



CTC machine was mounted on casters so it could be rolled up onto truck for the move to Gurdon

MP Consolidates CTC Machines

INCREASED OPERATING EFFICIENCY is the result of the Missouri Pacific's action in consolidating CTC control locations on the Arkansas division at Gurdon, Ark. This is on the mainline from St. Louis to the south and southwest. Daily scheduled traffic includes 9 passenger and 13 local and through freight trains over this Benton-Texarkana section.

For some time CTC operation between Benton and Texarkana, 122 miles, has been controlled from three locations: (1) At Malvern, the CTC panel controlled a GRS type F, class M duplex, 3-wire coded system extending between Benton and RR Jct. (Gurdon) for 54 miles. (2) A unit-wire machine at Gurdon controlled territory between RR Jct., and BCD Jct., 7

miles. (3) The third section was also type F, class M code system between BCD Jct., and Texarkana, 61 miles, being controlled by a machine at Hope.

Gurdon Is New CTC Center For Consolidated Control

To effect single control in place of three CTC-machine operation on this section of its Arkansas division, the Missouri Pacific selected Gurdon as the logical new CTC control point since it was centrally located between the other two sta-

Moving two centralized traffic control machines to Gurdon, Ark., and putting them together, enables one dispatcher to control 122 miles of mainline on the Missouri Pacific

tions it would absorb. Moreover, other railroad activity centers there because the Norman subdivision extends 60 miles northwestward, and the Gurdon subdivision reaches southeastward 66 miles to El Dorado, where it continues on to form a link with heavier density freight traffic lines to New Orleans and the Gulf Coast.

On February 25 of this year, the first step of this consolidation was completed. After months of exacting planning, the machine at Malvern was taken out of service, moved over the highway to Gurdon,

set up there and put into operation. The movement was accomplished without delay to any train.

It had been decided to retire the Gurdon machine and consolidate its functions into the Malvern and Hope machines, the latter machine also to be eventually installed at Gurdon. These two machines, although now setting side by side, appear as one, but they are two complete units completely divorced from each other. Circuit and code changes were necessary to change both machines from double end, to single end operation, and two control points were added to each machine to replace the unit wire system.

New Code Line Put Up

As the overall length of the line from the control office to the end was to be about doubled, No. 6 weatherproof copper line wire replaced the No. 10 bare copper then in service. This served a two-fold

purpose: (1) to decrease the overall resistance of the line, and (2) decrease the failures due to broken wire and crosses. The control and common return were the only ones changed. Indication remained on No. 10 bare wire. When this work was started by the field forces it was discovered that two strips over the line were necessary to install the new wire. Control was on Pin 4, return on Pin 8, and indication on Pin 10. By changing circuit positions of control and indication wires, the new wire would be placed on Pins 8 and 10, these being on the track side of the line. A substantial saving on labor cost was realized by this change.

The operating department of the Arkansas division informed the signal department that there was usually a five-hour period between 3:00 p.m. and 8:00 p.m. daily, when trains were operating over this section only in a southward direction. Plans were then geared to fit this period.

In order to maintain the signals clear for the second or following trains, a temporary jumper was placed around the GZ relay cancellation circuit. This jumper did not include the signal stop relay, as it was desired to maintain complete control over the field locations. This had the following advantages:

(1) A signal could be cleared right or left, then coded to stop when a train passed, then cleared in the opposite direction.

(2) Left the decision as to which way the signals should remain lined until just prior to disconnecting the machine from the line wires.

(3) Permitted this phase of the work to be completed so there would be no delay in starting the actual move. The jumpers were installed prior to the passing of the last northbound train.

