

THE BAYMAG MINE

Welcome to the Baymag Mine, the site of the purest and one of the largest crystalline magnesite deposits on earth.

Baymag's mine is located in the East Kootenay District of British Columbia, approximately 65 kilometres northeast of Radium Hot Springs and just north of the confluence of the Mitchell River and Assiniboine Creek. The valley near the mine is formed by Mount Eon on one side and on the other, Mount Brussiloff. The mine site is located on the lower southwest slopes of an un-named mountain south of Mount Eon. Elevations at the mine site range from 1,350 to 1,500 metres.

In this area Baymag holds a total of 21 mineral claims containing 215 units covering about 65 square kilometres.

This huge deposit of crystalline magnesite was created during the Cambrian period at the beginning of the Palaeozoic Era more than 600 million years ago. However, it was not discovered until as recently as 1966 when Geoff Leech of the Geological Survey of Canada was doing field mapping in the area.

Leech reported occurrences of magnesite along the west flank of Mount Brussiloff and at the south end of the mountain ridge between Mitchell River and Assiniboine Creek. Grab samples were collected and found to contain up to 98% magnesium oxide on a loss-free basis.

Leech's report was quickly followed by a claim-staking rush. A major claim-holder turned out to be Baymag Mines Co. Limited, which was founded in 1971 in Calgary.

During the early 1970s, Baymag conducted a large diamond drilling program which led to a preliminary feasibility study and then additional core drilling. But it would be a while before full-scale development of this huge natural resource would begin.

It was in 1975 that Refratechnik first became interested in Baymag and its mining claims. By 1979 Refratechnik had acquired Baymag and made a significant commitment to develop the mine, processing plants and related infrastructure required to turn raw magnesite into marketable products.

As Baymag undertook more extensive core drilling, some of the characteristics of this vast deposit of magnesite began to be revealed.

The proven and probable reserves just in the vicinity of the prime mining area were calculated to be in excess of 50 million m.t. of high grade ore with purity exceeding 97% MgO. The total extent of reserves has not been determined as, in most areas of Baymag's claims, the deposit has not yet been drilled through even though drilling depths have exceeded 120 metres.

Extensive assays of core samples have confirmed the purity of the deposit. Minor amounts of calcium oxide, iron oxide, alumina and silica are present typically in volumes of less than 3% combined.

In 1980 Baymag began designing and developing the plan for its mine. The pre-production phase continued through 1981 and into 1982.

John Wolfe Construction Company Limited was contracted to help develop the mine as well as eventually operate it and take responsibility for transporting the ore to Baymag's production plant at Exshaw.

John Wolfe Construction was also involved in building some of the roads to the mine. In addition to the roads which were constructed on the lease, 42 kilometres of existing Forestry Service road system were upgraded and some bridges were rebuilt.

Following site preparation and installation of the crushing and screening equipment systems, commercial-scale mining started in the second quarter of 1982.

Mining and pit development were initiated at the southeast end of the deposit at an elevation of 1,436 metres where the ore was exposed at the top of a cliff. The pit was started in an area containing extraordinarily high grade ore with practically no waste.

Today, state-of-the-art computer programs are used to help design the open pit operation.

At Baymag's mine, mining and pit development are divided into four operations: stripping and stockpiling topsoil and overburden, drilling and blasting the ore and waste, hauling, crushing and screening the ore and loading and transporting the ore for processing.

In the first stage of the mining process, topsoil and overburden are removed and loaded by backhoe into dump trucks. The depth of the layer of topsoil and overburden varies but is generally no deeper than about five metres.

In the second stage the caprock above the ore is removed as a quality assurance measure. The caprock is, in essence, pure ore but very weathered and fractured, so contamination can occur. The caprock is drilled and blasted and then hauled away to the pit waste dump.

Pit development is very cost efficient. The ratio of waste to ore is only One-point-five to One, an extremely low ratio.

Drilling is done by Air Tracks using a drill hole pattern with 2.5 metre spacing at a depth of about 7 metres. The holes are shot using aluminized ANFO prills. Wet holes are blasted using slurry products.

Drill cuttings are sampled and located by surveying. At Baymag's Central Quality Control Laboratory at Plant I in Exshaw, the drill cuttings are chemically analyzed. The results are plotted on bench assay plans so that a selective mining process can be utilized.

Blasted ore is loaded by backhoe into the ore trucks, then hauled and dumped into the primary jaw crusher. The ore is crushed in two stages resulting in a minus four-inch product. For quality control, a triple-deck screen scalps all the minus three-eighths-inch material, or fines.

Incidentally, the fines made an excellent road surfacing material and are used on the mine roads and Forestry roads leading to the mine as well as on all in-pit mine roads.

Crushed, screened ore is conveyed to product stockpiles to await transport, the final stage of activities at the mine site.

Trucks are loaded by front-end loader directly from the stockpiles. Six truck-trailer units haul crushed ore from the mine to Baymag's plants. Each unit carries a payload of 36 metric tons. The route to Exshaw uses Forest Service roads, Highway Number 93, and the Trans Canada Highway - in total, a distance of 200 kilometres.

The mine operates year-round. Baymag started mining at the rate of about 35,000 tonnes a year. As demand for Baymag's calcined and fused MgO products grew, mining rates increased dramatically. Now, Baymag mines close to 200,000 tonnes a year of this exceptionally pure feedstock for its processing plants.

Every year land reclamation work is carried out by Baymag following the guidelines of independent environmental assessment reports to minimize impact of the mine on the environment.

Also on an ongoing basis, Baymag continues to assess the extent of the magnesite reserves on its claims. To date, more than 26 hundred core samples have been analyzed from more than 90 drill holes, totalling almost 8 thousand metres. And still, the ultimate reserves of magnesite have not been defined. The reserve estimate of 50 million tonnes has been calculated using only three of Baymag's 215 claim units.

Since 1982 and the development of the mine operation and its processing plant operations at Exshaw, Baymag has grown to become one of North America's largest producers of high grade calcined magnesium oxide and the world's largest supplier of refractory-grade fused MgO.