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# Union Pacific Veranda Turbine



RAY LOWRY PHOTOGRAPH, BOB GRAHAM COLLECTION

After World War II, GE began work on a locomotive using a gas turbine powerplant specifically designed for locomotive usage. The gas turbine had an advantage in that it could burn Bunker "C" fuel oil. Bunker "C" is a thick, low-grade oil that is a left-over when crude oil was refined into higher quality products like gasoline and diesel fuel. Being a residual of the refining process, it was both very cheap and widely available. GE's locomotive gas turbine was about 20 feet long and created 4,500 horsepower, three times as much as a contemporary diesel.

GE's test-bed and demonstrator gas turbine locomotive was completed in November 1948. Numbered as UP 50, it spent twenty-one months testing on the UP, covering 105,732 miles of operation and moving 349 million gross ton-miles of freight. UP's first gas turbine, numbered 51 and part of a ten locomotive order, was received at the Omaha shops on January 28, 1952. It had a full car body and a single cab. On the demonstrator and the first six gas turbine locomotives, the air intake was through banks of screened openings in the car body sides. The last four locomotives of the order were delivered with roof-mounted air intakes.

On December 11, 1952, with only the first six locomotives having been delivered, UP placed an order for 15 additional 4,500 horsepower gas turbine locomotives. Numbered 61 though 75, the second order eliminated the side air intakes. In their place was a covered walkway along both sides of the locomotive, giving them the nickname of "Verandas".

Like the standard turbines, each Veranda turbine carried 7,200 gallons of fuel oil and 1,000 gallons of diesel fuel. In addition to the gas turbine, there was also a 250 horsepower diesel engine. The diesel was used to move the locomotive around yards, power the auxiliaries, and crank the turbine. Each locomotive weighed 551,720 pounds and was just over 83 feet long and stood 15 feet six inches tall. They rode on two sets of span-bolster AAR Type B trucks with a wheel arrangement of B+B-B+B. The gear ratio of 74-18 gave a maximum speed of 65 miles per hour and a starting tractive effort of 137,930 pounds. Like contemporary diesels, the gas turbines were equipped with dynamic brakes.

In October 1955, number 61 was the first 4,500 horsepower turbine to receive a 22,000 gallon fuel tender. The original assignment for the Veranda gas turbines was Ogden, Utah to Cheyenne, Wyoming. With the addition of the tenders, they could run between Ogden and Council Bluffs, Iowa, without refueling. That remained their normal operating range for the rest of their careers. The first five Veranda turbines were retired on August 31, 1963. Five more were retired by year's end and the remaining five were retired by June 30, 1964.

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