

SUPPLEMENT TO  
**820127**  
PRELIMINARY REVIEW  
OPERATIONS OF  
BRITISH COLUMBIA MOLYBDENUM LTD.

March 1, 1971

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PRELIMINARY REVIEW  
OPERATIONS OF  
BRITISH COLUMBIA MOLYBDENUM LTD.  
JANUARY 30, 1971

March 1, 1971

Project: 1423-1

CHAPMAN WOOD & GRISWOLD LTD.

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## INTRODUCTION

Subsequent to finalizing the Chapman, Wood and Griswold Preliminary Review of British Columbia Molybdenum Limited of January 30, 1971, Messrs. R. D. Lucas of Sandwell and C. R. D. Miller of C.W.&G. Ltd. visited the property at the request of Mr. P. R. Sandwell of Ritchie Developments Limited.

The purpose of this visit was to observe current operating conditions and discuss expansion possibilities in greater detail with Mr. C. T. Penney, manager, and the senior staff at the mine.

The information so gained during the period February 16 to 18, 1971, is summarized in this Supplement to our Preliminary Review.

## SUMMARY AND CONCLUSIONS

1. Conditions at the British Columbia Molybdenum Mine, observed February 16 to 18, are essentially as described in our Preliminary Review of January 30, 1971.
2. Research completed to date suggests the lead content in the concentrates can be reduced through one of the recognized leaching processes and further metallurgical research is warranted.
3. Production, now averaging 6300 t.p.d., could be sustained at a substantially higher rate which should effectively reduce operating costs to the ranges assumed in our economic projections.
4. An increase to 10,000 tons per day would increase the indicated annual output from some 5 million pounds of molybdenum per year to average about 7.7 million pounds annually for at least six or seven years.
5. Capital expenditures required for such an increase should include allowances for leaching facilities and equipment replacement on a scheduled basis. Additional capital expenditures in the concentrator and related facilities may be necessary to ensure sustained productivity at the 10,000 ton per day rate.
6. Reserve estimates used are based on detailed pit mine plans and are believed valid. The total reserves which can be mined with acceptable stripping ratios will probably exceed 100 million tons at grades in the range of 0.20% MoS<sub>2</sub>.
7. Comparative cash flow projections were completed for the 30 million ton reserves at 0.205% MoS<sub>2</sub> and the 36 million ton reserves at 0.190% MoS<sub>2</sub> to illustrate the effect of changes in profitability with

variations in realized metal prices, the production rate constant at 10,000 tons per day and all current debt eliminated.

8. In the exploitation of the reserves above the 0.16% MoS<sub>2</sub> cut-off a decrease in the realized price of molybdenum from \$1.76 per pound to \$1.66 per pound indicates a drop in PV at the 16% rate from \$16,062,000 to \$13,132,000 with low costs and from \$9,033,000 to \$5,471,000 with high costs. An increase in price to \$1.82 per pound increases the corresponding PV's to \$17,600,000 and \$11,169,000 respectively.
9. In exploitation of the reserves at the 0.12% MoS<sub>2</sub> cut-off, PV's at the similar rate and high costs vary from \$5,053,000 to \$8,630,000 to \$10,777,000 with similar changes in realized metal prices.
10. We believe that the long range potential of this deposit is sufficient to justify further detailed studies, provided that the Company's current heavy debt load can be eliminated or greatly reduced.
11. All assumptions will require substantiation by further investigations including:
  - (a) Metallurgical and marketing studies.
  - (b) Plant design research.
  - (c) Development of an ultimate mining plan, optimum operating rate and associated costs.
12. The cost of the initial phases of such an investigation, including preliminary plant and mine evaluations, should range from \$20,000 to \$40,000 dependant on the amount of metallurgical research required.

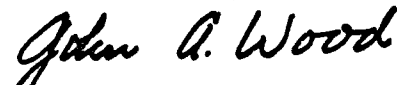
The total cost to an expansion decision might range to \$100,000.

Respectfully submitted,

CHAPMAN, WOOD & GRISWOLD LTD.

  
C. R. D. Miller, P. Eng.

Approved:

  
John A. Wood, Vice-President

March 1, 1971

## II PRODUCTION

Current production has been set at 5 million pounds of molybdenum per year. This is the amount committed in a long term contract expiring December 31, 1972, arranged by the Kennecott Metal Sales Organization. Kennecott have been unable to sell the overproduction to date of some 1.5 million pounds of molybdenum (in concentrates). There are no sales commitments subsequent to 1972.

Throughput is scheduled to average 6300 tons per day but the daily tonnage treated varies considerably, particularly during the winter season. Management has demonstrated that production at a higher rate can be achieved without major capital expense. Ore milled per day averaged 9672 tons for the fourth quarter of 1970. It is doubtful that the high production rates achieved in late 1970 could be sustained on a continuing basis without additional capital expenditures including:

- (a) Scheduled replacement of certain equipment.
- (b) Increases to pit equipment so that the daily movement of ore and waste can be maintained according to schedule.
- (c) Revisions to the concentrator and related facilities.

The mine technical staff have, in their report of July 1970, included capital and operating cost estimates for various expansion proposals and indicate that expansion to 10,000 tons per day could cost in the order of four to five million dollars. On the basis of the increased performance without additional equipment during the latter part of 1970, we assumed in our Preliminary Review that this expansion might be effected at minimal cost. The leaching plant, two additional trucks, and scheduled replacement of equipment were envisioned with no other major revisions to the processing and allied



facilities. Our recent visit to the mine suggests that further research will be required prior to finalizing an expansion decision.

