

R E P O R T

O N

THE NADIRA COPPER PROPERTY

COWICHAN LAKE AREA

ALBERNI MINING DIVISION, BRITISH COLUMBIA

92C034

- f o r -

DICTATOR MINES LTD. (N.P.L.)

Suite 1, 558 Howe Street
Vancouver 1, B.C.

- PREPARED BY -



James M. Dawson, M.Sc., P. Eng.

May 4, 1971

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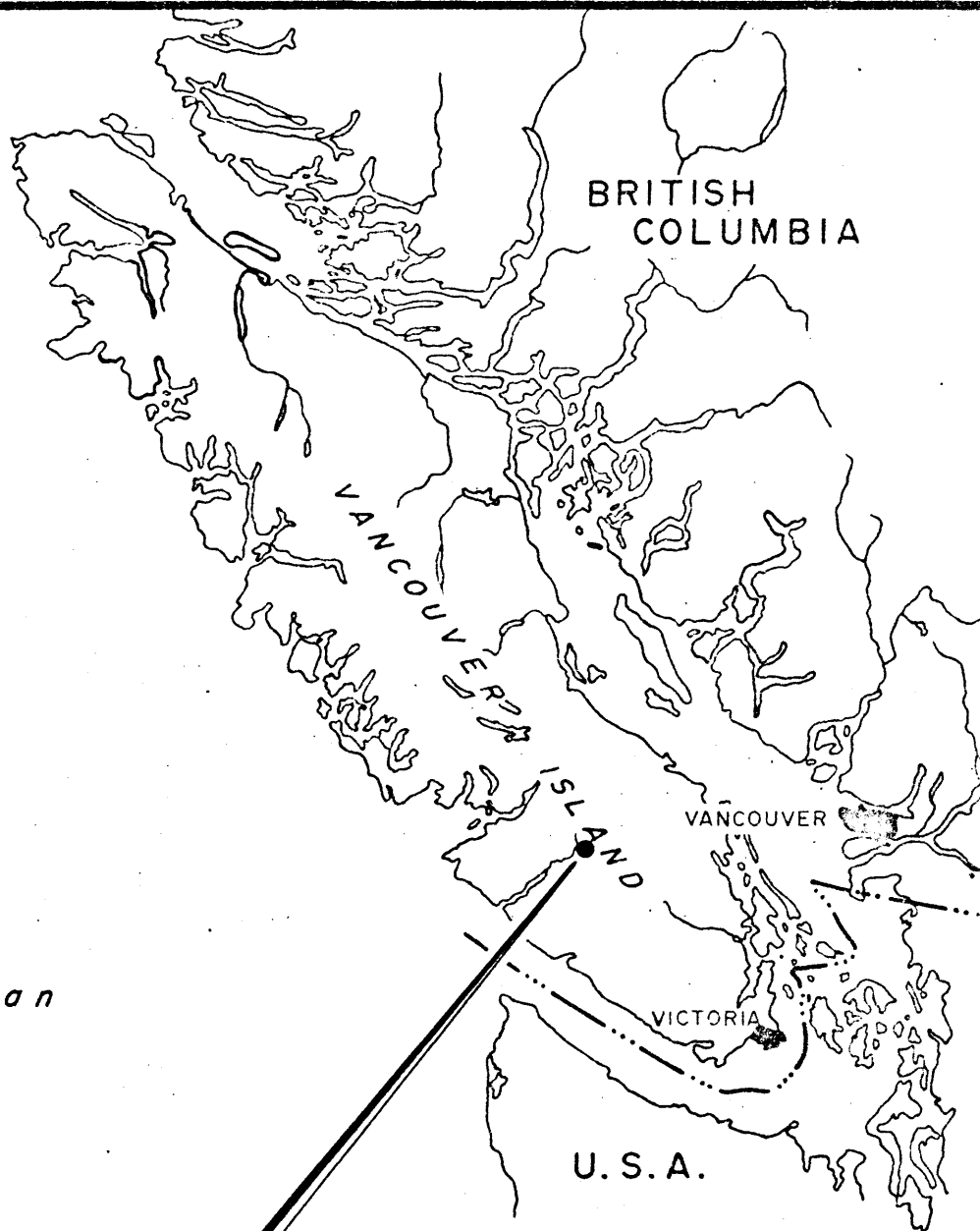
APPENDIX A: Estimated Cost of Recommended Programme.

