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August, 1979

UNITED MINERAL SERVICES LTD.
1326 - 510 West Hastings Street
Vancouver, B. C.
V6B 1L8

GOTCHA TUNGSTEN PROPERTY PROPOSAL

GENERAL REMARKS

The Gotcha Tungsten Property, owned by United Mineral Services Ltd., is located near Clearwater, B. C. and is accessed by year round logging road. The Property has been explored and developed by Union Carbide, NCA Mineral Corp. and United Mineral Services. Data collected from this work are found in reports by Cook for Union Carbide; Elwell for NCA; and Ryan for United Mineral Services. All workers indicate that excellent potential exists for a probably small but very high grade tungsten deposit to be developed on the Property.

United has spent $100,000 on the property; building a mine access road, stripping the deposit, conducting initial metallurgical testing, mining a large sample and general geological studies. United is vending the Gotcha Tungsten Property to "New Company" to facilitate financing of first a 1500-2000 foot diamond drill program to prove the indicated reserves and secondly if warranted put the property into production. Debt financing of at least a portion of the production costs may be possible if the reserves can be shown to be in a proven ore category.

It is the intention of the "New Company" to raise $60,000 to carry out the 1500-2000 foot drill program recommended by Ryan by selling shares at 25 cents per share to a select few investors. A substantial part of these drill proceeds when expended will be qualified as Canadian Exploration Expenses and will be subject to a 100% tax write off against other income. The "New Company" proposes to pass this tax benefit on when at all possible to its 25¢ shareholders on a pro rata basis.

If the drill program is successful, production financing will likely be raised through a public offering. Further company exploration and development expenses will probably not accrue directly to the Company's shareholders.

ECONOMICS OF THE DEPOSIT

The Gotcha Tungsten Deposit has all the earmarks of being an excellent source for an immediate cash flow for "New Company's" further expansion. Much of the higher risk exploration expenditures have already been made.

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Important economic data enabling a preliminary economic evaluation of the deposit is as follows:

1) Work to date indicates potential ore of 20,923 tons grading 1.5% WO_3 (Ryan, 1979)

2) The cost of mining, milling, overhead has been calculated at $40/ton (Elwell, 1978, Hicks, 1978)

3) The capital cost of a 100 TPD gravity separation mill, using custom crushing, installed at an operating gravel operation in Clearwater would be less than $300,000.

4) The ore is "clean" comprised of coarse grained scheelite with unimportant to no sulphides present. Metallurgical testing using only one grind shows a recovery of 71.1%. Circuit refinements may increase recoveries.

5) There is 1500 tons of broken ore grading 1.5% WO_3 at the gravel pit in Clearwater,

6) A further 1000 tons of broken ore grading 1.0% WO_3 is available at the property. These two stockpiles will allow for an early start up of the mill and payback.

7) Concentrate grading 65% WO_3 is currently selling at a world price of $136 US ($150 Can.) per short ton unit (20 lbs).

8) The ore can likely be milled in less than two years.

A preliminary cash flow projection using this data is as follows:

Reserves	20,923 tons
Grade	1.5%
Units Available	31,385
Gross Value	$4,707,750 Can.
Recovery	71.1%
Units Recovered	22,314
Gross Value	$3,346,157 Can.
Less	
Operating Costs ($40/ton, 25% dilution)	983,800
Capital Cost	300,000
Net Cash Flow Before Tax	$2,063,357 Can.

N.B. A decided plus is that the gross value of broken ore already available for milling is (3250 units x 71.1% x $150) $346,612 Can.

DISPOSITION OF DRILL FUNDS

The funds raised from the issue of 240,000 shares at 25¢ per share are forecasted to be spent as follows:

1)	Geological mapping (complete)	$ 4,000
2)	Legal, Accounting, Incorporation	2,000
3)	Free Miners License	400
4)	Land Use Bond	2,500
5)	Insurance	400
6)	Diamond Drilling	40,000
7)	Cat work	2,200
8)	Vehicle, Accomodation	2,000
9)	United Management fee	1,500
10)	Assaying	1,500
11)	Miscellaneous	3,500
	TOTAL ESTIMATED EXPENSES	$60,000

PROJECTED TIMING OF DEVELOPMENT AND FINANCING

The projected timing of important corporate events is as follows:

1) Private financing - August 1979
2) Drilling - September 1979
3) Metallurgical Studies - Winter 1979/1980
4) Mining Plan, Feasibility - Winter 1979/1980
5) Public Primary - Early Spring 1980
6) Build Mill - Spring 1980
7) Begin Milling - Spring 1980
8) Continue Milling, Begin Mining - Summer 1980

NEW COMPANY STRUCTURE

The capital structure of "New Company" is proposed to be as follows:

Authorized Capital	10,000,000 shares	
Purchase of escrow property (United)		375,000 shares
Purchase of Gotcha Property (United,for equity)		750,000 "
Private Financing ($60,000)		240,000 "
Shares Outstanding Before Primary	1,365,000 shares	

Note: United has $75,000 of equity and $25,000 debt in the property. United proposes to vend the property for 750,000 shares and assign the debt of $25,000 to "New Company". United will guarantee the debt and it will not be paid off until a primary financing is completed.

LITIGATION REMARKS

United Mineral Services Ltd. was sued during 1979 for the Gotcha Claims by NCA Mineral Corporation. The Property was under option to NCA who failed to make option payments to United when due. The agreement was terminated by United and NCA subsequently sued for performance of the option agreement. United won this case with costs. United has been notified that NCA have launched an appeal. United's legal counsel has advised that "as a matter of law when a case turns primarily on credibility, the Appeal Court will not interfere with a decision of the Trial Judge". Although the success of NCA's appeal is unlikely "New Company" would not entertain public financing until this delay is resolved. The appeal process could take as long as a year to be resolved.

"NEW COMPANY'S" FUTURE

With the early cash flow possible from this project "New Company" would be in an excellent position to expand rapidly in the resource industries. Directors and staff would be professional people qualified in resource acquisition and devlopment.

By owning a mill "New Company" will be in an advantageous economic position to exploit other properties of merit.

JACK CRAM
B.Sc., P.Eng. (ONT.), LL.B.

J. GARRY WATSON
B.Sc., LL.B.

BARRISTERS & SOLICITORS

July 30, 1979

TO WHOM IT MAY CONCERN:

I am Counsel for United Mineral Services Ltd. with respect to an Appeal taken by NCA Minerals Corp. against that company with respect to a Judgment of the Supreme Court of British Columbia dismissing NCA Minerals Corp.'s action against United and its principals. I was also Counsel for United and its principals at trial. I have been asked to provide my opinion as to the merits of the Appeal that has been taken and I am pleased to do so.

The Reasons for Judgment of the Honourable Mr. Justice Fawcus make it clear that the basis of the decision against NCA Minerals Corp. was a decision against the credibility of the President of that Company Mr. Donald MacLeod and in favour of Messrs. Dickinson, McClaren, principals of United. The Learned Trial Judge's findings against Mr. MacLeod's credibility included the following statements:

> "In my view, MacLeod's recollection of what was said and done at that meeting is hopelessly out of harmony with the probabilities of the situation."

> "I find MacLeod's recollection of the conversation at this meeting puzzling." (the meeting referred to was a meeting on March 31, 1978, the correct version of which was crucial to the outcome of this action)

> "I therefore reject MacLeod's evidence where it conflicts with that of either Dickinson or McClaren."

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As a matter of law, where a case turns primarily on credibility, the Appeal Court will not interfere with a decision of the Trial Judge, because the trial Judge is in a much better position to assess this question having heard the witnesses in person.

It is therefore my opinion that the Appeal by NCA to require performance of the Option Agreement has very little chances of success.

Yours truly,

JACK CRAM
/sc

A REPORT OF
DETAILED GEOLOGICAL MAPPING PROGRAM
WITH PROPOSED DRILL PROGRAM

GOTCHA TUNGSTEN PROPERTY

KAMLOOPS MINING DIVISION

by

BARRY D. RYAN, B.Sc., Ph.D.

JULY, 1979

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I. INTRODUCTION

This report summarizes the results of a seven day mapping project and is accompanied by a 1 inch representing 10 feet geological map of part of the Gotcha Tungsten property. It is the purpose of this report to (1) discuss briefly the general geology of the property; (2) outline geologically probable tonnages of scheelite mineralization based on data acquired during this project and from previous work on the property; and (3) present the details of a drill program that will prove or disprove the presence of these tonnages. The phrase geologically probable is used informally and the degree of certainty implied should become evident as one reads this report.

II. OWNERSHIP

The Gotcha claim group is owned by United Mineral Services Ltd.

III. LOCATION, ACCESS & TOPOGRAPHY

The Gotcha claims are located 20 miles northeast of Clearwater, British Columbia and are within the Kamloops Mining Division. More specifically, the claims are 2 miles up Maxwell Creek from its junction with Raft River, on the west bank of the creek, at an elevation of about 3,750 ft. The claim group is covered by the Raft River map 82M/13E of the 1:50,000 topographic series and by the northwest corner of the Geological Survey of Canada map 48.1963 Adams Lake 82M/W.

A well maintained logging road along the west bank of Raft River and

Maxwell Creek provides access to the property. This road adjoins the Yellowhead Highway (Route 5) 4 miles east of Clearwater.

The claims are located on the thickly vegetated west side of the valley which in the area of the claims is sloping at 20° to 45° towards Maxwell Creek.

IV. REGIONAL GEOLOGY

The claim group lies within the Omineca Crystalline Belt which is the high grade metamorphic core zone of the Eastern Cordilleran Fold Belt. Rocks in the zone have generally been metamorphosed to upper amphibolite facies and have experienced multiple phases of intense penetrative deformation. The deformation and metamorphism were probably completed by late Jurassic to early Cretaceous times but the stratigraphic age of some of the metasediments is at least 1500 m.yr. Large volumes of "granitic" rock were intruded into the belt during and after the protracted metamorphism and deformation.

The property covers an area of contact between the metasediments and a post metamorphic stock. The metasediments may correlate with the Lower Paleozoic,quartzite,limestone assemblage of the Kootenay Arc to the southwest, though such a correlation is extremely tenuous. The stock may be late Cretaceous or early Tertiary in age based on a single muscovite pottassium-argon age of 64 m.yr. from a phase of the stock.