Assuming an increase to 10,000 tons per day can be implemented this year the average output is indicated in the order of 7.7 million pounds annually through 1978, the 30 million tons of reserves at the 0.16% MoS<sub>2</sub> cut-off and 1.18:1 stripping ratio being depleted in 1979.

By lowering the cut-off to 0.12% MoS<sub>2</sub> and stripping ratio to 0.84:1, production of the same order could be maintained to at least 1977, mining continuing through 1980.

As stressed in our previous report, these reserves are minimal and the total mine life and productivity is dependant on the ultimate depth of mining dictated by the highest stripping ratio compatible with satisfactory returns. The feasibility study indicated a total of over 80 million tons at the 0.16% MoS<sub>2</sub> cut-off.

The priority of continued investigation is now indicated as:

1. Metallurgical and marketing research.
2. Plant design research.
3. Design of an ultimate mining schedule.

### III

## METALLURGICAL RESEARCH

One of the most serious metallurgical problems has been lead contamination in the concentrates. Premium quality concentrates must contain less than 0.06% lead. British Columbia Molybdenum is experiencing difficulty in achieving this standard and is therefore subject to penalties not only as to realized market price but also in sales competition with the higher quality concentrates now available from other sources.

The lead occurs in trace amounts as lead sulphides or lead-bismuth sulpho-salts in scattered concentrations within some late quartz veins. No relation between lead content and the abundance of molybdenum has been recognized, but lead seems to be more prevalent within certain areas of the deposit. Because of the very erratic distribution of this element the mine staff have not been able to forecast the production of "high lead ore."

This problem was apparently not fully evaluated during the feasibility study but has been the subject of considerable research since commencement of production.

Approximately 20% of current production is now diverted through a small acid leaching circuit effecting production of both a "high lead" and "low lead" molybdenite concentrate. The Company has thus been able to reduce, but not eliminate, marketing penalties since neither product is universally acceptable. Furthermore, the lead reduction achieved varies proportionately to the initial lead content of the mill heads. The staff are still experimenting with this leach circuit and have recently achieved more favorable results through the addition of calcium chloride.

The mill research staff have completed laboratory scale acid grind tests producing a concentrate assaying:

MoS <sub>2</sub>	-	98.18%
Pb	-	0.0088%
Cu	-	0.0069%
Fe	-	0.0165%
Insol	-	1.59%

A small mill is now on order and a production scale test is scheduled for later this spring.

Results of the various other bench scale leaching tests implemented at external research centres are not known but the technical staff of British Columbia Molybdenum Limited are confident that one of the established leaching methods will be applicable.

In our opinion further investigation is warranted and should include not only the selection of the optimum method but also a realistic analysis of the profitability that can be anticipated through implementation of full scale leaching of the total plant output.

IV  
MINE

The present equipment is adequate for current production. Some units now require major overhaul and others (ore trucks, service vehicles, etc.) are to be replaced on a scheduled basis.

Factors critically impeding productivity were :

- (a) a long haul road to the primary crusher;
- (b) no stockpile reserve within the crushing circuit.

These dictated that the production of ore was limited to the crushing capacity and further subject to delays in any phase of the cycle.

A shorter haul route has been established and the trucks are dumping ore onto a stockpile for transfer to the primary crusher by a front-end loader. This is satisfactory in that a higher rate of productivity can now be attained from the prime rock moving units (shovels and trucks). Maximum utilization of both shovels can not be realized, however, until the two additional ore trucks, recently ordered, are in service (May 1971). The use of the loader to charge the primary crusher will be reduced after a new direct haul road has been completed later this spring.

When fully implemented, these innovations should, through increased efficiency, cause some reduction in mining costs. A more significant reduction should be possible by increasing the mining rate. The two 6-yard shovels supplemented by a loader and the expanded truck fleet have a possible maximum productivity in the order of 12,000 tons of material moved per shift. This suggests that an expansion to 10,000 tons milled per day would not dictate further additions to the mining equipment. The sustained higher rate might be vulnerable in spare loading capability (major breakdown of

a shovel). The winter months would probably be the most critical periods.

Mining operations, on the whole, seem to be well organized with considerable thought devoted to production scheduling. Bench height has now been increased from the planned 35-foot interval to 40 feet (ideal maximum for present equipment). Blast hole pattern and depth of subgrade drilling are being varied according to rock characteristics. Snow cover masked the general pit conditions except in the current work areas but it appears that satisfactory fragmentation is being realized in the diorite and porphyry host areas (60% of the deposit). In the tougher hornfels greater care may be required in the drilling and blasting sequence to minimize secondary blasts and ensure a smooth working floor.

V

MAINTENANCE

Equipment maintenance has been unsatisfactory. The Company has been unable to secure sufficient expertise, consequently maintenance has been both expensive and poorly implemented. The low wage scale, in effect prior to December 1970, was no doubt a contributing factor and the manager commented that there has been considerable improvement in maintenance since Mr. Oishi was engaged as mechanical superintendent a few months ago. This department is still undermanned but the recently signed labor contract includes a pay increase of 19% which should encourage more applicants.

The present shop area, a wing of the mill building, seems to be adequately equipped but is much smaller than the usual design. The space restriction would certainly decrease efficiency and may have been a factor contributing to the difficulties in retaining experienced personnel. A new shop, preferably near the pit area, should be included in any expansion proposal thus vacating space desirable for additional mill equipment.

The process plant buildings are not insulated, consequently compounding winter maintenance problems.

