GEOLOGICAL REPORT ON THE

ALLERSTON PROPERTY

WHITNEY TOWNSHIP

PORCUPINE MINING DIVISION

ONTARIO

August, 1976

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(In Back Pocket)

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SOUTH ZONE 1" = 50'

SAMPLE LOCATION MAP 1" = 400'

SUMMARY

This report describes the geology and mineral occurrences on a 55 claim group in Whitney Township, Ontario, optioned by Alamo Petroleum Ltd.

The principal reason of this survey was to evaluate the deposits of talc-magnesite occurring in two zones over 2 claims (North Zone) and 2 claims (South Zone) by using thin section, chemical analysis and metallurgical testing. The results of the field mapping, petrological studies and chemical evaluation (by CIPW Normative Analyses) are presented in this report. Metallurgical results will be presented in a separate report. A geophysical report will also be compiled.

The talc-magnesite deposits are associated with ultramafic intrusive rocks which are interpreted to be part of a differentiated sill. Drilling and structural data suggest the North Zone dips at a shallow angle to the north-northeast while the South Zone dips at a shallow angle to the southeast. Tonnage estimates for the North Zone are 6,318,000 tons of talc-magnesite on surface with a possibility of an additional 12,987,000 tons below peridotite cover. The South Zone has a possible 31,590,000 tons as suggested by 5 drill holes, and has an approximate thickness of 100'. Evidence thus far suggests the talc-magnesite zones are uniform in composition except for a 10' transitional zone on the contacts and grade 7% chlorite and 7% ferrous oxides.

Results of this study warrant a drilling program to delineate the extent of the deposits, North Zone first, then the South Zone, to further test for uniformity of grade. This drill program would require 40 holes and 50 holes, for the North and South Zones respectively at an estimated cost of $230,000.

The secondary purpose of this study was to evaluate base and precious metal potential of the pyritized felsic volcanic unit underlying 17 claims.

Preliminary assays are encouraging enough to warrant continued trenching of all outcrops on the northernmost 4 claims on Lot 7, Con. 3, and the conducting of an induced polarization survey to arrive at a drilling proposal.

INTRODUCTION

Purpose: The main purpose of this study was to evaluate the economic potential of the talc-magnesite deposits. The secondary objective of this survey was to evaluate the economic potential of the felsic volcanic units for base and precious metals.

Location and Property Description: Whitney Township is in the Porcupine Mining Division of Ontario, approximately six miles east of the town of Timmins. Plate 1 shows the relative position of the claims to the town. The property is located within the Municipality of Timmins in the south-western portion of Whitney Township bordered approximately by the Township line to the south, Concession III and one half line to the north, Lot 10 line to the west and Lot 5 line to the east. Fifty-five contiguous claims form the option group. Three claims have been brought to lease at the time of writing. A claim map and claim inventory are submitted as Plate 2 and Figure 1 respectively.

Access and Facilities: The property is most easily accessable by a good gravel all-weather road south from Highway 101 from the Village of Porcupine, between Lots 8 and 9. This road passes through the western one-third of the property and terminates on the property. The Ontario Northland Railroad passes approximately one-half mile to the northwest of the property. The Northern Ontario Natural Gas line passes 2 miles north of the property and electric power lines are situated within a mile of the property.

Previous Work: Early prospecting (around 1910) for gold was done on the property. Search for base metals started in the 1960's. Plate 3 shows the areas of work previously done and which companies did the work.

Canadian Longcourt Mines Limited (ODM Assessment File No. 63.2218, Drill Report No. 22, Whitney Twp.) had work done for them by Watts, Griffis & McQuat Ltd. of Toronto in 1967 on the northern part of the present property. This work consisted of 11.9 miles of line cutting, geological mapping, trenching and sampling. Geophysics included a ground magnetometer and electromagnetic survey. Uhatec Limited of Toronto conducted an induced polarization survey

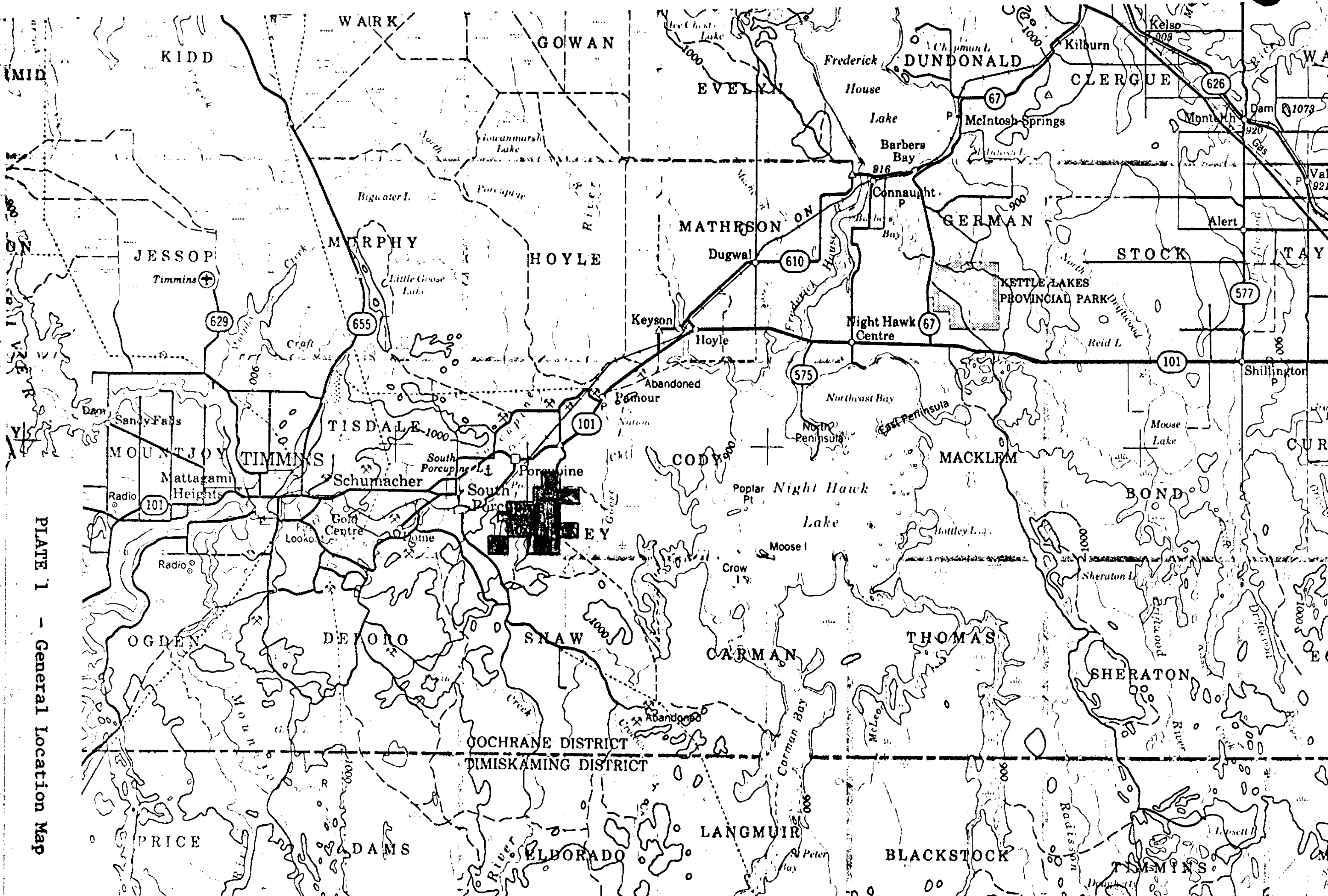
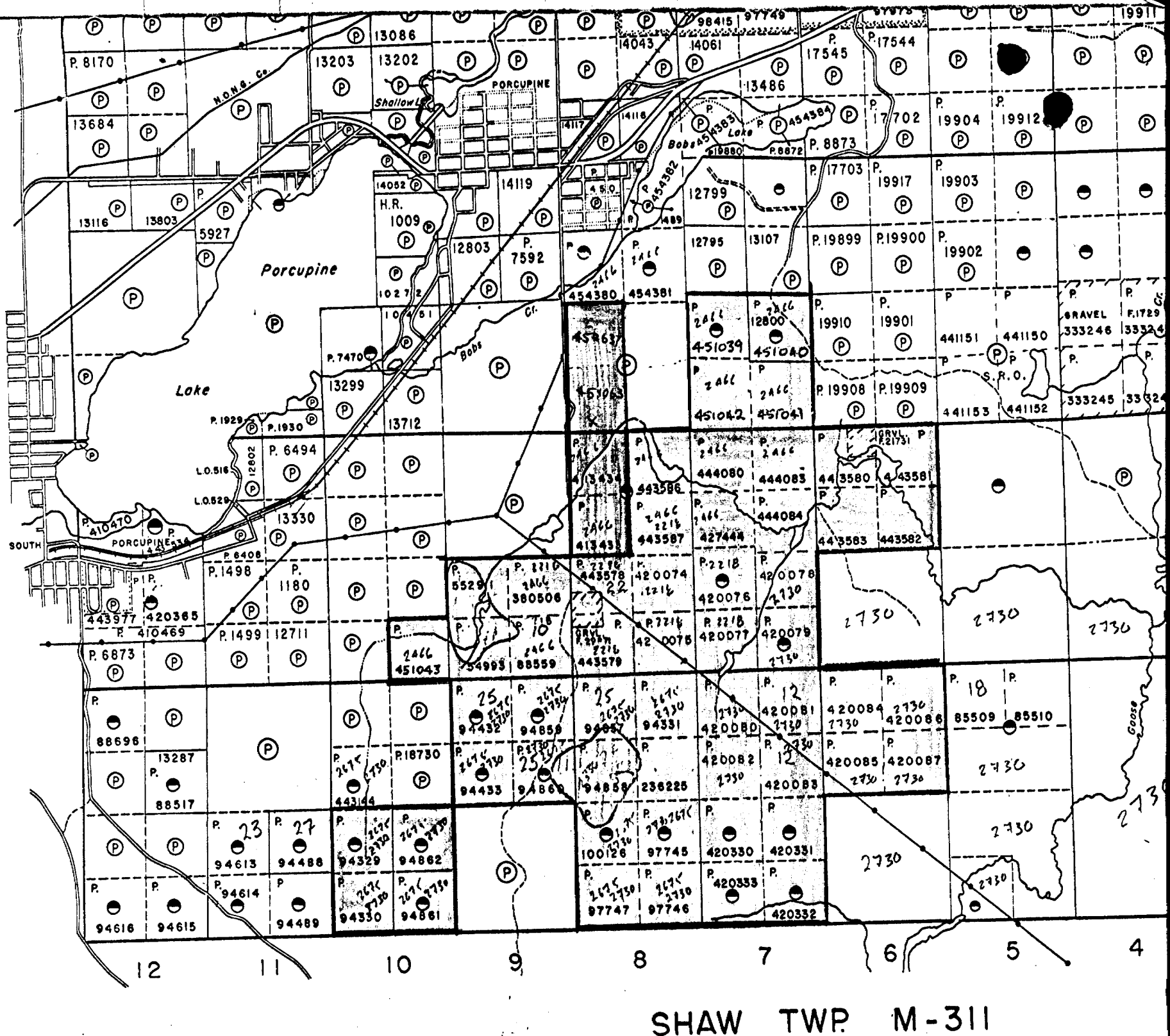


PLATE 1 - General Location Map


TISDALE TWP. M-3
PLATE 2 - Claim Map
Porcupine
Lake
Shallow Lk.
Bobs Lake
Bobs Cr.
PORCUPINE
SOUTH PORCUPINE
N.O.N.& Co.
H.R.
S.R.O.
GRAVEL
12
11
10
9
8
7
6
5
4
SHAW TWP. M-311

Whitney Twp.

P.94329	Con I, Lot 10, S½	
94330	" " "	
94861	" " "	
94862	" " "	
94432	Con I, Lot 9, N½	
94433	" " "	
94860	" " "	
94858	" " "	
451043	Con II, Lot 10, S½, SE¼	
55291	Con II, Lot 9, S½	Leased
54993	" " "	"
380506	" " "	
88559	" " "	Leased
97745	Con I, Lot 8, S½	
97746	" " "	
97747	" " "	
100126	" " "	
94857	Con I, Lot 8, N½	
94858	" " "	
94331	" " "	
236225	" " "	
443578	Con II, Lot 8, S½	
443579	" " "	
420074	" " "	
420075	" " "	
443586	" " N½, NE¼	
443587	" " N½, SE¼	
420080	Con I, Lot 7, N½	
420081	" " "	
420082	" " "	
420083	" " "	
420330	Con I, Lot 7, S½	
420331	" " "	
420332	" " "	
420333	" " "	
420076	Con II, Lot 7, S½	
420077	" " "	
420078	" " "	
420079	" " "	
444080	Con II, Lot 7, N½	
444083	" " "	
444084	" " "	
427444	" " "	
451039	Con III, Lot 7, S½	
451040	" " "	
451042	" " "	
451041	" " "	
420084	Con I, Lot 6, N½	
420085	" " "	
420086	" " "	
420087	" " "	
443580	Con II, Lot 6, N½	
443581	" " "	
443582	" " "	
443583	" " "	

TOTAL 55 Claims

FIGURE 1

P.	452637	Con. III, lot 5, NW¼, S½
	451063	Con. III, lot 8, SW¼, S½
	413434	Con. II, lot 8, NW¼, N½
	413433	Con. II, lot 8, SW¼, N½

Sub-Total: 4 claims

TOTAL: 59 Claims

over the property as well. Continental Diamond Drilling Limited drilled five holes totalling 1,003 feet. Anomalous silver values were obtained from the iron formation in the area.

Noranda Mines Limited (ODM Assessment File No. 63.2466, Drill Report No. 10, Whitney Twp.) performed linecutting totalling 21.5 miles and conducted a ground magnetometer and electromagnetic survey over the area shown in Plate 3. Noranda drilled two holes in 1969 and 1970 totalling 896.8 feet.

In 1966 Canadian Nickel (INCO) (ODM Drill Report No. 12, Whitney Twp.) drilled one hole on claim P.420081 of 400.0 feet and one hole on claim P.420083 of 358.0 feet for a total of 758.0 feet.

Ralph Allerston (ODM Drill Report No. 19, Whitney Twp.) drilled one hole on claim P.55291 totalling 112.0 feet in 1965.

In 1969 Oro Mines Limited (ODM Assessment File No. 63.2675, Drill Report 25, Whitney Twp.) optioned the property shown in Plate 3. They contracted Kenneth H. Darke, Consulting Geologist of Timmins to conduct an exploration program. Canadian Aero Mineral Surveys Limited (ODM Assessment File No. 63.2730, Whitney Twp.) flew 217.0 line miles of airborne magnetic and electromagnetic information.

Tri-J Mineral Surveys Limited did a ground magnetic and electromagnetic survey over a cut grid on the property. Bradley Brothers Diamond Drilling Limited drilled nine holes on the property in 1970 totalling 4370.0 feet. On behalf of Oro Mines Limited, Dolmage Campbell & Associates Limited of Vancouver, B.C. conducted a petrographic study of the magnetic bearing rock obtained from diamond drilling. Elemental analysis of selected drill core sections were made by Technical Services Laboratories for CO_2, CaO and MgO. Follow up work on the same selected core samples was done in 1976 by X-Ray Assay Laboratories Limited for Alamo Petroleum for SiO_2, Al_2O_3 and Fe_2O_3.

K. H. Darke submitted a summary of diamond drilling results in 1971 to Oro Mines, and the logs plus sample descriptions are included in the appendix of this report.

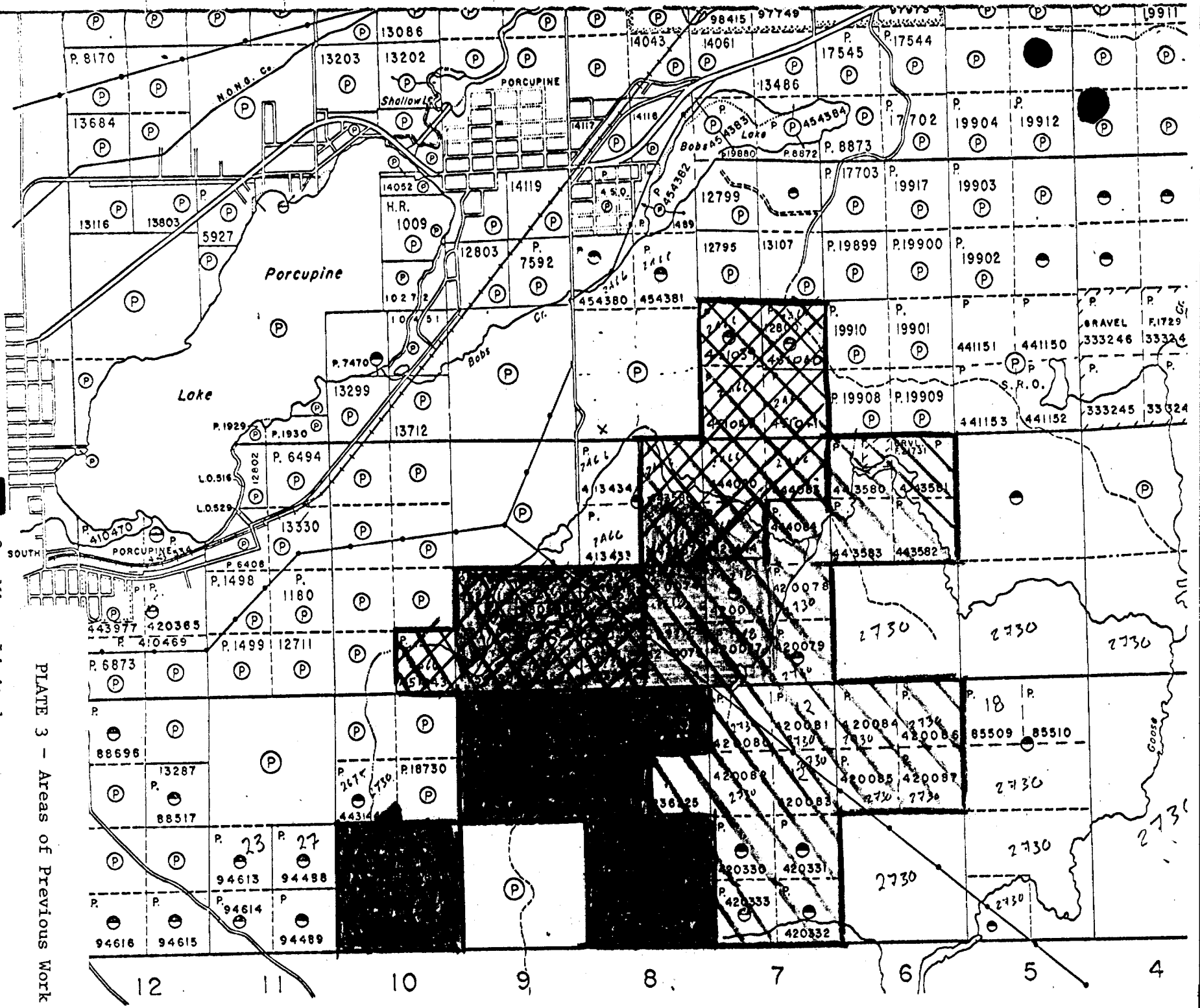


PLATE 3 – Areas of Previous Work

Oro Mines Limited

Canadian Lencourt Mines Limited

Noranda Mines Limited

Alamo Petroleum Limited

TISDALE TWP. M-3

SHAW TWP. M-311

In April, 1974 and November, 1974, K. H. Darke wrote two reports entitled "Summary Comments on the R. E. Allerston Talc-Magnesite Prospect Whitney Township, Ontario" and "Summary Report on the R. E. Allerston Talc-Magnesite Deposit Whitney Township, Ontario", respectively.

In 1973, R. E. Allerston submitted two samples from surface outcrop to the Ontario Division of Mines for mineralogy and elemental analysis.

In 1964 Union Carbide took a bulk sample from the north talc-magnesite zone at approximately line 6+75E/13+80N and sent it to Ottawa for metallurgical testing at the Mines Branch. Report IR65-4, Mines Branch Investigation Report by F. H. Hartman was issued January 25, 1965.

Ownership: The claims are owned by Mr. R. E. Allerston of 322 Elm St. N., Timmins, Ontario, P4N 6B2, and are currently under option by Alamo Petroleum Ltd., 55 Yonge Street, Suite 310, Toronto, Ontario. M5E 1J4.

Personnel: The geological survey and sampling was conducted by Alamo Petroleum Ltd., 55 Yonge Street, Suite 310, Toronto, Ontario. M5E 1J4 between April 30, 1976 and August 20, 1976.

Mr. R. P. Bowen, Consultant, worked on the property from April 30, 1976 until July 20, 1976. Mr. Jesse Winters of Alamo worked on the property from May 18, 1976 until August 20, 1976. Mr. R. S. Middleton, Chief Geophysicist for Rosario Resources spent the days through July 13 through 16, 1976 on the property and devoted considerable other time and effort consulting and advising on geology, geophysics, assaying and metallurgical work. Mrs. Toni Fisher of Alamo spent considerable time doing background work and research on the projects and conducted a petrological study of the specimens submitted for thin section. Mapping of claims 452637, 451063, 413434 and 413433 was completed November 4 - 7 and 11, 1976 by R. S. Middleton and P. Bowen.

Method of Work: Geological mapping at a scale of 1" to 400' was carried out using cut lines and enlarged air photos for control. Mapping of the talc-magnesite outcrops was also done at 1" to 50', using compass and tape measure.

Bulk sampling was done on the talc-magnesite outcrops in both the North and South Zones. These samples were thin sectioned for a petrographic study, assayed for an elemental geochemical study to perform a normative analysis to compare with the modal analysis and to finally perform metallurgical testing to determine if a marketable product can be produced.

Expanded metallurgical testing on split core samples of talc-magnesite from the holes drilled in the South Zone by Bradley Brothers for Oro Mines in 1970 was performed by Lakefield Research of Canada in 1976 for Alamo Petroleum Ltd.

Hand samples of the other rock units were taken at the time of mapping for petrographic and geochemical studies to determine any relationships between the stratigraphic units in the area. Rock geochemical samples from the sulphide iron formation and quartz sericite schist units were analysed for Zn, Ag and Au.

GENERAL GEOLOGY

With the exception of a few high level felsic intrusives, diabase dikes and lamprophyre dikes the bed rock is of Early Precambrian age.

Regionally the claim group is 2.5 km (1 mile) south of the Destor-Porcupine Fault that extends from Timmins in the west to the Greenville Front east of Noranda, Quebec.

A general stratigraphic sequence is typical of the Abitibi Greenstone Belt and the Timmins Camp in particular.

It follows with:

(1) A lower sequence of mafic metavolcanic rocks, basaltic to andesitic in nature and varying in texture from massive, porphyritic flows and pyroclastics;

(2) Felsic to intermediate metavolcanics with a lower unit of dacitic to rhyodacitic flows and pyroclastics altered to quartz sericite schist or quartz sericite chlorite schist locally, with numerous sill-like intrusions of ultramafic, and subordinate mafic rocks confined largely to this metavolcanic unit, and an upper felsic metavolcanic unit composed of rhyolite to rhyodacite locally altered to quartz sericite schist and with minor sill-like intrusions of mafic to ultramafic material;

(3) Metasedimentary rocks are a lower oxide (chert-magnetite with minor pyrite) iron formation and an upper sulphide (quartz, chert, carbonate, pyrite, pyrhotite) iron formation that is distinguished by extensive graphitic and graphitic tuff-breccia zones. Serpentinized ultramafic sills and intrusions penetrate the metavolcanics and due to magnetic segregation form dunitic lower zones and peridotitic upper zones. Mafic intrusives of gabbroic composition form sills and high level intrusive complexes. Felsic high level intrusives are feldspar porphyry and quartz biotite feldspar porphyrres and cause local moderate alteration up to 100 m (300') from their contact with the surrounding rock. North -

South diabase dikes generally follow faults or zones of weakness although they may not completely cut the earlier rocks. Small lamprophyre dikes are common and are most often associated with the ultramafic rocks. These dike rocks are middle to late Precambrian age.

Regional metamorphism is of the greenschist facies with local epidote-amphibolite facies metamorphism noted near intrusives.

TABLE 1 - TABLE OF LITHOLOGIC UNITS FOR THE ALLERSTON CLAIMS

CENOZOIC

Pleistocene & Recent

Proglacial lacustrine silt, clay, fine sand and gravel cover the area from 0 to 10m (30') (in one drill hole) and possibly deeper in the central portion of the claim group.

