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LETTER OF TRANSMITTAL

Mr. Peter Steen, President,
Cassiar Asbestos Corporation Limited,
2000 Guinness Tower,
1055 West Hastings Street,
Vancouver, B.C. V6E 3V3

Dear Mr. Steen:

The following report on the Bear Creek orebody at Clinton Creek has been prepared at your request by Mr. N. Gritzuk, Professor G. R. Davis, and myself following a visit to the Clinton Creek Mine from April 15th to April 20th, 1975.

We have been provided with all relevant information by the mine staff, and wish to acknowledge the co-operation and courtesies we received while on the property, with special reference to Messrs. Norman Kelly, Grant Smith, and David Acason.

Yours faithfully,

Rick W. Blanton

061715

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REPORT

ON

BEAR CREEK OREBODY

CLINTON MINE

CASSIAR ASBESTOS CORPORATION

CLINTON CREEK, YUKON TERRITORY

BY

LEIGH W. BLADON

G. R. DAVIS

N. GRITZUK

Vancouver, B.C.

April 24, 1975.

Leigh W. Bladon

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CONT'D.

PRELIMINARY REMARKS

PRELIMINARY REMARKS

The Clinton Mine of Cassiar Asbestos Corporation Limited is located about six miles from the confluence of the Forty-Mile river with the Yukon river, and nine miles from the Yukon Alaska boundary. (Reference - Exhibit 4.)

The mine has been in production by open pit since 1967 and is now approaching the end of its ore reserves. There is an extension of the mineralized zone to the south-west of the Porcupine open pit. The fibre content of the extension does not appear to differ greatly from that of the open pit, but it plunges beneath an increasing burden of waste rock which puts it in a sub-ore category.

Two approaches have been made to determine if it would be feasible to mine the extension. One approach has been by continuing open pit methods, and the other approach by underground methods. A study of the situation has been made for the purpose of this report, with the unavoidable conclusion that neither mode of operation would be economically feasible. In this regard it should be noted that the tonnage of mineralized zone physically available by open pit is in the order of 6,400,000, but that little

more than half this amount would be available by an underground operation.

Throughout this report the extension of the mineralized zone to the southwest of the Porcupine open pit is referred to as "The Bear Creek Orebody". Its relationship to the present Porcupine open pit is shown on Exhibits 5 and 6.

The Snowshoe open pit, although mentioned occasionally in this report, is not very pertinent to the Bear Creek orebody. The Snowshoe orebody is relatively small compared to the Porcupine orebody and lies approximately 1,800 feet in an easterly direction from it. Ore is currently being taken from both the Porcupine and Snowshoe open pits.

There is also a smaller orebody known as Creek. It is mined intermittently, and lies approximately 1,000 feet in an easterly direction from Porcupine.

The inventory of ore reserves for the Porcupine, Snowshoe, and Creek orebodies as of January 1, 1975, is shown in Exhibit 1.

A typical cross section through the Porcupine open pit is shown on Exhibit 7, and a trial cross section through the Bear Creek orebody is given in Exhibit 8.

CONCLUSIONS

CONCLUSIONS

1 - It is not in the best interest of the Company to mine the Bear Creek orebody by open pit.

2 - An underground mine in the Bear Creek orebody would be economically not viable and physically uncertain.

3 - It would be advisable to cease operations at the Clinton Mine upon depletion of the Porcupine, Snowshoe, and Creek open pits.

NOTE -

The exploitation of the Bear Creek orebody is highly sensitive to fluctuations in fibre prices and the relativity of these prices to inflationary pressures on labour rates, equipment costs, and supply costs. The effects of inflation, being unknown in absolute terms, have not been taken into account in assembling this report.

SUMMARY OF ESTIMATED FIGURES

SUMMARY OF ESTIMATED FIGURES

A - Tons of "ore" in Bear Creek orebody amenable to open pit mining	6,400,000
Tons of waste to be removed to free above "ore"	66,500,000
Percent fibre yield from above "ore"	
- excluding CZ	4.8
- including CZ	5.3
Yieldable value per ton of above "ore"	
- excluding CZ	$16.99 (1)
- including CZ	$17.99 (1)
Cost per ton of mining above "ore" by open pit at 45 degree side-wall slope	$16.17 (2)
B - Tons of "ore" in Bear Creek orebody amenable to underground mining	3,700,000
Percent fibre yield from above "ore"	
- range	4.08 - 4.32
Yieldable value per ton of above "ore"	
- range	$12.93 - $13.76

Cost per ton of mining above "ore" by underground - range	$14.41 - $15.40

(1) See page 9-4 of Review by Professor Davis on which he points out that CZ increases the value of the ore by only 50 cents per ton after deducting marketing charges.

(2) Flattening the slope of the open pit side-walls by 3 degrees would more than cancel out the additional value of any CZ which could be marketed.

SUMMARY BY LEIGH W. BLADON

SUMMARY BY LEIGH W. BLADON

The cash flow from the Porcupine and Snowshoe orebodies should be good until mid 1978.

It would be possible physically to extend the Porcupine pit through the Bear Creek orebody and maintain mill throughput and output until 1981, but the increase in accumulated cash by so doing would not be commensurate with the expenditure and risk involved. An extension of the Porcupine open pit into the Bear Creek orebody would have to pass through a zone having an uneconomic waste to ore ratio, and would require a heavy pre-production expenditure for waste removal. (See pages 9-12 and 9-13 of Review by Professor Davis.)

It has been assumed in these estimates that both the Porcupine and Bear Creek pits would operate with 45-degree overall side-wall slopes. It is not certain that this can be done, and any necessary flattening of the side-walls would adversely affect the estimates. Such flattening could result in a serious money loss for the company. (See page 9-12 of Review by Professor Davis and page 10-2 of Comments by N. Gritzuk.)

An increase of about 19 percent in the current

average fibre price, with costs remaining static, would be necessary to make an open pit viable in the Bear Creek orebody with a side-wall slope of 45 degrees.

The definition of the Bear Creek orebody outlines is not adequate for planning an underground mining design, and there are many factors of unknown magnitude which would adversely affect the estimates for an underground operation.

The life span of an underground mine in the Bear Creek orebody is too short to settle down to a smooth operation.

The dimensions of the Bear Creek orebody are too small for an underground operation of the required daily output.

It is doubtful if mass caving would be the proper method of mining the Bear Creek orebody, and considerable experimentation would be necessary before determining the most effective and economic mine design. Ground control and dilution by argillite would be the key factors.

From a corporate point of view, the Clinton mine cannot be divorced from the Cassiar mine. The Cassiar mine has the important long-term ore reserves, and investment of

available cash in Cassiar would be much more rewarding than the investment of this cash in Clinton.

QUALITATIVE REMARKS RE OPEN PIT - (BLADON)

CLINTON

QUALITATIVE REMARKS

RE OPEN PIT (BLADON)

1 - As shown in the attached Exhibits 1, 2, 2A and 3, a continuous open pit operation could be carried on into the year 1981 by mining the Bear Creek deposit.

However, on a simplistic cash flow basis, the positive cash flow after terminating the Porcupine and Snowshoe open pits would only increase from $44,855,000 to $50,133,000 at an expenditure of $103,458,000 for a pre-tax return on expenditures of 5.10 percent. This is not an acceptable situation in the first place, and in the second place the sensitivity to changes in costs, fibre yield, and pit slope relative to fibre prices could result in an eventual negative cash flow. A discounted cash flow either before or after tax liability would result in a loss as shown in Exhibit 2A.