## VI

### CRUSHING AND FINE ORE STORAGE

The primary crusher has been a source of much trouble. It is a 42-inch Allis Chalmers machine set to 4 inches on the close side. Larger rocks bridge frequently and wet fines (snow in muck, etc.) plug it readily. This condition occurs less frequently when the crusher is charged by front-end loader than in the normal dumping of the 65-ton loads. Mr. Penney stated it could be avoided by staged dumping but this is harder on the trucks.

There is virtually no coarse ore storage between primary and secondary stage crushing. This was apparently eliminated from the original design, probably due to space restrictions at the excavated mill site. One secondary and one tertiary cone crusher (both 7') seem adequate for current throughput but might be overloaded if the primary crusher were set for a wider clearance. There is space in the building for one additional crusher.

The fine ore bins are two exposed steel tanks each with a designed capacity of 10,000 tons of which only 5,000 is live storage. The original design included Mexican feeders which plug easily in the cold wet winters. Some feeders have been replaced recently by a slot type. These are working well but more feeders are needed to achieve maximum utilization of the bins. Management is also considering a source of heat beneath the bin which should further reduce delays in the supply of feed to the mill.

VII  
CONCENTRATOR

The building and processing equipment is adequate for current throughput.

The grinding section, including one rod and two ball mills, appears to be overdesigned, particularly at the grind now considered adequate (42% or higher plus 100 mesh). By shifting the three smaller regrind mills an additional rod mill could be positioned.

Space for additional flotation capacity could be achieved through repositioning of the various processing units. A significant expansion, however, would probably crowd the mill and certainly an exterior addition would be required should full scale leaching be implemented.

The site has been excavated in rock on the hillside. Consequently exterior expansion of the mill is rather restricted and expensive. For any major expansion, the adjoining building, now the maintenance shop, should provide adequate space.



VIII  
LABOR AND RELATED FACILITIES

A new labor contract has just been negotiated authorizing a wage increase of about 19% to the 196 hourly rated employees. Staff rates have not been adjusted to date. This will alleviate the disparity between rates at British Columbia Molybdenum Limited and other northern mines, but further increases may be mandatory to attract and maintain a well trained and stable work force.

Mr. Penney is striving, with fair success, to develop a strong management team. His senior staff seem to be conscientious and enthusiastic young men with considerable interest in the future development of the mine. They unfortunately lack the experience that develops with age, consequently greater efficiency might be attained with more experienced direction.

Accommodation in the townsite includes company houses and mobile home sites for about 25% of personnel. The new community centre has boosted morale considerably and all married personnel contacted seem very contented with both the quality of their homes and the community as a whole. There appear to be limited amenities, however, for single employees in the dormitories, other than the community centre and the natural sports. A higher percentage of family housing is desirable since turnover of single status employees will probably continue at a very high rate unless a more balanced community can be developed.

Expansion plans outlined by the mine technical staff include allowances for further community development.

IX  
ECONOMIC CONSIDERATIONS

We have compiled, from Company records, the operating cost and production data by months since July 1969. Cost trends are partly obscured through seasonal fluctuations but they do emphasize that the lowest operating costs are synonymous with periods of highest productivity. As these statistics include allowances for deferred expense amortization, they substantiate our preliminary choice of operating costs at the varying production rates.

The most favorable mining costs per ton milled were achieved in September and November 1970. Costs per ton of material moved were \$0.409 and \$0.575 respectively, the lower rate in September reflecting a higher total material movement. The equivalent cost per ton moved was \$0.523 in December.

Milling costs show similar variations. The lower costs are generally experienced in the warmer months but during 1970 costs were lowest in the September through November period of peak productivity. Comparative milling figures for the last four months of 1970 are:

	Tons Milled	Tons/Day	Cost/Ton
September	363,926	8,798	\$0.847
October	305,110	9,842	\$0.657
November	312,623	10,421	\$0.750
December	236,300	8,752	\$1.014

We have expanded three of the original cash flows to produce six additional ones based on assumptions identical to those in our Preliminary Review with respect to:

- (1) Elimination of present debt
- (2) Taxation
- (3) Reduction of lead contamination by leaching

- (4) Similar ore reserve estimates, stripping ratios and operating cost data
- (5) Production rate of 10,000 tons per day sustained at no increased capital cost other than the previously scheduled leaching plant at \$500,000 in 1971, additional trucks in 1973 and the scheduled replacement equipment.

The revised assumptions are two additional molybdenum prices (\$1.66 and \$1.82) for each case. The original three cases at the \$1.76 realized price have been repeated for convenience.

It is stressed that these are also preliminary assessments of potential return based on theoretical parameters, all of which will require critical review should the indicated potential meet investment goals. It is further emphasized that because of a lack of detailed annual projections, the cash flows terminate less than half way through the life of the deposit as indicated by the reserve calculations of 1969.

The nine cash flows reflect the effect of the following variables:

1. Ore reserves

- (A) 30,000,000 tons @ 0.205% MoS<sub>2</sub> and
  - (B) 36,000,000 tons @ 0.190% MoS<sub>2</sub>
- with appropriate stripping ratios for each.

2. A production rate of 10,000 tons per day in all cases.
3. Costs "high" (H) or close to those recently achieved and "low" (L) which we believe can be achieved with efficient operation.