MIDDLE TO LATE PRECAMBRIAN

Mafic Intrusive Rocks

Lamprophyre dikes

Diabase dikes

EARLY PRECAMBRIAN (ARCHEAN)

Felsic Intrusive Rocks (High level intrusives)

Feldspar porphyry, quartz-feldspar porphyry, quartz-feldspar-biotite porphyry.

Mafic Intrusive Rocks

Gabbro

Ultramafic Intrusive Rocks (Serpentinized)

Talc-magnesite, peridotite, carbonatized and chloritized ultramafic rocks (including possible extrusive members).

Metasedimentary Rocks

Sulphide horizon associated with the upper felsic volcanic unit; Chert-Graphitic shale-pyrite pyrrohotite. Sulphide iron formation; Chert-Argillite-magnetite oxide iron formation.

Felsic to Intermediate and Metavolcanic Rocks

Flows and ash flow tuffs (some welded) altered to quartz-sericite and quartz-sericite-chlorite schists. Rhyolite-rhyodacite and dacite in composition.

Mafic Metavolcanic Rocks

Basalts-andesites (flows, tuffs lapilli and agglomerates, amygdaloidal and foliated.)

MAFIC METAVOLCANIC ROCKS

Mafic metavolcanic rocks occur as flows, tuffs, lapillis, agglomerates and narrow sills. The volcanic sequence is concentrated on claims P.94329, 94330, 94861, 54993, 88559, 94857, 94859, 97747 and 94860 with small outcrops noted on several other claims. All rock exhibit moderate to strong foliation. The rocks are basalts and andesites and are all chloritized and some are carbonated as well. Metamorphism is to greenschist facies. The flows are fine grained (less than 1mm). The weathered surfaces are light greenish gray to dusky brown. Fresh surfaces are grayish green to dark grayish green. Phenocrysts of carbonate and occassionally quartz are often present present as are stringers of carbonate and quartz. Quartz veining is a not unusual phenomena.

Pyroclastics range from ash flows and lapilli to agglomerates. Fragments range from mafic to intermediate composition and are angular to moderately rounded. Elongation in the direction of foliation is always present. Mafic metavolcanic units within the main claim group area vary from 1m (3') to 30m (100') thick. The mafic metavolcanic unit in the southwestern four claims is part of a major unit estimated to be 10,000m (33,000') thick.

FELSIC TO INTERMEDIATE METAVOLCANIC ROCKS

The lower part of this sequence is dacitic to rhyodacitic in composition with less than 1% sulphide content disseminated throughout and outcrops on claims P.94432, 94433, 94859, 94860, 94857, 94858, 94331, 236225, 97745, 97746, 420330, 420080, 420082, 420083, 420084, 420086, 420085 and 420087. The rocks are flows and tuffs, some of which exhibit welding. The flows are fine grained (less than 1mm) and the tuffs contain fragments no larger than 2 to 3mm and are probably ash falls. Alteration to quartz-sericite-chlorite schist is common. The massive to moderately foliated portions grate both horizontally and vertically to and from the schistose portions.

The rocks weather greenish gray to moderate dusky brown and are blueish gray to grayish green on fresh surface.

The upper sequence is rhyolitic-rhyodacitic to dacitic in composition with greater than 1% sulphide disseminated throughout. The bulk of this sequence is concentrated in the northwest and north, outcropping on claims P.55291, 380506, 88559, 443579, 443578, 420074, 420076, 451039 and 450140. The rocks are largely flows with some tuffaceous units. They are generally fine grained (less than 1mm). Schistosity is common with some zones becoming very fissile. Chlorite content is notably less than in the lower unit and alteration is largely to quartz sericite schist. Gradation from massive to schistose portions occurs throughout the dacitic units. Weathered surfaces are generally moderate yellowish brown with fresh surfaces being white to medium light blueish gray to grayish orange pink. The total thickness of the felsic metavolcanic units could be on the order of 2000m (6,800') thick.

METASEDIMENTARY ROCKS

Rocks classed as metasedimentary are in part pyroclastic. At least three iron formations occur on the property, one predominately quartz sulphide, and one predominately quartz graphite sulphide and one predominately oxide.

A lower unit of oxide iron formation is banded chert argillite and magnetite with minor pyrite outcrops on claims P.97747, 100124, 94860, 94433 and 94862 and is found in drill holes B-1, B-2, B-5, B-7, B-8 and B-9 of Oro Mines. On claim P.94862 and the south portion of claim P.94433 the trend is east-northeast dipping to the north about 15^{o}. On claims P.97747, 100124 and 94860 the trend is north-northwest dipping about 10^{o}-20^{o} east.

Bands are composed of: chert ranging in thickness from less than 1cm (less than 0.5") to 15-20cm (6-8") and are light gray to blueish gray weathering to dusky gray; argillite or slate bands from 2-10cm (1-4") thick are dark gray to red weathering to dusky brown; layers of magnetite (fine grained less than 1mm and magnetic with minor pyrite and pyrrhotite less than 1% occurring as flecks and stringers) from less than 1cm to 5cm (less than 0.5" to 2") are black weathering to grayish black.

The thickness varies from 3m (10') to over 30m (100') averaging 15m (50').

The upper unit is a quartz-graphitic-sulphide iron formation and is found on claims P.94329, 94862, 94433, 94860, 94432, 94859, 94857, 94858, 97746, 42033, 94331, 420075, 420080, 420083, 420085 and 420087 and is associated with the lower felsic to intermediate volcanic unit.

This unit is at least partially pyroclastic in origin, especially the cherty graphitic breccia portion. The best type examples occur on claims P.94859, 94432, 420075 and 94331. This section is massive graphite with pyrite-pyrrhotite stringers and cherty to graphitic chert, tuffaceous and brecciated with pyrite and pyrrhotite stringers. The color is black to gray weathering to dusky brown (due to sulphides oxidizing to hematitite and limonite). Type examples of this iron formation where the graphitic content is considerably less with quartz content increasing and pyrite-pyrrhotite content remaining about constant occur on claims P.97746, 94858, 94857, 420075, 420080, 420085 and 420087. The color on fresh surface is lighter due to a lower graphite content, however, the weathered surface is the same color. This unit is found in Oro Mines drill holes B-1, B-2, B-3, B-4, B-5, B-8 and B-9, Noranda drill holes W-69-1 and W-70-2 and Canadian Nickel (INCO) hole 29144.

The thickness is 3m (10') to over 30m (100') averaging 20m (65'). The trend is generally east-west and northeast dipping north and northwest on claims P.94433, 94859, 420075 and 420085 and north-south to northwest dipping to the east on claims P.97746, 97747, 94858, 94859, 94331, 420080 and 420075.

The sulphide horizon associated with the upper felsic volcanic unit is a quartz-sulphide formation composed of chert, recrystallized quartz, pyrite and pyrrhotite as stringers and as massive sulphide zones. Outcrops appear on claims P.55291, 380506, 44358 and in Canadian Lencourt holes L-4 and L-5.

Minor carbonate and chlorite stringers are commonly associated with this zone. This unit is of more economic significance because of anomalous silver values than the previously mentioned iron formations. A more complete discussion will appear in the section on economic geology.

The quartz is generally an off-white or dull white as is the chert and exhibits

sacchaoidal texture where recrystallized. The pyrite and pyrrhotite is fine grained to medium grained (less than 1mm to 3mm) and brassy in color. Weathering causes oxidation of the sulphides and a dusky brown of limonite and hematite staining is characteristic of the weathered surface. The thickness varies from less than 1m (less than 3') to over 6m (20') averaging 3m (10'). The trend follows the upper felsic volcanic units on the claims mentioned above.

ULTRAMAFIC INTRUSIVE ROCKS

Ultramafic intrusive rocks are found in the west and west central portion of the claims P.451043, 55291, 380506, 54993, 88559, 443579, 94859, 94432, 94433, 94860, 94858 and 100124. They occur as sills in the volcanic sequence. Serpentinization is common to all with carbonation and chloritization occurring to a more or less marked degree from one location to another.

Magmatic segregation appears to have occurred in the thicker portions causing a layer of dunite to form on the bottom with a layer of peridotite above. Local pyroxenite zones are also common. Diamond drilling has noted two layers varying in thickness from 15m (50') to 50m (200'). The average thickness can probably be stated as 30m (100').

Alteration of olivine to serpentine and magnesite is common and proven by petrographic studies which were made as part of this project. Talc, sericite and chlorite are common. Narrow asbestos veins and stringers were noted in peridotite outcrops. Serpentine with relic textures of pyroxene were also noted in the petrographic study.

Where the rock was dunitic in composition, large bodies of talc-magnesite rock exist at present. This dunitic layer is probably a differentiated base of a sill. More on this will be covered under economic geology. Alteration of the peridotite zones was much less pronounced.

Veins of carbonate and talc are relatively common while quartz veining is rare. Azimuth of veining in the north talc-magnesite zone is from 10^{o} to 30^{o}.

TABLE 2 - COMPARISON OF VISUAL, MODAL & NORMATIVE ANALYSES OF THE NORTH TALC-MAGNESITE ZONE BULK SAMPLES

Bulk Samples 354, 356, 358, 359, 360, 362, 363, 365, 368, 370, 371, 372 (12 samples).

Appendix A contains modal analyses of all thin sections, mean, variance and standard deviation tables.

Appendix B contains C.I.P.W. normal calculations for all samples, mean, variance and standard deviation tables.

Appendix C contains hand specimen descriptions of all samples, mean, variance and standard deviation tables.

Mineral	Visual			Modal			Normal			Additional 8 Samples 355, 357, 361, 364, 366, 367, 369 & 373 (Total 20 Samples) Total Visual			Total Normal		
	Mean	Var.	S.D.	Mean	Var.	S.D.	Mean	Var.	S.D.	Mean	Var.	S.D.	Mean	Var.	S.D.
Carbonate	34.92	23.10	4.81	41.67	51.21	7.16	35.41	38.73	6.22	33.95	26.88	5.18	34.77	45.37	6.74
Talc	52.00	34.83	5.90	42.16	40.04	6.33	46.08	30.42	5.52	31.95	37.52	6.13	44.47	35.37	5.95
Chlorite	7.42	5.67	2.38	8.67	14.36	3.79	7.16	7.38	2.72	8.2	7.43	2.73	8.04	15.45	3.93
Opaques	4.83	1.82	1.35	7.50	11.36	3.37	8.53	1.69	1.30	4.9	1.04	1.02	8.54	2.13	1.46

$$\text{Mean} = \frac{\Sigma (a + b + c + \ldots . n)}{n}$$

$$\text{Variance} = \frac{\Sigma(a^2 + b^2 + c^2 + \ldots . n^2) - n \left[\frac{\Sigma(a + b + c \ldots n)}{n}\right]^2}{n - 1}$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}}$$

TABLE 3 - AVERAGE CHEMICAL ANALYSES FOR 12 NORTH ZONE BULK SAMPLES

Sample	SiO_2	Al_2O_3	CaO	MgO	Fe_2O_3	CO_2	H_2O*
354	31.9	0.7	0.76	34.3	7.83	21.4	3.11
356	31.5	1.3	0.95	32.5	7.58	20.5	5.67
358	34.6	1.2	0.42	34.6	6.33	18.4	4.45
359	34.8	2.4	0.87	31.7	10.5	12.4	7.33
360	34.8	0.7	0.43	33.3	9.14	18.7	2.93
362	30.8	1.2	0.28	33.9	9.64	20.1	4.08
363	36.8	1.9	1.55	31.5	8.63	14.8	4.82
365	31.3	0.9	0.24	33.3	10.3	15.4	8.56
368	35.6	1.8	0.40	32.5	8.12	15.9	5.68
370	32.9	1.4	0.34	33.5	8.51	18.6	4.75
371	25.7	1.2	0.32	34.9	10.2	23.7	3.98
372	30.8	1.1	0.43	35.7	7.3	21.7	2.97
Mean	32.63	1.3	0.58	33.48	8.67	18.47	4.86
Var.	8.54	0.3	0.15	1.28	1.80	10.74	3.01
St.Dev.	2.92	0.55	0.39	1.13	1.34	3.28	1.74

* H_2O calculated by subtracting total of major oxide and CO_2 from 100%.

Sample	Ti ppm	Cr ppm	Ni ppm
354	1600	210	240
356	1600	280	280
358	800	240	260
359	2000	170	320
360	600	85	250
362	1800	180	220
363	1400	76	250
365	1400	54	210
368	2000	110	160
370	1400	150	200
371	1400	140	320
372	2600	140	190
Mean	1550	153.92	241.67
Var.	284545	4591.12	2431.58
St.Dev.	533	67.76	49.31

Sample	Ti	Cr	Ni
355	1000	210	280
357	1600	260	280
361	1600	120	240
364	2000	90	190
366	2200	190	140
367	1800	94	170
369	1800	160	130
373	1200	90	150
TM	1590	152.45	224
TV	225,157	4164.89	3288.42
TSD	475	64.54	57.34

Peridotite

Sample	Cr ppm	Ni ppm
UM-1	850	940
UM-45	315	1250
UM-60	220	1560
Ave.	462	1250

The talc-magnesite weathered surface is grayish brown and has a pock-marked appearance due to weathering of magnesite aggregates. Fresh surfaces are medium blueish gray to greenish gray dependent on chlorite content. Fine-grained to medium-grained (less than 1-2mm) magnetitie is common in the rock except in the area of line 8+00E/14+00N where specular hematite occurs. The rock is massive, coarse grained (3-5mm) to medium grained (1-2mm). The smaller the grain size the more pronounced the shearing and foliation.

Tables 2 and 4 show a comparison between visual estimates, modal analysis of thin sections and normal C.I.P.W. calculations of chemical analysis of 12 bulk samples from the north zone and 23 drill core samples from the south zone.

TABLE 3B - TOTAL ROCK ANALYSES OF PERIDOTITE ADJACENT TO NORTH ZONE

Sample	SiO_2	Al_2O_3	CaO	MgO	Na_2O	K_2O	FeO	MnO	TiO_2	LOI	Sum
UM1	32.14	1.02	0.15	36.58	0.10	0.01	9.90	0.21	0.05	19.08	99.26
UM7	41.48	9.17	8.05	16.30	1.54	0.04	10.21	0.21	0.53	10.59	98.14
UM45	34.04	2.20	0.16	35.75	0.02	0.01	8.77	0.11	0.15	18.32	99.54
UM60	39.05	2.05	0.30	33.87	0.10	0.01	13.17	0.11	0.13	10.61	99.40

The purpose for this statistical analysis was to determine if the mineralogy was uniform over the zones. Tables 3 and 5 demonstrate chemical analyses for SiO_2, Al_2O_3, CaO, MgO, Fe_2O_3, CO_2 and H_2O (H_2O calculated by subtracting total of major oxides and CO_2 from 100%).

Mineralogical calculations demonstrate a reasonable correlation between the three methods of examination (visual modal and normal). Visual and normal showed the best results for carbonate and chlorite content. While the modal and normal exhibited better correlation for iron. For talc, visual estimates were high, modal low, with normal in between.

Variances were considerable, however, the standard deviations were no greater than 7.16 for modal carbonate and a low of 1.30 for normal opaques. The visual and normal calculations showed the lowest overall standard deviation. It must be kept in mind that the thin sections were one small portion while the bulk sample chemical analysis and hand specimens were more representative.

For the chemical analyses (Tables 3 and 5) there was a very low (2.92 high, 0.39 low) standard deviation indicating a high degree of uniformity of chemistry.

Also on Table 2 is a comparison of the total averages for visual and normal analyses of bulk samples.

In the talc-magnesite zones SiO_2, Al_2O_3 and Fe_2O_3 values increase when the chlorite content increases. This phenomenon takes place near the contact of the talc-magnesite zone.

Nickel values as shown in Table 3 are in the 150 ppm range in the talc magnesite rock however they are much higher, (i.e.) 1250 ppm in the peridotite suggesting Ni has been driven from the now destroyed olivine in the talc magnesite phase. Chromium and titanium values average 152 and 1590 ppm respectively in the talc magnesite while the peridotite averages 462 ppm Cr again indicating heavy metals being driven from the now destroyed olivine in the talc magnesite phase.

TABLE 4 - COMPARISON OF VISUAL, MODAL AND NORMATIVE ANALYSES OF THE DRILL CORE SAMPLES.

Drill Core:

Hole No.	Samples
B-5	9818, 9819, 9820, 9821
B-6	9824, 9825, 9826, 9827, 9828, 9831, 9832
B-7	9833, 9834, 9835, 9836
B-8	9840, 9841, 9842, 9843, 9844
B-9	9847, 9848, 9849, 9850

Appendix A contains modal analyses of all thin sections, mean, variance and standard deviation tables.

Appendix B contains C.I.P.W. normal calculations for all samples, mean, variance and standard deviation tables.

Appendix C contains hand specimen descriptions of all samples, mean, variance and standard deviation tables.

Mineral	Visual			Modal			Normal		
	Mean	Var.	Std. Dev.	Mean	Var.	Std. Dev.	Mean	Var.	Std. Dev.
Carbonate	44.46	47.93	6.92	47.17	106.83	10.34	39.17	41.08	6.41
Talc	44.29	47.24	6.87	41.52	83.83	9.16	40.89	14.43	3.80
Chlorite	5.08	2.46	1.57	6.09	10.57	3.25	9.04	13.72	3.70
Opaques	5.33	4.27	2.07	5.23	5.74	2.40	7.27	1.22	1.10

TABLE 5 - AVERAGE CHEMICAL ANALYSES FOR SOUTH ZONE BULK SAMPLES

Sample	SiO_2	Al_2O_3	CaO	MgO	Fe_2O_3	CO_2	H_2O *
374	30.50	0.96	0.10	34.97	8.51	20.4	4.56
375	30.23	1.12	0.11	34.62	7.99	21.3	4.63
376	29.70	0.91	0.06	35.75	8.38	21.4	3.80
377	31.07	1.06	0.43	35.84	6.71	22.3	2.59
378	30.94	1.11	0.05	36.14	7.93	20.6	3.23
379	31.97	1.52	0.61	34.27	9.31	19.5	2.82
380	29.67	0.85	0.96	35.39	7.94	22.3	2.89
381	31.31	1.04	0.33	37.28	7.72	16.0	6.32
382	31.85	0.89	0.12	35.59	8.38	19.5	3.67
383	29.79	0.97	0.08	38.50	7.83	17.0	5.83
384	39.80	5.32	5.59	18.89	9.70	18.4	2.30
Mean	31.53	1.43	0.77	34.29	8.22	19.88	3.88
Var.	8.19	1.70	6.59	27.87	0.61	4.35	1.72
S.D.	2.86	1.30	2.57	5.28	0.78	2.09	1.31

* H_2O assumed to be 100% - % (SiO_2+Al_2O_3+CaO+MgO+Fe_2O_3+CO_2).

TABLE 6 - COMPARISON OF VISUAL, MODAL AND NORMATIVE ANALYSES OF SOUTH ZONE BULK SAMPLES

Mineral	Visual			Modal			Normal		
	Mean	Var.	S.D.	Mean	Var.	S.D.	Mean	Var.	S. D.
Carbonate	33.90	508.99	27.56	42.40	114.71	10.71	38.31	16.04	4.00
Talc	54.40	559.16	23.65	40.42	127.60	11.30	50.42	81.65	9.04
Chlorite	7.40	7.82	2.80	11.80	131.51	11.47	5.67	1.06	1.03
Opaques	3.80	2.40	1.55	5.40	2.71	1.65	7.96	0.36	0.60

In the South Zone visual, modal and normative analyses from drill hole data indicate that the uniformity of composition, both mineralogical and chemical is not quite as good as in the North Zone. (Tables 4 and 5) One plausible explanation is that there is not the density of lateral variation of samples, but rather a greater vertical spread. If magmatic segregation did in fact occur this distribution would be expected.

In drill core a reddish tinge occurs on the magnesite. This is not noticed on the surface samples. Magnetite and specular hematite occur as dustings on and interstitially with the magnesite as well as individual grains in the talc matrix. In Appendix A details of the petrographic study are presented.

The magnesite-talc zone grades into peridotite on the northwest corner of the property suggesting that the peridotite overlies the talc magnesite. The transition zone between these two units is approximately 30' wide and is characterized by an increase in dark mafic minerals and iron content as the peridotite is approached.

The bulk of the other ultramafic intrusives associated with the talc-magnesite are serpentinized peridotites. These weather to a moderate brown "elephant hide" texture. The fresh surface is dusky blue green. Magnetite can often be seen plainly and almost all are magnetic.

The chloritized portions are softer and more greenish on fresh surface and not magnetic.

Carbonated ultramafic intrusives occur on claims P.94433 and 451043. The weathered surface, while exhibiting "elephant hide" texture is generally grayish brown to grayish orange in color. The magnetite has oxidized or altered to hematite or siderite. Quartz veining is common especially in tension fractures. Fresh surfaces generally lack the characterish bluish green tinge of the serpentinized peridotites and lack the gray of the talc-magnesite. The color of the fresh surface of the body in claim P.451043 is greenish gray while that in claim P.94433 is grayish orange. Foliation is moderate.

The ultramafic rocks intruding the felsic to intermediate units as sills are generally very fine grained (less than 1mm).

MAFIC INTRUSIVE ROCKS

Outcrops of gabbro are confined to claims P.420085, 443579, 451039, 94432 and 94859.

The gabbro is generally medium to coarse grained 1mm to 3-5mm generally. Blue quartz eyes (1-3mm) and pyrite cubes (1-3mm) are commonly associated. The rocks are chloritized with an overall estimated composition of:

Plagioclase	30-40%
Hornblende.	25-30%
Biotite	7-15%
Chlorite	10-15%
Pyrite	5-7%
Quartz	Less than 5%

The intrusive mass on the boundary of claims P.94432 and 94859 varies in grain size from 1mm to hornblende laths up to 5cm (2") long and 1.5cm (0.625") wide. This is most probably indicative of slow cooling or due to more than one stage of heating.

Ultramafic and mafic intrusives appear as intrusive masses within the felsic to intermediate sequences and are believed to be sill-like intrusions.

The one contact between the ultramafic and the gabbro was observed in claim P.481039. The gabbro was medium grained (1-3mm) with quartz eyes and chloritized. The ultramafic was very talc rich and very fine grained less than 1mm.

The gabbro was always foliated and weathered in rounded surfaces to a color of greenish black. The fresh surface tended to be grayish green to grayish blue green.

FELSIC INTRUSIVE ROCKS

Three felsic intrusive bodies occur within the claim groups. All are fine grained, (1mm and smaller grain sizes) porphyritic (quartz-feldspar and biotitic) and no longer than the area of one claim. These occur in claims P.54993, 443579 and 236225.

On weathered surface they are smooth and exfoliated and light pink in color. Fresh surfaces are pinkish orange. Quartz veining is common.

The intrusives are feldspar porphyry and quartz-feldspar or quartz-feldspar-biotite porphyries. These rocks are indicative of high level felsic intrusives due to their fine grained and porphyritic nature and small size.

LATE MAFIC INTRUSIVE ROCKS

Three diabase dikes of middle to late Precambrian age have been found in the claim group. These dikes trend north to north-northwest and each can be traced over a considerable distance. These dikes are quartz poor, magnetic and generally fine to medium grained (less than 1mm to 2-3mm). There is one very coarse grained dike outcrop in claim P.420333 with average grain size more than 3mm.

Weathered surfaces generally extend above the quartz sericite schist but are below the felsic intrusives. The weathered surface is moderate brown, smooth and rounded with cracks perpendicular to the length of the dike. Fresh surfaces are black on chilled margins to dark grayish brown in the medium grained interior. The very coarse grained dike is grayish brown and exhibits the "salt and pepper" appearance common to diabase.

In claim P.420074 phenocrysts of light greenish saussuritized plagioclase 2-5mm were noted.

These dikes appear to be post-tectonic and follow zones of weakness or faults.

Several small lamprophyre dikes were noted in claims P.55291, 451039 and 380506. These are generally no more than 30cm (1') wide, weather dark greenish black and are highly chloritized. The fresh surface is dark green and the larger biotite or phlogopite (3-5mm) blocks are not completely altered to chlorite. These dikes were found cutting the talc-magnesite and the upper felsic volcanic unit.

STRUCTURAL GEOLOGY

Foliation is generally northeast (10^{o} to 60^{o}) dipping 10^{o} to 30^{o} north, however local variations trend northwest with dips 10^{o}-60^{o} southwest and northeast to east-west with dips 10^{o}-50^{o} north or south indicating a series of gentle folds which may be part of a much larger structure.

On a local scale as series of anticlines and synclines form a series of gently undulating folds in the west central part of the claim group. This is substantiated by diamond drilling.

