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" G A S S I A R "

A S B E S T O S

M I N E

FEBRUARY, 1966.

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CASSIAR ASBESTOS MINE

LOCATION

The Cassiar Asbestos Mine is located in north central British Columbia on the McName Mountain in the Cassiar range. It is linked by an all weather gravel road running 65 miles southwest from mile 649 on the Alaska Highway, Watson Lake serviced by C. P. R. at the Watson Lake Airport. The Cassiar road is a northern extension of the proposed road to Stewart on the Pacific coast.

HISTORICAL

The existence of this deposit has been known for many years. Prospectors tell of mountain sheep bedding down in the matted fibre that accumulated from the weathering of the outcrop. It was not until 1951 that improvement in transportation and economics made the original development work possible. Four prospectors Sittler, Nelson, and the Kirk brothers, staked the property in that year and their holdings were acquired by Con-West Exploration Company of Toronto and development started. A small tonnage of ore was mined and processed from the talus ore in the fall of 1952. A mill was started in 1953 at a rated capacity of 150 tons per day. Since that time the operation has expanded steadily to its present capacity of 2,000 tons per day. Ore originally was brought down by means of trucks over a road six miles in length. To eliminate the long truck haul, a flight conveyor with a steel chute brought the ore down the steep face of the mountain (in years 1953, 1954, and 1955) from elevation 6200 to elevation 4800 on the south face of the mountain where it was trucked to the mill using 10-ton International trucks. This system was abandoned in favour of the aerial tramline the construction of which was started in 1954.

OREBODY

The orebody is located at an elevation of 6200 feet on a spur off the west side of McName Mountain, which is 6300 feet in elevation. It occurs as a large lenticular orebody about 500 feet in width by 1200 feet in length within a serpentine body which dips at an angle of approximately 45° to the east under McName Mountain. The fibre occurs as innumerable veins or seams up to 3" in width in the serpentine rock. The asbestos is a fiberized form of serpentine technically known as the mineral "chrysotile" which is a magnesium silicate with chemically combined water of the same composition and specific gravity as the serpentine rock. The fibres run crosswise to the veinlets and amount to about 8 to 10% of the rock in which it occurs.

MINING

The ore in place was originally mined by 15 foot benches in the exposed outcrop of the orebody on the spur of McName Mountain. Joy CM - 400 wagon drills, Elmer loaders, TD - 14 tractors and International Harvester trucks, capacity up to 10 tons, were the principal equipment used at the time. As mining progressed and tonnages increased it became apparent that a substantial waste stripping program was required in order to free the ore that dipped under

McDane Mountain. In late 1956 the pit layout was changed to 30 feet mining benches and additional equipment was purchased to step up this program. The equipment now consists of one 1½ yard Northwest shovel, two 2½ yard Northwest 800 shovels, one 3½ yard Northwest shovel and one 4½ yard P&H shovel, four 22 yard International Payhaulers, and four 35 yard Kenworth Dart trucks perform hauling from these shovels. At present this program requires the stripping of 3,500,000 tons of waste for 950,000 tons of ore per year.

#### DRILLING AND BLASTING

Four Ingersoll-Rand drillmasters with 5" or 6½" "down the hole" drills are available for ore and smaller waste benches. Major waste drilling is done with a Bucyrus-Erie 40R drill using 9" Rotary Bits. Two Ingersoll-Rand Crawl-ir Drills with 3½" Tungsten Carbide Bits are found particularly adaptable to drilling on steep and rough terrain.

#### ORE TRANSPORTATION

Ore is transported from ore benches by Payhauler trucks to the Jaw Crushers, where it is crushed to 4". From the crusher ore is conveyed to a rock rejection ore preconcentration circuit consisting of 2 cone crushers, 4 screens and a rotary dryer. By rejecting 25 - 30 % of barren serpentine, a comparably larger amount of fibre can be delivered to the mill.

Annual ore production from pit is scheduled at 950,000 tons with 650,000 tons delivered to the mill.

