GEOL RET 92HNE047-07 BRENDA PROPERTY FILE

THE BRENDA FROJECT THE
BRENDA
PROJECT

THE BRENDA PROJECT

INTRODUCTION

The Okanagan Valley in south central British Columbia is justly famed for its beauty. A chain of magnificent lakes, extending north for some 130 miles from the international boundary and flanked by mountainous terrain on either side, provides a scenic panorama unsurpassed anywhere in the great western Cordilleran region of North America. Particularly noted for its prolific apple and soft-fruit orchards, the Valley has also become an important ranching and forestry region since British Columbia entered Confereration in 1871. In recent years, tourism has grown spectacularly and the population of the Okanagan virtually doubles each summer. Despite the natural resources of the Valley, the climate and other attractions have been so great that population growth has historically outstripped the employment opportunities provided by local industry.

Into this setting of natural grandeur, and of economic potential marked by the ever-growing demand of youth for opportunity, has come the Brenda Project. Will it, as we are told by politician, reporter, and conservationist, despoil the country side? Or will it be, as we affirm, an unqualified blessing to the people of this beautiful valley, the province of British Columbia, and the Canadian economy?

EARLY HISTORY

The earliest record of the Brenda prospect appears in the Geological Survey of Canada Memoir No. 243, 1947. It was written by Dr. H. M. A. Rice following his field examination of the Copper King property in the summer of 1944. The Sandbergs of Kelowna had for several years been working on a narrow quartz vein, well mineralized with chalcopyrite and molybdenite, probably expecting to develop some tonnage of good grade gold-silver ore. Their prospect is very near the centre of the present Brenda pit.

Work was stopped by the Sandbergs after Dr. Rice's examination. The property was forgotten locally and the G. S. C.'s report apparently failed to attract any wider attention despite the significant and relevant statements it contained.

In the early 1950's Bob Bechtel, a Canadian Army veteran from Hamilton, Ontario, became entranced with the Okanagan and settled in Penticton, a city 20 miles south of Peachland. Bob, a mechanic by trade, made a living by working in local garages and driving a school bus. Life was pleasant for Bob, although less so for his friends whom he habitually harassed with elaborate practical jokes. But he found his greatest satisfaction in prospecting the mountains of the Okanagan Valley. Having had no training in mining or the techniques of prospecting, he bought a jeep and books on the subject and diligently applied himself to mastering the art of the traditional prospector.

Fortunately, Bob did not know - or if he did, he ignored the fact - that no economic mineral deposit had ever been found in the Okanagan Valley. Mining companies, both large and small, could not be persuaded to invest time or money in an area of so little potential.

One summer day in 1954, Bechtel drove his jeep up the old irrigation trail towards Brenda Lake. The old irrigation district wagon trail from Peachland on the west bank of Okanagan Lake followed Peachland Creek and tributary streams northwesterly for 18 miles to the Copper King prospect and continued on to its terminus at Brenda Lake another 2 miles to the west. In this distance, it climbed 4400 feet from the Okanagan Lake level of 1200 feet to 5600 feet at Brenda Lake. (The road, passable by jeeps in summer months, fell into disuse after a good but longer logging road was constructed from Peachland to the Brenda area along Peachland Creek to its headwaters.)

Ever observant of changes in rock formation and signs of mineralization, Bechtel noticed the increasingly rusty appearance of the granitic rock as he neared the summit. He stopped his jeep and began to prospect. Intense fracturing with associated copper mineralization did not escape his attention and he shortly found himself on the old Copper King prospect.

He had not heard of the showing, the Sandbergs, or the G. S. C. report. High-grade chalcopyrite-molybdenite ore on the old dumps was a spectacular sight but Bob knew then that there was not enough of it. The huge tonnage of lightly mineralized fractured rock must make ore or there would be no mine at Brenda Lake. With an intuitive faith in his discovery, Bob staked his first claims a few days later and began his long vigil over the Brenda property.

THE NORANDA - KENNECOTT PROGRAMS

In the spring of 1955, Bechtel, having heard of the Noranda office in Vancouver, contacted the manager, Bern Brynelsen, and requested an examination of the Brenda property. This was effected on July 1st and despite the low copper values obtained from his channel samples, Bern was never to lose interest in this intriguing prospect. Subsequent visits by Brynelsen and Morris Menzies, his assistant, led to an option agreement and plans for a program the next summer.