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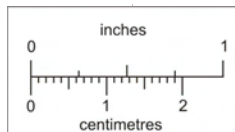
Fig. 228-1	Location Map
Fig. 228-2	Claim Map
Fig. 228-3	Plan Showing Generalized Geology, Copper Occurrences & Main Zone of Interest



Pacific
Ocean

N

NADIRA COPPER PROPERTY



This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.



Dictator Mines Ltd. (N.P.L.) VANCOUVER BRITISH COLUMBIA	
LOCATION MAP NADIRA COPPER PROPERTY	
TECH. WRK Versatile Mining Services	SCALE: 1" = 45 Miles
DRAWN BY: T. G. Veljean	DATE: May 1971
APPROVED: J. M. Dawson	DWG. No. 228 - 1

INTRODUCTION:

Dictator Mines Ltd. (N.P.L.) intends to option the Nadira copper property from the owner, Amax Exploration Inc. The purpose of this report is to briefly summarize the history and geology of the property, assess its potential and make recommendations as to further work. This report is based on compiled data from various sources (see Appendix B). The writer has never personally examined the property; therefore, opinions expressed are based entirely on data collected by others.

PROPERTY:

The property consists of the following claims (see Figure 228-2):

RED GROUP

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>	<u>TAG NUMBER</u>	<u>EXPIRY DATE</u>
Rob 2	13471	595936	Dec. 2/71
Rob 4	13473	595938	Dec. 2/71
Rob 6	13475	595939	Dec. 2/71
Rob 7	13476	595941	Dec. 2/71
Rob 8	13477	595942	Dec. 2/71
Rob 9	13478	595952	Dec. 2/71
Rob 10	13479	595951	Dec. 2/71
Rob 11	13480	595954	Dec. 2/71
Rob 12	13481	595953	Dec. 2/71
Rob 13	13482	595956	Dec. 2/71
Rob 14	13483	595955	Dec. 2/71
Rob 15	13484	595958	Dec. 2/71
Rob 16	13485	595957	Dec. 2/71
Rob 17	13486	595943	Dec. 2/71
Rob 18	13487	595944	Dec. 2/71
Rob 19	13488	595945	Dec. 2/71
Rob 20	13489	595946	Dec. 2/71
Rob 1 Fraction	14997	595979	July 2/71
Rob 2 Fraction	14998	595980	July 2/71

BLUE GROUP

Rob 1	13470	595935	Dec. 2/71
Rob 3	13472	595937	Dec. 2/71
Rob 5	13474	595940	Dec. 2/71
Rob 21	13490	596947	Dec. 2/71

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>	<u>TAG NUMBER</u>	<u>EXPIRY DATE</u>
Rob 22	13491	595948	Dec. 2/71
Rob 23	13492	595949	Dec. 2/71
Rob 24	13493	595950	Dec. 2/71
Rob 25	15036	595959	June 27/71
Rob 26	15019	595960	June 27/71
Rob 27	15020	595961	June 27/71
Rob 28	15021	595962	June 27/71
Rob 29	15022	595963	June 27/71
Rob 30	15023	595964	June 27/71
Rob 31	15024	595965	June 27/71
Rob 32	15025	595966	June 27/71
Rob 33	15026	595970	June 27/71
Rob 34	15027	595968	June 27/71
Rob 35	15028	595969	June 27/71
Rob 36	15029	595967	June 27/71
Rob 37	15160	595977	June 27/71
Rob 38	15030	595972	June 27/71
Rob 39	15161	595978	June 27/71
Rob 40	15031	595974	June 27/71
Rob 41	15032	595971	June 27/71
Rob 42	15033	595973	June 27/71
Rob 43	15034	595975	June 27/71
Rob 44	15035	595976	June 27/71

The following claims are ungrouped and their status is unclear as of the time of writing. Apparently they were staked simultaneously with claims of the N.T. Group (see Figure 228-2) owned by others. The mining recorder for the Alberni Mining Division is quoted as saying the ownership must be resolved between the claimants.

These claims are removed from the main zone of interest:

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>	<u>TAG NUMBER</u>	<u>EXPIRY DATE</u>
Rob 45	16379	127595 M	May 8/71
Rob 46	16380	127596 M	May 8/71
Rob 47	16381	127597 M	May 8/71
Rob 48	16382	127598 M	May 8/71

Owner: Amax Exploration Inc.

F.M.C. 80469

A verbal agreement has been reached to option the foregoing claims to Dictator Mines Ltd. (N.P.L.) and a final letter of agreement is presently being drafted.