There does not appear to be any doming caused by the felsic intrusions. Lineation along planes of foliation and schistosity suggests thrusting from the north.

Larger scale folds were not noted due to the small scale of the project, however, the smaller folds could be part of a much larger structure.

Most faults of major influences and earlier age trend northeast and are of the strike slip variety.

Later faulting was northwest trending and offset the strike slip faults and are normal faults. Late diabase dikes follow these faults.

There is a possibility that thrusting could account for repeated sequences in the west-central claim group. The two talc-magnesite zones and two felsic-intermediate zones and two iron formations. A detailed petrochemical study would have to be made to determine this, however, lack of outcrop in the central and eastern portion of the claim group precludes accurate structural analysis.

Increased shearing and schistosity occurs near the felsic intrusives. Breccia and shear zones are noted both in the field and in drill core, especially in the graphitic iron formation and mafic volcanic and near the contacts.

Pg 31 in with maps "oversize"

ECONOMIC GEOLOGY

The main purpose for conducting this survey was to assess the talc-magnesite deposits in claims P.55291 and 54993 (North Zone) and claims P.94859, 94860 and 94858 (South Zone). Of secondary importance is the assessment of precious and base metal potential.

TALC-MAGNESITE DEPOSITS

Dimension and Extent

The extent of the north zone outcrop extent covers an east-west dimension of 427m (1400'), between line 2+00 west and line 12+00 east and a north-south dimension of 305m (1000') between lines 12+00 north and line 22+00 north. Actual outcrop area covers approximately 40,900 square meters (440,000 square feet).

The extent of the south zone is divided into two portions. The first enclosed east-west by lines 15+00E and 19+00E and north-south by lines 14+00S and 10+00S. Actual outcrop area is approximately 5570 square meters (60,000 square feet). The second is enclosed east-west by line 22+00E and line 25+00E and north-south by line 23+00S and line 28+00S for an actual outcrop area of 1860 square meters (20,000 square feet).

Estimates of Tonnage

Conservative Estimates Render:

North Zone

Assuming outcrops are contiguous, average thickness is 100' and a tonnage factor of 175.5 pounds per cubic foot.

Area 720,000 square feet
X Thickness 100 feet
= Volume 72,000,000 ft^3
X Pounds 175.5 = 1.2636×10^{10}
÷ Tons 2000 = 6,318,000 Tons of minimum stripping ore.

Note: An area of 1,480,000 sq. ft. of peridotite should be drilled assuming talc-magnesite is below the peridotite, giving another possible 12,987,000 tons of talc-magnesite.

South Zone

Outcrop area and diamond drilling from Oro Mines records give an area of at least 3,600,000 square feet of potential talc-magnesite.

Area 3,600,000 square feet
X Thickness 100 feet
= Volume 360,000,000
X Pounds 175.5 = 63,180,000,000
÷ Tons 2000 = 31,590,000 Tons

Considerable stripping on the east margin of the zone as outlined in Plate 4 would have to be done to extract this material. However the west half of this area contains talc-magnesite at surface or within 30' of surface as indicated by drilling (Appendix F). This gives a conservative total estimate of 37,908,000 tons of talc-magnesite on the property.

Mineralogy

A petrographic study of the north zone bulk samples show a trend of carbonate crystal sizes from 0.5-3mm in the east to 2-6mm in the western portion. Glomeroporphyritic aggregates of carbonate in the east grate to anhedral crystals in the west. Foliation decreases from east to west. This can be explained by the close proximity of the high level felsic intrusive along the eastern boundary of the north zone.

Relics of olivine (now carbonate) are enclosed in a dirty ground mass of fine talc and chlorite which contains very fine black granular opaques (magnetite and spectilar hematite with some chromite). Talc laths do not sppear to be over 2mm and most are 1mm or less. Chlorite occurs as fine stringers and interstitial aggregates.

Opaques occur as medium grained subhedral to enhedral (0.5-2.5mm) crystals of magnetite (hematite in samples 368) and fine dustings interstitial with the carbonate, probably left behind when the olivine was altered to carbonate.

Petrology of the south zone drill hole samples shows:

B-5 - The carbonate tends to increase in grain size down hole 0.5-5mm range. Saccharoidal in texture at top to glomeroporphyritic aggregates down hole. Some recrystallized silica is encountered at 355'.

Talc also tends to increase in grain size (0.01-0.1mm). Opaques range 0.2 to 0.4mm down hole increasing in grain size.

This increase in mineral size suggests magmatic segregation.

Rutile, sericite and pumpellyite are noted accessories.

B-6 - Appears dunitic altered to carbonate, glomeroporphyritic, foliated, with dustings of opaques (magnetite).

Talc and chlorite are aligned parallel to the foliation and are intimately associated together.

The opaques occur as euhedral crystals in stringers and disseminated throughout the groundmass and as dustings or interstitial aggregates within the carbonate.

B-7 - Again all minerals become more coarse with depth. Carbonate pseudomorphs after olivine from 0.1 - 2mm, 5mm glomeroporphyritic aggregates, pseudomorphic often olivine, minor shearing and foliation.

Talc 0.01 - 1.0mm parallel to foliation and with similar sized chlorite with coarse material occurring in pressure shadows behind porphyroblasts of magnesite.

Opaques are generally magnetite or euhedral crystals or rims around carbonate crystals and weak banding parallel to foliation to 0.5mm euhedral crystals disseminated throughout the matrix.

-8 - Pseudomorphic dunite, now carbonate increasing in grain size 0.2-1.0mm with depth with glomeroporphyritic aggregates up to 1-5mm common. Some recrystallization is noted and foliation is minor to moderate. Talc and chlorite occur as the matrix 0.01-3.0mm laths and is generally clean, but, may be dusted with iron oxides. The pink tinge is iron oxide staining.

Magnetite ranges from 0.1 to 0.5mm subhedral to euhedral crystals and as fine dustings along outlines of carbonate crystals.

B-9 - This drill section is carbonate and talc carbonate pseudomorphic after dunite, grain size 0.02-1.5mm anhedral to subhedral and foliated.

Talc and chlorite parallel to foliation 0.01-0.8mm laths increasing grain size with depth.

Magnetic occurs as 0.02-0.5mm subhedral to euhedral crystals or dustings on crystals to disseminated crystals in the matrix. At 240' the crystals were cubic, elongated to 1.5mm.

For the north zone the mineralogy from examination of bulk samples and C.I.P.W. normal calculations is approximately: (See Table 2)

Dolomite		< 2.0%
Carbonate	35.5%	
Talc	48.5%	
Chlorite	7.5%	
Magnetite-Hematite	8.5%	
	100.0%	

Table 7 gives chemical analyses for all bulk samples and Appendix B shows all calculations of C.I.P.W. norms.

Table 8 gives chemical analyses for all south zone drill core samples and Appendix B shows all calculations of C.I.P.W. norms.

Table 6 gives chemical analyses for all south zone bulk samples and Appendix B shows all calculations of C.I.P.W. norms.

For the south zone the mineralogy from examination of drill core samples and C.I.P.W. normal calculations is approximately: (See Table 4)

Carbonate:	
(Magnesite)	42%
Talc	43%
Chlorite	8%
Magnetite-Hematite	7%
	100%

For the south zone bulk samples the mineralogy is approximately: (See Table 6)

Carbonate:	
(Magnesite)	40%
Talc	48%
Chlorite	7%
Magnetite-Hematite	5%
	100%

TABLE 7 - CHEMICAL ANALYSES FOR 20 NORTH ZONE BULK SAMPLES [1]

Sample	SiO_2	Al_2O_3	CaO	MgO	Fe_2O_3	CO_2	Assumed [2] H_2O
354	31.9	0.7	0.76	34.3	7.83	21.4	3.11
355	31.7	1.0	0.45	34.3	6.60	23.1	2.85
356	31.5	1.3	0.95	32.5	7.58	20.5	5.67
357	30.5	1.1	0.49	34.3	6.72	21.8	5.09
358	34.6	1.2	0.42	34.6	6.33	18.4	4.45
359	34.8	2.4	0.87	31.7	10.5	12.4	7.33
360	34.8	0.7	0.43	33.3	9.14	18.7	2.93
361	34.5	1.8	1.28	32.2	8.82	16.3	5.10
362	30.8	1.2	0.28	33.9	9.64	20.1	4.08
363	36.8	1.9	1.55	31.5	8.63	14.8	4.82
364	35.3	3.6	0.34	30.9	12.3	12.9	4.66
365	31.3	0.9	0.24	33.3	10.3	15.4	8.56
366	36.3	2.5	0.27	32.9	8.11	14.2	5.72
367	31.2	1.1	0.29	33.1	9.54	19.7	5.07
368	35.6	1.8	0.40	32.5	8.12	15.9	5.68
369	36.2	1.9	0.64	31.6	7.33	14.1	6.23
370	32.9	1.4	0.34	33.5	8.51	18.6	4.75
371	25.7	1.2	0.32	34.9	10.2	23.7	3.98
372	30.8	1.1	0.43	35.7	7.3	21.7	2.97
373	35.3	0.8	0.30	34.4	8.58	18.1	2.52
Means	33.13	1.44	0.55	33.27	8.70	18.09	4.78
Var.	7.6	0.63	0.13	1.67	2.20	11.78	0.64
Std. Dev.	2.76	0.79	0.36	1.29	1.48	3.43	0.80

1. See sample map for location.
2. H_2O arrived at from subtracting total oxides from 100%.

TABLE 8 - CHEMICAL ANALYSES FOR 24 SOUTH ZONE DRILL CORE SAMPLES

Hole	[1] Sample	SiO_2	Al_2O_3	CaO	MgO	Fe_2O_3	CO_2	[2] H_2O
B-5	9818	33.9	1.9	3.19	32.26	10.1	13.39	5.26
	9819	30.9	0.8	0.22	35.46	5.99	23.06	3.57
	9821	33.4	1.8	0.23	33.21	8.35	17.49	5.52
B-6	9824	33.5	1.7	2.07	34.22	6.70	18.88	2.93
	9825	32.9	1.2	0.33	35.11	6.44	22.69	1.33
	9826	33.2	1.2	0.17	35.18	7.05	21.81	1.39
	9827	33.0	1.5	0.28	34.32	7.50	21.67	1.73
	9831	32.3	1.4	0.39	33.07	6.47	23.86	2.51
	9832	29.9	1.0	6.77	32.61	5.42	26.57	2.27
B-7	9833	32.4	1.7	1.28	34.42	6.60	19.61	3.99
	9834	33.0	1.4	0.27	35.08	7.39	21.81	1.05
	9835	33.2	1.5	0.84	35.20	8.10	19.83	1.33
	9836	34.1	1.9	1.01	33.79	7.78	19.40	2.02
B-8	9840	37.9	3.3	7.22	28.43	10.30	12.88	0.03
	9841	32.9	1.5	1.23	34.37	6.77	21.59	1.64
	9842	32.5	1.4	1.12	34.81	6.94	22.47	0.76
	9843	33.9	1.6	0.45	33.65	7.48	21.23	1.59
	9844	37.5	3.8	3.92	31.32	8.79	13.98	0.69
B-9	9847	32.9	1.6	3.92	32.39	8.02	20.71	0.56
	9848	31.9	1.1	2.18	34.03	6.74	22.83	1.22
	9849	31.8	1.4	1.40	33.15	7.13	22.25	2.87
	9850	33.1	1.9	2.29	32.76	7.74	19.91	2.30
Means		33.54	1.98	2.26	32.88	7.33	20.24	2.17
Variance		6.05	2.80	5.78	10.67	1.55	29.58	1.92
Std. Dev.		2.46	1.67	2.40	3.27	1.25	5.44	1.38

1. Sample locations are given on drill logs in Appendix.
2. * H_2O arrived at from subtracting total oxides from 100%.

Modal calculations are not used in this comparison due to the small sections used for thin section purposes compared to the area of bulk sampling and length of drill core sampling (10' minimum in most cases).

This is the main draw-back of the modal analysis evaluation.

Precious and Base Metal Potential

The other goal of this survey was to examine the potential for precious and base metals within the claim group. The major area of interest was the pyritized upper felsic volcanic unit and sulphide iron formation trending northeast across claims P.55291, 380506, 443578, 420075, 420074, 420076, 451039 and 450140. These claims had outcrops which were chip sampled and assayed for gold, silver and zinc. Our sample Q-64 was also assayed for copper, arsenic and lead.

Claims P.443587, 443586, 427444, 444089, 444083, 444080, 451042 and 451041 do not have outcrops but aeromagnetic and airborne electromagnetic information (Reference ODM File No. 63.2730) indicate that the pyritized felsic volcanic unit is the bedrock under these claims.

On the whole this is a large area totals approximately 14 claims or 0.875 square miles.

Samples Q-1 through Q-21 and samples Q-41 through Q-64 with the exceptions of samples Q-46, 47, 48, 49, 50, 51, 52 and 53 which are in the lower felsic to intermediate unit which does not show as encouraging assays. (See Appendix E).

Zinc is anomalous in the upper unit being characteristically about 40ppm higher than the lower unit (Low 10.0ppm, High 50,600ppm for upper unit vs a Low 5.0ppm and a High 190.0ppm for the lower unit). Silver is generally 10ppm higher (upper 0.0 to 50.0ppm and lower 0.0 to 10ppm silver) and gold 0.80 to 100ppb higher in the upper unit than the lower unit (upper 10.0 to 1650.0ppb vs 0.0 to 340ppb gold in the lower).

The upper unit is dacitic to rhyodacitic in composition and has been largely altered to quartz sericite schist and is pyritized throughout.

Samples of the sulphide iron formation related to the upper zone are Q-1, 2, 3, 10, 11, 19, 19B and 21.

On claim P.451039 a series of quartz sericite schist outcrops with disseminated

pyrite sphalerite and galena were noted and extensively sampled, samples Q-54-64 (See Sample Map).

Canadian Lencourt drilled five holes L-1 through L-5 on claim P.443578 in 1967 and took samples on claims P.55291, 488559, 443578, 443579 and 420075.

Canadian Lencourt Samples	Ag 03/+	Au 02/+		Alamo Grab Samples	Ag ppm	Au ppb
2701 - Grab	3.71	0.10	Same Location			
2702 - Grab	6.34	-				
2703 - Grab	9.78	-			No sample	
2704 - Chip 2.0'	1.80	0.02				
2705 - Chip 1.5'	0.62	0.01				
2717 - Chip 6.0'	0.13	0.005	Same Location	Q-21	50	340
2718 - Grab	0.38	0.005				
2723 - Grab	Tr	Nil	Same Location	Q-16	X	80
2726 - Bulk 20#	0.38	Nil		Q-1	49	0.5
				Q-2	28	25
				Q-3	32	35
2728 - Grab	0.82	0.02		No sample		
3412 - Grab	1.46	Tr	Same Location as 2701-5	No sample		

Assays for Canadian Lencourt holes L-4 and L-5 follow:

Hole	From	To	Length	Au Oz/T	Ag Oz/T
L-4	39.6'	40.9'	1.3'	Nil	0.22
	40.9'	45.0'	4.1'	0.005	0.31
	45.0'	52.6'	7.1'	Nil	0.15
			12.5'	0.0004	0.21
L-5	59.0'	60.6'	1.6'	Tr	0.08
	60.6'	70.0'	9.4'	0.01	0.40
	70.0'	74.3'	4.3'	Nil	Tr
			15.3'	0.0007	0.25

No assays were reported for holes L-1, L-2 and L-3.

The location of these holes are on the Geological Map.

Being that this upper felsic volcanic sequence contains disseminated sulphides, no associated magnetic highs occur and EM conductors are limited to the sulphide iron formation and an I.P. survey should be carried out over claims not previously covered. Canadian Lencourt carried out an I.P. survey over claims P.55291, 54993, 380506, 443578, 443587, 420074, 420076, 420075 and 420077 in 1967. The previous drilling concentrated in one small portion of the upper sequence, (i.e.) the iron formation. The proposed I.P. survey should cover claims P.443586, 427444, 444080, 444084, 444083, 450142, 541041, 451039 and 451040.

Extensive trenching and sampling has been undertaken by Álamo in claim P.451039. Preliminary assays of samples Q-54 through Q-64 have shown encouraging results.

	Zn ppm	Ag ppm	Au ppb
Q-54	49	2	X
Q-55	98	0.5	X
Q-56	98	0.5	X
Q-57	10	0.5	X
Q-58	61	0.5	150
Q-59	79	7	220
Q-60	3930	10	220
Q-61	87	1	820
Q-62	1290	4	X
Q-63	37800	25	1650

Sample	%Cu	%Zn	%As	%Pb	Au Oz/ton	Ag Oz/ton
Q-64	0.27	5.06	0.38	0.34	0.03	0.99

Note: X less than 0.5 ppm Ag
less than 30 ppb Au

Shearing and Veining

Shearing and veining is common, especially near contacts with other rock and is more pronounced near the felsic intrusive in the north zone.

Veins of carbonate 1-2cm wide are not uncommon but compose a very minor portion of the total mineral constituency. Quartz veining in the talc-magnesite was not noted and was rare in the peridotite. Talc veining (a green to white variety) was common and ranged from 1mm stringers to 5cm wide. At line 8+02E and 1m 15+41N a talc vein with 2-3cm long X 1-2mm diameter hornblende crystals was noted.

Specular hematite often occurs as coarse plates on the contact of these talc veins.

RECOMMENDATIONS

Talc-Magnesite:

1. Bulk samples from the North and South Zones should be sent to Lakefield Research of Canada for metallurgical testing.

2. A geophysical program of a ground magnetometer and a VLF-electromagnetic survey should be run over the entire claim group when a grid has been cut to help map the structure and delineate any conductors.

3. A diamond drilling program should be initiated on the 200' grid in the North Zone working out from the outcrops of talc-magnesite over the peridotite to delineate the zone. Development of the North Zone should proceed first due to the close proximity of the talc-magnesite to the surface. Drill core size should be at least BQ wireline, 150' should penetrate the ore zone at $11.00 per foot. At least 40 holes should be drilled. $66,000.00.

4. Approximately 50 holes should be drilled in the South Zone to delineate the extent of that deposit. These holes would have to be drilled to a depth of at least 300'. $165,000.00.

Drilling should be done to provide a representative sample for metallurgical testing and pilot plant purposes.

Precious and Base Metal Potential:

1. Trenching across the outcrop exposure of felsic volcanic rock exposures where disseminated sulphides are found and the chip samples assayed for gold, silver and zinc, followed by sampling on claims P.420076, 420075, 420074, 443578, 443579, 88559, 380506 and 55291.

2. An induced polarization survey should be carried out on claims P.451039, 451040, 451041 and 451042 followed by claims P.55291, 380506, 88559, 443578, 443579, 420075, 420074, 443587, 443586, 444080, 444083, 427444, 444084 and 420078, to outline the disseminated sulphide zone.

Respectfully submitted,

Qualifications: New - on this file

R. P. Bowen

R. S. Middleton

Qualifications: New - on this file

Toni L. Fisher

Qualifications: New - on this file

Jesse A. Winters

APPENDIX A

Modal Thin Section Descriptions

Tables of Means, Variances and Standard Deviations

NORTH ZONE

BULK SAMPLES
MODAL ANALYSES

NORTH ZONE

Sample	Carbonate	Talc	Chlorite	Opaques
354	40	39	6	15
356	50	40	5	5
358	60	29	6	5
359	35	54	5	6
360	45	35	8	12
362	40	44	6	10
363	35	45	12	8
365	40	47	6	7
368	35	42	15	8
370	40	41	15	4
371	40	46	8	6
372	40	44	12	4
Total	500	506	104	90
Mean	41.67	42.16	8.67	7.50
Variance	51.21	40.04	14.36	11.36
Standard Deviation	7.16	6.33	3.79	3.37

No. 354 21N/1.5W

Mineralogy:		
	Carbonate	40%
	Talc	39
	Chlorite	6
	Opaques:	
	magnetite and hematite	15

Anhedral crystals (1 - 2mm) and glomeroporphyritic aggregates of carbonate are dusted with fine anhedral brown and black opaques (hematite and magnetite-chromite). In places the opaques suggest relict outlines of pseudomorphed olivine crystals.

The carbonate grains are enclosed in a dirty groundmass of fine talc and chlorite, which contains abundant, very fine black granular opaques (magnetite?)

Medium grained subhedral to euhedral opaques (0.5 - 1.5mm)-magnetite are scattered.

No. 356 19N/1.5W

Mineralogy:		
	Carbonate	50%
	Talc	40
	Chlorite	5
	Opaques (magnetite)	5

Medium grained anhedral crystals (1 - 2mm) and glomeroporphyritic aggregates of carbonate are enclosed in a groundmass of talc and chlorite. The groundmass is foliated and generally fine grained but talc laths up to 2mm are Present in aggregates.

Fine euhedral grains of magnetite are present from 0.01mm to skeletal 2mm outlines.

No relict textures are preserved. The groundmass is quite "clean" ie: no dusty opaques (hematite) are present.

No. 358 17N/1.0W

Mineralogy:		
	Carbonate	60%
	Talc	29
	Chlorite	6
	Opaques	5

Coarse glomeroporphyritic aggregates of carbonate up to 6mm, and also ragged crystals of carbonate to 2mm contain relict outlines of pseudomorphed olivine.

They are enclosed in a groundmass of a fine mesh of talc laths to 1mm with interstitial fine chlorite.

Relict euhedral grains of magnetite are scattered and stringers of fine opaques outline original peridotite textures.

The rock is fairly clean, however fine brown hematite? is present within the talc patches.

No. 359 16N/3.5E

Mineralogy:		
	Carbonate	35%
	Talc	54
	Chlorite	5
	Opaques	6

Coarse glomeroporphyritic aggregates and coarse ragged individual crystals to 3mm of carbonate contain relict outlines of pseudomorphed peridotite. One pseudomorphed crystal has the relict texture of a carbonated orthopyroxene crystal poikilitically enclosing olivine crystals.

The carbonate is enclosed in a finely foliated groundmass of talc and chlorite.

Subhedral to euhedral grains of magnetite to 1mm are scattered in the groundmass.

A few euhedral recrystallised carbonate grains in a talcy vein may be dolomite?

No. 360 15N/11.5E

Mineralogy:		
	Carbonate	45%
	Talc	35
	Chlorite	8
	Opaques	12

Similar to No. 362 but more foliated.

Stringers of very fine anhedral opaques parallel the foliation.

The carbonate is all partly recrystallized and contains no relict textures. The non-recrystallized carbonate patches are flattened and strained.

Chlorite is present as fine stringers and interstitial aggregates.

The rock is dusted with fine hematite except where carbonate is recrystallized.

No. 362 13.75N/11E

Mineralogy:		
	Carbonate	40%
	Talc	44
	Chlorite	6
	Opaques	10

Medium to coarse grained (0.5 - 3mm) aggregates of carbonate contain relict textures of pseudomorphed olivine from peridotites which are outlined by fine opaque granules (magnetite) and dusty oxides (hematite).

The carbonates are enclosed in a highly foliated groundmass of fine talc and chlorite.

Patches of fine granular subhedral to euhedral opaque oxides (magnetite) are scattered throughout the rock and also occur more concentrated at the edges of coarse elongated patches of clean carbonate (recrystallized?).

A few fine grains of euhedral carbonate may be the result of some recrystallization.

No. 363 13.5N/10.5E

Mineralogy:		
	Carbonate	35%
	Talc	45
	Chlorite	12
	Opaques	8

Coarse euhedral opaque crystals (magnetite to 2.0mm) with some crystals having cores of different composition (translucent hematite) are evenly distributed through the sample.

The rock contains fine to medium grained aggregates of carbonate with relict outlines of pseudomorphed olivine indicated by fine granular and dusty opaques.

The carbonate and coarse opaques are enclosed in a highly foliated groundmass of talc (up to 2mm) and chlorite (in stringers and patches). The groundmass is clean and contains clean fine grains of recrystallized carbonate (dolomite? to 1.5mm).

No. 365 14N/10E

Mineralogy:		
	Carbonate	40%
	Talc	47
	Chlorite	6
	Opaques	7

Medium to coarse grained ragged aggregates of carbonate are dusted with fine opaques (magnetite and hematite) and outline vague relict textures of pseudomorphed olivine.

Some carbonates are partially recrystallized at the rims to clear euhedral carbonate.

The carbonates are enclosed in a foliated groundmass of fine talc laths (to 1.5mm) and chlorite patches. The groundmass is dusted with iron oxides (hematite).

Tabular to cubic opaques (up to 2.5mm) are scattered throughout the talc groundmass.

A vein and stringers of clean carbonate are present - may be dolomite?