On April 17, 1956 a party of 12 under Menzies' direction drove to Brenda Lake and in three days, over 6 feet of packed snow, staked 80 claims around Bechtel's key group. Three EX diamond drill holes were drilled that summer with the half core returning an average copper value of 0.21 percent and partial assays indicating about 0.03 percent molbydenum. There was no established market for molybdenum and the copper content was far from ore grade, so it was not surprising when Noranda made known its intention to withdraw. Wishing to see further work done, and attaching considerable importance to the presence of molybdenite, Brynelsen approached Kennecott, a major producer of that mineral in the United States, and proposed a joint program with Noranda the following year. In time, this was approved and an agreement signed that winter.

In June of 1957, Northwestern Explorations, Kennecott's exploration company in British Columbia at that time, began an aggressive program under the able direction of Charlie Ney. In addition to claim surveying and the preparation of geology, fracture density and alteration maps, the first induced polarization program ever undertaken in B. C. was run over the greater part of the present Brenda ore body. The only weak

part of an otherwise excellent program was the pattern of X-ray holes, which were only 20 feet deep, drilled over the principal mineralized area. Subsequent work has shown substantial to heavy leaching of both copper and molybdenum to an average depth exceeding 20 feet.

New suspected this at the time and made allowance for it in his final report. Nevertheless, had the drill holes been 50 feet or more in depth, Charlie might well have been asked to write this paper. The winter of 1957-58 saw Noranda and Kennecott withdraw from the Brenda project and the property returned to Bob Bechtel. He requested and received help and advice from Brynelsen and Menzies from that point onward.

THE YEARS OF WAITING

Now began a waiting period that was to last six years. There was no illusion of an early demand for Brenda's low-grade rock but there was a determination to hold the property, if necessary, for 50 years. Data accumulated over two seasons of field work established, to the owners' satisfaction, the fact that Brenda had earned the right to an exhaustive test at an appropriate time determined by markets and advances in mining technology. Prospecting continued and two deep holes were drilled, the first in 1959 and the second in 1962, mainly for assessment purposes.

Two events of great importance took place in B. C. between the years of 1960-65 and set the stage for an early and comprehensive test of Brenda. One was the exploration and development of the Endako molybdenum property by Placer Development which led to successful production in the spring

of 1965. Concurrently, Noranda Mines explored, developed and began to produce from the Boss Mountain molybdenum prospect. The significance of Endako was that for the first time advanced open pit mining methods were to win a profit from \$4.00 rock containing a mineral only then coming into strong demand on the world markets. The importance of Boss Mountain was that it gave Brynelsen and Menzies the experience and knowledge required for the proper evaluation of a moly prospect.

INITIAL PLANNING AND FINANCING

By June, 1964, it was evident that the meticulous work of Placer and their consultants, Chapman, Wood & Griswold Ltd., on Endako would pay handsome dividends. Menzies decided the time was ripe for a comprehensive test of Brenda. In a discussion with Brynelsen, it was agreed that:

- 1. Brenda had greater size potential than Endako.
- 2. It was ideally located in every respect, including labour supply.
- 3. Small core drilling without sludge collection could not return representative grades.
- 4. Boss Mountain experience suggested the molybdenum grade might be twice that obtained in the 1956 program.
 - 5. Significant improvement could be expected in the copper grade.
- 6. Assaying must be very closely controlled and checked by several laboratories.
- 7. Visual examination of Brenda ore specimens showed distinct separation of chalcopyrite and molybdenite indicating the possibility of a simple metallurgical solution.
- 8. Recent advances in mining technology and equipment had radically changed the economics of open pit mines.

In retrospect, the conference seems to have lasted only a few minutes but Brynelsen was off and running.

The old reports were unchanged and there were no new data to present. The grade appeared hopelessly low and speculative arguments were unconvincing. Noranda declined further involvement but, to the company's lasting credit, permitted Brynelsen and Menzies to proceed on their own. It was agreed at this point that Ted Chapman, president of Chapman, Wood & Griswold Ltd., would be asked to conduct an examination of Brenda and, if interested, would manage the project.

Through the summer months, every major Canadian, American, and Japanese mining company resident in Vancouver was approached. In turn, with one exception, they all courteously declined to participate, a fact that led Brenda's sponsors to feel that their collective reason was subject to considerable doubt.

The exception was Nippon Mining Company, which was willing and apparently anxious to take all of the action. But policy required Canadian control and imposed a limit on Japanese participation.

On October 18, 1964, Chapman, accompanied by Brynelsen, examined the Brenda property. His report, dated November 20, 1964, was compiled after an exhaustive study of all available data; it was cautiously optimistic and recommended a \$30,000 program of photogeology, geochemistry, percussion drilling, and shallow shaft sinking.

