



To run FL9s under energized catenary, as with Boston-bound 2053/2032 at Rowayton, Conn. (just west of Norwalk), in June '61, cost more than the electrics they replaced. A plan to de-electrify east of Stamford was dropped, so this uneconomic operation lasted for decades.

Playing with fire

The saga of the FL9

EMD may have been the dominant locomotive builder in the mid-1950s, but it had a tiger by the tail with the New Haven's dual-power cab unit

By **J. W. Swanberg** • Photos by the author



During the mid-1950s, GM's Electro-Motive Division had the diesel world by the tail: Its GP9, introduced in 1954, was such a runaway success that EMD was swamped with orders from railroads still completing dieselization. Competitors Alco, Baldwin, and Fairbanks-Morse couldn't match the reliability of EMD's 567C prime mover, but got many orders owing to EMD's backlog.

Meanwhile, the New Haven Railroad had been seeking a locomotive capable of operating as both a diesel-electric and straight electric so the road could eliminate the engine change at New Haven, Conn., on its busy 230-mile New York-Boston "Shore Line" passenger route.



After a brief first stint on New Haven ended in failure, the first two FL9s returned from EMD after extensive modification, including changing the front truck from a normal Blomberg to a Flexicoil, which had space for third-rail gear. On July 14, 1957, Nos. 2000/2001, with EMD test car ET-909 in between, rest at North White Plains, N.Y., on the NYC's Harlem Division.

George E. Votava, author's collection



Long before Penn Central took over the New Haven in 1969, FL9s tested again on New York Central's Harlem Division, as here at Brewster, N.Y., on July 14, 1965, as 2033/2032 pause with a long eastbound train of heavyweight coaches. NYC, however, never ordered any.



When the FL9s were new, TRAINS Editor David P. Morgan enthused about their "bringing the modern era" into Grand Central Terminal, wonderfully illustrated in comparing 2017 next to the heavily riveted New York Central P-2b class box-cab electric 223 on February 10, 1958.

Jim Shaughnessy, author's collection



When a single FL9 went to Pittsfield, Mass., it had to be spun on the manual turntable, as is the case on July 9, 1967, with 2014 being rotated majestically after arriving with train 138.

Electric operation was essential in the 3-mile Park Avenue Tunnel used by New York Central and NH trains to reach Grand Central Terminal. Moreover, NH's aging fleet of 60 Alco DL109s was due for replacement. Although they had been good locomotives, some dated from 1941. But no practical dual-power solution had emerged, so in 1954 New Haven ordered 10 more passenger straight electrics from General Electric. Delivered in early 1956, the double-cab, mercury-arc rectifier units were classed EP-5.

As GE was beginning work on the EP-5s, Patrick B. McGinnis became NH's president after a bitter proxy fight. The road had mostly Alco diesels, but McGinnis and his new motive-power man, E. Hales, spread the wealth, ordering from EMD 30 GP9s and 20 SW1200s (with Flexicoil trucks, for better tracking on the road), plus 15 Alco RS11 and 15 FM H16-44 road-switchers. All were delivered concurrently with the EP-5s.

McGinnis and Hales renewed the search for a dual-power diesel. EMD approached this challenge with confidence, modifying a previously proposed lengthened FP9 design to include third-rail shoes and electrical gear for the NH. Already called an FL9 on paper, the model incorporated a three-axle rear truck to distribute the unit's greater weight. The NYC trackage into Grand Central over which NH trains operated was equipped with 650-volt D.C. third rail, about the same as diesel traction motors, so no difficulties were foreseen. (NH's passenger electrics could draw power from both A.C. catenary and D.C. third rail.)

Thus was born the New Haven FL9, which at 58 feet 8 inches was 4 feet longer than a standard FP9 (itself 4 feet longer than an F9). The previously proposed diesel-only FL9 model was never built. Prototype FL9s 2000 and 2001 were assembled in the second half of 1956 and delivered for testing in January '57, still considered demonstrators at this point. Their six-wheel Flexicoil rear trucks were equipped with third-rail gear and contact shoes, but their four-wheel front trucks were standard EMD Blombergs, with outside swing hangers that prevented adding third-rail shoe beams. EMD had considered mounting the shoe on a bracket off the end of the Blomberg, but determined this to be unsuitable.