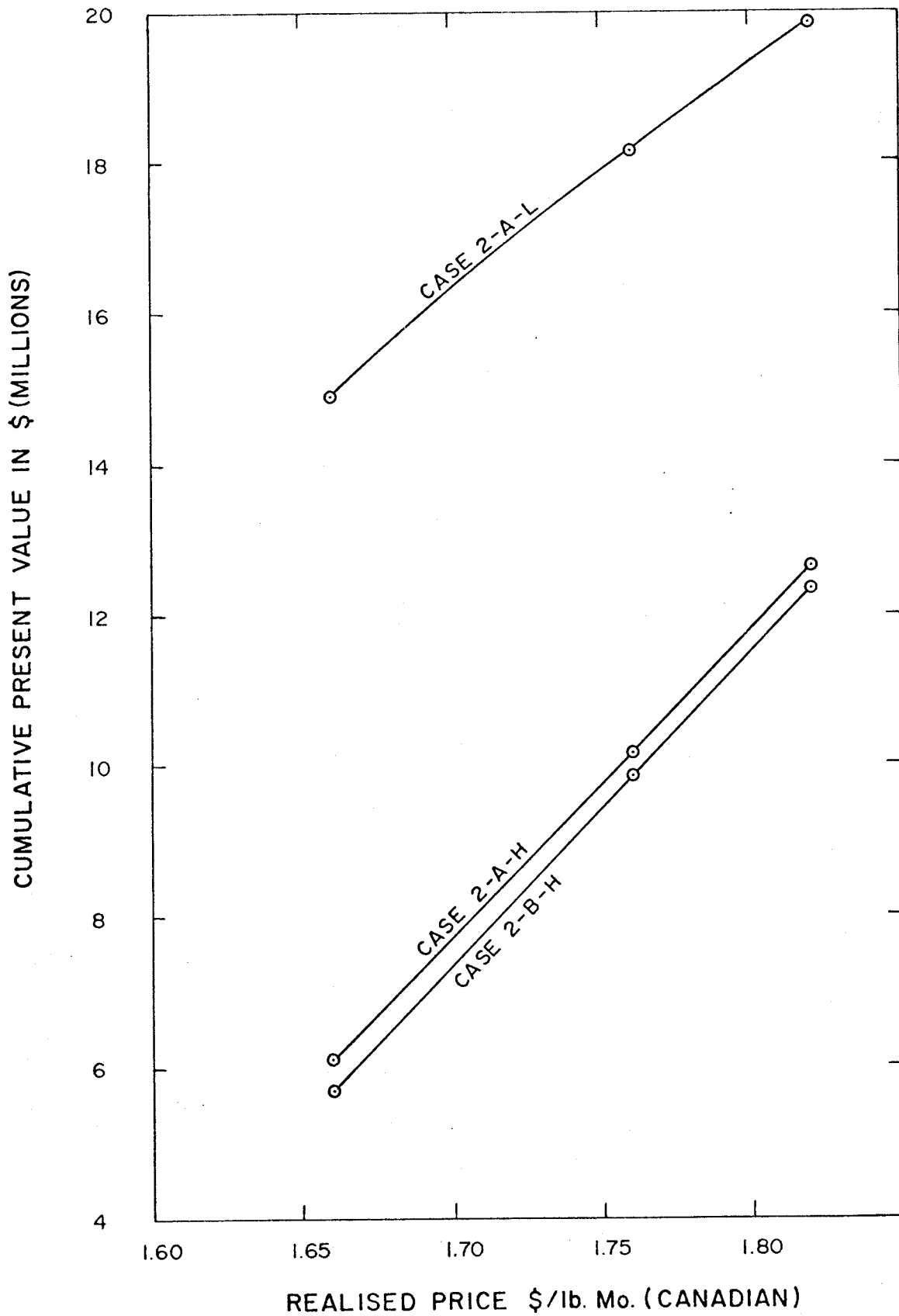
4. All production sold at Canadian prices of \$1.66, \$1.76 and \$1.82 per pound contained molybdenum. Selling and general expenses of about \$0.025 per pound have been deducted from the above prices.

Pertinent results are tabulated below and illustrated graphically on the following pages.

Case	Life (years)	Maximum Production Mo/Yr. (000s lbs.)	Realized Price (per lb.)	PV's in \$000s		
				@ 12%	@ 14%	@ 16%
2 AL	9	8,497	\$1.66	14,910	13,973	13,132
			\$1.76	18,173	17,062	16,062
			\$1.82	19,865	18,674	17,600
2 AH	9	8,497	\$1.66	6,106	5,772	5,471
			\$1.76	10,185	9,579	9,033
			\$1.82	12,632	11,862	11,169
2 BH	10	7,959	\$1.66	5,710	5,361	5,053
			\$1.76	9,879	9,216	8,630
			\$1.82	12,381	11,529	10,777

