

**Trains** SPECIAL

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# LOCOMOTIVE

**2019**

Annual 2019

## *Alco* **LIVES**

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Schenectady closed,  
its legacy lives on** p. 26

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GO wouldn't  
take no for  
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# LOCOMOTIVE<sup>2019</sup>

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Delaware-Lackawanna C420 405 exits Nay Aug tunnel in Scranton, Pa. See page 30. Greg McDonnell



New York & Lake Erie S1 No. 308  
assists FPA4s lugging 27 covered  
hoppers up Dayton Hill in Gowanda,  
N.Y. See page 8. Greg McDonnell



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**Associate Editors** David Lassen, Angela Pusztai-Pasternak,  
Brian Schmidt, Jim Wrinn

**Digital Editor** Steve Sweeney

**Editorial Assistant** Diane Laska-Swanke

**Senior Graphic Designer** Scott Krall

**Graphic Designer** Samantha Primuth

**Lead Illustrator** Rick Johnson

**Production Specialist** Sue Hollinger-Klahn

**Librarian** Thomas Hoffmann

**Editorial Director** Diane M. Bacha

## Editorial

**phone:** (262) 796-8776

**email:** editor@trainsmag.com

P.O. Box 1612

Waukesha, WI 53187-1612

## Advertising Sales

**phone:** (888) 558-1544, ext. 625

**email:** adsales@trainsmag.com

## Customer Service

**phone:** (877) 246-4843

**Outside the U.S. and Canada:** (903) 636-1125

**Customer Service:** customerservice@TrainsMagazine.info

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**GO Transit F59PHs 550 and 554 pass at Bathurst Street in downtown Toronto. See page 42.** Greg McDonnell



## THE EVOLUTION OF CAB COMFORT

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# Backstage pass



**Preparing UP 4141 for its debut at the George H.W. Bush Presidential Library and Museum in College Station, Texas, Greg Pietruszynski helps remove the blue tarp shrouding the locomotive on its trip from Wisconsin.** Michael E. Iden

**I had occasion** the other day to rummage through one of those catch-all file drawers we all seem to have. I never did locate the object of my search, but I did come across an all-but-forgotten souvenir from the past: an all-access backstage pass from a Bob Dylan concert a few decades ago. That's another story for another time, but it occurred to me that *LOCOMOTIVE* presents its own version of an all-access backstage pass.

It's rare privilege in these days of dehumanizing technology and corporate business practices to be afforded the opportunity to pull back the curtain and present in-depth, inside stories from the boardrooms, backrooms, and backshops of modern railroading. *LOCOMOTIVE* has been granted that benefit throughout its 14 years of publication: from the erecting halls, paint shops, and test tracks of General Electric's

locomotive plants in Erie, Pa., and Fort Worth, Texas; Progress Rail's facility in Muncie, Ind., and Siemens in Sacramento, Calif., to the cab of an Amtrak Acela making 135 mph on the Northeast Corridor, to the cupola of an 88-year-old wedge plow being rammed through prow-high southwestern Ontario snowdrifts by an A-A of FP9s.

The tradition carries on with this issue. Bill Stephens demystifies systems that allow specialists in Wabtec's Global Performance Optimization Centers to monitor, diagnose, and troubleshoot the real-time performance of more than 17,000 locomotives operating in more than 20 countries around the globe.

Those EVOs you watch racing a hot intermodal across the Mojave desert, or trudging up Rocky Mountain grades, or lugging minerals in Brazil, or moving Australian ore are also under the watchful eyes of experts at Wabtec GPOC centers in Erie,

Pa.; Fort Worth, Texas; Brazil; and Kazakhstan 24 hours a day, 7 days a week, 365 days a year.

David R. Busse puts names and faces to the General Motors Diesel Division F59 in interviews with the remarkable men who turned a lunchtime conversation into one of North America's most successful modern passenger locomotives. Overcoming Electro-Motive's initial reluctance, GO Transit operations director James A. Brown and GMD's Rob Wright spearheaded the design and ultimate success of the F59PH and its streamlined counterpart, the F59PHI.

Michael E. Iden, one of the most respected and influential motive-power men of our time, presents an epic, first-person account of the first and final miles of Union Pacific 4141. Iden, personally charged with managing the design, painting, and delivery of the UP SD70ACe specially decorated



to commemorate the George Herbert Walker Bush Presidential Library and Museum, follows the project from inception, to a ride with the president at the throttle, to the locomotive's sombre duty carrying the 41st president of the United States home aboard the first presidential funeral train in 49 years.

A half-century after Alco Locomotive Inc. called it quits in locomotive manufacturing, Delaware-Lackawanna Chief Mechanical Officer Don Colangelo — better known as “the Alco Doc” — explains how D-L and parent Genesee Valley Transportation operate a successful and award-winning network of short lines and regional railroads with Alco-powered locomotives, and nothing but Alco-powered locomotives.

LOCOMOTIVE wears its mandate on its sleeve. Its heart and soul belong to the people who build, operate, and maintain them.

Now, about that Dylan thing.



Greg McDonnell, editor

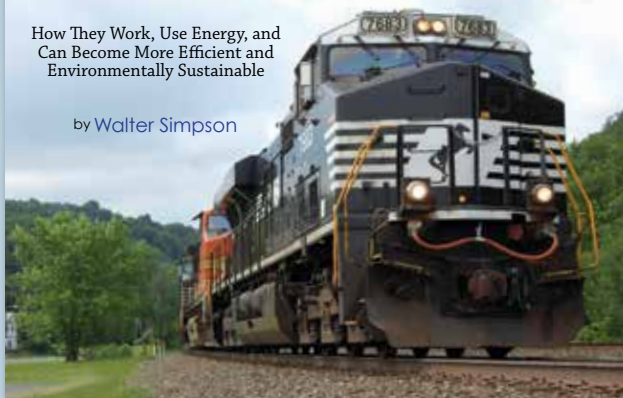


**Delaware-Lackawanna Chief Mechanical Officer Don Colangelo in the cab of D-L C425 2461 in Scranton, Pa. This magazine is about locomotives: its heart and soul belong to the people who build, operate, and maintain them.** Greg McDonnell

## Diesel-Electric Locomotives

How They Work, Use Energy, and Can Become More Efficient and Environmentally Sustainable

by Walter Simpson



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Come along with us as we explore how diesel-electric locomotives actually work and penetrate the hush-hush world of locomotive fuel economy and energy efficiency. This beautifully illustrated, information-packed book, written by an energy expert, allows you to look under the hood of the most modern diesel-electric locomotives through an energy and environment lens.

- Discover how every energy producing or consuming component of diesel-electric locomotives works, including the diesel engine, alternator/rectifier, inverters, traction motors, braking systems, auxiliary energy systems, head-end power, aerodynamics, and emissions controls.
- Learn about locomotive fuel economy technologies and energy efficiency performance measures rarely discussed by the railroad industry.
- Gain insights on meeting future environmental challenges with alternative fuels and motive power options.

“Walter Simpson’s book should prove interesting and educational to a wide audience—from rail buffs wanting to know more about the inner workings of their passion to anyone working on transportation policy. Professional railroaders will benefit from this well-researched nuts-and-bolts book.”

—Dave Cook, *Rail Propulsion Systems*

“Here at last is a publication that addresses the technical side of diesel electric locomotives yet one that explains the many details of these marvelous electro-mechanical machines in language a lay person can understand. And all this written from the unique perspective of energy conservation, one of the true hallmarks of North American railroading.”

—Don Graab, *Retired Vice President-Mechanical, Norfolk Southern*



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# Making style points in Meridian

Patten was right on the money ■ by Kevin P. Keefe

To borrow from songwriter **Stephen Stills**, there's something happening here, but what it is ain't exactly clear. It's July 1958 in Meridian, Miss., and two crews on two different railroads have something to say to each other. In the foreground, a Southern F3 is getting a wheel into tonnage bound for New Orleans, 203 miles distant. On an adjacent track, the crew aboard Gulf, Mobile & Ohio FA1 753 is waiting for clearance to take a local freight across Southern's tracks.

The GM&O hogger clearly has something on his mind. You can see him saying — or more likely shouting — something to his counterparts just a couple of tracks away. Does it have to do with the orders for his train, the Union Turn, about to head northwest 33 miles up the Union Branch? Did he spot something wrong behind the F3? Is it simply the camaraderie of railroaders who live in the same division town? Are they arguing Ole Miss versus Mississippi State football? Laughing about who's going to get home first?

Here's what I wish was true: they're debating the style points of their respective charges. Think about it — does the diesel universe offer a more compelling contrast of cab units? In the foreground, F3 No. 4157: emblematic of arguably the most recognizable and certainly the most pervasive design in North American locomotive

streamlining, the EMD bulldog nose. First appearing on the FT demonstrator of 1939, by 1958 that snout had graced every F unit and damn near every E unit that ever came out of La Grange. Graceful and mysteriously complex with its compound curves, set off by the distinctive arc of its windshield, the EMD design team's handiwork is a masterpiece.

But I doubt the GM&O guys feel the least bit inferior, not looking down from their lofty perch behind that most imposing of all diesel prows. Industrial designer Ray Patten was working for Alco-GE in 1946 when he came up with a look that fairly shouts "get out of the way!" Equal parts long wrap-around nose, headlight grille, and flared windshields, the Alco cab unit was an inspired answer to EMD's. Patten was right on the money when he cooked up the phrase "Locomotive Eye-Appeal Creates Buy Appeal." And even if most Alco love is rooted in its long-legged PA passenger diesel, the front end of a shorter FA looks just as imposing.

We owe photographer J. Parker Lamb a debt of gratitude for having the presence of mind to record this brief encounter on a hot summer afternoon in Meridian, at the high tide of the cab unit. We'll never know what these railroaders really had to say to each other, but whatever it is, they're doing it in high style. **I**



Southern and GM&O crews exchange greetings at Meridian, Miss. J. Parker Lamb, Center for Railroad Photography & Art collection



# Parker, you shoulda been there

It ain't over 'til it's over

■ by Greg McDonnell

**Six decades have gone by** since J. Parker Lamb watched Southern Fs and Gulf, Mobile & Ohio FA1s pass at Meridian, Miss., in summer 1958, “at the high tide of the cab unit,” as Kevin P. Keefe so eloquently put it. Cab units were a fixture in freight service when Parker framed Southern F3A 4157 and Gulf, Mobile & Ohio FA1 753 in his viewfinder. These days, the concept of cabs hauling tonnage is all but ancient history.

A precious few F units — most notably Ontario Southland's quartet of FP9s — survive in revenue freight service. However, for all intents and purposes, the era of Alco cabs working freight ended with a one-two punch in the mid-to-late '70s.

In 1975, CP Rail retired its fleet of Montreal-built FA1s, FB1s, FA2s, FB2s, FPA2s and FPB2s. Three years later, the formation of VIA Rail Canada put an end to Canadian National's long-standing tradition of assigning passenger power, including FPA4s and FPB4s, to its overnight piggyback and express trains between Mimico Yard in the western suburbs of Toronto and Turcot Yard in Montreal. Though VIA kept its former CN FPA4s and FPB4s in passenger service until 1988-89, the unique arrangement that saw passenger power moonlighting on overnight CN freights was cancelled in the late '70s. The book on FA-powered freight was closed. Well, almost.

More than a dozen VIA FPA4s migrated to the United States, finding post-retirement work on tourist operations from New York to California. New York & Lake Erie, a western New York short line operating a onetime Erie Railroad line out of Gowanda, purchased former VIA 6758 and 6764. Like other buyers, NY&LE picked up its pair for excursion trains. Unlike the others, NY&LE isn't above using its FPAs on freight. It doesn't happen often, but it does happen.

On a warm spring day in Gowanda, NY&LE 6758 and 6764 went marching out of town with a train of 27 brand-new covered hoppers bound for temporary storage at the end of the line at South Dayton. Shouldered against the rear of the train, and shoving for all it's worth, NY&LE 308, a former Erie S1 assisted the train up the 2.5% Dayton Hill.

The heart-pounding harmonies of two V-12 Alco 251s and a 660-hp McIntosh & Seymour 539 echoed through the woods as the unlikely trio clawed at jointed rail and trudged past concrete mileposts measuring the distance from Buffalo. With Erie-inspired stripes and wings adorning “that most imposing of all diesel prowls,” the FPAs paid homage to history, proved that they're more than able to earn their keep, and not too old to make style points of their own. The only thing missing was Parker Lamb. **I**



NY&LE FPA4s 6758 and 6764 roll tonnage over Dayton Hill, west of Gowanda, N.Y., on May 18, 2016. Greg McDonnell





Freshly outshopped Norfolk Southern SD70ACC No. 1824 (rebuilt from SD70 2534) and SD70M-2 No. 2693 race Kansas City, Mo.-bound auto-parts train 181 along Illinois state Route 36 near Niantic, Ill., on March 1, 2019.  
Steve Smedley



**Rebuilds lead the race as  
modernizations and upgrades  
top new locomotive sales  
for the first time**

**by Chris Guss**







**A**nd then there were none. On Feb. 25, 2019, General Electric completed the spinoff of its transportation division to Wabtec Corp. with the two entities merging, producing a company expected to earn over \$8 billion in revenues this year. The move is historic. GE Transportation was the last major locomotive builder in North America that hadn't been sold, spun off, or gone out of business outright. GE had been in the locomotive business since 1892; pioneered in development and construction of electric, diesel-electric, gas-turbines, as well as electric M.U. cars and other rail products on its own as well as under the famed Alco-GE partnership that lasted from 1940 until 1953. GE was No. 3 in the locomotive market when its U25B hit the market in 1960, rose to No. 1 with its Dash 8 locomotive series in 1987, and never looked back.

The sale of GE Transportation, first announced in 2017, comes as part of a corporate move to shed various business units valued at an estimated \$20 billion. Under the new ownership, the former GE Transportation will be called Wabtec Freight. The two companies are a good fit. While GE Transportation leads the field in heavy-haul



**On April 4, 2019, Kansas City Southern ET44AC No. 5022 leads train MKCVN through Venice, Ill., north of East St. Louis. The locomotive is part of a 50-unit order: 25 ET44ACs for KCS and 25 ES44ACs for KCSM in Mexico.** Chris Guss

freight locomotives for domestic and international markets, Wabtec has focused on new and rebuilt passenger locomotives, a freight-car and locomotive-parts business, and control systems such as its I-ETMS positive train control system, which is used by freight and passenger railroads across the

country. The combined businesses will now have three major facilities to produce and rebuild locomotives: Wabtec's Boise, Idaho, facility and the former GE plants in Erie, Pa., and Fort Worth, Texas.

With only 187 units ordered so far by North American customers, 2019 isn't





**Factory-fresh CN ET44ACs Nos. 3139 and 3136 roll ethanol tank cars through new-fallen snow at Grayslake, Ill., on Nov. 27, 2018.** Chris Guss



**Indian Railways ES57ACmi No. 69006 rides a QTTX flat as East Erie Commercial Railroad GE 85-ton switcher No. 21 leads the 6,000-hp Evolution Series loco from its Building 10 birthplace in Erie, Pa.** Wabtec, Steve Gerbracht

shaping up to be a banner year for locomotive builders. Half of those new locomotives are headed for a single customer, Canadian National. Its traffic booming, power-short CN is scheduled to receive 52 ET44ACs and 40 credit ES44ACs this year, all part of a massive 260-unit multiyear order placed

with GE prior to the Wabtec takeover. Iowa Interstate will receive three credit ES44ACs this year. Kansas City Southern is receiving its first Tier 4 locomotives this year as part of a 50-unit order. KCS ordered 25 ET44ACs along with 25 ES44ACs for Kansas City Southern de México. Noncompliant with

emissions regulations in the U.S., the ES-44ACs will be for use in Mexico only. Norfolk Southern is receiving Tier 4-credit SD70ACes, CSX Transportation is in for 10 SD70ACe-T4s from Progress Rail in 2019. California-based Oakland Global Rail Enterprise has ordered one EMD24B for delivery this year. Siemens continues to deliver its Charger locomotives, with four SC-44s headed to Altamont Commuter Express in California and eight to Illinois Department of Transportation. Virgin Trains USA is receiving 13 SCB-40s, the 4,000-hp version of Siemens SC-44 model. Siemens secured a major SC-44 order in December 2018 when Amtrak announced plans to purchase 75 Chargers to power its long-distance trains. Siemens will begin delivering the locomotives in 2021. Amtrak holds an option for 100 additional SC-44s as part of the deal.

### **Progress Rail Tier 4s off to a rocky start**

Following Progress Rail's well-publicized delay into the Tier 4 heavy-haul market, the company has faced its share of challenges. Sales of its SD70ACe-T4 model have been slow.

Progress Rail's first order for the F125 to



## 2018 NEW LOCOMOTIVE CONSTRUCTION

GE: 190, Progress EMD: 88, Siemens: 41, MPI: 14, NREC: 4, PYSC: 2

Railroad	Qty.	Road No.	Builder	Type	Order/serial	Build date	Notes
Antofagasta Railway (Chile)	7	3201-3207	EMD	GT38AC	20168300-001 to 007	01/18*	4
CalTrans (CDTX)	16 (22)	2107-2122	Siemens	SC-44	Order 02148671	04/18* – 11/18*	1
CFM (Mozambique)	5	701-705	GE	C30ACi	65813-65817	12/18*	2
CN	30 (130)	3806-3835	GE	ES44AC (T4C)	64744 – 64773	05/18 - 08/18*	2
CN	40 (130)	3133-3172	GE	ET44AC	64774 – 64803, 65858 – 65867	11/18* – 12/18*	2
GO Transit	14 (16)	668-681	MPI	MP40PHTT4AC	2573.02 to .15	02/18 – 12/18	6
IDOT (IDTX)	8 (33)	4626-4633	Siemens	SC-44	Order 02148671	2018	1
Indian Railways (India)	38 (700)	49003-49040	GE	ES43ACmi	64666 – 64703	01/18* – 06/18*	3,7
Indian Railways (India)	2 (300)	69001, 69002	GE	ES57ACi	64713, 64714	12/18*	3,8
MARC	5 (8)	83-87	Siemens	SC-44	unknown	01/18* – 02/18	1
Metrolink (SCAX)	11 (40)	932-942	EMD	F125	20126849-030 – 040	01/18* – 09/18*	4
NS	15 (40)	1175-1189	EMD	SD70ACe (T4C)	20176662-001 – 015	11/18 – 12/18	4
Pakistan Railways	20	4553-4572	GE	C20-EMP	65793 – 65812	2018	2
PeruRail (Peru)	2 (8)	536, 537	PYSC	LSL1400	unknown	?/18	5,9
Rio Tinto	20	9129-9148	GE	ES44ACi	64719 – 64738	09/18* – 11/18*	2
Roy Hill	5	RHA1022-RHA1026	GE	ES44ACi	64739 – 64743	04/18 – 05/18	2,10
SEPTA	12 (13)	902-913	Siemens	ACS-64	unknown	01/18* – 07/18	1
Sitarail (Ivory Coast)	4	CC 22201-CC 22204	NREC	GT22C	unknown	01/18* – 02/18*	
SNCFT (Tunisia)	10 (20)	060DS651-060DS670	EMD	GT42AC	20158211-001 – 010	03/18* – 06/18*	4
<i>Savage (SVGX)</i>	2	006, 007	<i>NREC</i>	<i>3GS21B</i>		<i>not new</i>	
Ukrainian Railways (Ukraine)	30	2001-2030	GE	TE33AC	65763 – 65792	08/18* – 12/18*	3,11
UP	38 (88)	3062-3099	EMD	SD70ACe-T4	20146140-062 – 088	03/18 – 10/18*	4,12
UP	8	9097-9104	EMD	SD70ACe-T4C	20146115-101 – 108	12/18*	4

- rows in italics are updates to year 2017 production

- numbers in parenthesis in quantity column are total number of units in that order, if different from the quantity delivered in 2018, or represent size of a multiyear order

\* estimated build date, unconfirmed by publication deadline

**Notes:** 1. Built in Sacramento, Calif. 2. Built in Fort Worth, Texas. 3. Built in Erie, Pa. 4. Built by Progress Rail, Muncie, Ind. 5. Built in San Luis Potosi, Mexico. 6. Built in Boise, Idaho. 7. Indian Railways designation is WDG4G. Multiyear order for 700 units with the first 50 built in the U.S. and the rest at a new GE factory in India from Erie-supplied kits and new build.

8. Indian Railways designation is WDG6G. Multiyear order for 300 units with the first 6 built in the U.S. and the rest at a new GE factory in India from Erie-supplied kits and new build. 9. Multiyear order through 2018 10. Painted pink to support breast cancer research and treatment. 11. Constructed in Erie and then shipped in primer to Ukraine for completion, which

included paint and installation of local content. 12. Nos. 3013 (2017), 3091, 3097-3099 never accepted by UP. Assigned PRLX 7228-7232 in 2019.



**Add CSX to the list of railroads engaged in major rebuilds of modern power. Part of a program to upgrade SD70MACs to SD70ACe specs in its own shops, CSX No. 4560 undergoes conversion at Huntington, W.Va. Marshall W. Beecher**

California's Metrolink is approximately two years behind schedule. Issues ranging from redesign of certain appliances to various mechanical issues over the past several years have continued to keep most of the F125s sidelined. Only a portion of the order has been delivered to California while

the balance is parked at Progress Rail's shop in Muncie, Ind. As of early 2019, Metrolink has only conditionally accepted seven of the 40-unit order, though 16 additional locomotives are on Metrolink's property. Many of these are out operating, working out the bugs before conditional

delivery can occur. Due to the reliability issues of the F125, Metrolink has increased the number of failure-free miles a new locomotive must operate before being accepted from 500 to 2,500 miles. Progress anticipates all 40 locomotives will be accepted and in service by summer 2020.

Progress Rail's launch customer for its four-cycle, 1010J-powered SD70ACe-T4 was Union Pacific. The first units of a multiyear order arrived in 2017, but problems with these locomotives prompted a delayed acceptance of subsequent units until the bugs were worked out.

The majority of the order was delivered in 2017 and 2018, the balance scheduled for early 2019. This never happened. UP canceled the order with five left undelivered. Progress will divert these locomotives, originally intended to be UP Nos. 3013, 3091, and 3097 to 3099 to its lease fleet as PRLX 7228 to 7232. Another blow came when Union Pacific parked its entire SD70ACe-T4 fleet due to a number of factors, including the implementation of Precision Scheduled Railroading, which requires less motive power. To continue field-testing of the new model, Progress worked out an agreement to keep 10 UP SD70ACe-T4s operating. Progress and UP were in the process of placing 10 of these



# 2018 LOCOMOTIVE REBUILDS

Railroad	Qty.	Road No.	Builder	Type	Order/serial	Build date	Notes
ADMX	1	401	Railservice	LEAF	14992	?/18	A
Amtrak	1	793	NRE	2GS12B-R	260-793-6-2018	7/18	B
CP	5	8140-8144	GE	AC4400CWM	various	04/18*	C
CP	65	8000-8063, 8200	GE	AC4400CWM	various	04/18*-08/18*	C
CEMEX	1	419	KLW	SD32C		11/18*	D
CITX	1	3087	MPR	SD38-2	A2145	04/18	E
GMTX	1	222	MEI	Slug	827018-4	06/18*	F
Larry's Truck Electric (LTEX)	1	3823	AMP	GP38-3	7786-25	04/18	G
NC DOT (RNCX)	1	105	NS	NPCU	A4746	03/18	H
NS	2 (25)	1800,1801	EMD	SD70ACC	various	03/18	I
NS	6 (25)	1802-1807	EMD	SD70ACC	various	11/18-12/18	I
NS	39	4018-4042, 4125-4138	GE	AC44C6M	various	04/17-12/17	J, K
NS	34	4043-4076	GE	AC44C6M	various	02/17-12/17	J,L
NS	48	4077-4124	GE	AC44C6M	various	01/18-12/18	J,M
NS	36	4139-4174	GE	AC44C6M	various	02/18-05/18	J, N
NS	2	6219, 6220	NS	SD33ECO	31301, 36900	12/18	O
NS	12	see note	EMD	SD70ACU	various	01/18-12/18	P
NS	1	8520	NS	AC44C6CF	49122	07/18	Q
Railservice (RSSX)	2	1007, 10051	Railservice	LEAF	unknown	2018	A
TRRA	1	307	MEI	Slug	33351	10/18	R
UP	41	various	MEI	PS6B	various	02/17-12/17	S
UP	8	various	MEI	PS6B	various	01/18-12/18	T
UP	11 (980)	various	GE	C44ACM	various	07/18*-12/18*	U
UP	4 (10)	UPY1000-1003	EMD	EMD24B	various	08/18+-12/18+	V
WAMX	5	4002, 4003, 4006, 4009, 4012	MEI	GP38-2	various	2018	W
Waste Management (USWX)	1	010	KLW	SE23B-S	4114-5/14329	10/18*	X
Waste Management (USWX)	1	400	KLW	SE23B-M	7943-11/32654	10/18*	X

**Notes:** **A.** Converted to LEAF genset (two Cummins QSK15-L3 600-hp engines) by Railservice at Longview, Texas. An unknown number of LEAF conversions were completed in 2018. ADMX 401 core was WTLC GP7 115. **B.** Amtrak 793 converted from SW9 to 2GS12B-R (twin 600-hp Cummins QSK15 engines) by NRE at Mt. Vernon, Ill. **C.** CP AC4400CWs modernized and upgraded to AC4400CWM by GE at Fort Worth, Texas, and Erie, Pa. Work includes updating the control system software equivalent to current generation of Evolution Series software, and installing new operator, auxiliary, and blower cabs. Sources (in order) are CP 9610, 9585, 9650, 9623, 9626, 9521, 9502, 9507, 9515, 9516, 9520, 9526, 9532-9534, 9541, 9545, 9548, 9518, 9552, 9553, 9555, 9558, 9562, 9563, 9565, 9566, 9568, 9570, 9572, 9573, 9581, 9574-9576, 9550, 9557, 9564, 9578, 9582, 9504, 9509-9512, 9514, 9519, 9522, 9524, 9529-9531, 9542, 9544, 9549, 9556, 9561, 9567, 9570, 9572, 9577, 9579, 9580, 9559, 9500, 9546, 9560, 9547, 9540, 8550. **D.** SD40-2 core rebuilt to EPA Tier 4 SE32C by Knoxville Locomotive Works in Knoxville, Tenn. The SE32C replaces the original EMD engine with an MTU Series 4000 16V R54 engine connected to an AR10 alternator by a ZF Friedrichshafen AG 2:1 reduction gearbox, and adds a TMV Control System. **E.** CITX 3087 rebuilt from SD40-2 to SD38-2 by Motive Power Resources in Minoaka, Ill. Locomotive built 1966-09 as CP SD40 5512. **F.** Former UPY MP15DC 1379 (GMTX 222) converted to slug by Metro East Industries at East St. Louis, Ill. Mated with GMTX MP15AC 336. **G.** GP35 converted to GP38-3 by American Motive Power Dansville, N.Y. Work includes removal of turbocharger and adding a microprocessor. Core is LTEX 2574 (former BNSF), built as ATSF 1374. **H.** RNCX 18521, former GO Transit F59PH 521 rebuilt to Cab Control Car 105 by NS Juniata shop, Altoona, Pa. **I.** NS SD70s rebuilt to SD70ACCs by Progress Rail, Muncie, Ind. Work includes converting locomotives from D.C. to A.C. traction with new control systems, replacement of original spartan cab and low short hood with a new safety cab, new electrical cabinet, and electrical system. From NS 2537, 2548, 2505, 2503, 2532, 2533, 2521, 2528. **J.** AC2DC program conducted by GE and NS. NS Dash 9-40Cs and Dash 9-40CWs rebuilt to AC44C6M by GE Erie, Pa., and Fort Worth, Texas, and NS shops at Roanoke, Va., and Juniata shop, Altoona, Pa. Work includes converting locomotives from D.C. to A.C. traction with new A.C. traction motors and trucks, inverters, updated control system equivalent to current generation of Evolution Series, and new operator cab. **K.** NS 4018-4042, 4125-4138 AC2DC by GE Fort Worth, Texas. Dash 9-40C and Dash 9-40CW cores. Dash 9-40CW cores begin at road number NS 4125. Sources (in order) are NS

