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BRENDA MINES LTD.

Burns Bros. and Denton Limited

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AN INVESTMENT STUDY

OF

BRENDA MINES LTD.

BURNS BROS. and DENTON LIMITED

C. L. Renzoni

Investment Research Department

December, 1969

ESTIMATES AND PROJECTIONS CONTAINED HEREIN ARE OUR OWN. FACTUAL DATA, WHILE NOT GUARANTEED, HAVE BEEN OBTAINED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. THE FOLLOWING INCLUDES THE NAME OF EVERY PERSON HAVING AN INTEREST EITHER DIRECTLY OR INDIRECTLY TO THE EXTENT OF NOT LESS THAN 5% IN THE CAPITAL OF BURNS BROS. AND DENTON LIMITED: C. F. W. BURNS, L. C. BURNS, E. S. MILES, P. B. M. EBY AND D. E. BOXER.

BRENDA MINES LTD.

WEEKLY PRICE RANGE



LISTED - Vancouver Stock Exchange
 STOCK SYMBOL - BND

	<u>1967</u>	<u>1968</u>	<u>1969</u>
Price - High	8 $\frac{1}{4}$	14 $\frac{1}{4}$	17 $\frac{3}{4}$
- Low	4 $\frac{3}{4}$	7 $\frac{1}{4}$	10 $\frac{1}{2}$
Current:	\$13 $\frac{1}{2}$		

BRENDA MINES LTD.

SUMMARY AND RECOMMENDATION

We recommend the shares of Brenda Mines be carefully accumulated for capital appreciation in the next 18 months for the following reasons:

1. The Company is expected to generate earnings and cash flows, depending on the operating rate achieved in the mill, at the following rates:

		<u>1970</u> (9 months)	<u>1971</u>	<u>1972</u>
Earnings per share	24,000 tons/day	\$2.30	\$3.15	\$2.85
	30,000 tons/day	\$2.90*	\$4.40	\$2.90
Cash Flow per share	24,000 tons/day	\$3.30	\$4.50	\$4.20
	30,000 tons/day	\$3.90*	\$5.75	\$4.25

* assumes that the Company attains an operating rate of 30,000 tons per day by Dec. 31/70

The above projections assume a copper price of \$0.50 per lb. U.S. in 1970, \$0.48 per lb. U.S. in 1971, and \$0.45 per lb. U.S. thereafter, and a molybdenum price of \$1.72 per lb. U.S. If higher prices are obtained for these metals, it would increase Brenda's 1970 earnings (based on 24,000 ton per day rate) as follows:

<u>Metal Price Increase</u>	<u>Increase in Brenda Earnings</u> (per share)
Copper -\$0.01/lb.	\$0.06
Molybdenum-\$0.10/lb.	\$0.19

The mill has a minimum rated capacity of 24,000 tons per day, but as is customary it was designed with a certain degree of overcapacity. We expect that the operating level will exceed the minimum capacity and could approach the 30,000 ton per day rate by the end of 1970. Tune-up operations commenced in December, 1969, and can be expected to reach rated capacity by April, 1970.

2. Proven ore reserves on the property, as outlined in an independent feasibility study carried out in 1966/67, are approximately 145 million tons grading 0.20% copper and 0.054% molybdenum - sufficient for a minimum of 16 years of operation at an operating rate of 24,000 tons per day. The probability of adding to existing ore reserves is excellent.
3. Brenda has contracted for the sale of all its copper concentrate for a period of five years to Nippon Mining Company Limited. In addition, Noranda Sales Corporation Limited has agreed to market all molybdenite production for a period of five years.
4. Brenda is controlled by Noranda Mines Ltd. which has 51% of the outstanding shares. Noranda has proven ability in the management of mining operations.

Given the White Paper's Proposals for tax reform, the Present Value of the cash flows generated over the life of the proven orebody, assuming a 10% discount factor, is \$10.05 per share for an operating rate of 24,000 tons per day and \$12.60 per share for an operating rate of 30,000 tons per day. Although a Present Value calculation provides an indication of the worth of a mining stock, historical observation has indicated that it does not normally sell in relationship to its Present Value in the market place, particularly during the initial production years.

