

Unit lever interlocking machine has controls for 10 crossovers, 14 switches, 45 signals and 1 movable point frog

Interlocking Consolidation:

Three Into One at Baltimore

Track changes and interlockings modernized at the B&O's Camden street station where traffic includes 55 passenger and 170 freight trains every 24 hours as well as hundreds of switching movements

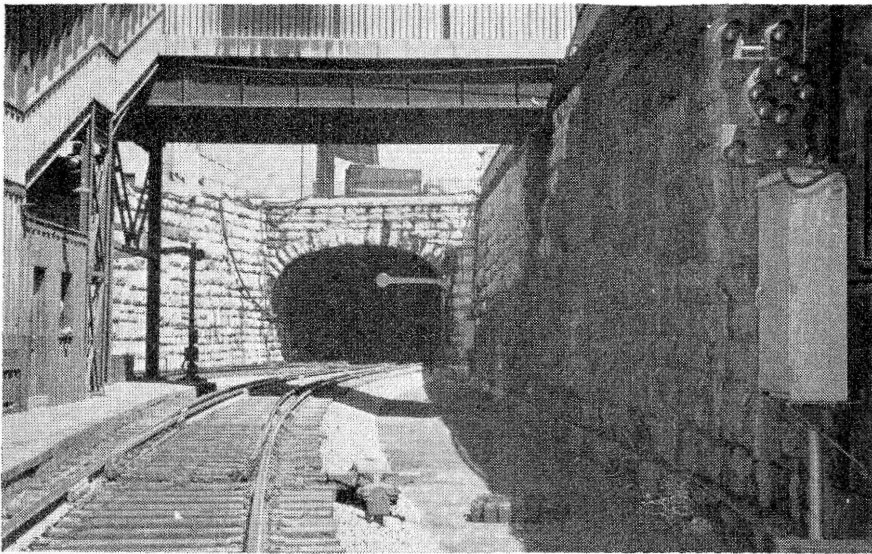
A NEW ALL RELAY INTERLOCKING, replacing three previous interlockings, was recently placed in service at the Baltimore & Ohio's downtown passenger station at Camden street in Baltimore, Md. The former signaling and interlockings included a mechanical interlocking with facing-point locks on the switches and crossovers of the five upper level stub-end tracks in the depot; electric switch machines on the switches and crossovers on the lower level two main tracks at the west end of Howard street tunnel; hand-throw switches where the upper-level and lower-level tracks

joined at the throat of the depot; and an electric interlocking at the wye at Bailey. The signals were, and are the B&O's standard color-position light type. Upper level tracks are used by passenger trains originating or terminating at Baltimore. The lower level tracks are used by through trains.

Electrification Ends

The double-track mainline enters the city from the south and swings east to Bailey where it turns north towards Camden station. Here the line enters Howard street tunnel to

run north 1½ miles to Mt. Royal station where it turns east toward Philadelphia and New York. At Bailey, a double-track line runs east to the B&O's yards and docks at Locust Point on the Patapasco River. From the west end of Howard street tunnel to a point approximately 3 miles east, there is a very heavy ascending grade. Trains operated by steam locomotives required a helper. A city ordinance, of the anti-smoke variety, required that eastward trains be operated by electric locomotives. Therefore, until the advent of dieselization, all eastbound trains operated by steam locomotives were



Smashboard controls are interconnected through signal controls

pulled through the Howard street tunnel to Waverly by electric locomotives, operating on 660 dc, from a third rail. After full dieselization in 1953, the "motor pen" track and other facilities for the electric locomotives were no longer required.

In addition, the mechanical interlocking on the upper level was in need of repair or replacement. Although "BY" interlocking was in good condition, the tower itself

