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THE COBALT LODGE

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PUMPING MINE WATER IN THE COBALT MINES

Water was not a serious drawback in the mines at Cobalt. The host rocks are compact and water seepage only took place along lines of faulting or fracturing and even along such water courses the volumes of water encountered were seldom large. Development headings and cross cuts were always driven slightly upgrade to allow the water to flow to the closest shaft or sump adjacent to the shaft.

One of the problems, however, in Cobalt was that in order to secure quick returns in the early days of the mines, the surface ore was often removed, which under better mining practice would have been left as a crown pillar or a roof which would have kept surface water out of the mines. Numerous examples of these open mined veins can be seen at all the mines in the area surrounded by fences or sudden cave-ins such as the recent one adjacent to the S.M.C. property or the new one at the Townsite Shaft site.

Through the large open cuts that were thus created, surface water found its way into the mine workings and accounted for a considerable portion of the water that had to be pumped. Rainstorms and winter snow melt were the biggest contributors to this. It must also be remembered that a lot of overburden and trees were also gone from the area which meant that run off was rapid as there was little or no storage capacity on surface.

Pumps, therefore, had to be sized to allow for the surges in water volume to be handled. The largest pump for water known to have been in use was at the Nipissing Mine Property and had a capacity of 400 gallons per minute. The area of workings was large, and Nip Hill was bare rock due to prospecting, but the pump only had to be operated a few hours a day except for spring run-off.

The larger pumps employed in the mines were all electrically driven with two types being used (1) the plunger type, triplex, either belt driven or direct connected or (2) centrifugal, direct connected. Both these pump types were capable of pumping water directly to surface up the vertical shafts. The majority of shafts were less than 500 feet deep. Shaft sinking water was

dealt with by using small auxiliary pumps driven by compressed air. These pumps were also used when sinking winzes or small internal shafts in the mine workings.

A look at a map of Cobalt will reveal that much of the surface is lake covered. These lakes are frequently formed in depressions along fault or other lines of weakness and as veins also follow lines of weakness it was not surprising that valuable ground was found under the lake beds. This was particularly true of Cobalt Lake and Kerr Lake. In order to mine this ore without fear of flooding the mines below, it was necessary to pump the lakes empty. The case of Kerr Lake is particularly noteworthy.

The Lake covered an area of 30.35 acres and was estimated to contain 400 million gallons of water and liquid mud. Its greatest depth was 100 feet. The plan was made to pump this water to Giroux Lake, which was half a mile away. The static head to lift the water was 153 feet at the close of the operation. Giroux Lake is 53 feet above the level of Kerr Lake. The pumping plant was duly designed and placed on a scow. It consisted of four single stage centrifugal pumps arranged as two units. Each unit consisted of two pumps directly connected to the motor between them and was designed to deliver no less than 3,000 gallons of water per minute at heads of 153 feet. At the start of the operation the four pumps worked in parallel, but later when the head and the density of the material increased due to mud, a change was made to the series operation. The motors to drive the pumps were 250 H.P. each. Whatever happened to any fish that were in the lake has never been mentioned in literature and there were very few rules and regulations. The pumping took place over a period of three months and a volume of 325,000,000 gallons of water and mud were pumped in 38 actual working days. The average pumped was 6,000 gallons per minute.

One case did occur when a mine was flooded by a lake and this was The Cross Lake Mine in 1920 when the lake level rose due to Mill Creek being blocked by tailings causing the water to rise. It took four weeks to pump the mine out once the creek had been cleared.

By 1910, electric power was readily available to all the Cobalt mines to support compressors and motors for mechanical power. Prior to this when the mines were being developed from 1904, coal was the main power source, being burnt in boilers to supply steam for generators for electrical power to drive compressors and mill equipment. Cobalt mine owners were quick to seize on innovations that would help in keeping mining costs down. The advent of The Ragged Chutes air plant was one of them as well as the Hound Chutes and Matabitchuan power plants on line by 1910.

There were 105,416 tons of coal delivered to Cobalt in 1909. By 1911 this quantity was practically zero!

Background information courtesy of A.A. Cole Mining Engineer. Report on Cobalt Mining, 1926.

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