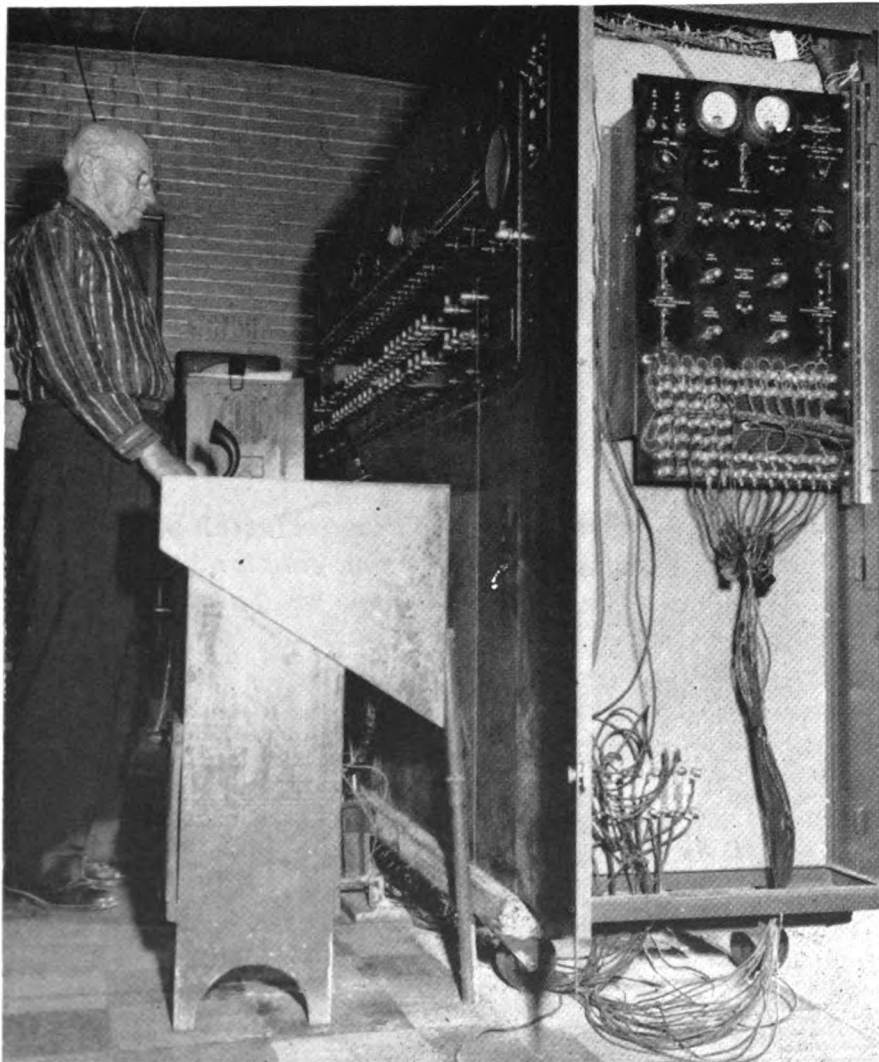
Work at Field Locations

Two items at eleven field locations (the field stations between Malvern and Gurdon) were to be taken care of in the period between the disconnecting of the control machine at Malvern and reconnecting it at Gurdon. (1) Changing positions of the code line arresters in each location. Control south to control north, control north to control south, return south to return north, etc. (2) Adjustment of the control and indication line resistors to compensate for the change in line length between the location and the end of the line. (These resistors were set in advance with an ohmmeter and the new setting marked so it would not be necessary for each field man doing this work to carry an ohmmeter, since the time required to complete this work would, of necessity, be short.)

All the foregoing was completed about ten days before the change-over. This interval before the actual move of the machine was used to check and then recheck plans and circuits to determine that nothing had been overlooked and everything was in readiness. Written instructions were composed and handed to each employee to be followed on the day the machine was to be moved. The signal foreman supervised placing the machine on a platform with castors, to facilitate rapid handling to a waiting truck.

Had Only 5 Hours for Move

When it had been determined that everything was ready, 3:00 p.m. of February 25 was the time and date decided upon for the



Hope control machine was mounted on heavy timbers and casters for moving

move. However, the exact hour was dependent upon how northbound passenger train No. 8 to St. Louis, and No. 220 from Hot Springs to Memphis, would be running past Benton, Ark., which was the end of control for this machine.

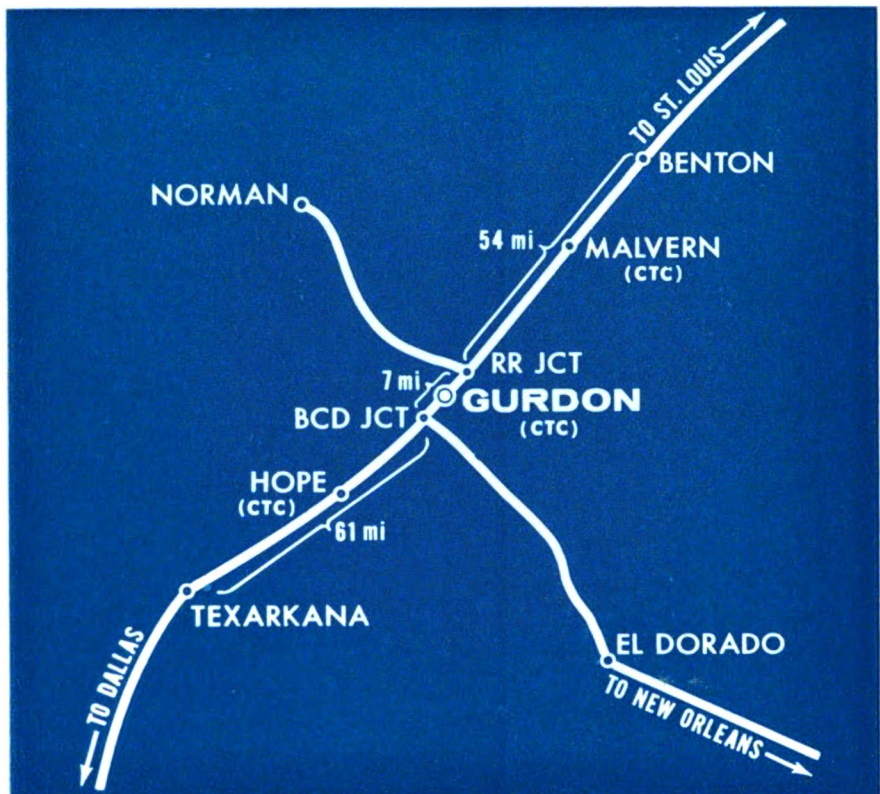
That morning at 10:00 a.m., all employees involved reported at Malvern control office, either in person or by phone. The written instructions were gone over again to insure a proper and mutual understanding by all. The field forces started installing the GZ relay stick jumpers at 11:00 a.m. and completed this phase at 1:30 p.m. Finishing at that time it was possible to determine from the control office that these jumpers were functioning as intended. The forces assigned the job of moving the machine were busy preparing the machine for loading immediately after it had been disconnected.