No. 368 15N/8.0E

Mineralogy:		
	Carbonate	35%
	Talc	42
	Chlorite	15
	Opaques	8

Medium to coarse aggregates of carbonate crystals (each crystal to 2.5mm) contain at the centers dustings and fine granules of black opaques which outline relict pseudomorphed olivine crystals.

The edges of these coarse carbonate aggregates appear to be free from opaques and are euhedral (recrystallized) crystals of carbonate (magnesite?) and suggest partial recrystallization.

Coarse anhedral patches of black opaque oxides and aggregates of fine opaques granules are scattered. They usually occur associated with chlorite at either the edge of the coarse carbonate crystals or at the centers of the crystals. This suggests that the opaques may be the concentration of oxides expelled from carbonates during recrystallization.

The carbonates are enclosed in a foliated groundmass of talc and chlorite which is heavily dusted with iron oxides (hematite?)

No. 370 13.5N/7E

Mineralogy:		
	Carbonate	40%
	Talc	41
	Chlorite	15
	Opaques	4

Coarse grained crystals (2 - 4mm) and glomeroporphyritic aggregates (up to 6mm) of carbonate are clouded with granular (magnetite) and fine dustings (hematite?) of opaques. The carbonates contain relict pseudomorphed outlines of olivine, and are enclosed in a groundmass of medium to coarse grained foliated talc and chlorite (to 2mm).

Lath shaped and cubic opaques are present (black oxides to 0.5mm). The euhedral opaques appear zoned and occur associated with the carbonate. The lath shaped opaques occur in the groundmass and may be recrystallized during shearing as they are often curved around the non-recrystallized carbonate aggregates.

No. 371 13.5N/6.5E

Mineralogy:		
	Carbonate	40%
	Talc	46
	Chlorite	8
	Opaques	6

Medium grained crystals of carbonate to 3mm are very ragged and contain fine grains and dustings of opaques which outline relict pseudomorphed olivines.

These carbonate crystals are enclosed in a groundmass of fine talc laths (0.05 - 1mm), and chlorite patches.

Tabular to subhedral grains of oxide opaques (magnetite, often rims of different composition - chromite?) are scattered.

The rock is relatively clean except for relict textures developed in coarser carbonate crystals.

No. 372 14N/3E

Mineralogy:		
	Carbonate	40%
	Talc	44
	Chlorite	12
	Opaques	4

Glomeroporphyritic aggregates of dirty carbonate containing relict pseudomorphed outlines of olivine, and also clean euhedral recrystallized carbonate crystals (to 2mm) are enclosed in a fine grained foliated groundmass of talc and chlorite.

Tabular to cubic grains of opaques (magnetite to 1mm) are scattered in the groundmass.

The talc and carbonate are dusted with fine brown iron oxides (hematite?)

SOUTH ZONE
BULK SAMPLES
MODAL ANALYSES

SOUTH ZONE SURFACE SAMPLES

No. 374

Mineralogy:	Talc	45
	Carbonate	35
	Chlorite	12
	Opaques	8

Medium to coarse grained patches of ragged carbonate are heavily dusted with iron oxides giving them a pink sheen. The carbonate is enclosed in a highly foliated groundmass of talc and chlorite. Carbonate patches may originally have been orthopyroxene from vague relict textures. Granular fine subhedral opaques are scattered. A few carbonate patches have relict olivine outlines. Other euhedral carbonate crystals at the edges of carbonate aggregates result from recrystallization.

No. 375

Mineralogy:	Carbonate	60
	Talc	33
	Chlorite	4
	Opaques	3

Medium to coarse grained carbonate (anhedral to 2 mm) in a groundmass of matted fine to medium grained talc laths. Blades of opaques (magnetite) and granules of magnetite are scattered. Minor chlorite is associated with the talc.

Vague relict textures are outlined by granules of magnetite in a few carbonate aggregates.

No. 376

Mineralogy:		
	Carbonate	45
	Talc	45
	Chlorite	5
	Opaques	5

Similar to 378 - see below

Medium to coarse grained carbonate crystals in foliated talc-chlorite groundmass, more carbonate than 378.

Possibly some secondary dolomite. Foliated rock.

No. 377

Mineralogy:		
	Carbonate	60
	Talc	23
	Chlorite	13
	Opaques	4

Foliated fine to medium grained carbonate - talc - chlorite rock. Fine grained euhedral to subhedral opaques (magnetite) are present. Carbonate crystals are ragged.

No. 378

Mineralogy:		
	Talc	54
	Carbonate	35
	Chlorite	6
	Opaques	5

Foliated carbonate - talc rock. Relict patches of ragged carbonate have good relcit textures of cumulate olivine. Other carbonate patches are highly strained and partly recrystallized. The carbonate is enclosed in a well foliated groundmass of very fine talc and chlorite. Fine euhedra of magnetite are scattered.

No. 379

Mineralogy:		
	Talc	55
	Carbonate	33
	Chlorite	6
	Opaques	6

Highly foliated carbonate - talc - chlorite rock with abundant talc. Relict textures of olivine are outlined in the medium to coarse grained carbonate aggregates. Subhedral to euhedral grains of fine magnetite are scattered. Some recrystallization of the carbonate to dolomite? The talc groundmass is highly foliated.

No. 380

Mineralogy:		
	Talc	46
	Carbonate	45
	Chlorite	4
	Opaques	5

Fine even grained rock with fine carbonate crystals in a fine felty matted groundmass of talc and chlorite. Opaques are fine and granular, to fine euhedral magnetite.

Vague relict textures are present in some carbonate crystals.

No. 381

Mineralogy:		
	Carbonate	36
	Talc	30
	Serpentine	30
	Opaques	4

A vein of carbonate composed of interlocking subhedral crystals crosses the thin section. The rock is composed of medium grained crystals and aggregates of carbonate which have relict cumulate olivine textures enclosed. The carbonates are distributed in a groundmass of serpentine (lizardite). The carbonate crystals and aggregates have rims of fine laths of talc. Subhedral and granular opaques (magnetite) are scattered.

No. 382

Mineralogy:		
	Talc	46
	Carbonate	45
	Chlorite	3
	Opaques	6

Medium to coarse grained patches of carbonate with beautiful relict cumulate fine to medium grained olivine crystal outlines, are surrounded by a groundmass of fine clean talc. Patches of medium grained granular opaques (magnetite) are scattered. The rock is relatively clean with minor dustings of brown iron oxides outlining the relict textures. Some carbonate is partly recrystallized.

No. 383

Mineralogy:		
	Serpentine	35
	Carbonate	30
	Talc	27
	Opaques	8

Very well defined cumulate olivine texture is preserved in clean carbonate patches. The carbonate patches are set in a groundmass of serpentine (lizardite) and are surrounded by a fine rim of talc. Euhedral to granular opaques (to 0.5 mm - magnetite) are scattered. The carbonate crystals are often bent.

This rock shows the progressive alteration from peridotite to talc and carbonate and serpentine. Talc and carbonate would be the final end product but here not sufficient CO_2 present for complete reaction.

No. 384

Mineralogy:		
	Talc (sericite)	50
	Chlorite	
	Carbonate	35
	Quartz	12
	Opaques	3

Highly foliated fine to medium grained rock with dirty ragged carbonate crystals enclosed by foliated aggregates and stringers of chlorite and talc (sericite?). Interstitial strained quartz and fine granular opaques are scattered. Possibly a highly foliated dacite.

ULTRAMAFIC SAMPLES

UM - 2

Mineralogy:		
	Serpentine	76
	Talc	10
	Carbonate	6
	Magnetite	8

Fine to medium grained serpentine rock with scattered patches of secondary carbonate and talc and euhedral magnetite crystals. Minor patches of granular magnetite suggest a cumulate texture.

UM - 3

Mineralogy:		
	Talc	49
	Carbonate	35
	Chlorite	8
	Opaques	8

Highly foliated medium to coarse-grained carbonate-talc rock with coarse-grained carbonate crystals to 3 mm having deformed relict peridotite texture enclosed. The carbonate is enclosed in a groundmass of fine talc and chlorite. Stringers of fine granular opaques (magnetite) parallel the foliation.

UM - 4

Mineralogy:		
	Talc	44
	Serpentine	30
	Carbonate	8
	Chlorite	6
	Magnetite	12

Serpentinised medium grained peridotite containing patches of carbonate surrounded by talc. Coarse grains of serpentinised olivine contain heavy dustings of magnetite. Patches of medium grained chlorite laths are interstitial between the serpentine and talc. A few carbonate crystals contain relict orthopyroxene (bronzite) outlines.

UM - 7

Mineralogy:		
	Talc	38
	Chlorite	35
	Quartz	12
	Carbonate	10
	Opaques	5

Very fine grained iron oxide stained rock.

The rock is finely foliated with fine talc and chlorite defining the foliation.

Scattered fine to medium grained (1 mm) crystals of carbonate are enclosed in the talc-chlorite groundmass.

Very fine black opaque granules are scattered. Fine crystals of quartz are enclosed in the talc-chlorite groundmass and are evenly distributed.

I suggest that the rock is possibly a highly altered volcanic - dacite?
It is now a talc chlorite schist.

UM - 9

Mineralogy:		
	Talc/Sericite	42
	Carbonate	25
	Quartz	15
	Feldspar	10
	Chlorite	8

Foliated rock composed of granular carbonate and strained quartz (and feldspar?) enclosed in a fine grained foliated groundmass of talc/sericite. Stringers of chlorite are abundant.

Probably originally a volcanic - andesite or dacite?

UM - 11

Mineralogy:		
	Tremolite	70
	Chlorite	20
	Talc	6
	Carbonate	4

Very fine grained rock with well defined foliation. Fine short laths of tremolite have subparallel texture. They are enclosed in a groundmass of chlorite. Fine patches of carbonate and talc are present. Probably originally a pyroxenite.

UM - 25

Mineralogy:		
	Carbonate	45
	Talc	39
	Chlorite	10
	Magnetite	6

Medium grained ragged euhedral carbonate crystals to 1.5 mm are enclosed in a fine grained felty groundmass of talc and chlorite. Fine grained euhedra of magnetite are scattered throughout. The carbonate has a pinkish tinge due to fine red-brown iron oxides (hematite?). Coarser carbonate patches have relict peridotite textures enclosed.

UM - 36

Mineralogy:		
	Talc	42
	Serpentine	30
	Carbonate	10
	Chlorite	3
	Opaques	15

Fine to medium grained interlocking outlines of olivine are replaced by serpentine and talc. Coarser grained olivine outlines replaced mainly by iron oxides were probably originally iron rich fayalite. Minor fine carbonate and chlorite are present.

UM - 42

Mineralogy:		
	Carbonate	30
	Quartz	25
	Feldspar	23
	Chlorite	20
	Opaques	2

Foliated, carbonated and chloritized fine grained rock originally containing quartz and feldspar as phenocrysts in a groundmass of fine quartz, feldspar, carbonate and chlorite. Minor opaques are associated with the chlorite.

The rock suggests an altered rhyodacite or dacite, volcanic tuff?

UM - 46

Mineralogy:		
	Carbonate	55
	Talc	36
	Chlorite	8
	Opaques	1

Foliated fine grained subhedral carbonate grains are probably recrystallized(?) and are enclosed in a fine grained foliated groundmass of talc and chlorite. The chlorite usually occurs as stringers. A couple of opaque grains were fractured during foliation and are enclosed in chlorite patches.

UM - 47

Mineralogy:		
	Carbonate	30
	Chlorite	44
	Quartz	20
	Altered Feldspar(?)	6

Highly foliated rock composed of elongated chlorite patches, ragged carbonate and interstitial fine quartz. A few patches have vague relict texture of feldspar partly replaced by carbonate. Rock was probably an andesite or dacite volcanic.

UM - 48

Mineralogy:		
	Serpentine	40
	Talc	23
	Carbonate	20
	Relict olivine	5
	Tremolite	4
	Opaques	8

Medium to coarse grained patches of carbonate are surrounded by talc needles, also separate talc patches are enclosed by serpentine. Some carbonate patches have relict olivine texture and also contain abundant opaques. Euhedral grains of opaques are also present (magnetite). A few relict olivine crystals are present. Serpentine laths (antigorite) are enclosed by carbonate crystals. A few tremolite laths are scattered.

UM - 50

Mineralogy:		
	Serpentine	75
	Carbonate	8
	Talc	6
	Relict Olivine	3
	Opaques	8

Serpentine - carbonate - olivine - talc rock. This rock has a beautiful flattened cumulate texture of interlocking olivine (medium grained, average 1.5 mm) crystals replaced by serpentine (antigorite) with some interstitial carbonate and talc. Opaques occur as patches or veins within the crystal outlines. The rock is an altered dunite.

UM - 58

Mineralogy:		
	Carbonate	35
	Chlorite	30
	Tremolite	20
	Talc	10
	Opaques	5

Foliated banded rock. Bands of carbonate rich material alternate with chlorite rich bands. The bands are evenly spaced from 2.0 - 2.5 mm. The carbonate bands are composed of anhedral carbonate (80%) with interstitial tremolite laths and fine talc, chlorite and granular opaques.

The chlorite rich bands contain fine carbonate crystals (15 - 20% of band) enclosed by a fine chlorite groundmass dotted with fine granular opaques and fine grains of high relief, low birefringent mineral - probably cross sections of tremolite.

UM - 63

Mineralogy:	Peridotite		Pyroxenite	
	Carbonate	40	Tremolite	40
	Talc	24	Pyroxene	35
	Olivine	12	Talc	13
	Serpentine	12	Carbonate	12
	Opaques	12		

Fine grained cumulate peridotite in contact with altered pyroxenite. Fine interlocking network of olivine crystals are altered to talc and carbonate and surrounded by interstitial stringers of serpentine and opaques (magnetite-chromite). Relict olivine is present.

The contact appears to be gradational to altered pyroxenite, the ortho-pyroxene being partly altered to talc and fine tremolite.

SOUTH ZONE

Drill Hole Samples

Modal Analyses and

Thin Section Descriptions

Mode SOUTH ZONE DRILL CORE

Hole	Sample	T.S. No.	Carbonate	Talc	Chlorite	Opaques
B-5	9819	601	30	45	15	10
	9819	602	60	34	3	3
	9821	512	60	32	5	3
Mean			50	37	7.67	5.33
Variance			300	49	41.26	16.39
Standard Dev.			17.32	7	6.42	4.05
B-5		500	44	40	12	4
		503	55	38	4	3
		505	55	36	5	4
		508	50	40	6	4
		509	55	36	3	6
Mean			51.8	38	6	4.2
Variance			23.7	4	12.5	1.2
Standard Dev.			4.87	2	3.54	1.10
B-5 Mean			51.13	37.63	6.63	4.62
B-5 Variance			99.54	16.12	19.62	5.75
B-5 Standard Dev.			9.98	4.02	4.43	2.40

new

Mode SOUTH ZONE DRILL CORE

Hole	Sample	T.S. No.	Carbonate	Talc	Chlorite	Opaques
B-6	9824	517	40	46	8	6
	9825	523	45	44	3	8
	9826	524	45	45	5	5
	9827	608	45	48	3	4
		528	45	47	5	3
	9832	515	50	36	6	8
Mean			45	44.33	5	5.67
Variance			10	19.02	3.6	4.22
Standard Dev.			3.16	4.36	1.90	2.05
B-7	9833	B7-25	38.3	54.7	3.6	3.4
	9834	B7-45	45.2	47.9	3.1	3.8
		530	40	51	4	5
		B7-50	45	48	5	2
		B7-76	50	40	7	3
		615	49	40	3	8
	9836	B7-86	43.8	47.3	5.5	3.4
		617	35	51	6	8
Mean			43.29	47.49	4.65	4.58
Variance			31.14	26.77	2.12	5.11
Standard Dev.			5.58	5.17	1.46	2.26
B-7		529	50	43	2	5
		531	55	34	5	6
		B7-86	43.8	47.3	55	3.4

CONT'D.

new

Mode SOUTH ZONE DRILL CORE

Hole	Sample	T.S. No.	Carbonate	Talc	Chlorite	Opaques
B-6	9824	517	40	46	8	6
	9825	523	45	44	3	8
	9826	524	45	45	5	5
	9827	608	45	48	3	4
		528	45	47	5	3
	9832	515	50	36	6	8
Mean			45	44.33	5	5.67
Variance			10	19.02	3.6	4.22
Standard Dev.			3.16	4.36	1.90	2.05
B-7	9833	B7-25	38.3	54.7	3.6	3.4
	9834	B7-45	45.2	47.9	3.1	3.8
		530	40	51	4	5
		B7-50	45	48	5	2
		B7-76	50	40	7	3
		615	49	40	3	8
	9836	B7-86	43.8	47.3	5.5	3.4
		617	35	51	6	8
Mean			43.29	47.49	4.65	4.58
Variance			31.14	26.77	2.12	5.11
Standard Dev.			5.58	5.17	1.46	2.26
B-7		529	50	43	2	5
		531	55	34	5	6
		B7-86	43.8	47.3	55	3.4

CONT'D.

old

Mode SOUTH ZONE DRILL CORE

Hole	Sample	T. S. No.	Carbonate	Talc	Chlorite	Opaques
B-6	9824	517	50	36	6	8
	9825	523	40	46	8	6
	9826	524	45	44	3	8
	9827	608	45	45	5	5
	9828	609	45	48	3	4
	9832	515	45	47	5	3
Mean			45	44.33	5	5.67
Variance			10	19.02	3.6	4.22
Standard Dev.			3.16	4.36	1.90	2.05
B-7	9833	B7-25	34.7	34.7	3.6	3.4
	9834	B7-45	45.2	47.9	3.1	3.8
		530	40	51	4	5
		B7-50	95	48	5	2
		B7-76	50	40	7	3
		615	49	40	3	8
	9836	B7-86	43.8	47.3	5.5	3.4
		617	35	51	6	8
Mean			43.29	47.49	4.65	4.58
Variance			31.14	26.77	2.12	5.11
Standard Dev.			5.58	5.17	1.46	2.26
B-7		529	50	43	2	5
		531	55	54	5	6
		B7-86	47.8	47.3	55	3.4

CONT'D

SOUTH ZONE DRILL CORE CONTINUED ...

Hole	Sample	T. S. No.	Carbonate	Talc	Chlorite	Opaques
Mean			49.6	41.43	4.17	4.8
Variance			31.48	46.48	3.54	1.72
Standard Dev.			5.61	6.82	1.88	1.31
B-7	Mean		45.01	45.84	4.52	4.64
B-7	Variance		36.87	35.77	2.23	3.93
B-7	Standard Dev.		6.07	5.98	1.49	1.98

Mode SOUTH ZONE DRILL CORE

Hole	Sample	T. S. No.	Carbonate	Talc	Chlorite	Magnetite
B-8	9840	534	57	30	8	5
	9841	619	42	47	6	5
	9842	620	50	42	4	4
	9843	621	35	40	15	10
Mean			46	39.75	8.25	6
Variance			91.33	50.92	22.92	7.33
Standard Dev.			9.56	7.14	4.79	2.71
B-8		537	60	36	2	2
		538	45	44	6	5
Mean			52.5	40	4	3.5
Variance			112.5	32	8	4.5
Standard Dev.			10.61	5.66	2.83	2.12
B-8 Mean			48.17	39.83	6.83	5.17
B-8 Variance			88.18	37.29	20.22	6.93
B-8 Standard Dev.			9.39	6.11	4.50	2.63

Mode

SOUTH ZONE DRILL CORE

Hole	Sample	T. S. No.	Carbonate	Talc	Chlorite	Magnetite
B-9	9847	623	40	46	10	4
	9848	624	55	34	5	6
	9849	542	80	12	6	2
	9850	543	54	30	8	8
Mean			57.25	30.5	7.25	5
Variance			276.92	198.33	4.92	6.67
Standard Dev.			16.64	14.08	2.22	2.58
B-9		540	50	39	6	5
B-9 Mean			46.5	32.2	7	5
B-9 Variance			140.74	163.2	4	5
B-9 Stand. Dev.			37.52	12.77	2	2.24
Total Mean (V & N)			47.17	41.52	6.09	5.23
Total Variance (V & N)			106.83	83.83	10.57	5.74
Total Stand. Dev. (V & N)			10.34	9.16	3.25	2.40
Total Mean			47.10	40.87	5.80	4.95
Total Variance			211.40	63.09	9.57	4.54
Total Stand. Dev.			14.55	7.94	3.09	2.13

No. 512 B5 - 385'

Mineralogy:

Carbonate	60%
Talc	32%
Chlorite	5%
Opaques	3%

In hand specimen the rock has suffered some shearing with zones of white coarse carbonate.

In thin section patches of coarse grained carbonate (3 - 5mm) occur as recrystallized clean aggregates (possibly dolomite in part) in zones of more intense shearing.

The rest of the rock is composed of fine to medium grained carbonate crystals (0.3 - 2mm) as irregular glomeroporphyritic aggregates.

The carbonate is surrounded by foliated interstitial fine grained talc and chlorite (0.01 - 0.1 mm).

The matrix is dirty and sheared, and contains fine grained amorphous black material, possibly iron oxides.

Fine grained anhedral crystals or fine granular aggregates of opaques (magnetite - chromite) are scattered.

The carbonate crystals are cloudy with dustings of opaques which suggest ghost outlines of pseudomorphed serpentinized olivine.

No. 603 B5 - 355'

Slide thick

Quartz	30
Carbonate	25
Chlorite	10
Talc or Sericite	29
Pumpellyite	2
Opaques	4

Fine grained foliated rock containing rounded granular opaques, patches of subhedral carbonate, fine laths of sericite or talc, patches of green chlorite and ragged quartz crystals, all enclosed by a matrix of partly recrystallised silica. A few patches of pumpellyite, a low grade alteration mineral are also present.

The talc or sericite appears to be replacing the quartz in most of the rock. The granular opaques often have associated chlorite and appear to have been of primary origin.

Difficult to determine the origin of the rock as it has been heavily metasomatised. Appears to have been originally a siliceous volcanic or sediment, possibly at the top of a basic-ultramafic pile of flows? It has been carbonated by solutions percolating the rock and some of the silica is recrystallised.

No. 509 B5 - 345'

Mineralogy:		
	Carbonate	55
	Talc	36
	Chlorite	3
	Opaques	6

Medium to coarse grained carbonate crystals occur as individual subhedral crystals with ragged rims, or as glomeroporphyritic aggregates, from 0.5 - 6 mm. The carbonate crystals contain granular and dusty inclusions of opaques. In places the dusty opaques suggest the carbonate is pseudomorphing the serpentinised olivine.

The groundmass surrounding the carbonate crystals is predominantly fine grained talc (0.1 - 0.5 mm) with minor interstitial chlorite.

Anhedral granular opaques (magnetite, chromite) are scattered throughout, 0.3 - 0.4 mm in grainsize. In places they form curved stringers vaguely suggesting the outline of pseudomorphed olivine.

The 'pinkish coloured mineral' is where the carbonate crystals are dusted with fine opaques, in a couple of places possibly suggesting pseudomorphed olivine.

N.B. The section does not include the vein material.

Ian A Hutton

(Not a good slide - soft - has holes).

No. 508 B5 - 335'

Mineralogy:

Carbonate	50%
Talc	40%
Chlorite	6%
Opaques-magnetite	3%
rutile	1%

Medium grained carbonate crystals (0.5 - 1mm) are evenly distributed in a fine grained felty talc groundmass (0.01 - 0.4mm) with intimately associated fine to medium chlorite laths. A few dolomite(?) crystals are present in the talc vein crossing the section.

Fine needle like opaques (rutile) are scattered through the talcy groundmass and fine subhedral magnetite and rounded chromite(?) grains in places suggest relict crystal outlines as for pseudomorphed serpentinized peridotite.

Jean L. Hulbert

No. 602 B5 - 315'

Mineralogy:		
	Carbonate	60
	Talc	34
	Chlorite	3
	Opaques	3

Medium grained to coarse grained carbonate rich rock composed of ragged glomeroporphyritic aggregates of carbonate crystals (magnesite? - 0.05 - 3 mm) which are clouded with fine opaques. The carbonate is enclosed in a groundmass of fine grained felted talc with interstitial medium grained chlorite stringers.

A band of granular and rounded opaques is present and may mark the base of a unit (flow?). The opaques are probably chromite or chromiferous - magnetite and have rounded crystal outlines and are non-magnetic.

Vague relict textures of pseudomorphed serpentinised olivine are present near this band of opaques.