2 - There would be a tendency to cut waste removal costs by steepening pit walls and reducing berm widths to a dangerous point. In the event of pit wall failure the object of the exercise would be defeated by losing the working faces in ore.

3 - The Bear Creek open pit has been designed for an overall pit slope of 45 degrees. The present west wall of the Porcupine pit is not in a particularly stable condition. Should it be found necessary to flatten the slope of the Bear Creek pit, then each degree of angle would represent at least 2,000,000 tons of waste removal or $1,376,000 additional expenditure. The cash flow situation does not permit reasonable tolerance for flattening the pitwall slope. (See also page 9-12 of Review by Professor Davis and page 10-2 of Comments by N. Gritzuk.)

4 - Based on a 45-degree pitwall slope, it would appear that an economically acceptable average fibre price would be $421 per ton or an increase of 18.9 percent in the current average fibre price of $354.

QUALITATIVE REMARKS RE UNDERGROUND - (BLADON)

CLINTON

QUALITATIVE REMARKS

RE UNDERGROUND (BLADON)

1 - Mine estimate of underground tonnage available is 3,672,542 at 4.08% R.M.G. and rock value of $14.28 per ton (Exhibit 1).

Degradation to be expected in fibre quality and value is not a known factor, but per experience would be between 10% and 15%. This reduces the yieldable value per ton of rock mined to approximately $13.00. (See page 10-3 of Comments by N. Gritzuk.)

Total cost of Clinton complex per ton of underground ore recovered would not be less than $14 to $16.

On this basis, a Clinton underground operation is not viable.

2 - The outlines of ore for an underground operation are not definite enough for a precise underground layout.

3 - There is no rock classification knowledge of the type of ground development headings would be in.

4 - Column height for caving is in the order of 120-180 feet, and fragmentation characteristics of the ore are not known.

There could be trouble at drawpoints with large pieces of rock blocking the openings and also putting pressure on the extraction drifts.

5 - The configuration of the orebody as projected does not lend itself to good drawpoint control, and infiltration of argillite could be fatal to acceptable fibre quality standards.

6 - It is doubtful if the large development openings required by LHD equipment could be supported without exorbitant cost.

7 - It is doubtful if the size of the orebodies could accommodate the number of drawpoints necessary for a daily mine output of 7,000 tons.

8 - The life of the mine is too short to achieve a smooth and efficient underground operation.

9 - There are too many unknown factors to either plan or cost an underground operation with any degree of certainty or accuracy.

10 - The ore body would have to be almost fully developed before the designed production could be obtained. This would

involve an initial expenditure in the order of $11,000,000 or more, exclusive of the additional diamond drilling recommended by Professor Davis, all of which would be wasted money if the underground operation were not successful. (See page 9-6 of Review by Professor Davis.)

11 - A mass caving method has been assumed appropriate for an underground operation. It is doubtful if this would be the proper method for the orebody. Considerable experimental work would have to be done before an intelligent decision could be made concerning the mining method to be used.

12 - The following statements can be considered only as generalizations, as the factors involved in arriving at them are uncertain and variable. However, they serve as an order of probability.

An underground operation to produce 7,000 tons of ore per day from the mine would require an overall personnel complement of about 550 as opposed to the present complement of 312. This reflects on townsite facilities.

An underground operation to produce 4,000 tons of ore per day from the mine would require an overall personnel complement of about 400, and would not produce enough

fibre to cover costs.

Present output of fibre is required for an acceptable open pit operation. Overall costs for an underground operation would not be less, therefore a reduction in daily output from the mine could not be tolerated.

On the basis of the year 1974 cash costs for the open pit operation, the non-profit cut-off fibre production per day is 236 tons. Maximum estimated daily fibre output from underground at 4,000 tons per day and 4.32 percent yield would be 172 tons. This is less than a cash break-even figure. At 4.08 percent yield it would be less.

Our best estimate for the minimum daily mine output is in the order of 5,000 tons for a break-even return on investment.

13 - Although the surface diamond drilling may be adequate for open pit design, it is not sufficient to define ore boundaries for the design of an underground mine. (See page 9-10 of Review by Professor Davis.)

REQUIRED FIBRE PRICE ESTIMATE

(BLADON)

CLINTON CREEK

ESTIMATION OF REQUIRED FIBRE PRICE

BEAR CREEK OPEN PIT

Total Cost	$103,458,253
25% Pre Tax Margin (o discounting)	25,864,562
Minimum Pre-Tax Revenue Required	$129,322,815
Tons of Fibre from Bear Creek at 4.8%	307,200
Average place value of Bear Creek/ton	$16.99
Average value per ton of fibre - January 1975 prices	$354

Minimum Acceptable place value/ton of ore:

$$\frac{129,322,815}{307,200} = \$420.97 \text{ say } \$421$$

Difference of $421 - 354 = $ 67

% increase required in average fibre price = $\frac{67}{354} \times 100 = 18.9$

All figures considered in static 1975 prices and costs and do not provide for escalation and inflation, or for any unusual misadventure in the open pits.

ESTIMATE OF TOTAL COSTS BY ADOPTING AN UNDERGROUND MINING METHOD (BLADON)

ESTIMATE OF TOTAL COSTS BY ADOPTING AN UNDERGROUND METHOD OF MINING

(BLADON)

	Cost per Ton of Ore Mined	
Mining Equipment	$1.20	
Development (a) outside orebody	.80	
(b) inside orebody	1.50	
Mining, crushing, conveying, services	2.50	$ 6.00
Aerial Tramline	.20	
Concentration, drying, storage	.50	
Milling	2.40	3.10
Plant Burden	1.30	
Plant Depreciation	1.10	2.40
Sales, commissions, freight, volume discounts, exchange		3.90
TOTAL COST		$15.40

Value per ton of ore with 4.32 percent yield and average fibre price of 354 dollars per ton reduced by 10 percent for degradation $13.76

NOTE:- See also pages 10-3 and 10-4 of Comments by N. Gritzuk. Bladon adds $1.10 for plant depreciation to Gritzuk's total of $13.31 to give the $14.41 shown on page 3-2.

REVIEW BY PROFESSOR G. R. DAVIS

CONTENTS

1. INTEGRITY OF ORE RESERVE ESTIMATES

Considerable time was spent with Grant Smith, the Mine Geologist, in order to verify the procedures used in estimating tonnages and grades of ore and the production of fibre quality distribution, and in checking the geological records relating to the interpretation of the shape and position of the fibre body. Brief relative comment follows on particular aspects, but in general it can be stated that the standard of professional practice is high and conscientious, and that the estimates provided by the mine staff reflect a competent interpretation of all the available data. The base data (provided largely by diamond drill holes) are however not exhaustive and permit modest variation of interpretation. The tonnages, grades and valuations provided by the mine staff are therefore accepted as the best available, with an allowance for 10% variation either way, and noting that variation in the favourable direction is more likely than vice versa. The economic outcome is particularly sensitive to average fibre grade and quality which combine to give the average place value per ton of ore at about $17.00.