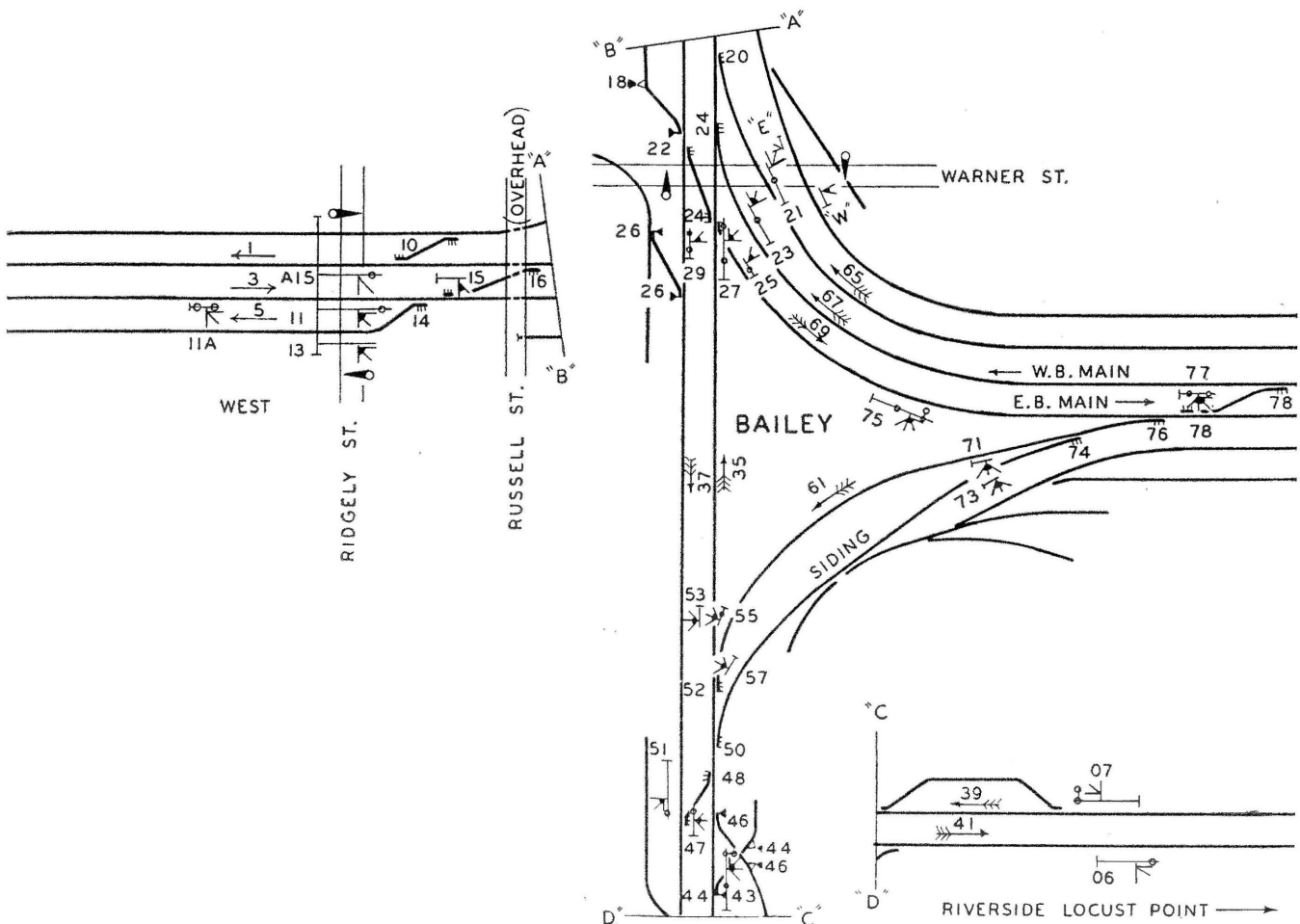
needed repairing. Thus it was decided that an effective solution would be the installation of a modern, all-relay interlocking with a new control machine in a new tower at Hamburg street, known as HB. Bailey interlocking at the wye was unchanged in the new plant, except that the controls of the switches and signals were brought into the new control machine. The upper level mechanical interlocking was re-

moved and the track layout simplified by removing some switches and crossovers. New GRS model 5C electric machines were installed and the color-position light dwarf signals were relocated.

In the simplification of the lower level interlocking, the "motor pen" track was removed, which also included the removal of some switches and crossovers. Power switches and crossovers were installed at the Hamburg street throat where the upper and lower level tracks converge, replacing hand-throw switches previously in service.