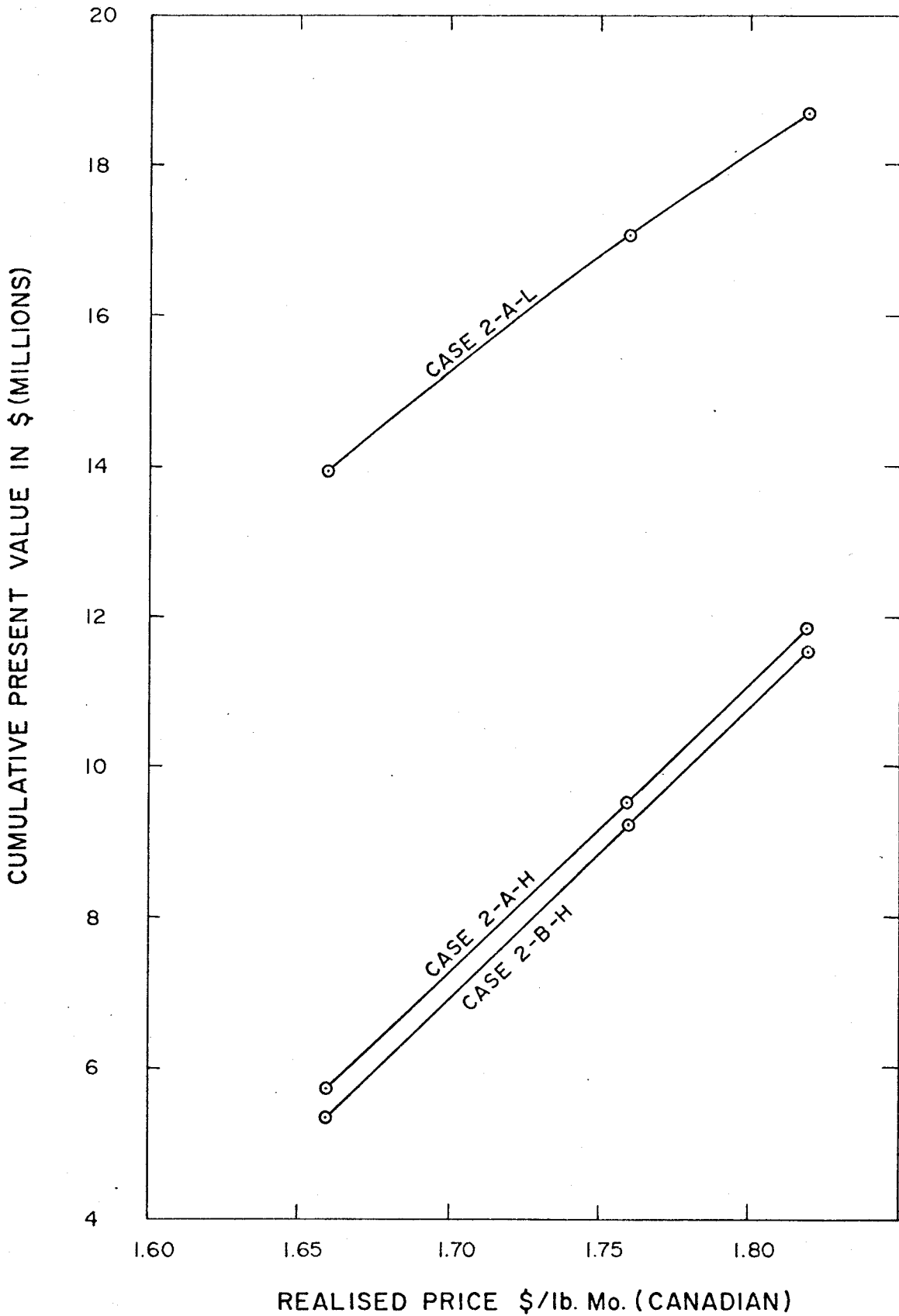
The annual operating criteria for each of the cases are tabulated at the end of this section.

PV AT 12 %



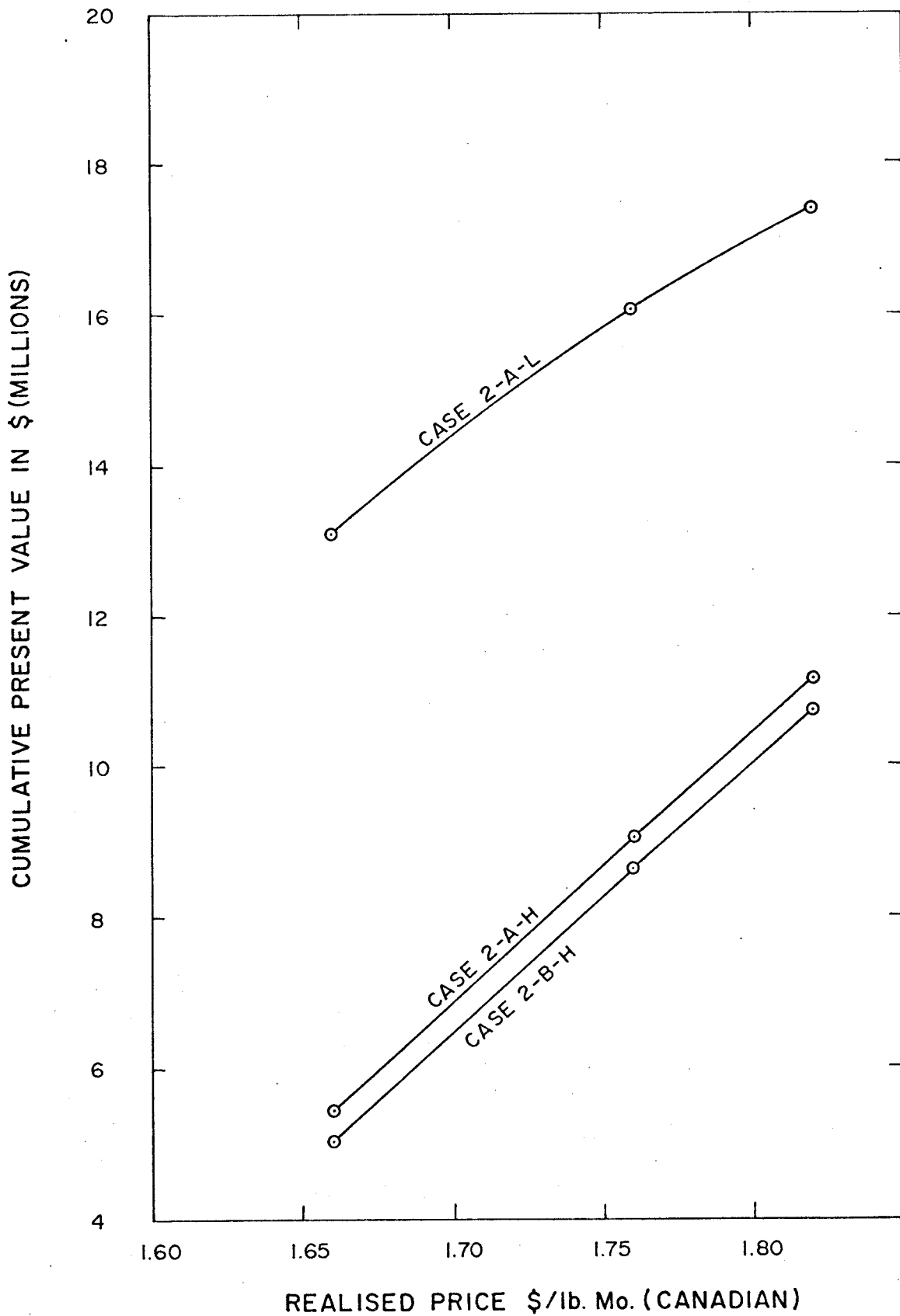
Assumed Production - 10,000 tons per day at high (H) and low (L) operating costs