8788, 8811, 8818, 8823, 8834, 8847, 8850, 8863, 8875, 8877, 8884, 8842, 8837, 8787, 8776, 8876, 8870, 8825, 8768, 8792, 8819, 8810, 8774, 8778, 8769, 8996, 8984, 8900, 8935, 8990, 8916, 8904, 8948, 8925, 8969, 8903, 8987, 8907, 8894. **L.** NS 4043-4076 AC2DC by NS shops at Roanoke, Va., and Juniata shop, Altoona, Pa. Sources (in order) are Roanoke: NS 8805, 8851, 8858, 8783, 8781, 8868, 8796, 8784, 8777, 8827; Juniata: NS 8881, 8775, 8859, 8888, 8791, 8800, 8841, 8828, 8865, 8771, 8821, 8767, 8785, 8793, 8807, 8832, 8854, 8780, 8824, 8848, 8840, 8764, 8773, 8886. **M.** NS 4077-4124 AC2DC by NS shops at Roanoke, Va., and Juniata shop, Altoona, Pa. Sources (in order) are Juniata: NS 8838, 8779, 8880, 8873, 8804, 8795, 8790, 8817, 8872, 8778, 8794, 8803, 8812, 8856, 8874, 8772, 8765, 8766, 8862, 8844, 8860, 8852, 8869, 8813, 8835, 8855, 8802, 8831, 8815, 8806, 8941; Roanoke: NS 8887, 8853, 8809, 8861, 8816, 8770, 8826, 8822, 8830, 8797, 8843, 8885, 8883, 8864, 8829, 8820, 8786. **N.** NS 4139-4174 AC2DC by GE Fort Worth, Texas. Sources (in order) are NS 8896, 8908, 8934, 8891, 8889, 8933, 8892, 8909, 8921, 8949, 8929, 8997, 8890, 8912, 8960, 9002, 8938, 8919, 8930, 9005, 8944, 8968, 8959, 8950, 8961, 8937, 8931, 8988, 8953, 8982, 8963, 8943, 8983, 8970, 8942, 8966. **O.** NS 3444 and 3383 rebuilt from SD40-2 to SD33ECO by NS Juniata shops, Altoona, Pa. Work includes new crashworthy Admiral cab, Tier 3 12N-710G3B-3 ECO prime mover, electronic air brakes, and EM2000 microprocessor. Equipped to operate with RPU6D slugs. Both originally SD40s, NS 3444 (6219) built 1966-02 as PRR 6056, NS 3383 (6220) built as 1970-12 as PC 6255. **P.** NS 7230, 7239, 7251, 7255, 7269, 7288, 7329, 7331, 7333, 7335, 7336, 7337 upgraded from SD90MAC to SD70ACU by NS Juniata shop, Altoona, Pa. Work includes replacement of original cab with SD70ACE cab, replacement of original Siemens electronics and inverters with Mitsubishi equipment, and upgrade to electronic air brakes. **Q.** NS 8946 rebuilt from Dash 9-40CW to AC44C6CF by NS shops, Roanoke, Va. Work includes conversion from D.C. to A.C. traction with new electrical/inverter cabinet, TMV control system, and a Ganser common rail EUI system added to the prime mover, and six CAFA.C. traction motors specifically designed to fit the existing Dash 9 truck frames. Additional weight added to raise locomotive weight to 432,000 lbs. **R.** TRRA 2000 converted from GP38-3 to slug by Metro East Industries in East St. Louis, Ill. Built as B&O GP38 No. 3833. Mated with TRRA GP40-3 No. 3007. **S.** UP SD38-2s and one S3-2B slug (UP 3010, a former SD38-2) rebuilt to PS6B slugs by Metro East Industries in East St. Louis, Ill. Cores are UPY 800 (407), 801-807, 810, 817, 818 (415), 819 (414), 820 (416), 821 (413), 822, 823, 824 (420), 825, 827 (418), 828, 829 (419), 834 (422), 835 (412), 836 (421), 839 (408),

841, 842 (405), 843 (425), 844, 845 (424), 846 (410), 849, 854, 858 (411), 860, 862, 863 (409), 865-867, and 3010 (403). Unit numbers in parenthesis were renumbered into UPY 400 series at the time of conversion. All conversions will be renumbered into the UPY 400s. **T.** UP SD38-2s rebuilt to PS6B slugs by Metro East Industries in East St. Louis, Ill. Cores are UPY 807, 808, 809 (446), 837, 838, 840 (441), 853, and 861. Unit numbers in parenthesis were renumbered into the UPY 400s at the time of conversion. All conversions will be renumbered into the UPY 400s. **U.** UP AC6000CW (4, 400-hp C6044AC "convertibles") modernized and upgraded to C44ACM by GE at Erie, Pa., and Fort Worth, Texas. Work includes updating the control system software equivalent to current generation of Evolution Series software, and installing new auxiliary and blower cabs. Locomotives retain existing road numbers. Nos. 7021, 7035, 7044, 7051, 7307, 7340, 7342 done by GE Erie, Pa., Nos. 7016, 7029, 7033, 7039, done at Fort Worth, Texas. **V.** UP 635, 623, 808, and 806 converted to EMD24B by Progress Rail at Patterson, Ga. Work includes replacement of EMD 16-645E prime mover with CAT 3512C HD engine with after-treatment (SCR, DOC and DPF), Zeit SAL V control system, rebuilt trucks, and D87B traction motors. **W.** WAMX GP40-2Ls converted to GP38-2 by Metro East Industries in East St. Louis, Ill. Work includes removing the turbocharger and replacing it with a paper air filter. Units retain their existing road numbers after conversion. **X.** Former UPY 103 (slug) and PRLX 2017 (GP40) rebuilt to mother-slug set by Knoxville Locomotive Works in Knoxville, Tenn. The SE23B-M replaces the original engine with an MTU Series 2000 12V Tier 4i (non-road standards) engine connected to an AR10 alternator by a ZF Friedrichshafen AG 2:1 reduction gearbox, and adds a TMV Control Systems control system. Slug 010 originally built 1951-04 as MP SW9 9191, SE23B-M No. 400 built 1966-11 as B&O GP40 3694.



Greg McDonnell





back in service during spring 2019.

BNSF Railway, meanwhile, cancelled its long-delayed SD70ACeP4-T4 order. The P4 models, which would feature four traction motors instead of six, were originally scheduled for delivery in 2017, but pushed back several times before BNSF pulled the plug. CSX will become Progress Rail's second SD70ACe-T4 customer when its units arrive. Norfolk Southern, which also had a 10-unit order for SD70ACe-T4s, canceled this spring and converted the order to 10 additional SD70ACe credit units. The 10 canceled units will also become part of Progress Rail's lease fleet as PRLX Nos. 7233 to 7242. Progress Rail's Muncie facility will be fulfilling an in-house order for 27 SD70ACe-T4s. Progress plans to use these in lease-fleet service, numbering them PRLX 7201 to 7227, just ahead of the canceled UP units.

### Rebuilds take the lead

Mark 2018 as the first year in which both builders produced more rebuilt locomotives than new. The trend appears to be holding true for 2019 as well. Many railroads are focusing on improving their existing fleets rather than expanding them. GE, now Wabtec Freight maintains its lead with rebuild orders for AC4400CWMs for Canadian Pacific, Union Pacific C44ACMs, and AC44C6Ms for Norfolk Southern from Erie and Fort Worth.

Progress Rail is rebuilding SD90MACs for Canadian Pacific, SD70ACCs for Norfolk Southern, and the balance of the EMD24B order for Union Pacific. Progress also secured three orders for Chicago-area commuter railroad Metra. The first is a two-

unit order for GP23ECOs with Tier 3-rated 8-710 ECO prime movers. Metra will also receive three hand-me-down F59PHs from Progress, doubling its share of the former GO Transit locomotives to six. The three will go to Progress Rail's shop in Patterson, Ga., for upgrades, including EM2000 control systems and conversion to electronic fuel injection. Progress will then upgrade Metra's other three F59PHs.

Breaking new ground, Metra has signed with Progress for 15 remanufactured six-axle, A.C.-traction passenger locomotives and an option for 27 more. The cores for the order will be A.C. freight locomotives. Metra is no stranger to six-axle passenger power, having rostered 15 EMD F40Cs that saw regular service until the early 2000s. Metra has retained two F40Cs, but they haven't operated in years. Progress initially identified a group of SD70MACs that would be used to fill this order, tentatively calling them SD70MACHs. Unfortunately, these cores became unavailable, and Progress is now looking for another group of units to meet their criteria. Metra is planning to operate the new Tier 3-rated six-axle locomotives on its services on BNSF lines west of Chicago to help mitigate exhaust issues present on the south side of Chicago's Union Station.

In-house rebuilding remains strong at Norfolk Southern with SD70ACUs and AC44C6Ms being the primary focus. CSX has begun rebuilding its SD70MACs this year at the company's Huntington, W.Va., shop, while Union Pacific is upgrading four- and six-axle EMD 60-series locomotives.

Progress built both Tier 4 and Tier

### Idled by Precision Scheduled Railroading, rows of stored Union Pacific GEs and EMDs fill tracks in UP's North Yard in Salt Lake City.

James Belmont

4-credit locomotives in 2018. UP received 37 SD70ACe-T4s and eight SD70ACe-T4Cs while NS received 15 SD70ACe-T4Cs, while 11 F125s were built for California's Metrolink. On the export side, an order for seven GT38ACs was built for Antofagasta Railway in Chile and 10 GT42ACs for SCNFT in Tunisia. General Electric built 40 ET44ACs and 30 credit ES44ACs for CN. For export, GE constructed five C30ACis for CFM in Mozambique, 38 ES43ACmis and two ES57ACis for Indian Railways. Pakistan Railways received 20 C20-EMPs while 30 TE33ACs were built for Ukrainian Railways. For Australian customers, GE built 20 ES44ACis for Rio Tinto and five ES44ACis for Roy Hill. Siemens continued to produce its SC-44 passenger model, with 16 going to CalTrans, eight to Illinois Department of Transportation and five to MARC in Maryland. MotivePower delivered 15 MP0PHTT4ACs to Toronto-area commuter operator GO Transit. NRE produced a pair of 3GS21Bs for Savage and four GT22Cs for Sitarail located in the Ivory Coast. Productos y Servicios del Centro (PYSC) built two more LSL1400s, as part of an eight-unit order for PeruRail. The locomotives are built at the company's San Luis Potosi, Mexico, facility.

With rebuilding trending high and new locomotive orders continuing to slump, locomotive builders are redefining their roles to meet customer demands. **I**





**Metrolink's much-delayed F125s are finally hitting the road. On Apr. 13, 2019, LA-Oceanside train 660 arrives in Fullerton, Calif., in the charge of F125 No. 908. The train will short-turn at Irvine due to weekend track work.** David Styffe



**Dressed in special colors applied to the first two SD70ACC rebuilds, NS No. 1801 bursts from the shadows with a westbound freight at Ridgecrest, N.C., on Jan. 16, 2019.** Samuel Phillips



Type/totals	Model	Total	BNSF	CN	CP
<b>GE A.C. TRACTION</b> Total: 8,684 Percentage: 31	ET44AC/C4	993 ▲109	274: 3725-3966, 3968-3999 (ET44C4)	243: 3000-3242	
	ES44AC/C4	4,612 ▲49	814: 5718~6438 CREX 1201-1215, 1301-1350, 1401-1435 (ES44AC) 1,266: 4200-4299, 5533-5546, 6500~7199, 7921~8291, 8318-8399 (ES44C4)	276: 2800-2999, 3800-3875	291: 8700-8960, 9350-9379
	DC2AC family	244 ▲71	21: 599-619 (AC44C4M)		
	AC-Conv/AC6000	189			
	AC4400CW AC4400CWM	2,646 ▼10	121: 5600-5717, 5838-5840		468: 8000-80, 8100-58, 8200, 8500-80, 8600-43, 8645-55, 9517~9683, 9700~84, 9800-40, CEFX 1026-59
<b>EMD A.C. TRACTION</b> Total: 3,157 Percentage: 11	SD70ACe-T4	99 ▲31	2: EMDX 1603-1604		
	SD70ACe/P4	1,672 ▲48	640: 8400~8599, 8749-8799, 8990~9399 20: 8500-8519 (SD70ACeP4)	4: 8100-8103	
	SD9043MAC	373			60: 3551, 3567, 9100~9160
	SD80MAC	29			
	SD70MAC SD70ACC	984 ▲7	756: 8800~8959, 9400~9499, 9504~9999		
<b>GE D.C. TRACTION</b> Total: 5,473 Percentage: 20	ES44DC/ES40DC	1,365 ▲5	719: 7200-7552, 7554-7837, 7839-7920	125: 2220-2344	
	Dash 9-44CW/40C	3,215 ▼99	1,761: 620~699, 700-799, 960~1123, 4000-4199, 4300~5532	241: 2200-05, 2500-24, 2526-39, 2541-44, 2546-83, 2585-2666, 2668-82, 2684-94, 2696-2727, BCOL 4641-4654	
	Dash 8-40CW/ 44CW/40CM	716	85: 867-951	78: 2098, 2099, 2135-2199, 2455~2466 (8-40CW) 81: 2400-2454, BCOL 4601-4626 (Dash 8-40CM)	
	Dash 8-40C	80		77: 2000-2041, 2100-2134	
	Dash 8-40BW/ 32B	97	38: 560-597 (8-40B) 59: 500-530, 532-559 (8-40BW)		
<b>EMD D.C. TRACTION</b> Total: 2,878 Percentage: 10	SD70M-2	320		190: 8000-8024, 8800-8964	
	SD70M/I	1,535 ▼6		26: 5600-5625 (SD70I)	
	SD75M/I	230	51: 227, 233, 250-256, 258-299	172: 5626-5636, 5638-5657, 5659-5752, 5754-5800	
	SD70	83 ▼31		36: IC 1000-1005, 1007-12, 1015-22, 1024-1039	
	SD60M/I/E	425 ▼111			5: 6258-6262 (M)
<b>EMD D.C. TRACTION SIX-AXLE</b> Total: 2,388 Percentage: 9	SD60	285 ▼70	77: 1400-1476	88: 5400-5411, 5413-5419, 5421-5489	37: 6221~57, 6300-09 (SD60-3)
	SD50	0 ▼4			
	SD50-2/-3	104 ▼140			
	SD-ECO family	80 ▲5	3: 1350-1352 (SD32ECO)		50: 5000-5049 (SD30C-ECO)
	SD40-3	719		79: 6000~6028, BLE 900-10, DMIR 400~409, GTW 5938~5955, IC 6200-6204, IC 6250~6265	
<b>EMD D.C. TRACTION FOUR-AXLE</b> Total: 4,186 Percentage: 15	SD40-2	1,399 ▼22	405: 300-302 (cabless), 1590~1999	93: 5241~5386, GTW 5930~5937, IC 6100	136: 5100-5109, 5719~6080, 6607~6621
	Older	86 ▼11	3: 1550, 1551, 1553 (SD9-3) 6: 1554~1560 (SD38-3P) 4: 1561-1564 (SD38-2) 21: 1565-1585 (SD40-2R)	1: BLE 862 (SD38) 3: BLE 866-868 (SD38AC) 27: 1650, 1652-1653, BLE 878, DMIR 211, 212, 215, EJE 656-675 (SD38-2)	
	GP60/60M/59/59E	389	42: 159-200 (GP60) 59: 100-158 (GP60M/GP60M-3) 22: 325-346 (GP60B)		
	GP50/50-3, GP40X	109 ▲1	99: 3100~3208 (GP50, GP25, GP50-3) 10: 3030-3039 (GP40X)		
	GP40-3	134 ▲20		15: IC 3101~3138	7: CP/DME 4001, 4002, 4004-4008
	GP40-2	703 ▼25	28: 3000-3022, 3025-3029 (GP40E/M)	62: 9402~9677, GTW 6420~6425, IC 3140	0: all sold
	GP40	16 ▼1		4: GTW 6401; WC 3018, 3026, 3027	12: 2010, CP/SOO 4601~4620
	GP39-2	298	124: 2700~2739, 2769-2799, 2835-2869, 2941-2959 135: 2750-2768, 2800~2834, 2870~2940, 2960~2984 (GP39E, M, V)		2: 4598-4599
	GP38-3/GP39-3	409 ▲69	185: 2515-2699 (GP39-3) 3: 2390-2392 (GP38-3)		
	GP38-2	1,473 ▼183	202: 2000-2051, 2075~2107, 2249, 2256~2382	267: 4700~4810, 7500~7532, GTW 4900~4934, 5812~5861, 6221-28, EJE 703, IC 9560~39, WC 2001-6, GATX 2163~2695	189: 3021~3135, CP/SOO 4400-07, 4409-4429, 4431-4452, 4521-4526, SOO 4506-4515, CP 4521-4526, D&H 7303-7312
	GP38/GP38AC	50	17: 2156~2248 (GP38) 13: 2110~2138 (GP38AC)		18: 3000~3020 (GP38AC) 2: DME 3800, 3801 (GP38)
	GP-ECO family	192 ▲12	2: 2197, 2233 (GP23ECO)		130: 2200-2329 (GP20ECO)
	Older	413 ▼22	50: 1500-1549 (GP28M-2, GP28-2P)	106: 4028, 4100~4141, GTW 4610~4633, 7014~7083, 7200~7280 (GP9) 15: 1400~1444 (GMD1)	
<b>GENSET</b> Total: 184 Percentage: <1	Progress	0 ▼			
	NREC	151 ▼11	74: 1220-1227, 1229-1294 (3GS21B) 17: 1300-1316 (3GS21C)		
	Railpower	33 ▼87			
<b>SWITCHER</b> Total: 173 Percentage: <1	MP15 family	113 ▼17	2: GN 3703-3704 (MP15)		
	SW1000/1001	12 ▼2	4: GN 3600~3619 (SW1000)		
	SW1500	34 ▼4	7: GN 3422~3447	15: WC 1552, 1558-1571	
	Other	14	1: 1205 (Hydrogen Cell) 1: 3546 (SW1200)	5: IC 1200-1204 (SW7RM) 4: IC 1492, 1497, 1504, 1506 (SW11) 1: 7311 (SW1200)	1: 6711 (SW900)
<b>SLUG</b> Total: 560 Percentage: 2	Road slug	262 ▼2			
	Yard slug	266 ▼1	11: 50~60, 65, 70, 71	78: 200~281, 500~526	
	RC platform	32 ▲1			2: 1126, 1128
<b>SPECIAL</b> Total: 26 Percentage: <1	F40PH/F40PH-2	7		3: 104-106	
	Other	2			
	Streamlined pass.	13		2: 102, 103 (E8A)	4: 1401, 4106, 4107 (FP9), 1900 (F9B)
	Steam	4			1: 2816 (4-6-4)
<b>TOTAL:</b> 27,709	<b>TOTAL</b> GE/EMD/Other: 51/46/3 percent		8,254 ▲2 GE/EMD/Other: 63/36/1 percent	2,417 ▲161 GE/EMD/Other: 46/51/3 percent	1,415 ▼15 GE/EMD/Other: 54/46/0 percent

~ denotes an incomplete series. Due to space limitations, some series include only the last two digits of the highest number, i.e., 2500-39 represents 2500-2539.



CSX	NS	UP
<b>225:</b> 3250-3474	<b>81:</b> 3600-3680	<b>170:</b> 2570-2739
<b>547:</b> 700-962, 964-999, 1776, 3000-3096, 3098, 3100-3111, 3113-3249	<b>185:</b> 8000-8184	<b>1,233:</b> 2010, 2520-2569, 2740-2769, 5248-5347, 5353-5481, 5483-5553, 5695-5699, 7345-7420, 7422-7468, 7470-7529, 7600-7913, 7915-8267
	<b>223:</b> 4000-4274 (AC44C6M), 8520 (AC44C6CF)	
<b>3:</b> 600-602		<b>186:</b> 6888-6968, 7010-7079, 7300-7344
<b>580:</b> 1-22, 24-129, 131-150, 152-173, 201-219, 221-319, 321-325, 327-398, 400-444, 446-468, 470-495, 497-516, 519-545, 547-596, 598, 599, 5101-5122		<b>1,477:</b> 5554-5667, 5669-5694, 5700-5835, 5837-5944, 5946-6081, 6145-6425, 6430-6535, 6537-6645, 6647-6706, 6708-6887, 6995-7009, 7080-7138, 7140-7222, 7224-7297
<b>10:</b> 8900-8909		<b>87:</b> 3000-3096
	<b>215:</b> 1000-1214	<b>793:</b> 1111, 1982-83, 1988, 1989, 1995, 1996, 4141, 8309-9099
	<b>110:</b> 7229-7338 (SD90MAC/SD70ACu rebuilds)	<b>203:</b> 3484-3777
	<b>29:</b> 7200-7228	
<b>201:</b> 4500-4524, 4525-4541, 4543-4589, 4701-4715, 4717-4758, 4760-4830	<b>27:</b> 1800-1826 (SD70ACC)	
<b>301:</b> 5200-5487, 5489-5501	<b>220:</b> 7500-7719	
	<b>946:</b> 8901-9978 Built as Dash 9-40CW, upgraded to 9-44CW <b>0:</b> Dash 9-40C all retired, see DC2AC increase	<b>267:</b> 9564-9592, 9594-9706, 9708-9715, 9717-9730, 9732-9834
<b>219:</b> 7310-7393, 7649-7929 (Dash 8-40CW) <b>48:</b> 9000-10, 9012-17, 9019-42, 44-48, 50, 51 (Dash 8-44CW)	<b>153:</b> 8314-8422, 8424-8467 (8-40CW) <b>12:</b> 8500-8502, 8504, 8506-8513 (8.5-40CW)	<b>40:</b> 9363-9552
		<b>3:</b> 9152, 9240, 9259
	<b>130:</b> 2649-2778	
	<b>71:</b> 2581-2648, 2797-2799 (SD70M)	<b>1,438:</b> 2001, 2002, 3778-5231 (SD70M)
	<b>7:</b> 2800-2806	
	<b>47:</b> 2502-2580 (see SD70ACC)	
<b>11:</b> 8724, 8756-61, 8763, 8766-8768	<b>161:</b> 911, 6717-6762, 6900-7002, 7004-7035	<b>248:</b> 2158, 2169, 2240-2519
<b>0:</b> all retired	<b>0:</b> all retired	<b>83:</b> 2100, 2155-2157, 2159-2168, 2170-2192, 2194-2239
<b>0:</b> all retired		
<b>18:</b> 8502-8662	<b>58:</b> 6300-6357 (SD40E)	<b>28:</b> 9900-9927 (SD59MX)
<b>13:</b> 1700-1712 (SD40E3)	<b>14:</b> 6210-6223 (SD33ECO)	
<b>150:</b> 4000-4090, 4225-4237, 4285-4293, 4295-4297, 4299, 4320-4333, 4372-4390		<b>490:</b> 1550-2052, 3113, Y302-Y340, Y3003, Y3005, Y3200-Y3208 (SD40N)
<b>265:</b> 2411-2445*, 8000-8488, 8801-8887 (* derated)	<b>498:</b> 1625-1652, 3201-3584, 6073-6133, 6135-6154, 6155-6206	<b>2:</b> 1799, 3206
<b>5:</b> 2450-2454 (SD38-2) <b>0:</b> all SD45-2 retired	<b>6:</b> 1700-1705 SD45-2	<b>10:</b> Y809-Y864 (SD38-2)
<b>2:</b> 6897-6898 (GP60)	<b>48:</b> 7100-7116, 7118-7136, 7138-7142, 7144-7150 (GP60) <b>29:</b> 4609, 4612-4614, 4616-4619, 4621, 4623-4625, 4627-4628, 4634-4635, 4639, 4650-4661 (GP59/GP59E)	<b>187:</b> 1000-1170, 1902-2098 (GP60)
<b>63:</b> 6500-6562		<b>49:</b> 1337-1543, 9989 (GP40N)
<b>368:</b> 4401-4452, 6001-6160, 6201-6296, 6341-6499, 6900-6987 (some derated to 2,000 hp "GP38-2s")	<b>103:</b> 3000-3102	<b>142:</b> 1335-1540, 5245, 9986-9992
<b>20:</b> 4300-4319		<b>17:</b> 1200-1216
<b>64:</b> 2000-2063 (GP38-3)	<b>37:</b> 5801-5837 (GP38-3)	<b>120:</b> 280, 281, 506-847 (GP38N)
<b>215:</b> 2500-2576, 2609-2814	<b>301:</b> 5001-5097, 5101-5199, 5200-5299, 5300-5361, 5601-5673	<b>299:</b> 238, 282, 500-848, GMTX 2110-2337, GMTX 2601-2695, HLCX 918-992, HLCX 1027-1093, HLCX 3800-3894
	<b>6:</b> 4662-4667 (GP59ECO) <b>28:</b> 4700-4727 (GP33ECO) <b>2:</b> 5900, 5901 (GP22ECO)	<b>10:</b> Y1000-Y1009 (GP22) <b>13:</b> Y2100-Y2112 (MG20GP) <b>1:</b> Y3001 (GP59ECO)
<b>20:</b> 1500-1522 (GP15T) <b>22:</b> 1536-1554, 1556-1563 (GP15-1)		<b>162:</b> Y545-Y744 (GP15-1) <b>38:</b> Y541-Y711 (GP15N)
<b>0:</b> all 2GS14B retired <b>0:</b> all 3GS21B retired		<b>0:</b> (GS14B retired) <b>60:</b> Y2701-Y2760 (3GS21B)
<b>1:</b> 1601 (RP20CD)	<b>2:</b> 2120, 2121 (RP14BD) <b>2:</b> 100, 101 (RP20BD) <b>1:</b> 3830 (RP20CD)	<b>14:</b> Y900-Y913 (RP18GP) <b>13:</b> Y887-Y899 (RP20SD) <b>0:</b> (RP20GE retired)
<b>47:</b> 1130-1139, 1150-1194 (MP15AC) <b>6:</b> 1140, 1142, 1144, 1145, 1147, 1149 (MP15) <b>38:</b> 1200-1218, 1221-1242 (MP15T)	<b>18:</b> 2349-2430 (17 MP15E, 1 MP21E)	<b>1:</b> Y1472 (MP15AC) <b>1:</b> Y1442 (MP15N)
<b>3:</b> 1123, 1127, 1128 (SW1001)	<b>5:</b> 2100, 2102-2105 (SW1001)	
<b>11:</b> 1102, 1103, 1106-08, 1110, 1112, 1116-1119		<b>1:</b> Y1214
	<b>1:</b> 999 (Battery)	
<b>171:</b> 2200-2387	<b>91:</b> 600, 601, 610-627, 645-660, 700-754	
<b>32:</b> 1006-1068	<b>85:</b> 850-895, 912-927, 929-937, 939-941, 952-962	<b>60:</b> Y402-Y451, Y801-Y861, Y926-Y940, Y3002-Y3006
<b>7:</b> 9197-9482	<b>2:</b> 97, 98	<b>21:</b> Y105-Y157
<b>4:</b> 9992, 9993, 9998, 9999		
<b>1:</b> 9969 (GP40WH)		<b>1:</b> 6936 (DDA40X)
	<b>4:</b> 270, 271 (F9PH), 275, 276 (F7B)	<b>3:</b> 949, 951 (E9AM), 963B (E9BM)
		<b>3:</b> 844 (4-8-4), 3985 (4-6-6-4), 4014 (4-8-8-4)
<b>3,691</b> <b>226</b> GE/EMD/Other: 52/42/6 percent	<b>3,958</b> <b>124</b> GE/EMD/Other: 46/45/9 percent	<b>7,974</b> <b>242</b> GE/EMD/Other: 42/46/2 percent

Arrows indicate upward and downward changes since table in Locomotive 2018. Data for this table from numerous sources and is as accurate as possible as of Aug. 14, 2019.



