

Efficient recovery by gravity concentration required careful screening and sizing of the ore before feeding to the individual concentrating units and a complicated system of screens, hydraulic classifiers and hydraulic sizers were in operation.

Another principle of gravity concentration is that the heavy minerals should be recovered as soon as they are released by crushing or grinding from the attached rock, otherwise the minerals would be reduced to slime and not recovered.

The feed to the jigging units were of six different size ranges, the overall range being  $\frac{3}{8}$  inch to about 100 mesh. The jigs were in close circuit with screens, a rod mill, a ball mill, classifiers, dewatering equipment and hydraulic sizers in order to recover mineral before it was slimed.

The fine sands and slime resulting from grinding were dewatered by hydro classifiers and a thickener and pumped to the leach plant for further recovery of uranium. Somewhat less than half of the uranium values in the ore were recovered by jigging. The concentrate was dried, drummed and shipped to Port Hope.

#### *Reclamation of Old Tailings*

The gravity concentration mill which was operated in earlier years employed hydraulic concentrating tables for recovery of uranium from fine sand or slime, as well as the jigging section which was kept in operation. While a greater percentage of uranium in the ore was recovered in the more elaborate mill, the tailings still contained up to one-third of the original uranium present. The tailings resulting from fifteen years' operations were available in 1952 as a valuable ore reserve, as a result of the development of the acid leach process.

The tailings were laundered to the lake and deposited in the bay and in the sound between the mainland and Cobalt island. The greatest depth of the deposit was 80 feet under water level. In later years tailings were also pumped to two small lakes near the campsite.

The tailings were recovered by a dredging operation employing a floating dredge with a 114-foot ladder capable of recovering sand from 80 feet to 90 feet in depth. Suction was provided by two SRL-C pumps operating in tandem. A system of water jets was attached to the suction hose to break up compacted sand.

This dredge was in continuous operation from 1952 to late 1960. During the winter months a system of water jets and air jets was kept in operation in order to maintain sufficient open water for operation.

The dredge sands were pumped to a dewatering and regrinding section in the mill, then to the leach plant.

#### *Leaching Plant*

The ore, ground to suitable size, was leached with weak sulphuric acid solutions under carefully controlled physical and chemical conditions. The leached slurry was filtered and the uranium was recovered from the solution by solvent extraction.

The combined tailings from the current mill and from the dredge were pumped to the leaching plant. This feed slurry, consisting of one part of tailings to four parts of water, was separated by hydraulic classification in a hydroseparator. The slime portion overflowed to a settling thickener while the coarser sand was reground in a ball mill-classifier system before entering the same thickener.