LOCATION AND ACCESS:

The property is located in the southern part of Vancouver Island, about 6 miles west of the west end of Cowichan Lake. The claims lie immediately southwest of Tuck Lake on the west side of the valley containing Parker Creek. The approximate geographic center of the claims is at 48°55' north latitude and 124°35' west longitude.

It is accessible by four-wheel drive vehicle via about 40 miles of logging roads from the village of Lake Cowichan. A complex network of roads exists, some of which are in better condition than others, so a map from the logging companies showing all the roads is essential until one becomes familiar with the area.

The prospect is situated on timber licences owned by McMillan, Bloedel and Powell River Company and B.C. Forest Products Ltd. Both companies require that road permits be obtained by persons going into the area. There are also certain restrictions governing the use of bulldozers and the cutting up of fallen timber.

PHYSIOGRAPHY, CLIMATE AND VEGETATION:

The claims occupy parts of the valley bottom and the east sloping hillside above Parker Creek. Relief is in the order of 2,000 feet, the valley of Parker Creek being 300 to 400 feet A.S.L. and the highest parts of the ridge west of the creek about 2,500 feet A.S.L. Topography in this part of Vancouver Island has been rounded by continental glaciation and there are no areas of extreme relief on the property. Overburden depths are reported to be fairly shallow (1-3 feet) except on the valley bottom.

The area has a high annual precipitation which falls mostly as rain and mostly in the winter months. Precipitation records show that the total varies widely from year to year, but exceeds 200 inches in most years. There is little snow below elevations of 1,000 feet. In the summer months, periods of rain are shorter and less frequent than in winter; however, the area is frequently blanketed in fog.

Vegetation is prolific and where it has not been logged off, consists of mature stands of large cedar, hemlock and fir trees with a profuse undergrowth of salal, salmonberry and devil's club. Most of the lower parts of the property lie on the B.C. Forest Product's license and were logged off some years ago. The main zone of interest lies in mature

virgin timber on the McMillan-Bloedel licence; however, logging operations are currently only about a mile away, and it is anticipated that this area will be logged late this year or next year.

HISTORY:

The property was first staked in 1930 when it was referred to as the Southern Cross. Prospecting, some minor trenching, and the driving of one short tunnel was carried out during 1931 and 1932.

In 1942, the property was (?) optioned to Bralorne Mines Ltd. who carried out some surface work and a total of 2,000 feet of diamond drilling in six holes. The property was relocated in 1947 when it was referred to as the Bornite Group. In 1953, it is reported that some of the old open cuts were cleaned out and American Standard Mines Ltd. mapped and sampled the main showings.

In 1955, the property was restaked and vended to Nadira Mines Ltd. (N.P.L.) which carried out some surface sampling, geological mapping and a self potential survey.

In 1956, a camp was constructed by this company, and a total of 11,902 feet of diamond drilling in 43 holes was completed. In 1957 an adit was driven for 102 feet to intersect a shear zone which outcrops on surface. Some surface stripping was carried out in 1958 and 1959.

In 1960, a total of 5,142 tons of ore was mined from open cuts and milled at the Cowichan Copper Company's mill on Cowichan Lake. The 261 tons of copper concentrate produced was shipped to Japan. There is no further record of work carried out by Nadira Mines Ltd. and the claims finally lapsed in 1968.

Amax Exploration Inc. restaked the property in 1968-69, and carried out an evaluation which consisted of detailed mapping, geochemical soil and silt sampling and resampling of the exposed trenches and mineralized outcrops. As a result of this preliminary evaluation, further work was recommended by Amax.

GEOLOGY:

The Nadira property is underlain by volcanic and sedimentary rocks of the Vancouver Group of Triassic age. These rocks have been intruded by a large dioritic pluton which is probably related to the Saanich granodiorite of Jurassic age. Dikes of diorite, diorite porphyry and feldspar porphyry cut all of the older rocks.

The Vancouver Group is subdivided into three units by Fyles (1955) and rocks from all three of these units are present on the property. The Franklyn Creek volcanics consist of intermediate to basic flow rocks with some intercalated tuffs and detrital sediments. The Sutton limestone outcrops both east and west of Parker Creek, but is more predominant on the east side. Usually, this rock type is a fine-grained, light grey weathering, recrystallized limestone. It sometimes contains minor interbedded argillite. The uppermost unit of the Vancouver Group is referred to as "clastic sediments" by Fyles (1955) and is probably represented by the dark green to reddish-brown graywacke found near the western border of the claim block.