No. 505 B5 - 295'

Mineralogy:

Carbonate	55%
Talc	36%
Chlorite	5%
Opaques-magnetite	3%
-rutile	1%

Fine to medium grained ragged crystals of carbonate (0.5 - 1mm) with saccharoidal texture are evenly distributed as single grains or as glomeroporphyritic aggregates in a fine groundmass of foliated talc and minor interstitial chlorite (0.01 - 0.15mm) with fine granular carbonate.

Skeletal medium grained black opaque crystals (magnetite, chromite?) are cut by the carbonate grains indicating they are of primary origin. In places in some carbonate crystals the opaques are dusted and have relict interlocking stringers suggesting outlines found in serpentinized peridotite (dunite in this case I suspect).

Fine needle-like opaques (rutile?) are scattered.

Yeni Fisher

No. 601 B5 - 275'

Mineralogy: (except the vein).		
	Carbonate (magnesite + dolomite)	30%
	Talc	45
	Chlorite	15
	Opaques	10

In hand specimen the rock is crossed by a shear zone containing a buff coloured mineral and adjacent patches of dark grey mineral aggregates.

In thin section the vein is composed of dolomite (recrystallised, twinned) and cloudy magnesite with interstitial talc.

The dark mineral aggregates are glomeroporphyritic aggregates of magnesite (each from 0.5 - 3 mm) forming perfect pseudomorphs after serpentinised olivine and containing abundant opaques defining the crystal outlines (best example so far!) and seems to define a cumulate texture.

Fine grains of subhedral opaques (0.2 - 0.5 mm) are scattered throughout.

The part of the rock outside the vein consists of glomeroporphyritic aggregates of ragged magnesite (0.5 - 1 mm) clouded with fine opaques, and euhedral clear dolomite, surrounded by a foliated groundmass of talc and chlorite (0.01 - 0.08 mm). Opaques are evenly scattered throughout.

Yeniit Hunter

No. 503 B5 - 45'

Mineralogy:		
	Carbonate	55%
	Talc	38%
	Chlorite	4%
	Opaques	3%

The rock is fine grained with a pseudosaccharoidal texture.

Equidimensional subhedral to anhedral carbonate grains (0.2 - 0.8mm) are homogeneously distributed in a non-foliated groundmass of fine felted talc (0.01 - 0.05mm), chlorite and fine anhedral carbonate.

The rock is fairly clean. A few fine granular opaque grains are rare. In a couple of places stringers of fine opaques (chromite?) suggest the vague relict ghost outline of pseudomorphed olivine crystals.

Jean A Hulse

No. 500 B5 - 15'

Mineralogy:		
	Carbonate	44%
	Talc	40%
	Chlorite	12%
	Opaques	4%

Fine to medium grained carbonate crystals (0.5 - 2mm) have a saccharoidal texture and many contain granular inclusions of opaques. The opaques within the carbonate in places suggest a relict schiller texture often found in orthopyroxenes (bronzite) in layered complexes. (Schiller texture formed by alignment of opaque inclusions along crystal planes).

In other areas of the thin section the fine granular opaques indicate a texture found in serpentinized olivine. The carbonate crystals associated with this latter texture usually occur as glomeroporphyritic aggregates.

The carbonate crystals are enclosed in a slightly foliated groundmass of fine to medium grained talc and abundant interstitial chlorite. (0.01 - 0.8mm)

Fine granular aggregates of opaques up to 0.3mm are scattered through the groundmass but 75% of the opaques present occur within the carbonate crystals.

Yours truly

No. 528 B6 - 300'

Mineralogy:		
	Carbonate	45%
	Talc	47 %
	Chlorite	5%
	Opaques	2%
	Rutile	1%

Very fine grained rock with fine anhedral - subhedral crystals of carbonate (0.05 - 0.3 (3.0 mm) homogeneously distributed in a very fine grained, slightly foliated groundmass of a felted mat of talc, minor chlorite and minor fine anhedral carbonate. The groundmass is quite dirty and a few fine grains of a yellow - brown mineral (rutile?) are present.

Very fine grained euhedral granular opaques (magnetite 0.01 - 0.02mm) are sparsely scattered. One coarse carbonate crystal contains the relict outline of dusty opaques of pseudomorphed olivine.

One possible grain of dolomite is present - ragged euhedral, lower relief than other carbonate.

No. 609 B6 - 210'

Mineralogy:		
	Carbonate	83%
	Quartz	15%
	Talc	2%

In hand specimen the rock appears to be a carbonate vein.

In thin section the slide is composed of interlocking coarse carbonate crystals and interstitial fine grained recrystallized carbonate. The coarse grained crystals have sutured grain boundaries and highly undulating extinction. The carbonate is cloudy with fine dusty opaques.

A quartz vein crosses the rock and interstitial secondary silica is present. Where the carbonate is recrystallized, twin lamellae are sometimes present in more subhedral and euhedral crystals - dolomite ? Minor fine talc laths are interstitial.

Hewitt Parker

No. 608 B6 - 185'

Mineralogy:		
	Carbonate	45%
	Talc	48%
	Chlorite	3%
	Opaques	4%

Foliated medium to coarse grained rock with crystals of ragged dirty carbonate (0.5 - 3mm) occurring as individual crystals or as glomeroporphyritic aggregates dusted with very fine opaques.

Finer grained cleaner crystals of carbonate are recrystallized and are euhedral - (0.5 - 1mm). The carbonate crystals are enclosed in a groundmass of very fine felty talc, minor interstitial chlorite and fine carbonate.

Fine granular and laths of opaques are present, and are evenly scattered.

In places the grains (chromite or magnetite) form fine stringers like those found in serpentinized peridotites.

The lath-like opaques (ilmenite?) are scattered.

Note: In a couple of places are dirty patches of carbonate, dusted with opaques and containing textures found in quenched peridotite magma.

No. 524 B6 - 155'

Mineralogy:		
	Carbonate	45%
	Talc	45%
	Chlorite	5%
	Opaques (black)	2%
	Sphene	1%
	Rutile	2%

Carbonate rich rock which appears to have undergone some later deuteric alteration with some euhedral carbonate crystals being partially replaced by secondary talc.

The carbonate crystals occur in aggregates and also as individual crystals from 0.3 - 4 mm in grainsize. The thin section is coarser at one end and is possibly a carbonate-talc vein?

The carbonate crystals are sitting in a fine grained groundmass of talc and interstitial chlorite up to 0.25 mm in size. The chlorite appears to be intimately associated with the talc, and is almost colourless.

Two types of opaques are present. One is magnetite and chromite as subhedral and subrounded grains. The other is sphene and rutile. The sphene occurs as dark patches with the typical rhombic cross section; only 4 grains were seen in the thin section. The rutile(?) occurs as needles or as stringers of fine grains in the groundmass. The yellow brown colour of the carbonate is possibly due to fine, sparse dustings of opaques in the carbonate.

David Hulbert

No. 523 B6 - 135'

Mineralogy:		
	Carbonate	45%
	Talc	44%
	Chlorite	3%
	Opaques	8%

Equidimensional crystals of carbonate of medium to coarse grain size occur as single crystals (0.5 - 1mm) and as glomeroporphyritic aggregates to 2.5 mm. They are enclosed by a fine weakly foliated groundmass of talc and minor interstitial chlorite up to 0.25mm.

Stringers of fine dusty opaques within the carbonate aggregates have clouded the carbonate and suggest ghost outlines of curved fractures within pseudomorphs of serpentinized olivine. Subhedral grains of opaques (magnetite and chromite?) are scattered through the talc groundmass.

In places the carbonate seems to have replaced an hexagonal or polygonal crystal outline, while the talc has replaced the groundmass. This suggests that the replacement is influence by the original composition.

No. 517 B6 - 55'

NB: This section very thin - soft talcy areas partly worn away.

Mineralogy:		
	Carbonate	40%
	Talc	46%
	Chlorite	8%
	Opaques	6%

Highly foliated rock with alternating talc rich and carbonate rich bands, 3 - 5 mm wide.

Fine to coarse grained crystals of carbonate 0.3 - 3 mm are scattered as single crystals or as glomeroporphyritic aggregates in the groundmass. Some carbonate crystals are recrystallized to euhedral grains and others are recrystallized and elongated parallel to the foliation defined by the groundmass minerals.

The groundmass is highly foliated and composed of fine grained talc, carbonate and slightly more chlorite than other samples.

Fine to medium grained euhedral and subhedral opaques 0.02 - 0.3 mm (euhedral magnetite, and some subrounded chromite - red internal reflections on fracture) occur in two vague bands parallel to the foliation. Dustings of opaques in some carbonate crystals suggest flattened relict texture of pseudomorphed olivine crystals.

Jane A Gerber

No. 515 B6 - 35'

Mineralogy:		
	Carbonate	50%
	Talc	36%
	Chlorite	6%
	Opaques	8%

The texture is almost dunitic in hand specimen, and slightly magnetic. It appears to have undergone some alteration, possibly due to percolating ground water.

Fine grained anhedral carbonate crystals 0.1 - 2 mm often occur as glomeroporphyritic aggregates. They have dustings of opaques (magnetite) and in a couple of places these dustings indicate possible ghost structures like the curved fractures in partly serpentinised olivine.

The carbonate crystals are enclosed by a groundmass of fine talc and chlorite up to 0.15 mm. The groundmass is quite dirty with talc grains having iron oxide rims. This is usually where opaques are abundant and indicates some oxidation due to weathering.

Fine euhedral opaques (cubes of magnetite) occur as stringers and a couple of grains of rutile (light brown, translucent needles) are present.

Sample No. B7-86 Talc Magnesite Schist

Mode:		
	Talc	47.3%
	Magnesite (+ Dolomite)	43.8%
	Chlorite	5.5%
	Magnetite	3.4%

2448 points were counted for mode.

The carbonate was stained using Alizarin Red S stain in a 5% NaOH solution. X.R.D. analysis revealed traces of dolomite in the rock which were not identified in thin section.

Description

Magnesite is present as roughly equidimensional porphyroblasts, with the occasional one slightly elongated parallel to the foliation in the matrix. The grains are subhedral to anhedral with the cleavage prominent. Many porphyroblasts have a vague ghosting in them which is suggestive of the curved fractures that occur in olivine during serpentinization. Their grain size varies from 0.2 mm to 1.5 mm.

The matrix is dominantly talc with minor chlorite and magnetite. It is fine grained (0.01 to 0.3 mm), with some coarser grains in pressure shadows. Chlorite tends to concentrate as fine dots or as smeared foliae in the talc. Magnetite grains are usually present in these chlorite concentrations. However, most of the magnetite is disseminated throughout the matrix as subhedral grains.

Sample No: B7-76

Magnesite Talc Rock.

Mode:		
	Carbonate	50%
	Talc	40%
	Chlorite	7%
	Magnetite	3%

Visually estimated

This sample was not stained or analysed by XRD methods. The carbonate is probably magnesite.

Descriptions:

This fine grained carbonate talc rock has a pseudo-saccaroidal texture with homogeneously distributed equidimensional anhedral carbonate grains sitting in a non-foliated to weakly foliated talc matrix. The carbonate grains vary from 0.1 mm to 1 mm. They often have clouded ghost structures in them suggestive of the curved fractures in partly serpentinized olivine.

A felted mat of talc and chlorite form the fine matrix. Talc is dominant with the minor chlorite disseminated evenly through it. Matrix grain size spans 0.01 mm to 0.2 mm. Subhedral magnetite grains of a similar grain size also occur disseminated throughout the matrix.

Sample No. B7-50 Talc Magnesite Schist

Mode:		
	Talc	48%
	Magnesite (+ Dolomite)	45%
	Chlorite	5%
	Magnetite	2%

The mode was visually estimated. The carbonate in the rock was identified using Alizarin Red S stain in a hot 55 NaOH solution. X.R.D. analyses of the rock showed traces of dolomite to be present; these were not identified in T.S.

Description

This rock is very similar to B7-45. It consists of porphyroblasts of magnesite sitting in a strongly foliated fine grained matrix of talc. The magnesite is medium grained; 0.1 mm to 3 mm ; and they often have the cloudy zones suggesting that they are pseudomorphing olivine. Magnetite also occurs as finedustings in the occasional magnesite crystal.

The matrix has a grain size from 0.01 mm to 0.2 mm , with the coarser grains growing in pressure shadows. Chlorite as well as being disseminated throughout the talc, also occurs in clots with magnetite, where both appear to be related reaction products of metasomatism. These clots are up to 1 mm in diameter.

Magnetite is prominent in the matrix as subhedral grains to 0.4 mm. It is evenly distributed.

Sample No: B7-45 Talc Magnesite Schist

Mode:		
	Talc	47.9%
	Magnesite (+Dolomite)	45.2%
	Chlorite	3.1%
	Magnetite	3.8%

The mode was determined by Point-Counting methods with 2134 points being counted. The carbonate mineral in the rock was identified by using Alizarin Red S stain in a 5% NaOH solution. Unfortunately it did not distinguish between the traces of dolomite in the rock and the magnesite. XRD analysis of a powder of this rock showed traces of dolomite to be present.

Description:

Magnesite occurs as randomly oriented subhedral to anhedral porphyroblasts from 0.1 mm to 2 mm in size. They often have a glomeroporphyritic habit. Some variation in colour in these grains suggests ghost outlines of pseudomorphed olivine crystals. They often contain inclusions of fine opaques, probably magnetite.

Talc occurs as a fine foliated matrix to the magnesite porphyroblasts. The flakes vary in grain size from 0.01 mm to 0.2 mm with the coarser grains occurring in pressure shadows around the magnesite. It is intimately mixed with traces of chlorite of similar grain size. The chlorite also occurs occasionally in clots (0.5 mm to 1 mm) associated with magnetite.

Magnetite occurs as both fine disseminated grains in the porphyroblasts and as slightly coarser grains well distributed in the talc matrix. These latter grains are euhedral and subhedral with numerous rhombic cross-sections being seen. Their grain size varies from 0.05 mm to 0.4 mm.

Sample No. B7-25 - Talc Magnesite Schist

Mode:	Talc	54.7%
	Magnesite (+ Dolomite)	38.3%
	Chlorite	3.6%
	Magnetite	3.4%

2331 points were counted for mode.

The carbonate was stained using Alizarin Red S stain in a 5% NaOH solution. X.R.D. analysis revealed traces of dolomite in the rock, which were not identified in thin section.

Description

The magnesite occurs as ragged porphyroblasts with a grain size from 0.4 to 2 mm. Most are roughly equidimensional. Some with a longer dimension have been rotated parallel to the foliation in the matrix. Some porphyroblasts have clusters or clouds of very fine opaques (magnetite?); these are usually oriented in planes suggesting a ghosting of a pseudomorphed grain. These grains are probably a reaction product associated with the metasomatism.

Talc, together with traces of chlorite, form the matrix to the magnesite. It is strongly foliated with the coarser talc occuring in pressure shadows behind the porphyroblasts. The minor chlorite is disseminated throughout the talc. The grain size of the matrix varies from 0.01 to 0.4 mm.

Magnetite also occurs in the matrix. It is coaser than the fine material in the porphyroblasts and typically occurs as clots of several grains (0.1 mm to 0.4 mm).

Sample No: B7-15 Talc Carbonate Schist

Mode:			
	Carbonate	55%	
	Talc	40%	
	Magnetite	3%	Visually estimated
	Chlorite	2%	

This sample was not stained or analysed by XRD methods.

Description:

The carbonate (magnesite?) occurs as equidimensional, homogeneously distributed anhedral to subhedral grains. Grain size varies from 0.1 to 0.3 mm, and is finer than other carbonate rocks in this suite.

The matrix to the carbonate is a fine felted mat of talc. The flakes have a strong preferred orientation and define a good foliation. Occasional traces of chlorite are seen disseminated through the talc. The grain size of the matrix is for 0.02 mm to 0.2 mm. Magnetite is also disseminated in the matrix where it occurs as fine anhedral to subhedral grains to 0.15 mm. Some areas in the thin section have a slightly higher concentration of magnetite, suggesting a weak banding parallel to the foliation.

No. 617 B7 - 90'

Mineralogy:		
	Carbonate	35%
	Talc	51%
	Chlorite	6%
	Opaques	8%

Foliated medium grained rock composed of ragged carbonate crystals (0.5 - 1.5 mm). Occasionally the carbonate is recrystallized to subhedral grains. The carbonate is cloudy and often has strained extinction due to shearing.

The carbonate is enclosed by fine to medium grained groundmass of talc (0.01 - 0.5 mm) and patches of chlorite.

Fine subhedral to euhedral (cubic - magnetite) grains of opaques are present and are concentrated on the foliation planes.

Minor partial recrystallization has occurred.

Henri Tuhel

No. 615 B7 - 65'

Mineralogy:		
	Carbonate	49%
	Talc	40%
	Chlorite	3%
	Opaques	8%

Beautiful relict textures of pseudomorphed serpentinized olivine are present in some aggregates of carbonate, and suggest a cumulate texture.

The carbonate is present either as individual crystals (0.5 - 2mm) or as glomeroporphyritic aggregates (up to 5mm). The carbonate aggregates are clouded with opaques and this imparts the dark grey colour to the magnesite(?) crystals.

The carbonate is enclosed in a weathered (oxidized) groundmass of very fine felty talc, carbonate and minor interstitial chlorite.

Granular and rounded, to subhedral grains of opaques (magnetite-chromite from 0.1 to 0.5mm) appear to be slightly more concentrated and coarser in one band suggesting possible settling of opaques.

No. 531 B7 - 55'

Mineralogy:		
	Carbonate	55%
	Talc	34%
	Chlorite	5%
	Opaques	6%

Aggregates of anhedral crystals of carbonate and medium grained individual crystals to 0.5 - 1mm are evenly distributed in a fine groundmass (0.05 - 0.25mm) of talc laths and some interstitial chlorite, with associated fine grained opaques.

Fine grained subhedral opaques (chromite?) are evenly distributed in the talcy groundmass. A few fine trails of opaques suggest relict crystal pseudomorphic outlines, possibly of olivine.

One crystal of ragged carbonate has a lower refractive index than the main carbonate mineral and has faint twin lamellae - possibly dolomite?

Pale brown cloudy patches in the carbonate suggest may have replaced orthopyroxene.

No. 530 B7 - 40'

Mineralogy:		
	Carbonate	40%
	Talc	51%
	Chlorite	4%
	Opaques	5%

The carbonate occurs as aggregates of broken crystals and as individual subhedral grains 0.2 - 1mm. Many of the coarser grains contain ghost outlines defined by opaques similar to relict olivine outlines.

The carbonate crystals are often elongated parallel to the foliation defined by the minerals in the groundmass.

The groundmass is composed of fine to medium grained felty talc stringers with some interstitial chlorite laths, crystals being up to 0.35mm.

The opaques (magnetic, chromite) occur as relict ghost outlines in the carbonate and also as scattered broken subhedral crystals.

A few carbonate crystals have fine dustings of opaques.

Janet Herbert

No. 529 B7 - 15'

Mineralogy:		
	Carbonate	50%
	Talc	43%
	Chlorite	2%
	Opaques - Magnetite	3%
	- Iron oxides	2%

Fine grained magnetic rock.

Fine grained subhedral carbonate crystals (0.2 - 0.4mm) are homogeneously distributed in a fine grained foliated groundmass of talc and chlorite with laths up to 0.01 - 0.2 mm in grain size.

Medium grained subhedral to euhedral opaque grains (magnetite- 0.05 - 0.15 mm) are scattered.

Fine brown amorphous iron oxide occurs at the rims of the carbonate crystals in the shear zones. This may be due to introduced solutions during the shearing. These fine iron oxides probably produce the yellow colouring or staining of the rock.

David Fisher

No. 621 B8 - 265'

Mineralogy:		
	Carbonate	35%
	Talc	40%
	Chlorite	15%
	Opaques	10%

Coarse grained patches of carbonate composed of glomeroporphyritic aggregates (up to 5mm) of crystals each from 0.5 - 1mm in size, have relict texture of serpentinized olivine now pseudomorphed by the carbonate. Relict olivine outlines are delineated by fine opaques, and this relict texture is of a cumulate peridotite.

The carbonate crystals are enclosed in a very finely foliated groundmass of talc and chlorite (up to 0.2mm) and fine carbonate.

Fine granular opaques 0.1 - 0.5mm are scattered (chromite?, magnetite).

No. 538 B8 - 245'

Mineralogy:		
	Carbonate	45
	Talc	44
	Chlorite	6
	Opaques	5

Medium grained anhedral, flattened and also some partially recrystallised aggregates of carbonate (up to 1 mm) are enclosed in a foliated groundmass of talc and chlorite (0.01 - 0.5 mm).

Granular to subhedral grains of opaques (up to 0.5 mm) are scattered but are vaguely more concentrated in one band.

The subhedral grains are subrounded and are chromite or chromiferous magnetite.

In a couple of glomeroporphyritic aggregates of non-recrystallised cloudy carbonate the relict texture of fractures of serpentinised olivine are present.

Yeni Hasbi

No. 620 B8 - 235'

Mineralogy:		
	Carbonate	50%
	Talc	42%
	Chlorite	4%
	Opaques	4%

Highly foliated medium grained rock.

Medium grained crystals of carbonate are recrystallized and elongated parallel to the well defined foliation (0.2 - 1.5mm). A few rhombic crystals with twin lamellae may be dolomite.

The carbonate is enclosed in a foliated groundmass of cloudy talc and chlorite (0.01 - 0.5mm).

Fine granular to subhedral opaques occur in stringers in the talc bands and these parallel the foliation.

Yeni L Hanke

No. 537 B8 - 225'

Mineralogy:		
	Carbonate	60%
	Talc	36%
	Chlorite	2%
	Opaques	2%

The slide is thin on one edge.

Fine to coarse grained (0.5 - 4mm) euhedral carbonate crystals are enclosed by a foliated fine grained talc and carbonate matrix. Stringers of recrystallized carbonate parallel the foliation in the more highly sheared zones. Here the talc is also coarse grained.

The rock contains fine grained dusty opaques (hematite) in the foliated talc groundmass of 0.03 - 0.45mm. A few fine grained euhedral opaque grains are present.

Minor chlorite is associated with the talc in proximity to the fine dusty opaques. The "pink mineral" appears to be carbonate dusted with fine opaques.

This sample has been highly sheared resulting in the foliation of the groundmass and the recrystallization of the carbonate. Evidence to support the recrystallization is that in the less sheared areas of the slide, carbonate is ragged and broken and strained; where the rock is more sheared, the carbonate is subhedral and euhedral.

No. 619 B8 - 205'

Mineralogy: (except vein)

Carbonate	42%
Talc	47%
Chlorite	6%
Opaques	5%

In hand specimen a vein crosses the rock and has associated pink mineral.

The vein is composed of recrystallized twinned carbonate (dolomite?) and abundant strained ragged carbonate (magnesite) with interstitial very fine talc and chlorite.

The pink mineral adjacent to the vein is fine to medium grained carbonate aggregates (crystals each 0.2 - 0.75mm) dusted with brown iron oxides (haematite?).

The remainder of the slide contains fine crystals of coarse glomeroporphyritic aggregates of carbonate up to 3mm. The aggregates contain relict textures of pseudomorphed serpentinized olivine. The carbonate is enclosed in a foliated fine to medium grained groundmass of talc and chlorite. Fine subhedral opaques (magnetite) are scattered.

A few patches (0.2mm) of chlorite are present.

Jean A Fisher

No. 534 B8 - 185'

Mineralogy:

Carbonate	57%
Talc	30%
Chlorite	8%
Opaques - magnetite	2%
- chromite	3%

The slide is inhomogeneous - at one end a band of recrystallized predominantly talc and some carbonate, is bordered by a band of euhedral opaques (magnetite).

Fine to medium grained interlocking crystals of carbonate (0.2 - 0.5 mm) are very clean and are surrounded by interstitial patches of fine grained talc to 0.2 mm. Fine, almost colourless chlorite laths are intimately associated with the talc where the opaques are present.

Subhedral, skeletal and euhedral grains of opaques (possibly chromite and magnetite) are scattered throughout the rock and in most places seem to form skeletal outlines which suggest a pseudomorphed dunitic texture in the rock.

No. 543 B9 - 240'

Mineralogy:

Carbonate	54%
Talc	30%
Chlorite	8%
Opaques	8%

The sample is medium grained and more foliated than at 210'.

Much of the carbonate has recrystallized to euhedral grains (0.5 - 1.5mm) some carbonate may be dolomite or calcite having twin lamellae.

A few coarse relict glomeroporphyritic aggregates of carbonate have relict serpentinized peridotite textures, and in these the carbonate is heavily clouded with opaques imparting a brownish colour to the carbonate.

The carbonate crystals are enclosed in a foliated dirty groundmass of talc and chlorite (0.01 - 0.8mm) and fine recrystallized carbonate.

