

The Potlatch Unit old Corliss steam engine was manufactured by The Minneapolis Steel and Machinery Co. of Minneapolis, Minnesota. Today the company is known as the Minneapolis-Moline Power Implement Co. It was ordered in 1905, installed in 1906, and put in operation when the mill started that year in September.

It served as a power source to operate the entire 4-band and 1 gang mill from the pond, bull chain, to and including the green chain. Mechanical breakdowns were few and it served for many years, sometimes on a <sup>10 hour - 6 days a week,</sup> two shift basis, as a steady and dependable source of power.

In 1924 a mixed pressure 2000 K.W. turbine was installed and the engine's exhaust steam at 5 lbs. pressure was further used in the turbine to generate electric power. Eventually, however, the cost of maintenance in the sawmill on all the thousands of feet of leather belting, the hundreds of bearings on the line shafting, together with numerous clutches, gears and couplings, indicated that individual electric drives would be far more economical.

In 1950 our unit Manager at that time, Mr. J. J. O'Connell, started a program of conversion and it was completed in 1952. The last day of operation for the engine was July 23, 1952. Mr. Art Fleiger, ~~who is now employed at the Rutledge unit,~~ was engineer at the time. During the 50th year celebration it was operated at slow speed during "open house" day.

By the steam engine "lingo", it is known as a simple 38x60, right hand, double eccentric, releasing, non-condensing, four valve Corliss steam engine. The manufacturer called it "The Twin City Engine". This original name is still on it today.

The main belt used to transmit power to the mill was 135 feet long, 66" wide, and three ply, or approximately 9/16" thick. As far as we know, there were only two belts purchased during the lifetime of the engine's operation. The last one was in April 1938 and manufactured by Graton and Knight for \$4345.00. It was of oak tanned leather and using many No. 1 steer hides. Weight was approximately 2400 lbs. and at normal engine speed was operating right at 5000 ft. per minute. The new belt in 1938 had to be taken up 26" after a 12-hour run. Thirty days later, 28" were taken out; then it ran for 8 years before excessive slack accumulated again.



The total engine weight is quoted as 190,000 lbs., or 95 tons. The fly wheel is 24 feet in diameter, with a 68-1/4" face, this alone weighing approximately 75,000 lbs. It cost approximately \$20,000.00, plus \$3,500.00 for freight and installation. The main shaft was 20" in diameter turned down to 18" through the two bearings. The main bearing was in four parts with the two side quarters provided with wedges for tightening. Overall engine dimensions were approximately 40 ft. long and 20 ft. wide. Fly wheel speed was governed at 66 r.p.m., driving a <sup>8</sup>15/16" shaft in the mill at 225 r.p.m.

Operating steam pressure was 125 lbs.; rated horsepower was 1200, with a maximum of 1800. Mill h.p. requirements operating varied somewhat between winter and summer, but would average around 1500 h.p. With no load and mill idling, h.p. load was around 700.

The engine frame contained a few cracks, which together with the entire unit, were watched very closely. Monthly checks were kept at 15 different locations on the base to record frame distortion, and measurements were also frequently taken between frame members and around the cracks to check for excessive deflection. The main parts of the engine were dismantled yearly and the cylinder opened so the piston could be checked. Cylinder wear through the years was practically nil, being approximately .015" at the last check. This was due to good lubrication and the piston arrangement of having two soft "junk rings" containing "allen metal", which absorbed most of the wear. This special soft metal had to be replaced occasionally.

It was always quite a thrill for any of the power house crew to work up to Corliss Engineer, even for a temporary period. However, one was never in the engineer's "class" until he could stop the engine without spotting it on center. Even the old timers would really get raged and shook up if they ever let this happen. One engineer, we recall, would always excuse it with "Well, they threw a load on her in the mill just as I was ready to spot her." On the tragic side, Engineer Jess Burden was killed September 10, 1941 when closing down, when the throttle valve stem bushing gave way and the wheel struck him in the head.

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Through the years, many visitors, including youngsters, have been thrilled by watching the old engine operate. Its usefulness, of course, has passed, but those who have seen "her" operate, will never forget the smooth old work horse.

Lee Gale,

P. P. Foreman

Potlatch, Idaho

March 26, 1959