Welcome to mission control: Wabtec's  
Global Performance Optimization  
Center in Erie, Pa. Greg McDonnell

Global Performance Optimization Center

# Evo phone home

**How Wabtec remotely  
monitors 17,000 locomotives  
around the globe to help keep  
trains moving**

**by Bill Stephens**

A two-unit consist is working hard as it leads a long hotshot intermodal train upgrade. The crew is unaware, but trouble is brewing in the trailing locomotive. Sensors have detected that it's beginning to run hot.

The locomotive essentially phones home, a blip in its continuous stream of data letting Wabtec know that all is not well. The infor-

mation is analyzed automatically. And, thousands of miles away at one of Wabtec's Global Performance Optimization Centers, an alert flashes on a computer screen.

Within 15 minutes, a pair of human eyes has looked at the unit's maintenance history and glanced at the train's speed, trailing tonnage, its precise location on the

railroad, and even the weather. The expert's conclusion at mission control? The train is near the top of the grade and the unit will keep running — ensuring that the train is not delayed due to locomotive problems — but it should head to the shop for preventive maintenance. Down the line, a shop foreman gets a text message telling him





**"We're really one system in different places," says Dave Gibson, "four connected centers."** Two photos, Greg McDonnell



**Greg Wolz at work in the GPOC in Erie: a blend of cutting-edge technology and invaluable experience.**

when the unit will arrive, what to check, and what parts to have ready.

This scenario is just another case at Wabtec's four Global Performance Optimization Centers, which remotely monitor 17,000 locomotives around the world to prevent failures, schedule maintenance, and keep trains moving.

The mission control process relies on a blend of cutting-edge technology and old-fashioned railroad experience. The technology includes sensor-laden locomotives, raw computing power, and artificial intelligence. The human element includes experts who possess a rare combination of equal doses of mechanical and railroad knowledge.

"This system improves the locomotive reliability and availability for our customers by more than 20%," says Wabtec's Glenn Shaffer, who leads the prognostics team that provides the information technology behind the locomotive monitoring program that GE Transportation began two decades ago.

### Evolution of an idea

The advent of microprocessor technology in the 1980s improved locomotive performance by fine-tuning engine and traction control like never before. Locomotives pulled harder and burned less fuel.

But for shop forces, the microprocessor revolution was nothing but a headache.

"The side effect of that was, you needed a little higher skill level to troubleshoot 'em, right? Everything wasn't fixed with a hammer," Shaffer says. "So that actually created a need, if you will. We had a problem in the beginning in the '90s where people were changing a lot of parts to try and find the real problem. We had what we called repeaters: So it failed on Monday, you fixed it on Tuesday, you let it go on Wednesday, and the thing

failed again on Friday. You can't run a railroad like that."

GE noticed that every locomotive shop had one mechanical wizard who could fix everything. "So, we said, 'What if we duplicate that guy?' We'd always say, 'Put him in a box, put him in a box.' That's where we came up with the idea of, let's just digitize what these guys do and put 'em in one place," Shaffer says. "Instead of them taking care of five locomotives in that shop, we'll let 'em take care of hundreds across the country."

And the idea of the Global Performance Optimization Center was born.

The microprocessors that challenged shop forces also provided a window into a locomotive's performance. GE began adding sensors and modems to locomotives in 1998 as part of its first Route Monitoring Diagnostics system. "Wireless was becoming big, sensors were becoming big, processors were becoming big," Shaffer recalls. "All that technology gave us the opportunity to bring data to one location, to process it automatically, and to have the best of the best look at it."

At the time, Dash 9-44CW and AC4400 locomotives rolled out of GE's Erie, Pa., assembly plant equipped with a dozen sensors and analog modems that used expensive satellite data connections to regularly report home.

The system covered about two-thirds of the maintenance issues that could affect a locomotive. It was enough, though, to improve troubleshooting by

helping shop forces identify problems and speed repairs on these locomotives.

### A more robust system

Remote diagnostics systems made great leaps forward over the past two decades amid dramatic advancements in sensor, communication, and computer technology that can collect,

analyze, and act on vast amounts of data.

"Fast forward to today, we now have 10 times the number of sensors, probably 20 times the number of processors, and we probably have 1,000 times the amount of data that's coming in," Shaffer says.

Today's Evolution Series ET44ACs sport 250 sensors that monitor the health and welfare of 80% of the locomotive's components and systems. What's covered: the prime mover, traction motors, auxiliary systems, computers, communications, crew interfaces, and control systems. What's not: things such as windshield wipers and toilets, the kind of parts that either don't need monitoring or for which sensors would be expensive overkill.

The on-board sensors are paired with so-called "digital twins," mathematical models that crunch through sensor data to provide a broader idea of what's going on inside the locomotive in real time. "With 250 sensors we end up with over 10,000 parameters that are insights," Shaffer says.

The newest locomotives, like 70% of those now in the monitoring program, are in constant contact with Wabtec via cellular data networks. In addition to producing 4,400 hp, each big Wabtec unit generates 10 gigabytes of data per year. On a daily basis, that equals roughly the amount of data in an electronic version of a book.

The added data and monitoring capability comes with a new focus: predict and prevent failures.

"Today, it's not just what to fix," Shaffer says. "Today, it's all about, 'Tell me two weeks before it's gonna fail, and tell me which shop to send it to, and tell me what parts to have ready, and tell me what people to have ready, so I can repair it in a minimum amount of time without ever losing horsepower and without ever impacting train velocity.'"

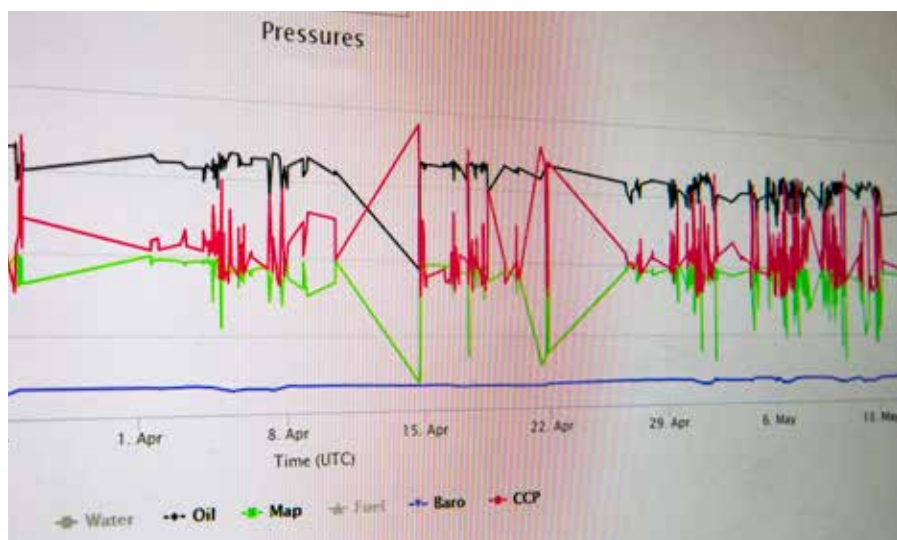
About a third of what the current monitoring system catches are predictive issues. That, combined with locomotives that are designed to be more reliable, is reducing

**"This system improves the locomotive reliability and availability for our customers by more than 20%."**  
- Glenn Shaffer





**World view:** Dave Gibson oversees Global Performance Optimization Centers in Erie, Pa.; Fort Worth, Texas; Brazil; and Kazakhstan. Two photos, Greg McDonnell



**Vital signs:** Data available for each locomotive includes oil pressure, crankcase vacuum, even ambient barometric pressure.

the number of locomotive failures out on the main line. It's a game-changer for Wabtec and its locomotive monitoring customers, officials say.

"They're able to identify unhealthy assets, those get reported to our centralized team, and we're able to then get those locomotives to a shop and effect repairs without actually having an on-the-road failure," Bruno Soto, general director of locomotive maintenance and reliability at BNSF Railway, says in a BNSF video about the monitoring program.

Wabtec's locomotive monitoring service isn't limited to new-builds. Wabtec, like GE before it, has been busy rebuilding roughly 200 older units per year and outfitting them with the latest sensor technology — a clear indication that railroads see value in full and continuous monitoring of their fleets.

As orders for new locomotives remain at relatively low levels, Wabtec can expect to have a robust pipeline of modernization business as thousands of older models are

at the age where they typically receive upgrades. Some 4,800 AC4400CWs and about 4,400 Dash 9s are potential candidates to one day be outfitted with the latest sensor technology.

### Mission control

The 17,000 locomotives that Wabtec monitors, including every GE and Wabtec locomotive operating on the Class I railroads, send their data to the Global Performance Optimization Centers. Two are based at Wabtec's locomotive factories in Erie and Fort Worth, Texas. The others are in Brazil and Kazakhstan. Each mission control center is staffed around the clock, every day by four or five experts per shift.

It would be humanly impossible to sift through the 2.5 million messages, the equivalent of 6,000 manual downloads, that the locomotives send each day. So Wabtec unleashes powerful predictive analytics and artificial intelligence tools on all this data. "The volumes of data have to be

managed with the artificial intelligence," says Dave Gibson, who oversees the Global Performance Optimization Centers. "It's near impossible to be consistent and accurate with the volumes we're dealing with, without the artificial intelligence and the extensive back office that we have."

The automated systems reduce those 2.5 million messages to 500 or 600 cases per day. "These cases are created based on our diagnostic tool and artificial intelligence output," Gibson explains. "So when the tools are run and the diagnostics are run on this data continuously, it advises a situation that needs to be addressed. Or, conversely, it might find something we may have never seen, something that tools don't identify. Then it will create a case and it will kick out to our expert team."

Some 100 to 150 of the daily alerts automatically go to railroad maintenance and transportation departments. "A classic example is if we see water in the oil," Shaffer says. "We have sensors that tell us the quality of the oil. If we see water in the oil, we're telling people that there's something leaking in that engine. There should not be water in the oil: Take action. I don't need to tie up the guys to do that."

But the rest of the cases come down to judgment calls made by the experts at each mission control center. The people on the front lines not only have to know every GE and Wabtec locomotive built since 1987 inside and out — they also have to fully grasp railroad operations in places as diverse as Brazil and the United States.

When the computer system creates a case, or a railroad calls the center with a problem, the technicians get to work. They look at the trouble alert and the locomotive's history. They also consider things such as the weather at the locomotive's location, the terrain it's covering, and what type of tonnage it's pulling.

"We'll look at all that information, in addition to shopping history and everything like that, so it's a complete maintenance look," Gibson says. "We'll do this all in about 15 minutes or less, on average, from the time the event occurs on the locomotive."

About half the time, the technician will decide the situation doesn't warrant alerting the railroad. A locomotive running hot in August while climbing a mountain grade, for example, might not be cause for immediate concern.

The other half of the time — or roughly 300 times per day — the monitoring centers will issue maintenance instructions that range from pulling a locomotive out of service to scheduling a shop appointment in the next couple of weeks.

A hot engine warning on flat terrain, for example, could mean trouble. "A loco-



tive might alert itself that it might have a failure condition starting. We can see in the data that it's definitely got a hot engine condition, so we'll help them check simple things like the water level at a run-through track, where they would be doing servicing and fueling," Gibson says. "In that case, all they need to do is top off the water, and we would have alerted them to do that, and they wouldn't need to fail or shop the unit."

Wabtec is just as careful to weed out false readings that could lead to removing a locomotive from service unnecessarily. "You cry wolf a couple of times — telling people to change a turbo or something — you're going to go out of business," Shaffer says.

And by closing out all 300 action cases each day, and tracking the results, Wabtec's system improves its diagnostic capabilities through machine learning and tweaks that Wabtec personnel make to processes and practices. "It's a very changing environment," Shaffer says. "Diagnostics and all these analytics are not stagnant at all. It's not like we develop something and forget it."

## Tracking shop work

Wabtec's monitoring system has helped railroads significantly cut down on the amount of time locomotives spend in shops. It does this in several ways.

First, the system has already diagnosed the problem. Previously, it might take shop forces two days to troubleshoot a locomotive issue. Now repairs are commonly tackled in 2 hours, often aided by computerized tools and temporary sensors plugged into the locomotive. "Two days versus 2 hours is a diagnostic transformation," Shaffer says.

Second, the monitoring system sends an alert to the nearest shop that includes the locomotive's road number, the type of problem the unit is experiencing, when it will arrive, and what parts and people will be needed to complete the repair.

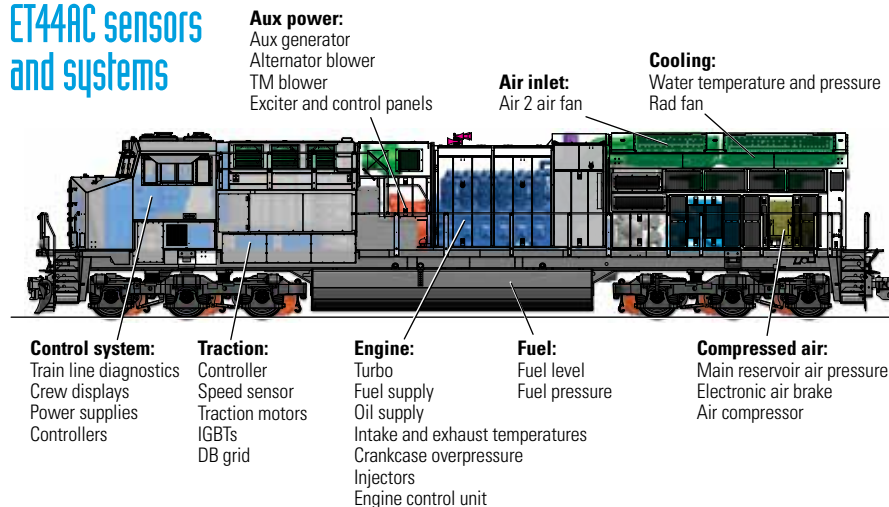
Third, by scheduling service proactively — instead of reacting to a problem — railroads can better plan their motive power needs in advance.

Finally, Wabtec can monitor repairs and ensure that they are done properly, which can prevent repeat failures. "We've got a lot of customers that actually rely on us every single time a locomotive goes through the shop, to validate all those repairs and make sure that it's a good locomotive when it leaves the shop," Gibson says.

## More than maintenance

The Wabtec monitoring program really has two customers at each railroad: the mechanical department and the transportation depart-

## ET44AC sensors and systems



ment. They both have different needs. Gibson puts it this way: "We're looking at how we can keep locomotives on the trains longer. When they do go to the shop, how can we get them through the shop quicker? And how can we help our customers figure out what power to use on what trains for that efficiency and that velocity that they're looking for?"

Wabtec personnel are embedded at Class I railroads and offer motive power advice, ranging from mechanical practices to what type of service would best suit an ailing locomotive that can't be spared during peak traffic periods. A unit that might conk out in the mountains, for example, would be fine running at river grade. So the Wabtec representative would recommend keeping that unit on a leash that's limited to tabletop terrain.

The industry has placed even greater importance on locomotive reliability as the Class I systems move tonnage on longer trains with much smaller locomotive fleets. Does Wabtec hear this from railroads?

"Every conversation," Gibson says. "Every conversation."

The trend to ever-higher locomotive productivity at the Class I railroads means that power that comes in on one train immediately flips and heads out on another. And that puts pressure on everyone to make sure locomotives are reliable, maintenance is scheduled, and failures are prevented.

"Surprises cost a lot. You don't have the power to handle surprises," Shaffer says. "Shifting things from surprises or unscheduled events to scheduled events, and minimizing the down time associated with that schedule, is key."

A leaner fleet and tighter operations increase the importance of selecting the right power for each

locomotive assignment.

"How do you put the right power on the high-priority trains? They're not putting four locomotives on the train, they're putting three or two," Shaffer says. "Those two or three have got to be the right power, so we've become a lot more involved in the power planning side of it in the last couple of years."

## More tech ahead

As technology continues to advance, what's the future of locomotive monitoring?

Railroads are eager to automate processes and operations as much as possible. It's a way to squeeze out costs and increase reliability. GE's merger with Wabtec, a leader in positive train control systems, brings more technical know-how and products under the same corporate umbrella.

At its heart, PTC is nothing more than a communications system that carries a river of data. Sophisticated locomotive video systems can monitor track conditions, for example, and pinpoint the location of anomalies that could lead to a derailment. It's the sort of thing that makes sense for the global centers to manage.

The monitoring system also can diagnose PTC issues.

"Our history has been whenever it's a complex product and you need the human element to it — a lot of data, a lot of decisioning on the human side — then our control guys make sense," Shaffer says. "That's definitely true for PTC coming on. The train went into emergency. Did it go into emergency because of sensor problems or battery problems, or did it go because there was no enforcement due to the signals?"

These are questions the global monitoring centers, and the computer and brain power that keep them humming, can answer as they continue to keep a close eye on thousands of locomotives around the globe day in and day out. **I**

"It's a very changing environment. Diagnostics and all these analytics are not stagnant at all."



# Tip of the hat to the top hat

by Samuel Phillips

They called them "top hats." Norfolk Southern's 125 standard-cab GE Dash 9-40Cs were a staple of coal-field railroading as I grew up watching these workhorses pull heavy trains through the rugged mountains of southwest Virginia in the late 1990s and early 2000s.

When most Class I railroads embraced safety cabs and A.C. traction, NS stuck with standard-cab D.C. EMDs and GEs. Delivered between January and March 1995, NS Nos. 8764 to 8888 were the last standard-cab GE locomotives built for a Class I railroad. They would also be the only standard-cab Dash 9s built. NS switched to wide-nose models in January 1996 and joined the A.C. revolution in 2008.

"The C40-9s were workhorses, plain and simple," says veteran engineer Greg Bowman. He worked for NS for almost 30 years, the last 18 of them running trains west of Roanoke to Bluefield and Bristol — all in Virginia — before retiring in June 2016. "They would always dig in and hold the rail well without any major slipping."

In summer 2015, NS and GE initiated a program to modernize aging Dash 9s. The top hats were first in line. Dubbed "DC2AC" by GE, the program included conversion from D.C. to A.C. traction, all-new Evolution Series electronics and control systems. In the process, the top hats traded their conventional cabs, narrow noses — and distinctive look — for brand-new, production-model operator cabs identical to those installed on the latest Evolution model locomotives. By 2018, DC2AC was in full stride. Of the original 125 Dash 9-40C top hats, fewer than 20 unrebuilt examples remained active.

Opportunities to see one of my favorite locomotive models leading trains had diminished greatly. Word that No. 8853 was leading westbound auto-rack train 27V at Roanoke sent me hurrying to Shawsville, Va., on a beautiful February 2018 afternoon.

Cloudless skies greeted the 23-year-old warrior as it pulled 73 empty auto racks through the Christiansburg District on the former Norfolk & Western. I took up the chase — 100 miles later, I watched the train roll into the famed N&W town of Bluefield, W.Va., at sunset. It would be the last time I photographed a top hat leading a road train.

By summer, fewer than five top hats were on the road. Equipped with Helper Link technology, No. 8809 had helper duties at Whitethorne on the former Virginian Railway near Blacksburg, Va. However, a work block was diverting heavy eastbound trains from their normal routing on the old Virginian line to the Christiansburg District, and No. 8809 found itself on a pusher set assisting up Charleston Grade to Christiansburg, Va. I photographed No. 8809 on the rear of the helper set shoving past the steam-era coaling tower at Vicker. It would be my last photograph of a Dash 9-40C.

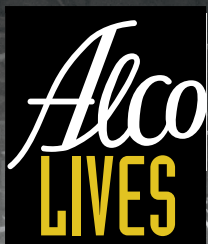
Two weeks later, NS removed No. 8809 from service and sent it to Altoona, Pa., to be rebuilt as AC44C6M No. 4110. On Oct. 31, 2018, No. 8806 — the last of the top hats — was officially retired, marking the end of Norfolk Southern's standard-cab GE era. Their distinctive look and D.C. motors are gone, but as AC44C6Ms, they will live on and provide Norfolk Southern with more years of reliable service. I



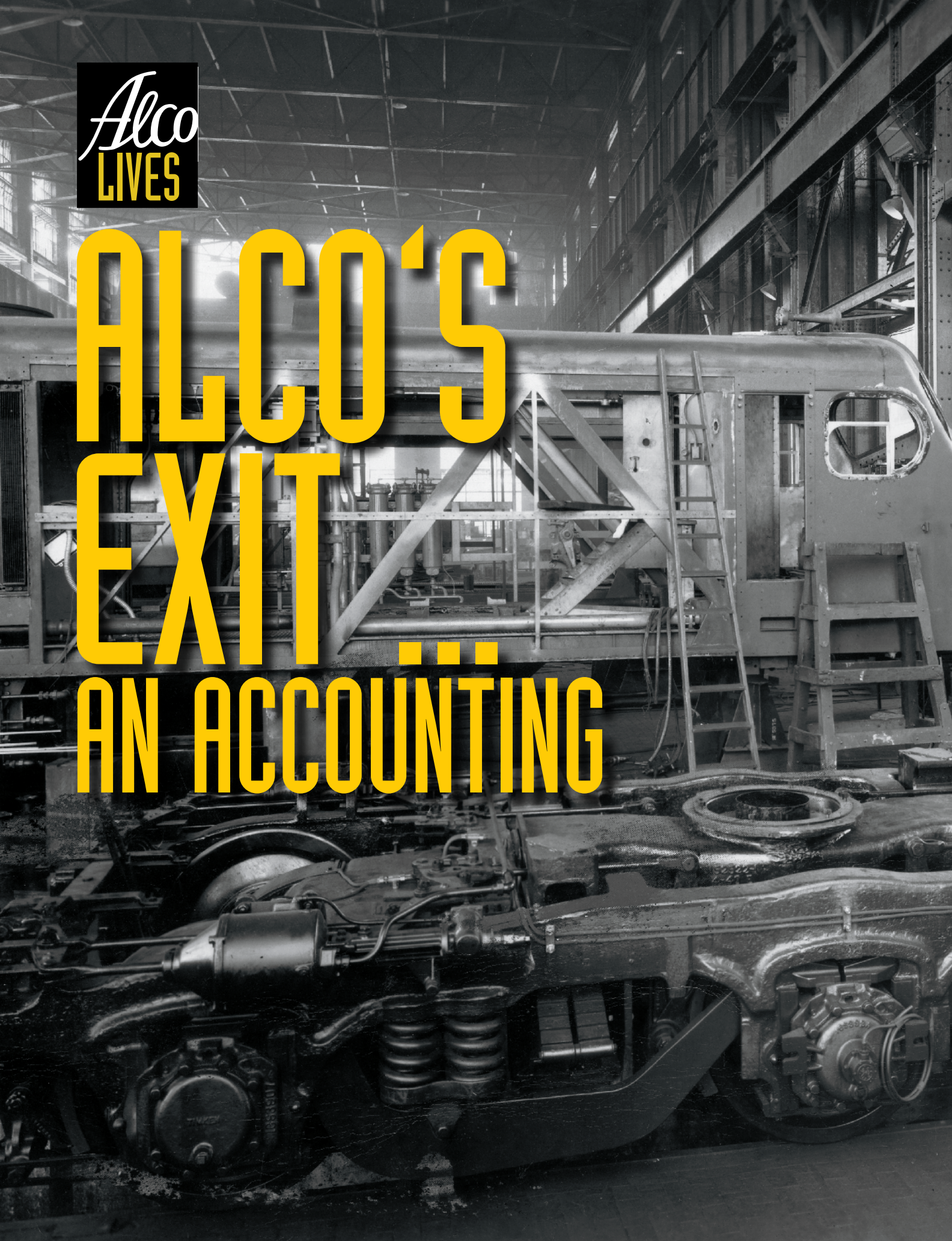


**NS C40-9 No. 8853 leads empty auto-rack train 27V through Hales Gap, W.Va., on Feb. 20, 2018. Inset: NS C40-9 No. 8809 in helper duty at Vicker, Va., Aug. 22, 2018. Two weeks later it would depart for rebuilding in Altoona, Pa.**  
Two photos, Samuel Phillips

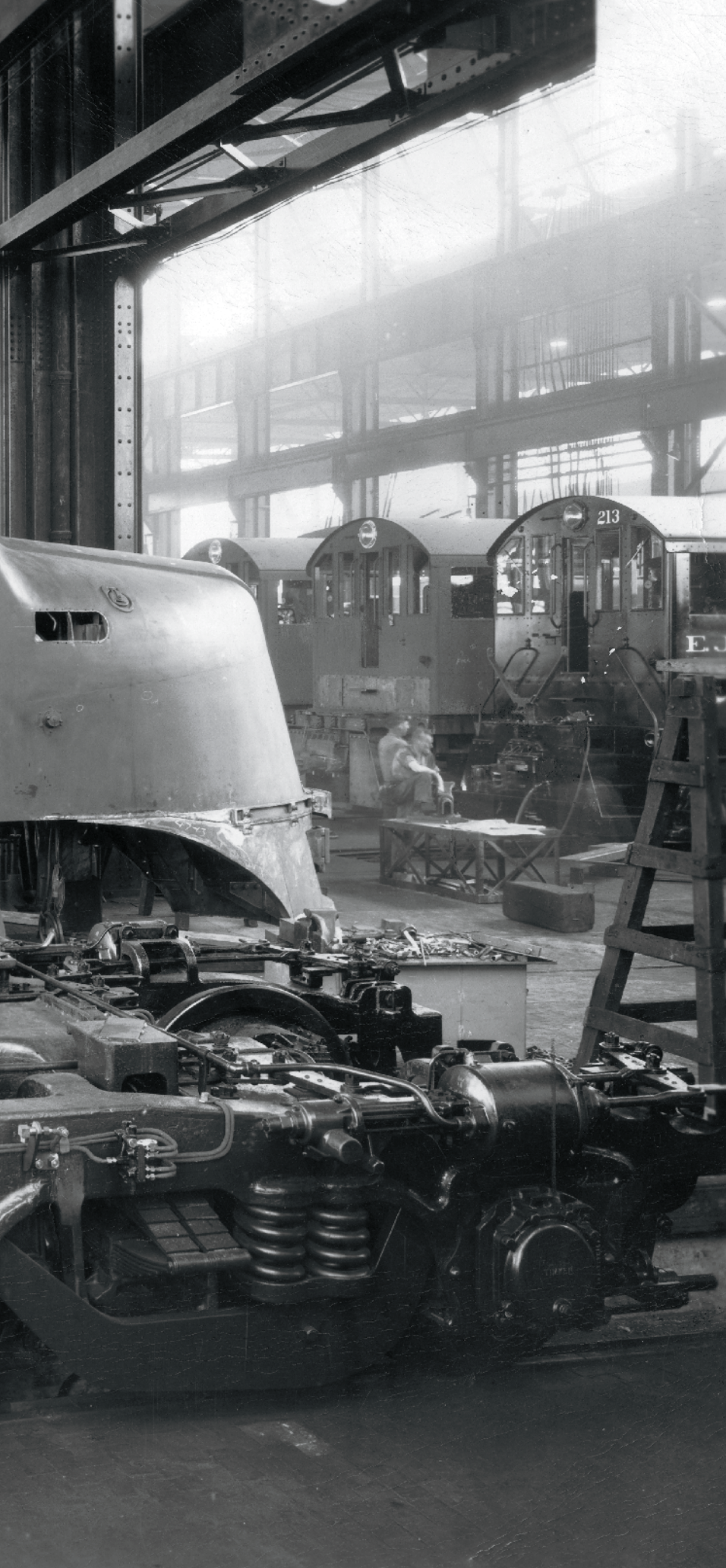




# ALCO'S EXIT... AN ACCOUNTING







# Alco finally folds its hand in the poker game of power

by David P. Morgan

**Y**ou know the news [page 12, December 1969 *TRAINS*], and it's sad: Alco is going out of the locomotive business. The company blames the decision primarily on high manufacturing costs; about 150 employees, all members of Local 2054 of the United Steelworkers of America, will be affected; and it will be some time before any disposition can be made of the Schenectady (N.Y.) plant.