The opaques here generally have a tabular crystal form, are black and up to 1.5mm in length. Often the long axis parallels the foliation and stringers of laths suggest possible spinifex texture of an ultramafic flow. Occassional cubic growths are seen on the opaque crystals (magnetite).

No. 542 B9 - 220'

Mineralogy:		
	Carbonate	80%
	Talc	12%
	Chlorite	4%
	Quartz	2%
	Opaques	2%

Highly foliated rock - thin section mainly of the white carbonate band.

The whole thin section is composed almost completely of recrystallized and highly strained carbonate.

Partly recrystallized bands of medium to coarse grained carbonate with fine to medium grainedinterstitial talc-chlorite groundmass, alternate with completely recrystallized bands of very fine euhedral interlocking carbonate grains with minor interstitial talc.

In some places secondary silica is interstitial.

Chlorite is present in the coarser bands and is intimately mixed with the talc.

A few fine granular opaques are present but the whole rock is dusted with fine iron oxides giving a dusty appearance to the talc groundmass.

Hoist Hubo

No. 624 B9 - 210'

Mineralogy:		
	Carbonate	55%
	Talc	34%
	Chlorite	5%
	Opaques	6%

Foliated fine to medium grained carbonate-talc rock similar to specimen from 190 feet.

Fine granular opaques here are concentrated along foliation planes and are subhedral.

The carbonate crystals are partly recrystallized. Where crystals are coarser and not recrystallized relict peridotite outlines are retained.

The groundmass of talc and chlorite may be slightly less chlorite rich than 190' and the rock contains more carbonate.

No. 540 B9 - 190

Mineralogy:		
	Carbonate	50
	Talc	39
	Chlorite	6
	Opaques	5

Foliated medium grained rock composed of fine to medium grained (0.5 - 1.5 mm) crystals of anhedral to subhedral and flattened carbonate. These are enclosed in a groundmass of talc and chlorite and fine recrystallised carbonate. The groundmass is quite dirty with dustings of iron oxides at the talc crystal rims.

Occasionally the coarser carbonate crystals have vague relict outlines of pseudomorphed serpentinised olivine preserved - generally carbonate has been recrystallised parallel to the foliation

Fine granular opaques are evenly distributed throughout, but are slightly more concentrated in one band.

This specimen is cleaner than that at 180'.

No. 623 B9 - 180'

Mineralogy:		
	Carbonate	40%
	Talc	46%
	Chlorite	10%
	Opaques	4%

In hand specimen the rock has vein crossing it.

In thin section the vein is composed of recrystallized fine to medium grained carbonate (dolomite? and magnesite), with chlorite at the vein margins containing skeletal opaques.

The rest of the rock is quite foliated. Fine to medium grained carbonate crystals (0.02 - 1mm) are ragged and occasionally elongated parallel to the foliation.

They are enclosed in a dirty groundmass of talc and chlorite with fine opaques (0.02 - 0.5mm) scattered. The opaques are granular to subhedral (magnetite?) and some occur as laths (ilmenite?) associated with chlorite patches.

The granular opaques also occur as fine stringers along foliation planes.

Geo A Hirst

APPENDIX B

C.I.P.W. Normal Calculations

Tables of Means, Variances and Standard Deviations

Description of Method Used for Normative Calculations

Standard Reference:

The mineralogy was relatively simple components were carbonate, talc, chlorite, iron oxide (magnetite &/or hematite) and only minor amounts of accessory minerals.

CaO was taken care of first on dolomite:

CaO	$\frac{100.0}{30.4}$	X	CaO	=	dolomite
CO_2	$\frac{47.9}{100.0}$	X	Dol.	=	X
MgO	$\frac{2.17}{100.00}$	X	Dol.	=	W

Total CO_2 - X = Y
Total MgO - W = Z

CO_2 was used up as magnesite:

CO_2	$\frac{100.0}{52.4}$	X	'Y'	=	Magnesite
MgO	$\frac{47.6}{100.0}$	X	Mag.	=	t

Z - t = r

Al_2O_3 was used up as chlorite:

Al_2O_3	$\frac{100.0}{18.4}$	X	Al_2O_3	=	chlorite
MgO	$\frac{36.1}{100.0}$	X	Chl.	=	P
SiO_2	$\frac{30.5}{100.0}$	X	Chl.	=	M
Fe_2O_3	$\frac{2.0}{100.0}$	X	Chl.	=	e
H_2O	$\frac{13.0}{100.0}$	X	Chl.	=	h

r - p = q
SiO_2 - m = n
Fe_2O_3 - e = f
H_2O - h = g

cont'd ...

Talc was accounted for next:

MgO $\frac{100.0}{31.7}$ X q = Talc

SiO_2 $\frac{63.5}{100.0}$ X Talc = o

H_2O $\frac{4.8}{100.0}$ X Talc = i

n - o = SiO_2 left

g - i = H_2O left

Iron Oxide:

The Fe_2O_3 (e) from the chlorite calculation was called magnetite &/or hematite.

In nearly all cases, SiO_2 and H_2O left over from the calculations was very small and when added to the percentage of calculated minerals gave 100%.

NORTH ZONE - BULK SAMPLES NORMAL CALCULATIONS

Normal Calculations - North Zone Bulk Samples

Sample	Dolomite	Magnesite	Total Carb.	Talc	Chlorite	Opaques
354	2.5	38.55	41.05	44.29	3.80	7.75
356	3.13	36.26	39.39	37.89	7.07	7.44
358	1.38	33.85	35.23	50.82	6.52	6.20
359	2.86	21.07	23.93	51.55	13.04	10.24
360	1.41	34.39	35.80	48.12	3.80	9.06
362	0.92	37.52	38.44	43.19	6.52	9.51
363	5.10	23.59	28.69	48.68	10.33	8.42
365	0.79	28.66	29.45	55.90	4.89	10.20
368	1.32	29.14	30.46	46.72	9.78	7.92
370	1.12	34.47	35.59	45.24	7.61	8.36
371	1.05	44.27	45.32	36.21	6.52	10.07
372	1.41	40.11	41.52	44.29	5.98	7.18
Mean	1.92	33.49	35.41	46.08	7.16	8.53
Variance	1.59	46.00	38.73	30.42	7.38	1.69
Std. Dev.	1.26	6.78	6.22	5.52	2.72	1.30

Sample	T. Dol.	T. Mag.	Total Carb.	T. Talc	T. Chl.	T. Opq.
355	1.48	42.73	44.20	36.87	5.43	6.49
357	1.61	40.13	41.74	41.14	5.98	6.60
361	4.21	27.25	31.46	36.25	9.78	8.62
364	1.12	22.48	23.60	37.92	19.57	11.91
366	0.89	26.28	27.17	48.23	13.59	7.84
367	0.95	39.72	40.67	37.29	5.98	9.42
369	2.11	24.98	27.09	48.96	10.33	9.12
373	0.99	33.65	34.64	49.91	4.35	8.49
T. Mean	1.82	32.96	34.77	44.47	8.04	8.54
T. Var.	1.39	49.82	45.37	35.37	15.45	2.13
T. St. D.	1.18	7.06	6.74	5.95	3.93	1.46

Note: Calculations can be found in the Whitney, Metallurgy (mineralogy) file.

SOUTH ZONE – DRILL CORE SAMPLES
– NORMAN CALCULATIONS

Normal Calculations - South Zone Drill Core

Hole	Sample	Carbonate	Talc	Chlorite	Magnetite
B-5	9818	26.48	58.80	10.33	9.89
	9819	44.08	41.29	4.35	5.90
	9820	-	-	-	-
	9821	33.45	44.54	9.78	8.15
Mean		34.67	48.21	8.15	7.98
Variance		78.56	86.75	11.01	4.00
Std. Dev.		8.86	9.31	3.32	2.00
B-6	9824	36.62	29.81	9.24	6.52
	98.25	43.40	39.05	6.52	6.31
	9826	41.68	41.45	6.52	6.92
	9827	41.44	35.24	8.15	7.34
	9831	45.65	28.14	7.61	6.32
	9832	52.61	35.90	5.43	5.31
Mean		43.57	34.93	7.25	6.45
Variance		98.15	26.71	1.77	0.52
Std. Dev.		5.31	5.17	1.33	0.72
B-7	9833	33.60	51.04	9.24	6.42
	9834	41.69	40.13	7.61	7.24
	9835	38.08	48.74	8.15	7.94
	9836	37.31	40.47	10.33	7.57
Mean		37.67	45.10	8.83	7.29
Variance		11.01	31.00	1.52	0.47
Std. Dev.		3.32	5.56	1.23	0.68

Normal Calculations - South Zone Drill Core

Hole	Sample	Carbonate	Talc	Chlorite	Magnetite
B-8	9840	26.55	48.83	17.93	9.94
	9841	41.55	40.06	8.15	6.61
	9842	43.20	39.27	7.61	6.79
	9843	40.64	36.28	8.70	7.31
	9844	27.79	44.10	20.65	8.38
Mean		35.84	41.71	12.61	7.81
Variance		74.73	23.43	38.22	1.82
Std. Dev.		8.64	4.84	6.18	1.35
B-9	9847	40.64	41.45	8.70	7.85
	9848	44.19	40.03	5.98	6.62
	9849	42.85	35.33	7.61	6.98
	9850	38.64	39.72	10.33	7.53
Mean		41.58	39.13	8.16	7.25
Variance		5.98	7.25	3.24	0.21
Std. Dev.		2.45	2.69	1.80	0.45
T. Mean		39.17	40.89	9.04	7.27
T. Variance		41.08	14.43	13.72	1.22
T. Std. Dev.		6.41	3.80	3.70	1.10

Note: Calculations can be found in the Whitney, Metallurgy (mineralogy) file.

SOUTH ZONE - BULK SAMPLES
- NORMAL CALCULATIONS

NORMAL CALCULATIONS - SOUTH ZONE BULK SAMPLES

Sample	Dolomite	Magnesite	Total Carb.	Talc	Chlorite	Opaques
374	0.33	38.63	38.96	46.35	5.22	8.41
375	0.36	40.32	40.68	41.71	6.09	7.87
376	0.20	40.65	40.85	46.09	4.95	8.28
377	1.41	41.26	42.67	44.45	5.76	6.59
378	0.16	39.17	39.33	48.31	6.03	7.81
379	2.01	35.38	37.39	45.45	8.26	9.14
380	3.16	39.67	42.83	46.63	4.62	7.85
381	1.09	29.54	30.63	66.75	5.65	7.61
382	0.39	36.86	37.25	51.40	4.84	8.28
383	0.26	32.21	32.46	67.06	5.27	7.72
Mean	0.937	37.37	38.31	50.42	5.67	7.96
Variance	0.994	15.12	16.04	81.65	1.06	0.36
Standard Deviation	0.997	3.89	4.00	9.04	1.03	0.60

APPENDIX C

Hand Specimen Descriptions
Tables of Means, Variances and
Standard Deviation

NORTH ZONE

BULK SAMPLES
HAND SPECIMEN ANALYSES

Hand Specimens - North Zone - Bulk Samples

Sample	Carbonate	Talc	Chlorite	Opaques
354	40	45	10	5
316	40	45	10	5
358	40	50	5	5
359	35	50	10	5
360	30	45	10	5
362	38	47	10	5
363	28	60	5	7
365	40	50	7	3
368	30	62	5	3
370	35	55	5	5
371	28	58	7	7
372	35	57	5	3
Mean	34.92	52.00	7.42	4.83
Variance	23.10	34.83	5.67	1.82
Std. Dev.	4.81	5.90	2.38	1.35
355	35	55	5	5
357	33	55	7	5
361	30	45	10	5
364	40	45	10	5
366	37	43	15	5
367	30	57	8	5
369	25	60	10	5
373	30	55	10	5
T. Mean	33.95	51.95	8.2	4.9
T. Variance	26.88	37.52	7.43	1.04
T. Std. Dev	5.18	6.13	2.73	1.02

Whitney
6 May 76

Sample 354 Bulk
Location 21 N/1.5 W

Dark Gray - Greenish Black

Medium Grained 2 mm ± massive

Talc 50% in 2 mm ± veinlets
Magnesite 45%
Magnetite 5% +
Chlorite ±
Carbonate - Dol ct.
Magnetic

Magnesite in talc matrix?

7ag.K

Whitney
6 May 76

Sample 355 Bulk
Location 20 N/1.5 W

Dark Greenish Grey

Medium - Coarse Grained 1-3 mm ± massive

Talc 60% - some veinlets 2.5 mm
Magnesite 35-40%
Chlorite ?
Magnetite 3.5%
Carbonate - in veinlets 5 mm ±
Magnetic

Talc matrix

Carbonate is most likely dolomite as it does not react with HCl.

Minor calcite does occur from time to time.

7agK

Whitney
6 May 76

Sample 356 Bulk
Location 19N/1.5W

Medium Gray - Dark greenish gray

Medium grained - 1-2 mm massive

Magnetite 40 %
Talc 45 % +
Magnetite 3-5%
Carb. chlorite ±

More fractured, veinlets minor.

Magnetic

Tagk

Whitney
6 May 76

Sample 357 Bulk
Location 18N/1.5W

Medium Gray - Dark greenish gray

Medium grained - 1-2 mm massive

Magnetite 35-40%
Talc 60% +
Magnetite 3-5%
Carb-chlorite ±

Magnetic

Tagk

Whitney
6 May 76

Sample 358 Bulk
Location 17N/1W

Dark greenish gray - Greenish Black

Medium Grained 2-3 mm massive

Magnetite 40% +
Talc 50-60%
Magnetite 3-5%
Carb Chlorite ±

Some carbonate veinlets up to 5mm wide in the immediate vicinity

Magnetic

Tag K

Whitney
19 May 76

Sample 35.9 Bulk
Location 16N/3.5E

Dark Greenish gray - ~~Dark~~ Greenish Black

Coarse Grained - massive - minor foliation. 3-5mm euhedral-subhedral.

Magnetite 35~~&~~40%
Talc 50% matrix & stringers 2-3mm
Magnetite 3-5%
Carb. ± - some stringers 2-3mm.
Chlorite 5-15%
Magnetic -

Tag K

Whitney
20 May 76

Sample 360 — Bulk
Location 11.5E/15N

Dark greenish gray - greenish black

Medium grained 1-2mm schistose

Some talc zones 90%+ talc intermittant up to 10cm wide possibly 1.5m long.

Magnesite 35-40%
Talc 45-50% matrix & stringers & veins.
Magnetite 3-5% magnetic
Dol. as stringers 3mm wide 5-10cm long
chlorite - 5-10%

7jgK

Whitney
20 May 76

Sample 361 — Bulk
Location 11.5E/14.5N

Dark greenish gray - greenish black
Talc - greenish gray
Medium - 2-3mm Coarse grained > 5mm
Schistose
Where schistosity is greatest & veinlets most commone dolomite & talc & chlorite content increases. Esp. fractures.

Magnesite 30-35%
Talc 45-50% matrix & veinlets
Magnetite - 3-5% magnetic
Dol. stringers
Chlorite - 10-15% ±

7jgK

Whitney
20 May 76

Sample 362 — Bulk
Location 11E / 13.5 N

Medium bluish gray · dark greenish gray · greenish black
Talc greenish gray

Medium grained 2-3 mm schistose
Talc increases in schistose zones

Magnesite 35-40%
Talc - 45-50%
Dol. 3-5% - as stringers
Magnetite 3-5% magnetic
Chlorite 5-10%

Fig K

Whitney
20 May 76

Sample 363 — Bulk
Location 10.5E / 13.5N

Greenish gray - Medium bluish gray.

Medium grained 1-2 mm · schistose
Distinct magnetite XTALS 1mm
High talc content

Magnesite 25-30%
Talc 60% ±
Dol. ± - not common
Magnetite 5-7% Magnetic
Chlorite 5% ±

Fig K

Whitney
20 May 76

Sample 366 Bulk
Location 10E/14.5N

Dark greenish gray - greenish black

Fine grained < 1mm - Medium grained 2-3mm
Schistose
Dol. & talc in shears & as stringers

Magnetite 30-35%
Talc 35-40% as matrix & stringers
Magnetite 3-5% < 1mm magnetic
Dol. & 5% as stringers
Chlorite 10-15% ±

7jnK

Whitney
20 May 76

Sample 367 Bulk
Location 7.5E/14N

Medium Bluish gray - greenish gray - dark greenish gray

Medium grained 1-3mm
Mildly schistose

Magnetite 25-30%
Talc to 60% matrix & stringers
Specular hematite - 5-7% not magnetic
Chlorite ± 5%
Dol. ± some stringers

7jgK

No. Whitney
Date 20 May 76

Sample 364 Bulk
Location 10E/13.5N

Medium bluish gray - dark greenish gray.

Medium grained 2-3mm schistose
Talc - dol. stringers 3-5 mm wide
Some magnesite F.G. < 1mm

Magnesite 30-35% -
Talc 40-45% - matrix & as stringers
Dol. 15-20% mostly as stringers & in shears
Magnetite .3-5% magnetic 1mm +
Chlorite 10% +

7jgK

Whitney
20 May 76

Sample 365 Bulk
Location 10E/14N

Medium bluish gray - dark greenish gray

Coarse grained - 3-5 mm
Moderately schistose

Magnesite 40-45%
Talc 50-55% matrix & stringers
Dol ± few stringers
Magnetite .3-5% magnetic 1mm +
Chlorite < 10%

7jgK

Whitney
20 May 76

Sample 368 — Bulk
Location 8E/15N

Greenish Gray - Medium bluish gray

Coarse grained
Schistose

Magnesite 25-30% +
Talc 60% + matrix veinlets
Specular hematite < 3-5% not magnetic
Chlorite ± 3-5%
Dol. ± 1-5% mostly as stringers

Pure talc vein 5-7 cm wide
Well developed euhedral hornblende
XTALS < 5%
Talc 95% +

7jgk

Whitney
20 May 76

Sample 369 — Bulk
Location 8.5E/15.5N

Light bluish gray to greenish gray to medium bluish gray

F.G. to M.G. < 1mm to 2-3mm
F.G. mostly talc
M.G. Magnesite increases to 20-25%
Schistose M.G. Chlorite increases.

Magnesite 20-25%
Talc 60-80% matrix & massive
Specular Hematite < 3-5%
Dol.-Cal. 10-15% + as stringers & XTALS
Chlorite 5-7%

7jgk

APPENDIX D

Diamond Drill Logs

Oro Mines - B-5 through B-9

Whitney
25 May 76

Sample .370 Bulk
Location 7E/13.5N

Medium Bluish gray - dark greenish gray

M.G 3mm - C.G. 5mm+ weakly foliated
Some quartz veins - 3-5cm

Magnetite 30%+
Talc 50%± matrix & veining
Specular Hematite - 5-7% Not magnetic
Carb - Dol. veins - 5%+
Qtz. ± veins
Chlorite - 5%+

7ajgk

Whitney
~~Whitney~~ 25 May 76

Sample - 371 Bulk
Location 6.5E/13.5N

Medium bluish gray - dark greenish gray.

M.G. 2-3mm weakly foliated

Some quartz & calcite veins - 5-7cm

Magnetite 25-30%
Talc 40-50%
Specular hematite 7-10%±
Qtz - ± veins
Carb. ± 5-10% veins
Chlorite ± 5-7%

7ajgk

Whitney
20 May 76

Sample 372 — Bulk
Location 3E/14N

Light bluish gray - Medium bluish gray to Greenish gray
Medium grained 2-3 mm schistose

Magnetite 30-35%
Talc 60% + matrix
Magnesite 1-3% Magnetic
Chlorite ± < 5%
Dolomite ±

7 jgk

Whitney
20 May 76

Sample 373 — Bulk
Location 3.5E/15N

Light bluish gray - Medium bluish gray
Dark greenish gray — Inc. Chl.

Medium grained 2-3 mm - Coarse grained 5-7 mm
schistose

Magnetite 20-30%
Talc 50-60% as matrix
Magnesite 3-5% Magnetic
Chlorite 5-15%
Dol. ±

7 jgk

KENNETH H. DARKE CONSULTANTS LIMITED

P.O. BOX 983
TIMMINS, ONTARIO

TELEPHONE (705) 264-1910
RESIDENCE 264-7403

MEMO TO: Oro Mines Limited

DATE: March 25, 1971: ..."Modified" April 4th/ 71 **

SUBJECT: WHITNEY TOWNSHIP, ONTARIO PROPERTY:
Samples of Magnesite-bearing Zones from DDHs Nos. B-5, 6, 7, 8 & 9 sent for assay to Technical Service Laboratories.

Samples: 9816 - 9851 inclusive (36)
Type: Split Diamond Drill Core
Dates Taken: Mar. 22nd & 23rd/71; by K.H. Darke, L. Paju
Sent To: T.S.L.; Toronto, Ont. via O.N.R. Express (C.O.D.); Mar. 25th/71
Assayed For: (1) MgO, CaO, CO_2 (all samples);
(2) 46-Metal Spectrographic (9821, 26, 31, 36, 42 & 48).

TABLE 1. - Determination of Magnesite Content; Assayed for MgO, CaO & CO_2.

DDH#:	SAMPLE No.:	CORE INTERVAL:	LENGTH:	GEOLOGY:
B-5 ...	9816	222 - 232	10.0	Chlorite-Carbonate SCHIST (222-269 ft.)
	9817	250 - 260	10.0	" " "
	9818	270 - 280	10.0	MAGNESITE ($MgCO_3$) (269-423 ft.) **
	9819	310 - 320	10.0	"
	9820	350 - 360	10.0	"
	9821	390 - 400	10.0	"
	9822	430 - 440	10.0	Chlorite-Carbonate SCHIST (423-443 ft.) **
B-6 ...	9823	20 - 30	10.0	Chl.-Carbonate SCHIST (6.0-30 ft.)
	9824	60 - 70	10.0	MAGNESITE (31-216 ft.)
	9825	100 - 110	10.0	"
	9826	140 - 150	10.0	"
	9827	180 - 190	10.0	"
	9828	205 - 215	10.0	"
	9829	235 - 245	10.0	Chl.-Carbonate SCHIST (216-275 ft.)
	9830	265 - 275	10.0	" " "
	9831	285 - 295	10.0	MAGNESITE (275-317 ft.)
	9832	305 - 315	10.0	"
B-7 ...				

... continued on Page 2.

TABLE 1. ... continued (Samples Assayed for MgO, CaO & CO_2)

DDH#:	SAMPLE NO.:	CORE INTERVAL:	LENGTH:	GEOLOGY:
B-7 ...	9833	20 - 30	10.0	MAGNESITE (10 - 104 ft.)
	9834	40 - 50	10.0	"
	9835	60 - 70	10.0	"
	9836	80 - 90	10.0	"
	9837	104 - 113	9.0	Chlorite-Carbonate SCHIST (104 - 113 ft.)
B-8 ...	9838	145 - 155	10.0	Chl.-Carbonate SCHIST (133 - 168 ft.)
	9839	155 - 165	10.0	" " "
	9840	170 - 180	10.0	MAGNESITE (168 - 294 ft.)**
	9841	200 - 210	10.0	"
	9842	230 - 240	10.0	"
	9843	260 - 270	10.0	"
	9844	280 - 290	10.0	"
B-9 ...	9845	148 - 158	10.0	Chl.-Carbonate SCHIST (148 - 175 ft.)
	9846	165 - 175	10.0	" " "
	9847	175 - 185	10.0	MAGNESITE (175 - 259 ft.)
	9848	205 - 215	10.0	"
	9849	225 - 235	10.0	"
	9850	245 - 255	10.0	"
	9851	260 - 265	5.0	Chl.-Carbonate SCHIST (259 - 265 ft.)

TABLE 2. - Determination of Possible "Detrimental" Trace Elements in Magnesite-Bearing Zones; 46-Metal Spectrographic Analysis.

DDH#:	SAMPLE NO.:	CORE INTERVAL:	LENGTH:	GEOLOGY:
B-5	9821	390 - 400	10.0	MAGNESITE (269 - 423 ft.)**
B-6	9826	140 - 150	10.0	" (31 - 216 ft.)
	9831	285 - 295	10.0	" (275 - 317 ft.)
B-7	9836	80 - 90	10.0	" (10 - 104 ft.)
B-8	9842	230 - 240	10.0	" (168 - 294 ft.)**
B-9	9848	205 - 215	10.0	" (175 - 259 ft.)

