



On double track each track is signaled both ways, the signal for left-hand running being on the mast at left of track it governs.

## CTC Handles 15 More Trains

*With 10 Union Pacific passenger trains and considerable freight traffic between Chicago and Omaha, switched from North Western to the Milwaukee, increased track capacity and flexibility to maintain on-time performance has been attained by installing additional signaling with centralized traffic control, rather than by adding main tracks. The section of CTC needed the most, on 35 miles of three-track, was completed in 60 days, and remaining miles on single and double track, in 18 months.*

THE BIG SWITCH of Union Pacific trains, from the C&NW to the Milwaukee, was made October 31, 1955, the arrangement having been made known on the railroad August 1. This allowed only three months in which to make special preparations, including installation of 5 power crossovers; automatic block signals and changing out rail on about 9.2 track-miles between Towers A-3 and B-12. Additional new crossovers and turnouts, with complete centralized traffic control, on about 22 miles between Tower B-12 Franklin Park and Tower B-35 near Elgin, were installed early in 1956.

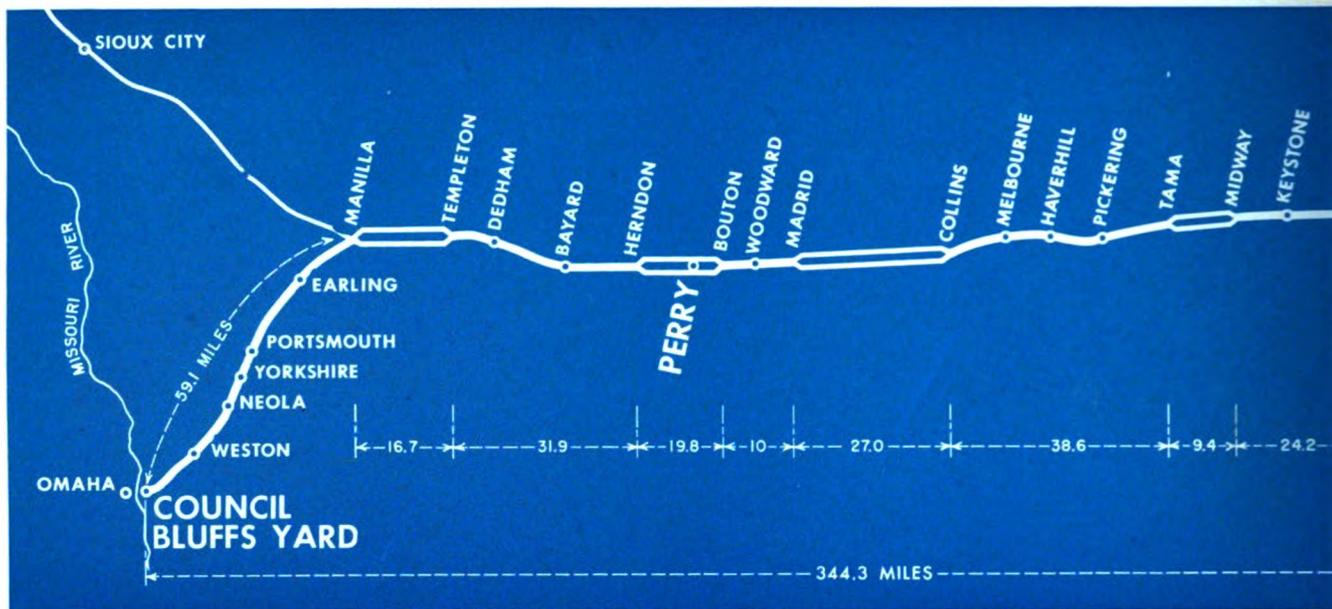
Prior to this time, the Milwaukee had main tracks between Chicago and Council Bluffs as indicated on

the map. This same track arrangement, with additional signaling, is now being used.

### **On the Same Tracks**

Five of the through passenger trains depart from Chicago between 4:30 pm and 6:45 pm. During this period seven westbound suburban passenger trains depart from Chicago for Elgin, 37 miles, making numerous station stops. To run the through passenger trains around the suburban trains, new 132-lb rail was laid on a previous freight transfer track, on 9.5 miles between A-3 tower and Franklin Park. New signaling, for westbound only, was installed on this track.

To further increase track capacity, both main tracks on the previous double track main line were signaled for train movements in both directions from Franklin Park to interlocking B-35 on the east side of the Fox River, 1.4 miles east of Elgin station. To cross trains from one track to the other, No. 20 crossovers were installed at Franklin Park, B-17, Roselle and Spaulding, with No. 20 turnouts at B-35 tower Elgin. Trains are authorized to use these crossovers for diverging moves at 50 mph. These crossovers and turnouts are all power-operated and included in interlocking, or are remotely controlled by levers in interlocking. As advance information that a 50 mph crossover or



On the 482.4 miles between Chicago and Council Bluffs Yards the Milwaukee main line includes 244.6 miles of single-track CTC, and

turnout is lined for a diverging route, the approach signal displays a flashing-yellow, rather than steady yellow.