Now that the sponsors' theories had the support of a consultant of wide experience and proven ability and integrity, the stage was set for the crucial test. While awaiting the spring breakup, the search for money continued unabated.

The winter passed without prospects of additional financial support. As spring approached, the property owners turned their attention to the Okanagan Valley. Having had dealings with Mervin E. Davis of Penticton two years earlier,

Brynelsen outlined the proposed Brenda program to him and a few associates. Merv and his friends were quickly sold on the project and contributed an amount equal to Nippon's allotment. The balance of the funds required was quickly raised from other sources. Merv, a chartered accountant and a business man of outstanding ability, joined the management group in due course and remained to become a director and vice president in charge of finance of Brenda Mines Ltd.

On April 30, 1965, Chapman issued a supplementary letter report in which the estimated cost of the Brenda program was increased to \$40,000.00. Management, facing heavy expenditures for legal surveys and contemplating an expanded program, decided to raise \$140,000 through a seven-unit financing syndicate. The units, at \$20,000 each, were finally distributed as follows:

Nippon Mining	2	units
M. E. Davis & Associates	2	units
Brynelsen - Menzies	1	unit
Hedlin - Menzies	1	unit
Fisher in trust	1	unit

An option was taken from the Deep Creek Mining Syndicate, the registered owner of the Brenda claims. The claims were held for a time by A. W. Fisher in trust and later transferred to Northlands Explorations Limited, a private company acquired for use as the eventual successor of the Brenda Mining Syndicate.

THE 1965 PROGRAM

The 1965 program differed from Chapman's original recommendations in some respects:

- 1. Geochemical work was omitted when it was found that earlier coverage was adequate.
- 2. Percussion drilling was unsuccessful and was abandoned. In its place, a combination of three AX diamond drill holes, for comparison with the 1956 EX holes in essentially the same position, and three large diameter H core holes were drilled to provide bulk samples and an additional check on molybdenum and copper content.
- 3. An induced polarization survey was run in an attempt to delineate the area having a sulphide content similar to that checked by the series of drill holes put down from the 1956 Brenda 1, 2, and 3 drill sites.
- 4. The firm of Underhill and Underhill was retained to survey the location lines of all Brenda mineral claims to ensure that the area of interest was fully covered.
- 5. Preliminary flotation tests were carried out by Britton Research Laboratories of Vancouver.
- 6. Additional road building was required and a new camp begun at MacDonald Lake before freeze-up.

All phases of the program were rigidly controlled. Sludge collection and sample preparation was followed by assaying, in four different laboratories, all 162 samples obtained from 600 feet of core and sludge. From nearly 1000 assays run, the mean weighted average content was 0.066 percent molybdenum and 0.262 percent copper.

In a report dated December 15, 1965, Chapman's summary read in part:

- 1. Results.....indicate that actual content of copper and molybdenum are higher than earlier estimates.
- 2. Estimated grade of a 600' x1000' block containing 14 million tons to a depth of 300 feet based on size H combined core and sludge is 0.26 percent copper and 0.07 percent molybdenum.
- 3. Preliminary flotation tests indicate that at least 85 percent of both copper and molybdenum can be recovered in a bulk concentrate and inspection of products indicates that there should be no unusual problems in separating them into separate products at suitable grades.
- 4. Net returns from metals sales at the indicated recoveries and grades with metal prices of 32 cents per pound for copper and \$1.55 per pound for molybdenum should be approximately \$3.00 per ton.
- 5. Results of an induced polarization survey, geochemistry and fracture density studies indicate a potential of mineralized material ranging from 90 million to several hundred millions of tons.
- 6. At the indicated grade and recoveries, an operation at 10,000 tons per day should generate profits sufficient to repay investment and pay 10 percent compound interest on unrepaid capital, provided at least 70 million tons of ore is available and waste to ore ratio does not exceed 1 to 1.
- 7. We recommend a program of exploration and development involving drilling, bulk sampling and metallurgical testing designed to permit complete feasibility studies of large scale exploitation of the Brenda deposit.
- 8. The estimated cost of the recommended program is \$700,000.00.

The Brynelsen - Menzies theories had been vindicated.

into

THE FEASIBILITY PROGRAM 1966- 67

Preparations for an aggressive start on the feasibility program were completed by Christmas, 1965. The program, commencing in early January, 1966, was to take 15 months to complete at a cost of \$3.5 million. A technical committee, comprising Brynelsen, Menzies, Davis, and representatives of all consulting and legal firms, was established and met weekly to discuss all phases of the project. John Wood, vice-president of Chapman, Wood & Griswold Ltd., was personally responsible for the program and was clearly the key man at all technical meetings.