The market price of the stock is normally determined by a multiple of earnings and/or cash flows, particularly those earnings generated in the first full year of production. An historical analysis of other mining situations indicates that they have sold at about eight times earnings during their first full year of production.

HISTORY

The Company was incorporated on October 25, 1955 as a private company under the laws of the Province of British Columbia. In December 1965, Brenda was converted to a public company and the funds raised were used for initial exploration near Peachland, British Columbia. Subsequent exploration and underground development work has proven the existence of a large tonnage reserve of copper and molybdenum. A detailed feasibility study in 1966/67, which included an underground development program as well as metallurgical testing in a 100 ton per day (tpd) pilot plant, indicated that economic production of minerals from the property was possible. An agreement was concluded with Noranda Mines Limited, The Bank of Nova Scotia, the Nippon Mining Company Limited and Mitsui & Company Limited in early 1968, whereby, these companies agreed to provide the senior financing to place Brenda into production.

A start-up date of September 31, 1969 was initially announced by the Company. However, construction was stopped by a strike from April 15th to July 1969, and preliminary start-up of the plant was delayed until December, 1969. Approximately 1,000,000 tons of ore have been stockpiled for milling. Our projections assume that the operation reaches a rated capacity of 24,000 tpd by April 1, 1970.

ORE RESERVES

The computer based ore reserves and grades as reported in an independent feasibility study carried out in 1966/67 by Chapman Wood & Griswold Ltd. are:

	<u>Tons</u>	<u>Grade</u>	
		<u>Copper</u>	<u>Molybdenum</u>
	23,780,000	0.235%	0.075%
	<u>122,000,000</u>	<u>0.194%</u>	<u>0.050%</u>
Total	145,780,000	0.200%	0.054%

In early 1968, Noranda Mines estimated ore reserves at 177 million tons grading 0.183% copper and 0.049% molybdenum. These reserves included 26 million tons to be mined during the first three years grading 0.212% copper and 0.063% molybdenum.

As a result of conversations with management and visits to the property, we believe that the grade estimated by Noranda is conservative. In addition, a slight improvement in ore grade over the computer based values

has been indicated during pit preparation from analysis of blast hole cuttings and from exposure of a high grade section of molybdenite mineralization on two bench levels. For these reasons we have used the ore grade figures prepared by the independent consultant in our estimates.

The ore reserves are sufficient for a minimum of 16 years of operation at 24,000 tpd and there is an excellent possibility that additional reserves will be delineated on the property as the orebody is open both laterally and at depth.

MARKETING

Copper

The Company has contracted for the sale of all of its copper concentrates to the Nippon Mining Company Limited of Japan for a period of five years. The terms of the contract state that payment for the copper content of the concentrates will be based on the United States Export Refinery Price, as quoted in the Engineering and Mining Journal (E&MJ) published weekly in New York.

The contract provides for normal copper losses during the smelting and refining processes. This penalty has been estimated to be equal to 20 lbs. of copper per ton of concentrates shipped which is a normal deduction in most smelter contracts. In addition, the contract incorporates a confidential base charge which includes smelting and refining costs as well as the cost of moving the concentrates from Vancouver to Japan. A figure of \$25 per ton of concentrate has been used in our calculations which is thought to be a reasonable estimate of this cost.

The Company has negotiated a contract for shipment of copper concentrates from the mine property to Vancouver, a distance of about 320 miles, which includes storing, loading and trimming of concentrates on board ship. This cost has been estimated to be \$6 per ton of concentrate shipped.

Copper is currently in short supply and the U.S. Export Refinery Price averaged \$0.61 per lb. U.S. in the first eleven months of 1969, and \$0.69 per lb. U.S. during November. A modest oversupply of copper is expected to develop in 1971 and continue through 1973. However, even modest production stoppages would eliminate this surplus situation. In view of the large portion of free-world production from politically unstable countries, it is highly probable that abnormal work stoppages will occur. In spite of this fact, and in order to be conservative, we have assumed copper prices of \$0.50 per lb. U.S. in 1970, \$0.48 per lb. U.S. in 1971, and \$0.45 per lb. U.S. thereafter.