On the 102.7 miles between Elgin B-35 and Savanna, no changes were made in the conventional two-track main line, which is equipped with automatic block for right-hand running.

#### On the Iowa Division

The bridge across the Mississippi between Savanna, Ill., and Sabula, Iowa, is single track. Two-track, with each track signaled right-hand running, extends 12.1 miles to Green Island, this section being used also by trains to and from the Dubuque Line.

Centralized traffic control with six power sidings has been in service since 1950, on the 71.4 miles of single track between Green Island and Dove. Also, centralized traffic control has been in service since 1942 on the 59.1 miles of single track between Manilla, Iowa, and the yard office at Council Bluffs. This territory now includes five power sidings as indicated by black dots on the map.

On the remainder of this Iowa Division, sections of single and two-track, as indicated on the map, were in service prior to the change-over. Automatic signaling was in service on these sections, train movements being authorized by timetable and train order. The switches at the ends of double track were in interlockings or were operated by spring switch mechanisms to permit trailing moves without stopping. However, all the

sidings were operated by hand-throw switch stands. CTC was in service from Indian Creek to Covington, and Madrid to Bouton, with remote control power sidings (one end) at Melbourne, Haverhill and Pickering.

To secure the track capacity and flexibility for additional train movements, the Milwaukee, within a period of 12 months, installed centralized traffic control on those portions of this division that were not previously so equipped. These projects included power switches at seven sidings on single track, at locations indicated by dots on the map; power switches at the ten ends of double track; and signaling for train movements both ways on each track.

#### Longer Sidings

The turnouts at the ends of double track are No. 20 with 34-ft, 6-in. points, over which diverging train moves are authorized at speeds up to 50 mph, and signal aspects are arranged accordingly. Turnouts at ends of sidings are No. 11, diverging moves being authorized at 13 mph. As part of the overall project, sidings were lengthened to 175-car capacity at Bayard, Dedham, Portsmouth, Neola, Keystone and Pickering.

With the completion of this work, centralized traffic control is now in service throughout on the 329 miles between Green Island and the yard office at Council Bluffs. All this CTC is controlled by one machine, manipulated by the dispatcher at division headquarters in Perry, Iowa. This CTC,

including power switches and train operation by signal indication, is an important contribution toward the success that is being attained in train performance.