The tiger growls

The 2000-2001 pair soon ran into serious trouble. While Grand Central's third rail was indeed only 650 volts, it



Displaying a full Conrail/MTA livery, 5040 leads a bedraggled PC-lettered sister on train 948 through the old Harlem Division engine-change point at North White Plains June 30, 1978 (above). It's engineer Harry Morton's last run before retirement, and the smoke is from celebratory "torpedoes" on the rails. Three years earlier at Harmon, on October 28, 1975 (left), 5030 offers a contrast with a "dog's-breakfast" look of several schemes.

could draw up to 6,000 amps when grounded — enough to melt through a running rail. This was an order of magnitude greater than the maximum amperage produced by a diesel's main generator, and the FL9s' 2,000-amp ribbon fuses sometimes did not react quickly enough to prevent a disastrous internal electrical ground.

Further, third-rail shoes on only the rear trucks were insufficient for making it through GCT's long third-rail gaps in complicated double-slip switches. All NH passenger electric locomotives had two separate third-rail shoe assemblies per side, one on each end, and they also had a small D.C. pantograph on the roof that could be raised at slow speeds to contact an overhead third rail mounted over Grand Central's long gap areas.

Thus the new FL9s were unsatisfactory in GCT, and both caught fire as well, owing to high-amp grounds. EMD may have had the diesel world by the tail, but it had a tiger by the tail in the FL9. The prototypes were sent back to La Grange in disgrace, and six months would elapse before they returned to the New Haven.

EMD's initial "re-inventing of the wheel" was partially corrected by replacing the FL9s' Blomberg front truck with a four-wheel Flexicoil truck, which allowed clearance for third-rail gear and thus resulted in two shoe assemblies per side. A small, single-arm rooftop D.C. pantograph (EMD called it an "Overhead Collector") was also added, just

ahead of the steam generator stacks, and *voilà* — the FL9s now were equipped for D.C. operation just as all New Haven passenger electrics had been since 1906.

The 2000–2001 went back to the NH for another try, and this time they were reasonably successful, although the D.C. pantographs proved unnecessary and were soon deactivated. Another 28 units followed to complete NH's 1957 FL9 order, and 30 more followed in 1960. EMD in January 1958 proclaimed that the FL9 model "has just been added to the standard product line of Electro-Motive Division of General Motors," but New Haven's 60 would be the only FL9s built.

Steam and fire

How did engine crews feel about the FL9? One complaint was slow acceleration: A pair of FL9s couldn't match New Haven's heavy passenger electrics, what with the electrics' impressive short-time ratings for getting out of stations or recovering from speed restrictions. Even the 1931-built GE EP-3 box-cabs (whose mechanical design was the prototype for Pennsylvania's GG1) could out-accelerate the FL9s. Thus electric locomotives were still used on heavy commuter trains, and

even into the Penn Central era in 1969, when the EP-5s were the only NH passenger electrics left, train makeup sheets for such heavy trains specified: "MUST HAVE 'JET' LOCOMOTIVE" ("Jet" being the nickname for the EP-5, taken from its wailing blowers). When the last EP-5s were retired, three-unit FL9 sets were assigned to these heavy trains, but even three FL9s could not match a Jet.

The FL9s were somewhat rough-riding owing to the four-wheel front truck, but they were not intolerable. However, they seemed top-heavy on the curving line to Pittsfield, Mass., where they replaced Alco RS3s. The FL9s weren't unstable, but some engineers lost time with them until they got used to their "feel" on curves. They ran all the way to Boston, of course, and from New Haven north to Springfield, Mass., replacing Alco PAs and FM CPA24-5 "C-Lines."

The Vapor steam generators on the FL9s were easier for the fireman to operate than the true boilers on older electrics, though the remote controls on the fireman's "dashboard" seldom worked, so going back through the engine room to blow down the boiler, etc., was usually required. I was a fireman on FL9s on the



Recreating the glory years: FL9s 2023 and 2002, among four rebuilt by Chrome Locomotive in Silvis, Ill., in 1985, show off their retro New Haven Railroad look on a Maybrook Line excursion east of Brewster on October 18, 1987. The NH livery was ordered by Connecticut DOT, owner of the state's portion of Metro-North. The rebuilds' last two digits didn't match their NH original numbers, but at least they were back in the 2000s.