Molybdenum

An agreement has been signed with Noranda Sales Corporation Limited, who will act as agents for the sale of all molybdenite production for a period of five years. The sales commission to be charged by Noranda is understood to be about 1% of the gross value of concentrates. The terms of the contract provide for payment on an F.O.B.-plant basis at the E&MJ quoted Climax price.

Molybdenum has been in oversupply since 1967 and the excess of supply is expected to continue through 1973. In spite of this, the price of molybdenum, in the form of molybdenite concentrates, was increased from \$1.62 U.S. to \$1.72 U.S. per lb. in January 1969. The price for molybdenum has remained constant at the published Climax price for primary high purity concentrate; however, discounts have recently appeared in the pricing structure for by-product material with impurities. The price stability for high purity concentrate has resulted from the dominant position of American Metal Climax in the industry. Climax produces approximately 45% of the world's molybdenum and about 90% of the world's molybdenum trades at the Climax price. Climax is expected to adjust its production according to the supply-demand relationship over the next five years in order to prevent price erosion. In view of the historical price stability and the fact that Brenda will produce a high purity concentrate, we have used the current molybdenum price of \$1.72 per lb. U.S. over the life of the mine.

PRODUCTION PLANS

Projected production statistics are illustrated in Table I. Metallurgical testing of the ore in a 100 tpd pilot plant indicated recoveries of 88% for copper and 82% for molybdenum. In addition, concentrates with minimum grades of 25% copper and 54% molybdenum, which more than meet sales specifications, have been produced in the pilot plant. It is important to note that a leaching process has been incorporated in the mill to produce a molybdenite concentrate with a 0.1% copper impurity. The Company does not expect to encounter any problems in achieving the above recovery rates and meeting sales specifications in the full-scale plant.

An operating cost of \$1.40 per ton of ore milled has been estimated and used in our projections. This estimate is based on information provided by the Company and assumes a stripping ratio of 0.5 to 1.0 which is the overall average for the designed pit. Increased labour and material costs are assumed to be offset by higher metal prices as well as technological improvements.

The plant, which is scheduled to begin preliminary operations in November 1969, has a minimum rated capacity of 24,000 tpd. As customary, the plant has been designed with a certain degree of overcapacity and operations are expected to exceed the 24,000 tpd level in 1970 and approach the 30,000 tpd operating level by the end of that year. (For example, Endako Mines, with a rated capacity of 22,500 tpd, operates in excess of 27,500 tpd). For this

reason, projections of earnings and cash flows have been made at these operating rates.

TAXES

The White Paper on Tax Reform, published recently by the federal government, proposes three basic changes in the treatment of mining companies. These are: elimination of the three year tax-exemption on new mines on December 31, 1973; revision of the depletion allowance on December 31, 1975; and significant changes in depreciation and amortization rates. The net effect will be to substantially increase the tax rate of mining companies beyond 1975. Our earnings and cash flow projections are based on the assumption that the proposals will be implemented.

FINANCING

The total capital cost required to bring the mine into production, originally estimated at \$60 million, has recently been revised to \$62.5 million. It is understood from conversations with management that the additional \$2.5 million is a maximum overrun estimate and that the capital cost could still be less than \$62.5 million. We have used the \$62.5 million estimate in our projections.

Noranda has undertaken to provide any funds required, in excess of the previously estimated \$60 million to a maximum of \$15 million to place the property in production. In this event, Noranda will receive four Brenda shares and 7.2% income bonds in the principal amount of \$100 for each \$100 advanced.