PV AT 14 %



Assumed Production - 10,000 tons per day at high (H) and low (L) operating costs

PV AT 16 %



Assumed Production - 10,000 tons per day at high (H) and low (L) operating costs

## BRITISH COLUMBIA MOLYBDENUM LIMITED

## ANNUAL OPERATING CRITERIA

## CASE 2-A-L

## Assumptions:

Milling Rate:	10,000 tpd
Cut-Off Grade:	0.16% MoS <sub>2</sub>
Reserves:	30,000,000 tons @ 0.205% MoS <sub>2</sub>
Low Operating Costs:	
Mining	\$0.40 per ton moved @ 1.18 / 1.00
Milling	\$0.80 per ton ore
Leaching	\$0.06 per ton ore
General Plant	\$0.85 per ton ore

~~2.11~~ 2.58

	1971	1972	1973	1974	1975	1976	1977	1978	1979
Ore Mined, 000s tons	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,560	1,515
Mill Heads, % MoS <sub>2</sub>	0.219	0.219	0.204	0.186	0.212	0.213	0.221	0.175	0.175
Stripping Ratio	1.00	1.00	1.00	1.38	1.50	1.50	1.08	0.59	0.81
Mo Produced, 000s lbs.	8,420	8,420	7,843	7,151	8,151	8,189	8,497	6,728	2,863
Cost Per Ton Milled, \$	2.510	2.510	2.510	2.662	2.710	2.710	2.542	2.346	2.434

14819  
8932  
5883



BRITISH COLUMBIA MOLYBDENUM LIMITED

ANNUAL OPERATING CRITERIA

CASE 2-A-H

Assumptions:

Milling Rate: 10,000 tp.d  
 Cut-Off Grade: 0.16% MoS<sub>2</sub>  
 Reserves: 30,000,000 tons @ 0.205% MoS<sub>2</sub>

High Operating Costs:

Mining \$0.50 per ton moved @ 1.18/1.00  
 Milling \$0.95 per ton ore  
 Leaching \$0.08 per ton ore  
 General Plant \$0.95 per ton ore

3.07

	1971	1972	1973	1974	1975	1976	1977	1978	1979
Ore Mined, 000s tons	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,560	1,515
Mill Heads, % MoS <sub>2</sub>	0.219	0.219	0.204	0.186	0.212	0.213	0.221	0.175	0.175
Stripping Ratio	1.00	1.00	1.00	1.38	1.50	1.50	1.08	0.59	0.81
Mo Produced, 000s lbs.	8,420	8,420	7,843	7,151	8,151	8,189	8,497	6,728	2,863
Cost Per Ton Milled, \$	2.980	2,980	2,980	3.170	3.230	3.230	3.020	2.775	2.885

## BRITISH COLUMBIA MOLYBDENUM LIMITED

## ANNUAL OPERATING CRITERIA

## CASE 2-B-H

## Assumptions:

Milling Rate:	10,000 tpd
Cut-off Grade:	0.12% MoS <sub>2</sub>
Reserves:	36,000,000 tons @ 0.190% MoS <sub>2</sub>
High Operating Costs:	
Mining	\$0.50 per ton moved
Milling	\$0.95 per ton ore
Leaching	\$0.08 per ton ore
General Plant	\$0.95 per ton ore

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Ore Mined, 000s tons	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,560	3,540
Mill Heads, % MoS <sub>2</sub>	0.201	0.201	0.201	0.180	0.171	0.207	0.186	0.202	0.185	0.165
Stripping Ratio	0.50	0.50	0.50	1.23	1.18	1.00	1.00	1.00	0.75	0.19
Mo Produced, 000s lbs.	7,728	7,728	7,728	6,921	6,575	7,959	7,151	7,766	7,113	6,308
Cost Per Ton Milled, \$	2,730	2,730	2,730	3,095	3,070	2,980	2,980	2,980	2,855	2,575