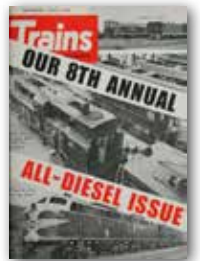
The obit was issued on Oct. 20, 1969, in a scant double-spaced two-page release that was, perhaps appropriately, photocopied rather than mimeographed. Thus unceremoniously ends a locomotive manufacturing industry that dates to 1837; that once operated plants in Dunkirk, N.Y.; Manchester, N.H.; Montreal, Quebec; Paterson, N.J.; Pittsburgh; Richmond, Va.; Schenectady, and Scranton, Pa.; that was the biggest of the Big Three of steam and long No. 2 in dieselism; and that earned as secure a niche in the railroad dictionary as any trade name in the supply field.

It would require a book, and doubtless several will be written, to effectively chronicle the American Locomotive Co. in steam even after its predecessors formed the combine in 1901. Such a volume would explain Alco's affaire d'compound, its three-cylinder-drive fixation, its continuing willingness to indulge in high-pressure experimentals, its most perfect product (Milwaukee Hiawatha 4-4-2), Big Boy, and of course, NYC's Hudson/Mohawk/Niagara triumvirate.

But what engages us now is Alco the diesel merchant — the apparent and often real success of its switch from steam, and

**Otto Kuhler-styled DL109s take shape on the Schenectady factory floor in 1940. Across the way, S-series switchers, including Elgin, Joliet & Eastern S1 No. 213 near completion.**

Alco







A 1956 Alco publicity photo shows a technician holding micro-calipers on the crankshaft for a new 1,800-hp 251 series engine. Alco

the ultimate collapse of that transition. In common with Baldwin and Lima, Alco at first grievously underestimated the diesel, and/or could not bring itself to write off its fixed investment in steam manufacture. The best it could do as the 1930s wore on toward World War II was to form a marriage of convenience with neighbor General Electric. Out of this union there came the "3-Power Formula" — an advertising promise to investigate any motive-power need and recommend whichever was best, steam, diesel, or electric. Alco's Young Turks knew even then that "best" was always synonymous with diesel, that the 4-8-4s and articulateds, which crowded their shop during the war, were the last of their breed. They bitterly resented a War Production Board directive, which restricted Alco diesel production to 1,000-hp switchers and confined road-unit manufacture to General Motors, and they poured their energies into development of a four-cycle, V-type engine of extraordinary horsepower output per cylinder.

Alco closed out steam production within three years after V-J Day, sold its steam pat-



Working on Delaware & Hudson, Alco C636 demonstrators Nos. 636-1, 636-2, and 636-3 depart Mohawk Yard in Schenectady, N.Y., with a manifest freight bound for Wilkes-Barre, Pa., on Nov. 26, 1968. George W. Hockaday

ents to Lima, set up a mass-production line, and fielded V-12 and V-16 244-series power plants that did with 12 cylinders what the competition required 16 to accomplish or managed with one engine what the biggest builder needed two for. And the customers

bought and bought, and Alco soon could claim for itself 42% of all diesel sales.

Many reasons have been forwarded for the difference between 42% of the market in 1947 and zero today. All are in a degree valid, even if collectively they are not a



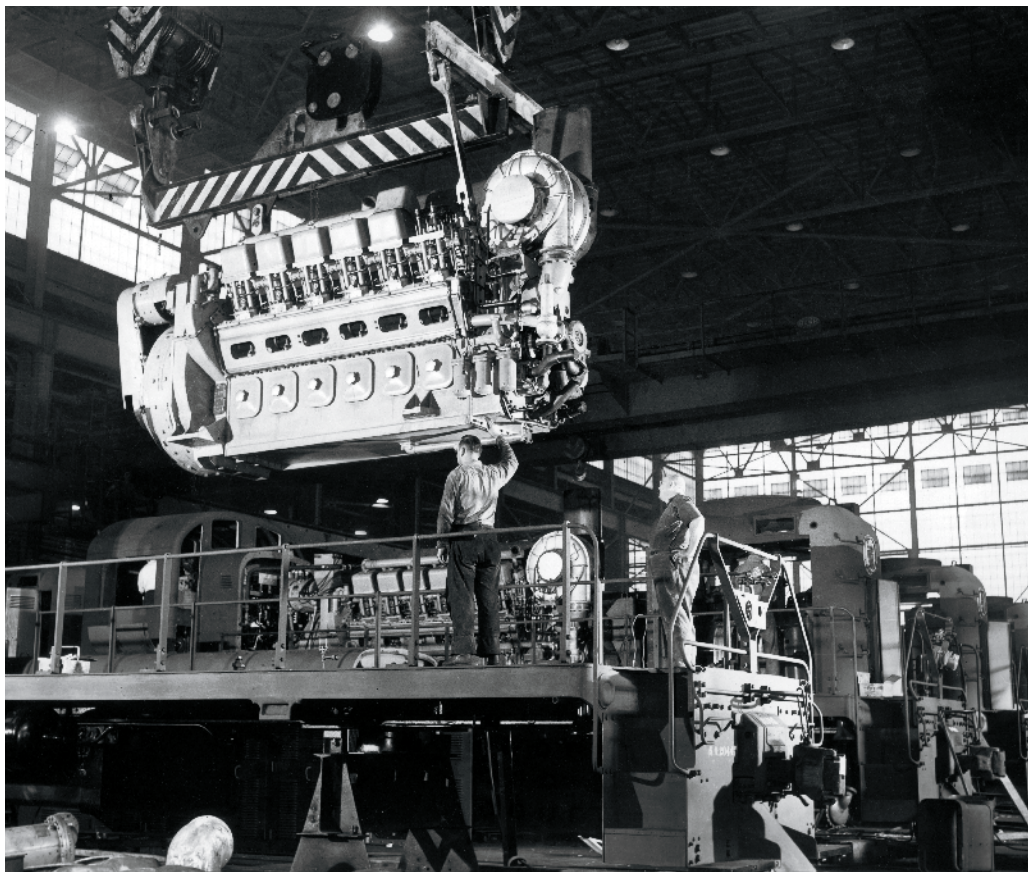
total answer. However powerful it was per pound, Alco's 244 engine didn't wear well ... the Alco-GE alliance ran into split-responsibility problems in field servicing ... the also-rans, from Alco to Baldwin to Fairbanks-Morse to Lima, tended to take more out of each other's hides in selling than they did GM's ... the breakup of the Alco-GE partnership and General Electric's decision to field the U25B in the domestic market left Alco totally dependent upon a rival for its electric transmission gear ... well-intentioned diversification into such product lines as heat exchangers for atomic plants sometimes backfired ... and the competition out in La Grange, Ill., remained big, aggressive, constant.

## Heaven knows

Alco tried, heaven knows it tried. The Schenectady crew forecast and capitalized on the market shift from covered wagons to hoods; redeemed the 244 engine with the 251; jumped the gun on A.C./D.C. drive; steered clear of the Aerotrain/Talgo/Train X fiasco; exploited the six-motor uprising; gained the loyalty of such majors as Louisville & Nashville and Southern Pacific, and the total allegiance of such minors as Delaware & Hudson, Green Bay & Western, and the Spokane, Portland & Seattle; dominated exports to India and Spain; delivered to Union Pacific the most powerful of the first twin-engined jumbo diesels; and assembled for Espee the nation's first domestic diesel-hydraulic. In the poker game of power, Alco always seemed to have one playable hand left. Its last was the C636 riding brand-new, high-traction trucks — more powerful than GE's U33C, equal in output to EMD's SD45 but with four fewer cylinders.

But one locomotive model, even one as theoretically potent as the C636, couldn't temper depressed foreign sales, high manufacturing costs in Schenectady, the doldrums of domestic railroading, and GE and GM. Oh, the Alco imprint will still be on the production of the very active MLW-Worthington successor to Montreal Locomotive Works, as well as on the units built by licensees in Argentina, Australia, India, and Spain; and Schenectady will be supplying parts for the 6,000 still-active Alco units for years to come.

But Alco is, in a locomotive context, dead. And perhaps that is inevitable in the sense that the country neither can support nor needs a No. 3 locomotive builder. The demise of the passenger train cost diesel sales; so did the construction of all those hump yards. And the future may hold penalties for the builder unable or unwilling to put together straight electrics or trains instead of just locomotives. In this sense, all of the standard reasons proffered for Alco's exit are inadequate, for if there



**Easy does it.** An Alco worker uses hand signals to direct the overhead crane operator as a six-cylinder 244 engine is lowered onto an RS3. Alco

is room in our time only for a locomotive Big Two, Schenectady could have survived only by eclipsing Erie — and that was not in Alco's poker hand.

Alco's last testament, as excerpted from a letter to employees, reads as follows: "The many efforts to bring new or additional business into the Schenectady plant of Alco Locomotive, Inc., have been largely unsuccessful, due primarily to high manufacturing costs. This plant has been operating at a substantial loss despite all-out efforts by management to reduce controllable costs." However understandable the sparseness of those two sentences may be in view of the cause of their composition, they are totally inadequate for a eulogy. Those who attend the funeral will want to hear of PA1s climaxing their ascent of the Rockies inside Moffat, of the windup of an S-2 kicking cars in South Louisville, of the Alco-sired blueprints for a 4,000-hp V-18 ... yes, and of that day when a workman chalked "Big Boy" on the bald face of UP No. 4000, and of all the memorable days before back to 1837. For the mourners are many, and the testimonial is deserved. **I**

*Editor's note: This story was first published as the lead editorial in the January 1970 issue of TRAINS.*



**A worker readies the trimount truck for a Ferrocarril del Pacifico RSD5 while others work on an RS3 on the Schenectady floor in November 1953.**

Philip R. Hastings





# TOUGHER





# THAN THE REST



## Delaware-Lackawanna's enduring Alco allegiance

Story and photos by  
Greg McDonnell

*In the poker game of power, Alco always seemed to have one playable hand left. Its last was the C636 riding brand-new high-traction trucks — more powerful than GE's U33C, equal in output to EMD's SD45 but with four fewer cylinders.*

— David P. Morgan, TRAINS, January 1970

Fifty years after Alco Locomotive Inc. folded its cards and called it quits in the locomotive manufacturing business, Delaware-Lackawanna C636 3642 — the sole survivor of that “last playable hand” — basks in the cool light of a brilliant spring morning at Bridge 60 in Scranton, Pa. The low sun highlights the complex curves of its hi-ad trucks, the “high-traction trucks” that once offered such promise. Its gray-and-white dress, the Alco demonstrator-inspired paint scheme of D-L parent Genesee Valley Transportation, bears evidence of years of hard work hauling tonnage up and down Pocono Mountain grades. The Alco 16-251E engine under its hood is as robust as ever, faithfully delivering on the builder's promise of 3,600 hp with four fewer cylinders than the V-20 645 powering the competition's SD45. The historic significance of the big Alco, turned out of Schenectady on April 18, 1968, as Penn Central 6342, is of no concern to the railroaders going about their business in the yard. Nor is its presence particularly notable. It's just one of 13 Alco-powered locomotives called for duty at Bridge 60 on this May 2019 morning.

Pounding to a four-cycle beat, a 176-cylinder, 44,600-hp, all-Alco chorus fills the morning air as crews marshal power and build trains set to depart in three directions out of the onetime Delaware, Lackawanna & Western terminal. It's an Alco-powered baker's dozen comprised of nine different models: RS3, RS11, C420, C424, C425, and C636 from the Schenectady catalog, and M420, M630, and M636 from Alco's Canadian affiliate Montreal Locomotive Works. Montreal continued to produce Alco-powered locomotives for nearly 20 years after Schenectady shut down.

**Delaware-Lackawanna 3642, the last C636 in existence, awaits the call to duty at Bridge 60 in Scranton, Pa., May 20, 2019.**



MLW carried on as MLW-Worthington until Bombardier bought the business in 1975. Bombardier closed the Montreal plant in 1988 and sold the facility to GE. On the yard lead at Bridge 60, it's like 1969 and 1988 never happened. The erstwhile American Locomotive Co. may have pushed away from the table and its famed Schenectady works fallen to the wrecking ball, but Alco is anything but dead. Not in Scranton.

Delaware-Lackawanna is the busiest railroad in the shortline and regional portfolio of Genesee Valley Transportation. D-L employs some 20 Alco and MLW locomotives to serve an 88-mile network of Scranton-area rail lines owned by the Pennsylvania Northeast Regional Railroad Authority. The trackage consists of former Conrail and Delaware & Hudson lines including the mountainous Scranton-Portland, Pa., segment of the onetime Delaware, Lackawanna & Western main line, the Scranton-Carbon-dale portion of the D&H Penn Division, and a revived Scranton-Minooka remnant of the former Lackawanna & Wyoming Valley "Laurel Line," a onetime interurban electric line that includes the 4,750-foot-long Crown Avenue Tunnel and a switchback to reach industrial customers at the end of the Minooka Spur.

### An Alco allegiance

In the mid-2000s, Lackawanna County re-electrified Laurel Line trackage between Steamtown in downtown Scranton and Montage Mountain in Moosic, where a new station was established near PNC Field, home of the New York Yankees Triple-A affiliate the Scranton/Wilkes-Barre



**Sunset at Bridge 60 in Scranton finds M630 No. 3000, C636 3642, M636 3643, and M420 2045 — just in from Mount Pocono — keeping company with Erie Lackawanna 2, GVT's former Lackawanna heavyweight business car.**

Railriders. D-L Alcos operate under Laurel Line catenary between Steamtown and a connection with the Minooka Spur at Virginia. Temporal separation blocks govern shared use of the route when restored Philadelphia Suburban Transportation Co. Brill trolleys are operating seasonal excursions for the Electric City Trolley Museum.

Alco roots run deep in Scranton. A cornerstone implanted in the red brick walls of a repurposed factory at the intersection of Penn Avenue and Vine Street identifies the origin of the sprawling, clock-tower-topped building: "Machine Shop Rebuilt A.D. 1882, The Dickson Manufacturing Company Organized 1856." Dickson began con-

structing steam locomotives in Scranton in 1856. Its builder's plates were bolted to 1,312 locomotives — including conventional and Camelback 4-4-0s, 2-6-0s, 2-8-0s, and 4-8-0s for local carriers DL&W, D&H, and New York, Ontario & Western — before Dickson joined the eight-builder syndicate that formed the American Locomotive Co. in 1901. Under Alco, the Dickson works built 500 more locomotives, including Camelback 0-6-0s and 2-8-0s for D&H, before production at the Scranton factory ceased in 1909. D-L's Alcos come within sight of the place as they work along the former D&H Penn Division.

A few miles south on the old Penn Division tracks, in the tiny, two-bay, aluminum-sided shed that serves as D-L's South Scranton shop, the labors of a small band of dedicated workers make GVT's Alco allegiance both possible and practical. The simple look and cramped quarters of the place belie the volume, quality, and complexity of work conducted by D-L Chief Mechanical Officer Don Colangelo and his talented crew. From everyday service, maintenance, and repairs, to from-the-rails-up overhauls, upgrades, and repainting, they do it all.

If all goes according to plan, by spring 2020 they'll be working in a new state-of-the-art, 80-by-200-foot enginehouse being built at the location of the old D&H Green Ridge roundhouse.

When it comes to Alcos, Colangelo is one of the most respected authorities on everything from maintenance and operation to design, troubleshooting, repairs,

**Returning from switching customers on the Laurel Line, D-L C424 2423 and RS3 1554 exit Crown Avenue tunnel and guide LL-1 over Roaring Brook on the approach to downtown Scranton.**







**There's no light duty on the D-L. RS3s 4068 and 4118 make track speed on the Pocono Main as they hurry back to Scranton with grain empties from the mill at Mt. Pocono.**

### **There's no light duty here**

Colangelo and others at GVT display an affection for Alcos, but it's based on respect for the machines, their capabilities, and durability. There's no place for sentimentality when it comes to hauling 80-car grain trains over the rugged profile of the Pocono Main, or lugging sand up to Carbondale. "There's no light duty on the Delaware-Lackawanna Railroad," Colangelo says.

If there are celebrities among D-L's Alco fleet, it's the road's quartet of RS3s, the "girls of summer" as David Monte Verde famously dubbed them. D-L 4068, 4103, and 4118 carry their original D&H road numbers and wear a tastefully adapted version of their '50s-era D&H black-with-yellow, zebra-striped ends and Delaware-Lackawanna spelled out on their hoods. D-L 1554 wears its original road number and green-and-yellow Central Railroad of New Jersey colors, complete with Jersey Central Lines "Miss Liberty" heralds. Built in 1952-53, the RS3s are afforded no special treatment and are expected to perform with the same gusto and reliability as anything else on the roster.



**When the stars align in this second decade of the 21st century, it's possible to hear the spine-tingling sound of four 244s echoing in unison through the Pocono Mountains. The girls of summer march tonnage through Cresco, Pa.**

rebuilt, and upgrades; from the idiosyncrasies of regular and simplified amplidyne control, to the intricacies of Type E control circuitry; from the fuel rack settings on a 66-year-old 12-244 engine, to the proper pumps, injectors, and nozzle size (17mm pumps and .375 nozzles) necessary to ensure that a 16-251E delivers its rated 3,600

hp. Colangelo is quick to share the credit. "Listen," he emphasizes, "I'm the band leader, I keep everybody in 4/4 time. I'm backed by great men ... men that want to do the job. They like what they're doing, they want to learn, they listen, and they want the stuff to run. So, they make me look good, I just want to make that clear."





**The fourth RS11 built, and one of GVT's first locomotives, D-L 1804 teams with LV-painted C420 414 on SC-7 working at Archbald.**



**Engineer Chad Tyk at work in the cab of RS11 1804. It's like stepping back in time, old school appliances and appurtenances abound, but any sense of antiquity vanishes as he opens the throttle.**

And perform they do. Delaware-Lackawanna is the only railroad in the world that can — and does — put more than two RS3s together. Who could have dreamed that when the stars align in this second decade of the 21st century, it'd be possible to stand at Moscow, Lehigh, Cresco, or Analomink and listen to the spine-tingling sound of four 12-244s shouting in unison as a quartet of RS3s thunder upgrade with revenue tonnage.

Alcos have been integral to GVT's business plan since David Monte Verde, Michael Thomas, and John Herbrand established the company in 1985. And they've been a good fit ever since. GVT made its start with three Alco locomotives, former Central Vermont RS11s 3600 and 3604 (built for Duluth, Winnipeg & Pacific), and a fourth-hand RS3 built as D&H 4085. The trio proved





**D-L's days of 65-mph running are behind it, but the venerable Chicago Pneumatic Tool Co. CP Speed Recorder still performs faithfully.**

sufficient to handle GVT's initial operations: a switching contract in Buffalo, N.Y., the Depew, Lancaster & Western on a short section of the onetime Delaware, Lackawanna & Western out of nearby Depew, N.Y., and 5 miles of former New York Central and Lehigh Valley trackage in Batavia, N.Y.

### Alco logic

In 1991, expansion plans sent GVT shopping for power for the Mohawk, Adirondack & Northern, newly formed to operate 124 miles of former NYC trackage north of Utica, N.Y. The company had Alcos in its sights. "The major contributing factor was price," Thomas says. "We were worried about cash flow and didn't want to spend a large amount of money on locomotives. We wanted something reliable, and that could pull at a reasonable price." GVT found just the ticket in former Erie Lackawanna C425s being retired by BC Rail. Thomas flew to Prince George, B.C., to inspect the locomotives, and then on to Vancouver to cut the deal for the first four. More would follow as GVT continued to expand. They tapped BCR's supply of Alco parts, too. "We'd buy a boxcar from them," Thomas recalls, "have them load up the boxcar with Alco parts, and ship it to the pertinent GVT railroad."

The C425, Colangelo will tell you, is the zenith of Alco's Century line. The combination of the Alco 251C engine and the GE 598 generator was a perfect match. "If you talk to Alco field-service people, they'll tell you the lowest warranty claims of any of their products was the C425. The service department virtually had no problems with them ... no one knew they were out there."

GVT added Delaware-Lackawanna to its holdings in 1992, and in 1996, the Falls Road was established to operate the 41-mile, former NYC Lockport-Brockport,

N.Y., line purchased from Conrail. This 300-plus-mile network of short lines and regional carriers is the province of more than 30 Alcos and MLWs.

The largest assemblage of Alco power on the continent, Genesee Valley's active fleet includes a single S6 switcher, four RS3s, two RS11s, and two RS32s; two C420s, two C424s, seven C425s, and a C636. Seven MLWs round out the complement: a single RS18, two M420s, two M630s, and two M636s.

The two RS11s that got things started for GVT in 1985 are still on the payroll as Depew, Lancaster & Western 1800 and 1804. The 1800 is assigned to its home rails

in Depew, 1804 is a Scranton girl.

Stepping into the cab of the 1804 is like stepping back in time. Old school appliances and appurtenances abound, from the classic Chicago Pneumatic Tool Co. CP Speed Recorder mounted on the cab wall astride the engineer's forward-facing window, to gauges bearing the familiar Alco streamliner-and-gear logo, to the milled wood-dowel handle and rope lanyard connected to the air horn.

Engineer Chad Tyk notches out on the throttle and any sense of antiquity vanishes. The 1804 and its companion, Lehigh Valley-painted C420 414, dig in and confidently walk a string of loaded covered hoppers up the steep incline of a switch-back spur, leading to a hilltop industrial yard in Archbald, Pa.

The notch-nosed, high-hood 1804 puts in a good performance as train SC-7 makes its way up the Carbondale branch with the RS11, D-L 414, and MHLA M420 2045 working a heavy train of covered hoppers burdened with sand. Tyk, who considers the C420 the ideal machine for this sort of heavy hauling and switching, readily offers praise for the 1804 as good runner — even if it's a bit light.

The fourth RS11 built, D-L 1804 is a tough, reliable machine. How tough? The 12-251B engine beating under the hood is the same one workers lowered onto its frame on the Schenectady erecting floor in summer 1956.

How and why D-L and GVT stick with Alco in an age when surplus second- and even third-generation locomotives can be



**"We wanted something reliable that could pull at a reasonable price." GVT found just the ticket in former Erie Lackawanna C425s being retired by BC Rail. D-L 2461, in EL-inspired colors that salute its heritage, is passed by LV 414.**





bought cheaply is a logical question in 2019. The unfaltering performance of SC-7's eclectic collection of Alco and MLW motors goes straight to the point. They work. Colangelo drives it home: "Our Alcos are tough, reliable, and economical. They're good on fuel. Parts aren't a problem, and our guys know them inside and out ... I'm 63 years old," he adds. "I don't chase broke-down engines. I wouldn't have a job, and the railroad wouldn't have Alcos, if we did that."

### Parts? We get everything we need

So what about parts? Colangelo is quick to dispel the myth that Alco parts are hard to find. "I'll tell you this, I have a fleet of 30-some-odd locomotives, if I couldn't buy parts, I wouldn't be able to run my fleet. Look, there's high mortality parts, wheels wear out, injectors wear out, rocker arms wear out, camshafts and push rods, brushes and contactors, they're subjected to hard usage, they wear out, just like anything else in your car. You want to run your car? You want to run your locomotive? You've got to throw a couple parts in once in a while. Yes, they're available. Not only from Fairbanks, or from GE, who's been very good to us, but there's tons of aftermarket suppliers that can source just about any part. I've never been in a showdown where I can't get anything. There might be some parts that are hard to get because they weren't high-mortality parts, and there wasn't a lot sold when the engines were new. Now that the engines are 50 years old, it's time to replace some of that stuff, and so you might have to look a little bit. But we get everything we need."

The familiar rap of a 16-cylinder 251 engine in full cry fills the air at the South



**"Rides like a Packard," says engineer Larry Pitbladdo of D-L 3007, the most recent Scranton rebuild. On May 9, 2019, Pitbladdo is at the throttle as the former M630-Super 7 demonstrator leads PO-74 through Moscow, Pa.**

Scranton shop as D-L 3000, an M630 turned out of MLW in December 1970 as Pacific Great Eastern 706, is readied for return to duty after a wheel change and some other minor work. Up in the cab of the Montreal-built M630, Colangelo has the electrical cabinet doors open, a screwdriver carefully positioned in an adjustment pot of one of the Type E blue cards, and his eyes fixed on a pair of test meters hooked to the panel. Putting the big M-Line through a series of tests, he works to fine-tune horsepower output, reference current,

no load volts, and more. "Come on, there we go ... wow, that's pretty darn good, you only want to be 1,160 volts, right." Digital readouts flash on the meters, adjustments are made with surgical precision. They don't call him the Alco Doc for nothing. A quick test run in full power and dynamic, and D-L 3000 is ready to hit the road.