V. GENERAL GEOLOGY OF THE PROPERTY

a) Previous Work

The property was first found in July 1972 by Union Carbide as a result of a regional stream sampling program. Silts in Maxwell Creek at its confluence with Raft River have anomously high scheelite content; the anomaly can be traced back up the creek to scheelite bearing boulders in the creek below the present pit. Union Carbide worked on the property from 1972 to 1974 and called it the Boulder Group. In the summer of 1972 preliminary trenching exposed mineralized skarn and geological mapping revealed the presence of two skarn bands. Diamond drilling of holes 1, 2, 3, 4, 5, 6, & 7 (total length 1,769.3 ft.) was completed in the winter of 1972/1973. The next summer further mapping and trenching took place. Also a soil sampling grid (7000 ft. x 4000 ft., sample spacing 200 ft.) was established over the property and surrounding ground. Soil samples were collected and panned for scheelite but no major anomalies other than those previously identified in the vicinity of the pit were found. In the winter of 1973/1974 diamond drill holes 8, 9, and 10 (not on accompanying map but located 350 ft. west of DDH 5) were drilled (total length 1,436 ft.).

The property was restaked by United Mineral Services Ltd. in 1977 who extended some of the trenches and exposed more mineralization. N.C.A. Mineral Corp. optioned the property in 1977 and in January 1978 drilled 18 percussion holes (total length 950 ft.) before the option was terminated. In 1978 a pit was opened up and about 1500 tons of about 1.5% scheelite ore mined. Figures 1 and 2 are panorama views of the pit area.

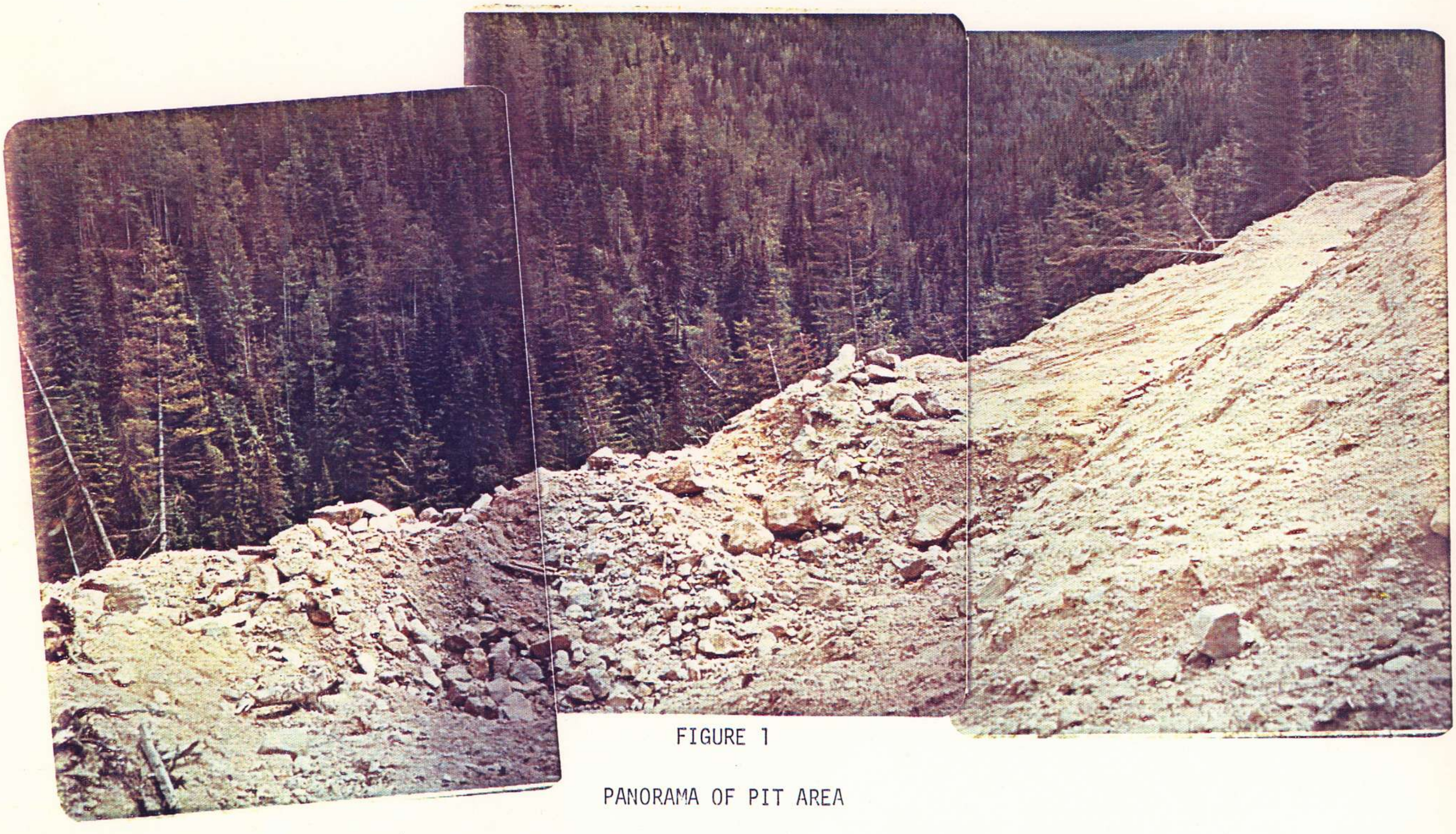


FIGURE 1

PANORAMA OF PIT AREA

FIGURE 2

PANORAMA OF PIT AREA

b) Map Techniques

The accompanying map represents the major output from 7 field days (July 7, 8, 9, 11, 12, 13, 14) spent on the property. Ground control was obtained by surveying in a number of pegged stations. Stations 1, 3, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17 and 18 form a closed loop and were sited in using a brunton compass fixed on a tripod for azimuth, chain or alidade plus staff for distance and alidade for changes in elevation. These stations were back sited to minimize errors. Closure errors shown on the map at station 14 are about 5 ft. laterally and 2 ft. vertically. Additional stations were located in the same way but were not back sited. Outcrops were located by chaining off from the stations. Field mapping was completed using a scale of 1" to 10 ft. and a compass declination of 025°. The elevation of station 1, located 30 ft. southeast of the pit, was arbitarily set at 3,732 ft. The map covers an area of 600 ft. by 350 ft.

c) Rock Types

Most of the outcrop in the area mapped occurs in the pit or in the walls of the trenches. In the rest of the area bedrock is covered by up to 50 feet of till. Outcrops consist of metasediments, skarns and quartz monzonites. No attempt has been made to establish a lithologic succession so that rock types rather than rock units are illustrated on the map. Five rock types have been identified; (1) medium grained biotite-quartz monzonite; (2) medium to coarse grained alaskite or muscovite granite; (3) biotite schist; (4) biotite quartzite; (5) skarn or calc-silicate.

Medium grained, biotite-quartz monzonite - Quartz monzonite outcrops extensively on the access road to the pit as an orange to brown weathering moderately well fractured rock containing no macroscopic fabric. In detail the quartz monzonite is a medium grained, equigranular, biotite (5 to 15%) quartz monzonite. The biotite does not outline a foliation and the rock generally has a very uniform appearance; veins of pegmatite or zenoliths of metasediments are rare. Contacts of quartz monzonite with the metasediments generally appear to be conformable.

Alaskite - Outcrops of alaskite occur in the pit and adjacent to the pit. In the pit fresh boulders are massive and chalky white. The grain size of the alaskite varies from medium to coarse, and the texture is generally equigranular but in places graphitic. Quartz makes up about 60% of the rock, most of the rest is composed of equal proportions of plagioclase and K-feldspar, no mafic minerals are present and muscovite (sericite?) is present in amounts up to 5%. There is no fabric to the rock except for occasional quartz stringers and pegmatite veins. The upper contact of alaskite with skarn is locally discordant and indented by skarn, but over a distance of 200 feet seems to be approximately concordant. There is no distinct border phase, though the upper part of the alaskite may be mixed with a considerable amount of skarn. The lower contact of alaskite with skarn appears to be fairly distinct and concordant.

The alaskite does not extend northwest of the pit and outcrops southeast of the pit along strike are pegmatitic and contain a considerable amount of metasedimentary material. Rocks equivalent to the alaskite are probably intersected in diamond drill holes 2, 3 and 5 where they are generally described as muscovite or leucocratic,quartz monzonite. A second distinct mass of alaskite may be intersected in diamond drill hole 6 which intersects a substantial amount of muscovite bearing intrusive.

Muscovite separated from the alaskite has a K-Ar model age of 64 m.yr. +/- 2 m.yr.

<u>Schist</u> - Outcrops of brown weathering, medium banded, well foliated schist account for about 20% of the exposed rock. The schist is medium grained and contains 40% quartz, 20% feldspar and 20% biotite. More exotic minerals are absent and the only major variation from this sample mineralogy is the appearance of large disoriented flakes of sericite in the schist near contacts with the alaskite or quartz monzonite. The schist grades to biotite quartzite with increase in quartz content.

<u>Biotite Quartzite</u> - This rock type forms massive to medium banded, brown weathering outcrops that account for about 10% of the exposed rock. In appearance the quartzite is similar to the schist but banding is coarser and foliation is absent.

<u>Skarn or Calc-silicate</u> - calc-silicate rocks and skarns derived from them, make up about 30% of the exposed rock. Outcrops of calc-silicate have a distinctive grey,pitted surface if the rock contains significant amounts of calcite or are grey-green and coarse banded if the amount of silica is high. Calc-silicate adjacent to alaskite or quartz

monzonite is converted to skarn of which there are 3 major types; types (1) and (3) are scheelite bearing.

1) Quartz-garnet (grossularite?)-idocrase skarn
2) Wollastonite-garnet-calcite skarn
3) Diopside-quartz skarn.

Quartz-garnet-idocrase skarn forms massive, rough surfaced, brown outcrops with indistinct layering. In hand specimen it is coarse to very coarse grained containing from 10 to 50% idocrase, 10 to 50% garnet and 10 to 50% quartz. Garnet occurs as clusters of euhedral, medium grained crystals or as coarse grained, subhedral crystals. Often there appears to be two generations of garnets with the subhedral crystals belonging to the earlier generation. Idocrase forms coarse grained, sub-euhedral crystals. Quartz forms a coarse grained matrix to these two mafic minerals. Figure 3 is a close-up photo of this rock type.