The main dioritic intrusive outcrops in the northeast portion of the property and down the valley of Parker Creek. It is a medium

grained, fairly fresh rock containing about 75% feldspar and 25% hornblende and where the contacts can be observed, they appear to be cross-cutting.

Several types of dikes cut all of the above-mentioned rock types and are particularly abundant in the main mineralized zone. Similar dikes were noted by Fyles a few miles east of the property and they are always more prevalent near larger plutonic bodies. Their abundance in the main mineralized zone may indicate that a cupola of the dioritic pluton exists under this zone at depth.

Irregular lenses of skarn are found in the central part of the property -- within and near what is referred to as the main mineralized zone. The skarn varies from a black, ilvaite-rich variety, through greenish varieties to a banded type. The skarn contains the usual calc silicates including ilvaite and garnet, actinolite and varying amounts of sulphides and magnetite. Blocks of relatively unaltered limestone are sometimes immediately adjacent to skarn lenses.

The different types of skarn are probably due to differences in original composition of the source rocks. Fyles suggests that skarns in this area:

"....have formed by replacement but the nature of the replaced material is generally uncertain relatively pure limestone has not been replaced, but the impure beds and volcanic rocks

along the edge of a band of limestone appear to have been more favourable for the formation of skarn."

From the mapping which has been done by various parties to date, the area is structurally complex. Several sets of faults have been recognized and there are at least two periods of movement. The presence of the irregular bands of differing types of skarn which have been cut by two and possibly three types of post-mineral dikes and then faulted, plus the fact that some drag folding in skarn-limestone has been recognized (McKechnie, 1960) indicates a very complex picture which necessitates further detailed investigation.

MINERALIZATION:

Chalcopyrite and minor bornite along with magnetite and lesser pyrite and pyrrhotite is found in skarn lenses near the central part of the property, primarily within what is referred to as the main mineralized zone (see Figure 228-3). This zone is a northwest-trending band of rocks consisting of various types of mineralized skarn, limestone and volcanics cut by swarms of diorite and feldspar porphyry dikes. The rough dimensions of the zone are 2,000 feet (NW-SE strike) by about 400 feet, although some mineralized skarn lenses occur outside this area.

Christoffersen and Mustard (1969) state that:

"Sulphides are erratically distributed in the black (ilvaite rich) skarn as lenses, blebs, fracture fillings and replacements of ilvaite prisms. Grades as high as 7% copper have been reported from this rock. The green skarn is generally weakly mineralized, containing disseminated chalcopyrite with minor amounts of pyrite and hematite. Banded skarn appears to be very rich in copper; however, only one small outcrop of this rock type was found."

There are a number of other copper occurrences on the property away from the main zone of mineralization (see Figure 228-3). A few mineralized skarn outcrops occur outside this area. Minor disseminated

chalcopyrite and pyrite occur in the volcanics, usually associated with epidote and quartz-filled amygdules. Some chalcopyrite has been found in sheared diorite and traces of chalcopyrite and galena were noted in limestone at one locality. In the southeast part of the property, an area of copper mineralization is reported in andesite cut by feldspar porphyry dikes. Some galena and sphalerite are also reported from the same locality (Amax files).

ECONOMIC POTENTIAL:

The work of previous companies has delineated a main zone of mineralization on the property. However, there are other copper occurrences which could be of considerable significance -- in particular, the mineralized area in the southeast corner of the property.

The main mineralized zone is roughly 2,000 feet by 400 feet as presently outlined, and within this area a number of pockets of high grade mineralization exist. Ninety rock chip samples over a total length of 770 feet were taken by Amax Exploration Inc. from mineralized outcrops within this zone. The report of Christoffersen and Mustard (1969) states that:

"Weighted average for all samples of mineralized skarn is 1.73% Cu and about 0.20 oz/Ag per ton (770 feet)....The highest assay was 5.65% copper over a length of 10 feet. Other assays are as follows:

<u>% Cu</u>	<u>Ag-oz/ton</u>	<u>Sample Length</u>
1.29	0.17	35 feet
1.61	0.14	118 feet
.97	0.08	30 feet
3.76	0.38	28 feet
1.19	0.12	60 feet
1.39	0.15	40 feet
1.65	0.13	40 feet
1.16	0.24	50 feet
1.68	0.36	30 feet

.....Most gold assays gave trace amounts only, three samples returned 0.02 oz/ton."