New Unit-Lever Machine

The control machine has a black panel with white lines representing the tracks with white indication lamps being lighted to show track occupancy. Switches are operated by toggle levers, the normal position being down. A switch point indicator on the track diagram forms a continuous white line with the track showing the route as lined by the operator. Above each switch lever is a red lock lamp and an amber out-of-correspondence lamp. The signal control knobs are the push-pull-turn type. To clear a signal after the route is lined, simply requires the

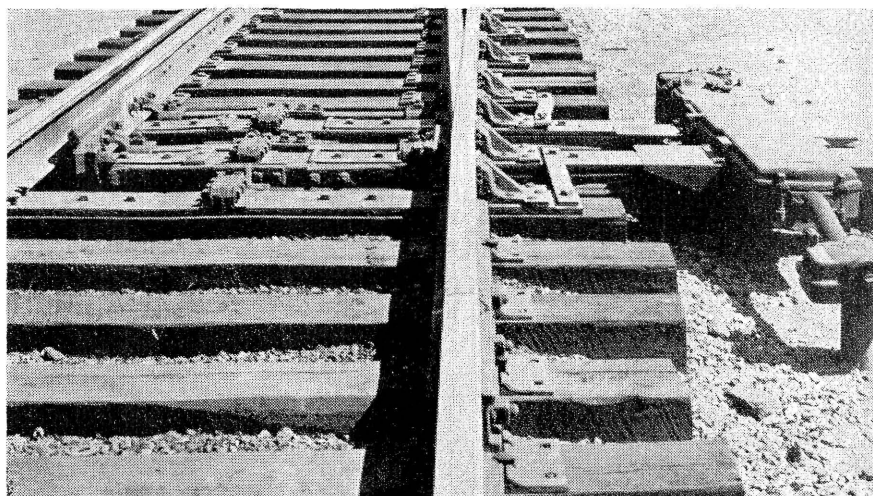


operator to push the signal knob. The indication lamp in the barrel of the knob is lighted red when the knob is pushed, but turns white when the signal clears. The red lock lights over the switches are also lighted, as the train passes the signal, the signal knob lamp is extinguished, as are the white track occupancy lamps when the train leaves a track circuit. Sectional route release locking, as well as time locking are employed.

To facilitate various switching moves, particularly where head-end cars are added or removed from trains, the call-on aspect has been employed. For example, to clear signal 117 to allow a switch engine to put a car on a train over switch 118 reversed, the operator turns the 117 signal knob white dot down and then pushes the knob. This action will cause signal 117 to display the call-on aspect (two lunar white lights inclined 45 deg., lower quadrant).

Special Clearing for Switching

Signals 87 and 97 can be cleared against each other to the lunar white aspect to provide for switching moves over crossover 88 normal. This is done by pushing one signal



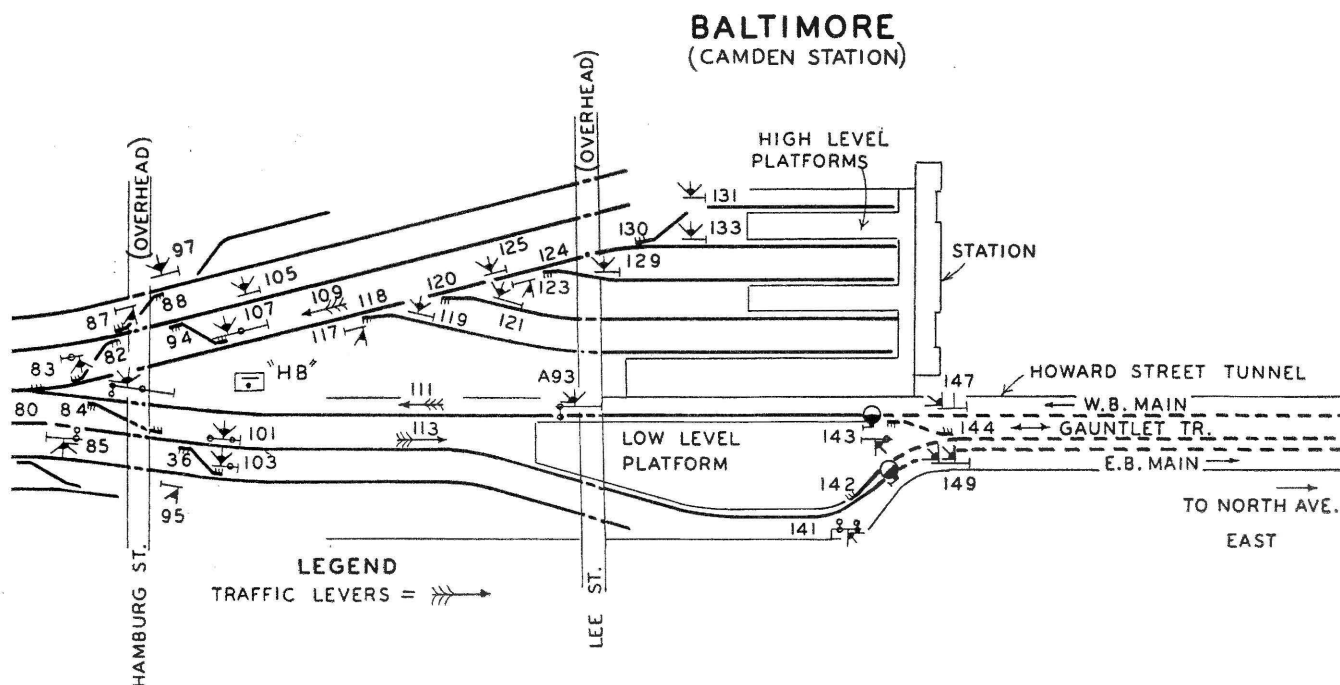
Switch machines operating on 110 volts d.c. have outboard brakes