Brenda Mines Ltd. began to acquire senior personnel and some of those who gave outstanding service to the company were: Keith Douglass, Manager of Engineering Services; Peter Stym, Mine Superintendent; Jack Stathers, Office and Personnel Manager; and Stan Slym, Comptroller. Dianne Robillard was and still is Brenda's indispensable bilingual head-office secretary.

The feasibility program included:

- 1. <u>Diamond Drilling</u> 74 B.Q. wire line drill totalling 42,573 feet.

 Rotary-Percussion 19 holes totalling 7,323 feet.
- 2. Bulk Sampling Drifting 1475 feet

 Cross Cutting 400 feet

 4 Inclined Raises 960 feet

 2835 feet

2675 feet of underground work were bulk sampled and passed through an automatic sampling tower. 20 pounds of minus $\frac{1}{2}$ inch material was obtained per 50 tons of rock broken. Raises followed the paths of diamond and rotary-percussion drill holes.

Results - 1640 feet drift & cross cut - 0.2 % Cu 0.056 Mo 796 feet raise - 0.23% Cu 0.074 Mo

- 3. Assaying A Perkin-Elmer No. 290 atomic absorption instrument was installed at the mine mid-summer, 1966. After an intensive training and checking program, mine assays were used after September, 1966.
- 4. Mill A mill designed and operated by Wright Engineers Limited processed 85 tons per day at 48% minus 200 mesh.

Wright's predicted production metallurgy: First three years:

0.235% Cu Heads - 26.0% Cu Cons. 90.5% Cu Recovery 0.077% Mo Heads - 54.0% Mo Cons. 81.5% Mo Recovery

After first three years:

0.22 % Cu Heads - 26.0% Cu Cons. 90.0% Cu Recovery 0.065% Mo Heads - 54.0% Mo Cons. 80.5% Mo Recovery

Recovery forecast used in feasibility:

Normal A Grade	Normal B Grade
88% Cu	86% Cu
82% Mo	79% Mo

For highly altered "B" grade ore, estimated to constitute no more than 10% of the total ore reserves, recoveries are forecast at 81% Cu and 71% Mo.

Concurrently, studies were carried out on water and gravel resources. Work continued or was initiated on pit clearance, legal surveys, and new highway location.

RESULTS OF FEASIBILITY PROGRAM

Summary and Conclusions of Chapman, Wood & Griswold Ltd.'s feasibility report, signed by E. P. Chapman Jr. and John A. Wood, read as follows:

"This study was undertaken to determine the feasibility of exploiting a large low grade copper-molybdenum bearing body described throughout this report as the Brenda Deposit.

The average grade of this deposit, as indicated by drilling results, falls into a range somewhat below the tenor of concentrator feed supporting existing large low grade mining operations.

This fact, coupled with the large investment required to bring the property into production, made it imperative to carry feasibility studies to a more conclusive stage than would ordinarily have been necessary. The great profitability in mining and concentrating very large quantities of low grade ores has been clearly demonstrated in recent years. We conclude that the results of the engineering studies, the sampling, the pilot mill operation, the cost estimation and the economic analysis reported in detail in this report show that exploitation of the Brenda Deposit is both technically and economically feasible. The principal factors influencing this conclusion are summarized below.

- 1. Ore reserves mineable by open pit methods as estimated by both computer and by conventional methods are in the range of 100 million tons at a grade of 0.21% Cu and 0.105% MoS2; sufficient to sustain an operation of 20,000 tons per day for more than 15 years. The ratio of waste plus low grade to ore is approximately 0.9 to 1.
- 2. Pilot Plant operation has demonstrated good recoveries of both copper and molybdenum into concentrates suitable for marketing from normal grade mill feed. Where molybdenum concentrates produced in the pilot mill contained impurities in quantities higher than specifications for high quality material, bench scale leaching tests have shown that these impurities, except for lime and iron, can be brought below specified maximum limits at an acceptable cost. Potential customers for Brenda's molybdenum concentrates have advised that the lime and iron percentages attained in the form in which they are present would be acceptable.
- 3. Although pilot mill treatment of low grade material from one raise indicated that some zones of highly altered grade B "ore" may present metallurgical difficulties, "normal" low grade responded well to the process and reagent practice developed during the mill test program.