The Nadira copper property appears to be an excellent exploration bet and there are two good possibilities for the development of a viable mining situation:

- (a) It is possible that sufficient high-grade material might be developed to warrant a selective, small tonnage operation.
- (b) If enough high-grade lenses could be outlined, it might be possible to mine the entire zone by low cost open pit methods.

Additional work is definitely warranted to test both of these potentialities.

SUMMARY AND CONCLUSIONS:

1. The Nadira copper property consists of 50 located claims located on Vancouver Island in the Cowichan Lake area, Alberni Mining Division, British Columbia. A verbal agreement has been reached between the owner, Amax Exploration Inc. and Dictator Mines Ltd. (N.P.L.) regarding an option to Dictator.
2. The property was first staked in 1930 and intermittent exploration has taken place over the years. The most important development was an extensive stripping and drilling programme by Nadira Mines Ltd. in the mid-fifties. This company shipped approximately 5,000 tons of ore from the property in 1960.
3. The claims are underlain by Triassic sedimentary and volcanic rocks of the Vancouver Group which have been intruded by a dioritic batholith. Dikes have also intruded these rocks, particularly near the center of the property where a zone containing numerous skarn lenses is found.
4. Copper mineralization is found in a number of places on the property, but is most commonly associated with skarn in a zone roughly 2,000 feet long by 400 feet wide. Copper mineralization

is also found in the diorite, limestone and volcanics. Most of the previous work has been carried out on the skarn occurrences within the main mineralized zone.

5. The most promising area appears to be the zone containing the skarn lenses; however, other areas of the property do have some exploration potential. The possibility exists for the development of either a selective small tonnage, high-grade operation or a larger tonnage, open pit operation if enough high-grade ore could be found to justify mining the entire "main zone".
 6. The property as a whole is an excellent exploration bet and further work is definitely justified to test both possibilities.
-

RECOMMENDATIONS:PHASE I

It is recommended that:

1. All available data on previous exploration work (particularly that by Bralorne and Nadira Mines) be acquired and data correlated with existing information.
2. A grid be established over the main area of interest and detailed soil sampling, geologic mapping and an I.P. survey be carried out.
3. A reconnaissance ground magnetometer survey be carried out over the property.
4. Consideration be given to bulldozer trenching and blasting to further delineate the high grade pods.

PHASE II

The second phase of exploration will be largely contingent upon the results of Phase I, but will probably include:

1. Further trenching and sampling.
2. Selective diamond drilling.



Respectfully submitted,
VERSATILE MINING SERVICES LTD.

James M. Dawson
James M. Dawson, M.Sc., P. Eng.,
Geologist

May 4th, 1971.

Kamloops, B.C.

APPENDIX A

ESTIMATED COST OF RECOMMENDED PROGRAMME

PHASE I (two month programme):

(a) Labour:

1 Geologist-Manager 2 months @ \$1,000.00 per month	\$ 2,000.00	
1 Prospector 2 months @ \$750.00 per month	1,500.00	
2 Assistants 2 months @ \$600.00 per month	2,400.00	
Casual Labour	500.00	
Overhead on Salaries @ 15%	<u>960.00</u>	\$7,360.00

(b) Truck Rental:

1 - 4 x 4 2 months @ \$450.00 per month		900.00
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(c) Supplies & Disbursements:

Food (250 man days @ \$5.00/day)	1,250.00	
Travel	750.00	
Camp Equipment	1,500.00	
Fuels, Lubes, Repairs & Maintenance	750.00	
Equipment Rental (power saw, rock drill, steel, transit, etc.)	500.00	
Assays & Analysis	1,500.00	
Telephone, Clerical, Drafting, Freight, etc.	750.00	
Powder, Caps, Fuse	<u>200.00</u>	7,200.00
Magnetometer Rental 2 months @ \$250.00 per month	500.00	
Miscellaneous Equipment and Supplies	<u>500.00</u>	<u>1,000.00</u>

Carried Forward \$16,460.00

Brought Forward	\$16,460.00
(d) Induced Polarization Survey 8 line miles @ \$450.00 per mile Includes interpretation and report	3,600.00
(e) Trenching and Road Repair D-8 Cat -- fuels and equiped with hydraulic blade & rippers 150 hours @ \$40.00 per hour	6,000.00
(f) Contract Consulting 10 days @ \$125.00 per day	<u>1,250.00</u>
	27,310.00
Contingency @ 10%	<u>2,731.00</u>
TOTAL ESTIMATED COST OF PHASE I	<u>\$30,041.00</u>
ROUNDED	<u>\$30,000.00</u>