Therefore, traffic levers, on the control panel, are for the tracks connecting these interlockings, and signals, of course, cannot be cleared from one interlocking into the other until traffic direction is established. In addition to this traffic locking, special controls were established on the signals governing eastward train movements into Howard street tunnel. After traffic direction is established, the operator cannot clear signals 141 or 143 for movement into the tunnel until the operator at the

this tunnel. In order to obtain increased clearance for freight trains, a third track in the center of the tunnel is used as gauntlet. This requires extra power switches and aspects on signals. Before signal 141 or 143 can be cleared the smashboard must clear.

A bell is provided to indicate the occupancy of the approach circuits to signals 11, 13 and 43, as well as the track circuits in Howard street tunnel.

The new brick tower at Hamburg



knob and then the other. The signals are returned to stop by pulling the knobs. These same special clearing provisions are provided for on signals 95 and 103 with crossover 96 normal.

The three junctions at the Bailey wye are treated as separate interlockings as are Hamburg street and the upper and lower level tracks.

other end of the tunnel clears a signal for movement out of the tunnel. This procedure works in reverse for westward train movements. In addition to these controls, signal 141 and 143 controls are interconnected with controls of smashboards at the tunnel entrance. Passenger trains generally operate right-hand running on conventional double track through

street has two stories, with the relay, battery and maintainer's office on the ground floor. Also on the ground floor is a wing containing the Camden street yardmaster's office. The new control machine is on the second floor of the tower. The relay and battery rooms in the tower are for the Hamburg street interlocking

(Continued on page 56)

B&O Interlocking

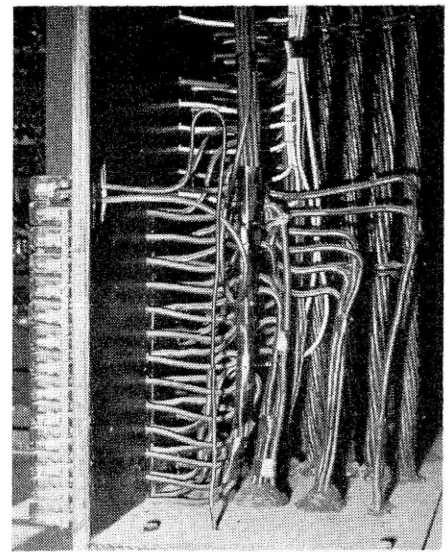
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control equipment. Twelve cells of Exide 120-a.h. storage battery are split for controls and the interlocking machine operation. Another six cells of 120-a.h. capacity are for local circuits, and 55 cells of 80-a.h. provide power for the 110-volt d.c. switch machines. These are model 5C with the outboard brake. In the change over to the new interlocking, the old single rail a.c. track circuits were replaced with conventional d.c. track circuits with two-ohm track relays. Trenchlay cable was used