Altered grade B is estimated to constitute no more than 10% of the tonnage of this grade, and would have little or no effect on overall profitability. Some altered A grade ore was encountered in a second raise and resulted in lower than normal recoveries in the rougher separation circuit. Overall recoveries from this raise were equal to those used in profitability studies.

4. Estimates of the cost of putting the Brenda Property into production with facilities capable of treating 20,000 tons per day of grade A ore and of mining and handling both this amount of ore and the grade B and waste that would have to be moved to obtain it come to \$56,500,000 in Canadian funds. We believe that ample provision has been made for possible price and wage escalation and for other contingencies and that production can be achieved at this cost or less.

- 5. We believe that the plant, as described by Wright Engineers Limited in this report, will have a minimum capability of treating 20,000 tons per day and that the probable capacity will exceed that figure by from 10% to 20%.
- 6. We believe that the copper and molybdenum recoveries used in cash flow projections will be attained or exceeded.
- 7. We forecast that metal prices during the period of the proposed Brenda operation will, on average, be equal to or higher than the 36 cents Canadian per pound for copper and \$1.74 Canadian per pound of contained molybdenum used as a base for profitability projections.
- 8. Cash flow projections based on \$10,590,000 in equity and \$45,910,000 in loan financing, continuation of present Canadian tax laws and variable copper prices, metallurgical recoveries and rates of production show ranges in net cash flow from 75 to 96 million dollars after repayment of all loans plus interest at 7%, taxes, and providing for additional capital assets. This cash flow when discounted at 12% compound interest gives a present value ranging from 20 million to 26.5 million dollars."

Financing for production was concluded on this basis.

MINE DEVELOPMENT AND MILL CONSTRUCTION

Noranda started providing major financing for the feasibility project in June, 1966, and, equally important, made available to Brenda the services of some of their most outstanding experts in mining, milling, and assaying. The advice of these men considerably shortened the time required to complete feasibility studies. In the spring of 1967, formalized later by agreement dated January 4, 1968, management control was assumed by Noranda.

Gordon Montgomery was appointed manager in June of 1967 and much essential preparatory work was completed before freeze-up. Mining began in late fall and mill construction commenced in March, 1968. Progress has been gratifying with tune up expected by late fall, 1969.

Mine preparation and plant construction costing an estimated \$60 million is an immense and complex undertaking. It is hoped that in due course a number of papers will be prepared on various aspects of Brenda's development and construction.

THE FUTURE OF BRENDA

Several years ago, at a meeting in Vancouver, Spud Huestis, the founder of Bethlehem Copper, made a remarkable off-the-cuff speech. Bethlehem had just come into production at the modest rate of 5,000 tons per day but Spud foresaw the time when more than 50,000 tons would be milled daily in the Highland Valley to supply both a local smelter and the export market. Most, if not all, of those present must have thought Spud had taken leave of his senses; even a prospector's licence hardly justified such fanciful dreaming.

But recent developments in the Highland Valley will, in a few years, given continuation of favourable taxation and regulatory policies, make Spud's predictions seem modest indeed.

And what is the future of Brenda? The Brenda intrusive covers a large area of about 20 square miles. Nearly all is fractured and mineralized. The low fracture density over much of this area restricts the copper-

molybdenum grade from traces of both metals to appreciable, but still sub-economic, values. However, there are known areas where fracture density and grades approach that of the Brenda pit and still others where overburden, lake, and swamp effectively obscure the geology.

It is possible that the present Brenda orebody represents the highest grade large-tonnage deposit in the Brenda area. But this is by no means certain and it will take many years of work to raise this conjecture to a higher degree of probability or to disprove it entirely. Brynelsen and Menzies contend that the 20-year life of the presently known Brenda orebody represents only a start, not the end, to mining in this favoured area of the Okanagan. They foresee future operations on a grander scale utilizing mill feed that could not be considered ore today.

Having joined Spud Huestis on the limb of conjecture, they confidently await events to vindicate their optimism.

* * *

Morris M. Menzies Vice President Brenda Mines Ltd.