A P P E N D I X B

REFERENCES

REFERENCES

- CHRISTOFFERSEN, J.E. & MUSTARD, D.K. (1969): Geological Report on the Rob Claims -- Nadira Copper Property; private report to Amax Exploration Inc.
- FYLES, J.T. (1955): Geology of the Cowichan Lake Area, Vancouver Island, British Columbia; B.C. Dept. of Mines Bull. #37.
- SKERL, A.C. (1956): Preliminary Report on the Geology of the Nitinat River -- Parker Creek Area, Vancouver Island, B.C.; private report to Nadira Mines Ltd. (N.P.L.)
- Annual Reports of the B.C. Minister of Mines and Petroleum Resources for 1931, 1932, 1953, 1956, 1957, 1959, 1960, and 1969.
- Various files of Amax Exploration Inc., Kamloops, B.C. office.
- Personal Communication: Dr. P.E. Fox
Amax Exploration Inc.
Kamloops, B.C.
- Mr. P. Weishaupt
Bralorne Can-Fer Resources Ltd.
Vancouver, B.C.

APPENDIX C

WRITER'S CERTIFICATE



TELEPHONE 374-6263
TELEX 048-8191

VANCOUVER ADDRESS:
1575 TWO BENTALL CENTRE, VANCOUVER 1, B.C.

C E R T I F I C A T E

I, JAMES M. DAWSON, of Kamloops, B.C., HEREBY CERTIFY THAT:

1. I am a geologist residing at 423 Arrowstone Drive, Kamloops, and employed by Versatile Mining Services Ltd., of P.O. Box 609, Kamloops, British Columbia.
2. I am a graduate of the Memorial University of Newfoundland -- B.Sc. (1960), M.Sc. (1963), a fellow of the Geological Association of Canada and a member of the Association of Professional Engineers of B.C. I have practiced my profession for eight years.
3. I am the author of this report which is based on various published and unpublished data on previous work on the property.
4. I have no beneficial interest in Dictator Mines Ltd. (N.P.L.) or in the property discussed in this report; nor do I expect to receive any.



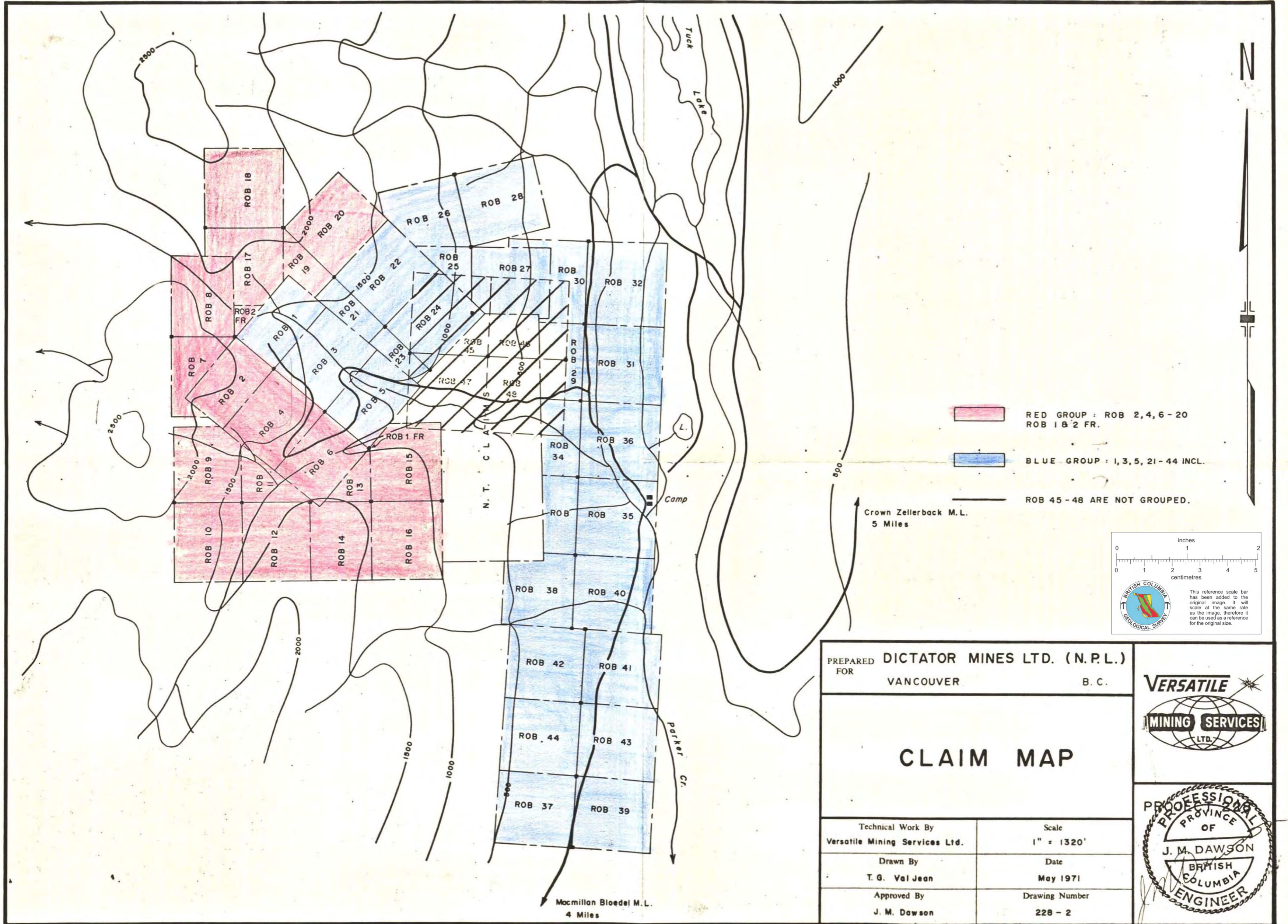
VERSATILE MINING SERVICES LTD.