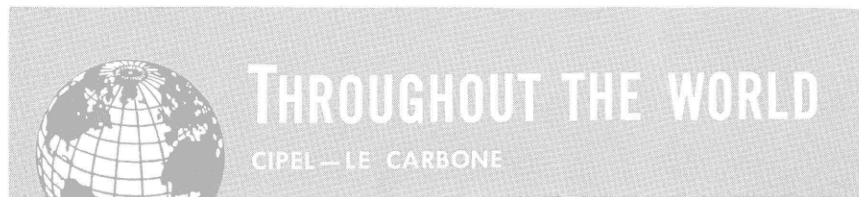
throughout. Track wires are No. 9 solid copper. All wire and cable was furnished by the Kerite Company.

New Crossing Protection

As part of the Camden street interlocking modernization, short-arm gates with flashing light signals are being installed at Warner and Ridgely street crossings. The crossing protection equipment controls are being interconnected with home signal controls so that a train stopping on an approach section, but short of the crossing, will not put the gates down if the home signal is not

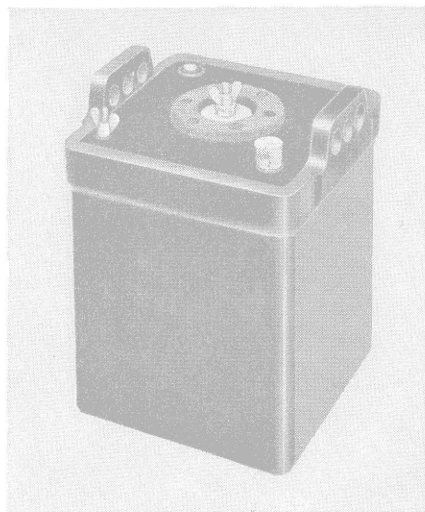


Cable terminations in "HB" tower



air depolarized

AD PRIMARY CELLS



ad 608a

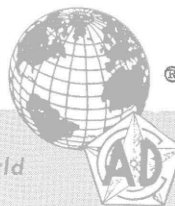
Save users

LABOR, TIME, MONEY

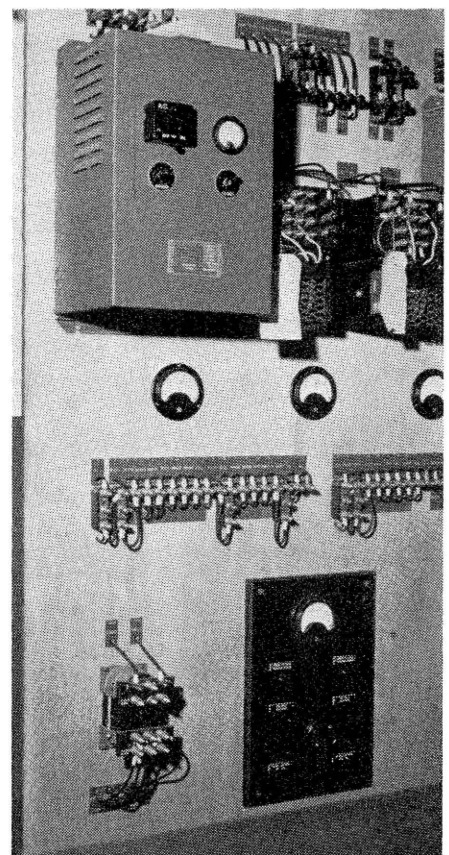
Maximum discharge rates:
1.0 amp. continuous
2.5 amp. max. intermittent
Approximately one gallon of water
for 2500 watt hours.
No washing of jars.
No mixing of caustic.
Only one stores item.

Railway track circuits—
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sales representatives throughout the world



Rectifier panel is in battery room

clear. At Warner street special "E" and "W" dwarf signals will govern movements on the switching lead over the street. When the gates are down, the dwarf signal will display lunar white (two lamps lighted, 45 deg. lower quadrant). If the gates are not down, the signal will display two horizontal red lights (Stop).

A. L. Jordan, signal engineer, directed the engineering and installation work. The major items of signaling equipment was furnished by the General Railway Signal Company.