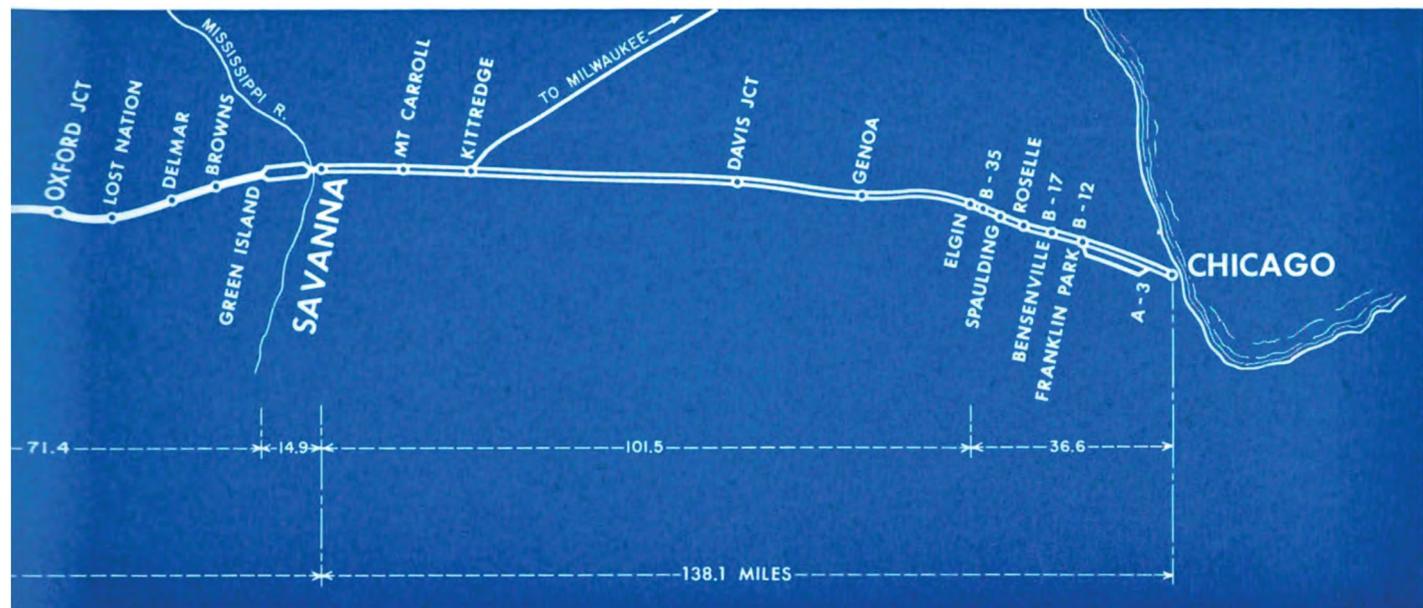
#### More Trains

Prior to the change-over, the Milwaukee had operated two passenger trains each way daily on the Chicago-Omaha runs. When the change was made, the Milwaukee night train each way was continued, but the day train each way was combined with the Challenge operated over the UP between Omaha and Los Angeles. The other trains are the City of San Francisco, City of Los Angeles, City of Denver, and City of Portland. Thus, the traffic now includes six passenger trains each way daily. Also the Milwaukee operates suburban trains each way daily between Chicago and Elgin, 37 miles.

Five scheduled time freights are operated each way daily between Chicago and Savanna, and three such trains are operated daily each way between Savanna and Council Bluffs. A second section of one eastward time freight is operated six months each year. Extra trains are operated as required, and local freights are operated on daily schedules on some sub-divisions.

#### Longer Freight Trains

To haul the additional traffic, longer trains are being operated using four diesel units on such trains, compared with three units on shorter trains before. Thus, the number of through freights has



236.2 miles of double track, on 119.8 miles of which both tracks are signaled both ways.

increased in as high a proportion as the increase in cars or tonnage. Freight trains are operated at 60 mph maximum and are powered to maintain this speed except on some grades.

Cars going to or coming from the line to Sioux City are set off or picked up at Manilla. During grain movements or other peaks of traffic from the Sioux City line, extra trains are operated through from Sioux City to Savanna and to Chicago.

#### On-Time Train Performance

The maximum speed for passenger trains is 79 mph. The through trains change crews at Savanna, Marion and Perry. The overall time of the four through trains, either way on the 488 miles between Chicago and Omaha, varies from 8 hr 5 min to 8 hr 15 min, depending on the number of station stops.

The Milwaukee is maintaining an excellent record of on-time train performance. If trains leave Chicago or Omaha behind schedule, the Iowa Division and the Illinois Division can make up a considerable amount of the time late.

Through freight trains with more tonnage, are making the same time as previously, which is about 8 hours either way on the 344 miles between Savanna and Council Bluffs Yard, and about 2 hr 45 min either way on the 121 miles between Savanna and Bensonville Yard near Chicago.

Because the five westward through passenger trains leave Savanna in the period between 6:44 p.m. and 9:55 p.m. difficulty would

be encountered in operating freights either way in this territory, if the CTC were not in service to authorize moves promptly by signal indication, rather than by train orders. For example, a typical move is for westbound freight No. 63, to leave Savanna shortly after the second passenger train No. 105, and go 170 miles to the siding at Melbourne to let the two remaining westward passenger trains, 101 and 103, pass.

Westbound time freight No. 63 meets all five of the eastbound through passenger trains in the 59 miles of single track between Manilla and Council Bluffs Yard. Also

in this section, some of the westbound through passenger trains meet some of the eastward passenger trains.

#### Flexibility on Single Track

Consideration is being given to a proposed change from two-track to single-track with three power CTC sidings, on the present section of double-track between Collins and Madrid, 27 miles. This change will provide better flexibility to advance a freight train one or more sidings ahead of a passenger train of the same direction, this being the needed flexibility in this area, rather than a need to meet opposing trains.

The signaling projects and track changes in this change-over program were planned and constructed by Milwaukee Road forces under the direction of Philip H. Linderoth, Signal Engineer, and under the jurisdiction of Chief Engineer W. C. Powrie and Virgil E. Glosup, Assistant Chief Engineer Signals and Communications, now promoted to Engineer Maintenance of Way. The major items of signal and CTC equipment installed were furnished by Union Switch & Signal, Division of W A B Company.

Design of the carrier control system, as well as the wayside telephone system, was handled by communications forces under the direction of D. L. Wylie, Communications Engineer. Carrier equipment was supplied by F. W. Lynch Company and telephone equipment by Automatic Electric Company and R. W. Neill Company.



All of the 244 miles of single-track in Iowa is equipped with CTC