James M. Dawson
James M. Dawson, M.Sc., P. Eng.,
Geologist


May 4th, 1971.
Kamloops, B.C.


APPENDIX D

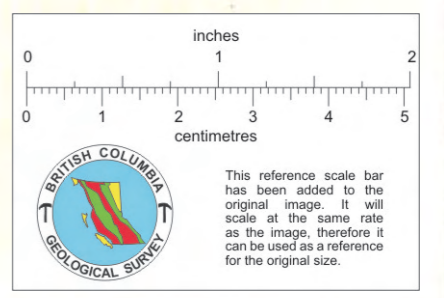
MAPS



 RED GROUP : ROB 2, 4, 6 - 20
 ROB 18 & 2 FR.

 BLUE GROUP : 1, 3, 5, 21 - 44 INCL.

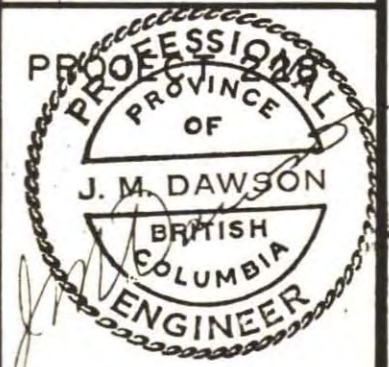
 ROB 45 - 48 ARE NOT GROUPED.