After a turn on BR-1, the transfer from Scranton to Norfolk Southern's Taylor Yard, the 3000 will rejoin younger sister 3007 working the Pocono Main, the bailiwick of D-L's quartet of six-motor Big Alcos. Still





**Above: Tribute. D&H-inspired paint and Delaware-Lackawanna lettering on RS3 4068.**

**Right: Putting some of his mechanical and electronic wizardry into practice, Don Colangelo tests and adjusts a Type E blue card from a C420. "This is the brains of an Alco."**

**Below: "If I couldn't buy parts, I wouldn't be able to run my fleet." Rebuild for an Alco 12-251F engine.**

dressed in the grey-and-white demonstrator colors of former owner GE, the 3007 was built as PGE 705, and rebuilt as an M630-Super 7 in 1991. One of 25 BC Rail M630s traded-in to GE for Dash 8-40CMs, the 705 was selected to serve as a prototype for a 251-powered Super 7 rebuild program proposed by GE for Ferrocarriles Nacionales de Mexico's fleet of M630s and M636s.

The near-pristine 630 returned to its Montreal birthplace for upgrades and revitalization. (Between 1988 and the early 1990s, the former MLW plant was owned by GE and used as a rebuild facility, and to construct export model locomotives.) Outfitted with a brand-new 16-251E prime mover, a GE GTA24 alternator, and a host of GE Dash 7 features including Brightstar controls, the reborn 630 emerged from the Montreal plant as GECX 5000 in October 1991. The FNM demonstration never took place, and after sitting in Laredo, Texas, for nearly a year, GECX 5000 was shipped to GE in Erie, Pa., where it was assigned to Building 60 and served as a load engine on the test track for years.

At the close of its test-track career, the 5000 was set aside and eventually declared







**Steelwork of the 1904-vintage, once-double-tracked D&H bridge over the Lackawanna River at Olyphant blurs past as SC-7 heads home to Scranton after a long day working the Carbondale Branch.**

surplus. GVT purchased the 630 from GE in 2016 and dispatched it to Scranton as D-L 3007. Years of sitting idle in the back lot at Erie had taken their toll, and difficulties with the control systems were vexing. After working closely with GE in an attempt to resolve the issues, Colangelo ultimately decided that the best solution would be to convert the 3007 to Type E controls to match the rest of the GVT fleet and take advantage of familiarity and availability of parts. “We re-cabled the engine, and rewired it, and did numerous upgrades,” Colangelo explains. The latest addition to D-L’s Alco fleet was released from the shop on March 9, 2019.

The 3007 “rides like a Packard,” says D-L engineer Larry Pitbladdo, declaring

the recently revived M630 his favorite of the fleet. It’s “a sweetheart of a runner,” he notes, making smooth transition and loading, minimal smoke, and maintaining good adhesion control on slippery rail.

### **Better than new**

The next rebuild project is already underway in the Scranton shop. Streaming in through an open bay door, the afternoon sun illuminates the face of a ragged-looking and rusty C424 in faded blue paint. Almost anywhere else, this battered Century would be considered a cadaver. But there are parts boxes on the gangway and a replacement 12-251 block secured to the engine mounts on a freshly cleaned and painted frame. A nearby pallet holds 12 reconditioned 251 pistons and rods. Work to bring the 55-year-old C424 — one of seven built for Nacionales de Mexico in 1964 but diverted to Wabash prior to completion — back to life will take time. The business of keeping D-L’s everyday fleet on the move

takes priority. When it does emerge from the shop as D-L 2409, this 21st-century Century won’t be as good as new. It’ll be a better locomotive than it was on the March 1964 day it rolled off the Schenectady line as Wabash B905. The Alco Doc and his crew wouldn’t have it any other way.

The business at hand on this May afternoon, though, is a few feet over from the 2409. In the next bay, D-L 3642 is in for its 92-day inspection. Hood doors and hatches are open as the locomotive gets a thorough going over. Set up by the rear truck, Dave Hoffman tends to a task not on the FRA checklist. It’s just a couple weeks past the big C’s 51st birthday, and Hoffman is affixing a replacement builder’s plate to mark the occasion. There’s a lot of hammering and drilling and coaxing as the 51-year-old remnants of the rivets that held the original plate refuse to budge, but Hoffman prevails. It’s a small gesture, but a badge of honor for a locomotive worthy of recognition.

Not unexpectedly, the 3642 breezed





**Better than new. D-L C425 No. 2457, completely rewired and upgraded with a 251F engine and GTA11 alternator, gleams in the morning light at Dickson, Pa.**



**An added touch to a routine 92-day inspection: Dave Hoffman carefully affixes a replacement Alco builder's plate to 51-year-old C636 No. 3642.**

right through its inspection. Just days after D.J. Colangelo inked his name in box 17 of the mandatory "Locomotive Inspection and Repair Record" blue card, the last Schenectady-built C636 in existence and a trio of its six-axle MLW cousins went marching out of Scranton, muscling a 60-car grain train into the Pocono Mountains. No one bats an eye.

Fifty years after the fact, locomotive historians continue to debate the reasons for Alco's exit. Whether or not Alco could have overcome its difficulties and carried on is academic. What is indisputable in 2019 is that D-L's (and GVT's) Alcos and MLWs continue to move tonnage and help pay the bills on one of the most successful regional railroads in the land with no apologies for age or origin.

It turns out that Alco still has a few playable hands. And, if Monte Verde, Thomas, Colangelo, and company have anything to do with it, Alco will be in the game for a long time to come. **I**



**A badge of honor for a locomotive worthy of recognition: D-L 3642, Alco 4-68.**



# THAT MOTOWN SOUND

by Michael Ross Valentine

**Classic EMD Geeps  
are still playing  
their part of Henry  
Ford's vision**

**Concrete arches, vestiges of Henry Ford's heavy-duty electrification of 16 miles of the Detroit, Toledo & Ironton Railroad, frame Grand Trunk Western GP9 4619 working northbound at Pelham Road in Taylor, Mich.**

Two photos, Michael Ross Valentine





**Sixty-five-year-old GTW 4619 rolls train L572's hi-cubes through Allen Park, Mich., on Feb. 19, 2019. DT&I's electric operation lasted just five years, from 1925 to 1930, but 89 years later the arches survive as icons of Motor City railroading.**

## Ninety-nine years ago,

Henry Ford — the Elon Musk of his time, and far more successful — had a vision of a factory that would input raw materials: iron ore, sand for glass, rubber for tires, and out came finished Model Ts and later Model A automobiles. But Ford had a problem: getting materials to his vast Ford River Rouge factory that had fulfilled his automaking dream. So, in 1920, he purchased the Detroit, Toledo & Ironton Railroad to alleviate his supply-chain problem.

In 1923, Ford announced plans to electrify the DT&I, and even constructed a cement plant to build the distinctive arches that would carry the 22,000-volt, single-phase, 25-cycle A.C. catenary strung over 16 miles of double-track railroad between Ford River Rouge plant and the yard at Flat Rock, Mich. Catenary arches — each consisting of 95 yards of cement, and 257 feet of steel rebar, conveniently made at Ford's steel mill — and spaced 300 feet apart, defined Ford's heavy-duty electrification. Ford's own steam-powered River Rouge generating plant supplied the power.

DT&I's electric operations began in 1925. Motive power was a pair of articul-

ed motor-generator box-cabs designed by Ford engineers, outfitted with Westinghouse electrical gear, and built — where else — at River Rouge. The electrics lasted just five years, but the graceful concrete catenary arches proved virtually indestructible and stand today. It took a large crew two days to remove just one of them, and they are local landmarks now.

The buzz of electric locomotives vanished in 1930, the steam locomotives that replaced them gave way to Electro-Motive Geeps in the 1950s, and DT&I itself was purchased by Grand Trunk Western in 1980. The rumble of vintage EMD diesels can still be heard performing the same work Ford wanted his railroad to do: haul auto parts to and from the same Ford assembly plant where today more than 6,000 workers are employed, and approximately 1,000 Ford F-150 pickups roll off the assembly line daily, at 52-second intervals. Ford remains the lifeblood of the railroad.

The local trains that ply this route are classic Detroit in every sense of the word. Often powered by EMD Geeps still in Grand Trunk "Burdakin Blue" colors, they lug 86-foot-long, hi-cube boxcars full of body stampings, auto racks, and flatcars

stacked with pickup truck frames along jointed rail spiked on a right-of-way still spanned by Ford's signature catenary arches. It could be 1971 with Marvin Gaye's "What's Going On" playing on CKLW, 800 on the AM radio dial.

CN conductor Jack Watts knows the history of the Geeps and appreciates having them when he's assigned to CN train L572. "I prefer the old Geeps to a road unit. They are easier to get on and off when switching," he says. "The 4600s are great. We take care of them here. They're ours." On Feb. 19, 2019, Jack had local favorite, 65-year-old GTW GP9 No. 4619. Built in August 1954 as GTW No. 1759, it's had a bit of cosmetic surgery, including a new cab and low hood during a rebuild at GT's Battle Creek, Mich., shops in 1991, and is one of the oldest locomotives on a Class I railroad in daily service. GTW Nos. 4626 and 4632, part of the same order, are also still running.

It's ironic that pockets of railroad operations from 50 years ago, even on Class I railroads, remain even if in relative obscurity in 2019. I'm curious what else is out there? How long will the concrete arches stand and will 65-year-old EMDs be around are anybody's guess. **I**





**GO wouldn't take no for an answer:  
The inside story of Electro-Motive's  
F59PH and F59PHI passenger locomotives**

**by David R. Busse**







Performing just as Jim Brown, Rob Wright, and their team intended, GO F59PH 558 hurries commuters into downtown Toronto as the sun peaks over the skyline.  
Ryan Gaynor



Meetings between locomotive builders and their railroad customers were the order of the day in the steam era. Individual railroads believed locomotives should be custom-built for their specific needs. But it was unusual in the mid-1980s, decades after the end of the steam era, when Toronto's fast-growing GO Transit commuter operation first approached General Motors Diesel Division in nearby

London, Ont., with a set of numbers, a list of operational requirements, and a problem.

The agency's GP40TCs — modified freight locomotives that launched the operation in 1967 — were near the end of their service life. And GO Transit was growing, with more routes, new bilevel cars delivered and on order, and longer trains. "We were saying, build something that you're not building now," says retired GO Transit operations director James A. Brown. "But it started around 1985 as the kind of thing you talk about over lunch. We wanted a locomotive that would be GO Transit's standard for the long term."

Brown began a series of informal discussions with GMD's Rob Wright, a veteran sales engineer whose General Motors experience ranged from marine and industrial engines to city buses and diesel locomotives. Brown and GO Transit "wanted more horsepower, and they wanted something that looked a little more passenger-oriented than the GP40TCs."



**Rob Wright and GO 539 at GMD in London, Ont.** Greg McDonnell

Wright wanted a happy customer.

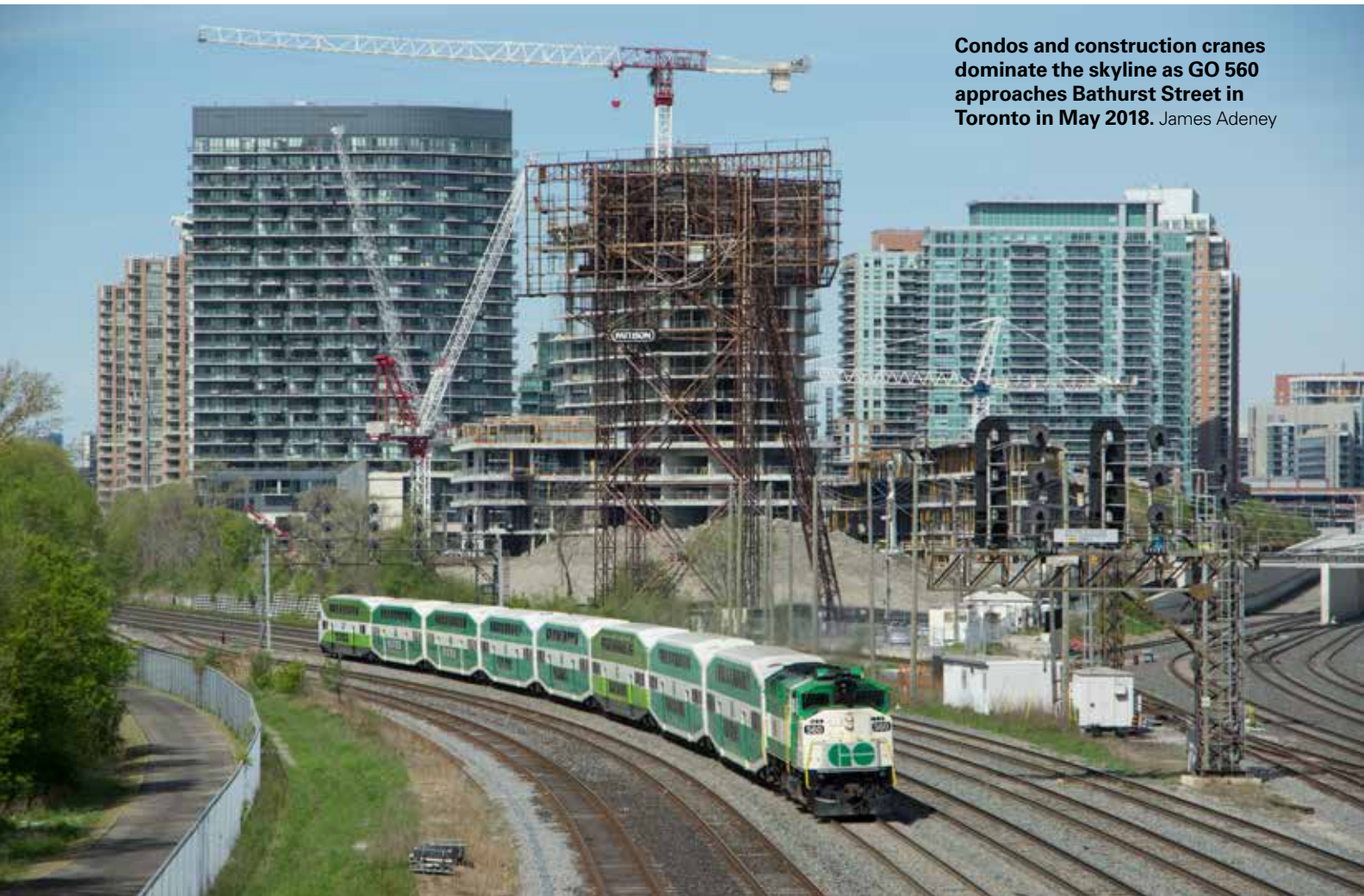
In the mid-1980s, commuter railroading in North America was largely the domain of locomotives left over from pre-Amtrak intercity railroading, or in some cases (GO included), freight power adapted for passenger use.

Jim Brown was a seasoned Canadian National Railways mechanical guy who paid his way through engineering school working as a relief tower operator on Canadian Pacific Railway lines in the Toronto area. Joining GO Transit in 1972, he was one of a small team that administered the GO contract with CN. He came to GMD with some vexing ideas for a new locomotive, including 3,000 hp for traction, the ability to push and pull a 10-car train, and room enough for a separate, robust, 575-volt, 500KW HEP power system (50kw/car).

All this and more, but restricted by a CN-mandated, 65,000-pound locomotive axle-loading, which meant a locomotive weight of 260,000 pounds. No exceptions.

"This was really the sticking point for us because it really constrained us on what we could put on our locomotives," Brown says. "And this was the time in the commuter business when we were all kind of feeling our way — learning by experience what we needed our locomotives to be capable of."

Wright came to those early informal meetings with a three-digit number: 710, the successor to the tried-and-proven Electro-Motive 645 engine. The 710 was still undergoing extensive testing in three EMD demonstrator GP59s, and word around La Grange, London, and the locomotive world was the tests were going well. But EMD was conservative with new products, and Wright knew reliability



**Condos and construction cranes dominate the skyline as GO 560 approaches Bathurst Street in Toronto in May 2018.** James Adeney



would be a major requirement of any commuter locomotive. His employer simply wasn't ready to say "build it" to a 710 order.

"We met in Toronto and London for a couple of years with a real small group of guys, including an electrical engineer and mechanical engineer from GMD, and Jim Brown and three others from GO Transit joined in," Wright says.

This informal committee was developing a passenger locomotive from a "clean sheet" based on a customer's requirements, and that was something unusual for General Motors' locomotive business. EMD had developed the DDA40X "Centennials" exclusively for Union Pacific Railroad years earlier, but the success of EMD over the years was built on the company's preference for a few models that could be used in many applications on many railroads. One (or perhaps a couple) size fits all had certainly been the rule at GMD and EMD. "I think we were kind of tracking new ground in London by being as open as we were — by being as collaborative," Wright says.

## Hey, we've got a customer here

Brown was intrigued by the potential of the 710 delivering 3,000 hp for traction with just 12 cylinders. That shorter engine block gave promise of room on the frame for a separate diesel for HEP.

Brown and the GO team had an increased urgency to resolve the locomotive issue. New bilevel cars were arriving, and plans called for standard 10-car consists, with push-pull cab cars. Without new commuter-specific locomotives, there would be continuing need for conventional freight locomotives working in combination with second-hand F units modified as HEP sources with operating cabs for push operation. Schedules were tightened. Locomotives and cab cars were aging. "Rob was right on board with the idea of a new commuter locomotive, but La Grange was a little bit hesitant," Brown says.

Now retired, Brown and Wright are respectful of their former employers. But there were some at EMD who responded to Wright and the GO Transit requests with something that sounded like "why don't you just sell them more F40s?"

"I told them that's not what the customer wants," Wright says.

Earlier, GO Transit had purchased six F40PH locomotives —



**Jim Brown: it all began over lunch.**  
Greg McDonnell



**GO F59PHs await the afternoon rush in the North Bathurst yard in downtown Toronto in August 2008. MotivePower MP40PH-3C replacements are in the wings.** Greg McDonnell

with the HEP generator powered by the main engine — and operated them in what Brown calls "that little unfortunate period." The F40PH did not measure up to the demands of commuter service. "We quickly said 'this is not the answer,'" Brown says, "because the longer the train the less power you've got for traction and so the acceleration is poor. And the F40PHs' 645 engines ran constantly at eighth notch because of the HEP generator. We were getting all kinds of noise complaints. So they were very much a stopgap. They were decent performers on short trains where the HEP demand and traction power needs fell within the F40PH's comfort zone. But as all trains tended toward a full nine- or 10-car size, the F40PHs weren't up to the task. Ultimately all six were sold to Amtrak, where they spent many years working in the U.S."

"Our point in the early meetings was simply let's assume you can get 3,000 hp out of a 12-cylinder engine and go from there," Brown says.

Meanwhile, Wright continued his internal pitch with GMD and EMD. "I kept saying, 'hey, we've got a customer here,' and back in those days, GO Transit was very visible as a commuter rail operator not only in Canada but in America. I thought golly, if we could give GO Transit what they needed and wanted with that new F59, then we could use it as a stepping stone to the American market."

Did GO Transit pitch their ideas to competing manufacturers? Montreal Locomotive Works wasn't aggressively in the passenger locomotive business, and "we had a moral obligation to show our shareholders, the people of Ontario, that we were giving them good value and keeping the manufacturing jobs in Ontario."

"I said to Rob, 'you know we've never talked to GE, but if GM is not willing to play ball with us, we might talk to GE,' and they



**GO 521, the second F59PH built, poses at its London, Ont., birthplace with the Diesel Division design team that helped make the new model a resounding success.** Steve Bradley





**Wright was right: Metrolink board chair Jacki Bacharach dedicates F59PH 851 at LAUPT, Jan. 12, 1992.** David R. Busse

didn't want to hear that at all. In the end, it was Rob and me against GM and EMD. Rob wanted this to work as much as I did."

### Give the customer what he wants

"My mission," Wright says, "was to give GO Transit what they wanted. And if we had to hire a couple engineering staff and lay it all out and make it happen, then that's what we did. That was very unusual in my experience." By 1986, EMD gave the go-ahead for a locomotive with a 12-710 power plant. From that point, it was a game of give-and-take with weight and balance, aesthetics, and that all-important, CN-imposed, axle-loading limit.

"If there was a feature or an item they wanted, I wouldn't just go back and give them a ballpark. I remember getting some spreadsheets developed that would provide a cost detail I wouldn't normally give to a customer," Wright says. "I felt the whole process was a pretty open book."

"We wanted a full cowl unit from the beginning," Brown says. "We liked the full-width carbody. Cab design was essentially copied from existing CN freight locomotive orders, and we kept a front porch."

"Getting the balance right was a catchy design thing," Brown says. "We had that 65,000 weight on axles limit. You had to know the weight of all the fluids, messing around with sand capacity, and



**Amtrak California F59PHI 2015 departs Sacramento with a Capitol Corridor train to Oakland.** Two photos, Nikki Burgess



**Sound Transit F59PHI 901 and GO-spec'ed bilevels pass South Landers Street in Seattle.**

that sort of stuff. That was fun, like building an airplane. But ended up with those units having smaller fuel tanks than we'd have liked."

"I remember working with our drafting and engineering guys coming up with different shaped noses for that locomotive, or having GO Transit guys come to London and take a look at paper models of how all this might come together and say, 'This one ... this is the shape we want,'" Wright says. "The whole design process



**Metrolink train 708, with F59PH 851 and four bilevel cars, races Friday night eastbound traffic on the 91 freeway near Prado Dam, west of Corona, Calif., on Oct. 5, 2007.** David Styffe





**Living up to its name, a southbound Surfliner led by Amtrak 455 skirts the coast at Del Mar, Calif.** Nikki Burgess

evolved, and at the end of the day, we provided GO Transit the style of nose they wanted, which included redesigned collision posts to give crew members even more protection.”

“We ran several computer simulations and shared the results with the group so everyone understood the impact that cab design and operating speeds would have on fuel consumption and emissions,” Wright says. “From a customer-supplier perspective, it was the most fun I ever had.”

GO Transit F59PH 520, the first of a 49-unit order, rolled off the London assembly line in May 1988, slightly more than three years after discussions began.

As the new locomotives became the backbone of the GO Transit fleet, a group of commuter railroaders quietly assumed a daily presence in the Toronto operations center. They were the early planners for the proposed Metrolink commuter rail system in Southern California, and their directive was to create a taxpayer-funded rail operation “without re-inventing the wheel.”

“The public was clearly interested in getting something done quickly,” Richard Stanger, Metrolink’s first CEO, says. “GO Transit was recognized as the best new regional rail system in North America. It was clear to us that it should be our design benchmark.”

Wright’s prediction of the F59PH appealing to users south of the border became reality. Metrolink ordered 24 F59PH locomotives and a fleet of bilevel cars, using the GO Transit specifications.

Months after Metrolink F59PHs were rolling revenue miles in Los Angeles, a refined F59PHI rolled off the assembly line with a streamlined nose and carbody and slight modifications to the 710 engine to meet more stringent emissions requirements. Ultimately, some 83 units were delivered to California operators, including more for Metrolink, the Caltrans Division of Rail, Amtrak. Agencies in Seattle; Dallas-Fort Worth; Vancouver, B.C.; North Carolina; and Montreal all signed up for F59PH and/or F59PHI models.



**Metrolink F59PHI 879 glides along Trestles Beach in San Clemente with Riverside-bound train No. 800.** David Styffe



**North County Transit F59PHI 3001 rolls Coaster train No. 645 under the historic Route 101 bridge at Torrey Pines State Beach in Del Mar, Calif.** David Styffe

The production total for the combined F59PH/F59PHI was 156 units. “I can sleep at night knowing we did the best we could for GO Transit and General Motors,” Wright says.

“If you look at their total performance after the F59 was rolling, they were selling tons of locomotives with the 710 engine,” Brown says. “All we did was push them past their comfort zone, because they didn’t really want to let that thing out in the wild until they were really sure it was going to be a good engine.”

The F59PH was the backbone of the GO fleet for two decades. To permit operation of even longer and heavier trains, GO began replacing its F59PHs with 4,000-hp MotivePower MP40PH-3Cs in 2007. Most of the F59s were sold and have moved on to work for other agencies. GO has retained eight for use on shorter trains.

It’s been said that a camel is a horse designed by a committee. In the case of the F59, the committee created a thoroughbred. **I**



**Its Surfliner colors rebranded Metra, F59PHI 73 works train 113 along Cedar Lake in Lake Villa, Ill.** Marshall W. Beecher



*Alco*  
LIVES





# 'Sorry to hear of the Falcon'

by Ted Benson

## "The 'Stars and Stripes Forever' on flanged wheels."

Former Editor David P. Morgan was effusive in his praise of Southern Pacific's Alco DH643 diesel-hydraulics in the October 1965 issue of *TRAINS* magazine. It mattered not that the experimental trio was a mixed marriage of Alco car-body and prime movers with German powertrain and transmission. Schenectady, N.Y.'s domestic alternative to SP's 21 Krauss-Maffei fluid-drive diesels had "that all-American look," and that was enough for Morgan.

Espee's multimillion-dollar hydraulic gamble began in 1960. Tired of running up to 10 first-generation units on increasingly heavier hotshots, the search began for higher-horsepower locomotives. When domestic builders came up short, the company looked overseas. K-M responded with six 4,000-hp C-C diesel-hydraulics: three "prototype" cab units each to SP and Rio Grande, delivered in November 1961.

Mountains and Maybach prime movers soon proved incompatible. Disillusioned, Denver & Rio Grande Western sold its K-Ms to SP in February 1964. Undaunted, SP took delivery of 15 K-M "series" hood units a month later. By the time Alco's three DH643s arrived in September 1964, the bloom was off the rose. Hundreds of 3,000-plus-horsepower diesel-electrics were rolling off domestic assembly lines by 1966. SP proved its point, but victory wasn't cheap. The "hydros" became high-priced, high-maintenance, short-lived orphans, banished to the tabletop profiles of California's San Joaquin Valley.

SP locomotive engineer George Irvin didn't share Morgan's flag-waving appreciation of Alco's answer to Teutonic technology. Waiting for a meet at Sunmaid siding, 21 miles outside Fresno, Calif., on Aug. 24, 1967, the jovial hogger minced no words in his honest assessment of the hydraulic

leading Extra 9151 East: "Alco never made a locomotive in its life."

Exotic motive power hadn't brought me south that sultry summer day. Buoyed by Morgan's acceptance of an earlier manuscript, I'd proposed a story on SP's sugar beet operations. Summertime was sugar time on the San Joaquin Division — time to explore the beet fields below Fresno.

Traveling companion Bruce Orr and I paced F7s rolling loaded "beet racks" past K-M 9116 at Fresno Yard before turning our attention to the mile of empty composite gondolas in the siding at Sunmaid. The "Alco-haulic" and F7A upfront were window dressing.

The man at 9151's throttle personified SP's long-lost billing as "the friendly Southern Pacific." Alco sentiments aside, Irvin couldn't have been more gracious, welcoming us into 9151's cab to record the meet with Extra 8423 West. Once the SD40 passed, Irvin was off to peddle empties, and we were off to the races. After capturing 9151 blowing by Traver at 60 mph, we ran across four lanes of Highway 99, and jumped into my 1961 Ford Falcon wagon. Accelerating to 90 in an adrenaline-fueled haze, the chase ended with a loud *thump* and white plume. I'd blown a bolt out of the transmission housing.

