



3rd Rail N&W Streamlined K2a

Review and Photos by George Brown

At a first glance, the streamlined Norfolk and Western 4-8-2 Classes K2 and K2a looked like the road's famed Class J 4-8-4. Because of their close resemblance to the Js, the streamlined K2 classes were frequently referred to as J-Juniors. Before the onslaught of diesel locomotives, these 4-8-2s were the regular power for the mainline passenger runs on several of the N&W's divisions and they also pulled mainline locals. At the road's larger terminals, the K2 classes were standby power for trains normally powered by the Js. In their later years of service, the versatile 4-8-2s pulled mixed trains, local freights, and even served on coal drags when the N&W experienced shortages of motive power.

The N&W first began using the 4-8-2 mountain type for heavyweight passenger service with 16 Class K1 locomotives erected in the road's Roanoke Shops in 1916 and 1917. They became the N&W's primary power for mainline passenger trains, replacing 4-6-2s as the trains became longer and heavier.

As a class, the K1 was so successful that in 1919 the N&W accepted 10 USRA heavy 4-8-2s built by Alco. The road assigned the class of K2 to these Alco 4-8-2s and numbered them 116-125. Later the N&W ordered 12 additional 4-8-2s from Baldwin based on the same USRA design as the Class K2. Erected in 1923, the 12 Baldwin 4-8-2s became N&W Class K2a

numbered 126-137. Both K2 classes were nearly the same, but with a few subtle differences such as placement of the double check valves and the bell on top of the boiler. On the K2, these valves were behind the sand box, while on the K2a the valves were in front. Both K2 classes rode on 69" drivers and developed 58,000 lbs of tractive effort from a boiler pressure of 200 psi. For all intents, the N&W considered the K2 and K2a as one class.

One of the distinctive characteristics of the N&W K2 classes was the location of the feedwater heater hanging from the left side of the boiler between the second and third drivers. When the engines were

streamlined in 1945 and 1946, a large shroud extended down from the side skirting to cover the feedwater heater.

As part of their streamlining, the K2 classes received larger tenders with a capacity of 30 tons of coal and 22,000 gallons of water. Although these tenders looked like the Class J's welded units, they were constructed with rivets. Additionally, new 1/2" thicker tires increased driver diameter on each J-Junior from the original 69" to 70".

The 1:48 scale 3rd Rail locomotive in this review models K2a number 126 after its second modernization in 1949. Road numbers 133 and 137 are also available. In the 1949 rework of the real J-Juniors, solid wheels replaced spoke wheels on the pilot trucks, and the tender trucks received roller bearings. However, each engine's trailing truck retained its spoke wheels. The bell was also relocated from on top of the boiler to the left side pilot beam behind the steps. The resultant hole in the top of the boiler shroud was left vacant.

My thanks to Jimmy Lisle of the Norfolk & Western Historical Society for



his help with prototype information about the N&W 4-8-2s and specifically the K2a J-Juniors.

Construction and Features

Sunset/3rd Rail is one of the few builders today that produces brass steam locomotives for the 3-rail O gauge hobbyist. Regardless of the type, each engine is a limited production model that is handcrafted from brass sheets, wire, or bar stock along with lost wax brass castings. Even the drivers are made from brass using a process not unlike the minting of coins.

Each axle for the drivers and tender trucks is sprung, although the springs are rather stiff. To accommodate the independent vertical movement of each of the sprung drivers, the side rods are prototypically articulated. Other operating mechanical features include the prototypical swing-out front coupler, mechanical oiler linkage on the right side valve gear, opening vents on the cab roof, and opening water tank hatch. Underneath this hatch are the control switches for command and sound electronics.

An LED headlight, green LED classification lights, and lit number boards adorn the front of the locomotive, while a light illuminates the inside of the cab. Inside the industrial green cab is a detailed boiler backhead with hand-painted valve handles and gauge faces. The valves, gauges, and firebox doors as well as the throttle and duplex stoker are all individual castings. On each side of the cab, a painted figure representing a crewman sits on its respective seat box. A directional backup light is on the back of the tender.

At the back of the cab, a hinged step plate fills the wide visible gap between the engine and tender. However, I found it rather curious that the only glazing in the cab was in the window behind each crewman. None of the other cab windows had clear plastic representing the window glass of the real K2a.

Inside the boiler are a skew-wound Pittman motor equipped with a large flywheel and a fan-driven smoke unit. The unique silent drive mechanism from 3rd Rail features a metal drive shaft that spins in ball bearings, metal gears encased in



a metal gearbox, and a toothed carbon-fiber drive belt that transfers mechanical power from the motor to the drive shaft.

The tender carries the TMCC and RailSounds 4.0 electronics, licensed from Lionel, and the Cruise Commander motor driver board from Electric Railroad. The Cruise Commander electronics use electromotive feedback from the motor for

speed control rather than an external optical sensor arrangement. Additionally, this board employs a high-frequency pulse width modulation of 20 MHz for quiet motor operation. Also inside the tender is a 9-volt battery for short-term backup power to the sound system.

A load of real coal fills the bunker in the tender...well actually the load is a thin layer of coal glued to a brass plate. Of course, the paint and lettering on the J-Junior are what I've come to expect from 3rd Rail—flawless.