At 3:01 p.m. trains No. 8 and No. 220 had both passed beyond the limits of the Malvern machine. The signals for the entire territory were lined for southward movements. This was complete at 3:05. The dispatcher gave assurance that there were no northward train movements for a period of five hours. Then the machine was disconnected and loaded on the truck. It started toward Gurdon at 3:35. Another empty truck followed in case of a breakdown. An hour and thirty minutes later the truck reached the Gurdon depot, 5:05 p.m. At 5:45 the machine was in its new location. It took only 20 minutes to connect the machine to power cabinets and check the local circuits before tying to the control line. But before connecting to the control line it was determined that the work at the field locations had been completed. This work consisted of adjustment of the field control and indication resistance units to match the new line setup, and reversing the line hookup at all stations between Malvern and Gurdon.

Machine "On-Line" in 3 Hours

At 6:05 the last connection was completed. The machine immediately received all of the indications that were stored during the past three hours. One southbound train was moving in the territory at that time.

With the aid of five crews of signalmen in the field, the process of checking each station was started. This involved removing the GZ cancellation jumper, the shunting of OS track relay to determine

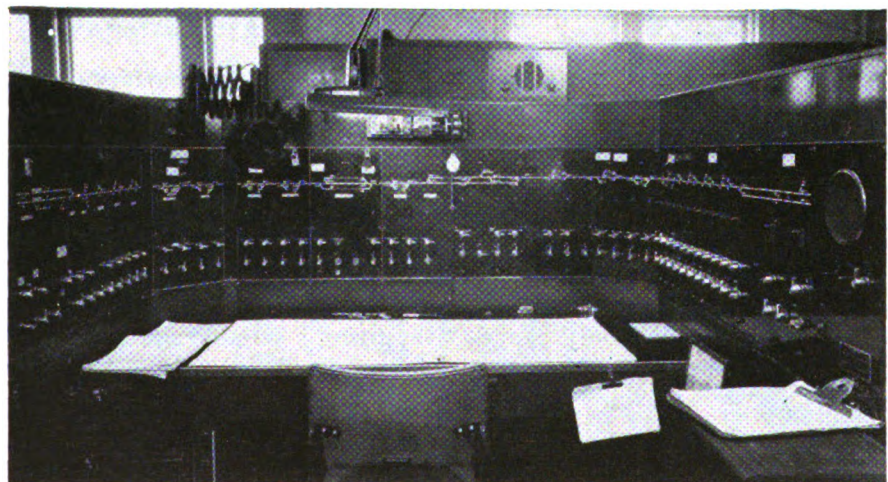


Gurdon is new home of consolidated CTC machines on MP Arkansas division

that the location was back to normal, and the indication on the control panel was in correspondence to the track occupancy in the field. Tests were made to determine that the switch would follow the switch lever. Signal clear right, signal clear left, and signal stop codes were checked to see if they were functioning properly. The line current was checked and resistance units readjusted when necessary for the proper flow of current. These tests were all completed at 8:20, at which time the machine was turned over to the operators for normal use.

The satisfactory manner in which

the Malvern-to-Gurdon move worked out, indicated that the next consolidation, Hope-to-Gurdon, could well follow the same procedure. The target date for that changeover was set for April 29. A small adjustment in the timing was necessary since the scene of action was farther to the south. Consequently the northbound trains were encountered earlier in the afternoon, but aside from that, the whole procedure followed generally the plan that worked so well in the previous move. Signal department forces were under the jurisdiction of C. T. Marak, Signal Engineer.



Completed consolidation at Gurdon office: Malvern CTC panel is at left and the Hope machine at the right including former Gurdon CTC controls