

The Baldwin Locomotives of Portola...

...Why We Have Them

By Wayne Monger

The FRRS mission: The Feather River Rail Society is dedicated to preserving the history of the Western Pacific Railroad, the railroad history of Northern California and the history of the evolution of the diesel locomotive in North America over the past 50 years.

Here is why switcher DS-4-4-660 NVR 51, and AS-616s O&NW 3 and 4 fit within the museum mission statement:

1. Western Pacific relied heavily upon Baldwin produced steam locomotives and they purchased 5 Baldwin VO-1000 diesel switchers.
2. Previous owners are Southern Pacific and McCloud River Railroad.
3. Baldwin pioneered the design for all six-axle heavy diesel road switchers that have been built worldwide since 1947, including the modern Electro-Motive Division SD60s and General Electric Dash 8-40Cs.
4. Baldwin products diesellized many California and Oregon shortlines in the 1940's and 1950's, including McCloud River Railroad, Sierra Railroad, Amador Central Railroad, Trona Railway, Oregon & Northwestern Railroad and Weyerhaeuser's Klamath Falls operations.
5. SP diesellized many branchlines in California and Oregon with these and other six-axle Baldwin road switchers, including Stirling City branch, Colusa branch, Placerville branch, Westwood branch, Santa Cruz branch, Northwestern Pacific mainline, San Diego & Arizona Eastern mainline and lines of the Pacific Electric in southern California. These types also replaced steam locomotives in mainline helper service on the Shasta line out of Dunsmuir, the Siskiyou line out of Weed, Donner Pass line out of Roseville and Sparks and the Coast line out of San Luis Obispo.
6. Baldwin diesels were utilized in logging operations by various railroads in northern California and Oregon.

The Western Pacific took delivery of five Baldwin VO-1000 diesel switchers in late 1945, these being numbered WP 581-585. After a long and productive life on the WP as both yard switchers and branchline power, the last of these VO-1000 switchers was retired in 1974. Although the WP never returned to Baldwin for more diesels, the Southern Pacific and a few California shortlines helped make the transition from steam to diesel in the early 1950's with the help of BLW diesel switchers and road switchers.

The extensive collection at Portola includes a nearly complete sampling of the evolution of diesel locomotives in North America from the catalogs of the Electro-Motive Division of General Motors, American Locomotive Company (ALCO) and the General Electric Corp. To any student of modern railroading, what had not been represented at the Portola Railroad Museum was the significant contributions of the Baldwin Locomotive Works/Baldwin-Lima-Hamilton Company and the Fairbanks-Morse Corp. The FRRS has greatly changed this by acquiring three examples of diesel locomotives produced by BLW/BLH. These are switcher DS-4-4-660 NVR 51, AS-616s O&NW 3, and O&NW 4, which are now all at Portola and on display. A major plus is that even though all three of these locomotives are in excess of 35 years old, they are in good operating condition. In addition, the FRRS was able to obtain an extensive parts supply at a very reasonable price that will allow these locomotives to operate for many, many years to come.

Brief history of the development

With the conclusion of WWII and with the lifting of the government-imposed restrictions on what and how many each locomotive builder may build, BLW in 1946 redesigned and greatly expanded their line of diesel locomotives available for purchase. Not only would BLW offer switchers, but also heavy road switchers and streamlined freight and passenger diesel-electric locomotives, all based upon a heavily redesigned and upgraded 600-series prime mover derived from the VO power plant. The direct replacement for the low-end powered 660-horsepower VO-660 was the DS-4-4-660 (Diesel Switcher-4 Axles-4 Powered Axles-660 horsepower). This locomotive was not a very popular model with railroads, as only 139 of these were ever built, 99 of them for the Pennsylvania RR. Due to low sales, BLW changed this locomotive to the DS-4-4-750, an example of which is ex-BLW demo 750, which still exists in Klamath Falls, Ore. The VO-1000 was changed to the DS-4-4-1000.

All of this led up to the development of the final redesign of BLW locomotives in 1950, which is when Lima-Hamilton Corp. was merged into Baldwin. At this time, the in-line 8-cylinder super-charged 1500-horsepower 608SC became the 1600 horsepower 608A, the normally aspirated 606NA became the 800-horsepower 606 and the super-charged 606SC became the 1200-horsepower 606A. The 1600 horsepower 608A was the power plant in not only the "new" AS (All Service) line of B-B, A1A-A1A and C-C road switchers but also in the now famed "shark-nose" RF line of streamlined freight units. From 1950 to the end of locomotive production in 1956, the locomotives that they produced were referred to as Baldwin-Lima-Hamilton (B-L-H) products.

