

# DISTRIBUTED POWER'S WONDER YEARS



In the beginning, Southern, Louisville & Nashville, and Norfolk & Western led the way

by Ron Flanary

**D**espite the innovation that distributed power represents today, remotely controlled mid-train units have been in use since the early 1960s. At least four major railroads in the Southeast operated trains this way, and one of them became the national leader.

During the 1960s, Southern Railway President D.W. Brosnan pushed the industry to try new ideas. Motivated by moving more tonnage on fewer trains, Southern in 1963 equipped GP9 No. 298 as a master and



FM turned into radio car. C.K. Marsh Jr.

modified an F7B as a receiver car to take radio commands and feed them to a "slave" unit via M.U. cables. After an initial test on a 70-car coal train between Bulls Gap, Tenn., and Asheville, N.C., that January, Southern opted for unpowered receiver cars, converting two retired Alco RS2s and two EMD FTBs. With unpowered receiver cars, Southern could maximize motive power flexibility rather than rely on receivers in specific units designated as slaves; even if a locomotive went in for maintenance, it wouldn't hamper the radio operation of these huge trains. As with all subsequent receiver cars, the bodies were fitted with the coding and relay equipment (which took up a fraction of the cars' space), air brake equipment, and concrete blocks for ballast. Initial tests used Union Switch & Signal equipment. Locotrol, an improved solid state version, which North Electric Co. developed in 1960 and later be-

came part of General Electric, became Southern's standard early on.

Southern tested Locotrol successfully with mixed freights on the sawtooth profile of the Washington-Atlanta main line, and in 1965, a Marion, N.C., contractor built 13 more receiver cars from retired Fairbanks-Morse H16-44 road-switchers. The railroad designated 17 locomotives (four GP35s and 13 SD35s, to augment a GP30 and two GP9s already equipped) as masters. Soon, Southern identified such units with black-on-white numberboards or "white faces." All other Southern power had white on black numberboards.

In 1968 Southern installed a new generation of Locotrol on 50 locomotives and retired the homemade receiver cars in favor of 50 new cars built by Berwick Forge & Fabricating. For many years, this was the backbone of Southern's "radio train" fleet.



A Southern Railway "radio train" powers 117 coal loads near Natural Tunnel, Va., on Jan. 2, 1966. The 11,500-ton train was testing the capability of running four six-axle units on the point and four cut in 57 cars deep on a line with 2-percent grades. C.K. Marsh Jr.



Southern's use of radio-controlled units spread across the system, not only in the mountain regions for heavy coal traffic, but also on the main lines, where Brosnan realized his dream of huge trains rolling at track speed between major terminals. Without peer, Southern was the preeminent operator of these early-day distributed power trains in the nation. The number of master units peaked at 74 in 1978.

## L&N, N&W, AND CHESSIE

In Louisville, Ky., the Louisville & Nashville noticed what Southern was trying. Always looking to improve, the L&N and General Railway Signal came up with the most innovative mid-train motive power concept of all. The two took F7A No. 830 and replaced the unit's front drawbar with one fitted with an electronic strain gauge to measure tension. The tension then translated into appropriate throttle settings, meaning if the slack was stretched, the unit would throttle up, or correspondingly throttle down if the slack was bunched. This eliminated often-undependable radio continuity with the head end, so 830 operated independently of whatever the engineer might be doing dozens of cars away. Surely such a Rube Goldberg device would have been unnerving to a veteran hoghead, but the 830 performed as designed.

Mated with other units in the middle, the 830 ran successful test runs between Ravenna and DeCoursey, Ky., in 1964, on trains grossing nearly 17,000 tons. The unit, mated with a GP7, also tested on mainline fast freight No. 72 between Louisville and DeCoursey on the challenging profile of the L&N's "Short Line" to Cincinnati. Nonetheless, L&N did not replicate the 830, and the unit resumed conventional service until its 1975 retirement.

Another big-tonnage neighbor of the Southern was eventual merger partner Norfolk & Western. Beginning in 1967, the N&W used Wabco's Remote Multiple Unit system on its Pittsburgh, Shenandoah, and Pocahontas divisions. Crews equipped new 3,600-hp EMD SD45s as master and receiver units, and then used them to move big-tonnage trains. With this equipment, N&W sent 18,000-ton trains north from Roanoke up the Shenandoah Valley line.

On Nov. 15, 1967, the N&W grabbed national attention by safely operating the mother of all trains: a 500-car, 48,170-ton coal train 159 miles from Iaeger, W.Va., to Portsmouth, Ohio. N&W put three SD45s on the point and three more radio-controlled units 300 cars back. This monster train contained 12 car lengths of slack, so with it bunched, the lead unit rolled that distance before the caboose started moving. Hampered only by a broken knuckle 150 cars from the rear at Williamson, W.Va.,



Louisville & Nashville experimented with an "automatic" unit on fast freight No. 72. L&N



L&N F7A No. 830, mated with a GP7, was always the trailing unit in mid-train consists so that its strain gauge drawbar could increase or decrease the throttle. L&N

and the loss of radio continuity in tunnels, the train made the trip with a convoy of officials in escort. Interestingly, in the steam era, N&W Class A 2-6-6-4s routinely handled 190-car loaded coal trains from Williamson to Portsmouth single-handedly.

Impressed by N&W's success and with its own experiment behind it, the L&N adopted the Wabco Remote Multiple Unit system in 1968. L&N converted a retired Alco and EMD B unit each into "power cars," using the term the "Old Reliable" for a receiver car. L&N equipped SDP35s Nos. 1700 and 1701 with radio control equipment to match the receivers. Early test results impressed L&N officials, and they instructed crews to fit two more retired B units with receiver gear. The two remaining SDP35s on the roster also received the controlling equipment.

The L&N dragged 300-car trains grossing as much as 26,000 tons from its Eastern Kentucky Subdivision over the hill into Patio Yard at Winchester, Ky., and then downgraded to DeCoursey. However, these huge trains were difficult and time consuming to assemble and break apart. Crews experienced problems with broken knuckles, pulled drawheads, and (during extreme cold, when the rubber gaskets in air hoses harden, causing excessive air

loss) air brakes. When one of these levathan drags was on the line, all other movements stopped to allow passage. After only a year, L&N abandoned these trains, shoved the receiver cars into storage, and subsequently scrapped them.

The Chesapeake & Ohio, another Southeastern road, tried radio-controlled power in this era. In 1969, C&O equipped SD40 No. 7475 as the controlling unit and 7476 as the receiver. These units (mated through multiple unit controls to sister SD40s on the head end and at mid-train) ran a series of test runs over C&O's main across the Alleghenies. Chessie soon came to the same conclusions the N&W and the L&N had: The long, heavy trains were not operationally efficient, since they required more terminal time and expense at both ends, their over the road operational success was not predictable, and they monopolized a route.

In the end, only Southern and successor Norfolk Southern made the radio train succeed. NS later phased out Locotrol operations in the late 1990s in favor of manned pusher districts for the heaviest trains in the mountains. A renewed interest has brought the technique home again. I

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