

# CENTRALIZATION

## DISPATCH CIRCUITS ARE CHANGING

In recent years there has been a trend to consolidate dispatcher positions at district or regional headquarters for greater efficiency. These consolidations require changes and rearrangements in the railroad's communications system. In many instances, carrier equipment is installed to bridge the distance from the new dispatchers' office to the old location.

When one railroad moved several dispatchers to a new district headquarters, the communications engineer said it was simply a matter of moving the dispatcher to a new office and then "transporting his voice by carrier back to the old office where it was put on the physical circuit. For one of these moves, where the dispatcher was originally at the end of the physical, we reached out and put the carrier terminal at the midpoint, so we could pick up two short physical circuits. We get better transmission than if we had picked up the physical at one end," he said.

When consolidating operating divisions, a western railroad installed a carrier system that extended past the entire physical circuit to the original dispatching office. This allowed the dispatcher's selector ringing equipment to be retained at the former office, rather than move it to the near end of the physical circuit. The 3½-cycle ringing was inserted on a frequency of its own between existing carrier channels. In another consolidation on the same road, the communications department installed Lenkurt 32E carrier to bridge the distance from the new office to the old office, which was near the midpoint of the dispatchers' physical circuits. The 32E equipment has a normally suppressed carrier, but in this installation the carrier-fre-

quency is transmitted to send the 3½-cycle ringing pulses.

An eastern railroad, in a move to centralize dispatching, had to provide for CTC control and indication codes as well as the dispatchers' talking circuits. One 15-mile CTC installation was 70 miles from the new office and a 140-mile CTC system was 75 miles from this office. The CTC control machines are at the new headquarters, and the railroad leases circuits from the telephone company to connect the control machines to the physical code line. To assure continuity of service, the telephone company provides three circuits for each CTC installation for (1) control codes, (2) indication codes, and (3) dispatcher's voice. If any of these circuits fail, the phone company provides alternate circuits via different physical routes between the dispatchers' headquarters and the CTC territories.

### SP Dispatchers Are at Houston

In a dispatcher centralization at Houston, Tex., the Southern Pacific's line in Texas and Louisiana relocated dispatchers from Lafayette, La., Ennis, San Antonio and El Paso, Tex. A considerable number of channels of telephone and telegraph had to be installed to provide the necessary communications. Lenkurt 45A carrier systems were installed from Houston to Valentine, Tex., 660 miles west, and from Houston north to Ennis, Tex., 225 miles. Additional channels were added to existing Lenkurt 45 systems between Houston and San Antonio, Tex., 211 miles, and from Houston to Lafayette, La., 217 miles. Telegraph transmission was provided by speech-plus-telegraph channels, bringing

branch line Morse facilities into the Houston dispatchers' office.

At the time of this dispatcher centralization, CTC was installed between Sierra Blanca and Belen (near El Paso), Tex., about 90 miles. The control machine is at Houston. SP General Superintendent of Communications J. N. Albertson, who, at the time of this dispatcher relocation program, was assistant superintendent communications for the SP Lines in Texas and Louisiana, explains how the CTC code was accommodated:

"This circuit is operated over the sixth channel of the 45A carrier system between Houston and Valentine, with an extension over a 33A third channel carrier to Sierra Blanca. Since many channels of telegraph were involved and space was at a premium, it was decided to use the Lenkurt type 23A telegraph equipment. The use of this equipment provided a system of modern design using transistors in place of tubes with flexible terminal arrangements, frequency shift operation, interchangeability, supervisory indication and also the availability of 100 word-per-minute operation. Four channels of 23A VF (voice frequency) carrier telegraph were supplied to furnish the facility over which the CTC would be operated from Houston. One channel operates direct from Houston to Valentine. At that point it is transferred on a VF carrier basis to a 33A third channel regulated carrier system to Sierra Blanca, where it is connected to the 23A telegraph equipment. At Sierra Blanca, the 23A terminal equipment is connected to the CTC control circuit.

"Another 23A telegraph channel is operated via speech-plus over an exist-

ing Western Electric "C" system to El Paso, and then back to Sierra Blanca over a third channel Lenkurt 33A carrier on a speech-plus basis, forming a Houston-Sierra Blanca CTC alternate channel via El Paso. This is a temporary arrangement until the Lenkurt type 45 system is installed on an adjacent pair between Houston and El Paso, after which this equipment will be removed and placed on the new carrier.

"In addition to the CTC circuits mentioned above, another channel of 23A operating over the same facility, is used to control the path over which the CTC circuit is operated. For instance, a failure on the principal circuit will result in an alarm at the dispatcher's office in Houston. If this alarm is not extinguished within five seconds, the dispatcher may, by operating a transfer button, move the CTC main circuit to the alternate route. The alarm circuits are so designed that should the carrier section between Valentine and Sierra Blanca be in alarm and he is operating on an alternate circuit, he could not restore the system to the principal path. Various indicating lights at Houston, Sierra Blanca and El Paso display to personnel at these locations the type of failure, such as channel failure west-east, east-west, fuse alarm, etc. Also, the fact that these channels were equipped with supervisory circuits provided us with alarm facilities on a channel basis. The supervisory feature has been most helpful in quickly locating faults.

"A further provision is made to insure that the CTC will be operational at all times by making use of the Bell Telephone Co. or Western Union Telegraph facilities. Jacks are located in the switchboard at El Paso and Houston for the installation of leased facilities and these jacks are so connected that once the railroad facility is placed on a leased circuit, it cannot be transferred or removed unless the patches are taken down. This is especially important in the section between El Paso and Sierra Blanca, since there are no Bell facilities at this point and the Bell connection at El Paso must be carried to Sierra Blanca over railroad facilities."

These are but a few of the railroads which are making dispatcher moves. Some dispatcher centralizations require extensive re-arrangement of existing communications facilities, while others require only a few additional carrier channels. Whatever the magnitude of the job, the economies of present day railroading are such as to assure continuation of this trend toward centralized dispatching. **RSC**