Wollastonite-garnet-calcite skarn forms chalky white, rough surfaced outcrops. Garnet which makes up 5 to 20% of the rock occurs as medium grained, equigranular crystals clustered together in 1 to 5 cm. diameter masses. Wollastonite forms radiating masses growing outward from the garnet masses. Calcite occurs as medium to coarse grained masses often outlining the indistinct layering.

Diopside-quartz skarn forms massive to medium banded, grey to greenish outcrops. The fine grained nature of the skarn precludes a detailed description of its mineralogy but it certainly contains a high proportion of diopside and probably other minerals such as actinolite and epidote. Fresh samples are dark green to black, medium to fine grained and fine to medium banded. Figure 4 is a close-up photo of this rock type.

The calc-silicate - skarn rock type is coloured on the map as a single rock type, however, varieties of skarn are indicated by a superimposed letter code which is explained on the map. In addition, in the vicinity of the pit, the skarn derived from the calc-silicate forms 5 major bands which are numbered on the map. Three of these bands contain economic quantities of scheelite mineralization. The five bands are described in more detail under the heading of mineralization.

FIGURE 3

QUARTZ-GARNET-IDOCRASE SKARN

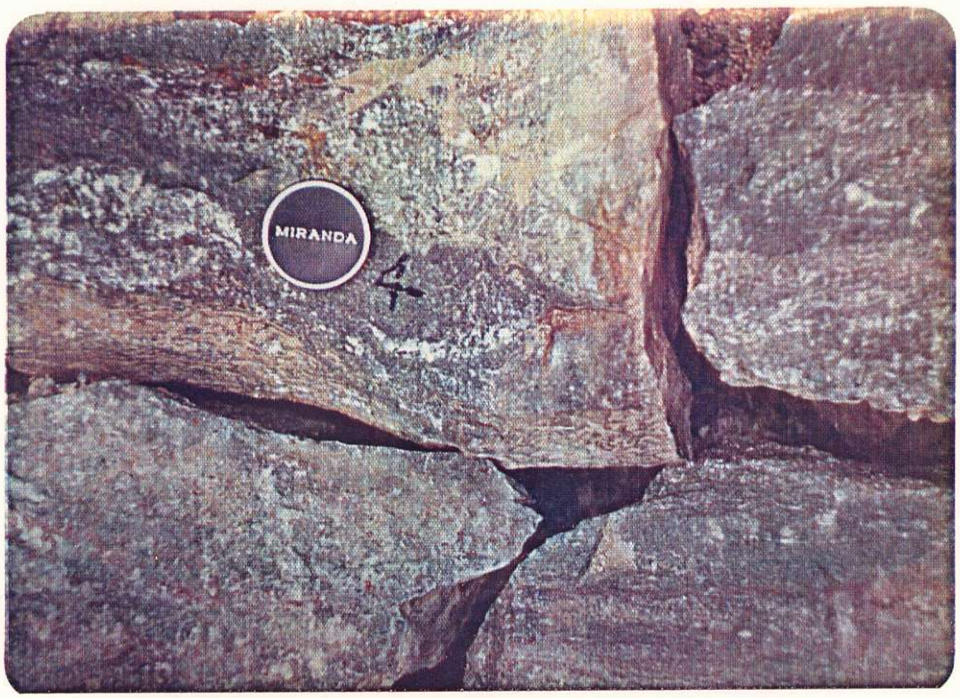


FIGURE 4

DIOPSIDE-QUARTZ SKARN

d. Structural Geology

Contacts between the various rock types and the layering in them trend northeast and dip northwest with no great change in orientation. Figure 5 is a stereonet plot of layering measurements. Bands of the various rock types vary greatly in present thickness and converge and diverge with each other though no major fold closures are clearly evident. Layering and foliation in the schist are parallel and a fine crinkle lineation can be identified on the foliation. This lineation, which generally plunges shallowly northeast is parallel to the hinges of mesoscopic, rootless, isoclinal folds which are occassionally observed in schist (Figure 6). The lineation and isoclinal folds constitute the only evidence for an early phase of isoclinal folding. Large scale isoclinal folds may be present in the area but have not been positively identified.

South of the pit near station 23 the layering is deflected round an open fold whose hinge plunges 230°/40°. This structure post dates the isoclinal folding and may represent evidence for a later phase of pervasive deformation that could pre or post date the alaskite or be caused by its intrusion though it most likely predates intrusion of the alaskite.

Intrusive rocks are well jointed and 2 conjugate sets are evident (020°/30°W and 105°/60°S) which intersect about a line plunging steeply southwest. These are probably shear joints. Fracture zones in the metasediments generally seem to parallel layering. One fracture zone identified in the quartz monzonite is oriented 010°/60°W. Fracture or alteration zenes were encountered in most diamond drill holes though generally core recovery was good. No fault with an accompaying offset could be identified in the pit

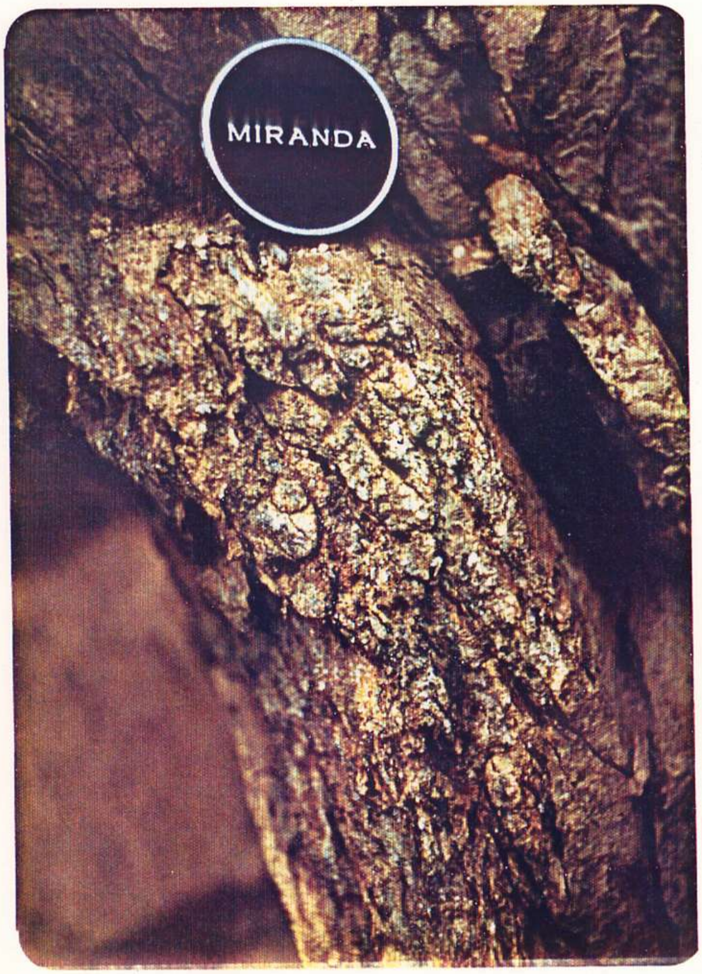
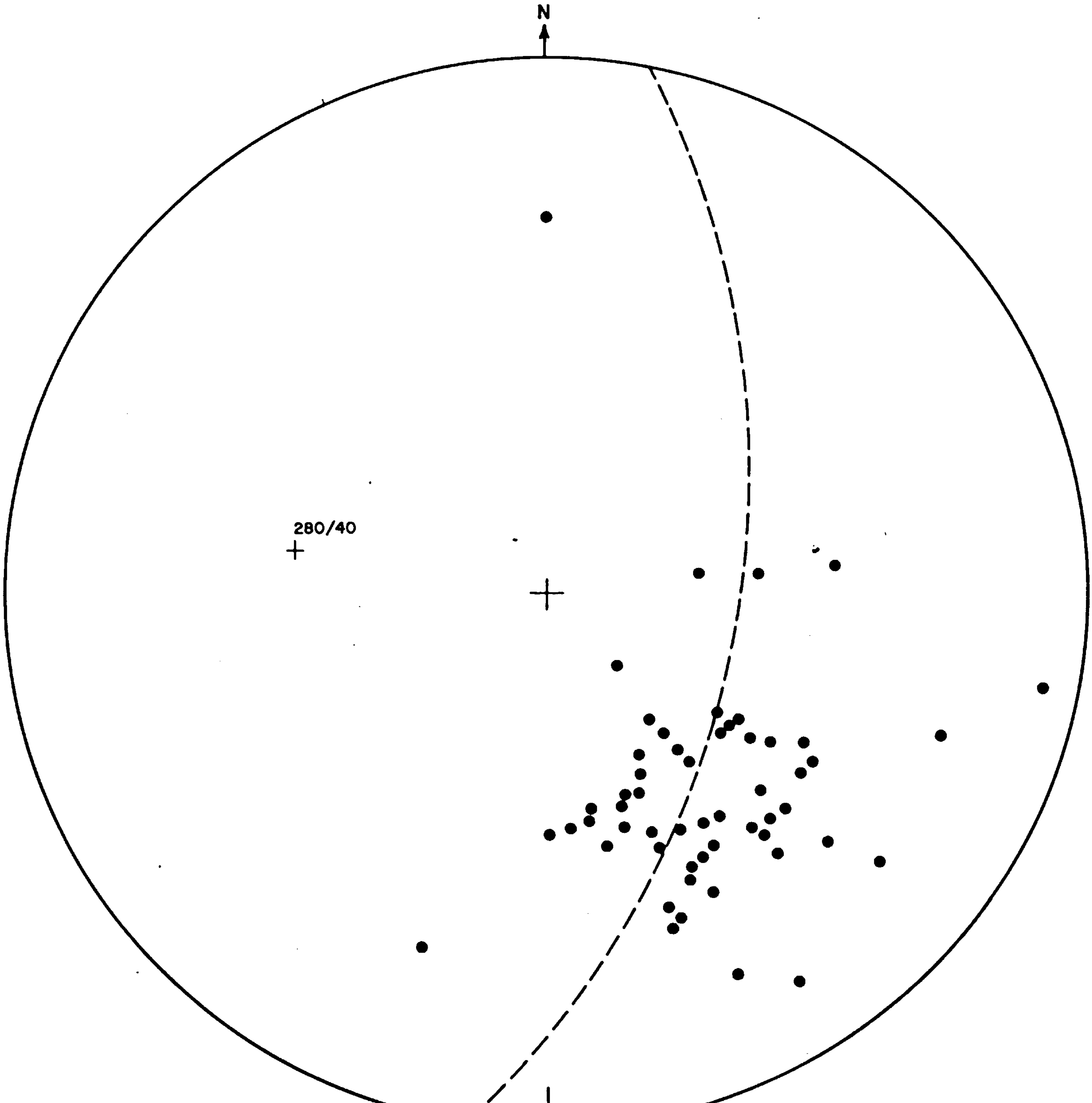


FIGURE 6

POSSIBLE SMALL SCALE FOLDS IN SCHIST

FIGURE 5

STEREOGRAPHIC PLOT OF POLES TO LAYERING



or surrounding area.

e. Metamorphism and Skarn Formation

The rock types have been affected by regional metamorphism of upper amphibolite grade that probably finished by late Jurassic time; by contact metamorphism, caused by intrusion of the quartz monzonite, and possibly at about the same time by metasomatism originating from the alaskite. The contact metamorphism and metasomatism probably occured 64 m.yr. ago,long after the deformation and regional metamorphism had ceased.