Baldwin Proves The Need For Six-Axle Road Switchers

With the opening of the market to all builders of diesel-electric freight locomotives following WWII, the redesigned line of Baldwin locomotives was meant to take on both EMD and ALCO/GE head to head. Thanks to the wartime restrictions, EMD had gained a vastly superior advantage in the production of road freight units that we know as F-units. BLW not only wanted to counter this with their own line of streamlined freight units initially with the "babyface" DR-4-4-1500 and later with the "shark-nose" RF-16, but also wanted to gain a foothold on the road switcher market. ALCO/GE had proven in 1941 with the RS-1 just how popular the road switcher concept would be. Baldwin expanded upon this concept in 1946 with the introduction of the DRS-series of locomotives. These locomotives, available in both 1000-horsepower and 1500-horsepower thanks to the super-charged 6-cylinder or 8-cylinder 600-series prime movers, could also be supplied with B-B trucks, A1A-A1A trucks or C-C trucks.

The AS-616 model (All Service-6 Powered Axles-1600 horsepower) is the result of the redesign and upgrading of Baldwin Locomotives in 1950, which in itself was the result of a closer relationship with BLW's electrical parts supplier, Westinghouse Corp. The six-axle DRS-6-6-1500 had pleased the Southern Pacific in California and Oregon freight service

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so much that the SP returned with three more orders for the upgraded AS-616 between 1950 and 1952. In all, the SP (and subsidiary T&NO) rostered 93 Baldwin six powered axle road switchers, including 5 cabless AS-616Bs and the only DRS-6-6-1500B ever built.

Between 1946 and 1955, Baldwin proved to the railroad world the practicality of a heavy road switcher with six powered axles and more than 1500 horsepower.

Every single six-axle locomotive built since, including the most modern SD60Ms and Dash 8-40CWs on the Union Pacific, is descended from this BLW line.

ALCO/GE did not produce a heavy road switcher with six powered axles and in excess of 1500 horsepower until the RSD4 of 1951. EMD was even later to enter what would turn out to be the most important configuration of diesel-electric locomotives ever, as their SD7 did not appear until 1952.

Initially with the DRS-6-6-1500 and later with the AS-616 model, many railroads dieselized their last strongholds of steam with these Baldwin products. In California, the Western Pacific looked, but was not interested. On the other hand, the SP, long a big Baldwin customer, accepted the heavy road switcher concept openly. In California and Oregon, A-B-A sets of DRS-6-6-1500s and AS-616s removed steam locomotives from helper service in the Cascades and the Siskiyou, and from numerous branchlines, and from heavy yard switching duties, and from mainline freights where the heavy Baldwins gained a reputation of being slow but being able to haul nearly everything out of a yard at once. The McCloud River Railroad also dieselized in the late 1940's and early 1950's with Baldwin road switchers and switchers. The end for extensive use of Baldwin road switchers on the SP came in 1970.

In 1968, while the SP's program of removing Baldwin diesel locomotives from the roster was in full swing, the O&NW purchased from them AS-616, SP 5274, which be-

came O&NW 3. This particular unit was one of four in the last order of AS-616s that was built with an additional faring on the ends of the hoods for the placement of those giant SP "ash-can" gyralights, leaving the factory in Eddystone, PA in May 1952 for the SP. This unit, along with 3 others, was designated for initial use on the Pacific Electric in Southern California and was equipped with trolley poles to activate the crossing signals on the PE. One source has the 5274 (O&NW 3) being lettered for the PE for a very brief time. Some reports have O&NW 3 being rebuilt in the Morrison-Knudsen shops in Boise during the mid-1970s following an electrical fire. A close inspection of O&NW 3 bears this out, as most of the electrical system and traction motors are in almost new condition. Both O&NW 3 and O&NW 4 are designed to operate long-hood forward.