Assuming a capital cost of \$62.5 million, the following is an approximate estimate of the distribution of shares:

	<u>Number of Shares</u>	<u>%</u>
Noranda Mines Ltd.	2,190,900	51
Nippon Mining Co. Ltd. and Mitsui & Co. Ltd.	350,000	8
Others	<u>1,749,100</u>	<u>41</u>
Total	4,290,000	100

FINANCIAL ANALYSIS

In order to assess the investment worth of Brenda Mines Ltd., cash flows have been projected over the life of the proven orebody, a Present Value of the cash flows was determined and an estimate of earnings for the first three years of operations was made (in Table II). These estimates were

made for mill rates of both 24,000 tpd and 30,000 tpd. It is felt that there is a high degree of probability that a mill rate approaching 30,000 tpd will be attained during the first year of operations. The assumptions used in projecting cash flows are based on the foregoing discussions and are summarized in Table I.

A Present Value of \$10.05 per share has been determined (assuming a 10% discount factor) for an operating rate of 24,000 tpd. This is considered to be a minimum estimate in view of the excellent probability that a substantially higher operating rate will be attained in 1970. These calculations are based on conservative metal prices, operating costs and proven ore reserves and assume that all the cash flows are paid out as generated. It is important to note that this projection provides for a three and a half year payback of the \$62.5 million capital cost. Assuming an operating rate of 30,000 tpd and a 10% discount factor, a Present Value of approximately \$12.60 per share was estimated, providing for a capital payback of approximately two and a half years.

Although a Present Value calculation provides an indication of the worth of a mining stock, historical observation has indicated that it does not normally sell on its Present Value in the market place, particularly during the initial production years. Rather, the market price of the stock is normally determined by a multiple of earnings and/or cash flows, particularly those earnings generated in the first full year of production. An historical analysis of other mining situations indicates that they have sold at about eight times earnings during their first full year of production.

Brenda is expected to generate earnings and cash flows of \$2.30 per share and \$3.30 per share respectively in the nine month period April 1 to December 31, 1970, at an operating rate of 24,000 tpd. In 1971, earnings and cash flows are expected to be \$3.15 per share and \$4.50 per share respectively. If the Company attains an operating rate of 30,000 tpd by December 31, 1970 and averages 27,000 tpd in the above-mentioned nine month period, earnings and cash flows of \$2.93 per share and \$3.93 per share respectively would be generated. In 1971, earnings and cash flows are expected to be \$4.45 per share and \$5.85 per share for the 30,000 tpd operating rate.

At a current market price of \$13 $\frac{1}{2}$, the shares are trading at multiples of approximately 4.3 times and 3.0 times our projected earnings for the first full year of production at operating rates of 24,000 tpd and 30,000 tpd respectively. It is felt that the metal prices used in these projections are reasonably conservative. Due to the mining of a higher grade section of the orebody in the first three years, the earnings and cash flow projections mentioned above are not sustainable over the longer term unless, of course, additional ore is found to warrant an expansion in production capacity. As previously mentioned there is an excellent possibility that additional reserves will be developed on the property.

The major variables that could alter earnings projections are listed below, using 1970, the Company's first nine months of operations at 24,000 tpd as an example. It is our feeling that the assumptions made in Table I are reasonably conservative and for this reason any changes in the variables would tend to add to earnings projections.

- (1) A \$0.10 per lb. change in the price of molybdenum would alter earnings by \$808,100 or \$0.19 per share.
- (2) A \$0.01 per lb. change in the price of copper alters earnings by \$260,860 or approximately \$0.06 per share.
- (3) A \$0.10 per ton improvement in operating costs would increase earnings by \$657,000 or \$0.15 per share.
- (4) A 1% improvement in copper recovery would increase earnings by \$123,159 or \$0.028 per share.
- (5) A 1% improvement in molybdenite recovery would increase earnings by \$169,725 or \$0.039 per share.
- (6) A 1% improvement in overall grade of the ore treated in the mill would increase earnings by \$305,250 or about \$0.07 per share.

CONCLUSION

In view of the excellent earnings and cash flow projections, as well as the fine management team directing the Company's operations, we recommend that the shares of Brenda Mines be carefully accumulated for capital appreciation in the next 18 months.