It is difficult to distinguish between the effects of contact metamorphism and metasomatism but in the pit area a sequence of metasomatic changes can tentatively be identified. The quartz-garnet-idocrase skarn seems to be the end result of metasomatism of a calcium rich,calc-silicate. The first stage of metasomatism involved introduction of iron and crystallization of garnet probably grossularite. The second stage saw introduction of silica and crystallization of wollastonite. This was followed by continued introduction of silica and crystallization of idocrase and garnet possibly at the expense of wollastonite. The final stage was represented by silica flooding and introduction of tungsten which crystallized as scheelite (powellite has not been observed).

The diopside-quartz skarn apparently has not experienced the same degree of metasomatism though there are vuggy zones in which patches of coarse calcite and idocrase crystals occur. Scheelite seems to be concentrated in these zones but also occurs as coarse grained poikiolitic crystals enclosing diopside, scattered through the rock.

The presence of wollastonite (confirmed by X-ray diffraction work) indicates that the skarn formed under conditions of high temperature and low pressure. Under these conditions the muscovite in the alaskite (if it is of igneous origin) was probably metastable at the time of crystallization.

VI. STRUCTURAL INTERPRETATION AND ORE CONTROLS

The primary control of the location of mineralization is the intrusive contact of the quartz monzonite with the metasediments. Previous mapping and drilling indicates that this contact trends northerly with metasediments to the west, but in the area of the pit there is an embayment of metasediments projecting northeasterly into the intrusive mass. The embayment probably acted as an energy and chemical trap. The alaskite (granitic composition) which is probably a late phase of the quartz monzonite, crops out in the embayment and probably acted as a channel way, carrying iron, silica and tungsten plus other elements from the nearly solid intrusion into the calc-silicate metasediments. The exposed scheelite mineralization is restricted to metasomatised calc-silicate outcropping in the embayment.

The northern, west-trending intrusive wall of the embayment may be a fault or discordant intrusive contact. One interpretation based on data in diamond drill hole 2 and near diamond drill hole 1 is that it is a late fault oriented 050°/55°SE. This postulated fault does not parallel any joint set but has the correct orientation to be a tension fracture related to the 2 joint sets identified. The five skarn bands identified in the pit area are assumed to be cut off by the fault. This model provides a northern limit to the mineralization in the pit area and helps in the estimation of ore tonnages.

Folding may complicate the simple model proposed. One possibility is that Skarn Bands 1 and 3 are respectively the upper and lower limbs of an overturned,nearly isoclinal synform. In support of this suggestion it can be seen from the map that the two bands converge to the north-east and that the open fold in Band 3, near station 23, is the correct sense for its position on the lower limb of a synform. The open fold plunges 280°/40° which would presumably be the same as the plunge of the synform. A plunge of 280°/40° would project the hinge of the syn-form into the fault below a point about 20 feet north of the pit.

Alternatively Band 3 and 4 may represent a fold, in which case this would most likely be a northeasterly plunging antiform related to the earlier isoclinal folding. The plunge of this structure would be the same as the crinkle lineations in the area and therefore its hinge would almost parallel the topography into Maxwell Creek. In the absence of adequate diamond drill hole information in the pit area neither of these fold hypotheses can be checked, but they do not greatly influence the fault plus skarn slab model used in predicting ore tonnages.

VII. SCHEELITE MINERALIZATION

a) General Distribution and Petrogenesis

Scheelite occurs in parts of Skarn Bands 1, 3 and 4 and to a lesser extent in Skarn Band 2. Within these bands it was found in the quartz-garnet-idocrase skarn and the diopside-quartz skarn. Scheelite was not found in skarns containing wollastonite or skarns containing more than 10% calcite. In the quartz-garnet-idocrase skarn scheelite percentage is higher if the quartz content is between 10 and 60 percent.

In the quartz-garnet-idocrase skarn scheelite occurs as anhedral rounded crystals 2mm to 2cm in diameter evenly distributed throughout or defining indistinct layering. The percentage of scheelite in individual samples can range up to 10%. Scheelite crystals contact all major skarn minerals but are not seen to enclose any other mineral. Despite this it appears that scheelite was one of the last minerals to crystallize in the skarn.

Scheelite occurs as large poikiolitic crystals in the diopside-quartz-skarn in part concentrated in vuggy zones. It appears to have crystallized after the diopside.

b) Chip Sampling and Lamping

The pit area was lamped on two nights using an ultraviolet lamp. Extensive scheelite mineralization was observed in Bands 3 and 4 and in boulders in the pit. Lamping of samples during the day revealed good scheelite mineralization in outcrops on the slope northwest of the pit. Eight chip sample lines (which are located on the map) were established across the skarn bands. Samples were collected along these lines and the present thickness of the band was measured. The lines were lamped at night and their grade estimated. The results of this sampling are tabulated in Table 1. The grade estimates from lamping should be reasonably accurate. Any results from the chip samples may not be representative because of the difficulty of obtaining equal amounts of material from each foot of sample line.

c) Skarn Band 1

General Petrology - The Band includes a number of skarn types. Generally the upper part of the Band is coarse grained,wollastonite-garnet-calcite skarn which grades downwards into quartz-garnet-idocrase skarn which sometimes contains scheelite.

Structure of Band 1 - The alteration (fracture?) zone cropping out 10 feet south of station 45 is assumed to be the base of the Band. This zone is recognized in diamond drill hole 2 but not in diamond drill hole 5 or 1. The orientation of the zone seems to be 050°/55°. Band 1 is cut by an intrusive contact or fault near diamond drill hole 1 and by a fault in diamond drill hole 2 at 89 ft. This fault, previously described, limits the downdip extent of Band 1.

Lithologic sections

Near station 38 base of Band not exposed

Present thickness (exposed) = 20ft.

Top-coarse grained,garnet calcite skarn - Bottom

Near diamond drill hole 1 present thickness = 25 ft.

Top - coarse grained wollastonite-garnet skarn / coarse grained,quartz-garnet-idocrase skarn/ banded,diopside-quartz skarn - Bottom

TABLE 1

SAMPLE LINE WO_3 GRADE ESTIMATES BY NIGHT ULTRA VIOLET LAMPING

Line No.	True Unit Thickness	Lamping Results
1	14	0-6 (T), 6-8 (3%), 8-10 (2%) (10-14 T)
2	19	0-15 (T)
3	11	0-12 (T)
4	10	0-2 (5%), 2-4 (1%), 4-6 (1.5%), 6-8 (2%), 8-10 (2%)
5	6	0-6 (T)
6	6	0-2 (1.5%), 2-4 (2.5%), 4-5 (1%)
7	8	0-3 (T), 3-4 (3%), 4-5 (5%), 5-7 (T)
8	18	0-2 (T), 2-3 (1%), 3-19 (T)
9	76' N-S line through pit	38, 2' Ft sections average = 1%

N.B. T equals trace WO_3

In diamond drill hole 2 present thickness = 40ft

Top - coarse grained,garnet wollastonite skarn / banded, diopside skarn / coarse grained,garnet-diopside skarn - Bottom

North end of the pit base partially digested by alaskite,present thickness remaining 10 ft.

Top coarse grained, calcite wollastonite skarn / coarse grained, quartz-garnet idocrase skarn / alaskite - Bottom.

Mineralized sections

1) 2 ft in diamond drill hole 2 at 1% scheelite

2) approximately 10 feet at 1% in outcrop south of diamond drill hole 1.

Tonnage possibilities Band 1

Band 1 is cut by the fault to the north and is not mineralized in diamond drill 5. The surface extent of probable mineralization can be approximated by the triangle A C D A is near diamond drill hole 1. D is along strike to the southwest from A and C is near the mineralized portion in diamond drill hole 2. A mineralized thickness of 8 ft. is assumed to exist at A and 2 ft. at C and D. These thicknesses should be conservative as is the extent of triangle A C D. The volume of the prism AA' CC' DD' (Figure 7) is 30,400 cu.ft. which is equivalent to 2763 tons (11 cu.ft. = 1 ton). A grade of 1% is assumed for this tonnage.

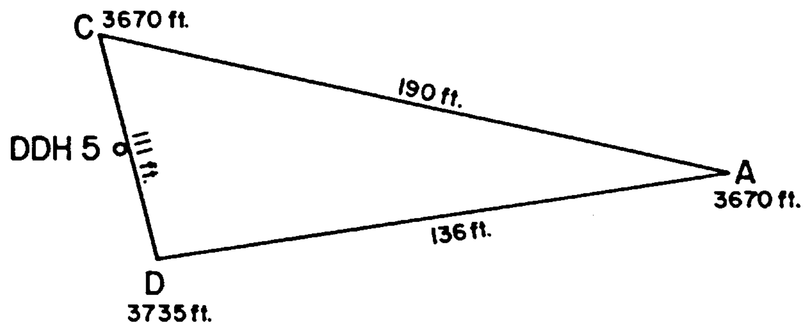
<u>d) Skarn Band 2</u>

Band 2 outcrops near station 28 where it is a coarse grained, quartz-garnet-idocrase skarn. To the south it is covered by overburden and may in fact merge with Band 1. Near station 28 the top of the Band is in

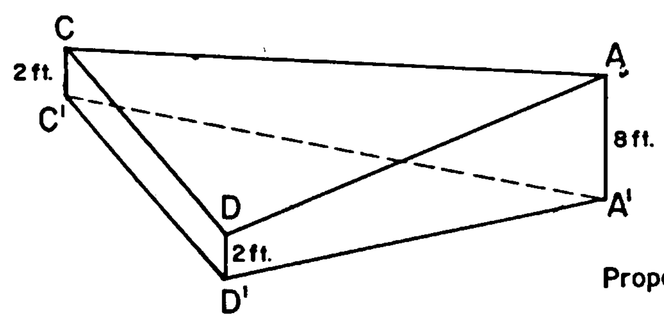
FIGURE 7

MINERALIZED PORTION OF BAND I

(NOT TO SCALE)



Thickness at A = 8 ft.   at C = 2 ft.