AS-616 O&NW 4, is a unit that has worked for three railroads since being built in March, 1952 as a member of the second SP order for AS-616s. This unit was SP 5253 until July 1963, when it was sold to the McCloud River Railroad at McCloud, Calif. The McCloud had dieselized with Baldwin products starting in 1948 with a DRS-6-6-1500. At McCloud, this unit was renumbered to McCloud 34 and became the only AS-616 on an eight unit roster that included S-8s, S-12s, RS-12s, and DRS-6-6-1500s. Like most of the McCloud Baldwins, the 34 was sold off in 1969 when the McCloud converted from Baldwin motive power to EMD motive power in the form of the current SD-38s that run this line.

The 34 became O&NW 4 upon arrival at Hines, OR., and as the FRRS members that went to Hines in October 1990 found out, the O&NW purchased the entire contents of the locomotive parts warehouse at O&NW and moved it to Hines. Many of the parts that the FRRS purchased are still in their original B-L-H or Westinghouse packages addressed to the McCloud River Railroad.

Both of the AS-616 locomotives at Portola (O&NW 3, O&NW 4) are in complete, very good condition, except for the very thick coating of dust from their 6 year storage. The FRRS Board of Directors decided to acquire two units instead of one due to the lack of available Baldwin parts, many of which had not been produced since the early 1950's. We expect to have them operating before the end of the year.

Specifications of O&NW #3 and #4

Weight: 326,000 pounds
Weight per axle: 54,300 pounds
Length: 58 feet, 0 inches
Height above rail: 14 feet, 1 inch
Trucks: General Steel Casting
Commonwealth C-type
Bearings: Friction
Minimum curvature: 23 degrees
Number of powered axles: 6
Horsepower: 1600
Power plant: Baldwin 608A (in-line 8 cylinder) with H-704 turbocharger
Bore and Stroke: 12.75 in. X 15.50 in.
Displacement per cyl: 1,979 cu. in.
Traction Motors: Six Westinghouse Type-370
Main Generator: Westinghouse Type 471-B
Electrical System: Westinghouse
Total Number of AS-616s Built: 222

Oregon & Northwestern Railroad #3

Built: May 1952 by Baldwin-Lima-Hamilton Eddystone, Pa.

Built For: Southern Pacific Transportation Co.

Original Number: SP 5274 (briefly lettered for subsidiary Pacific Electric Ry. according to some sources).

Brief History: It is part of the final SP order of six B-L-H road switchers numbered 5273-5278 for heavy branchline use. #5273-5276 were equipped with large "ash-can" signal lights for crossing protection on the PE lines in southern California as initially used, but later all were used extensively on SP branchlines in California and Oregon. SP 5274 was retired by the SP in 1967 and sold to the Oregon & Northwestern RR in 1968, where it became O&NW #3. Electrical systems were rebuilt by Morrison-Knudsen at Boise, Idaho in 1976 (?) following an electrical fire.

Oregon & Northwestern Railroad #4

Built: March 1952 by Baldwin-Lima-Hamilton Eddystone, Pa.

Built For: Southern Pacific Transportation Co.

Original Number: SP 5253

Brief History: It was the first member of the second order by the SP for B-L-H AS-616 heavy road switchers numbers SP 5253 to 5271. It was used during the 1950's mostly on SP branchlines in California and Oregon. It was retired and sold to the McCloud River Railroad, in July 1963, becoming McCloud River #34. McCloud retired all Baldwin locomotives in 1968 upon delivery of new SD38s from EMD. The unit and a warehouse of locomotive parts were sold to Oregon & Northwestern RR in 1969, where it became O&NW #4.

Both of these units were placed into storage at Hines, Oregon in operational condition in March 1984 following shut-down of O&NW operations due to the flooding of connecting UP's Oregon Eastern branch.



Top left, This 40 year old rubber tired boom truck crane has a capacity of 10,000 lbs. and has hydraulic controls. Ken Roller is shown in the background working on a switch. Top right, Memorial Day saw train crew members Gordon Wollesen, Steve Habeck, Mardi Langdon, Julie Anderson, Jim Gidley, Sr, and Tom Clabaugh on the passenger train. Center left, O&NW #3 is being lowered from DODX flat car. Center right, Baldwin switcher DS-4-4-660 NVR 51 pulled a couple of passenger train runs on Memorial Day 1992. Lower left, portrait of Baldwin AS-616 O&NW #3. Lower right, portrait of Baldwin AS-616 O&NW #4. All photos by Ed Warren.

Baldwin AS-616