Limping into Goshen, we photographed Irvin spotting cars at the Spreckels Sugar beet loader, called my father, and braced for an unpleasant rendezvous several hours later. Silence accompanied the return to Modesto. It was bad enough I'd disabled the Falcon. Dad didn't need to know *why*.

I dispatched a packet of prints to Bakersfield, and it was followed shortly by a thank you note from Irvin. "Sorry to hear of the Falcon," he wrote. "Just to think that an Alco killed her off is quite amazing to me. The Alco is very unhandy to work on, but they are powerful brutes."

Amen, brother — Amen. **I**



*Alco*  
**LIVES**  
gallery





**Tonnage on Arizona's Apache Railway has declined since the closure of the paper mill at the south end of the line in Snowflake. However, the railroad has bounced back, and Centuries still rule the Navajo County short line. The mill was still open when a half-dozen Apache Centuries — three C424s and three C420s — rolled toward the setting sun east of Taylor, Ariz., on Oct. 7, 2010. Michael Ross Valentine**







One of only two surviving RS27s, Minnesota Commercial Railway 316 takes a nighttime spin on the turntable at the road's roundhouse in St. Paul, Minn., on April 29, 2016. Marshall W. Beecher



Working the Bath & Hammondsport local, Livonia, Avon & Lakeville C424 423 and B&H RS18 416 roll through the backstreets of Painted Post, N.Y., en route to the Norfolk Southern interchange at Corning. Joseph Bishop



Crossing the railroad's namesake river, Batten Kill Railroad RS3 605 approaches Shushan, N.Y., as it heads south on the former Delaware & Hudson line to the Pan Am interchange at Eagle Bridge with 13 cars from Greenwich Junction. Matt Krause





Traipsing through the sunflower fields near Millbrook, Manitoba, early on a summer morning, Greater Winnipeg Water District RS23 200 leads the biweekly work supply train to the aqueduct intake on Shoal Lake on Aug. 20, 2014. Mark Perry









**Still working daily in mainline service in her mid-50s, Chile Pacific Railroad (FEPASA) DL543 (RSD34) 1809 leads a long string of empty flats under the massive train shed in Talca, Chile, on April 17, 2019. Charles Freericks**



**A few groups of Alco survivors hang on in Australia. Southern Shorthaul Railroad's Goodwin-built DL541 No. 602 leads a brace of Goodwin-Alcos and Clyde-GMs on a grain train at Spring Ridge in northwest New South Wales on Aug. 2, 2018. Bernie Baker**







**White Pass & Yukon Railway 104 rests at Skagway, Alaska. Built in May 1969, WP&Y's seven narrow-gauge DL535s were among the last orders Alco received. They were diverted to MLW in anticipation of the Schenectady closure. Jeff Mast**





# THOUGHTS

BN 4243, built in 1964 as SP&S 303, leads an eastbound freight east of Lyle, Wash., on SP&S rails in 1979. In another year, the freight business would take a dive and the 4243, along with its sisters, would be stored and sold. One of the fortunate few to survive, 4243 is now Delaware-Lackawanna 4203. Garland McKee

*Alco*  
LIVES



# Centuries

On the road to an Alco reunion in Scranton • by Garland McKee

**S**pokane, Portland & Seattle C424 303, Alco serial No. 3381-04, was built in June 1964. As part of a seven-unit order that marked the first foray of longtime loyal Alco customer SP&S into the second-generation locomotive market, its first sampling of Alco's new Century Series models, and even its first locomotives powered by Alco's 251 engine.

In June 1965, SP&S 312, serial No. 3423-03, was delivered as part of the road's second batch of Centuries, an eight-

unit order for C425s. The C425, developed by Alco at the request of the Erie Lackawanna, used the same main generator as the GE U25B. It leveled the playing field, achieving the same 2,500-hp rating as the competition's U25B and GP35, and 100 hp more than the C424.

Both units joined the Burlington Northern roster with the March 2, 1970, merger of Chicago, Burlington & Quincy, SP&S, and its parent roads Great Northern and Northern. SP&S 303 and 312 became BN 4243 and 4252 and soldiered on, working the Pacific Northwest out of their traditional

home of Vancouver, Wash., where the shop employees spoke fluent Alco. Alas, the need for them vanished in the 1980-81 recession that sidelined thousands of locomotives nationwide. Nos. 4243 and 4252 were part of a group of BN Alcos sold to dealer Chrome Locomotive, and among at least a dozen former BN Centuries dealt by Chrome Locomotive to regional startup Kyle Railways in 1982.

Kyle put the Centuries to work in Kansas and Colorado, but never intended the Alcos as long-term power. Still in tattered coats of BN Cascade Green, Nos. 4243 and



Factory-fresh SP&S 315 poses for the Alco photographer at Schenectady, N.Y., in June 1965. These days the C425 wears Genesee Valley Transportation colors as Delaware-Lackawanna 2457. Alco photo



4252 parted ways as Kyle disposed of the Alcos after a few short years. The 4252 went to Indiana Hi-Rail, a regional road trying to make a go out of an old Illinois Central line based out of Evansville, Ind., among other lines. No. 4243 bounced from dealer to dealer before being sold along with three more former SP&S sisters to the MassCentral Railroad in 1994. Three of the four were overhauled and given fresh orange-and-black paint reminiscent of the Milwaukee Road.

When the Alco era on MassCentral ended, the 4243 moved on. Sold to private owner TC Rail and leased to the Adirondack Scenic Railroad in 2000, it traded its orange paint for green. The Adirondack gig lasted until 2010. Genesee Valley Transportation purchased the well-travelled C424 and sent it to the Delaware-Lackawanna in Scranton, Pa., where it became D-L 2403. Younger sister SP&S 312, now D-L 2457, was already there waiting.

D-L 2457 sat rusting on the storage line outside D-L's Scranton shop in faded maroon paint, a vestige of its days as IHRC 325. Hi-Rail's shaky existence faltered after a flood undermined a bridge over the Wabash River. The trustee rejected the railroad's plan to reorganize, and GVT picked up the 325 in 2002.



**Freshly painted BN 4243 leads train 139 out of Tacoma, Wash., in September 1973. This was the photographer's first encounter with former SP&S 303; 25 years later, he'd purchase the C424 and sell it to GVT after 12 years.** Tom Carver

Wearing patched Hi-Rail maroon and white with Delaware-Lackawanna lettering, No. 325 went to work out of Scranton. It was renumbered 2457 in 2004, but set aside shortly afterward to wait its turn in the shop for a major overhaul. The famed "Alco Doc" Don Colangelo and his Scranton shop crew gave the 2457 a complete overhaul and

upgrade in 2015-16, and it emerged in a fresh coat of GVT corporate paint. Sister 2403 received GVT colors the same year.

Reunited some 2,800 miles from their original Pacific Northwest stomping grounds, the future looks bright for this pair of Schenectady girls in their mid-50s. The Alco Doc will see to it. **I**



**Indiana Hi-Rail 325 and another ex-BN castoff, GP20 316, lead a northbound train near West Liberty, Ill., on April 23, 1994, on former Illinois Central Gulf trackage. Today you'd never know a railroad was ever here.** Three photos, Garland McKee





Dressed in fresh GVT colors, 54-year-old Delaware-Lackawanna 2457 looks just as good at age 54 as it did on the June 1965 day it posed for the Alco photographer at its Schenectady birthplace.



Looking fine after more than 50 years of service, Delaware-Lackawanna 2403 leads an eastbound freight past the former Delaware, Lackawanna & Western Mattes Street Tower in Scranton, Pa., on Aug. 20, 2016.



# Lackawanna

by John K. Howell

"This old girl needs a home," said author Scott Snell of former Delaware, Lackawanna & Western Alco HH660 No. 409 in "Lackawanna Survivor," published in the 75th anniversary issue of TRAINS magazine in November 2015. Constructed at Schenectady in spring 1940, the 75-year-old HH was facing an uncertain future at the end of a long career that began working yards and branch lines out of Scranton, Pa., and in New York state.

Retired as Erie Lackawanna 324 in 1963, the HH was sold to locomotive leasing company Relco and went to work in the Chicago area as RE 603. After moving around a bit, the aging Alco found steady work leased to scrap metal dealer Joseph Behr & Sons in Portage, Ind. Behr kept up the lease on No. 603 for decades, and when Relco announced plans to retire its small fleet of Alco HH model switchers, the Indiana company purchased the locomotive and kept it employed switching cars of scrap in the Portage yard. No. 603 stayed on when Scrap Metal Services LLC purchased the Behr operation in 2010. Scrap Metal Services finally retired the 603 in

2013, and the company began closing the Portage location in 2015.

Enter Northern Illinois & Wisconsin Railway Corp., aka NIWX Corp. Founded in 1999, NIWX is a small locomotive leasing firm offering a variety of locomotives to industrial and shortline customers. One of NIWX's oldest customers was located in the Port of Indiana at Burns Harbor, Ind., and every trip to Burns Harbor, I would see 603 sitting, never moving, and certainly looking lonely as Scrap Metal Services began the process of site cleanup.

Thinking that 603 could serve as a backup to our locomotives, I approached Scrap Metal Services about purchasing the Alco in July 2015. Near the end of October, just as the 75th anniversary issue of TRAINS was hitting the streets, NIWX Corp. became the proud owner of a "vintage" Alco HH660 switch engine.

NIWX first employed Locomotive Specialists Inc. to assess the condition of 603. By early November, we inspected the locomotive and had developed a work plan to get it running again. Batteries were charged, a balky fuel pump repaired and, finally, in

December 2015, No. 603 came back to life. In May 2016, 603 was used to switch cars within the Port of Indiana. But, with other locomotives handling the switching chores, 603 went back into semiretirement.

The next call to service came in June 2018, when 603 was pressed into switching duty. Unfortunately, a seal on the venerable Woodward SI governor failed causing a small fire, which was quickly extinguished. No one, it seemed, could be found to rebuild the SI governor until LocoDocs Inc., based in Mazon, Ill., volunteered to give it a try. The governor was successfully rebuilt and reinstalled in April 2019. All that remained to be done was to charge up the batteries and see if the now-79-year-old locomotive could be coaxed into coming out of retirement to again switch cars within the Port of Indiana. By June, 603 was back at work switching cars in the port.

Retirement in Scranton may yet be in DL&W 409's future, but that time has not yet come. This old Alco, called the "Yellow Beast" by the crews that use her, still has a few more miles to run, helping to move America's freight! **I**



Laboring in relative obscurity, NIWX HH660 is one of the most historic locomotives in the country. Turned out of Schenectady in April 1940 as DL&W 409, it's the oldest Alco diesel in revenue service. Greg McDonnell



Called out of semiretirement, No. 603 is back at work and switching cars at the Port of Indiana on June 9, 2018. A blown governor seal would interrupt the HH660's return to duty, but you can't keep a good Alco down. John K. Howell



# legacy



Lackawanna's grand Beaux Arts station towers overhead as DL&W 409 works the Lackawanna & Wyoming Valley interchange in Scranton, Pa., on Sept. 8, 1951. The station is now a hotel, and the HH lives on. John F. Endler Jr.



"American Locomotive Co. US Patent 15125/6." Alco staked its claim to the Blunt truck and cast it in the heavy steel frame. Three photos, Greg McDonnell



No. 603 was sidelined when its venerable Woodward SI governor blew a seal in 2018. LocoDocs Inc. made it right.



Behind the yellow hood doors of the 79-year-old HH660 is the real thing, an in-line, six-cylinder, 660-hp McIntosh & Seymour 539 engine.



# UNION PACIFIC 4141

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## THE FIRST AND FINAL MILES

**Story and photos by Michael E. Iden**





Union Pacific locomotive 4141 may be the most famous and identifiable locomotive in the world. On Dec. 6, 2018, it hauled the first presidential funeral train in 49 years, for the 41st president of the United States, George Herbert Walker Bush.

Thousands of people paid their respects trackside as the 4141 travelled from Spring (near Houston) to College Station, Texas, and millions more watched on cable and broadcast television. The 70-mile trip marked the final miles travelled by the locomotive with the late president. At the beginning of its special status career on Oct. 19, 2005, UP 4141 travelled 2 miles with the president at the throttle, marking the beginning of a unique relationship between a U.S. president and a locomotive. This is how those 72 connected miles came to be.

## How UP 8423 became the UP 4141

The story behind locomotive 4141 goes back to February 2005, when UP Chief Mechanical Officer Barry Kanuch asked me to handle a special presidential locomotive project. Five weeks earlier, I had started working on a “special heritage locomotive project” with Brenda Mainwaring from UP’s Corporate Communications department on the first three of what would become six “merger heritage” locomotives. The presidential locomotive project was the province of Katie Maness, who was UP’s director of Washington affairs in Washington, D.C. Katie had been special assistant to White House Chief of Staff John Sununu from 1989 to 1991 during the administration of President George H.W. Bush.

Both special locomotive projects were confidential “eyes only” endeavors. I was subsequently invited to a meeting at the George H.W. Bush Presidential Library and Museum in College Station, Texas, hosted by Dr. Robert Holzweiss, deputy director of the Presidential Library and Museum. (I also learned he was the president of the Railway & Locomotive Historical Society.)

## “Can you make this locomotive look like a 747?”

This project was unique. A UP locomotive was to be decorated to commemorate the GHWB Presidential Library and Museum. UP’s external graphic arts contractor in Omaha, Bailey Lauerman, would provide graphic design and artwork assistance, I would manage painting and delivery of the locomotive, and Maness would manage an invitation-only presentation ceremony in the fall. Facing an October deadline, I selected the last of UP’s new 115 SD70ACes, UP 8423, which was completed at and shipped in primer-only paint from GM’s Diesel Division plant in London, Ontario, on July 31.

UP 8423 operated briefly on the UP network until early September 2005, when it was interchanged to the Wisconsin & Southern Railroad at Granville, Wis., north of Milwaukee, and moved to Horicon, Wis., where the railroad operated a small paint shop. I had previously suggested Horicon as the paint shop for the merger heritage units because it was “off line” and remotely located, providing some measure of “security from publicity.”

The 4141’s “similar to Air Force One” color scheme was a collaboration between staff at Bailey Lauerman

**Having fulfilled its funeral train duties in Texas, UP 4141 sprints for Omaha under luminous blue skies near Padonia, Kan.**

Cameron Applegath





**1 and 2: Mixing, masking, and painting, workers at the Wisconsin & Southern paint shop in Horicon, Wis., transform a primer-painted SD70ACe into a work of art. 3: Paint shop manager John Smet unmask the presidential library and museum seal. 4: Greg Pietruszynski checks position of the flag decal. Look at the stars!**



and myself. The Bailey Lauerma designers made good two-dimensional conceptual drawings but needed help with the unfamiliar three-dimensional “lumps and bumps” of a locomotive carbody, especially an SD70ACe. Given that some replication of Air Force One was our goal, we had to carefully account for the angular, blunt, and boxy shape of the locomotive compared to the streamlined tubular shape of a Boeing 747. I made comments about how industrial designer Raymond Loewy had decorated the presidential aircraft.

Loewy was one of the great industrial designers, with significant image impact on the railroad industry. He was, for example, responsible for the Brunswick green paint with gold pinstripes on Pennsylvania Railroad GG1 electrics. In 1962, the Kennedy White House commissioned Loewy to create the paint scheme for the Boeing 707 being built as the first “presidential jet.” He offered two schemes for review, and President John F. Kennedy chose the blue-on-blue. Loewy (or an assistant) had selected the typeface Caslon to spell out “UNITED STATES OF AMERICA,” as it was similar to the typeface at the top of the Declaration of Independence. The Loewy-styled Air Force One first flew with JFK on Oct. 10, 1962. A pair of special Boeing 747s eventually replaced it. George H.W. Bush was the first president to fly on one of the new 747s, on Sept. 6, 1990.

Loewy’s choice of what he called “luminous ultramarine blue” pigment was a design triumph. Historically, natural ultramarine paint pigment was the finest and most expensive and was used frequently by Renaissance artists like Vermeer and Rafael. Michelangelo was said to be too poor to afford the pigment.

Loewy used a lighter “sky blue” for the underside of the airplane and the engine cowlings. White was chosen for the fuselage top, leaving highly polished aluminum on the bottom. Loewy also added an American flag on both sides of the vertical stabilizer, with the blue in the flag’s union purposely lightened to better match the ultramarine blue.

UP ornamentation on the 4141 was intentionally kept to an absolute minimum, with a medium-size UP shield on the front nose and smaller shields with the

“Building America” legend on the cab sides. Although UP had been using the historic “winged shield” on new and repainted locomotives since early 2000, it was not used on the 4141 to minimize the UP imprint.

Bailey Lauerma quickly prepared final artwork, and Brian Marsh at Overland Models in Muncie, Ind., was commissioned by UP Government Affairs to create a detailed-and-dimensioned, paint-and-decal drawing for the paint shop. Brian also produced a custom-painted brass O-scale SD70ACe model for the ceremony.

### Flags and medallions

Late in the project, I requested and received approval to add two details, which had not been included by Bailey Lauerma in its artwork. Like the presidential aircraft, I added a pair of American flags to the 4141, on the dynamic-braking compartment, with the stripes trailing the union stars on each side.

I also received approval to purchase and add a pair of hand-painted, cast-bronze medallions replicating the official seal of the GHWB Presidential Library & Museum, for each side of the 4141s nose. (The two 747s have presidential seal decals.) The medallions were a real challenge, arriving at Horicon just in time. Each medallion was heavy and measured about one inch thick at the outer rim. To securely attach the medallions to the locomotive, I asked John Smet, the Horicon paint shop manager at the time, to find a local machine shop that could precisely roll a pair of “Z section” steel rings, which could be welded to the locomotive’s nose as protective frames around the medallions. John also applied epoxy to cement the medallions to the nose as an extra precaution.

UP 4141’s colors are exact matches to official Air Force One colors. I asked UP Government Affairs to request “paint drift cards” (archived paint samples) from the U.S. Air Force District of Washington staff at Andrews Air Force, and on a trip to Omaha I received an envelope with several such cards and the admonition “Don’t lose these, they are Air Force property!” I gave the cards to Dan Kelly, whose Kelly Coatings Co. in Waukesha, Wis., made computer scans to formulate





the DuPont Imron polyurethane paints. Look at the photo of the first can of ultramarine blue paint being strained at Horicon; it is truly, as Raymond Loewy described it, a “luminous” blue.

On arrival at Horicon in late September, primer-painted UP 8423 went into the shot blast building, where the entire locomotive exterior was blasted to bare metal with fine steel shot to remove all of the factory primer paint. John Smet wanted to be sure there wouldn't be any chemical reaction between the GM factory primer and Imron paint, so the entire carbody and both truck frames were blasted clean.

Each color was sprayed, allowed to cure and dry for a day, then masked off before the next color was sprayed. A detail we had not noticed in making the artwork or Brian Marsh's production drawing is that the gold pinstripe actually passed “through” the dynamic braking compartment and inverter cabinet air intake louvers, and also horizontally down the length of the two horizontal hand grabs on either side of the front nose. Smet's shop staff artistically laid out and carefully taped all of the color separation lines. Those two hand grabs have to be the finest hand grabs ever painted in the entire history of railroad locomotives!

After all paint and decals had been applied, the 4141 was completely sprayed with an unpigmented clear coat to “gloss up” the locomotive, protect the paint, and seal the decals.

The two American flags on the 4141's “tail” created a small delay. The decal crew from WG Graphics in Neenah, Wis., had temporarily taped the first flag decal to the carbody. I took a photo of my assistant, Greg Pietruszynski, who had just gotten on the unit to check the flag's position with a tape measure. As I walked away, something didn't seem right, and at the same time Greg called to me. I looked at the image on my Nikon digital camera, zoomed in, and discovered that the flag decals had been incorrectly printed with the “union” containing 50 stars “upside down.”

The error resulted from an artwork computer glitch. Somehow the graphic coding flipped all 50 stars and none of us had seen the error. If the wrong flag decals

had been applied using their adhesive backing, we would have had a major rework involving grinding, sanding and new paint. We lucked out; two replacement flags arrived in Horicon early the next morning.

The locomotive was still officially registered as UP 8423, but externally it had been transformed into UP 4141. (The “other” 4141, an SD70M, was renumbered the following week.) On Oct. 7, 2005, the UP 4141 Bush locomotive was complete. A car mover slowly eased the locomotive outdoors from the paint shop into a light rain so that we could take official “beauty shot” photos before returning to the paint shop and applying a 700-pound, blue, rubberized-canvas tarp which would cover the locomotive, hiding the Air Force One scheme, for the long trip to Texas.

Horicon, a town of about 3,600 people and home to a John Deere yard tractor plant, had a local festival that day and the town was temporarily teeming with about 10,000 visitors, many of them within 1 mile of the Wisconsin & Southern paint shop. This could be our big security problem, but we didn't see any people near the paint shop. Or so we thought.

**Finished at last, UP 4141 is pulled from the Horicon shop by a car mover on Oct. 7, 2005. But just long enough for a few quick photos before going “under cover” for the trip to Texas.**

## Formula for making an SD70ACe look like a 747

Sequentially, here is the order in which UP 4141 was painted; I'm including the Imron paint formula code numbers that were in effect in 2005, and the quantity of each color applied:

- |  |  |  |
|--|--|--|
| <b>1. Grey primer (62-1060-G),</b><br>15 gallons, the entire locomotive                | <b>3. Paper white (103142P),</b><br>8 gallons, mid-body        | part of the nose   |
| <b>2. Metallic silver (33-MAG009),</b><br>15 gallons, trucks, fuel tank and underframe | <b>4. Gold (L1904HL),</b><br>2 gallons, the “Loewy pin stripe” | <b>6. Medium blue (76685642P),</b><br>2 gallons; this replicated Loewy's “luminous ultramarine blue” |
|  | <b>5. Light blue (76685742P),</b><br>3 gallons, lower          | <b>7. Clear coat (611P),</b><br>12 gallons   |





**The unveiling. Preparing for the presentation ceremony at the George H.W. Bush Presidential Library and Museum, Greg Pietruszynski helps remove the heavy blue tarp that shrouded UP 4141 for its 1,000-plus-mile journey from Horicon, Wis., to College Station.**

**UP 4141 greets the light of day for the first time, and poses for portraits in the light rain outside the Horicon shop on Oct. 7, 2005.**

After the 4141 rolled back into the shop, but before we could apply the tarp, I walked a railfan with a camera around his neck. I don't recall his name, but we quickly talked, and I negotiated a promise from him to not talk or post on the internet about the "presidential locomotive." I do remember that he was a C&NW fan, and we had a good talk about that before he left. A close call was averted. Thank you to our nameless visitor.

### **The last trip of UP 8423**

We now needed to get the 4141 from Horicon back to UP rails at Granville, through Proviso, Dupo Yard, Pine Bluff, and around Dallas-Fort Worth to College Station. UP chartered Wisconsin & Southern business car *James M. Gardner* with a cook, and sent SD70M 4338 to pull UP 4141 on the 1,000-plus-mile trip to Texas. At noon on Oct. 8, 2005, Greg and I departed Horicon aboard our special train. We shared 6-hour shifts awake to stay in radio contact with the engine crew, frequently observing 4141's tarp during crew changes. Fortunately, our trip from Wisconsin to Texas was uneventful, with one exception.

Early Monday, Oct. 10, we stopped in Hope, Ark., to wait for opposing traffic. I had requested a 45-mph speed limit to protect the tarp, so we ran "against the traffic" on UP's directional main lines across Arkansas. While standing on the rear platform of the business car, I looked across the street and noticed we had stopped in front of the birthplace home of William Jefferson Clinton, the 42nd president and the man who defeated Bush in

his bid for re-election in the 1992 presidential race!

We arrived at College Station on Oct. 11. The small Texas city is home to Texas Agricultural & Mechanical University, commonly known as Texas A&M, and the on-campus home since 1997 of the George H.W. Bush Presidential Library & Museum. The Oct. 18 presentation ceremony would occur in the Texas A&M transit system bus parking lot adjacent to the UP main line. A spur track extended to the parking lot fence. UP track workers had opened the fence and laid about 250 feet of temporary track down a steep grade onto the parking lot asphalt. UP 4338 had run around our train, and we carefully shoved the covered 4141 down onto the "presentation track." Ed McCaddon, UP's general superintendent mechanical for the Southern region, and Joe Borden, manager of train operations, were there to see 4141 safely spotted and secured. Greg and I retrieved our suitcases from the business car and flew home for several days of rest.

During the next few days, a crew built a large tent with aluminum framing around the 4141. A stage and a massive curtain hid the locomotive. Seats would accommodate several hundred guests. When Greg and I returned to College Station on Oct. 16, our first job was to un-tarp the 4141 inside the now-secure tent.

On Oct. 17, the U.S. Secret Service arrived and did a "safety sweep" of the entire tent including the locomotive. The entire event staff, Greg and myself included, were also vetted by the Secret Service.

Oct. 18 was "locomotive presentation day." A "green room" like those provided at





broadcast studios, where guests rest before the big event, had been created off-stage and a number of my photos taken at Horicon had been enlarged and framed on the tent walls. This is where the former president and first lady, and UP CEO Dick Davidson and his wife, would gather before coming on stage at the start of the ceremony. The two couples then walked to the stage podium, and Davidson presented Overland Models O-scale hand-painted brass model of the UP 4141 to President Bush who commented on the model's underwhelming size. The president was then invited to pull a gold rope hanging from the tent ceiling. When he did, the 4141's bell rang and the stage curtain peeled back revealing the 74-foot, 210-ton locomotive.

### Our special mission and project had been completed

The former president and first lady had a winter home in an apartment above the Presidential Library and Museum, and that evening he hosted a dinner for about 80 guests. During the reception, I was introduced to the former president, who shook my hand, and we talked for several minutes about how the locomotive had been painted and delivered to College Station. He seemed genuinely interested in the locomotive carrying his name. I had no idea that evening just how interested he really was.

### Morning call

Wednesday morning, Oct. 19, Ed McCaddon called my hotel room. "Mike? The president wants to go for a ride on his locomotive." I initially thought Ed meant UP's Dick Davidson. "No, Mike, *the* president, George Bush, and he'll be there in an hour." Ed was soon at the tent and quickly got the tent personnel refocused on freeing the 4141. I arrived shortly after.

Taking him for a ride within an hour required a "working" 4141. Riding on a dead engine pushed by another unit was unacceptable. Would the engine start?

The SD70ACe engine has air turbine starters using compressed air stored in a special reservoir on the underframe. Fortunately, in order to ring the bell during the ceremony, we had connected a small portable air compressor to the locomotive to charge the air system, but it was turned off after the ceremony. Did the starting reservoir maintain enough air pressure overnight? After closing the breakers, I removed the Do Not Start tag and depressed the start switch: the EMD 710 engine rolled over and it started idling. Greg did a daily inspection, and 4141 was alive. Just in time.

Engineer Don Gardner, conductor Randy Kuhneck and manager Joe Borden joined me in the cab. A caravan of federal-plated black Chevy Suburbans pulled alongside. We could see President Bush on the ground, shaking hands, smiling. The man and the working locomotive were about to be joined.