Proposed slab

Volume of slab = 30,400 cu.ft.

Tonnage = 2,763 tons

Assumed grade = 1%

conformable contact with alaskite and the bottom of the Band is fractured and possibly sheared but appears to be conformably underlain by alaskite.

There is some scheelite mineralization in the center part of chip sample line 8 which traverses the band near station 28 but it is not of economic thickness.

e) Skarn Band 3

Petrology - Much of the mineralized part of Band 3 is diopside-quartz-garnet-idocrase skarn and banded,diopside skarn. No wollastonite was found in Band 3 and the band grades rapidly into banded calc-silicate southwest of the pit. In the pit area the type of skarn within Band 3 changes abruptly from outcrop to outcrop.

Structure - In the northeast Band 3 is separated from Band 1 by about 20 ft. of schist while towards the southwest,separation of the two bands increases and alaskite and Band 3 intervene. The strike of Band 3 is fairly constant except for the open fold southwest of the pit. The dip of the band is variable but for the purpose of tonnage calculations it is assumed to be 55°. The base of the band is generally schist or quartzite and in the pit area the top is alaskite. A gossany zone which is mapped near station 25 and in diamond drill hole 5 as a pyritic zone may be a useful marker for identifying Band 3.

Lithologic Sections

South end of pit and trench present thickness at least 50 ft.

Top - coarse grained, quartz-garnet-idocrase skarn / fractured gossany zone/ quartz rich skarn or quarztite / coarse grained, quartz-garnet skarm / fine banded to massive, diopside-quartz skarn - Bottom.

Diamond drill hole 3 present thickness about 30 ft.

Top - fine grained, banded, diopside-quartz skarn / medium to coarse grained, garnet-diopside-quartz skarn / fine grained, massive, diopside skarn with pyrite / coarse grained, massive, garnet-diopside-quartz skarn - Bottom.

Diamond drill hole 5 about 15 ft. present thickness.

Top - coarse grained, quartz-garnet-diopside-idocrase skarn / banded, diopside skarn, gossany in part - Bottom.

Northeast of pit and down slope present thickness about 30 ft.

Top - coarse grained, garnet-quartz-idocrase skarn / schist / banded, diopside skarn, banded skarn? (inaccessible) - Bottom.

Mineralized sections

1) Percussion drill hole 1 intersected about 20 ft. present thickness at 1.34%
2) Percussion drill hole 5 intersected about 10 ft. present thickness at .5%
3) Percussion drill hole 3 intersected about 20 ft. present thickness 1.56%
4) Chip sample line 4 lamping results suggest about 10 ft. present thickness at 2.3%
5) Diamond drill hole 3 intersected the equivalent of 20 ft. present thickness at 1.56%
6) Northeast of pit and down slope is difficult to evaluate because of terrain but 10 ft. present thickness at 1.5% should be conservative.
7) Diamond drill hole 5 minor scheelite over less than 1 ft.

Also percussion drill hole 9 checked down dip extension for 70 ft. at

3.77% and percussion drill hole 7 checked down dip extension for 50 feet at .65%

Tonnage possibilities

Mineralization does not seem to extend west southwest of a line through station 21 to mineralization in diamond drill hole 5. Mineralization is cut off by the topography to the northeast and by the fault to the northwest. The block of potentially mineralized ground is outlined on the map by triangle EFG and Figure 8. Based on exposed mineralization a thickness of 10 feet is assigned to F, a thickness of 0 feet to G and a thickness of 15 feet to E. A thickness of less than 2 feet is not considered mineable so that only the tonnage of EIHFF'E'I'H' (Figure 8) is considered. This block contains 16,134 tons. A grade of 1.5% is assigned to this tonnage.

f) Skarn Band 4

Band 4 is composed of fine grained, siliceous skarn, fine grained, diopside-quartz skarn and a central gossany zone. The Band is separated from Band 3 by schist and a schist plus pegmatite mixture. It may merge with Band 3 to the northeast but for the purpose of ore tonnage calculations it is assumed to dip at 55° and to be 25 ft stratigraphically below Band 3. The base of the Band is marked by schist or quartzite.

Chip sample lines 5 and 6 traverse the Band and lamping results indicate about 5 ft. present thickness at about 1.5%. The band was intersected by diamond drill hole 3 but no mineralization was encountered.

The mineralization extends along strike for 20 feet between chip sample lines 7 and 6 but stops before chip sample line 5. For the purpose of tonnage estimation a mineralized strike length of 60 ft. is assumed and the slab is limited down dip by diamond drill hole 3. The resulting volume is illustrated in Figure 9, and provides 779 tons with an assumed grade of 1.5%.

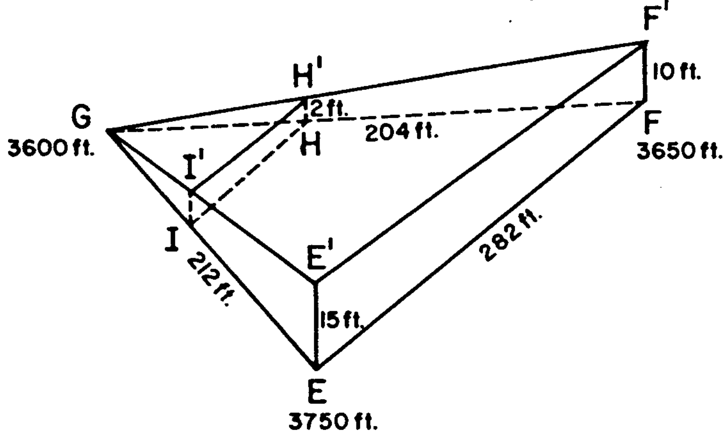
Skarn Band 5

Skarn Band 5 is intersected in diamond drill hole 2 above Band 1. It does not outcrop and is not mineralized in diamond drill hole 2. This band forms a small wedge against the fault but because of its location near other mineralized skarn bands it has been delineated.

FIGURE 8

MINERALIZED PORTION OF BAND 3

(NOT TO SCALE)



Volume of E E' G F F' = 178,600 cu.ft.

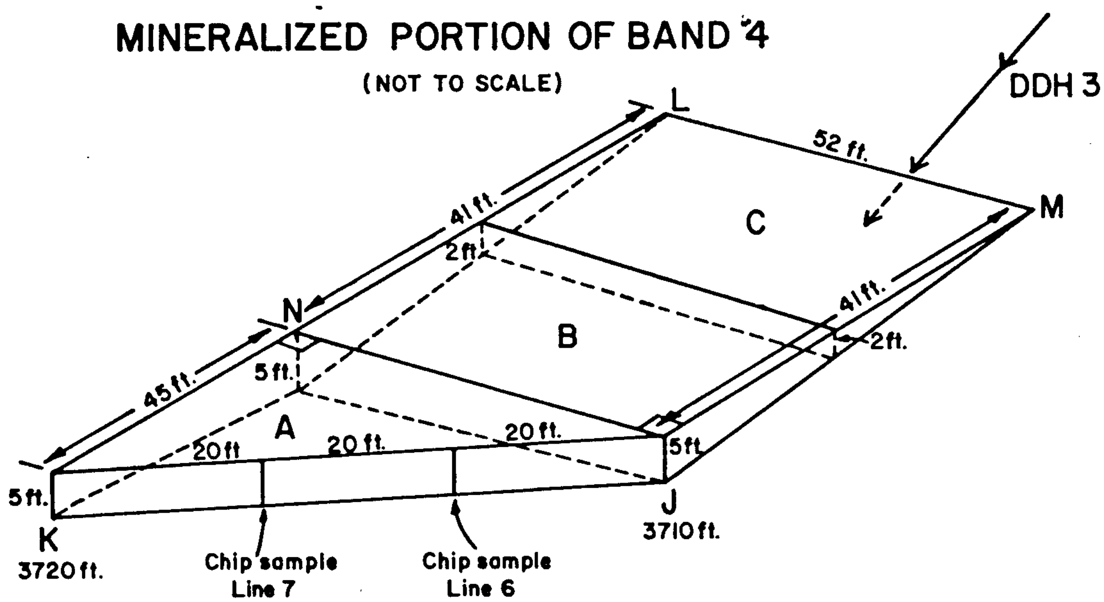
Volume of I I' H H' G = 1,120 cu.ft.

Tonnage truncated pyramid = 16,134 tons

FIGURE 9

MINERALIZED PORTION OF BAND 4

(NOT TO SCALE)



Volume of A+B = 8,500 cu.ft.

Tonnage = 779 tons

VIII DRILL PROGRAM

a) Introduction

Three primary and two secondary drill sites have been planned. A total of 12 drill holes have been projected to give a total length of 1,490 feet. The drill program is flexible to allow for additional and/or alternative holes to be drilled as drilling progresses. Sections and logs have been constructed for each planned hole but these are only rough guides of what to expect.

Access to the planned drill sites will require construction of 2 short cat roads. The road to give access to drill site T (plotted on map) is planned to start 20 feet southeast of station 16 and to cut back angling down slope through stations 24, 4 and 21. This road as well as giving access to the bench south of the pit should expose any extension of Band 4 to the southwest. The road to give access to sites S and R is planned to start 20 feet north of station 10 and to cut back angling down slope towards station 3. This road should expose Band 5.