* * * * * * * * * * * * * * * *

KENNETH H. DARKE CONSULTANTS LIMITED

K.H. Darke

K.H. Darke, P.Eng.
Consulting Geological Engineer

c.c.:- Mr. R.E. Allerston

Loc. ..... Dip collar : ..... Bearing col r : ..... Length: 674 ft.
..... : ..... : ..... Collar el. : .....
..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: K.H. Darke

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	428				METAVOLCANIC (DACITE ?): Chlorite-Carbonate-Quartz
					alteration; generally massive rock with only rudimentary
		469	41	100	schistosity.
		469	.....		- conformable contact; abundant Chlorite; @ 63° to c
	469				Talc-Chlorite-Carbonate SCHIST: numerous strgs.
					Calcite; few Pyrite cubes; minor disseminated Magnetite;
		481	12	100	471 ft.: Schistosity @ 69° to core axis.
		481	.....		- gradual change to more massive, talcy rock type.
	481				Talc-Carbonate-Chlorite SCHIST (Steatite): mottled
					grey colour; numerous contorted Carbonate stringers;
		559	78	100	minor disseminated Magnetite.
	559	561	2	100	.... - Contact zone; Schistosity @ 58° to core axis.
		561	.....		- Conformable contact, chloritic, @ 49° to c.a.
	561				Chlorite SCHIST:
		566	5	100	565 ft.: Schistosity @ 37° to core axis.
	566				Chlorite SCHIST with some Cherty BRECCIATED FeFm
					bands; numerous Carbonate alteration zones; local
		576	10	100	concentrations Pyrite.
	576				Cherty FeFm-Siliceous TUFF; BRECCIA in part:
					abundant Carbonate; some Chlorite; local concentrations
		602	26	100	Py, Po - total sulphide content less than 5%.
	602				METAVOLCANIC (DACITE ?): Quartz-Chlorite alteration;
					generally massive, with rudimentary schistosity only;
					few thin strgs. Pyrite parallel to schistosity.
					602-630 ft.: few strgs. Py // to sch.
					647 ft.: Sch. @ 56° to core axis.
		674	72	100	673 ft.: " @ 56° " " "
		E N D	O F	H O L E	

REGISTERED PROFESSIONAL ENGINEER K. H. DARKE PROVINCE OF ONTARIO

KENNETH H. DARKE CONSULTANT LIMITED K.H. Darke

Loc. ..... Dip collar : ..... Bearing collar : ..... Length: 674 ft.
.... : .... : ..... Collar el. : .....
.... : .... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: K.H. Darke

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	123				Graphitic TUFF: dense, black; concentrations Po,Py;
					few sections of Brecciated FeFm.
E.M. Conductor					124 ft.: Sch. & Po bands @ 62° to c.a.; somewhat contorted.
					124-126 ft.: 95% Po; tuffaceous matrix.
		136	13	100	126-136 ft.: 20% Po, minor Py
	136				Intercalated Graphitic TUFF & Cherty BRECCIATED FeFm:
					local concentrations Po,Py; sulphides & schistosity
					contorted in part.
					139 ft.: Cherty banding @ 65° to core axis.
					147 ft.: Brecciated fragments @ 50° to c.a.
		158	22	100	153 ft.: Pyrrhotite stringers @ 38° to c.a.
					136-158 ft.: 20% Po, minor Py.
	158				Quartz-Carbonate-Chlorite SCHIST (Tuff, Agglomerate):
					greyish-green colour; few zones of Cherty Brecciated FeFm;
					very minor amounts Pyrite.
		194	36	100	172 ft.: Schistosity @ 74° to core axis.
					189 ft.: well developed Schistosity @ 64° to c.a.
	194				Chlorite-Quartz SCHIST (Sediment ?): some Quartzitic
					sections, in a chloritic matrix, show typical Ptygmatic
					folding patterns.
					199 ft.: Schistosity @ 64° to core axis.
					222 ft.: Sch. & Qtz. fragments @ 65° to c.a.
					260 ft.: Sch. & Quartzitic banding @ 65° to c.a.
					276 ft.: " " " @ 64° " "
					286 ft.: " " " @ 60° " "
					325 ft.: " " " @ 60° " "
					357 ft.: - zones of Carbonate (lt. Brownish-yellow) alteration commence.
		396	202	100	382 ft.: Schistosity @ 60° to core axis.
	396		.....		- contact conformable.
	396				Quartz-Chlorite SCHIST (Tuff): few bands of greenish-
					blue, micaceous mineral (Fuchsite); few strgs. Pyrite
					parallel to schistosity; few fragmental horizons in
					chloritic matrix.
		407	11	100	397 ft.: Schistosity & banding @ 74° to core axis.
					402 ft.: banding @ 65° to c.a.
	407				Cherty FeFm-Siliceous TUFF: brecciated in part;
					with strgs. & few local concentrations Po,Py; zones of
					Carbonate & Chlorite alteration parallel to fracturing.
		428	21	100	416 ft.: Chl. alt. @ 59° to c.a.

RO MINES LIMITED

WHITNEY TWP., ONT.

Claim Group "B" (Alleraton Option)

D. D. HOLE No. B-1

Loc. Mining Claim P.94857 Dip collar : 50° Bearing collar : N 73 W Length: 674 ft.

310 ft. South, 175 ft. East ..... : .... : ..... Collar el. : .....

of Post No.4, P.94857 593' : 54° ..... : ..... Bottom el. : .....

Drilled by: Bradley Core size: AX Begun: April 4th/70 Ended: Apr.16/70 Logged by: K.H.Darke, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	17	17	0	Overburden
	17				Chlorite SCHIST: some contorted Carbonate stringers.
		25	8	95	23 ft.: chloritic schistosity @ 46° to core axis; contorted & irregular in part.
	25				Graphitic TUFF: abundant Graphite in places; matrix
*heavy Graphite sections should be E.M. Conductor.					varies from black to greyish-black colouration; stringers
					of Pyrite parallel to schistosity - total sulphide content
					less than 5%;
		45	20	100	34 ft.: schistosity contorted; avg. @ 54° to core axis. 38 ft.: 3" sample (N.I.) sent for spectro. analysis.
	45				TUFF - AGGLOMERATE: more coarse-grained; few Graph-
					itic partings; highly sheared, schistosity contorted in
					part; few blebs Pyrite.
		76	31	100	55 ft.: Schistosity @ 49° to core axis. 73 ft.: Pyrite content increases
	76				Graphitic TUFF; as before.
E.M. Conductor					77 ft.: Graphitic Sch. @ 52° to c.a.; few Py stringers. 81-91 ft.: abundant Graphite, 5% Py; contorted Sch.;
		88	12	100	numerous irregular Calcite stringers. 82 ft.: 3" Quartz stringer.
	88				**Cherty "IRON FORMATION"(FeFm)-Siliceous TUFF:
					(*typical sugary-weathering banded rock type that changes along
E.M. Conductor					strike from alternating layers of Chert-Sulphide-(Py, Po) to Chert-Magnetite; locally classified as FeFm even if no Magnetite present in 'local' specimen examined; there is only Py,Po in the so-called FeFm in this drill hole.)
					- breccia in part; massive Pyrite sections, filling
					fractures & surrounding cherty fragments.
					91-97.6 ft.: massive nodular Py; 10% Graphitic matrix. 94 ft.: Graphitic matrix; Sch. @ 33° to core axis.
		101	13	100	97.6-101 ft.: 5% Pyrite surrounding fragments.
	101				Graphitic TUFF: bands of Pyrrhotite, Pyrite parallel
E.M. Conductor					to schistosity.
		104	3	100	101-104 ft.: 20% Pyrrhotite, minor Pyrite. 103 ft.: ½" strgs. Po // to Sch. @ 49° to core axis.
	104				Cherty BRECCIATED FeFm-Siliceous TUFF: local con-
					centrations Pyrrhotite, Pyrite.
Probable E.M. Conductor					108 ft.: cherty fragments oriented @ 67° & 89° to c.a.; generally irregular & contorted.
		123	19	100	104-123: 15% Po, Py

KENNETH H. DARKE CONSULTANT LIMITED

THE MINING ACT – DEPARTMENT OF MINES
ONTARIO

DIAMOND DRILLING LOG

Start a new page for every new hole, but fill in top portion of form only on first page for each hole.

FILL IN ON EVERY PAGE

HOLE NO.	PAGE NO.
2	1

DRILLING COMPANY	COLLAR ELEVATION	BEARING OF HOLE FROM TRUE NORTH	TOTAL FOOTAGE	DIP OF HOLE AT	LOCATION OF HOLE IN RELATION TO A FIXED POINT ON THE CLAIM	MAP REFERENCE NO.	CLAIM NO.
Bradley Brothers Limited		N-73° West	825 Feet	55° collar 55	See Sketch	Plan M-319	P-94857

DATE HOLE STARTED	DATE COMPLETED	DATE LOGGED	LOGGED BY		LOCATION (Tp., Lot, Con. OR Lot. and Long.)
April 21st 1970	April 29th 1970	May 22 1970	R.E. Allerston	ft	Whitney Twp., NW¼, W½, Lot 8, Con. #1

EXPLORATION CO., OWNER OR OPTIONEE	DATE SUBMITTED	SUBMITTED BY (Signature)		PROPERTY NAME
Oro Mines Limited (allerston Option)	June 5th 70	R.E. Allerston R.E.A.	52°(700') 52 ft	

DEPARTMENT OF MINES
JUL 23 1970

FOOTAGE FROM	FOOTAGE TO	ROCK TYPE	DESCRIPTION Colour, grain size, texture, minerals, alteration, etc.	PLANAR FEATURE ANGLE –	CORE SPECIMEN FOOTAGE +	YOUR SAMPLE NUMBER	SAMPLE FOOTAGE FROM	SAMPLE FOOTAGE TO	SAMPLE LENGTH
0	4'	Casing (overburden)							
4	32'	Tuff	Silicified, brecciation (22-28'), graphitic (30-32') scatterd pyt., Pyrrhotite			D/Reaction minor			
32	99'	Tuff	Graphitic schist (some ground in coring)	60°	to core axis				
99	175'	Tuff and	Graphitic schist, minor pyt., schistosity-cleavage varies slightly						
175	200'	"	less graphitic, schistose in places						
200	252'	"	Grey schist, carbonate ($MgCo_3$) occasional stringers, tending to serp. & Chlorite @ 250',						
252	277'	"	" Carbonate stringers, chloritic in places, grading from Lt. to Dk., gray			D/Reaction 254'			
277	410'	"	grading from Dk. Gray to Light Schist, sericitic appearance, carbonate in places, 45-55° variation						
410	438'		Sericite Schist, Lt. & Dk., minor sulphide mineralization (pyT)			D/Reaction 431' (slight)			
438	491'	"	" Minor Sulphide to 448', quartz carbonate section 15' starting at 463'			D/ tested nil			
491	515'	"	" Magnesium Carbonate with talc commencing at 512', serpentinized in parts			D/ Reaction (slight)			
515	544'	Serp. -Magnesium (Magnesite) schisted in places							
544	569'	"	" "						
569	595'	"	Magnesite, some brown crystals, occasional greaen, chrome association,						
595	622'	Magnesite -Serp. throughout							
622	647'	"	abundant $MgCo_3$						

PORCUPINE MINING DIVISION
RECEIVED
JUN 9 1970
AM 6 7 8 9 10 11 12 1 2 3 4 5 6 PM

ASSESSMENT WORK
T-1152

THE MINING ACT – DEPARTMENT OF MINES
ONTARIO

DIAMOND DRILLING LOG

Start a new page for every new hole, but fill in top portion of form only on first page for each hole.

FILL IN ON EVERY PAGE — HOLE NO. 2 — PAGE NO. 2

DRILLING COMPANY: Bradley Bros. Limited	COLLAR ELEVATION:	BEARING OF HOLE FROM TRUE NORTH: N-73° West	TOTAL FOOTAGE: 825 ft	DIP OF HOLE AT: 55 collar / 55 ft / ft / ft / ft	LOCATION OF HOLE IN RELATION TO A FIXED POINT ON THE CLAIM:
DATE HOLE STARTED: April 21st 1970	DATE COMPLETED: April 29th 1970	DATE LOGGED: May 22 1970	LOGGED BY: R.E. Ullerston		MAP REFERENCE NO.: M-319
EXPLORATION CO., OWNER OR OPTIONEE: Oro Mines Limited		DATE SUBMITTED: June 5th 1970	SUBMITTED BY (Signature): R.E.A.		CLAIM NO.: P-94857
					LOCATION (Tp., Lot, Con. OR Lat. and Long.): Whitney Twp., NWt, W½, Lot 8 Conc. #1
					PROPERTY NAME: Oro "B", Group

FOOTAGE FROM	FOOTAGE TO	ROCK TYPE	DESCRIPTION Colour, grain size, texture, minerals, alteration, etc.	PLANAR FEATURE ANGLE °	CORE SPECIMEN FOOTAGE +	YOUR SAMPLE NUMBER	SAMPLE FOOTAGE FROM	SAMPLE FOOTAGE TO	SAMPLE LENGTH	ASSAYS +
647	672'	Magnesium Carb.	Serp.-talc to 656', silicified carbonate zone 656-672'							
672	700'	"	Silicified zone 676-679', scattered sulphides, grading into banded I.F.							
700	762'	Iron formation	- interbedded silica (chert) and Magnetite Iron abundant							
762	786'	"	" " Magnetite Iron							
786	810'	Dolomite	and carbonate,							
810	825'	Felsite	fine grained.							
		DDH-ended at 825'								

DEPARTMENT OF MINES — JUN 13 1970

ASSESSMENT WORK

T-1152

R.E. ALLERSTON PROPERTY
WHIT[illegible] TWP., ONT.
Claim Group "B":

ORO MINES LIMITED

D. D. HOLE No. B-3 (Partial Log; June 21/71)*

Loc. Claim P.94432 ..... Dip collar : 45° Bearing collar : S. 52° E. Length: 553 ft.
Picket Line 16+00 W ; ..... : ..... : (Grid South) Collar el. : .....
Station 10+04 N . ..... : ..... : ..... Bottom el. : .....

Drilled by: Bradley B. Core size: AX Begun: May 7 / 70 Ended: May 13 / 70 Logged by: *K.H.Darke

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	8.0	8.0	0	Overburden
	8.0	29.0	21.0	.....	..... Serpentine; Carbonated (per R.E.Allerston)
	29.0	.....	.....	.....	..* Relogged from 29 - 99 ft. by KHD; June 21st/71
**9444 to 9453					STEATITE (Talc-Chlorite-Carbonate SCHIST):
					fine-grained to aphanitic, soft, bluish-grey matrix consisting primarily of Talc & Chlorite; with euhedral
					crystals of white Carbonate (buff-coloured upon weathering); minor Pyrite; core non-magnetic; "positive"
		51.0	22.0	90	Dimethylglyoxime "nickel-tests" throughout core interval.
	51.0				GRAPHITIC TUFF; minor Chloritic SCHIST zones:
					generally dense, black, aphanitic matrix with pronounced Graphite along a few shear planes; Schistosity (bedding?)
					generally poorly developed & contorted in part; a few local sections contain small, white pods of Carbonate;
					a few Quartz-Carbonate stringers; scattered pods & cubes of Pyrite.
		60.0	9.0	95	54 ft.:- sch. @ 79° to core axis.
	60.0				Quartz-Chlorite-Carbonate SCHIST & minor
					intercalated Graphitic Tuff; a few thin Quartz stringer
		91.0	31.0	95	veins; minor Pyrite.
	91.0				GRAPHITIC TUFF & minor intercalated Qtz-Chl-
**9434 to 9437					Carbonate SCHIST: local concentrations of Pyrrhotite,
					Pyrite as blebs & thin stringers parallel to schistosity; strong, pink ("positive") Dimethyl reaction in local
		99.0	8.0	95	Carbonate Schist horizons @ 90 ft. & 95-97 ft.;
					... drill core was previously split from approx. 78.4 - 99 ft.
					END OF LOGGING BY K.H. Darke, P.Eng.

**NOTE:- Samples previously taken by R.E. Allerston & assayed per attached Reports.

THE MINING ACT – DEPARTMENT OF MINES
ONTARIO

DIAMOND DRILLING LOG

Start a new page for every new hole, but fill in top portion of form only on first page for each hole.

FILL IN ON EVERY PAGE → HOLE NO. 3 | PAGE NO. 1

DRILLING COMPANY	COLLAR ELEVATION	BEARING OF HOLE FROM TRUE NORTH	TOTAL FOOTAGE	DIP OF HOLE AT
Bradley Bros. Limited		128° Azim.	553 Ft.	0 collar | 45

DATE HOLE STARTED	DATE COMPLETED	DATE LOGGED	LOGGED BY
May 7th 1970	May 13th 1970	June 5th 1970	R.E. Allerston

EXPLORATION CO., OWNER OR OPTIONEE	DATE SUBMITTED	SUBMITTED BY (Signature)
Oro Mines Limited, Vancouver B.C. (Allerston Option) Group "B"	June 7th	R.E. Allerston R.E.A.

LOCATION OF HOLE IN RELATION TO A FIXED POINT ON THE CLAIM: See sketch

MAP REFERENCE NO.: M-329 | CLAIM NO.: P-94432

LOCATION (Twp., Lot, Con. OR Locality): Whitney Twp., N½ N½, Lot 9, Concession #1.

PROPERTY NAME: Oro Group "B"

ASSESSMENT RECEIVED JUL 13 1970

FOOTAGE FROM	FOOTAGE TO	ROCK TYPE	DESCRIPTION Colour, grain size, texture, minerals, alteration, etc.	PLANAR FEATURE ANGLE °	CORE SPECIMEN FOOTAGE ±	YOUR SAMPLE NUMBER	SAMPLE FOOTAGE FROM	SAMPLE FOOTAGE TO	SAMPLE LENGTH	ASSAYS ± To
0	8'	Overburden -Casing								
8	103'	Serpentine	Carbonated (Mg, Co), some scattered sulph. 54-79', chloritic Alt. not apparent bedding to axis in places, graphitic section 101-103'.							Dimethyl Reactions Pos. N.
103	128'	Tuff Fragmental,	Graphitic, brecciated, sulphides, pyt. & pyrrhotite, heavier graphite 102-107'							N.
128	201'	"	Silicified and carbonatized, grading to sericitic schist at 200'							
201	325'	"	Sericite-Chlorite type, carbonate in places	40° to axis						
375	447'	Sericitic	" changing to darker gray schistose, occasional sulphide mineralization, scattered.							
447	521'	"	Light to medium gray.							D/Reaction slight, on piece selected.
521'	553'	"	grading to darker schist, minor pyt, blebs and stringers of carbonate, foliations less apparent in core toward end of DDH.	44°						
		DDH -ended 553'								

ASSESSMENT WORK
T-11

Whitney Township, Ont.
Claim Group "B".

ORO MINES LIMITED
D. D. HOLE No. B-4

Loc. Mi[redacted]laim P.94432 | Dip collar : 60° | Bearing collar : Grid South | Length: 421 ft.
Picket Line 26+00 W | 400' : 61° | (S 45° E) | Collar el. :
Station 10+16 N | : | : | Bottom el. :

Drilled by: Bradley Core size: AX Begun: Nov. 26th/70 Ended: Nov. 30th/70 Logged by K. Darke, P. Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	10	10	0	Overburden.
	10				METAVOLCANIC FLOW (Quartz-Chlorite SCHIST):
					dull, olive to greyish-green colour; appears to be of
					intermediate composition (Dacite-Trachyte); numerous
		18	8	100	Calcite stringers; few blebs Pyrite.
	18				GRAPHITIC SCHIST (TUFF) & intercalated CHERTY
9525-31 inclusive					FRAGMENTAL (highly brecciated; Siliceous Tuff):
(Assay Cert. # 41919)					local concentrations of Sulphides (Pyrrhotite, Pyrite)
					& Graphite.
					18-25':- 5% Py,Po
E.M. Conductor ...				....	25-29':- 40% Po, Py
					29-37':- 10% Py, Po in Cherty Fragmental
E.M. Conductor ...				....	37-42':- 30% Po, Py
					42':- Graphitic Tuff; schistosity @ 51° to core axis.
					50':- " " & Sulphides @ 64° to c.a.
E.M. Conductor ...				....	42-50':- " " & " (80% Py, Po).
					50-62':- Cherty Fragmental; few Graphitic sections;
					5-10% Py, Po.
					62-79':- ... as above; 20% Po, Py.
					79-94':- Graphitic Tuff; Sch. & Sulphides @ // to c.a.
E.M. Conductor ...				....	86-96':- " " ; 80% Py.
					103':- Graphite & Po layers @ 48° to c.a.
					107':- Cherty Fragmental with distinct Chloritic
		113	95	100	partings (schistosity & fracturing ?) @ 69° to c.a.
					96-113':- a few local concentrations of massive Po,Py.
	113	.....	.....	.....	..... contact ground.
	113				METAVOLCANIC FLOWS (Quartz-Chlorite SCHISTS):
					dull, greyish-green to black; appear to be of intermed-
					iate composition (Dacite-Trachyte); amygdaloidal &
					granular texture in part although generally massive
					with extensive zones of Chloritic alteration; Schistosity
					generally indistinct but prevalent throughout --- the
					rock is very fissile & easily broken along Chloritic
					partings; a few Quartz-Carbonate stringers; minor Pyrite.
					151':- foliation (Chloritic partings) @ 53° to c.a.
					140-170':- numerous elongated pods & fragments of Quartz.
					180':- Chloritic partings @ 53° to c.a.
					215':- Calcite strg. & Sch. @ 67° to core axis.
					217':- Chl. partings & rough 'flow banding' @ 66° to c.a.
					237':- " " (somewhat irregular) @ 57° to c.a.
					243':- " " @ 50° to core axis.

... continued on Page 2. ...

K. DARKE CONSULTANTS LTD.

Loc. M.C. Claim P.94432 Dip collar : ..... Bearing collar : ..... Length: 421 ft.

..... : ..... : ..... Collar el. : .....

..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: K.H.D., P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 1.					
...	(113)	.....	.....	.....	... ((METAVOLCANIC FLOWS (Quartz-Chlorite SCHISTS):
					intermediate composition (Dacite-Trachyte).))
					272-82':- abundant amygdules.
					291':- Chloritic partings @ 73° to core axis; & to a lesser degree @ 69° to c.a.
				(0)..	298':- ground one foot core; Chloritic Fractures; Fault Zone (?).
					320':- foliation (Sch.) @ 47° to core axis.
					333-35':- Diorite Dike; contacts @ 75° to c.a.
					335-36':- few blebs & stringers of Pyrite.
					353':- Chl. partings @ 55° to core axis, and to a lesser extent @ 70° to c.a.
					362':- "rough" Schistosity & Chl. alteration @ 57° to c.
					377':- Chl. partings @ 59° to c.a.
					397':- " " @ 46° " "
		421	308	99%	420':- " " @ 56° " "
		E N D	O F	H O L E	

KENNETH E. DARKE CONSULTANTS LIMITED

REGISTERED PROFESSIONAL ENGINEER
K.H. DARKE
PROVINCE OF ONTARIO

Whitney Township, Ont.,
Claim Group "B";

ORO MINES LIMITED

D. D. HOLE No. 8-5

B-5

Loc. Min. Claim P.94860 Dip collar : 60° Bearing collar : Grid South Length: 528 ft.
Pick Line 16+00 W : (S 45° E) Collar el. :
Station 5+00 S : Bottom el. :

Drilled by: Bradley Core size: AX Begun: Dec. 2 /70 Ended: Dec. 7 / 70 Logged by: K.Darke, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	9.0	9.0	0	Overburden
	9.0				MAGNESITE: generally massive Carbonate, crystalline rock; dk.greenish-black, euhedral crystals in a bluish-grey to green matrix; a few Talc (white to light green, translucent in part) & Carbonate (white) stringers or layers parallel to fracturing; a few scattered Pyrite cubes.
					9-34':- fractured; friable; rusty weathering in part.
					18':- partings (sch.?) & Talc strgs. @ 34° to core axis.
					27':- few partings (fractures) @ 37° to c.a.
		48	39	95	33-47':- fine-grained; massive.
					47-48':- coarsely crystalline.
	48	49	1.0	.....	... contact ground; chips of CHERTY FRAGMENTAL
	49				CHERTY FRAGMENTAL (highly brecciated; fragments surrounded by aphanitic groundmass) & intercalated GRAPHITIC SCHIST (TUFF): local concentrations of Graphite & Sulphides (Pyrite, Pyrrhotite).
E.M. Conductor					49-56':- Cherty Fragmental with Graphitic matrix.
					56-60':- heavy concentrations of Graphite with local stringers & blebs of Pyrite, Pyrrhotite.
					56':- Pyrite & Graphitic layers @ 65° to c.a.
					58':- Graphitic layers @ 22° to c.a.(foliation).
					59':- " " @ 29° " " (Sch.;bedding ?).
					60':- Pyrite (3") & Graphite @ 40° to core axis, followed by a 2" Quartz strg. with contacts conformable to Schistosity (40° to c.a.).
				(0)	62':- Graphitic shears (Schistosity) @ 35° to c.a.
					63-64':- core ground; Fault Zone (?) followed by 6" of Chert Fragmental.
		64.5	15.5	96	
	64.5	.....	.....	.....	... contact ground; appears to be nonconformable.
	64.5				METAVOLCANIC FLOW (Quartz-Chlorite SCHIST): siliceous flow of intermediate composition (Dacite); Chloritic alteration; generally massive texture with only rudimentary foliation (Schistosity); bluish-grey coloured matrix in non-sheared portions; few blebs & stringers of Pyrite, Pyrrhotite.
					98':- Schistosity & Flow Banding @ 45° to core axis.
					105':- " " " @ 43° " " "

... continued on Page 2. ...