Pittsfield line, and trying to work on a boiler in the rear of a lurching FL9 while swinging through many curves and with the diesel in the deafening eighth notch — and on an oily, slippery steel runway, to boot — was challenging.

The FL9s generally operated satisfactorily on third-rail power, and, when assigned to trains using the ex-PRR East River tunnels into Penn Station, they could also operate on the overrunning third rail there (Grand Central had underrunning third rail, *i.e.*, the shoes rode under the third rail and were sprung up against it). Penn Station's third rail was a suitable height that allowed FL9s to run on D.C. in both terminals. Veterans of the era recall no problems with Penn's third rail, except when a little-used section was encountered, when rusty rail contact surfaces could cause arcing.

Nonetheless, the FL9s were never entirely trouble-free in D.C. operation, with occasional heavy electrical grounds still sometimes causing fires and major damage. An extreme example of such a meltdown was suffered in 1958 by FL9 2020, which grounded, caught fire, and tied up Grand Central traffic. The locomotive was so badly damaged that it had to go back to EMD for repairs.

In the 1970s, I was Penn Central trainmaster at Grand Central, and PC's inherited FL9 fleet was in dubious shape. An inbound train died in the Park Avenue tunnel during the evening rush, and Master Mechanic Ed Whitney and I commandeered an ancient former NYC

S-class electric switcher to tow in the disabled train. When we nosed up against the FL9s, the engine crew had already wisely gotten off, but Ed Whitney fearlessly climbed into the FL9's smoldering cab. Suddenly the electrical cabinet in the cab suffered a direct high-amp ground, exploding in a burst of flame and ugly brown smoke. Ed jumped right out of the cab door down to track level to escape the inferno, and to this day I do not know how he didn't break a leg. The next stop for that FL9 was heavy overhaul in PC's backshop at Altoona, Pa.

Big-picture evaluation

In the big picture of New Haven operations in the late-'50s, the purchase of 60 FL9s was in fact a monumental mistake. President McGinnis wanted to eliminate the four-track electrification entirely east of Stamford, Conn. (catenary would be retained west of there for M.U. trains), and his successor George Alpert continued in the same direction. Fortunately the de-electrification never happened. Meanwhile, New Haven's Cos Cob power plant still had to provide 11,000 volts A.C. around the clock, so the FL9s were running on diesel under energized catenary much of the time. The electric locomotives that they replaced were cheaper to maintain and burned no fuel (except for Cos Cob's coal). And, as stated, their acceleration was superior to the FL9s'.

The targeted engine change at New Haven was never entirely eliminated, and time for it remained in the timetable

even for FL9-powered trains. New Haven was the FL9s' maintenance point, so trains often changed power there anyway, ironically from FL9s to other FL9s. Under Penn Central and Amtrak, Northeast Corridor intercity trains were hauled by GG1s from Washington to New Haven, where they gave way to E8s.

The only real FL9 success was on the Pittsfield line, where they could run right through from Grand Central, eliminating the required engine change at Danbury. This also allowed removal of the catenary on the Danbury branch, but even that was a mistake in the long term. Today's Metro-North would love to have that catenary back, because the Danbury branch's commuter trains require dual-power GE P32AC-DM locomotives and Bombardier coaches, whereas using MN's numerous M.U. cars would allow for a cheaper and faster operation.

A more lasting success for the FL9 fleet came in the Penn Central era, when ex-NH FL9s were sent to cover former NYC Harlem Line and Hudson Line commuter trains, thus eliminating expensive engine changes at North White Plains and Harmon, N.Y., as well as allowing retirement of most of the antiquated ex-NYC third-rail electric locomotive fleet. PC also continued using FL9s on the remaining Danbury Branch trains, which by then went only as far as Danbury, rather than on to Pittsfield, but of course NH had removed the wire on the branch, so dual-power locomotives still were needed.