### The first miles

The 4141's nose door opened and a Secret Service agent (with a clearly visible but holstered Glock pistol under his suit coat) entered the cab, quickly surveying everything and everyone. We shook hands, and I quickly asked if I could photograph the former president. (Yes.) The nation's 41st president entered wearing UP hearing protection, safety glasses and a big smile on his face.

Stop for a moment and ponder the rareness of the situation: six people, a former U.S. president, an armed



**George and Barbara Bush in the cab on presentation day.**



**A handshake from the president: George H.W. Bush and Michael Iden.** George H.W. Bush Presidential Library and Museum

Secret Service agent, and four railroad employees, in the cab of a locomotive painted to mimic a presidential 747.

The object of the cab visit, of course, was for the president to actually ride the locomotive, so we gave him a quick safety briefing. Bush sat in the conductor's seat and asked questions about the 4141 while Don backed us onto the main line. And then Bush asked the big question: "Can I drive it?" Under Federal Railroad Administration regulations, anyone operating a locomotive must have an FRA locomotive engineer's license, which two of us (engineer Don Gardner and myself) had. Joe and I quickly decided since Bush had been the chief executive of the federal government (of which the FRA is a part), we would allow him to operate the locomotive while being closely monitored. (One doesn't ask a president to wait while calling Omaha.) Bush sat down at the control stand. Joe stood behind the engineer's seat, Don to Joe's left and me next to Don. I kept three-point contact with my left hand on the control stand.

Conductor Randy Kuhneck temporarily left the cab of the 4141 to comply with UP's five-occupant cab rule. Kuhneck, a Navy veteran like Bush, was later selected to be the conductor on the presidential funeral train in 2018.

We gave Bush a quick tutorial on the throttle, independent brake, and Nathan air horn, and with prompting the 41st president of the United States opened the throttle, and UP 4141 headed south toward Texas A&M's Kyle Stadium. Bush was clearly enjoying his time at the throttle, keeping visual contact ahead as we moved at about 20 mph. After 2 miles, we approached Kyle Stadium, and Bush eased the 4141 to a stop well short of a public crossing. "Better not hit that Chevy!" he said with a laugh and a huge smile.

While waiting for the caravan of black Suburbans to pull alongside, Bush leaned from the conductor's window and started waving and talking to bystanders. The president and the locomotive were now truly linked.





**UP 4141 and 9096 usher the train home to Omaha.**  
Cameron Applegath

**The 41st president of the United States takes the throttle of UP 4141, "his locomotive," at College Station on Oct. 19, 2005.**



Bush then turned, shook hands with all in the cab, thanking us for a great trip on "his locomotive," and departed with his Secret Service escort. He immediately headed to the College Station airport for a flight to Birmingham, Ala., and the Business Council of Alabama Chairman's dinner that evening. The next day he flew to Houston to meet with former President Bill Clinton (that native of Hope, Ark.) regarding the Bush-Clinton Hurricane Katrina Hurricane Relief Fund, and then back to College Station. He was 81 years young.

I asked Bush for his autograph before he left the cab. I had a glossy photograph of the locomotive on the conductor's work desk in front of Bush when he first sat in the cab. He graciously consented, writing "To Mike — on a great day in my life GHW Bush." Signed onboard the 4141.

UP 4141 served briefly in freight service, even going off-line. But Omaha decided that 4141 was "too special" to be operating regularly, and it was sent to Jenks Shop in North Little Rock, Ark., for protective care. Occasionally, Jenks employees applied touch-up paint specially blended by Kelly Coatings. Several

times a year, 4141 would operate on a local freight to Pine Bluff and return, always as a protected trailing unit, to "keep it limber." There were extensive plans for its most important trip ever.

### The final miles

State funerals are offered to all current or former U.S. presidents, presidents-elect and other officials designated by the president. They are created and managed by the U.S. military, with the Department of Defense's 4,000-person Joint Force Headquarters National Capital Region as the organizing body.

For the 41st president, the official state funeral occurred over four days, with the funeral train the second-last event on the last day. All presidential funerals involve long-term planning, which includes the living former president and his or her family. Each president is expected to place a personal and detailed imprint on that future event. Bush expressed a desire to make his final journey, his final miles, by train. I like to believe that his first miles with 4141 on Oct. 19, 2005, contributed to that decision.

Thirteen years, one month and 17 days after President Bush operated "his" locomotive, the man and the locomotive were reunited for one final trip. On Dec. 6, 2018, America (and the world) witnessed a rare and special train when Union Pacific operated a presiden-

tial funeral train across rural Texas to carry the remains of the late George Herbert Walker Bush between Spring and College Station. Thousands of people paid their last respects trackside during the 70-mile, 2.5-hour trip. Raquel Espinoza, UP's senior director corporate communications and media relations, estimated that the funeral train generated more than 2,000 media stories (with a potential readership of 2.2 billion







people) and 30,000 social media posts (potentially reaching 1.65 billion people). CNN broadcast the entire trip live, with remote video cameras on the exterior of the 4141 and helicopters following the train, allowing me to watch the entire trip from my home. I had retired from UP on Nov. 1.

### Locomotives and the "final goodbye" to presidents

Since 1831, more than 330,000 locomotives have been built in the United States and Canada. Most have existed in near or total obscurity, some plodding, some racing across the continent. Hauling people home for holidays, off to war, to or from a daily job; moving the goods of everyday life or switching rail yards, canneries, grain elevators, mines and factories; most locomotives are born unnoticed by the public, and only vaguely documented. All except a few have disappeared quietly into scrap yards. It is the inevitable cycle of locomotive life.

Between 1841 and 1969, U.S. railroads transported the remains of 11 deceased U.S. presidents to their final resting places: William Henry Harrison (1841); John Quincy Adams (1848); Zachary Taylor (1850); Abraham Lincoln (1865); Ulysses S. Grant (1885); James A. Garfield (1881); Chester A. Arthur (1886); William McKinley (1901); Warren G. Harding (1923); Franklin Delano Roosevelt (1945); and Dwight D. Eisenhower (1969). Lincoln was the first president to be carried by a designated funeral train. Previous presidents had ordinary passenger trains or specials not yet designated as presidential funeral trains.

Dozens of locomotives powered those trains, most of their identities long lost. Only one is known to have been preserved. Southern Railway 1401, a 1926 Ps-4 Pacific, has been enshrined since 1961 in the Smithsonian Institution in Washington, D.C., dressed in Sylvan green paint with Dulux gold lettering and trim. On April 13, 1945, the 1401 (with another Ps-4 coupled behind) powered FDR's funeral train from Greenville, S.C., to Salisbury, N.C., en route to his final rest at Hyde Park, N.Y.



### End of an era

Bush's passing brought an end to an important era in American history. On his 80th birthday in 2004 (a year before encountering "his" locomotive), George H.W. Bush gave his thoughts on reaching 80 in Forbes Magazine:

"Satchel Paige was right when he said, 'Don't look over your shoulder. Something might be gaining on you.' So I look forward. I want to give something back. I want to live life to its fullest. Every night, Barbara and I say our prayers. We count our many blessings, and we give thanks to God ... In the Navy, we young pilots all prayed for CAVU: Ceiling and Visibility Unlimited. But, you see, that is where my life is now. Thanks to my family and my friends, my life is CAVU."

I'm certain he's up there now, in that luminous ultramarine blue. **I**

*This author extends thanks to Tom Lange, Brenda Mainwaring, and Raquel Espinoza at Union Pacific Railroad. And to John Smet, formerly with the Wisconsin & Southern Railroad; Carlye Azzolina at Kelly Coatings; Brian Marsh of Overland Models; and Dr. Robert Holzweiss, deputy director of the George H.W. Bush Presidential Library and Museum. My friend and UP manager Greg Pietruszynski passed away in 2006.*

**UP 4141 shows off its handsome lines at Kansas City, Kan.**

Cameron Applegath



**1** On Feb. 7, 2019, BNSF Railway GP25 (rebuilt GP50) No. 3143, four GP60Bs, and a GP60M-3 make an impressive A-B-B-B-B-A consist while pulling the Chewelah-Spokane freight south, just north of Deer Park, Wash.

A-B-B-B-B-A

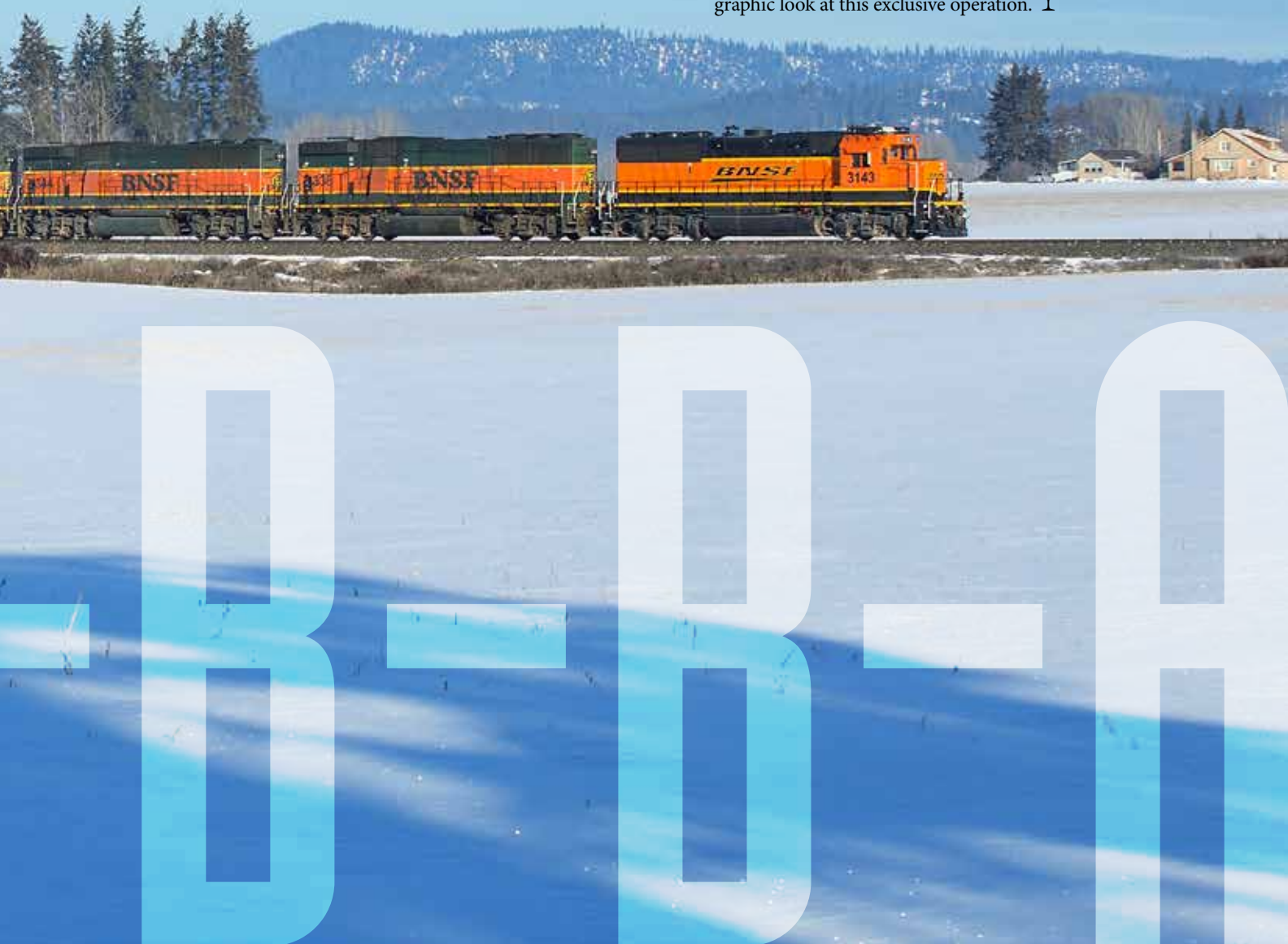


# While not the covered-wagon consists of yore, BNSF still assembles a worthy set of locomotives

Story and photos by  
Tom Danneman

**In a world** where an intriguing locomotive consist is hard to come by, BNSF Railway still assigns perhaps the most exciting set a Class I railroad has to offer to the six-days-a-week freight from Spokane to Chewelah, Wash. The 63.5-mile-long Kettle Falls Subdivision branch line possesses an incredible amount of curvature, (the longest stretch without a curve is 3 miles through Hillyard), which necessitates the use of four-axle power, and what could be better usage of a not-so-flexible cabless GP60B?

For the round trip up to Chewelah, where BNSF interchanges traffic with Progressive Rail's St. Paul & Pacific Northwest, the railroad usually operates up to four GP60Bs, bracketed by two Geeps. No other train regularly sports such a unique consist. Come along for a photographic look at this exclusive operation. **I**

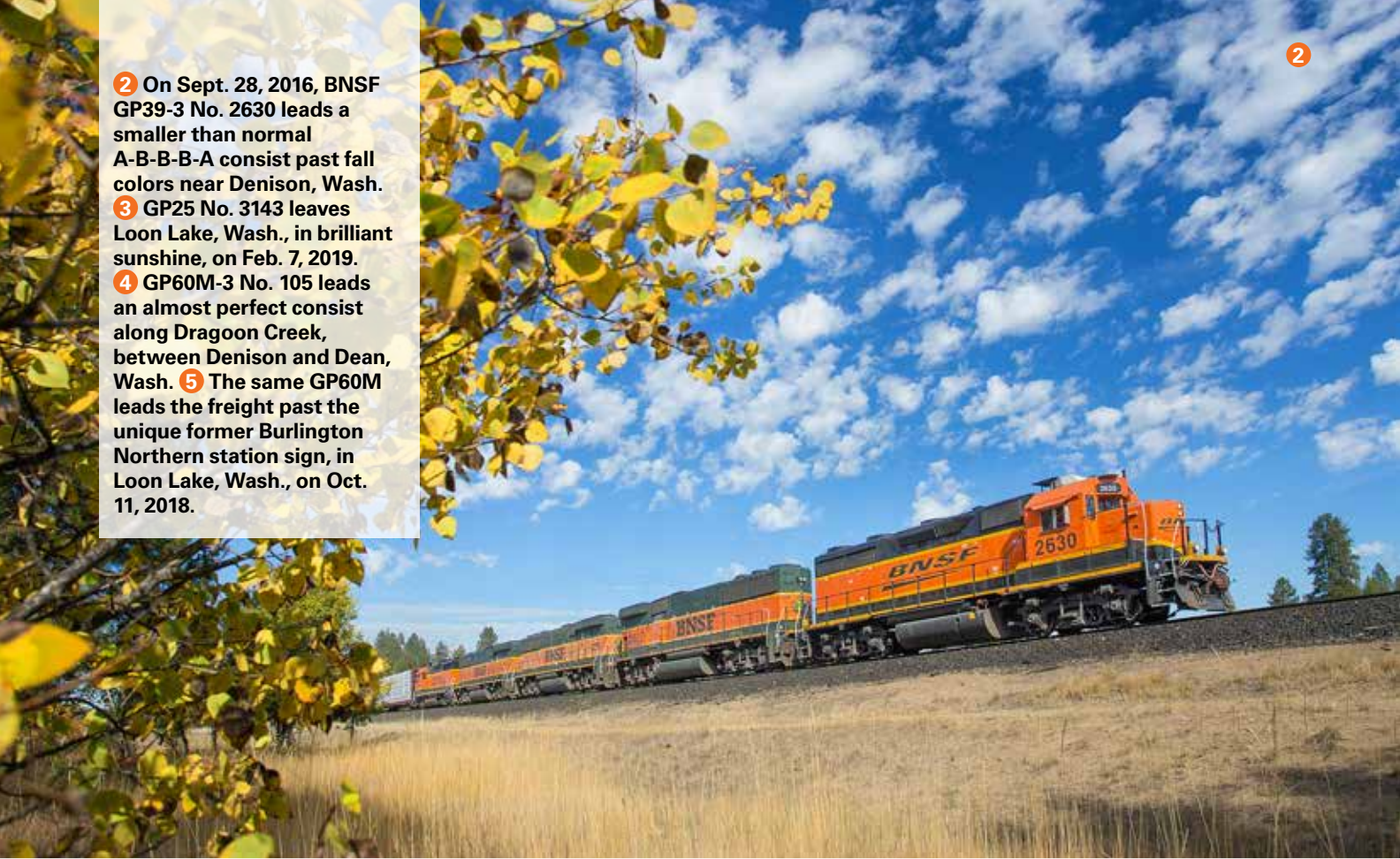




② On Sept. 28, 2016, BNSF GP39-3 No. 2630 leads a smaller than normal A-B-B-A consist past fall colors near Denison, Wash.

③ GP25 No. 3143 leaves Loon Lake, Wash., in brilliant sunshine, on Feb. 7, 2019.

④ GP60M-3 No. 105 leads an almost perfect consist along Dragoon Creek, between Denison and Dean, Wash. ⑤ The same GP60M leads the freight past the unique former Burlington Northern station sign, in Loon Lake, Wash., on Oct. 11, 2018.









6



7



**6** The Chewelah-Spokane freight arrives at its destination as it rolls under North Freya Street in Spokane, on Oct. 11, 2018. **7** Hoarfrost clings to the handrails of GP38-2 No. 2010, as it leads BNSF's H-CWHSP01-23A through a wintry landscape north of Loon Lake, Wash. **8** GP39-3 No. 2923 has a pinpoint of light on its nose, as it curves along Loon Lake on Feb. 6, 2018. **9** BNSF's Chewelah-Spokane freight negotiates the tight curves as it approaches Clayton, Wash. Charlie Danneman **10** On Feb. 6, 2018, H-CWHSP01-06 crosses the Little Spokane River north of Colbert, Wash.

8



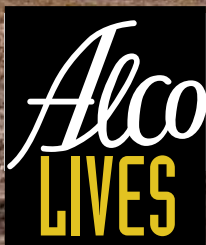






# NOT IN THE GU

by David Baer



The sweet sound of a McIntosh & Seymour 539 fills the morning air as Conrad Yelvington RS1 No. 2116, built in November 1943 as Atlanta & St. Andrews Bay Railway 907, tends to its chores in the company's aggregate yard in Largo, Fla., on Oct. 1, 2018. David Baer



# IDEBOOKS

## The small Conrad Yelvington gravel distribution facility

in Largo, Fla., located less than a dozen miles from Clearwater Beach, doesn't rate mention in any local tourist information guides. But maybe it should. One of 27 rail-served Conrad Yelvington aggregate facilities in the southeastern United States, the Largo site is itself unremarkable: a few yard tracks, an office, a conveyor system for unloading hoppers, and a level lot that provides ground storage for gravel. However, the small facility, tucked away near the intersection of Route 688 and Starkey Road, is home to a pair of Alco attractions.

The largest distributor of aggregates in the state of Florida, Conrad Yelvington is well-known among locomotive historians for its widely dispersed collection of a dozen or more Alcos, mostly S-series switchers and RS1s. In recent years, CY has turned to hand-me-down Electro-Motive switchers and hood units, including a number of GP30s, but Largo is home to a working RS1 and a long-dormant S2.

Turned out of Schenectady in October 1948 as Baltimore & Ohio Railroad No. 516, the forlorn-looking S2 has almost certainly breathed its last. Five years senior, RS1 No. 2116 carries on, working for a living as it has for 76 years and counting. A native Floridian, the RS1 was built in November 1943 as Atlanta & St. Andrews Bay Railway No. 907. Sold to the Tennessee Railway in 1957 and retired a few months after the Southern Railway takeover in August 1973, the RS1 did a stint with Peabody Coal in Kentucky before finding its way back to Florida in the employ of International Minerals & Chemicals.

Sharply at 8 a.m. on a bright Monday morning in fall 2018, No. 2116 awakens from its weekend slumber. Its turbo-charged, straight-six McIntosh & Seymour 539 engine lazily turns over and clatters to life. Looking every bit its age, the World War II-vintage locomotive lumbers across the yard and gets to work. There are 20 loads of gravel delivered by CSX Transportation, waiting to be unloaded and distributed by truck to customers in the Largo area.

After spotting the first loaded hopper at the unloader, the 2116 idles contentedly, then erupts for a couple of seconds, as it moves a few feet to position the next set of hopper doors over the unloading pit. And on it goes. The work isn't glamorous or particularly demanding, but a working RS1 is a sight and sound to behold.

Florida has many great beaches and wonderful tourist attractions. Not all of them are in the guidebooks. **I**







# SIX-MOTORS FROM MONTREAL





# After Schenectady quit, Montreal's M-Lines carried on

Story and photos by Ken Goslett

## As the American Locomotive Co. closed its doors in 1969, the fortunes of its Canadian subsidiary, Montreal Locomotive Works, looked bright. At MLW, the order book was full and production of a new series of locomotives, the M-Line, was underway.

Six years earlier, MLW had led Alco in completion of the first Century-series locomotive, a four-motor, 2,400-hp C424 delivered to Canadian Pacific Railway as CP 8300. The Montreal builder produced a total of 51 C424s for CP, and another 41 for Canadian National Railways.

The C424 was a good locomotive. With its 16-cylinder, 251 engine producing a modest 150 hp per

cylinder, the C424 was reliable, although sometimes criticized for being slippery, understandable in light of its 600 hp per traction motor.

Both CN and CP were more used to diesel units with 400 hp per motor.

After the C424, MLW began to diverge from Alco designs. In 1966, Alco sent brand-new Union Pacific C630s 2903 and 2904 to Canada for a brief demonstration on CN and CP. MLW would catalog the 3,000-hp C-C under a new model designation: C630M (for Montreal) and with a new truck design. The MLW ZWT-3 high-adhesion truck was a joint effort between the Montreal builder and Dofasco (formerly Dominion Foundries & Steel) of Hamilton, Ont. The new Dofasco truck was unique to MLW. Alco had its own high-adhesion truck.

The first C630Ms, CN 2000-

2001 were delivered in August 1967. These were followed by 42 more, CN 2002-2043, during 1967-68.

CP, dissatisfied with the reliability of its General Motors GP35s and equally unhappy with the pulling power of its GMD SD40s, ordered eight C630s. CP 4500-4507 arrived in 1968 riding the new ZWT-3 truck and wearing the handsome gray, Tuscan, and yellow "script" paint scheme. Before long, CP was testing C630s in the mountainous territory between Calgary and Vancouver where they outperformed the competition's SD40s.

In the U.S., however, things were not going well for MLW parent, Alco. By 1968, it appeared certain that Alco would exit the locomotive business. MLW began work on its own improved design to replace the Century series: the "M-Line." Model designations would follow the Alco style but would be M630 (Montreal-6 axles-3,000 hp) and M636 (Montreal-6 axles-3,600 hp).

**Extra 4744 West. Flying white flags and sparkling in the afternoon sun, CP M640 4744 storms through Dorval, Que., making its first revenue trip with two soiled C424s and a Toronto-bound manifest freight.**





**CP M630s 4553 and 4570 at St. Luc, Que., on arrival from MLW in October 1969. Nos. 4550-4553 were delivered with the then-new Multimark logo incorrectly placed ahead of the radiators, an error that was quickly corrected.**



All six-motor M-Lines would ride on the same 69-foot, 6-inch frame and share common carbody components that differed only in the size of the radiator compartment. With the redesign only partially completed, four C630s were built for Pacific Great Eastern incorporating only some of the new features. Delivered in July 1969, PGE 701-704 were referred to as “intermediate” or C-630i, within MLW.

### **CP Rail steps up**

As 1969 approached, Canadian Pacific (by then CP Rail) decided to expand its fleet of six-axle locomotives for both coal train service in western Canada and transcontinental fast freights. Based on the success of its C630s, CP elected to place an order with MLW. Accordingly, the initial order was proudly announced in business pages of the Montreal newspapers. Within weeks, the size of the order had been increased. Twenty-nine M630s for British Columbia coal

traffic and 44 M636s for transcontinental freights. A single 4,000-hp M640 would test a new 18-cylinder version of the Alco 251 engine.

The first pair of M630 locomotives, CP 4550 and 4551, appeared in 1969. These were the first new locomotives to be delivered in the CP Rail Action Red corporate image with its Multimark logo. They also boasted a completely revised air system that for the first time was truly centralized. The C630M had drawn combustion air directly from the atmosphere via filters at the rear of the engine compartment. On the M-Lines a single Farr Dynavane inertial filtration system at the front of the engine compartment cleaned all incoming air and a massive blower below it distributed the air to the main generator, traction motors, dynamic braking resistors, electrical cabinet, and turbocharger. This required a duct inside the locomotive’s frame beneath the prime mover, raising the locomotive several inches higher off its trucks than on

the predecessor C630M.

Additional M-Line improvements included modular solid-state control cards in the electrical cabinet, a unitized air-brake control system, and minor interior changes to modernize the cab and provide a better toilet area in the nose.

As production of the CP orders progressed, there were a couple of minor exterior changes. With 21 M630 and five M636 units complete, the box structure in the roof between the exhaust stack and the radiators was eliminated in favor of a smooth streamlined top. The 30th M636, CP 4729, introduced electric start to the M-Line units, identifiable only by two air reservoirs instead of three on the fireman’s side of the locomotive. The previous 29 CP M636s, CP 4700-4728, and all CP M630 units had air starters and three air reservoirs.

By 1970, CP’s orders were complete except for delivery of the experimental M640. CP 4744 was delivered in spring 1971.

CN placed two orders for a total of 40 M636s. Delivered in 1970-71, CN 2300-2339 didn’t have dynamic braking systems. The railway had unfortunate experiences with dynamic braking on its first-generation diesels and decided that the option was not for them. The CN M-Lines also had screened openings at the rear of the carbody, leaving the rotating components of the fan drives in plain view.

Pacific Great Eastern received 18 M630s, numbered 705-722 and delivered between December 1970 and January 1972. PGE specified dynamic braking and was content

**Fresh from MLW, CP 4744 rests at St. Luc with S3 6501 in March 1971. The winged section at the rear of the M640 accommodates massive radiators required by the unit’s 4,000-hp, 18-cylinder 251 engine.**







**CP M630 4570 and three SD40s emerge from the west portal of the Connaught Tunnel in Glacier, B.C., in June 1970.**

with the 3,000-hp M630 as the grade profile of its railway could not have taken advantage of the M636's higher horsepower and therefore speed. The PGE units in their two-tone green, lightning-stripe colors were the most handsome M-Lines. During 1972, the railway's name was changed to the British Columbia Railway, better reflecting its north-south route and provincial government ownership. The line returned to MLW in 1973 for another order of eight M630s.

### Comfort cabs

British Columbia Railway 723-730 boasted comfort cabs, a significant change in appearance. The comfort cab was developed by Canadian National to encourage engine crews to operate 250 miles between crew changes rather than the 125 miles of the traditional steam-era subdivisions.