The ore reserve figures estimated and provided to us

by the mine staff are as follows: (Exhibit 1)

Bear Creek Trial 3A Pit Design

Potential ore	6,438,250 tons
Recoverable mine grade	4.8% fibre excluding CZ
Average fibre value per ton	$354 excluding CZ
Average ore value per ton	$16.99
(CY production	42.5%)
Fibre bearing serpentinite	2,603,000 tons
Recoverable mine grade	1.50% fibre excluding CZ
Average fibre value per ton	$344
Average ore value per ton	$5.16
(CY production	50.9%)

Note:

1. The place value per ton of ore at Bear Creek is sensitive to whether the fibre bearing serpentinite, which must be mined, is taken either to waste or to mill. The combined figures above, assuming all to mill, are:

Tons 9.0 million	Average grade 3.8%
Average fibre value	Average place value per ton
$350	$13.60

2. The addition of CZ fibre should add about 0.5% fibre valued

at $200 per ton (January 1975 prices) or say $100 after deduction of marketing costs, equivalent to about $0.50 per ton of ore.

Underground Block Cave Mining Trial Design

The tonnages of reserves available depend heavily on the mining layout adopted, which is at present no more than a first approach. The effective recoveries of ore in situ and diluted grade to mill are also matters of estimation based on experience elsewhere. As the most important aspect of underground mining is judgment on whether or not it will be amenable for use in this particular orebody under the conditions of operational scale and life imposed, figures for ore reserves are not repeated here, and reference is made to the tabulations and economic estimates for underground mining made elsewhere in this report. (See pages 3-1, 8-1, 10-3, and 10-4 of this report.)

2. BEAR CREEK - TONNAGES

The current interpretation of the serpentinite and its contained fibre zones, based on drilling to date and experience in the Porcupine pit, is reasonable and well rationalized between cross sections, plans and longitudinal sections. Tonnages based on the current geological interpretation seem to me to provide an adequate basis for testing the feasibility of both open pit and underground mining, and I do not see any reason to suspect the possibility of relatively large increases or decreases. The current information is however insufficient for optimising an open pit, and quite inadequate for laying out an underground mining system.

Further trial pits should be computed, and relatively small departures can be expected from the figures given for Trial Pit 3A, dependent on depth and configuration at the same 45 degree slope. The main uncertainties connected directly with the orebody are the position and effects of faults, and the distribution of low grade fibre zones (under 2%) which could be handled either to mill or to waste.

A decision on underground mining would depend less on

absolute tonnage than on amenability of the orebody to the selected mining method. I would therefore agree that current tonnage calculations as provided by Clinton staff are acceptable, but it should be borne in mind that any underground operation would have extensions of ore (south-westwards and in depth) potentially available to it which are out of reach of open pits with waste:ore ratios under 15:1. If a mass mining method is further considered, then it will in my view be essential to provide a first phase of further data on the orebody to guide mining layout prior to a second and more detailed phase of exploration drilling for extraction control. The first phase exploration would consist of a minimum of the following work between sections 25 and 44:

	Feet	Cost
One exploratory drift at say 1,200 elevation located in the hanging wall for best ground and advantageous drill stations. Unit cost $200	2,500	$ 500,000
Drilling on sections 200 feet apart, mainly from underground, same from surface. Unit cost $30	20,000	600,000
Approximate total cost		$1,100,000

The amount (and cost) of work could well be doubled if the 200 feet spacing of drilled sections in this irregular ore-body provides insufficient detail.

3. BEAR CREEK - FIBRE CONTENT AND VALUE

Grant Smith has recently completed a detailed study and revision of grade and value prediction procedures at Clinton Creek, on which he is reporting, and which I believe has been thoroughly and competently conducted. The revised procedures for estimating grade in place incorporate test mill results as well as core reading results, and improved weighting procedures. The revision appears in principle to improve on former practice for short term mining control, and for long term outlook on Bear Creek reserves it has not resulted in any significant change in the forecast average grade of 4.8%. In addition the logic of the method of fibre valuation in drill core currently under trial appears to be sound and provides good agreement when tested again with results. The ore reserve estimated by Clinton staff for Bear Creek Trial Pit 3A can in my view be regarded with a degree of confidence appropriate to the amount of drill data available. Drillhole sample data plotted as histograms indicate that Bear Creek ore has a characteristic fibre content similar to that of Porcupine, which has historically produced better than 5% fibre per ton. The best fibre types and content were encountered close to the initial pit levels,

with a fall off in depth, and 4.8% recoverable mine grade would appear to be a reasonable estimate. That average estimated grade excludes CZ production for which a further 0.5% could be added. The average grade does not appear to fall off with increasing distance from Porcupine pit. For feasibility study a 10% variation on either side of the estimated average content appears to be adequate, and the estimate is likely to be well within these limits. Variation is much more likely to be caused by mining policy in an open pit where discretion can be exercised in taking marginal material near 2% fibre content either to mill or to waste.

The dollar valuation per ton of ore has little historical experience of prediction, but appears on current tests to be remarkably accurate. Consequently, the predicted average value per ton of fibre of $354 at January 1975 prices is acceptable as a sound guide within 10% variation either way, excluding CZ.

4. OBSERVATIONS ON UNDERGROUND MINING

4.1 Due to the relatively low tonnage of reserves and the high rate of extraction required for the mill capacity, the entire strike length of the fibre body will need to be delineated in sufficient detail to control mining. A first phase of exploratory drifting and diamond drilling costing about $1.1 million will be needed to precede and control the layout design of the underground extraction development. A second phase of ore delineation drilling will accompany the underground development work at a cost of about $0.9 million for production grade control. The total of about $2 million will be required as a pre-production expenditure.

4.2 A high standard of geological grade control procedures for a mass mining method will be necessary due to the relatively low vertical height of the fibre body and the non-acceptability of graphitic argillite as a dilutant. In addition, delivery of about 2 million tons per annum will require active mining spread over almost the entire strike length of the fibre body. This combination of a dispersed rather than a concentrated area of active mining and the requirement of strict grade control is likely to contribute to percentages of ore extraction and dilution more severe

than customary in mass mining operations.

4.3 There is insufficient detailed knowledge and no experience of the ground conditions which will control the mechanics of mass mining, particularly in the footwall zone containing the extraction openings. Due to the short life of the projected operation, there is insufficient time to optimise mining procedures on the basis of operational experience.

4.4 An underground mining operation would be rendered more attractive if the following factors could be accepted:

4.4.1. A lower rate of milling (to probably less than 1 million tons per annum) which will extend the life of the total reserves to say 6 or 8 years. This would require a marked lowering of fixed overhead costs, which appears to be difficult and which would require detailed study.

4.4.2. Marketability of a fibre discoloured by graphite would permit more flexibility and improved efficiencies in mining.

5. OBSERVATIONS ON AN OPEN PIT

5.1 An extension pit from Porcupine would be better than a separate Bear Creek pit as the two would in any event overlap and the intermediate zone consists of a fibre body only marginally less well developed than the main Bear Creek.

5.2 The waste argillite wall conditions will be more adverse in the Bear Creek pit and the 45 degree overall slope used in computing waste stripping tonnages for Trial Pit 3A may be too steep as an average. The increment for a 1 degree slope increase is estimated by mine staff as about 2.4 million tons. The view that conditions will be more adverse are based on the following:

5.2.1. The contorted argillites which form the troublesome north and northwest walls of the Porcupine pit will occupy a much higher proportion of a Bear Creek pit as the controlling Central Fault moves across the strike of the fibre body southwestwards.

