

The White Knob Story

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Geology

The White Knob limestone, a blue-gray limestone, with some sand and clay, may be as much as 10,000 feet thick. This sedimentary formation was deposited over a long period of time, about 300 million years ago, in an ancient sea. Long after the formation was pushed out of the sea it was intruded by granitic magma. This occurred about 80 million years ago. The contact between the granite and the limestone resulted in a metamorphic process changing the original granite and limestone into a zone of granitic porphyry and garnet rock. Mineralized solutions, chiefly valuable for copper, along with significant gold and silver values were injected into the contact zone. The garnet rock contained the richest ore.

The ore deposits consisted of a series of pipe-shaped shoots of copper carbonate and oxide minerals. Another phase of mineralization occurred at the foot-wall border next to immense deposits of iron oxides up to 100 feet thick carrying low values in copper, gold, and silver.

The mineralized area extends from Alder Creek to Copper Basin.

History

The mining boom began in 1884. A twenty ton copper smelter was constructed at Cliff City. After operating for one week the operation was shut down. The smelting resumed during the summer of 1885 but was idle by the beginning of 1886 due to technological

problems. A concentrator was added in 1887 but production was suspended until 1888. During 1888 attention was diverted to Copper Basin. In 1890 New York investors spent \$100,000 but to no advantage. Several unsuccessful attempts were made to revive copper mining in the area during the next ten years.

John Mackay, using profits from Virginia City's Comstock property, acquired the White Knob Copper Company in 1900. He arranged with Union Pacific to construct a railroad from Blackfoot. The railroad was completed in 1901 and the town of Mackay established at the railhead.

During 1902 and 1903 one of the finest smelters in the West was constructed at Mackay. It contained two blast furnaces capable of processing 700 tons of ore per day. A twelve mile electric railway was constructed to transport ore from the mine to the smelter and loading facilities at the mine were constructed. The new town of Mackay had approximately 1,000 inhabitants.

During 1904 the White Knob Copper Company produced a metal value of \$349,757 which was double the 1903 production. Manpower employment ranged from 300 to 400 men. However, expenses far exceeded the return so the enterprise failed and it passed into receivership. The problem resulted from expensive smelting plant and surface features constructed before the metallurgical features and ore treatment was sufficiently worked out. The carbonate and oxide ores lacked sufficient sulphur for a successful matting method of treatment. A matting process was adopted utilizing sulphide ore

shipped in from Butte, Montana. The operation was very expensive resulting in significant financial loss, so the operation ceased. 1905 was one of the most interesting years. Frank Leland was sent up from California with instructions to junk the plant (smelter) and wind up the affairs of the company.

Leland reviewed the situation and went to work to mine the better ore that could be successfully smelted. The prospects looked brighter. The first profits (\$60,000) were attained after a prior expenditure of approximately 3 million dollars.

The electric train was replaced by a shay locomotive which reduced hauling costs 80%.

Ore was supplied by leasers who worked the various parts of the lode with the higher quality. Approximately 100 men were employed.

1906 saw continued success. The MacBeth lease, managed by Leland was very successful. Ore was transported down to the Albert tunnel by tram and then shipped by the Shay locomotive to the smelter.

The Matting plant (smelter) required iron sulfides which were shipped from Bingham, Utah, to supply enough sulfer to make the process work. One furnace was operated treating 200 tons per day.

In 1907 the Empire Copper Company assumed the MacBeth lease and Frank Leland was retained as manager. About 275 men were

employed. The smelter operated two furnaces and processed about 300 tons per day, but was closed in August as a result of complaints from ranchers against the smoke and fishermen objecting to slag dumped into the river. Subsequently, the oxidized ore was shipped to Salt Lake City smelters for processing.

Production during the years 1908, 1909 and 1910 was minimal due to low copper prices. Some lease activity continued to stockpile ore.

During 1912 more than 30 leases were being worked almost all of which were within the Empire mine.

By the close of 1913, the Empire Mine was the largest producer of copper in the State. 150 men were employed and 65 railroad cars of ore per month transported the ore to the Salt Lake City area for smelting. The average value was \$5 per ton.

