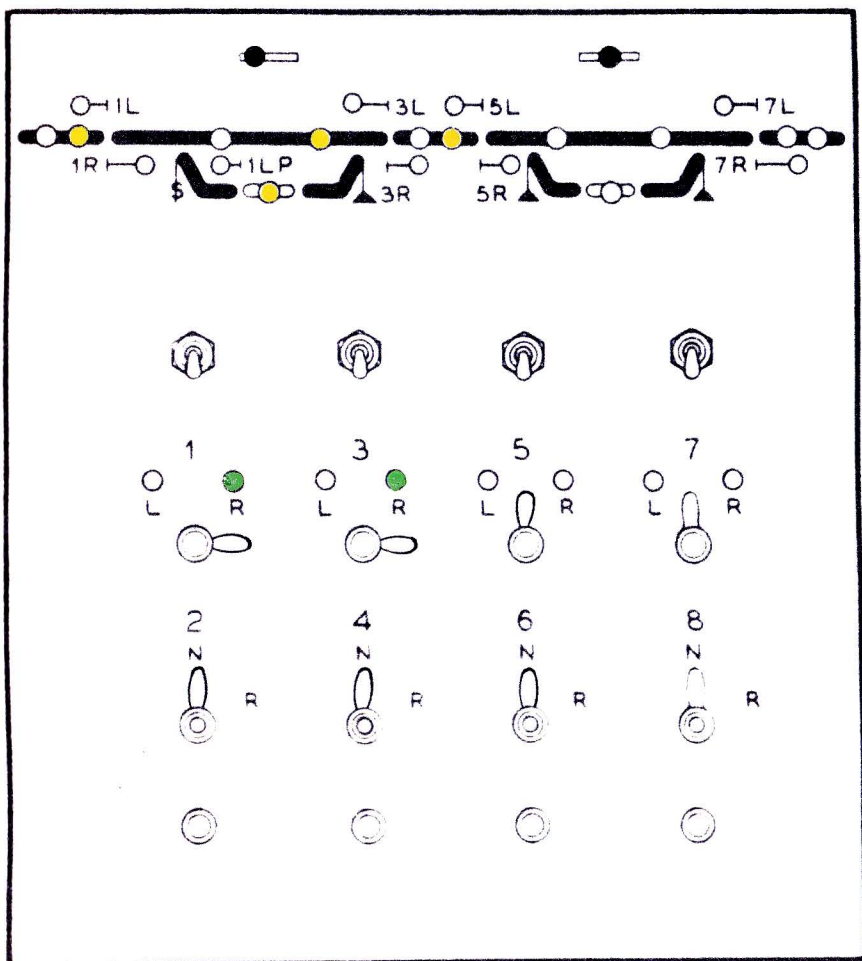


DIAGRAM 5.



### CLEARING SIGNALS 1R and 3R

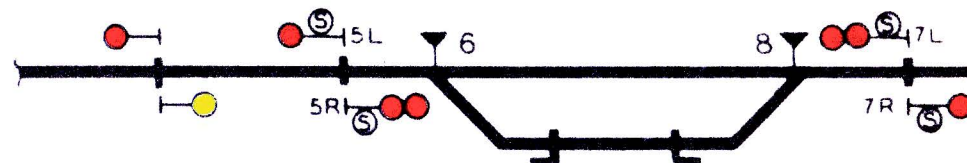
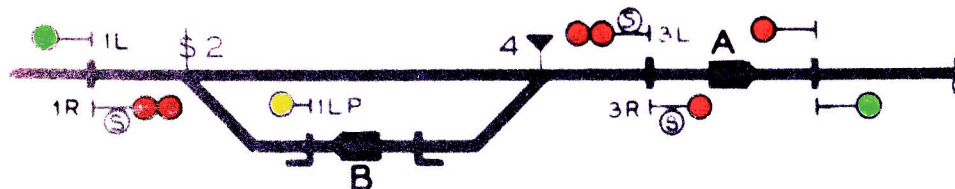
1. Operator moves levers 1 and 3 to clear signals 1R and 3R for train A to move to the right.
2. cTc control clears signals 1R and 3R.
3. cTc code indicates to the operator that the signals are clear by lighting the green indication lamps R and the right track occupancy lights on the main line.