Except for the extra length of the drawbar between the engine and tender, which is mandated by the model's ability to run on O54 tin-plate curves, the model's major dimensions measured quite close or at 1:48 scale of the real streamlined K2a.

At Trackside

Streamlined locomotives don't usually do much for me because the fascinating myriad of pipes, unions, and appliances associated with steam are not visible. But on the rails and at the head of a passenger or freight train, I found the 3rd Rail model of the K2a to be unusually handsome and also well suited to my rather small layout. Visually, the engine has a well-appreciated mass, but its modest length does not appear to overwhelm everything else on the tracks. A streamlined





passenger train of 15" aluminum cars looked just as good as one with 20" cars, as did a freight train of steam-era boxcars and reefers.

On the O72 loop of my editorial Carpet Central Railroad, the J-Junior was at home at any speed from a dead-slow crawl to an open throttle highball. It also negotiated the Atlas O72 crossovers between my O72 and O54 main lines without hesitation in both forward and reverse. Of course, since the engine is designed for O54 minimum curves, it also smoothly and dependably traveled my O54 main line.

Steam exhaust sounds are switch-selectable at two or four chuffs per driver revolution, while another switch selects smoke unit voltage for either command or conventional operation or turns the unit off. I opted for the realistic four chuffs, but with the smoke unit off.

Unfortunately, the Lionel RailSounds 4.0 generic heavy steam sound repertoire doesn't reproduce the hooter whistle of N&W fame, but the rest of the sounds are reasonable and are pleasantly loud, obviously to the annoyance of my next door neighbor's dogs. With the sound system and dogs muted, only the faint whir of the spinning motor and the rush of the wheels on the rails broke the silence of my train room. Now that's what I call a quiet runner!

The tender's coil-operated coupler opened on cue from my CAB-1 remote controller every time, and what pleased me the most was the light pressure necessary to close it.

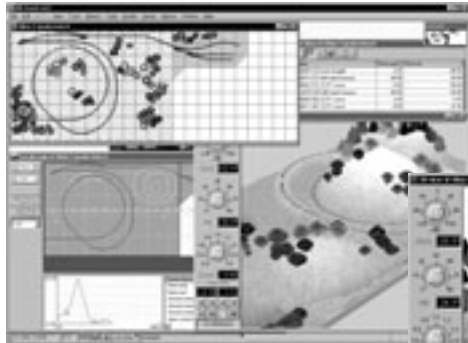


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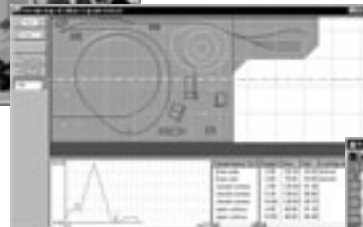
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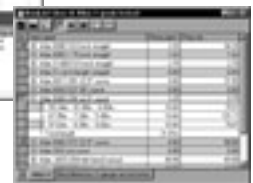
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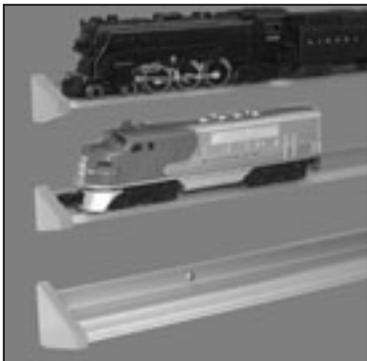
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Switching with the J-Junior was realistic and fun as it eased into the awaiting baggage car or express reefer.

I enjoyed all of the J-Junior's operating effects using either my original TMCC equipment or Lionel's Legacy control system. The Cruise Commander's default configuration for TMCC operation with a CAB-1 is 100 speed steps with speed control on. To run the locomotive using the Legacy system with the CAB-2 in TMCC mode, you have to configure the Cruise Commander for 32-step operation as described in the locomotive's operations pamphlet. Or alternately, you can enjoy 100 speed steps with the CAB-2 running in CAB-1 mode, which was my preference.

At the End of the Run

Brass locomotives still have an aura that makes them unique in today's world of die-cast steamers and plastic diesels. For the brass aficionado, the 3rd Rail model of the N&W streamlined K2a beckons a closer look. I enjoyed my time with it. 

3rd Rail N&W K2a Performance

(smoke unit: off; sound: on; speed control: on)

Length: 25-1/2" over coupler;
25" pilot to tender sill

Distance Between Pickup Rollers:

1st and 2nd: 4-5/8"

1st and 3rd: 13-1/8"

1st and 4th: 17-1/4"

Weight on Driving Wheels: 7 lbs, 2 oz

Tender Weight: 2 lbs, 8 oz

Tractive Effort @ 18 VAC: 2 lbs, 7 oz @ 2.5 A, 45 W

Minimum Sustained Speed @ 18 VAC:

2 scale mph @ 0.7 A, 12.6 W

Maximum Tested Speed @ 18 VAC:

60 scale mph @ 1.5 A, 27 W

Test Train

Eight O scale aluminum streamlined passenger cars; train weight 13 lbs; pull to move train 12 oz (amps for interior lights subtracted from all performance data)

Norfolk and Western K2a 4-8-2

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