LONG LAKE ZINC MINE

by

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Selected References


This deposit is located on lot 3, concession V and lot 3*, concession VI, Olden township, Frontenac county. It is sometimes referred to as the "Richardson Zinc Mine" or "Olden Zinc Mine". The mine is situated a third of a mile west of Long Lake post office. Map No. 1947 - 5 of the Ontario Department of Mines shows the roads leading to the property and the general geology of the area. A surface plan of the zinc showings is contained in Alcock's report.

HISTORY AND DEVELOPMENT

Alcock\(^1\) and Harding\(^2\) give a detailed account of the

2. W.D. Harding, op. cit.

early history and development of the mine. The deposit has been explored from 5 shafts, ranging from 60 to 125 feet in depth, and about 350 feet of drifting is said to have been completed. There are also three open cuts and many test-pits.

The records of the Statistics Branch, Ontario Department of Mines, show that shipments of zinc ore were made from the mine in 1902 - 1904, 1906 and 1907. These totalled 3,442 tons, valued at $41,550.

In 1947 the mine was leased from the owners, Jas. Richardson and Sons of Winnipeg, by Rochette Gold Mines, Limited. This company was reorganized as Consolidated Rochette Mines Limited in 1950. Work on the property was done intermittently from 1949 until late in 1950. In 1949 a flotation unit, capable of treating about 35 tons of ore per day, was installed. An unsuccessful attempt was made to concentrate the oxidized ore lying on the old dumps. Later in 1949 and in 1950 the company dewatered the No.2 shaft to the 100-foot level and drifting was done on small lenses of mineralization. From the rather incomplete mine plans it would appear that about
300 feet of drifting was completed. A small stope was opened above the west drift and some concentrates were made from the ore mined from this location. According to a report by W. T. May, consulting engineer for the company, in April 1950, a total of 240 tons of zinc concentrates and 15 tons of lead concentrates, carrying 230,323 pounds of zinc and 18,120 pounds of lead, were produced. However, no shipments of concentrates were reported to the Ontario Department of Mines so apparently these were not sold.

In 1950 a program of surface diamond drilling was carried out. Twenty-five holes were put down to test the area west of No.1 shaft. The location of the drill holes in the No.1 and No.2 shaft areas is shown in Figure.

SOURCES OF INFORMATION

The writer visited the property on several occasions from 1949 to 1951, and was able to examine the new development work on the 100-foot level in September 1949 and May 1950. A plan showing the surface drill holes and drifting on the 100-foot level was obtained from Consolidated Rochette Mines Limited in 1951, but no logs of the drilling were available. Some of the drill core was seen by the writer in May 1951 but the core boxes were piled in such a way that no systematic examination could be made. The results of the surface drilling and underground development were not made available to the writer, but presumably they were disappointing because the lease was later terminated.
GEOLoGY

The mine lies in a band of crystalline limestone of the Grenville series. The band is 150 to 400 feet in width and is traced for about 400 feet along the strike. The limestone is flanked by gabbro and granite. The drill cores show several different phases of the gabbro. This rock is cut by red granite and felsite dikes. The granite and felsite cut the limestone and also the lenses of sulphides, so are post-ore in age.

MINERALIZATION

The sulphides occur in lenses or narrow tabular veinlike replacements that parallel the banding of the crystalline limestone. The chief gangue mineral is calcite, sometimes very coarsely crystalline; there are also considerable amounts of green diopside. The ore may occur as massive sulphides, as a banded partial replacement in the limestone, or as disseminated grains in the host rock. The sulphide bodies are distributed erratically along the limestone band. There is no indication that they are related to any particular structure or zone of alteration although at places the close association of coarsely crystalline limestone and diopside with sulphides suggests that these minerals might be the result of hydrothermal alteration associated with the mineralization.

The ore consists of sphalerite accompanied by varying amounts of pyrite and marcasite with a little galena and
chalcopyrite. Small amounts of silver are associated with the sphalerite and galena. In the drill cores it may be seen that the pyrite is shattered and re-cemented by later sphalerite.

A 100-pound sample of the ore, collected from the various dumpa, was tested at the Mines Branch, Ottawa, in 1949\(^1\). This ore assayed as follows: Silver, 1.65 oz. per ton; lead, 2.31 per cent; zinc, 30.55 per cent; arsenic, 0.01 per cent; iron, 7.62 per cent; insoluble 30.53 per cent.

The mineralized zones vary considerably in size and shape. Alcock\(^2\) states that they range from 5 to 100 feet in length and from a few inches to 14 feet in width. The sulphide body seen by the writer in 1949 on the 100-foot

\(^{1}\) Investigation No. 2505, Mineral Dressing and Metallurgical Laboratories, Bureau of Mines, Ottawa, January 6, 1949.

\(^{2}\) F.J. Alcock, op. cit. p. 148
level west of No. 2 shaft was exposed for a length of 140 feet and varied from 6 inches to 3 feet in width. In May 1950, the first 100 feet of drifting east of the shaft showed only isolated patches of sulphides, one to 4 feet in maximum dimension, and assaying 5 to 18 per cent zinc with low values in lead and silver.

The Long Lake zinc mine is of some interest geologically in that it is a replacement type of deposit. However the lenses of mineralization found to date are much too small to be mined profitably.