5.2.2. The vertical height of the pit will be up to 800 feet, much greater than experienced to date in the Porcupine pit (now 650 vertical feet deep).

5.2.3. The wedge-type failures and friable rocks experienced in the Porcupine pit will also characterise the Bear Creek pit. The so-called major fault in the Porcupine pit projects along the north wall of the Bear Creek 3A pit at about the 1270 level where it would constitute a potential zone of failure as it dips down the pit slope at about 60 degrees. These and other detailed considerations indicate that a fairly generous waste cost contingency should be allowed for the tonnages calculated for the 3A trial pit - probably in the order of an additional 3.5 to 4.0 million tons.

5.3 The best approach to mining Bear Creek open pit will be rapid waste stripping and mining to minimise the time-related failures of the high waste slopes. It would be safest to cut generous initial waste slices so as to leave a very wide berm or catchment above ore. That procedure would permit safer working below without high sensitivity to waste slope failures, but would cost more in pre-production stripping capitalisation and interest charges. Also, the highest possible rate of ore extraction would be advantageous even to the point where consideration might be given

to stockpiling ore ahead of milling in order to vacate the final deep, narrow and dangerous pit as quickly as possible.

6. FUTURE MINING POSSIBILITIES AT CLINTON CREEK

A review was made of the potential sources of ore additional to the Porcupine modified 6F pit and the Snowshoe and Creek bodies. These are:

6.1 Extension of the fibre body southwestwards into Bear Creek. Beyond section 44 the serpentinite mass is under deeper topographic cover and there is no geological or geophysical evidence that a large fibre body exists within reach of open pit mining. The most westerly drilling indicates that the fibre body has reduced in size and position at the hangingwall of the serpentinite, and further exploration would be warranted only if underground mining is adopted.

6.2 Remnant ore under the bottom of the modified 6F Porcupine pit exists in relatively small tonnages (no separate estimates have been made) which could be in part recoverable by underground mining methods.

6.3 A number of prospects in the general vicinity have been explored to varying degrees over the years and rejected. Two occurrences of minor potential require further inspection, without much hope of success:

(a) A small area of serpentinite southeast of Snowshoe and probably part of the same productive intrusive, located at approximate co-ordinates 108500N and 111500E, on Nancy and Dot claims, with a magnetic anomaly. The anomaly has been related to magnetite in barren serpentinite, but some trenching is warranted.

(b) Cone Hill, near the Forty-Mile bridge, where a find during bridge construction of a boulder with half-inch fibre has been followed up only by magnetometer and visual traversing, and should be further explored.

ESTIMATES AND COMMENTS BY N. GRITZUK

EXPLOITATION OF BEAR CREEK OREBODY

The production of ore from the Bear Creek deposit was considered by open pit mining and by underground mining. The summaries are as follows:

OPEN PIT MINING

An unleveraged evaluation using year to date March 1975 costs and January 1, 1975 selling prices for asbestos gave the following results:

	Ore Value/T	Waste Cost /T Waste
No. 1	$17.00	60¢
No. 2	17.00	50¢
No. 3	19.00	60¢
No. 4	19.00	50¢

	$(000)			
	No. 1	No. 2	No. 3	No. 4
Pre-production "investment"	25,000	22,000	25,000	22,000
*Net cash flow cum.	2,367	3,650	8,867	12,310
Project DCF	4%	6%	15%	19%

The financial outcome is highly sensitive to the gross value per ton of ore. In general 12% increase in gross

*After tax

value per ton of ore results in an increase in project DCF of 12%. A decrease of 12% in gross value per ton would result in a cash loss of $1.4 million at 50¢ waste and $8.3 million with waste costs at 60¢.

PHYSICAL FACTORS

Somewhat less than one half of the present Porcupine Pit walls are in highly sheared and contorted graphitic argillite. The walls in this material show rapid loss of berms by wedge type failures. As an example, one such section which was reduced to a 45° slope in November 1974 shows considerable deterioration at this time. Due to the slope of the contained angle between the fault planes varying between 23° and 30° it is the opinion of a slope stability consultant that deterioration of the berms cannot be prevented at acceptable pit wall slopes without resorting to some form of rock bolting or retention by cable. Either would be expensive and not infallible.

Due to the strike of the fault which appears to be the dividing feature between the bedded and highly sheared and contorted argillites the Bear Creek Pit would have three quarters or more of its walls in this type of argillite. This might impose impractical conditions to mine the prescribed ore

either by virtue of safety or alternately to leave ore unmined.

COMMENT

There are no positive favourable factors apparent to offset the unfavourable ones in order to give the project serious consideration as a desirable investment.

UNDERGROUND MINING

The following evaluation was based upon data provided in the ore reserve schedule and preliminary underground planning by Clinton staff. (Exhibit 1)

Mineable U/G reserve	3,406,923 T	@ 4.32% RMG
Mill Feed (MF) produced	3,672,542 T	@ 4.08% RMG

Average fibre value estimated	$352/T fibre
Average fibre value used after allowance of 10% for degredation	$317/T fibre
Gross value per ton $12.93 - say	$13.00/T MF
Marketing Cost $80/T fibre	$ 3.26/T MF
Capital and Development Cost:	
$11.0 MM in 1973 escalated 35%	$15 MM
Capital and Development Cost amortization	$ 4.08/T MF

PRODUCTION COSTS

Mining - direct (Est.)	$ 2.00/T MF
Direct mine services (actual)	0.16
Ore delivery	0.21
Pre-concentration, drying and storage	0.47
Milling (actual adjusted)	1.50
Plant Burden (actual)	1.63
Costs at Mine	$ 5.97/T MF
Total Costs -	$13.31/T MF (1)
Gross value	13.00/T MF

It is obvious that this would not be a desirable investment.

COMMENT

A mass mining method using block caving was used in the Clinton study with the draw being restricted to recovery of only 55% of the in situ reserves in order to avoid the ingress of the graphitic argillite and thus rendering the asbestos unfit for sale. Upon reviewing the individual vertical cross-sections the shapes of the ore are such that the application of a mass mining method such as block caving is practical to yield the results postulated. Sub-level caving would have a better chance of success at higher cost and open stoping using

(1) See note on page 8-1

small stopes and leaving one half the ore in pillars would have a much greater degree of certainty in providing clean mill feed to the extent of 50% of the in situ reserve but at a still higher cost.

The uncertainty in proceeding underground is far greater than mining by open pit and is not recommended.

GENERAL

One cannot isolate the economic evaluation of Bear Creek ore from the needs of the Corporation for its well-being. It appears that the cash flow generated over the remaining life of Clinton could be used to better advantage for the needs of the Cassiar mine to upgrade its efficiency and regain its profitability, rather than undertake what might be a break-even operation by mining the Bear Creek ore by open pit.