Poughkeepsie, N.Y., May 20, 1995: During a lunch stop for riders of a Metro-North FL9 excursion behind NH-painted CDOT MK rebuilds 2027 and 2011, two maroon-and-blue FL9s arrive (left) with train 8829. Lead unit 2033 is ex-NH 2059, the last EMD F unit built, now at the Railroad Museum of New England. Some of these rebuilds ran until 2009. In 1976, title to 12 FL9s was transferred from PC to Amtrak, and six of these also were rebuilt by MK. At right, Amtrak 488 passes the standing 2027 in leaving Poughkeepsie with train 286, the *Empire State Express*.

Beginning in 1974, Amtrak leased PC FL9s to allow trains to operate Grand Central–Albany without the electric-to-diesel change at Croton-Harmon. Upon Conrail’s creation in 1976, title to 12 FL9s was transferred from PC to Amtrak. Six were totally rebuilt by Morrison-Knudsen at Boise, Idaho, and remained in Empire Service until replaced by new dual-mode P32AC-DMs in the late 1990s. Thus the FL9 kept going, still faithfully serving when the MTA Metro-North Commuter Railroad was created in 1983. There were no new dual-power models on the market yet, so MN became almost an operating museum with its fleet of bulldog-nose cab units.

Meanwhile, many Metro-North FL9s were rebuilt in various shops, carrying several renumberings and paint schemes. One rebuilding failure was the “FL9AC,” an over-complicated model with a new diesel power plant and A.C. traction motors. There were 10 of them: 7 for Metro-North and 3 for the Long Island Rail Road. They did not last long.

Much more successful were the FL9s rebuilt for Connecticut’s Department of Transportation. The final six of these came in the 1990s from M-K in Boise (painted in New Haven Railroad colors, no less), and the last ones were not mothballed until 2009, although by then their third-rail capability was gone and they were confined to branchline shuttles.

No FL9s run today on Metro-North, but some have gone to museums or short lines [see sidebar, above right]. Dual-power GE “Genesis” units now cover Grand Central trains that go beyond Metro-North’s electric territory, *i.e.*, to

Surviving after a half century Of 22 FL9s extant, 4 are operable

Perhaps amazingly, 22 of the 60 FL9s EMD built for the New Haven survive. Just four are operational (in diesel mode only), and it is unlikely that any others will return to service soon. The most active are Maine Eastern’s two ex-Amtrak units, which haul passenger trains between Brunswick and Rockland, Maine (right). Built as NH 2016 and 2021, they retain Amtrak numbers 488 and 489. The only FL9 in Canada, also ex-Amtrak (initially NH 2029), is Orford Express 484 at Sherbrooke, Quebec, where it powers a dinner train. Orford did not operate in 2014, but trains are expected to return in 2015.



Scott A. Hartley

The fourth active FL9 is the Railroad Museum of New England’s 2019, built as New Haven 2049 and now in fresh NH colors applied for its appearance at 2014’s “Streamliners at Spencer” event in North Carolina. It runs on RMNE’s Naugatuck Railroad out of Thomaston, Conn. RMNE also has former Metro-North 2033, originally NH 2059, the last F unit built, and plans to restore it. (The original FL9, New Haven 2000, one of 10 rebuilt in the unsuccessful FL9AC program, became Long Island 301 but was scrapped.)

Six additional FL9s are preserved at museums in the Northeast, and a couple may run again . . . someday. Metro-North, which operated FL9s for 26 years, has one left, 2012 (built as NH 2039), one of two it repainted in New York Central “lightning stripes” in 1999, but it’s been out of service for years. The other “NYC” FL9 is displayed at the Danbury (Conn.) Railway Museum.

Just one FL9 survives in Amtrak colors; owned by an equipment leasing firm, it languishes on a New Jersey short line. Connecticut DOT, which painted all 10 of its FL9s in original New Haven colors, has kept 6 in storage outside at New Haven for several years. — *Scott A. Hartley*

Danbury, Poughkeepsie, and Wassauc.

The saga of the FL9 is a checkered one. The New Haven should never have bought 60 of them in the first place, yet they found success elsewhere long after

the New Haven was gone. Despite early severe teething problems, some of them ran longer than half a century, and how many other mainline locomotives can claim such a record? ■