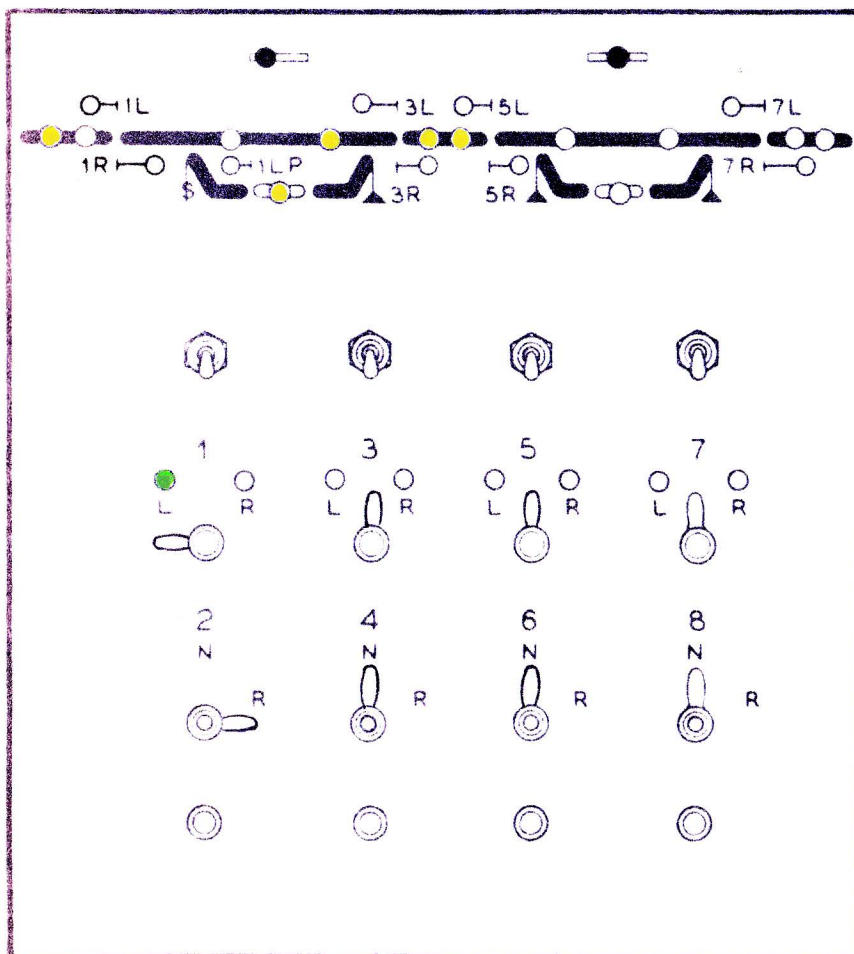


1. Train A passes signal 1R, putting it to stop.
2. cTc code indicates to the operator that:
  - (a) signal 1R is at stop, by extinguishing green indication lamp R,
  - (b) the track is occupied, by lighting left occupancy light on the main line between siding limits,
  - (c) train is off approach, by extinguishing the main line track occupancy light.
3. Operator moves signal lever 1 to the stop position.

DIAGRAM 7.