To review the important variables in the investment decision, it is suggested that the reader return to the summary and recommendation at the beginning of the report.

BURNS BROS. AND DENTON LIMITED

C. L. Renzoni

December 15, 1969

Investment Research Department

TABLE I

BRENDA MINES LTD.

Projected Production Statistics

	-----24,000 tons per day-----				-----30,000 tons per day-----			
	<u>1970</u> (9 months)	<u>1971</u>	<u>1972</u>	<u>1973-85</u>	<u>1970*</u>	<u>1971</u>	<u>1972</u>	<u>1973-82</u>
Tons Mined per year (000' s)	6,570	8,760	8,760	8,760	7,300	10,950	10,950	10,950
Grade of Ore: %Copper	0.235	0.235	0.235	0.194	0.235	0.235	0.215	0.194
%Molybdenum	0.075	0.075	0.075	0.050	0.075	0.075	0.063	0.050
Recovery: %Copper	88	88	88	88	88	88	88	88
%Molybdenum	82	82	82	82	82	82	82	82
Grade of Concentrate								
%Copper	25	25	25	25	25	25	25	25
%Molybdenum	54	54	54	54	54	54	54	54
Lbs. of Copper Recovered (000' s)	27,173	36,231	36,231	29,910	30,193	45,289	41,435	37,388
Lbs. of Molybdenum Recovered (000' s)	8,081	10,775	10,775	7,183	8,979	13,468	11,313	8,979
Tons of Copper Concentrate	54,346	72,462	72,462	59,820	60,385	90,578	82,870	74,775
Tons of Molybdenum Concentrate	7,482	9,976	9,976	6,651	8,314	12,471	10,475	8,314
Lbs. of Copper paid for (000' s)	26,086	34,782	34,782	28,714	28,985	43,478	39,777	35,892
Lbs. of Molybdenum paid for (000' s)	8,081	10,775	10,775	7,183	8,979	13,468	11,313	8,979
Price: Copper	0.53	0.51	0.48	0.48	0.53	0.51	0.48	0.48
Molybdenum (per lb. - Canadian)	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84

* assumes 9 months of operation at 27,000 tons per day

TABLE II
BRENDA MINES LTD.
Estimated Cash Flow and Earnings
(\$000's)

	<u>24,000 tons per day</u>			<u>30,000 tons per day</u>		
	<u>1970</u> <u>(9 months)</u>	<u>1971</u>	<u>1972</u>	<u>1970*</u>	<u>1971</u>	<u>1972</u>
Gross Metal Revenue	28,729	37,575	36,521	32,523	46,968	39,908
Less: Smelting & Refining Cost	1,359	1,812	1,812	1,509	2,264	2,072
Transportation Cost	326	435	435	362	543	497
Marketing Cost-Molybdenum	148	198	198	165	247	208
Operating Cost	9,198	12,264	12,264	10,220	15,330	15,330
Total Cost	11,031	14,709	14,709	12,256	18,384	18,107
Operating Profit	17,698	22,866	21,812	20,267	28,584	21,801
Less: Interest	3,398	3,494	2,090	3,398	3,308	1,520
Tax	nil	nil	1,666	nil	614	2,026
Cash Flow	14,300	19,372	18,056	16,864	24,662	18,255
Non-Cash Charges						
Preproduction	1,125	1,500	1,500	1,125	1,500	1,500
Fixed Asset	3,187	4,250	4,250	3,107	4,250	4,250
Total	4,312	5,750	5,750	4,312	5,750	5,750
Earnings	9,988	13,622	12,306	12,557	18,912	12,505
Cash Flow per share	3.30	4.50	4.20	3.90	5.75	4.25
Earnings per share	2.30	3.15	2.85	2.90	4.40	2.90

* Assume 9 months of operation at an average of 27,000 tons per day.

Note-Capital expenditures are assumed to be \$42.5 million and have been depreciated on a straight line basis over a 10 year period.

Preproduction Expenditures are assumed to be \$15.0 million, and have been amortized on a straight line basis over a 10 year period.

DIRECTORS and OFFICERS

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