Maximum flexibility of the drilling program will be retained if the following sequence is followed. First set up at site R and drill holes 1, 2 and 3. If no additional holes are planned for this site move to site S and drill holes 4, 5, 6, 8, and 9. If the cat road to sites S and R exposed mineralization, site another drill hole back along the road, otherwise move round top of the pit to site T. From site T drill holes in sequence 10, 11 and 12. It may prove worthwhile to set up on the access road near station 1 and drill additional holes based on the results of drilling from site T.

It is important to prepare drill sites as well as possible and to locate them accurately to minimize drill costs. Water will have to be piped at least 1000 feet. A good source of water with sufficient head should be located so that if possible the cat can help make access to it.

Most of the inclined drill holes are planned to intersect layering at close to 90°, if core bedding/angles are consistently less than 60° layering is shallowing or steepening with depth and sections should be reinterpreted before casing is pulled.

<u>Site R</u>

Three holes are planned for Site R. Figure 10 illustrates the location with respect to Band 1, Band 3 and Band 4. Piercing points of the surfaces of these Bands are plotted on the map and labelled in Figure 10.

Hole 1 Vertical

0-25 ft. projected to intersect 9 ft. of mineralization equivalent to a present thickness of 5 ft.

25 ft. base of skarn Band 1

25 - 60 ft. schist mixed with skarn (Band 2) and alaskite

60 ft. fault

60 ft.+ intrusives.

100 ft. maximum projected length.

Hole 2 145/42°

0-15 ft. Band 1 projected to intersect 5 ft. of mineralization equivalent to a present thickness of 5 ft.

15 - 50 ft. 60% alaskite 30% skarn (Band 2) 10% schist.

50 - 78 ft. Band 3 projected to intersect 15 ft. mineralization equivalent to 15 ft. present thickness.

78 - 100 ft. schist and quartzite

100 - 105 ft. Band 4?

150 ft. maximum projected length.

Hole 3 145°/63°

0 - 18 ft. Band 1, projected to intersect 5 ft. mineralization equivalent to 5ft present thickness.

18 - 50 ft. 60% alaskite 30% skarn (Band 2) 10% schist

50 - 90 ft. Band 3, projected to intersect 15 ft. mineralization equivalent to 15 ft present thickness.

90 - 113 ft. quartzite and schist

113 - 118 ft. Band 4?

150 ft. maximum projected length.

Depending on the results of drilling it may be useful to spot more holes to intersect Band 3.

Site S

Six holes are planned for Site S, Figure 11 illustrates the location of holes 4, 5, and 6, Figure 12 illustrates the location of holes 7 and 8 and Figure 13 illustrates the location of hole 9.

Hole 4 145°/40°

0-26 ft. Band 1, wollastonite skarn some quartz-garnet skarn and alaskite. Projected to intersect 6 ft. mineralization equivalent to 6 ft. present thickness.

26-50 ft. mostly alaskite

50 to 79 ft. Band 3, projected to intersect 12 ft. mineralization equivalent to a present thickness of 12 ft.

79-110 ft. quartzite plus schist

110-115 ft. Band 4?

150 ft. maximum projected length

Hole 5 0-21 ft. Band 1, wollastonite skarn, quartz-garnet skarn, alaskite. Projected to intersect 6 ft. mineralization equivalent to 6ft. present thickness.

21-60 ft. mostly alaskite

60-93 ft. Band 3, projected to intersect 10 ft. mineralization equivalent to 10 ft. present thickness.

03-113 ft. schist and quartzite

113-123 ft. Band 4?

150 ft. maximum projected length

Hole 6 Vertical 0-46 ft. wollastonite skarn, quartz-garnet skarn and alaskite. Projected to intersect 8 ft. mineralization equivalent to 4.5 ft. present thickness.

46 - 55 ft. alaskite, minor skarn (Band 2)

55 ft. fault

55-100 ft. biotite-quartz monzonite

100 ft. maximum projected length.

Hole 7 233°/62° 0-63 ft. wollastonite skarn, quartz-garnet skarn. Projected to intersect 3.2 ft. mineralization equivalent to 2 ft. present thickness.

63-74 ft. alaskite, minor skarn

74 ft. fault

74 ft - 100 ft. biotite-quartz monzonite

100 ft. maximum projected length.

Hole 8 233°/43° 0-31 ft. wollastonite skarn, quartz-garnet skarn. Projected to intersect 4.2 ft. mineralization equivalent to present thickness 2 ft.

31 - 94 ft. mostly alaskite, minor skarn

94 ft. fault

94 ft. - 120 ft. biotite-quartz monzonite

120 ft. maximum projected length

Hole 9 165°/62°

0-36 ft. Band 1, projected to intersect 2.5 ft. mineralization equivalent to 2.5 ft. present thickness.

36 to 130 ft. alaskite, minor skarn possibly mineralized (Band 2)

130-160 ft. Band 3, projected to intersect about 8 ft. mineralization equivalent to 8 ft. present thickness.

160-130 ft. schist and quartzite

180 ft. maximum projected length.

<u>Site T</u>

Three holes are planned for Site T, figure 14 illustrates the location of these holes. They are primarily designed to check the down dip extension of Band 4.

Hole 10 146/55°

0-42 ft. Band 3, projected to intersect 15 ft. mineralization equivalent to 15 ft. present thickness.

42-60 ft. schist

60-69 ft. Band 4, projected to intersect about 4 ft. mineralization equivalent to 4 ft. present thickness

69-100 ft. schist and quartzite

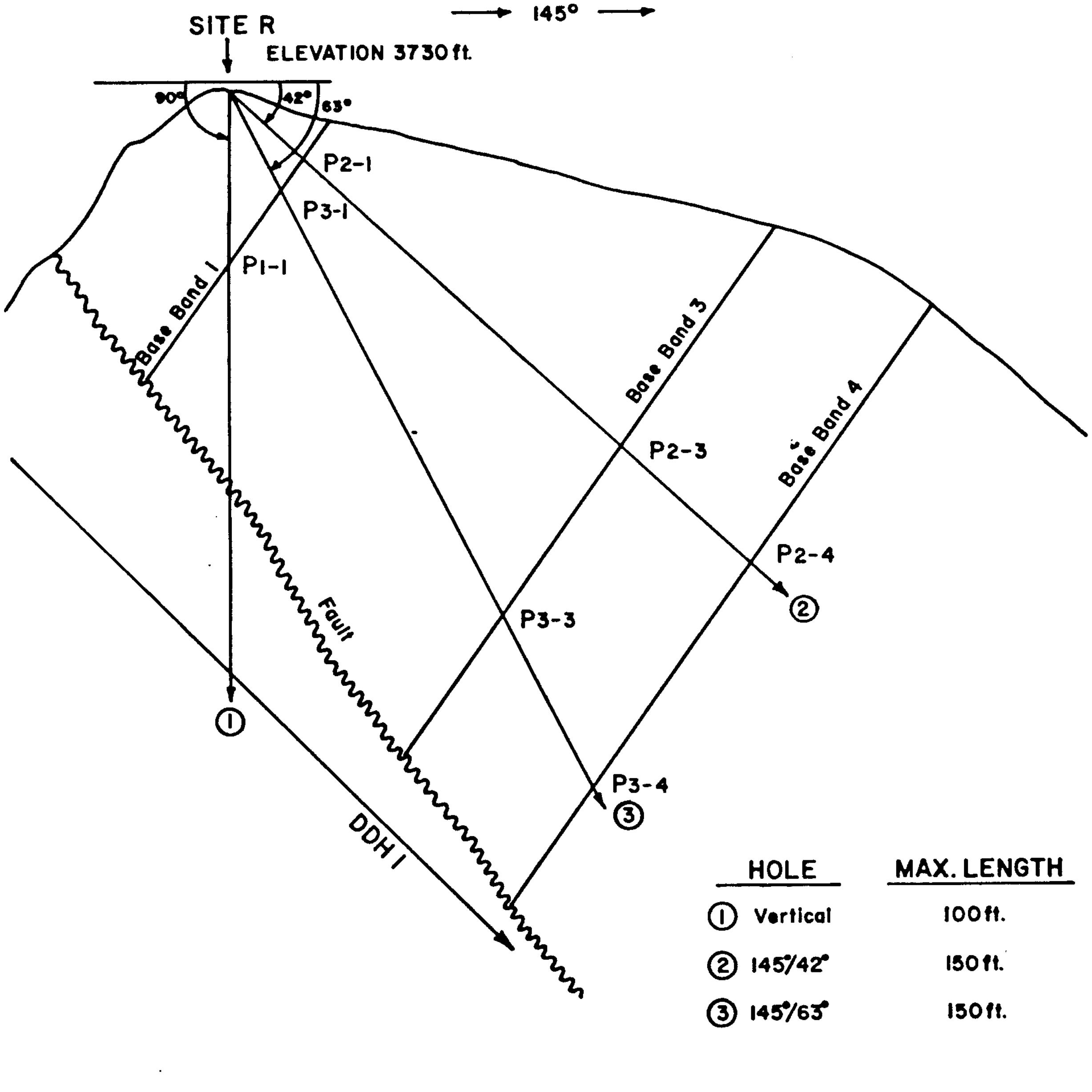
100 ft. maximum projected length

Hole 11 Vertical	0-70 ft. Band 3,projected to intersect 26 ft. mineralization equivalent to 15 ft. present thickness. 70-105 ft. quartzite and schist 105-114 ft. Band 4,projected to intersect about 8 ft. mineralization equivalent to about 4 ft. present thickness. 114 - 140 ft. quartzite and schist 140 ft. maximum projected length.
Hole 12 180°/60°	0-45 ft. Band 3,projected to intersect about 20 ft. mineralization equivalent to 15 ft. present thickness. 45 - 65 ft. quartzite and schist 65 ft. - 75 ft. Band 4, projected to intersect about 6 ft. of mineralization equivalent to 4 ft. present thickness. 75 - 100 ft. quartzite and schist 100 ft. maximum projected length.

FIGURE 10

VERTICAL SECTION TRENDING 145° THROUGH SITE R

(SCALE 1cm = 10ft.)