CASSIAR ASBESTOS CORPORATION LIMITED

CLINTON MINE

SUMMARY OF ORE AND WASTE TONNAGE INVENTORIES - JANUARY 1, 1975

	[illegible] OREBODY	SNOWSHOE OREBODY	CREEK OREBODY	TOTALS	BEAR CREEK FIBRE ZONE OPEN-PIT	BEAR CREEK FIBRE ZONE UNDERGROUND
					(TRIAL-3A) POTENTIAL ORE	
PROBABLE ORE	4,256,258 TONS	2,130,358 TONS		6,386,616 TONS	6,438,250	3,406,923
Recoverable Mine Grade	4.88%	4.16%		4.64%	4.80%	4.32%
Recoverable (%)+ 14 Mesh	33.7%	34.2%		33.9%	31.5%	
Average Fibre Value/Ton	$358	$356		$357	$354	$352
Average Ore Value/Ton	$17.47	$14.81		$16.56	$16.99	
% CY Production	39.6%	40.8%		40.1%	42.5%	43.6%
					FIBRE BEARING SHEE.	
POSSIBLE ORE	231,360 TONS	461,140 TONS	431,840 TONS	1,124,340 TONS	2,603,000	(Station) 265,619
Recoverable Mine Grade	3.40%	3.50%	4.69%	3.94%	1.50%	0.96%
Recoverable (%)+ 14 Mesh	32.3%	33.4%	34.6%	33.6%	30.2%	
Average Fibre Value/Ton	$350	$353	$359	$354	$344	
Average Ore Value/Ton	$11.90	$12.35	$16.84	$13.95	$5.16	
% CY Production	44.9%	43.3%	39.3%	42.1%	50.9%	
WASTE	6,358,585 TONS	455,449 TONS	433,022 TONS	7,247,056 TONS		
Possible Ore to Mine Even if Wasted	210,000 TONS	325,020 TONS		535,020 TONS		
MAXIMUM WASTE	6,568,585 TONS	780,469 TONS	433,022 TONS	7,782,076 TONS	66,535,800	
MAXIMUM WASTE: PROBABLE ORE RATIO	1.54:1	0.37:1	100:1	1.22:1 (Excluding Creek Possible 1.07:1)	10.33:1	

TOTAL PROBABLE + POSSIBLE ORE = 7,510,956 tons @ 4.54% RECOVERABLE MINE GRADE and 33.9% + 14 MESH

BEAR CREEK - UNDERGROUND - Extreme condition of Argillite dilution - Total tonnage to remove through Block Caving = 3,672,542 tons @ 4.08% R.M.G. Rock value estimated at $14.28/ton.

CREEK PIT

New pit design in 1974; requires feasibility check with regard to proximity of pit wall to primary crusher.
136,100 tons of indicated possible ore are within the previous pit design and were classified as "probable".
This tonnage can still be considered "probable" and should be available when Snowshoe pit is developed to 1280 level.
1,222 tons of Creek pit waste are associated with this ore.
Some possible ore can be excluded from pit designs if proven to be "waste".

EXHIBIT 1

TABLE TO S PROBABLE PRE-TAX CASH FLOW

OF PORCUPINE, SNOWSHOE, AND BEAR CREEK OPEN PITS

PORCUPINE AND SNOWSHOE OPEN PITS

YEAR	TONS ORE	TONS WASTE	TOTAL VALUE OF ORE TO CRUSHER	DIRECT COST ONLY			CASH MARGIN
				TOTAL COST AGAINST ORE TO CRUSHER	TOTAL OF ALL OTHER COSTS	TOTAL COST	
1975	2,160,000	4,300,000	35,144,444	4,605,225	17,596,320	22,201,545	12,942,899
1976	2,160,000	2,600,000	34,058,137	3,519,710	18,236,320	21,756,030	12,302,107
1977	2,066,000	500,000	35,561,685	2,088,050	17,468,320	19,556,370	16,005,315
1978	400,000	-	6,988,160	310,101	3,072,987	3,383,088	3,605,072
	6,786,000	7,400,000	111,752,426			66,897,033	44,855,393

% Return = 67 Pre-Tax

BEAR CREEK OPEN PIT

YEAR	TONS ORE	TONS WASTE	TOTAL VALUE OF ORE TO CRUSHER	DIRECT COST ONLY			CASH MARGIN
				TOTAL COST AGAINST ORE TO CRUSHER	TOTAL OF ALL OTHER COSTS	TOTAL COST	
1976	-	10,000,000	-	6,880,000	-	6,880,000	(6,880,000)
1977	-	20,000,000	-	13,760,000	-	13,760,000	(13,760,000)
1978	1,600,000	15,000,000	27,184,000	11,632,800	13,700,933	25,333,733	1,850,267
1979	2,100,000	11,500,000	35,679,000	9,634,000	17,132,320	26,766,320	8,912,680
1980	2,100,000	10,000,000	35,679,000	8,602,000	17,132,320	25,734,320	9,944,680
1981	600,000	-	10,194,000	412,800	4,571,080	4,983,880	5,210,120
	6,400,000	66,500,000	$16.99/ton total 108,736,000			$16.17/ton total 103,458,253	% Return = 9.10 Pre-Tax 5,277,747

Less Early Expenditure for Townsite Facilities

Basic Return - Pre-Tax

NOTES: Direct costs include equipment depreciation at 1st quarter 1975 rates:
Waste at $0.688 per ton
Ore at $0.82 per ton
No provision for escalation

April 16, 1975
L.W.B.

PROBABLE AFTER TAX DISCOUNTED CASH FLOW

OF BEAR CREEK OPEN PIT

YEAR	PRE-TAX CASH FLOW	DISCOUNTED PRE-TAX CASH FLOW	TAX LIABILITY	AFTER TAX CASH FLOW	DISCOUNTED AFTER TAX CASH FLOW
1976	$ (7,880,000) *	$ (7,880,000)	$	$ (7,880,000)	$ (7,880,000)
1977	(14,460,000) *	(13,144,140)		(14,460,000)	(13,144,140)
1978	1,850,267	1,528,320	72,500	1,777,767	1,468,435
1979	8,912,680	6,693,423	464,000	8,448,680	6,344,958
1980	9,944,680	6,792,216	527,000	9,417,680	6,432,275
1981	5,210,120	3,235,485	1,495,000	3,715,120	2,307,089
Total	$ 3,577,747	$ (2,774,696)	$ 2,559,500	$ 1,019,247	$ (4,471,383)
Rate of return	3.46%	(2.64%)		.96%	(4.25%)