February, 1969

APPENDIX

MAJOR BRENDA TRANSACTIONS

- 1. An option of all Brenda claims was obtained from the Deep Creek Mining Syndicate on March 24, 1965 by A. W. Fisher in Trust.
- 2. On April 28, 1965 all claims were assigned to Northlands Explorations Limited as Trustee for the Brenda Mining Syndicate. Northlands was to undertake the actual exploration and development of the assigned claims.
- 3. The Brenda Mining Syndicate was organized on June 1, 1965.
- 4. Northlands Explorations Limited's name was changed to Brenda Mines Ltd. on November 24, 1965.
- 5. Brenda Mines Ltd. was converted to a public company on December 16, 1965 with an authorized capital of 5,000,000 N. P. V.
- 6. Brenda Mines Ltd. acquired full ownership of all claims formerly held in trust on December 16, 1965.
- 7. A prospectus dated January 3, 1966 was filed with the B. C. Securities Commission.
- 8. Shares were called for trading on January 21, 1966.
- 9. Brenda Mines Ltd. was listed on the Vancouver Stock Exchange on January 21, 1966.
- 10. The Noranda management agreement was signed January 4, 1968.
- 11. The financing agreements were signed on January 17 & 18, 1968.
- 12. Supporting agreements were signed at official closure on April 24, 1968.

CONSULTING FIRMS AND KEY PERSONNEL ENGAGED IN THE BRENDA FEASIBILITY PROJECT

Chapman, Wood & Griswold Ltd.

E. P. Chapman, Jr., P. Eng.

J. A. Wood

Wright Engineers Ltd.

L. F. Wright, P. Eng.

W. B. Bolderston, P. Eng.

Ker, Priestman and Graeme Engineering Ltd.

A. W. Ker, P. Eng.

Ripley, Klohn & Leonoff Ltd.

E. J. Klohn, P. Eng.

M. A. Thomas & Associates Ltd.

M. A. Thomas, P. Eng.

R. Whiteley, P. Eng.

THIS IS THE FIRST KNOWN, PUBLISHED REPORT OF THE PROPERTY

NOW KNOWN AS

BRENDA

(from Page 110, Geological Survey, 1947, Memoir # 243)

COPPER KING GROUP

The Copper King group is on the eastern boundary of Princeton map-area about 9 miles south of the northeast corner. A small creek flowing east towards Okanagan Lake has here cut a small canyon in a body of light-coloured The showings are in the north wall of this granodiorite. canyon, three-quarters of a mile in from the western intrusive contact. A deep open-cut has been driven for some 30 feet along a steep-dipping quartz vein. The face of the open-cut is a vertical wall of rock 20 feet high, and from it a winze, now flooded, has been sunk. The vein consists of white, ribbon quartz carrying bunches and streaks of chalcopyrite. It is 3 to 4 feet wide, except in the face of the open-cut at the top where little or no quartz can be The granodiorite on the walls of the vein has been partly silicified, and is mineralized with chalcopyrite, pyrite, and streaks of molybdenite.

Fifty feet lower down the bluff below the open-cut a cross cut adit has been driven for 70 feet. At that point it encountered the same fractures as that in the open-cut above. This was followed into the hill by a drift for 60 feet. A quartz vein varying from an inch or two to two feet in width occupies the fracture, and in places carries massive pyrite and a little chalcopyrite. The wall-rocks, as in the open-cut above, are altered and mineralized, and scarcely a piece of rock on the dump but carries disseminated grains or fine veinlets of chalcopyrite. Many of them also contain an appreciable amount of molybdenite, although this mineral was not observed in the vein quartz. No unexpected constituents were revealed by the spectrograph.

It appears that the alteration and mineralization of the granodiorite was affected by different and probably earlier mineralizing solutions than those forming the quartz vein. The vein, though locally well mineralized, is small, and could hardly be expected to provide sufficient ore for a profitable base metal operation. The widespread mineralization in the wall-rock, however, suggests the possibility of a very considerable tonnage of low-grade ore and deserves further investigation.

* * *

THE ECONOMIC IMPACT OF BRENDA MINES

A study on the Economic impact of Brenda Mines Ltd. by Hedlin, Menzies & Associated Ltd., contained the following list of predictions for the period from the early stages of construction through to full production.

- * The Brenda payroll will reach \$3.0 million annually, with employment of 350.
- * Every job at the mine site will be matched by at least five other jobs elsewhere in the Canadian economy.
- * By 1972, approximately 900 workers in the central Okanagan alone will owe their livelihood, either directly or indirectly, to the mine.
- * The full scale operation of Brenda is expected to generate \$18.0 million annually in payrolls, of which \$7.0 million will be earned in the Okanagan.
- * The Brenda construction program will generate \$9.0 million in tax revenue for provincial and federal governments, while operations will eventually give rise to more than \$7.0 million annually.
- * The export of concentrates will earn as much as \$26.0 million annually in foreign exchange.