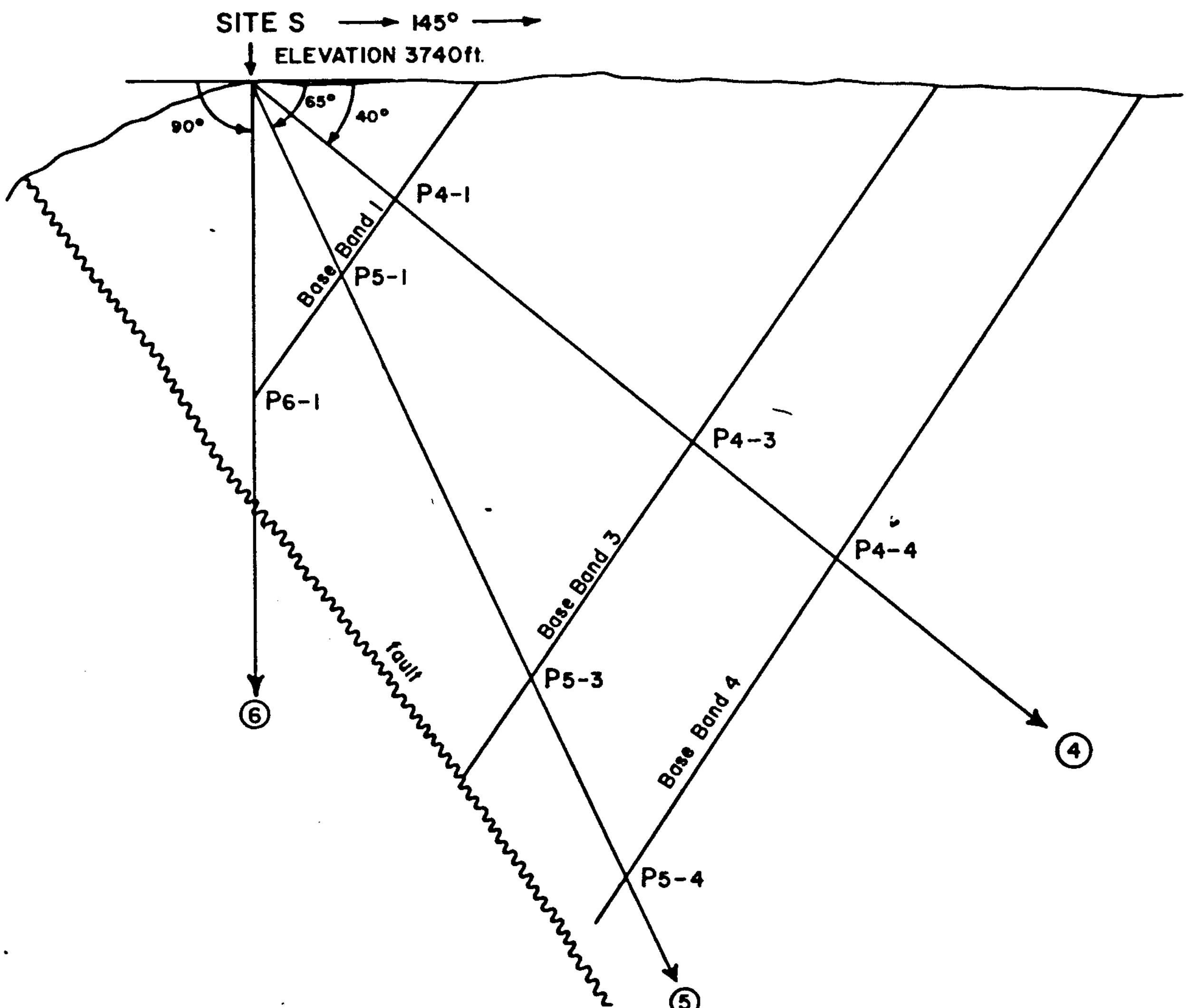


HOLE		MAX. LENGTH
1	Vertical	100 ft.
2	145°/42°	150 ft.
3	145°/63°	150 ft.

FIGURE II

VERTICAL SECTION TRENDING 145° THROUGH SITE S

(SCALE 1cm = 10ft.)

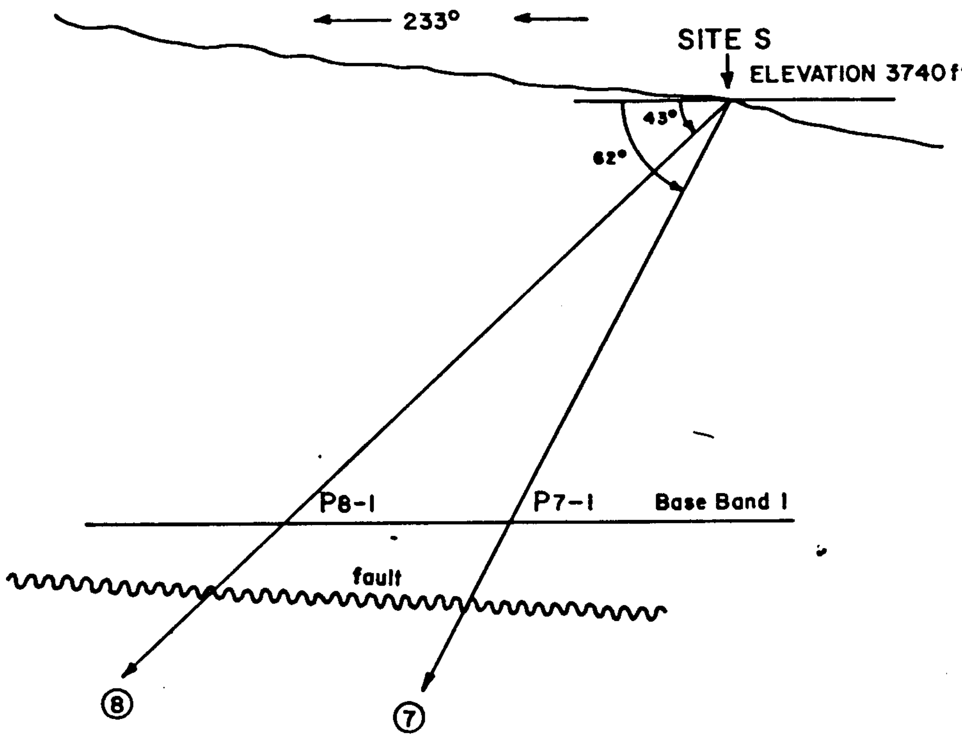


HOLE		MAX. LENGTH
4	145°/40°	150ft.
5	145°/65°	100ft.
6	Vertical	100ft.

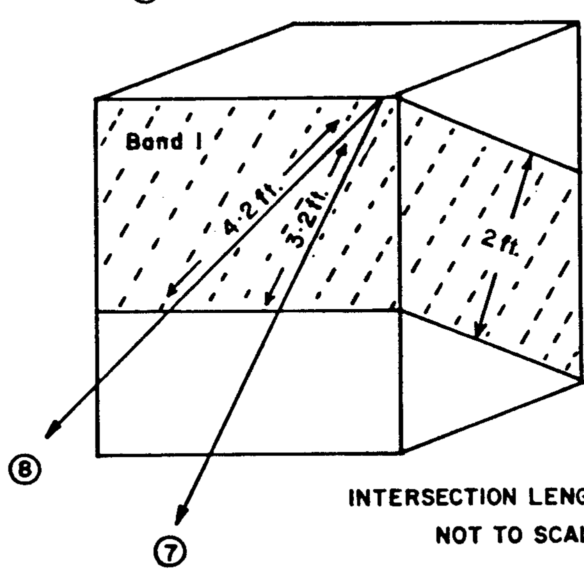
FIGURE 12

VERTICAL SECTION TRENDING 233° THROUGH SITE S

(SCALE 1cm = 10ft.)



HOLE	MAX. LENGTH
⑦ 233°/62°	100 ft.
⑧ 233°/43°	120 ft.

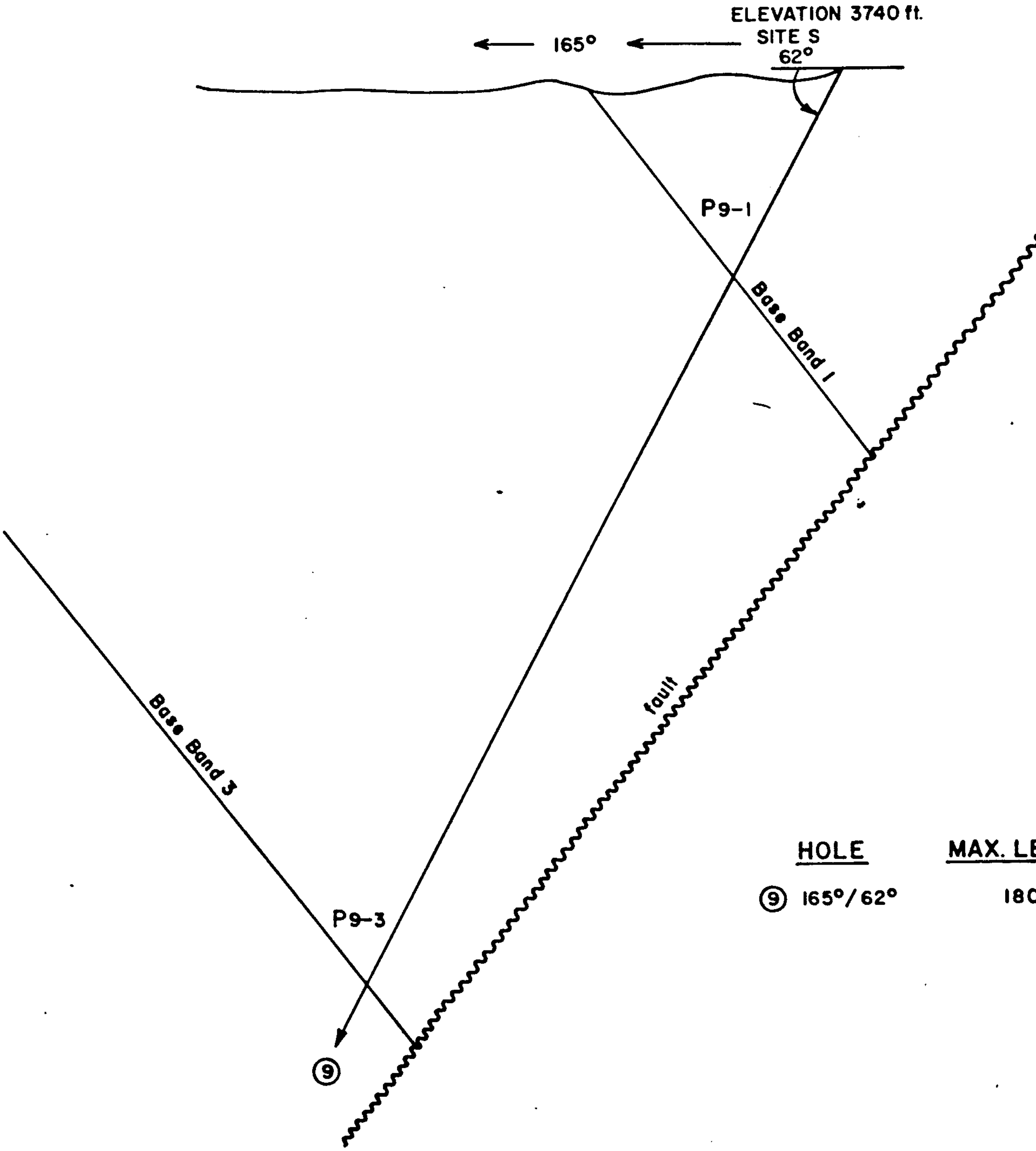


INTERSECTION LENGTHS
NOT TO SCALE

FIGURE 13

VERTICAL SECTION TRENDING 165° THROUGH SITE S

(SCALE 1cm = 10ft.)