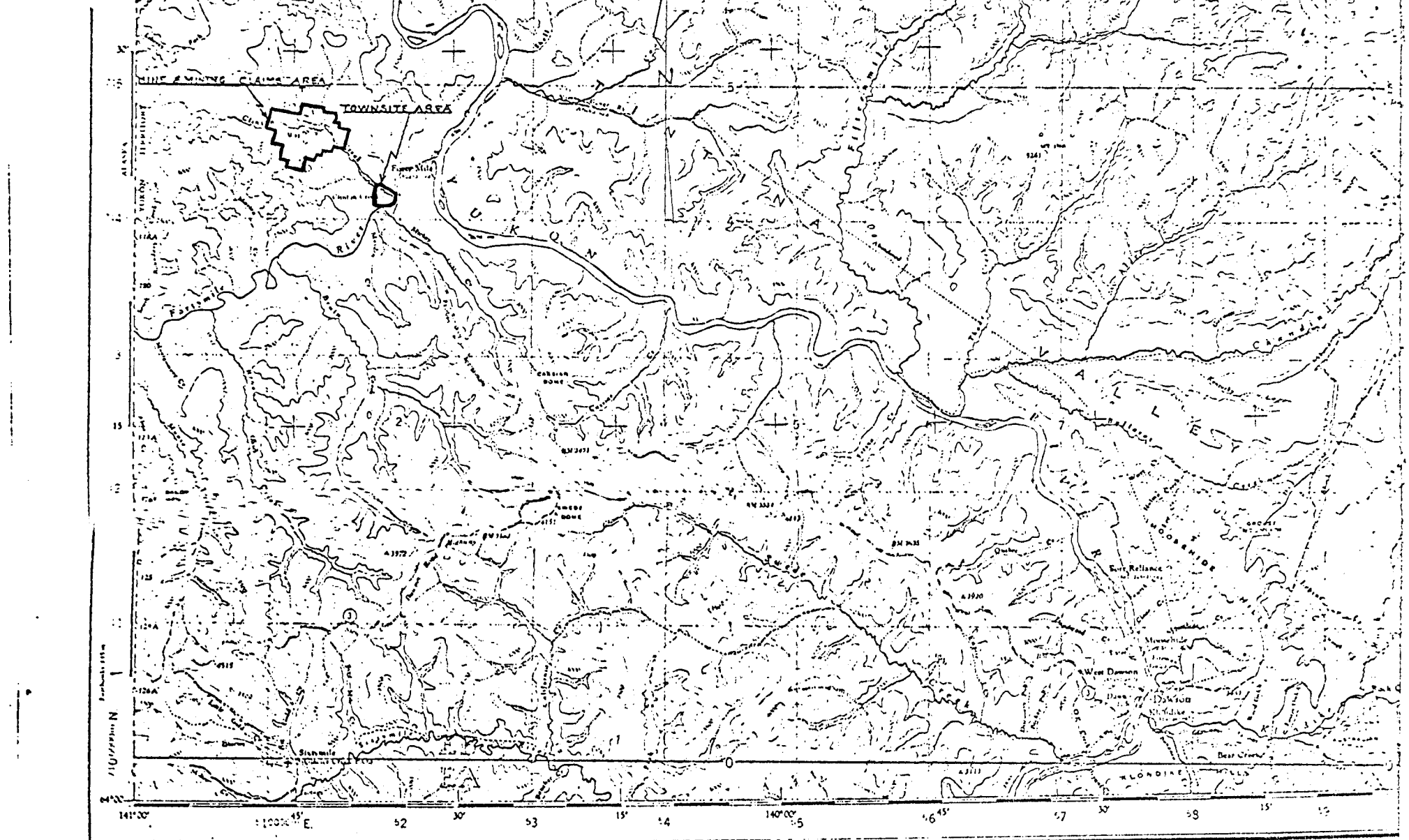
* The expenditure for townsite facilities of $1,700,000 has been distributed between 1976 and 1977.

TABLE TO SHOW PROBABLE INTEGRATED PRE-TAX CASH FLOW

OF PORCUPINE, SNOWSHOE, AND BEAR CREEK OPEN PITS

	DIRECT CASH FLOW				
YEAR	PORCUPINE & SNOWSHOE CASH MARGIN	BEAR CREEK CASH CONTRIBUTION	POSITIVE CASH FLOW	NEGATIVE CASH FLOW	OVERALL CASH SURPLUS (DEFICIENCY)
1975	12,942,899	-	12,942,899	-	12,942,899
1976	12,302,107	(6,880,000)	5,422,107	-	5,422,107
1977	16,005,315	(13,760,000)	2,245,315	-	2,245,315
1978	3,605,072	1,850,267	5,455,339	-	5,455,339
1979	-	8,912,680	8,912,680	-	8,912,680
1980	-	9,944,680	9,944,680	-	9,944,680
1981	-	5,210,120	5,210,120	-	5,210,120
TOTALS	44,855,393	5,277,747	50,133,140		50,133,140

April 21, 1975
L.W.B.



Internal Corrections 1974

ROADS - ROUTES
hard surface - pavée
loose surface - de gravier
cart track - de terre
trail - sentier
Distances - Suppressions

