Centralized vs. Remote Control

“What is the proper definition of centralized traffic control as distinguished from remote control?”

As the Operating Department Sees It

By H. B. Reynolds

Assistant Trainmaster and Division Operator, Pennsylvania, Fort Wayne, Ind.

The editorial comment under “A definition for centralized traffic control,” in the June issue of Railway Signaling, expresses practical and sensible views on this subject.

In naming and defining the “hot potato,” I would suggest the definition given in the following paragraph. This definition in no way conflicts with interlocking rules. It paves the way to directing and governing movements between holding points, by means of fixed signals whose indications supersede time-table superiority and take the place of train orders. This new member of the block system family must be provided with requisites, a set of operating rules, and a place beside its brothers—“manual,” “controlled manual” and “automatic” signal systems.

Centralized traffic control block system: A series of consecutive blocks governed by block signals controlled by continuous track circuits, electrically operated by control machine in central station, the signals arranged to restrict movements opposing that for which their indications establish the current of traffic.”

Operating Expense Factor in Definition of C. T. C.

By F. B. Wiegand

Signal Engineer, New York Central, Cleveland, Ohio

Centralized traffic control is what might be termed “amplified remote control.” Signal apparatus remotely controlled is ordinarily a unit layout whereas centralized traffic control is comprised of several of these units spaced as traffic conditions warrant to keep trains moving with minimum delay. I believe that the following definitions are proper:

Centralized traffic control—A series of remotely controlled interlocked switches and/or signal layouts operated from a central location, designed for the purpose of increasing freight train speed, gross tons per freight...
train, gross ton miles per freight train hour, and saving of time per freight train mile.

Remote control — Interlocked switch and/or signal layout operated from a station at some distant location, designed for the purpose of facilitating train movements.

**C. T. C. Multiplicity of Remote Control Points**

By A. G. Moore

Advertising Manager, General Railway Signal Company, Rochester, N. Y.

Centralized traffic control is a system of train operation by signal indication controlled from a central location.

Remote control is a method of controlling a location, usually consisting of a switch or switches with signals governing over it or them, from a distant point.

Remote control differs from centralized traffic control in that trains are not directed by signal indication over any extended territory. Centralized traffic control can be considered as a multiplicity of “remote controls” with the controls originating at a common point.

**Track-Circuit Operation**

“What can be done to improve track-circuit operation in tunnels and snow-sheds where the ballast conditions are very unsatisfactory? How should a gauntlet track be track-circuited under such conditions?”

Depends Upon Particular Conditions Encountered

By C. A. Taylor

Superintendent Telegraph and Signals, Chesapeake & Ohio, Richmond, Va.

The question of improving track-circuit operation through tunnels, especially in territories where heavy freight trains are operated, is, according to my experience, one that requires considerable study and experimenting to determine the type of installation that will give the best results.

In our longer tunnels we have experimented with various types of bonding, but we have found that ordinary No. 8 bond wires, placed outside of the angle bars where they can readily be inspected, give as good or better service than any other type of bonding, at a minimum cost.

The worst ballast conditions we have are usually found in our longer tunnels because of the ballast always being wet and because of the accumulation of cinders on the ties and around the base of rails, causing very low ballast resistance.

For some time it has been our practice to install two iron bond wires outside of the angle bars for each joint, when the rail is installed. In some of our longer tunnels where gaseous conditions are rather severe, we have found it desirable to apply two additional iron wires to each joint after the rail has been in service for one year, and according to our experience a bonding arrangement of this kind will last the life of the rail.

At locations where fans are used, very little trouble is experienced with track circuits, due to the fact that the gases are blown out of the tunnel and most of the cinders and other small particles of dirt are collected between the rails at the end of the tunnel, and by having the track at this point cleaned periodically, the track circuits can be kept in very good condition.

I am of the opinion that where a gauntlet track is installed through a tunnel of any length, two independent track circuits should be provided, one for each track, and the rails should be kept far enough apart to provide at least two or three inches clearance between the tie plates under the adjacent rails.

**Low Resistance Bonding Essential**

By W. E. Shepherd

Signal Supervisor, Great Northern, Whitefish, Mont.

Track-circuit operation in tunnels and snow sheds, where ballast conditions are bad and where there is considerable moisture, requires special consideration and a little more than ordinary care. There is danger of rust on rails causing high-resistance shunting when the track is occupied. Consequently great care should be observed to keep the current through the relay just above the pick-up value, and possibly a little under the working current value. Also, the drop-away current should be about 50 per cent of the pick-up current. Only relays that are in the best of condition should be used on tunnel track sections. The ballast conditions should be made as good as possible. If possible, crushed rock should be used and the ballast should be kept away from the rails. Drainage should be provided.

The bonding should be of very low resistance. Either welded bonds, copper-strand bonds with 7 No. 12 B & S wires, or four No. 8 B & S solid copper bonds, should be used. Copper weld bonds, also, should be satisfactory.

Primary battery, with five or more cells in multiple, probably provides the best source of power, as the low voltage is desirable on account of current leaking through the ballast. With five or more cells in multiple, the voltage will be fairly constant. The resistance used between the battery and the rails should be as high as possible, and should not be less than 0.5 ohm.

Track conditions in tunnels are fairly constant and circuits can be adjusted closely. This makes it desirable to arrange the track sections so that they are entirely either inside or outside of the tunnel. Adjacent rails should be of opposite polarity at relay locations.

If the track is gauntletted, separate track circuits should be used, insulated from each other, with the relays at the ends farthest from each other. The adjacent rails should have opposite polarities.

**Transformers in Parallel**

“What precautions must be observed in operating transformers in parallel?”

Three Conditions

By George O. Huginbach

Engineering Department, General Railway Signal Company, Rochester, N. Y.

The proper conditions for paralleling transformers are as follows: (a) The ratio of primary to secondary voltage should be the same for all transformers in the bank, and terminals of similar polarity only should be connected together. Otherwise, large local currents will flow whether or not the transformers are connected to a load, and the load will be poorly distributed among the transformers. (b) The percentage of impedance should be approximately the same for all the transformers. Otherwise, the transformers with the lower impedance will be compelled to carry more than their share of the load. (c) The ratio of the resistance to...