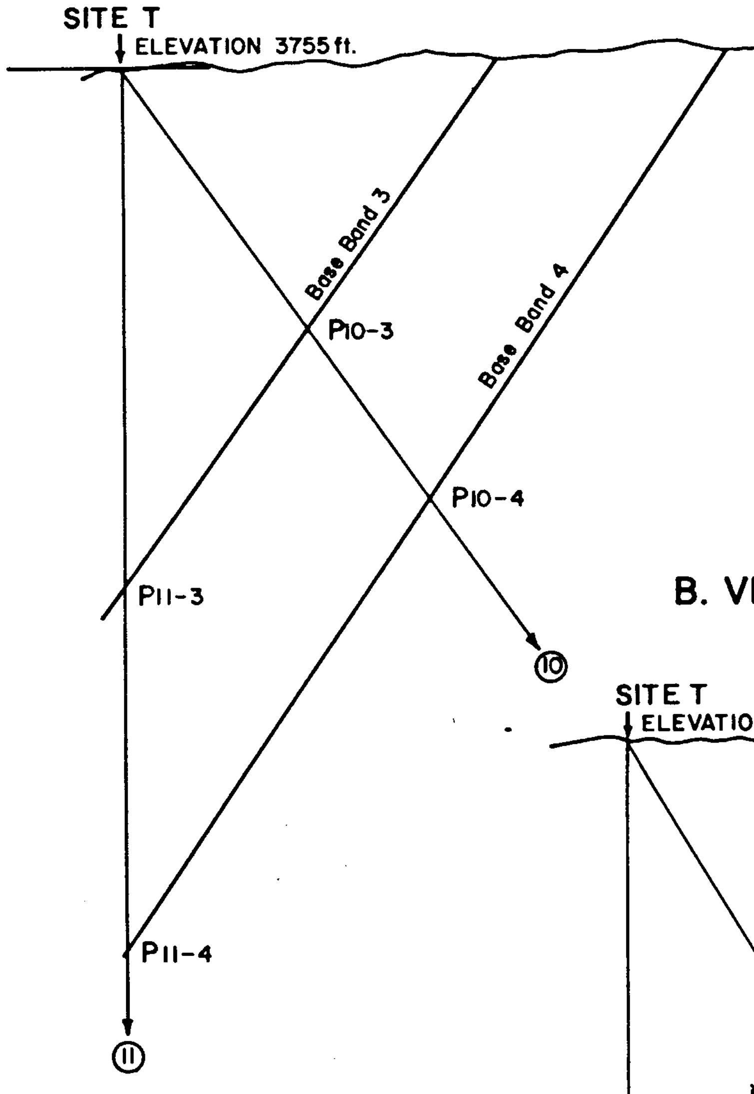


HOLE	MAX. LENGTH
9 165°/62°	180ft.

FIGURE 14

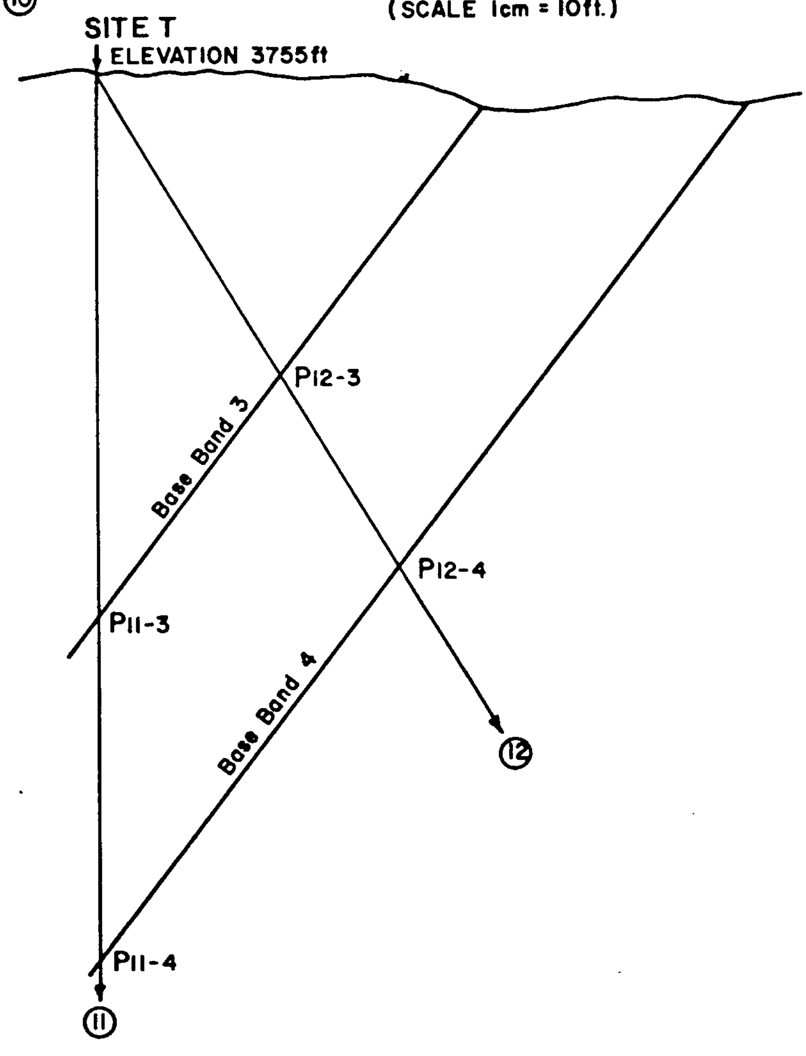
A. VERTICAL SECTION TRENDING 146° THROUGH SITE T

(SCALE 1cm = 10ft.)



B. VERTICAL SECTION TRENDING 180° THROUGH SITE T

(SCALE 1cm = 10ft.)



HOLE		MAX. LENGTH
(10)	146°/55°	100 ft.
(11)	Vertical	140 ft.
(12)	180°/60°	100 ft.

IX SUMMARY OF ORE TONNAGE POSSIBILITIES

Scheelite mineralization occurs in 6 areas which are listed below:

1) Skarn Band 1
2) Skarn Band 3
3) Skarn Band 4
4) Loose boulders in pit
5) Stockpile at Clearwater
6) Boulders below pit

1. Skarn Band 1 has a geologically probable tonnage of 2,763 tons at about 1%.
2. Skarn Band 3 has a geologically probable tonnage of 16,134 tons at about 1.5%
3. Skarn Band 4 has a geologically probable tonnage of 779 tons at 1.5%.
4. A 76 ft. lamping line through the pit indicated an average grade for loose material of 1%. The area of the pit is 3675 sq. ft., if a thickness of 3 ft. is assigned to the loose material then this provides 1002 tons at 1%.
5. The stock pile at Clearwater has previously been estimated at least 1500 tons. A grade estimate was made by lamping traverse lines across the pile at night and a value of about 1.5% obtained.
6. There is probably about 500 tons of better than 1% ore contained in boulders on the slope between Maxwell Creek and the pit. Unfortunately they can probably not be recovered.

Total reserves:

	2,763 tons 1.0%
	16,134 tons 1.5%
	779 tons 1.5%
	1,002 tons 1.0%
	1,500 tons 1.5%
equivalent to	20,923 tons at 1.5%

It is difficult to attach a certainty to this figure. It has been derived by assuming a degree of predictability for grade and skarn thickness that may not be justified. The test of the assumption will be how well drill results fit the predictions made in the proposed drill hole logs.

X CONCLUDING REMARKS

The Gotcha mineral claims cover a small area of high grade scheelite mineralization. The mineralization occurs in skarns adjacent to an alaskite body which is partially surrounded by quartz monzonite. The grade of scheelite mineralization changes abruptly from outcrop to outcrop as does the specific type of skarn. It is difficult therefore to see much consistency in the surface geology and even more difficult to predict with any degree of certainty what the mineralization is doing at depth. Despite these problems an attempt has been made to estimate geologically probable ore reserves. A drill program has been outlined that should prove or disprove the existence of these reserves.

XI RECOMMENDATIONS

1. Arrange for a cat to open up two short access roads to three drill sites R, S, T.
2. At the same time, cut a trench 400 ft. long trending 320° from DDH 6 to expose skarn bands next to the projected intrusive contact.
3. Drill holes in the sequence suggested at each site. Spot new holes and/or shorten planned holes depending on amount and location of mineralization intersected. About 2000 ft. of drilling will probably be required to adequately prove out the tonnages outlined.

Respectfully submitted,

B. D. RYAN, B.Sc., Ph.D.

RESUME OF QUALIFICATIONS

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1967	B.Sc. Hon. Geology, U.B.C.
1967-1973	N.R.C. Graduate scholarship
1973	P.hd. Geology, U.B.C.
1973-1975	N.R.C. Post Doctoral Fellowship
1976-1977	U.B.C. Sessional Lecturer Geology
1977	Consultant
1978-1979	Research Associate, U.B.C.

During the period 1965 to 1973, I have had temporary employment with the G.S.C., Inco., Anaconda and Union Carbide.