#### OTHER EQUIPMENT

Other equipment at the mine are Ingersoll-Rand stationary and portable compressors furnishing air for Crawl-ir Drills and TD-25 bulldozers for preparing grades at shovels and miscellaneous road work and mining operations. Two Adams graders and a Tournatractor are available for keeping roads in good condition, an important factor in keeping down transportation costs. A garage at the mine top performs all service and running repairs on this equipment. A mobile crane is available for heavy lifts and is convertible to a 3/4 yard shovel or back hoe.

#### TRAMLINE

The tramline, manufactured and installed by British Ropeways Engineering Co. Ltd., was started in operation in the spring of 1966. Its total length from the upper loading terminal at elevation 5800 feet to the lower tramline station at elevation 3525 feet is 14,600 feet, in two sections. A third section near the mill travels around the outside storage area. The maximum capacity is 2400 tons per day but approaches a practical average of about 1800 tons a day. There are about 180 eighteen foot buckets in the line which carry an average of 3/4 ton net weight. Tramline ore can be dropped directly into

The value of fibre in one ton of raw ore is about \$20.00. After this has been processed and ready for market the price varies from about \$126.00 per ton for short fibres, up to about \$789.00 per ton for the longer or spinning grades of fibre. Hand picked crude fibre is priced up to \$1,500.00 per ton. This is why it is sometimes known as "White Gold".

The spinning grades AAA, AA, A and AC which contain the longer fibres are used to make yarns, textiles, lapa, electrical insulation, etc. The asbestos cement grades AD, AK, AS, AX and AY are used in asbestos cement, pressure pipe, sheeting, wall boarding, and roofing materials used in the building trades. Brake lining, gasketing and heat resistant products also use considerable fibre in their manufacture. The reason for the use of the fibre in these products are its properties of high tensile strength, flexibility, resistance to electrical conduction and resistance to fairly high temperatures. Most of the fibres produced in the Americas comes from south-eastern Quebec but Cassiar fibre due to its exceptional quality and length combined with a low magnetic iron content and freedom from talc and dust, make it well received in the world market. As a good portion of Cassiar fibre is of spinning grade, it is essential that all foreign material such as wood, paper, and wire be kept out of the ore during the mining and milling processes.

A well equipped laboratory provides technical facilities to control the standards of the various grades of fibre.

#### PLANTSITE SERVICES

A powerhouse with seven Ruston Hornsby and 1 Mxless diesel-electric engines, with a combined capacity of 4200 hp., supply electricity for the mine, mill, and townsite. Some are equipped with exhaust heat exchangers, furnishing low pressure steam to augment plantsite heating. A steam plant consisting of two 150 hp. Inglis Boilers furnish heat for the plantsite and townsite and can be fired by oil, wood or coal. A well equipped heavy duty equipment garage maintains and repairs all mobile equipment such as shovels, bulldozers, trucks, etc. There are also combined machine shop and electrical shop, a carpenter and paint shop, and a sheet metal shop. These are all housed in Perma-steel prefabricated buildings insulated with Limpet asbestos coating. Warehousing, at present, is taken care of in some of the original campsite buildings.

#### TOWNSITE

The townsite located in a beautiful valley, provides fanabode dwellings and bunkhouses for about 100 families and 350 men in comfortable rooms.

There is a modern cookery operated semi-cafeteria style for the benefit of single status employees. A licensed lounge and billiard room, an athletic field, a two sheet curling rink and a ski tow provide recreational facilities. A community centre, consisting of a main auditorium (for sports, picture shows and large functions) library, and club rooms are available. A company store, a branch of the Royal Bank of Canada, and the R.C.M.P. Detachment are other services of the community.

An ultra modern six bed hospital, staffed with a full time doctor and nurses, handle all but the most serious cases of illness and accidents. A subsidized employee construction program has resulted in the building of 50 privately-owned family dwellings. A modern four room school accommodates the students from grades I to IX.

UNITS FOR CASSTAR ASBESTOS FIBRE

The longest

Grade No. 1

AAA

AA

A

AC

Spinning

AD

AK

AS

AX

AY

Asbestos Cement

The shortest