REFERENCE

Universal Transverse Mercator Projection

DAWSON

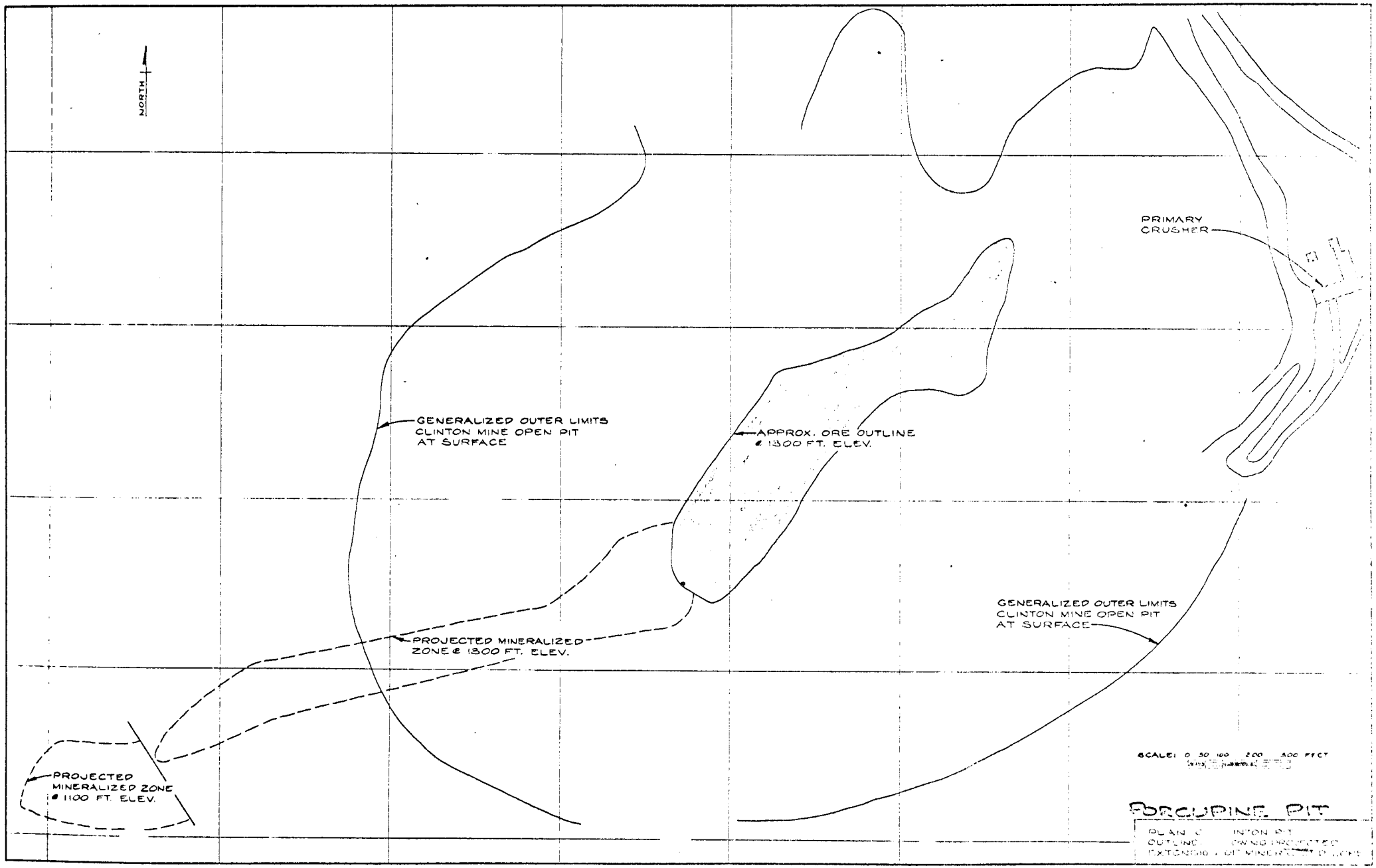
YUKON TERRITORY

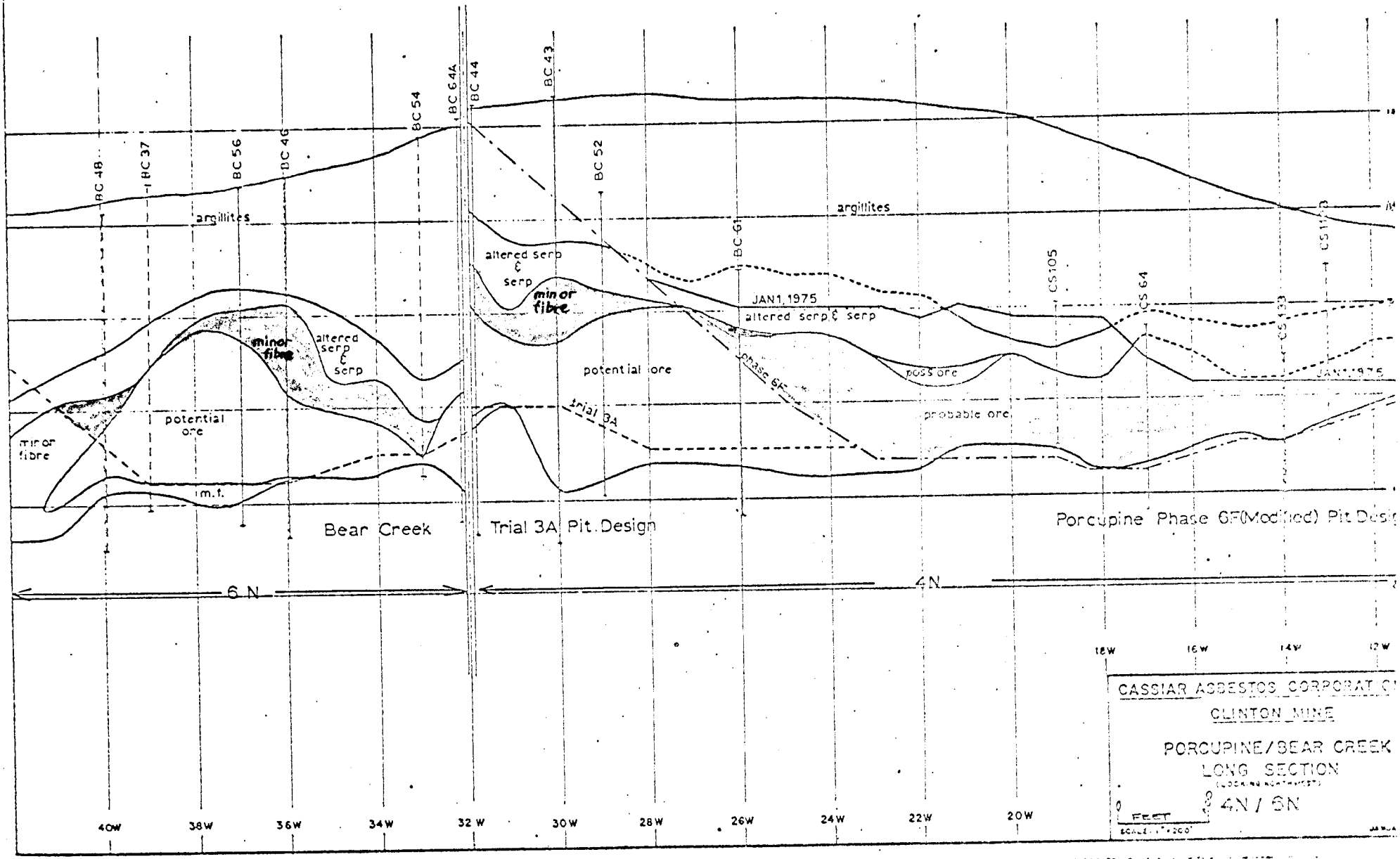
Scale 1:250,000

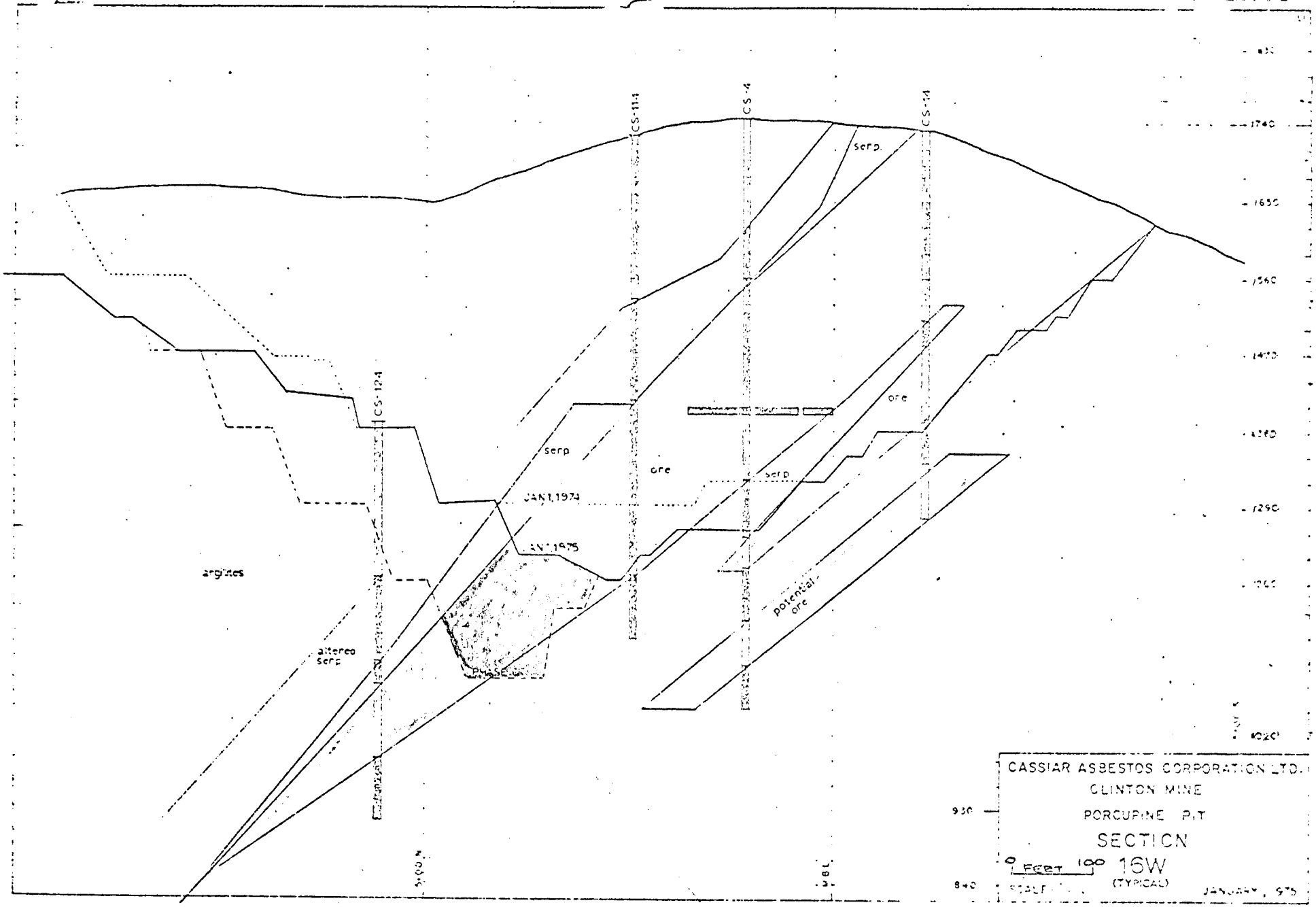
1 Inch to 4 Miles Approximately

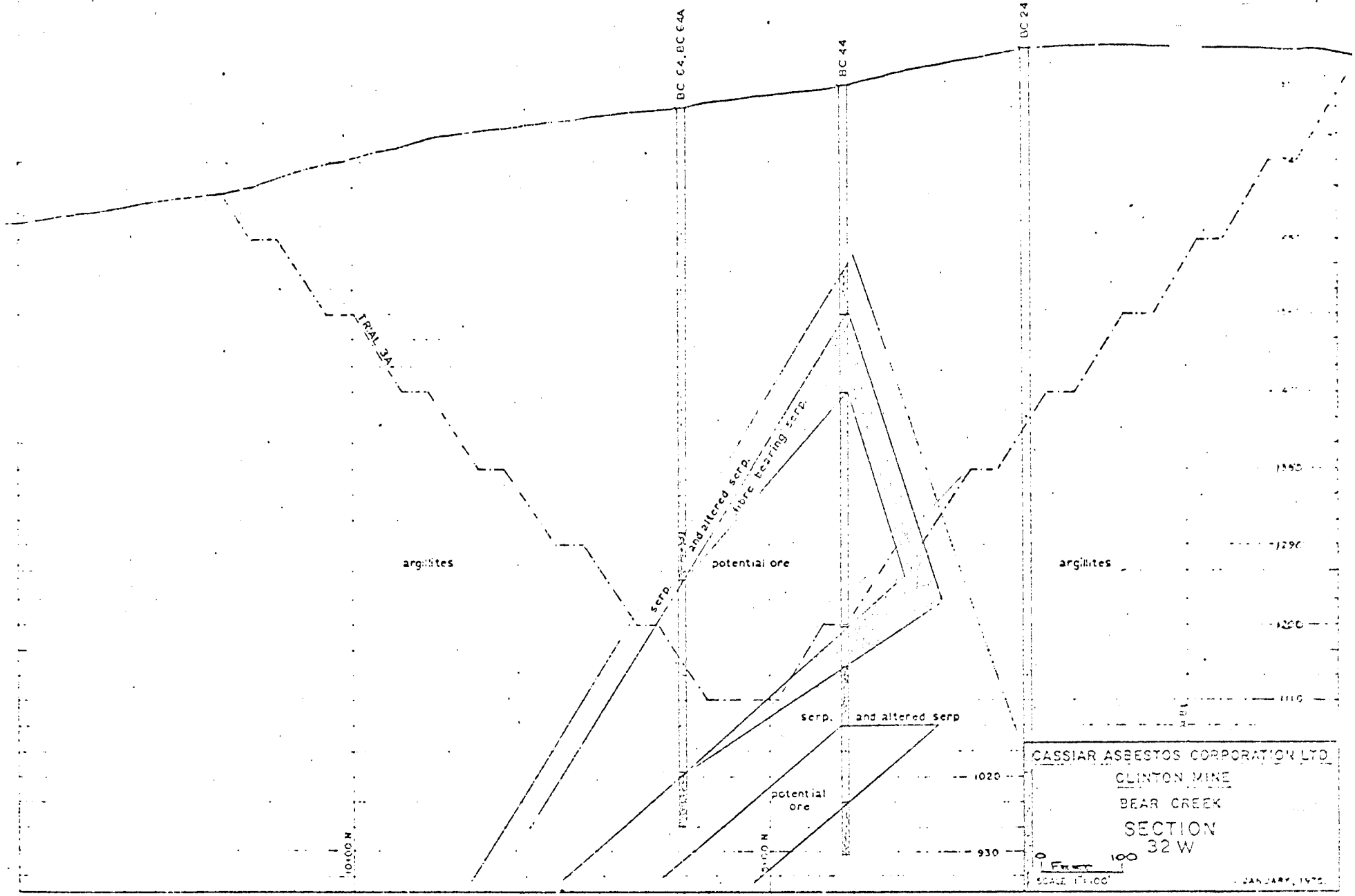
REF. DAWSON 116B-116C (E½)

PROPERTY


NORTH
PRIMARY CRUSHER
GENERALIZED OUTER LIMITS CLINTON MINE OPEN PIT AT SURFACE
APPROX. ORE OUTLINE @ 1300 FT. ELEV.
GENERALIZED OUTER LIMITS CLINTON MINE OPEN PIT AT SURFACE
PROJECTED MINERALIZED ZONE @ 1300 FT. ELEV.
PROJECTED MINERALIZED ZONE @ 1100 FT. ELEV.
SCALE: 0 50 100 200 300 FEET
PORCUPINE PIT
PLAN OF CLINTON PIT
OUTLINE OF NEGOTIATED
EXTENSION OF MINERALIZED ZONE


BC 48
BC 37
BC 56
BC 46
BC 54
BC 64A
BC 44
BC 43
BC 52
BC 61
CS105
CS 64
CS 33
CS 11
argillites
altered serp & serp
minor fibre
JAN1, 1975
altered serp & serp
potential ore