BRITISH COLUMBIA MOLYBDENUM LIMITED

OPERATING COSTS BY MONTHS, JULY 1969 THROUGH DECEMBER, 1970

<u>MINE</u>	<u>July</u> <u>1969</u>	<u>August</u> <u>1969</u>	<u>September</u> <u>1969</u>	<u>October</u> <u>1969</u>	<u>November</u> <u>1969</u>	<u>December</u> <u>1969</u>	<u>January</u> <u>1970</u>	<u>February</u> <u>1970</u>	<u>March</u> <u>1970</u>	<u>April</u> <u>1970</u>	<u>May</u> <u>1970</u>	<u>June</u> <u>1970</u>	<u>July</u> <u>1970</u>	<u>August</u> <u>1970</u>	<u>September</u> <u>1970</u>	<u>October</u> <u>1970</u>	<u>November</u> <u>1970</u>	<u>December</u> <u>1970</u>
Drilling	\$ .123	\$ .099	\$ .132	\$ .115	\$ .118	\$ .228	\$ .202	\$ .143	\$ .120	\$ .163	\$ .144	\$ .129	\$ .154	\$ .118	\$ .156	\$ .081	\$ .099	\$ .159
Blasting	.169	.142	.170	.169	.170	.219	.168	.102	.222	.182	.123	.188	.233	.324	.135	.181	.132	.184
Loading	.206	.166	.175	.189	.210	.323	.287	.467	.391	.460	.183	.270	.427	.223	.199	.269	.195	.304
Truck Haulage	.254	.264	.418	.288	.284	.541	.451	.611	.364	.424	.428	.603	.463	.402	.218	.296	.266	.212
Haulage roads	.033	.015	.019	.053	.051	.061	.059	.052	.032	.073	.030	.044	.095	.051	.027	.008	.036	.055
Waste Dumps	.025	.025	.026	.055	.017	.050	.032	.015	.016	.017	.011	.023	.038	.021	.017	(.001)	.008	.009
General mine	.370	.224	.193	.109	.235	.373	.185	.336	.297	.138	.257	.226	(.034)	.187	.103	.265	.159	.238
Deferred expense amortization	.160	.163	.158	.156	.152	.151	.152	.164	.154	.151	.151	.151	.150	.151	.151	.152	.144	.151
Maintenance shops	.038	.042	.039	.054	.063	.090	.094	.099	.087	.090	.067	.066	.080	.020	.044	.053	.056	.082
Total cost per ton of ore mined	<u>\$1.318</u>	<u>\$1.140</u>	<u>\$1.330</u>	<u>\$1.188</u>	<u>\$1.300</u>	<u>\$2.036</u>	<u>\$1.630</u>	<u>\$1.989</u>	<u>\$1.683</u>	<u>\$1.698</u>	<u>\$1.394</u>	<u>\$1.700</u>	<u>\$1.606</u>	<u>\$1.497</u>	<u>\$1.050</u>	<u>\$1.304</u>	<u>\$1.095</u>	<u>\$1.394</u>
Stripping Ratio	\$1.641	\$1.383	\$1.172	\$1.431	\$1.228	\$1.071	\$2.241	\$1.930	\$1.485	\$1.920	\$1.482	\$1.609	\$1.586	\$2.255	\$1.566	\$1.011	\$0.905	\$1.664
Total cost per ton of material moved	\$0.499	\$0.478	\$0.612	\$0.489	\$0.568	\$0.983	\$0.503	\$0.679	\$0.677	\$0.582	\$0.562	\$0.652	\$0.621	\$0.460	\$0.409	\$0.649	\$0.575	\$0.523
<u>CONCENTRATOR</u>	<u>July</u> <u>1969</u>	<u>August</u> <u>1969</u>	<u>September</u> <u>1969</u>	<u>October</u> <u>1969</u>	<u>November</u> <u>1969</u>	<u>December</u> <u>1969</u>	<u>January</u> <u>1970</u>	<u>February</u> <u>1970</u>	<u>March</u> <u>1970</u>	<u>April</u> <u>1970</u>	<u>May</u> <u>1970</u>	<u>June</u> <u>1970</u>	<u>July</u> <u>1970</u>	<u>August</u> <u>1970</u>	<u>September</u> <u>1970</u>	<u>October</u> <u>1970</u>	<u>November</u> <u>1970</u>	<u>December</u> <u>1970</u>
Primary crushing	\$ .022	\$ .018	\$ .017	\$ .016	\$ .026	\$ .032	\$ .060	\$ .058	\$ .047	\$ .041	\$ .024	\$ .019	\$ .011	\$ .033	\$ .042	\$ (.012)	\$ .029	\$ .036
Secondary crushing	.064	.049	.033	.030	.046	.060	.055	.100	.068	.074	.033	.090	.027	.035	.039	.028	.023	.050
Grinding	.172	.111	.091	.101	.210	.254	.182	.210	.168	.164	.114	.184	.144	.147	.099	.101	.096	.123
Molybdenite flotation	.078	.072	.047	.067	.064	.075	.095	.095	.115	.139	.098	.104	.075	.064	.071	.054	.062	.124
Concentrate dewatering	.018	.009	.010	.011	.017	.026	.014	.015	.019	.025	.013	.016	.010	.011	.009	.014	.008	.014
Leaching	.060	.041	.047	.042	.065	.106	.002	.003	.004	.014	.003	.005	.004	.006	.004	.005	.005	.005
General concentrator	.060	.041	.047	.042	.065	.106	.076	.062	.074	.078	.053	.068	.046	.060	.033	.032	.034	.053
Field repair & shops	.006	.005	.006	.010	.008	.019	.009	.007	.008	.011	.006	.006	.006	.021	.011	.010	.011	.014
Handling & loading molybdenite	.034	.031	.029	.037	.038	.036	.056	.035	.044	.027	.034	.040	.036	.024	.030	.038	.037	.037
Cost per lb. molybdenum content	<u>.454</u>	<u>.336</u>	<u>.280</u>	<u>.314</u>	<u>.474</u>	<u>.608</u>	<u>.549</u>	<u>.585</u>	<u>.547</u>	<u>.573</u>	<u>.378</u>	<u>.532</u>	<u>.359</u>	<u>.401</u>	<u>.338</u>	<u>.270</u>	<u>.305</u>	<u>.456</u>