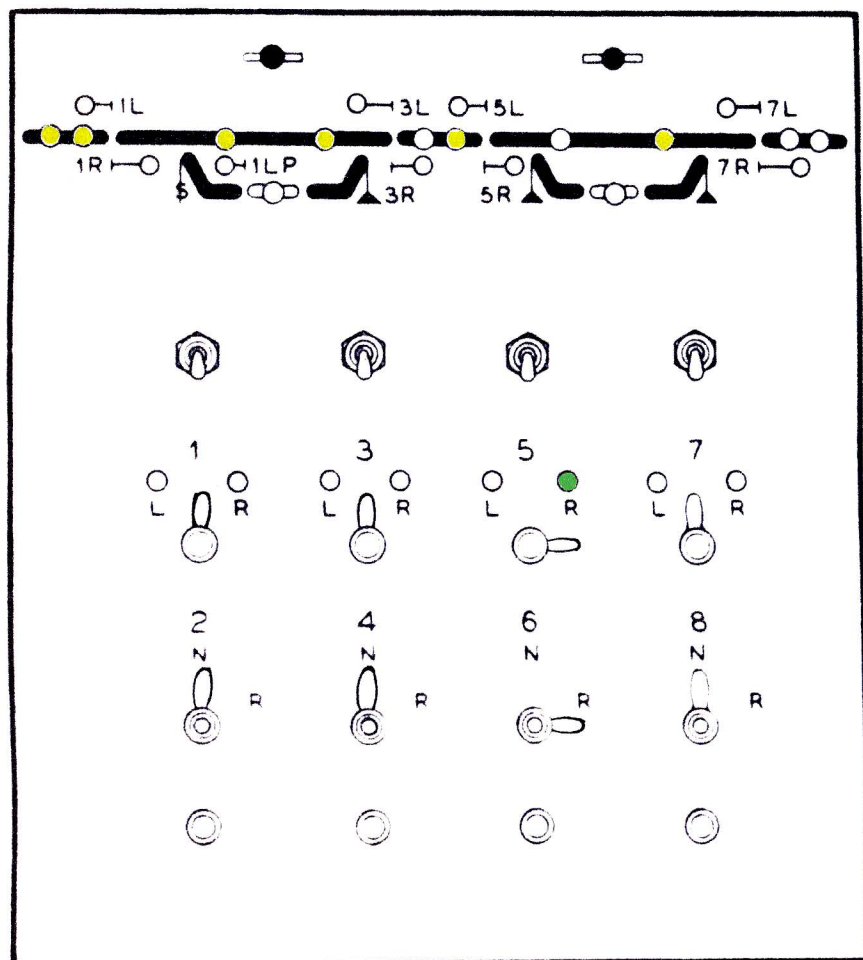
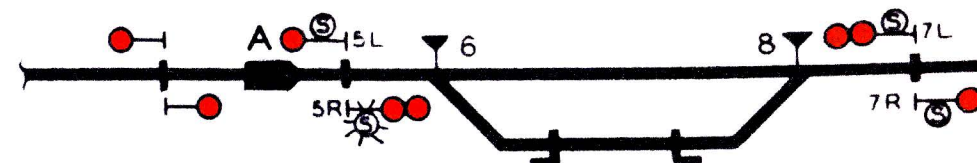
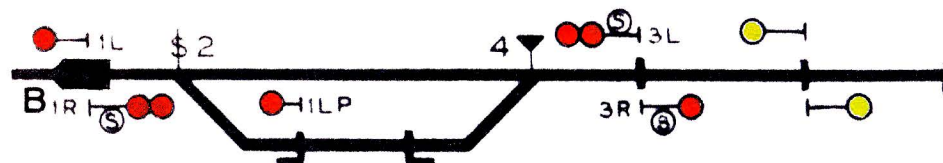
**TRAIN A PASSES SIGNAL 3R —  
CLEARING SIGNALS 1LP and 1L**



1. Train A passes signal 3R, putting it to stop.
2. cTc code indicates to the operator that:
  - (a) signal 3R is at stop, by extinguishing green indication lamp R,
  - (b) train has passed signal 3R, by extinguishing track occupancy lights between siding limits and lighting track occupancy light on the main line.
3. Operator moves signal lever 3 to the stop position.
4. In order to move train B off the siding, the operator:
  - (a) positions switch lever 2 reverse, illuminating the out-of-correspondence light,
  - (b) moves signal lever 1 to the left, to clear signals 1LP and 1L.
5. cTc code indicates back to the operator that:
  - (a) signals 1LP and 1L are clear by lighting green indication lamp L, the left track occupancy light in advance of signal 1L, and the right track light on the main line between siding limits.
  - (b) switch 2 is called reverse, by extinguishing the out-of-correspondence light.



DIAGRAM 8.



**TRAIN B PASSES SIGNALS 1LP and 1L—  
TRAIN A MOVES OVER SIDING TO EAST**

1. Train B passes signals 1LP and 1L, putting them to stop.
2. cTc code indicates to operator that:
  - (a) signals 1LP and 1L are at stop, by extinguishing green indication lamp L,
  - (b) train has passed signals, by illuminating track occupancy lights between siding limits and right occupancy light in advance of signal 1L.
3. Operator moves signal lever 1 to stop position and returns key switch to normal, extinguishing the siding track occupancy light.
4. Train A, meanwhile, has arrived on approach to signal 5R.
5. To put the train on the siding, the operator would proceed as already explained for Train B on the first four sheets of this series.
6. To move train A off the siding, the operator would move switch lever 8 reverse and signal lever 7 to the right, thus lighting the S marker on signal 7R.