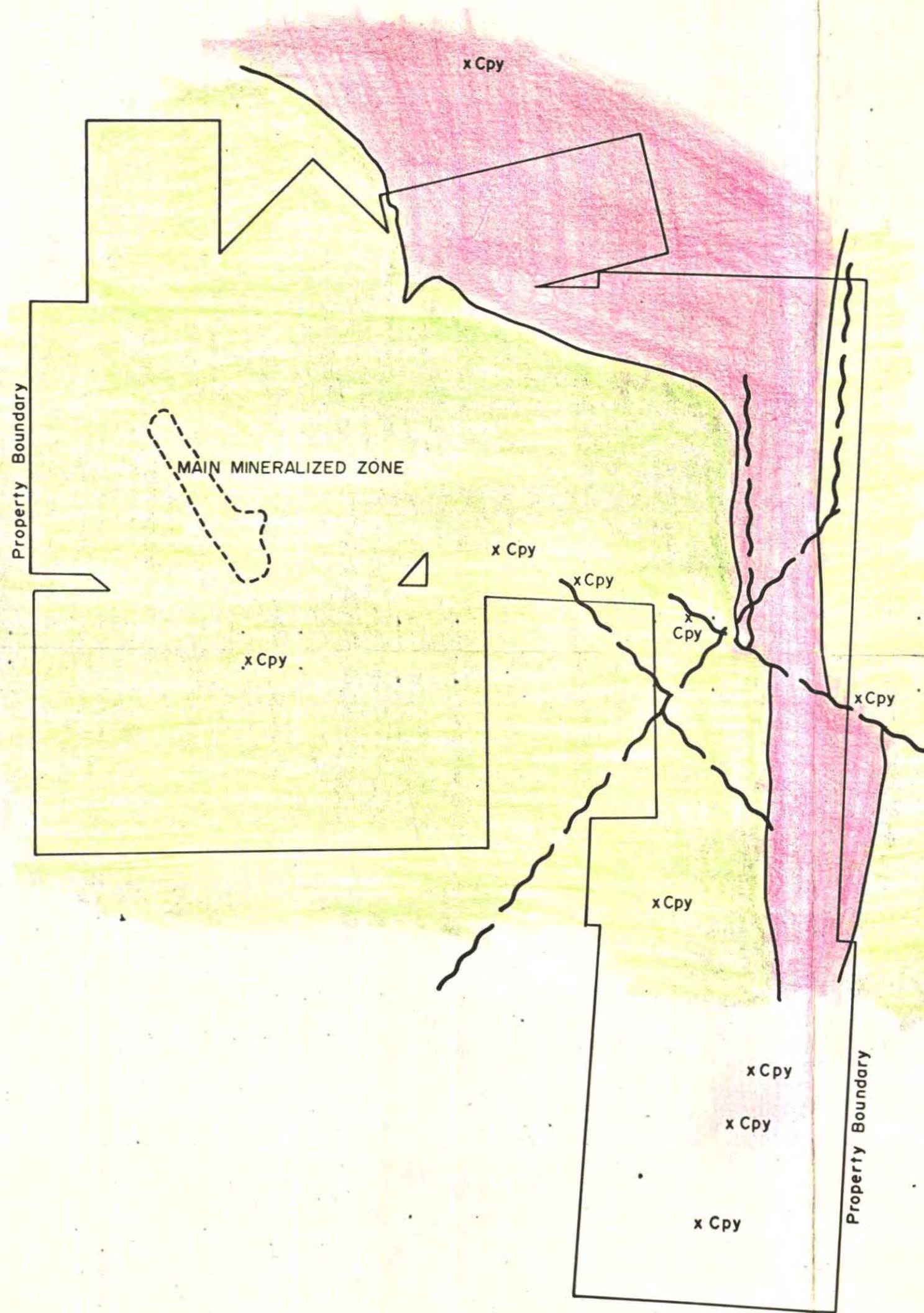


PREPARED FOR **DICTIONAR MINES LTD. (N.P.L.)**
 VANCOUVER B. C.

CLAIM MAP

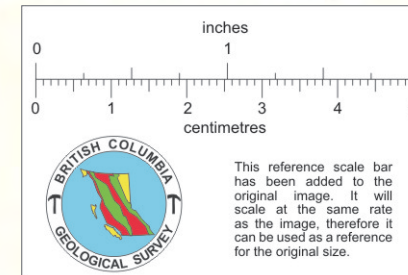
Technical Work By Versatile Mining Services Ltd.	Scale 1" = 1320'
Drawn By T. G. Val Jean	Date May 1971
Approved By J. M. Dawson	Drawing Number 228 - 2





— LEGEND —

- x Cpy MINERALIZED OCCURRENCE : CHALCOPYRITE
- ~~~~~ FAULT, INFERRED
- MEDIUM GRAINED HORNBLENDE DIORITE
- VANCOUVER GROUP : INTERMEDIATE TO BASIC VOLCANICS & RELATED DETRITAL SEDIMENTS WITH INTERCALATED LIMESTONE BANDS ; PORTIONS OF THESE ROCKS ARE CONVERTED TO VARIOUS TYPES OF SKARN.



NOTE : Geology modified after Christoffersen & Mustard (1969)

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 VANCOUVER B.C.

NADIRA COPPER PROPERTY
PLAN SHOWING GENERALIZED
GEOLOGY, COPPER OCCURRENCES
AND MAIN ZONE OF INTEREST

Technical Work By
 Versatile Mining Services Ltd.

Scale
 1" = 1320'

Drawn By
 T. G. Val Jean

Date
 May 1971

Approved By
 J. M. Dawson

Drawing Number
 228 - 3