BRITISH COLUMBIA MOLYBDENUM LIMITED

SUMMARY OF OPERATING COSTS AND PRODUCTION STATISTICS BY MONTHS  
 JULY 1969 THROUGH JANUARY 1971  
 (taken from Company records)

	1969						1970						1971				1969	1970			
	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.		
<b>COST SUMMARY</b>																					
Mine	\$1.318	\$1.140	\$1.330	\$1.188	\$1.300	\$2.037	\$1.630	\$1.989	\$1.683	\$1.698	\$1.394	\$1.700	\$1.606	\$1.497	\$1,051	\$1.304	\$1.095	\$1.395	\$1.39	\$1.351	\$1.458
Concentrator	1.034	.978	.811	.858	.988	1.200	1.143	1.297	1.156	1.089	.895	.878	1.020	.882	.847	.657	.750	1.014	1.10	1.033	.936
General Plant	1.493	1.512	1.384	1.453	1.527	2.239	2.075	2.057	1.901	2.169	1.575	1.678	1.726	1.612	1.362	1.180	1.150	1.748	1.17	1.752	1.622
Total Per Ton Ore Mined	\$3.845	\$3.630	\$3.525	\$3.499	\$3.815	\$5.476	\$4.848	\$5.343	\$4.740	\$4.956	\$3.864	\$4.256	\$4.352	\$3.991	\$3.260	\$3.141	\$2.995	\$4.157	\$3.66	\$4.136	\$4.016
Total Per Lb. Mo Produced	\$1.689	\$1.247	\$1.216	\$1.280	\$1.832	\$2.778	\$2.325	\$2.414	\$2.242	\$2.605	\$1.633	\$2.577	\$1.533	\$1.815	\$1.299	\$1.291	\$1.217	\$1.869	\$1.77	\$1.751	\$1.761
<b>PRODUCTION STATISTICS</b>																					
<b>MINE</b>																					
Days Operated	26	26	26	28	25	30	30	26	28	26	26	26	26	26	25	26	25	25	?	316	315
Ore Mined - tons	219,791	217,373	234,833	238,825	210,725	190,599	163,795	168,154	186,543	179,322	217,888	215,741	226,331	217,495	263,926	305,110	312,623	236,300	209,400	2,356,514	2,693,228
Waste Moved - tons	360,780	300,540	275,340	341,880	271,245	204,260	367,055	324,420	276,960	344,340	323,000	347,200	358,980	490,440	413,340	308,035	282,780	393,180	203,118	3,466,618	4,229,730
Total Material - tons	580,571	517,913	510,173	580,705	481,970	394,859	530,850	492,574	463,503	523,662	540,888	562,941	585,311	707,935	677,266	613,145	595,403	629,480	412,518	5,823,132	6,922,958
Stripping Ratio	1.641:1	1.383:1	1.172:1	1.431:1	1.288:1	1.071:1	2.241:1	1.930:1	1.485:1	1.920:1	1.482:1	1.609:1	1.586:1	2.255:1	1.566:1	1.010:1	0.905:1	1.664:1	0.97:1	1.471:1	1.571:1
Ore Mined, tpd	8,454	8,361	9,032	8,529	8,429	6,353	5,460	6,467	6,662	6,897	8,380	8,298	8,705	8,365	10,557	11,735	12,505	9,452		7,457	8,550
<b>CONCENTRATOR</b>																					
Days Operated	31	31	30	30	30	31	31	28	31	30	31	30	31	31	30	31	30	27	30	362	361
Ore Milled - tons	214,901	222,263	234,833	238,825	210,725	190,599	163,795	168,154	186,543	179,322	217,888	215,741	226,331	217,495	363,926	305,110	312,623	236,300	209,400	2,362,752	2,693,228
Ore Milled/day - tons	6,932	7,170	7,828	7,961	7,024	6,148	5,284	6,006	6,018	5,977	7,029	7,191	7,301	7,016	8,798	9,842	10,421	8,752	6,980	6,527	7,460
Mill Heads, % MoS <sub>2</sub>	0.214	0.249	0.238	0.235	0.167	0.176	0.181	0.185	0.194	0.178	0.193	0.174	0.243	0.205	0.228	0.219	0.213	0.193	0.176	0.217	0.203
Mill Recovery, % MoS <sub>2</sub>	91.725	90.514	89.671	89.673	89.384	89.192	90.713	89.641	89.509	87.983	91.373	87.283	89.679	91.073	91.504	92.732	91.962	91,272	88.90	89.701	90.687
Mo Produced, lbs.	*500,257	632,789	680,471	652,632	438,710	375,665	341,595	372,106	394,429	341,174	515,601	356,311	642,590	478,220	662,430	742,167	769,045	525,637	433,745	5,567,709	6,141,305
Concentrate Assay, % MoS <sub>2</sub>	93.277	94.141	92.119	92.795	89.529	90.063	92.313	91.909	88.622	89.735	93.256	90.804	94.429	93.230	93.669	90.560	91.420	93.338	91.40	91.590	92.070

\*Based on corrected weights

BRITISH COLUMBIA MOLYBDENUM LIMITED

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 JULY 1969 THROUGH JANUARY 1971  
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\*Based on corrected weights