Significant safety features of the new cab were stronger steel in the nose to improve collision protection, four front-window posts to support the roof in the event of a rollover, and a front door made larger than



**PGE C630M "intermediate" No. 702 and an M630 on a southbound freight at Lillooet, B.C., in August 1972.**

its opening so that it could not be punched in during a frontal impact. Comfort features included high-backed seats, electric cab-heating, refrigerators, hot plates, and more spacious toilet facilities. As applied to the British Columbia M630s the comfort cab looked out of place. Its angular surfaces were in direct contrast with the curved contours of the original M-Line design. The cab looked as if it had been grafted onto the units which, in fact, it had.

The Cartier Railway, an iron ore

hauler on Quebec's North Shore, purchased six M636s. Nos. 71-76 were delivered in 1972-73 and five more, Nos. 81-85, arrived in 1975. Cartier subsequently purchased 11 M636s second-hand from CN.

MLW had good success with six-motor M-Line models in export markets. Thirty-six went to Mexico: 20 M630s for Nacionales de Mexico and 16 M636s for Ferrocarril del Pacifico. In Australia, licensees Goodwin and Comeng produced a total of 73 M636s for



## MLW M-LINE PRODUCTION ROSTER

Road	Road Nos.	Model	Build date	Qty.	Notes
CP	4500-4507	C630	7-9/68	8/1	Century-series model designation, MLW-Dofasco ZWT-3 high-adhesion truck as on M-Line
CP	4550-4555	M630	9/69-2/70	6/0	Phase 1 M630, air start, dynamic braking
CP	4556-4557	M630	2/70	2/0	Phase 2 M630, air start, dynamic braking
CP	4508-4516	M630	11/69-1/70	9/0	Phase 1 M630, air start, dynamic braking. 4513-4516 renumbered 4558-4561
CP	4570-4575	M630	1969	6/2	Phase 1 M630, air start, dynamic braking. 4574-4575 renumbered 4562-4563
CP	4576-4581	M630	1969	6/0	Phase 2 M630, air start, dynamic braking. Renumbered 4564-4569
CP	4700-4704	M636	1969	5/0	Phase 1 M636, air start, dynamic braking
CP	4705-4728	M636	1969-70	24/0	Phase 2 M636, air start, dynamic braking. 4711 repowered with Caterpillar 3608 in 1988
CP	4729-4743	M636	1970	15/1	Phase 2 M636, electric start, dynamic braking
CP	4744	M640	3/71	1/1	Converted to A.C. traction (A1A-A1A) in 1985
CN	2000-2043	C630M	8/67-6/68	44/0	Century-series model designation, MLW-Dofasco ZWT-3 high-adhesion truck as on M-Line
CN	2300-2319	M636	4-9/70	20/5	Phase 2 M636, electric start, no dynamic braking. Eight to QCM in 1976, see below
CN	2320-2339	M636	1971	20/3	Phase 2 M636, electric start, no dynamic braking. Three to QCM in 1976, see below
PGE	701-704	C630M	7/69	4/0	Century-series model designation, MLW-Dofasco ZWT-3 high-adhesion truck as on M-Line. Some M-Line features, referred to as "C630i" within MLW. Traded to GE 1990-91, to FNM.
PGE	705-716	M630	12/70-1/72	12/2	Phase 2 M630, electric start, dynamic braking. 711 wrecked 1980. Rest traded to GE 1990-91, Nos. 707-714, 716 to FNM (Mexico), 705, 706, 715 used by GE, 705-706 to D-L, 715 scrapped.
BCOL	717-722	M630	1972-12	6/0	Phase 2 M630, electric start, dynamic braking. Traded to GE 1990, sold to FNM (Mexico)
BCOL	723-730	M630	1973-11	8/0	Phase 2 M630, electric start, dynamic braking, comfort cab. Traded to GE 1990-91, to FNM
QCM	71-76	M636	1/72-10/73	6/1	Phase 2 M636, electric start, dynamic braking. QCM 72 wrecked 1972; 75 to 636Leasing 2002
QCM	81-85	M636	3/75	5/1	Phase 2 M636, electric start, dynamic braking. Scrapped except 85 to 636Leasing 2002
QCM	41-49	M636	4/70-1/71	(8/4)	ex-CN 2300-2304, 2311, 2312, 2318, 2321, dynamic braking added
QCM	86-87	M636	2/72	(2/0)	ex-CN 2330, 2331, dynamic braking added
NdeM	8600-8619	M630	6-8/72	20/0	Phase 2 M630, electric start, dynamic braking
FCP	651-658	M636	6/72	8/0	Phase 2 M636, electric start, dynamic braking
FCP	659-666	M636	11-12/73	8/0	Phase 2 M636, electric start, dynamic braking

Quantities in table denote number built/number remaining. Overall M-Line production totals: M636: 75, M630: 111, M640: 1

Reporting marks: BCOL British Columbia Railway, CN Canadian National, CP Canadian Pacific Railway, FCP Ferrocarril del Pacifico (Mexico), FNM Ferrocarriles Nacionales de Mexico, NdeM Nacionales de Mexico, PGE Pacific Great Eastern Railway, QCM Quebec Cartier Railway

**Two of the three locomotives in this May 1970 view at MLW survive: the 80-tonner now at GE Erie, and CN 2300, on D-L.**

operators Mount Newman Mining (37), Hamersley Iron (27), and Cliffs Robe River (9).

If MLW made a fatal error with the M-Line, it was in not field-testing the design thoroughly before delivering the first CP locomotives.

### Grandstanding on Rougemont

The Dickson Street MLW plant had only a short test track, a length of straight track less than a city

block long, paralleling Rougemont Avenue on the east side of the factory. At its north end, this locomotive drag strip curved to the left so sharply that a six-axle locomotive would derail. MLW needed to test whether an M-Line would make transition at 25 mph or so. Accordingly, the test engineer would back the locomotive to the extreme south end of the steel drag strip, apply the brakes, open the throttle wide and

with the 16-251 wound up, release the brakes. The locomotive would explode up the track, rocking and swaying as speed increased to the magic threshold when electrical transition should occur. Then it was pile on the brakes and hope the unit stopped before it hit the curve.

Halfway up Rougemont Avenue, a small park abutted the MLW fence. The top bench of the park's little grandstand provided a perfect





**PGE M630 712, a pair of leased CN C424s and another PGE M630 lead a southbound freight near Squamish, B.C., in July 1977.**

place to watch the spectacle of a thundering M-Line hell bent for the dead end. The grandstand was so close to the MLW fence that from its top level you could step across the top of the fence and into the cab for the hair-raising ride in a locomotive still smelling of fresh paint.

Because of MLW's budgetary concerns and CP Rail's desperation to get the M-Lines in service quickly, the units were delivered without being road tested outside the plant. Consequently, they were beset with teething problems that irrevocably damaged the builder's reputation with CP. Even with the initial difficulties corrected, a few design flaws continued to haunt the locomotives. The cooling systems required modification: in 1975, CP equipped all M636s and some M630s with extra cooling water expansion tanks. CN made less obvious modifications to the cooling system under the hood.

More serious was the inability of the M636 to deliver its advertised 3,600 hp for traction. The massive inertial filtration/centralized air blower robbed the prime mover of far more horsepower than theoretical calculations had shown. Recognizing this, MLW and its new owner Bombardier offered customers a modification kit to reduce parasitic losses by decentralizing the air system and removing the internal filtration system. These were applied experimentally to CN 2310 and CP 4553 and 4716. British Columbia Railway and Cartier undertook similar modifications. CN chose not to purchase further air-system kits, while CP embarked on a program to modify the air system in a simpler fashion than the builder proposed.

Under Bombardier ownership the six-motor M-Line design underwent further engineering changes and improvements emerging as the HR616. "HR" stood for high reliability. Bombardier standardized on 3,200 hp for the 16-cylinder 251 prime mover. Canadian National was the only purchaser of the HR616 with 20 units numbered 2100-2119 received in 1982. The last of these was notable in that it was the first CN locomotive with desktop controls.



**Fresh from the paint shop and not yet lettered, Cartier M636 No. 71 basks in the sun at MLW in January 1972.**



**Newly rebuilt with a Caterpillar engine, CP M636 4711 tests with M636 4731 and three SD40s at Rigaud, Que., in August 1988.**



**D-L M636 3643, formerly CP 4743, leads the westbound Portland Turn through East Stroudsburg, Pa., on July 23, 2015.**





**Digging in for the climb to Keating Summit, WNY&P M636 637, M630 631, and M636s 636 and 638 head the Driftwood Turn past MP 115 near Gardeau, Pa.**

Early in 1985, the lone CP M640 4744, was transformed into an A.C.-traction test bed by a consortium of CP, Bombardier, and Brown Boveri. The European-designed electrical system replaced the original GE transmission system and four A.C. traction motors were installed, leaving the center axle on each truck unpowered.

In 1988, another CP experiment repowered M636 4711 with an eight-cylinder, 3,000-hp Caterpillar engine. The Cat 3608 engine proved to be reliable and less expensive to maintain than the Alco 251 engine. Unfortunately, no further units were converted. That same year Bombardier decided to exit the locomotive manufacturing business, leaving the MLW plant vacant.

Most North American M-Lines remained in service until 1990. At the start of the year, BC Rail began a systematic retirement of their units in favor of General Electric Dash 8-40CM locomotives. Ironically, GE Locomotives Canada had been the new tenant in the former MLW plant since 1988. GE Canada retained some of the former MLW/Bombardier service and sales representatives, and they convinced BC Rail to trade in its entire M-Line fleet to GE. The trade-in M-Line units were in such good condition that GE retained some for its own use on its Erie, Pa., test track, sold others to Mexican railroads, and converted one to a Super-7 Alco 251 demonstrator, GECX 5000,

intended for Mexican customers.

CP began to thin the ranks of its M-Lines during the early 1990s. At the close of 1993, an official retirement ceremony for the units was organized at the St. Luc diesel shop in suburban Montreal. With officials from headquarters present, the stop button on CP 4706 was pressed and as the crowd applauded, the prime mover freewheeled to a halt. But the gesture was largely symbolic. With the officials gone, the St. Luc shop forces immediately restarted the unit and the other M-Lines in the shop area so that they would not freeze-up and damage the prime movers. This turned out to be fortuitous as within months CP was so short of motive power that a C630M, 10 M630s, and 22 M636s were unretired and returned to service. Some of these continued in service until 1995.

Canadian National began to retire its fleet of C630Ms and its earliest M636s, during the mid-1990s. Some M636s from the second order hung on until 1998. Quebec Cartier's fleet was intact into the new millennium when some units were sold in 2002. Cartier's last M636s were finally scrapped in Port Cartier, Que., in 2011.

### **Fifty years on**

Remarkably, a few M-Lines remain in active service some 50 years after the first ones rolled out of MLW's Dickson Street plant. Well known is the tribute fleet of Alco

and MLW locomotives operating on Delaware-Lackawanna in Pennsylvania. Among those Schenectady and Montreal products thundering away on the "Pocono Mountain Route" are a quartet of six-motor M-Lines. D-L's first M-Line acquisition was CPR's final M636 now operating as D-L 3643. A pair of ex-BC Rail M630s, built as PGE 705 and 706 and now D-L 3007 and 3000,







**Blasting back from Hornell to Olean, N.Y., on the former Erie main line at sunset, WNY&P C630 No. 630 (former CP 4500) and RRPX M636 No. 41 make a fine sight.**

were acquired via GE. D-L 3007 is former M630-Super7 demonstrator GECX 5000. In spring 2019, D-L acquired its fourth big M from Railroad Power Leasing. Previously leased to Western New York & Pennsylvania, RRPX 41 is a Cartier Railway veteran, built as CN 2300.

WNY&P amassed a large fleet of six-motor MLWs, including a single ex-CP M630, six M636s of Cartier and Cartier/CN heritage, and CP's first C630M, now WNY&P 630. CN M636 2338 was purchased but never placed in service.

Famously employed on the Driftwood Turn south from Olean, N.Y., the future of WNY&P's six-

motor MLWs is uncertain. The road recently picked up several former CSX GE AC6000CWs.

The lone Caterpillar repowered M636, formerly CP 4711, on Minnesota Commercial in St. Paul, Minn. However, it has not been in use for some time.

Closest to home, a pair of six-motor M-Line units are preserved at Exporail, the Canadian Railway Museum, in the Montreal suburb St. Constant, Que. CP M630 No. 4563 is operational and was a star performer at the museum's Diesel Weekend celebration in 2015. Within the museum's premier display pavilion sits CP 4744, the historic

M640 and A.C. traction pioneer.

The entire Dickson Street plant of Montreal Locomotive Works has been demolished with only the office building remaining. The erecting hall where the first M-Lines were constructed with such optimism 50 years ago is the site of big-box retail stores. The roar of Alco 251 engines under test no longer disturbs the peace and quiet of the little park on Rougemont Street

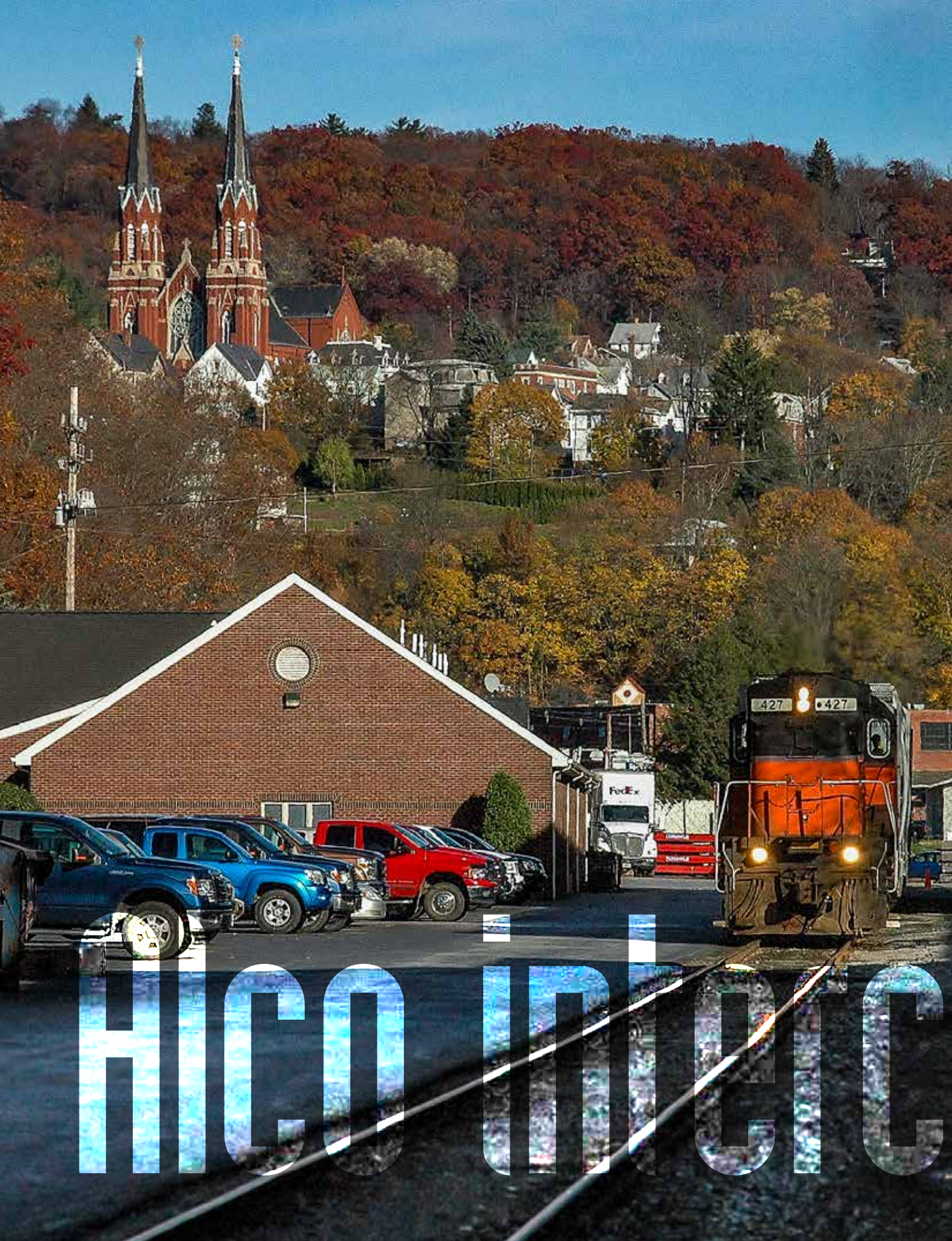
More's the pity. **I**

*This story is excerpted from the manuscript of the author's upcoming book documenting the history of MLW's M-Line locomotives.*

**Built as CN 2300, and now on D-L, RRPX 41 leads WNY&P No. 630 on the Olean-Hornell turn in August 2009.**







HICO interCITY



The Gothic spires of the St. Joseph church tower above the community as WNY&P C424 No. 427 wanders through Oil City, Pa. Kevin N. Tomasic

**Most weekday mornings**, the sound of Alco exhaust echoes through the onetime Erie Lackawanna yard in Meadville, Pa. This is where Norfolk Southern Railway conducts interchange with the Western New York & Pennsylvania Railroad, part of the shortline holdings of the Livonia, Avon & Lakeville Railroad, of Lakeville, N.Y. The WNY&P has been here since acquiring operating rights on the Hornell, N.Y.-Meadville portion of the Southern Tier line in 2002. Inherited by NS as part of the Conrail split in 1999, and purchased by the Southern Tier Extension Rail Authority for a dollar in April 2001, the line was originally part of the Erie Railroad's Jersey City, N.J.-to-Chicago main line. Despite its rich history, the main line doesn't pay the bills here. It's the 41-mile Meadville-Oil City, Pa., branch, acquired by WNY&P in 2005, which has saved this end of the railroad.

An NS local from Haselton Yard near Youngstown, Ohio, makes the connection with WNY&P at Meadville, where the all-Alco short line bases two locomotives (generally C424s) and a weekday crew. Working Monday to Friday, the Meadville-based WNY&P crew switches local industries and ventures up the branch to Oil City at least three days a week. Other days, they may make a run to Falconer, N.Y., to swap cars with a local that originates from the railroad's operating headquarters at Olean, N.Y.

The Oil City branch wanders through low rolling hills and farmland, tracing French Creek to Franklin, Pa., where it joins the Allegheny River. At Franklin, the railroad delivers gondolas of used rail to Franklin Steel. The rails are rerolled into fence and sign posts by Franklin Steel, a company owned by the Kovalchick family, famed for saving the East Broad Top. Scrap is sent back out in those same gondolas. Leaving this pretty little town, the tracks hug the Allegheny River to Oil City, home to a number of industrial customers, most notably Electralloy, a maker of high-quality alloy steel.

North of Oil City, industry is scarce. The refineries in Rouseville were razed after the oil ran out, but there's still business to be had, including a connection with the Oil Creek & Titusville Railroad at Rynd Farm. Established in 1986 to revive a dormant former Pennsylvania Railroad branch unwanted by Conrail, OC&T operates passenger excursions and freight service on the 13.5-mile line between Titusville and Rynd Farm, employing a pair of former South Buffalo Railway S2s and an M420 of Canadian National Railway pedigree.

OC&T's tourist trains have carried more than 750,000 passengers. The freight business is light by comparison, but where else in the world can you see two Alco-powered railroads interchange? **I**

*Alco*  
**LIVES**

by Kevin N. Tomasic

change



# Oklahoma





# ma!

Exploring a land  
of red dirt roads,  
jointed rail,  
grain trains, and  
vintage Geeps

Story and photos  
by Ryan Gaynor



① Hand-me-down Geeps of Southern Railway, Illinois Central, Santa Fe, Northern Pacific, and Katy heritage lead the Austin, Todd & Ladd morning train from Reno over a wooden trestle at Calumet, one of many that dot the former Rock Island line to Geary.



**M**orning sunlight painted the expanse of farmland and sun-cracked pavement along U.S. 270 somewhere deep in rural Oklahoma. Miles of a seemingly endless landscape of dusty brown blurred past. Drawn by the mystique of names like Farmrail and Austin, Todd & Ladd Railroad and the promise of aging Geeps hauling trains of

Oklahoma grain on the jointed rail of branch lines of Rock Island and Frisco heritage, we pressed on. It was bound to be a good day — sparing the fact that my temperature could have made a summer's day blush. Under normal circumstances, a fever of over 100 degrees is a good reason to stay in bed and rest. Though on this day, I accepted that I'd have to eat my chicken noodle soup on the run, because there were trains to catch. **I**







2 AT&L 5088 (built for the Southern as a high-nose GP38-2) and four elderly EMD companions roll westward through a landscape of spindly trees and jointed rail, slowly knocking down the miles to Geary, where the train will diverge onto the former Rock Island branch to Watonga. 3 Red dirt roads and rolling hills. Farmrail GP38-2s 2675 and 2304 amble southward near Fay with the Enid-Clinton "Farmrail Manifest/Thomas Switcher."





**4** A long-abandoned 1947 International Harvester KB-7 truck bears silent witness as Farmrail GP38-2s 2675 and 2304 and a 20-car train clatter through Custer City on their way south to Clinton. **5** A friendly wave from the engineer aboard Farmrail 2675 as he cruises along a former Frisco branch. **6** With John Fogerty's voice stuck in my head: Farmrail Geeps roll the "Farmrail Manifest/Thomas Switcher" through the "cotton fields back home" south of Thomas.











*Alco*  
LIVES

# Mundane

**Saturday, May 29, 1965**, was a hot and humid day in the Appalachians — the sort of weather that leaves one sticky, sweaty, and in constant search of a shade tree. As the afternoon sun shifted slowly into the western sky, Louisville & Nashville road freight No. 66 eased to a stop in the passing track at Wilhoit, Ky. Within 10 minutes, the rotating Mars light of Alco FA2 No. 314 appeared around the distant curve. Corbin-to-Norton freight No. 65 was bearing down on the small southeastern Kentucky community at track speed. With the click of a shutter, another everyday scene of American railroading was preserved on silver halide, black-and-white film.

American rail preservation is often a hit-or-miss affair. For any number of factors, particularly indifference to history, corporate focus on short-term economic gains versus long-term legacy, or a genuine cluelessness, too

many epic examples of American locomotive design have gone extinct. The list of lost classics is sobering. We'll never see a New York Central J-class Hudson 4-6-4 again, or a Milwaukee Road Class A Atlantic.

Many survivors barely made it. Were it not for a few knowledgeable individuals within the middle-management ranks of Penn Central, the last E7, PRR 5901, would have been scrapped. Thankfully, she gleams in Tuscan Red and pinstripes at the Railroad Museum of Pennsylvania in Strasburg. Through the efforts of the late William Withuhn of the Smithsonian Institute, and Doyle McCormack, two former Santa Fe Alco PAs were repatriated from Mexico before they too were gone.

More often, rail preservation is simple serendipity. The freight cousin of the vaunted PA was the slightly less glamorous, four-motor, FA cab unit and FB booster. First



# no more

by Ron Flanary

It was everyday railroading in Wilhoit, Ky., on May 29, 1965, when L&N crewmen on these two Kentucky road freights, No. 66 led by RS3 138, and No. 65 led by FA2 314 were eager to be immortalized on film. Ron Flanary



constructed by Alco in January 1946, the new model, its carbody the work of General Electric designer Ray Patten, was fielded to compete with the Electro-Motive F unit. Louisville & Nashville acquired 44 FA2s and 14 FB-2s. Time, hard service, and the advance of technology caught up with L&N's Alco cab units, and between 1968 and 1970, they had been downgraded into Cincinnati-area transfer service, retired as they suffered mechanical problems, and used as trade-in credit on new locomotives, most to GE.

Fortuitously, the commuter-heavy Long Island Railroad, looking for cab cars for push-pull trains, got a deal on a handful of old Alco FAs, including a half-dozen L&N FA2s. Modified to PC-6 cab cars by GE's North Bergen, N.J., facility, the FAs retained their 12-244 engines for HEP generation but were relieved of their traction motors. GE ultimately produced 19 examples from FA1s and FA2s of

Western Maryland; New York Central; Spokane, Portland & Seattle; Great Northern; and New Haven lineage.

All but one of the former L&N cab cars survive, former L&N 321 was scrapped after a wreck. Three are in private ownership in New Jersey in various states of restoration, another is in Nashville, and L&N 314 (LI 604) is at the Illinois Railway Museum in Union. At least 14 other ex-Long Island cab cars have also been preserved, but the L&N units retained their 244 prime movers.

Hats off to the volunteer craftsmen at the Illinois Railway Museum for their ongoing efforts to bring L&N 314 back to life. It's not likely she'll go roaring through Wilhoit again, but wouldn't it be grand to see her restored in L&N colors? What was mundane in 1965 will be extraordinary one day soon. Whether by chance or design, it's good that she's still with us. **I**



# Together, forever



by A. Ross Harrison

**J**ohn Lennon and Paul McCartney, Mick Jagger and Keith Richards, Alco and General Electric. What do they all have in common? All are duos that made beautiful music together at the height of their creativity.

The formal Alco-GE partnership was dissolved in 1953, but the relationship carried on. General Electric remained the supplier of electrical components for Alco diesels as well as those of its Canadian affiliate Montreal Locomotive Works right to the end. Witness the builder's plate affixed to the 12-cylinder Alco 251B engine installed in Montreal-built Wabush Lake Railway RS18 No. 910. Need further evidence? Check out the cast-aluminum injector covers, embossed with "A-L-C-O" and the timeless GE logo front and center.

The RS18 proved to be a hit for MLW with 351 iterations shipped from its sprawling plant at 1505 Dickson Street in east end Montreal to Canadian railways large and small from coast to coast. The rough and rugged 12-251B could take the abuse any engineer could throw at it. The GE main generator and 752-series traction motors would push out all the amps the throttle called for. The RS18s earned the respect of railroaders who threw every

demanding task their way, from flat switching to heavy drags, road freights, and fast passenger trains. Geared for either 75 or 89 mph, Canadian National pushed them to the limit hustling varnish, and Canadian Pacific Railway never shied away from using its RS18s on demanding Montreal commuter services, plow trains, work trains, hotshots, and lowly yard transfers. And they pinch-hit as required on local and even transcontinental passenger trains.

No. 910 represents the zenith of RS18 production, one of eight delivered in 1964 to remote northern Quebec and Labrador ore haulers, the Arnaud Railway and the Wabush Lake Railway. They came with factory low-noses and builder's plates stamped 10-1964, well into second-generation locomotive production. MLW had shipped CP 8300, the first-ever C424, some 18 months earlier.

Retired by Wabush in 2013 and sold along with three sisters to a western Canadian leasing concern, No. 910 remains an icon of railroading in northern Canada. You don't work more than 40 years hauling ore in northern Quebec and Labrador, if you're not up to the task. Life is a little more sedate these days for No. 910 and surviving classmates. The four survivors are scattered across the prairies in the employ of branch-line operators in Manitoba



**En route to a new home on the prairies, former Wabush Lake Railway 910, a factory-low-nose RS18, pauses at Winnipeg.** Two photos, A. Ross Harrison

and Saskatchewan.

The joint branding etched and embossed on No. 910's Alco prime mover is a reminder of a once-legendary duo. Nearly seven decades after the duo formally split, the staccato beat of the 251B can still stir the soul, proof enough that Alco and GE will always be thought of together, forever. **I**



**Together again. Alco and GE logos on the builder's plate affixed to the 12-251B engine in Wabush Lake 910.**



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