

Brief History Of The Deer Lake Power Company

Deer Lake Power Company at Deer Lake has been supplying hydro-electric power to domestic and industrial centers of northwestern Newfoundland since the start up of the Deer Lake Plant on April 11, 1925.

At the outset, the Deer Lake generating station provided power for the pulp and paper mill, Community of Corner Brook, as well as the new Town of Deer Lake which became a major pulpwood producing center.

The company's power distribution system was expanded over the years to include communities near Corner Brook, the region of the Humber River Valley, Howley, Buchans, the Baie Verte Peninsula, Springdale, and Little Bay. However, increased power and energy usage at the mill made it necessary to divest the assets associated with serving these areas and those assets were eventually sold to Newfoundland Light and Power Company and / or Newfoundland and Labrador Hydro. By 1977, the company was producing power and energy for use only in the mill at Corner Brook with any surplus secondary energy being sold to Newfoundland and Labrador Hydro.

The history of Deer Lake Power Company dates back to 1915 when an extensive survey of the Humber River hydroelectric and timber resources was begun. The original company, Newfoundland Power and Paper Company was granted, along with lands, the water power rights on the Humber River watershed by the Newfoundland Government in return for investment in the industrial development of Newfoundland and Labrador.

The First World War interrupted the project. It was not until late 1922 that development of a pulp and paper mill at Corner Brook and, concurrently, a hydroelectric generating station at Deer Lake was started.

The original plan was to locate both the paper mill and power plant at Deer Lake. This was changed at the eleventh hour to have the mill in Corner Brook at tidewater. This decision was based on engineering progress in the early 1920's making feasible transmission of power over the 50km separating the two sites.

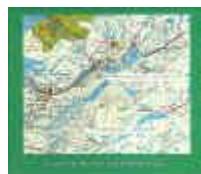
Coinciding with the construction of the generating station was the building of a diversion dam at the outlet of Grand Lake which flowed into Junction Brook and the Humber River. Called Main Dam, it is an Ambursen-type structure, 244 meters long containing 27,000 cubic meters of concrete.

The Dam controls the water elevation of Grand Lake, the main reservoir, and its adjacent feeder lakes, Sandy and Birchy. The Grand Lake watershed covers an area of 5,030 square kilometres while the reservoir covers 497 square kilometres. At full storage, Grand Lake is 130 kilometres long and 6 kilometres at its widest point. Depths are to 300 metres and its shoreline ranges from sandy beaches to vertical cliffs towering 550 metres above normal lake level.

In 1980, Newfoundland & Labrador Hydro completed its 100,000 HP Hinds Lake plant which obtains its water supply from a 650 square kilometre sub-watershed within the Grand Lake watershed. The relative locations of the Hinds Lake and Deer Lake generating plants permits utilization of run-off from this sub-watershed twice - once by Newfoundland & Labrador Hydro and again by Deer Lake Power Company.

The Grand Lake reservoir is connected to the Deer Lake Generating Station by a 11- kilometre canal. Man, horse, and steam power were the means of excavating and removing approximately four million cubic meters of earth to build the canal. The material forms the canal banks.

Grand Lake Reservoir and Watershed Areas



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Six huge steam-powered draglines were used on the canal project. The largest had been used earlier on the construction of the Panama Canal. It was subsequently taken to Ontario to the Welland Canal.

The Deer Lake Generating Plant, completed and producing power in 1925, was further enlarged in 1929. It now houses nine generating stations - five 60 HZ units at 11.2 MW, two 60 HZ units at 11.6 and two 50 HZ units at 23.5 MW for a total installed capacity of 126.2 MW.

Nine 1,192 metre penstocks connect the canal forebay to the power station.

In 1958, the power company's system capacity was increased again by the addition of a remote-controlled hydro station at Watson's Brook in Corner Brook. This has two generators, each with a capacity of 5,100 KVA (6,000 HP) thus increasing the company's overall production by 7%.

Interconnection with Newfoundland & Labrador Hydro's system in May, 1967 ended 42 years of strictly 50 cycle power on the west coast of Newfoundland. The plant generates at both 50 and 60 cycles with the two systems interconnected through a frequency converter located at Corner Brook. The 50 cycle power is almost entirely used in the mill with the ratio of 50 to 60 cycle power usage decreasing as most new equipment at the mill is installed on the 60 cycle system.

Deer Lake Power's two hydro plants supply approximately 90 percent of the Mill's energy requirements. The remaining 10 percent is purchased from Newfoundland and Labrador Hydro.

Deer Lake Power Company was originally operated as a department of the paper mill under a succession of owners. The original owners, Newfoundland Power and Paper Company, were taken over by the International Power and Paper Company of Newfoundland Limited (IP & P) in 1925, just after construction was completed. International Power and Paper Company of Newfoundland Limited operated the company until 1938 when the assets were acquired by Bowater Newfoundland Pulp and Paper Mills Limited. On April 5, 1955, the power company was incorporated as a sister company of the paper mill under the Companies Act of Newfoundland, becoming an investor-owned regulated utility operating under the name - the Bowater Power Company Limited. In 1972, the company became a subsidiary of Bowater Newfoundland Limited and operated as such until December 1984 when the Bowater assets in Newfoundland were acquired by Kruger Inc. The company was renamed Deer Lake Power Company and operated as a subsidiary of the mill in Corner Brook.

Although, the original plant was built in the early twenties and still outwardly appears much as it did then, it has been continuously updated. Over the past years, much original equipment has been modernized in the main plant. A modern supervisory control and data acquisition (SCADA) system permits control of the remote substations. Reliability and continuity of service is comparable to any other power system.

From an environmental point of view, the Grand Lake watershed has become one of Canada's finest wildlife, bird, and fish regions. Big game, such as moose, caribou, and black bear, as well as smaller game species, thrive in an area removed from towns, cities, and highways.

Since 1925, Deer Lake Power Company's contribution to the province is not properly measured in dollars and cents, but rather in terms of the economic development and social benefits its electrical power service has made possible to areas once considered remote.

Cross Section Through Main Dam, Intake, Forebay and Power House



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Deer Lake Generating Station

Gross Head ----- 80 m

Generating Units:

5 Units at 11.2 MW
2 Units at 11.6 MW
2 Units at 23.5 MW

Rated Voltage (all units) 6 KV

Turbines:

Rated Net Head ----- 74m

Rated Output

Units 1,2,3,4, & 6--16,000 HP
Units 5 & 7 ----- 16,200 HP
Units 8 & 9 ----- 32,000 HP

Rated Speed

Units 1 to 7 ----- 360 RPM
Units 8 & 9 ----- 214 RPM

Penstocks:

Woodstave / Steel ----- 6
Steel (No. 7) ----- 3

Length:

Woodstave / Steel

Woodstave section ---772 m
Steel section ----- 470 m

All Steel ----- 1192 m

Diameters

Nos. 1 to 7 ----- 2.9 m
Nos. 8 & 9 ----- 3.6 m

Power House:

Length -----146 m
Width ----- 19 m
Height ----- 21 m

Hydrological Data:

Annual precipitation -997 mm
Annual Run-off --- 4639 MCM
Watershed Area --- 5030 KM²
Reservoir Area ----- 497 KM²