

*(Continued from inside)*

All of the radiators were replaced with lead free mechanically bonded radiator cores. Because bonded radiators are not available in the 4 inch core size used on F-units, all the mounting brackets were modified to accommodate 6 inch cores. The original capillary tube temperature switches controlling the cooling fans were replaced with Quantum fan controllers. Many other modifications and upgrades were performed.

After all the mechanical work the units went to the paint shop where they received a modified version of the Southern Railway black and imitation aluminum scheme used on both freight and passenger locomotives in the 1950's and 1960's. This scheme complements the passenger car Tuscan red and gold that honors two NS predecessors, Norfolk and Western Railway and the Pennsylvania Railroad.

*Allen Rider, NS Mechanical Department*



*NS 4270, 4276, 4275 plus 5648 on their first OCS train. Newport, Pa, March 29, 2007*

*Paul Withers Photo*



Locomotive Specifications			
<b>NS 4270</b>	NS Model: F9A	Built: January 1952	
Lineage	B&O 937; B&O 4580; MK 4580; MDOT 7181; MARC 81; SLCC 101; RPCX 1010; KCS 1010		
<b>NS 4271</b>	NS Model: F9A	Built: August 1952	
Lineage	B&O 947; B&O 4590; B&O 4557; MK 4557; MDOT 7185; MARC 85; SLCC 102; RPCX 1020; KCS 1020		
<b>NS 4275</b>	NS Model: F7B	Built: October 1950	
Lineage	CGW 113D; C&NW 317; C&NW 410; SLCC 201; RPCX 2010; KCS 2010		
<b>NS 4276</b>	NS Model: F7B	Built: December 1950	
Lineage	CGW 114B; C&NW 318; C&NW 411; SLCC 202; RPCX 2020; KCS 2020		
Horsepower	1800	Engine Type	16-645E
Max Speed	90MPH	Air Brakes	26L
Gear Ratio	57:20	Traction Motors	D77
Length	50' 8"	Main Generator	D12B
Head End Power, (HEP 4270 & 4271 Only)			
HEP Output: 250KW, 480 Volts, 3-Phase AC			



*All four units on train 951 near Lynchburg, Virginia, August 15, 2007. NS 4271 leading.*

*Luke Sharrett Photo*

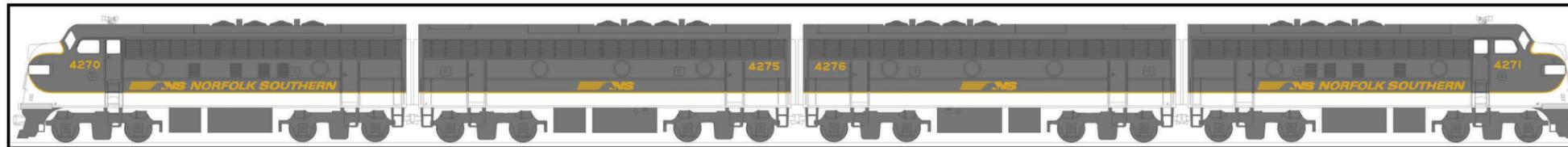
## Norfolk Southern's OCS Locomotives



*Mexico, Pa., on May 22, 2007*

*Paul Withers Photo*





These four units are part of one of the most successful locomotive designs ever produced. Over 7000 were built. Called F-units, carbody units, or covered wagons, these four-axle locomotives were pioneers of modern railroading. Manufactured by Electro-Motive Division of General Motors, or simply EMD, the model series began with the FT in 1939 and continued to the F9 in 1959. Only A-units had operator's cabs. B-units were used as trailing or middle units in a consist. Primarily intended for pulling freight trains, many were also used in passenger service along with EMD's passenger E-unit models.

More than any other locomotive, this is the one that proved the economics of diesel power, and replaced the steam locomotive. Nearly every Norfolk Southern predecessor owned some F-units. Southern Railway, one of the first railroads to dieselize, purchased the original 4 unit demonstrator set, EMD 103.



**Two of the original four unit EMD FT demonstrator set repainted to their original colors and displayed at EMD's 75th anniversary open house in 1987. These units were owned by Southern Railway before being donated to museums.**

Office Car Specials (OCS), better known as inspection trains are a way for management and customers to see the railroad. They have been a part of railroading since the nineteenth century. Using regular freight locomotives for these trains means they aren't available to pull regular revenue trains, plus there are often clearance and maximum speed concerns. Aesthetics are also of value with these high profile trains. Hence the decision was made to acquire dedicated OCS passenger locomotives.

In 2006 NS personnel searched the country for "streamliner" style locomotives. This set of four were the result. They were last used to power an excursion train out of St. Louis.

They arrived at Norfolk Southern's Juniata locomotive shop in Altoona PA in November of 2006. The shop forces nicknamed them "the babies," and immediately set to work rebuilding and upgrading them for pulling NS's premier office car trains. Even though they were in good shape, much needed to be done including overhauling the engines, generators, air compressors, trucks and all rotating equipment.

The A-units had been rebuilt in 1981 by Morrison-Knudsen (MK) of Boise, Idaho for commuter passenger service in the Baltimore-Washington area. At that time the 16-567B engines were replaced with 16-645E engines and the electrical system was completely rewired. Head-End-Power (HEP) generators were installed to provide power for the passenger cars.



**MARC 81 eventually became NS 4270.**  
Dan Munson/Diesel Era collection

At Juniata, many of the external changes made in 1981 were removed to return the units to their original appearance. The biggest of these was replacing the square switching style front pilots. Copies of the original fabrication drawings were obtained from EMD, and Juniata personnel constructed new pilots from scratch. The HEP generators were replaced with more compact units, and the rooftop piping was relocated. Another challenge was air conditioning. The right sand box was modified, and some equipment under the cab floor was moved so a Dayton-Phoenix sub-base central air conditioning/heating unit could be installed. Something unheard-of in 1952 when these units were built.

MK had removed the nose doors and reinforced the nose area for added protection in the event of a crossing accident. For safety reasons, this was one change deemed too important to undo even though it is not authentic. This is why the units do not have nose doors.

Some of the many other cab modifications include: cab signal systems with LSL to permit operation on Amtrak's Northeast Corridor, Railview cameras, new cab seats, event recorders, alerters, sound insulation, and MEI chemical toilets.



For the B-units, the original 16-567BC engines were replaced with 16-645E engines. The 24RL brakes were converted to 26L. The air cooled air compressors were replaced with industry standard Gardner-Denver WBO water cooled air compressors. The original wiring was in good shape, so most of the electrical work involved replacing the original pneumatic switchgear, and upgrading some of the control circuits. For example, the engine starting/shutdown circuit with its pull-cable emergency fuel cut-off valve was replaced with a more familiar Prime/Start switch, and shut down button. Loadmeters were added to the electrical cabinet so personnel can easily tell how well the units are performing.

The trucks on all four units were converted from clasp brake rigging to the easier to maintain single shoe arrangement. Traction motor/wheel assemblies received 57:20 gearing. Maximum speed is 90 MPH. Quantum speed based transition panels replaced troublesome transition relays of the original design.



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