1914 saw a drop in the market due to the war in Europe. Production was curtailed. Employment was limited to about 60 men.

1915 was the most profitable year, so far, in the history of this operation. 200 men were employed, most of whom were involved with small leasing units.

During 1916 production increased to a small extent over 1915. Employment continued at about 200 men producing 8,000 tons of shipping per month. A dividend of \$250,000 awarded investors after a decade or more of modest returns. The Empire Mining Company

An inexpensive aerial tramway replaced the Shay railroad in 1917. This reduced transportation costs 80% between the mine and Mackay. The tram had a 1,000 ton per day capacity.

During 1918 yield was reduced due to a shortage of labor.

Output also suffered during 1919. Labor was in short supply, railroad cars were difficult to obtain, and the price of copper was low.

After a long shutdown production was resumed in November of 1921, and the productive capacity was maintained through 1922.

During 1923 the Idaho Metals Company acquired the Empire mine. Production continued under the leasing system. Twenty five cars per month were shipped to Salt Lake and the enterprise continued to be the largest copper producer in the State.

1924 was another memorable year. A disastrous fire destroyed the ore bins and headhouse of the tramway. The tramway was badly damaged; buckets were liberated and ran wild during the fire. Repairs were made and the mining operation resumed in September. A new 150 ton floatation concentrator was housed in the old smelter to process the low grade ore that had accumulated in the stope fillings during 19 years of lease operations. Anaconda Mining Company furnished the equipment and supervised construction. The White Knob Mining Company added considerable value to the mining activity in the area.

During 1925 the Empire Mine continued to be the number one producer of copper in the state. Approximately 100 men were employed working under the leasing system. A mill financed by International Smelting of Salt Lake City was installed to treat ore produced by leasers. It processed 250 tons per day, utilizing a fine grinding and floatation system. The White Knob Mining Company reported some new discoveries.

1926 - the Empire mine, owned by the Idaho Metals Company continued to be the largest producer of copper in the state. Approximately 100 men were working under the leasing system. The property consisted of 20 patented claims and 19 unpatented claims. It had over 20 miles of underground workings. The principal tunnels were the Alberta and the Cossack 650 feet below. The aerial tramway was 16,300 feet long which transported ore from the Alberta Portal to the mill. The mill was a 150 ton concentrator involving fine grinding and floatation.

1927 - The Empire mine continued as the State's highest copper producer.

1928 - The Empire mine was acquired by the Mackay Metals Co. in June. The mill was entirely rebuilt and the mine rehabilitated. A large number of new leases were made and extensive exploration through core drilling initiated.

1929 - Empire Mine continued production. Most of the work was at the 1000 ft. level of the Cossack tunnel where a large body of new ore was found. A 1200 cu. ft. Norgerg Compressor and 4 miles

1930 - Mackay Metals (Empire Mine) suspended operations in August, but the lessees continued work. The Depression and low copper prices forced the shutdown.

1931 - The Mackay Metals (Empire Mine) property became tax delinquent.

1943, 1933, and 1934 - The Mackay Metal property remained in receivership.

1935 & 1936 - Mackay Metals activity limited to annual assessment work and some lease work.

1937 - Mackay Metals worked by ~~lessees~~ and several cars were shipped.

1938 - White Knob Mining Company had limited work by leasers. Mackay Metals was inactive pending sale.

1939 - The White Knob Mining Company had two leasers working. The Mackay Exploration Company was organized to operate the Mackay Metals (Empire Mine). The property was acquired in May and by December 20 leasers were working. The Alberta tunnel was re-opened to the 1,000 ft. level with 480 ft. of new development. The Cossack tunnel was re-opened on the 1600 ft. level.

1940 - Mackay Exploration Company had 20 sets of leases. White Knob development consisted of 175 ft. of tunnel.

1941 - Mackay Metals shipped a substantial tonnage of ore to Utah. White Knob developed two tunnels and sunk one 250 ft. shaft and had some lease work.

1942 - 1945 - Limited development and no production.

1946 - The Custer Copper Corporation acquired the Empire group and proceeded with limited development.

Activity since 1946 has not been researched.

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