poss ore
probable ore
Phase 6F
trial 3A
minor fibre
potential ore
altered serp & serp
minor fibre
m.f.
Bear Creek
Trial 3A Pit Design
Porcupine Phase 6F(Modified) Pit Desig
6 N
4N
18W
16W
14W
12W
40W
38W
36W
34W
32 W
30W
28W
26W
24W
22W
20W
CASSIAR ASBESTOS CORPORAT
CLINTON MINE
PORCUPINE/BEAR CREEK
LONG SECTION
4N / 6N
FEET


CS-12-W
CS-11-W
CS-4
CS-11-E
serp.
ore
serp
ore
serp.
JAN 1, 1974
JAN 1, 1975
argillites
altered serp
potential ore
PHASE 1A
1740
1650
1560
1470
1380
1290
1200
930
840
CASSIAR ASBESTOS CORPORATION LTD.
CLINTON MINE
PORCUPINE PIT
SECTION
0 FEET 100
16W
(TYPICAL)
JANUARY, 1975


BC 64, BC 64A
BC 44
BC 24
TRIAL 3A
argillites
serp.
and altered serp.
fibre bearing serp.
potential ore
argillites
serp.
and altered serp
potential ore
1020
930
10100 N
9900 N
CASSIAR ASBESTOS CORPORATION LTD.
CLINTON MINE
BEAR CREEK
SECTION
32 W
0
100
FEET
SCALE 1"=100'
JANUARY, 1975.