Loc. Min. Claim P.94860 Dip collar : ..... Bearing collar : ..... Length: 528 ft.
.... : .... : ..... Collar el. : .....
.... : .... : ..... Bottom el. : .....
Drilled by: Core size: Begun: Ended: Logged by: K.H.D., P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 1.					
...	(64.5)	.....	.....	.....	((METAVOLCANIC FLOW (DACITE): Chloritic alteration & schistose in part (Qtz-Chl. Schist))
					114':- Schistosity & flow banding @ 45° to core axis.
					131':- " & " " @ 40° " " " ... gradual change to a more massive, siliceous rock with less chloritic alteration & less shearing.
					132':- Breccia; small fragments in an aphanitic matrix.
					137-42':- small blebs Py, Po, // to foliation.
					142-44':- 2-5% Sulphides (Po, Py, tr. Chalcopyrite) as thin fracture-fillings parallel to foliation @ 52-55° to c.a.
					150':- ..... gradual change to a less-fractured, amygdaloidal Flow; minor Po, Py along fractures.
					95': sand seam along thin fracture (1").
		165	100.5	100	155-65':- bleached in part; no sulphides.
	165				CHLORITE SCHIST: highly altered, chloritic, schistose rock type; minor Sulphides (Pyrite, Pyrrhotite, trace Chalcopyrite); a few Quartz stringers.
		169	4	"	166':- Schistosity & sulphides @ 46° to c.a. 167-69':- Qtz. strgs.; Chl. along brecciated zones.
	169				GRAPHITIC SCHIST (TUFF) & CHERTY FRAGMENTAL (Brecciated): local concentrations of Graphite & Sulphides (Pyrite, Pyrrhotite, trace Chalcopyrite).
					169':- Graphitic layers @ 65° to core axis; & Chloritic fractures @ 55° to c.a.
E.M. Conductor	...			.....	172-74':- concentrations of Graphite & Pyrite.
		174	5	100	174':- Graphitic shears (foliation) & layers (somewhat contorted) @ 51° to c.a.
	174				CHERTY FRAGMENTAL: brecciated; banded; chert fragments & bands have interstitial matrix of granular, schistose, Argillaceous material; a few lt. buff-weathering Carbonate Zones; few blebs Pyrite.
		189	15	"	176':- banding & Chloritic fractures @ 51° to c.a.
	189				CHLORITE-CARBONATE SCHIST: finely foliated; mottled texture --- dk. green, schistose, Chloritic matrix with small pods of grey Carbonate (some are lt. buff-coloured where weathered) elongated & oriented parallel to schistosity.

... continued on Page 3. ...

Loc. M[redacted] Claim P.94860 Dip collar : ..... Bearing collar : ..... Length: 528 ft.

[redacted] ..... : ..... : ..... Collar el. : .....

..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 2.					
...	(189)	.....	.....	.....	... ((CHLORITE-CARBONATE SCHIST))
					189':- Schistosity @ 63° to core axis.
		206	17	100	195':- " @ 57° " " "
					200-204':- bleached (silicified), transition zone.
	206				CHERTY FRAGMENTAL: brecciated, Siliceous Tuff;
					roughly banded, with alternating layers of Chert (white)
					& Chlorite; Quartz stringers & numerous buff-weathering
					Carbonate stringers & fracture fillings; minor Pyrite.
					214':- Chl. fractures & banding @ 54° to c.a.
					221':- " " & " @ 70° & 73° to c.a.
		222	16	"	214-22':- numerous Chloritic & Sericitic zones.
	222				CHLORITE-CARBONATE SCHIST: (as before); dk.
					green Chloritic matrix with coarse but well-defined
9816					lineation exhibited by abundant small, thin & elong-
& 9817					ated (1/16" - 1/2") pods of greyish Carbonate (giving
					a mottled & granular texture) oriented parallel to
					the schistosity.
					231':- Schistosity @ 50° to core axis.
					250-269':- gradual increase in no. of Carbonate pods.
					250':- Sch. & lineation of Cart. pods @ 55° to c.a.
					261':- Fracture Zone; 3" of ground core.
		269	47	99	263':- Sch. & lineation @ 62° to c.a.
					269':- " & " @ 53° " "
	269	.....	.....	.....	..... gradual change from the preceding mottled,
					CHL-CARBONATE SCHIST to a more massive, coarsely
					crystalline-textured rock.
	269				MAGNESITE: generally massive Carbonate,
					crystalline rock; dk. green euhedral crystals in a
9818					dk. greyish-blue to green, soft, crystall. matrix; a
to 9821 inclusive.					few cross-cutting, white (lt. buff-weathering) Carbonate
					stringers; a few greenish-white Talc layers.
					272-96':- coarse-grained; only rudimentary schistosity.
					272-84':- a few rusty-weathering fractures.
				(0)	.. 325-26':- core ground; Fault Zone (?).
					337-38':- broken rock (Fracture Zone).
					347-56':- rusty-weathering Carbonate sections.
					353':- 3" of broken core (Fracture Zone ?).

... continued on Page 4. ...

Loc. Mi... Claim P.94860 ..... Dip collar : ..... Bearing collar : ..... Length: 528 ft.....
..... : ..... : ..... Collar el. : .....
..... : ..... : ..... Bottom el. .....
Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 3.					
...	(269)	.....	.....	.....	((MAGNESITE))
9818-21 inclusive					360':- Schistosity & lineation @ 59° to core axis.
		423	154'	(0) 98%	412-14':- core ground; fault Zone (?) 420':- Sch. & lineation @ 46° to c.a.
	423	.....	.....	.....	gradual change from the preceding massive,
					crystalline Carbonate to a schistose, mottled-textured
					rock type. 423':- Sch. & lineation @ 48° to c.a.
	423				CHLORITE-CARBONATE SCHIST: elongated pods of
					white Carbonate in an aphanitic, schistose, dk. green
9822					Chloritic matrix; coarse but distinct foliation (Sch.)
					& lineation (Carbonate pods).
					441-43':- several lt. buff-weathering, irregular stringers of Carbonate.
		443	20	100	442-43':- few blebs & thin strgs. of Po, Py.
	443	.....	.....	.....	contact conformable @ 53° to c.a.
	443				Banded, CHERTY IRON FORMATION: alternating,
					generally closely-spaced, well-defined layers of
					Magnetite (crystalline, "shiny" jet-black) & Chert
					(dk. grey) with sections also containing intercalated layers
					of Jasper (red, Hematite-stained Chert) & Carbonate
					(lt. buff-weathering); the Carbonate is present both as
					conformable layers & cross-cutting fracture-fillings.
					446':- banding (bedding) @ 52° to core axis.
					448':- " " @ 59° " " "
					459':- " (cross bedding ?) variable @ 59-65° to c.a.
					464-70.5':- dk. grey siliceous (cherty) layers are fragmented & contorted in part with irregular boundaries; intercalated bands of Magnetite, Chert & some Carbonate.
					470.5-71':- contorted, dk. grey siliceous fragments in a fine-grained matrix of crystalline to aphanitic Magnetite.
					474-528':- intercalated layers of Jasper, Magnetite (finely-crystalline, "high-grade") & Chert.
					480':- Jasper & Magnetite layers (3/4") @ 65° to c.a.
					481-83':- layers are highly folded, contorted & brecciated "Drag Fold"-(Magnetite layers vary from 0-65° to c.a.); Carbonate along cross-cutting fractures.
					483':- Magnetite band (1/4") @ 62° to c.a.

... continued on Page 5. ...

Loc. Min.Claim P.94860 Dip collar : ..... Bearing collar : ..... Length: 528 ft.

.... : .... : ..... Collar el. : .....

.... : .... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 4.					
...	(443)	.....	.....	.....	((Banded, CHERTY IRON FORMATION))
				(30%)	483-86':- core ground; fault Zone.
					488':- well-defined bands of Magnetite, Jasper & Chert @ 63° to core axis; a few zones of Jasper are brecciated, with fragments surrounded by Magnetite; a few Carbonate layers & fracture-fillings.
					489-91':- Magnetite layers (1/4" - 1/2") generally have 'ragged', irregular edges & contain thin, lt. Bu weathering Carbonate strgs. (conformable); sections are brecciated (Jasper fragments) & "Drag Folded"; numerous Carbonate-filled cross fractures; few Pyrite cubes.
					492':- regular, well-defined Magnetite layers (1/8" - 1/4"), Jasper & Chert bands (1/4"-1/2") @ 59° to core axis; bands displaced 1/4" by cross-cutting Carbonate-filled fractures (post Magnetite deposition).
					495':- regular, well-defined bands @ 63° to c.a.
					499-503':- numerous layers of lt. buff-weathering Carbonate conformable to banding (bedding).
					512':- banding variable @ 55° & 59° to c.a.; few cubes of Pyrite along cross-cutting fractures.
					522':- well-defined banding @ 64° to c.a.
					525':- Jasper & Magnetite layers @ 71° to c.a.
					527':- Siliceous layers @ 75° to c.a.
					528':- Jasper & Magnetite layers @ 43° to core axis; rapid change in dip indicates "Drag Folding" probably occurs between 527-528'.
					..... bit "stuck" due to 'cave' (rock chips) from up the hole; therefore, hole had to be abandoned.
		528	85	99%	
		E N D	O F	H O L E	

KENNETH H. DARKE CONSULTANTS LIMITED

REGISTERED PROFESSIONAL ENGINEER
K. H. DARKE
PROVINCE OF ONTARIO

ORO MINES LIMITED

B-6

Whitney Township, Ont.;
Claim Group "B";

D. D. HOLE No. B-6

Loc. Mi[illegible] Claim P.94860 ..... Dip collar : 90° ..... Bearing collar : ------- ..... Length: 340 ft.

Picket Line 12+00 W ..... : ..... : ..... Collar el. : .....

[illegible]cation 10+00 S ..... : ..... : ..... Bottom el. : .....

Drilled by: Bradley Core size: AX Begun: Dec. 9 /70 Ended: Dec. 11 /70 Logged by: K.Darke,P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	6.0	6	0	Overburden
	6.0				CHLORITE-CARBONATE SCHIST: mottled texture ---
					dk. green, schistose, Chloritic matrix with a few very
9823					small pods (specks) of grey Carbonate (lt. buff colored
					where weathered) elongated & oriented parallel to the
					Schistosity; lineation of Carbonate pods generally
					rather indistinct due to their small size.
					6-20':- only minor amounts of Carbonate as pods.
					20':- Carbonate pods (elongated) comprise approx. 15% rx
					22':- faint lineation @ 86° to core axis.
					24.5-25.5':- core broken; fracture Zone
		31	25	98	28':- Sch. & Carbonate lineation @ 84° to c.a.
	31				MAGNESITE: generally massive Carbonate,
					crystalline rock; mottled texture due to dk. green
9824					euhedral crystals (1/16"-1/8") in a silvery-blue to
to					green, soft, more / aphanitic-appearing but crystalline matrix; a few layers of white
9823 inclusive.					Carbonate & greenish-white Talc.
					31-33':- core broken; friable; rsty. weathering in part.
					33':- irregular, rough parting planes @ 73° to c.a.
				(0)	43-53':- core ground; Major fault Zone.
				(0)	166-68':- core ground; Fault Zone.
					200':- lineation exhibited by green Talc pods @ 55° to core axis; secondary Chloritic foliation (Schistosity) @ 84° to c.a.
					201':- Talc layers (1/4"-1") @ 62° to c.a.
					203-16':- Magnesite less crystalline, more schistose; appears weathered (friable); lineation of small, white Carbonate pods is more pronounced.
		216	185	93%	214':- lineation of Carbonate pods @ 80° to c.a.
	216	.....	.....	.....	..... gradational change; Quartz stringer veins.
	216				CHLORITE-CARBONATE SCHIST: granular & mottled
9829					texture --- dk. green, schistose, Chloritic matrix with
9830					small pods of grey Carbonate; only faint lineation.
					216-19':- abundant Quartz stringer veins (bull white, appear barren) in a contorted Schist.
				(12%)	219-27':- core ground; Major Fault Zone.
				(0)	227-28':- " " ; Fault Zone.

... continued on Page 2. ...

Loc. Min Claim P.94860 Dip collar : ..... Bearing collar : ..... Length: 340 ft.

.... : .... : ..... Collar el. : .....

.... : .... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 1.					
...	(216)	.....	.....	.....	((CHLORITE-CARBONATE SCHIST))
					254':- Sch. & lineation of Carb. pods @ 87° to core axis.
				(0)	..259-59':- core ground; Fault Zone.
				(0)	..274-75':- " " ; Fault Zone (?).
		275	59	97%	
	275				MAGNESITE: massive Carbonate, coarsely
					crystalline rock; mottled (speckled) texture due to
9831					scattered, dk. greenish-black euhedral crystals (1/16")
9832					in a silvery-blue to green, soft, crystalline matrix;
		317	42	100	no apparent schistosity or lineation.
	317	.....	.....	.....	..... contact gradational & conformable.
	317				CHLORITE-CARBONATE SCHIST: slightly mottled
					& granular texture due to scattered, white pods of
					Carbonate in a dk. greenish-black, generally massive;
		329	12	"	Chloritic matrix.
	329				DACITE: Siliceous Volcanic Flow of intermediate
					composition; generally massive & unsheared; Chloritic alteration
		340	11	"	in local zones only.
		E N D O F H O L E			

KENNETH H. DARKE CONSULTANTS LIMITED

REGISTERED PROFESSIONAL ENGINEER
K. H. DARKE
PROVINCE OF ONTARIO

Whitney Township, Ont.;
Claim Group "B";

ORO MINES LIMITED

D. D. HOLE No. B-7

B-7

Loc. [redacted] Claim P.[redacted]860 Dip collar : 90° Bearing collar : ------ Length: 300 ft.
Picket Line 18+00 W ..... : .... : ..... Collar el. : .....
Station 16+00 S ..... : .... : ..... Bottom el. : .....

Drilled by: Bradley Core size: AX Begun: Dec.14/70 Ended: Jan.6/71 Logged by: K.Darke,P.Eng

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	10	10	0	Overburden
	10				MAGNESITE: massive Carbonate, crystalline
					rock; schistose in part; somewhat granular (mottled)
					texture due to very small lt. to dk. green & white
9833					crystals in a more aphanitic-appearing but massive crystalline
to					matrix; a few greenish-white Talc-Carbonate stringers.
9836 inclusive				(0)...	84-85':- core ground; Fault Zone.
				(0)...	49-54':- core ground; Fault Zone.
		104	94	(65)...	54-71':- core ground along fracture (Sch.) planes.
				80%	
	104	106	2	0 ...	core ground; Fault Zone (?) or sheared contact zone.
	106				CHLORITE-CARBONATE SCHIST: granular texture
					due to small pods of grey Carbonate in a dk. green
		113	7	98%	Chloritic matrix. Schistosity @ 90° to core axis.
	113	.....	.....	...	contact conformable; minor lt. buff-weathering Carbonate extends to approx. 114 ft.
	113				Banded, CHERTY IRON FORMATION: alternating,
					generally closely-spaced, well-defined layers of
					Magnetite (crystalline, "shiny" jet-black) & Chert
					(dk. grey) with numerous zones also containing interc-
					alated layers of Jasper (red, Hematite-stained Chert)
					& some lt. buff-weathering Carbonate.
					114':- banding (bedding) @ 75° to core axis.
					116':- " " @ 81° " " "
					120':- " " @ 87° " " "
					124':- " " @ 84° " " "
					132':- " (+Jasper) @ 82° " " "
					133-44':- abundant Carbonate layers & stringers.
					144':- banding (abundant Jasper) @ 79° to c.a.
		159	46	100	155-59':- Carbonate layers.
	159				DACITE: highly siliceous flow; greyish green
9837					to lt. green in colour; generally massive & unsheared;
					amygdaloidal in part; several zones of bleaching
					(yellowish-white, highly siliceous); a few zones of
					crystalline rock types (Quartz Diorite; Granite).

... continued on Page 2. ...

DARKE CONSULTANTS

Loc. Min. Claim P.94860 Dip collar : ..... Bearing collar : ..... Length: 300 ft.

..... : ..... : ..... Collar el. : .....

..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 1.					
...	(159)	...	.....	.....	..... ((DACITE))
				(0)	.168-69':- ground core; Fault Zone.
					185-87':- highly silicified bleached zone; lt. yellow.
					187-90':- gradual change to a crystalline rock (Quartz Diorite) & back to flow --- coarse-grained center of flow ?
					201-208':- Granitic stringer (dike); irregular, assimilated contacts.
					216':- Granitic strg.(2"); contacts ground.
					209':- rough lineation (flow banding) @ 84° to c.a.
		229	70	98%	224':- bleached fractures @ 86° to core axis.
					228':- amgdaloidal; bleached; Flow Boundary.
	229				CHERTY FRAGMENTAL (BRECCIA): Chloritic alteration around Chert fragments & along fractures; abundant Hematite staining; numerous cross-cutting Quartz & Carbonate (lt. buff-weathering) stringers; a few scattered pods & disseminated grains of Magnetite; minor Pyrite.
					233':- H'line fract.(Chl.,Magnetite,Py) @ 87° to c.a.
					246':- small specks of Magnetite along Chloritic, hairline fracture @ 70° to core axis; Chloritic band (3/8") @ 60° to c.a. (appears to be // to main fracturing); highly irregular, cross-cutting Carbonate stringers (hairline to 1/4").
					254':--- abundant specks Magnetite; thin fractures (Chl.,Carbonate, Magnetite, tr. Py) & variably bleached zones @ 65° to c.a.; a few 'related' hairline fractures (Chl.,Magnetite) @ 82° to c.a..
					260':--- Chloritic band (1/4") @ 74° to c.a.; opposing cross-cutting Carbonate strg. (1/4") @ 26° to c.a..
		266	37	100	Numerous,highly-irregular, Hematite-stained, cross-cutting hairline fractures (altered Magnetite).
	266	.....	.....	.....	..... highly-irregular, Chloritic, brecciated (fragm.) contact.
	266				DACITE (TRACHYTE): highly siliceous flow of intermediate composition; green colour; generally massive & unsheared; amygdaloidal (3/16-1/8") in part; a few cross-cutting Carbonate stringers; minor Pyrite.
					280':- vesicular; amgdaloidal ---- amgdules (1/8") /roughly oriented @ 88° to core axis.
		300	34	"	
		E N D	O F	H O L E	

ORO MINES LIMITED

B-8

Whitney Township, Ont.;
Claim Group "B";

D. D. HOLE No. B-8

Loc. Min. Claim P.94858 ... Dip collar : 90° ... Bearing collar : ----- ... Length: 426 ft.

Picket Line 6+00 W ... : ... : ... Collar el. : ...

Station 16+00 S ... : ... : ... Bottom el. : ...

Drilled by: Bradley Core size: AX Begun: Jan.9/71 Ended: Jan.15/71 Logged by: K.Darke,P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	18	18	0	Overburden
	18				Quartz-Chlorite SCHIST (DACITE): greyish-
					green, schistose flow; somewhat banded appearance due
					to more Chloritic and/or siliceous zones; amygdaloidal
					in part; minor Pyrite;
					29':- Schistosity @ 64° to core axis.
					38-59':- Chloritic; granular; amygdaloidal.
					57':- Sch. & flow banding (?) @ 78° to c.a.
					74':- Sch. & Chl. layers @ 71° to c.a.
					78':- " & " " (1/32") @ 63° to c.a.
					86':- rough layering & Sch. @ 66° to c.a.
					99':- fine foliation (layering & Sch.) @ 74° to c.a.
				(60%)	..101-103.6':- broken core; chloritic; Fault Zone(?)
					103.6-104':- 60% Po,minor Py stringers oriented par-
					allel to Chl. layers & Sch. @ 68° to c.a.
		104	86	98%	
	104				CHERTY FRAGMENTAL (Siliceous Tuff; banded)
					& intercalated GRAPHITIC SCHIST (TUFF): a few zones of
					Sulphides (Pyrite, Pyrrhotite).
					107':- banding @ 66° to core axis.
					110':- Py, Graphite, & Sch. @ 62° to c.a.
		115	11	100	
	115				Quartz-Chlorite SCHIST (DACITE): dk. greyish-
					green flow of intermediate composition; a few lighter-
		126	11	"	coloured bleached (silicified) zones.
	126	127.5	1.5	"	CHERTY FRAGMENTAL (Siliceous Tuff).
	127.5	.....	.....	.....	.. contact conformable @ 57° to core axis.
	127.5				Quartz-Chlorite SCHIST (DACITE) ... as before;
					contains Sulphides (Pyrrhotite, Pyrite).
					128':- Sch. variable @ 60°-66° to core axis.
		133	5.5	"	129-30':- Quartz stkg. vein with 5% Py, min. Po.
					131-32':- 10% Po as fracture-fillings; minor Py.
	133				CHLORITE-CARBONATE SCHIST: mottled (granular)
					texture due to small, white pods of Carbonate (1/32"-
9838					
9839					1/8") in a dk. green, schistose, Chloritic matrix.
				(0)	..136-43':- core ground; Fault Zone.
					154':- direction of Carbonate pods @ 73° to c.a.
					166-68':- brecciated; 50% Carbonate.

... continued on Page 2. ...

DARKE CONSULTANTS

Loc. M[illegible] Claim P.94858 Dip collar : ..... Bearing collar : ..... Length: 426 ft.

..... : ..... : ..... Collar el. : .....

..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	... continued from Page 1.				
...	(133)	.....	.....	.....	((CHLORITE-CARBONATE SCHIST))
					168':- Sch. & lineation of Carbonate pods.
		168	35	75%	
	168				MAGNESITE: massive Carbonate, coarsely cryst-
					elline rock; 'silvery' bluish-white to green; soft;
					generally unsheared, but does have (in part) rough lineation; a
9840					
to					few stringers or layers of white to lt. green Talc
9844 inclusive					& Carbonate.
					184-85':- core ground; fracture Zone (?).
					221':- indistinct fracturing @ 67° to core axis.
					243':- thin Carb. strg. & fracturing @ 66° to c.a.
				(0)...	..278-80':- core ground; Fault Zone.
					289':- lineation @ 66° to c.a.
		294	126	99%	
	294	.....	.....	.....	... Contact Zone; gradational over about 2"; becomes
					Chloritic; somewhat irregular layering (bedding?).
	294				Banded CHERT (Siliceous Iron Fm) with a few
					scattered zones containing grains & layers of Magnetite ; local zones
					of alteration containing Carbonate (lt. buff-weathering)
					& Chlorite concentrated along schistosity planes.
					294':- Magnetite grains & layer (1/2") @ 71° to core
					axis; also, Sch. & min. Magnetite @ 63° to c.a.
					295':- Chloritic layers with disseminated grains &
					layers of Magnetite // to Sch. @ 66° to c.a.
		301	7	100	299':- rough layering & Sch. @ 74°-78° to c.a.
	301				Banded, CHERTY IRON FORMATION: alternating,
					generally well defined layers of Magnetite & dk. grey
					Chert.
					306':- banding (layering) @ 76° to core axis.
					315-21':- layering becomes very irregular; brecciated.
					321':- Magnetite layers are tightly folded. (drag fold)
					326':- Magnetite & Chert bands @ 74° to c.a.
		342	41	59	334-37':- core broken; Fracture Zone.
					337':- Magnetite & Chert bands @ 66° to c.a.

... continued on Page 3.

Loc. Min. Claim P.94858 Dip collar : ..... Bearing collar : ..... Length: 426 ft.

.... : .... : ..... Collar el. : .....

.... : .... : ..... Bottom el. : ...

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 2.					
	342				Banded CHERT (Siliceous Iron Formation) with
					a few layers of Magnetite; Chloritic alteration along
					fracture (schistosity ?) planes.
				(0)	352-57':- core ground; Fault Zone.
		379	37	86%	372-73':- Basic Dike; dk. green, massive. 374 & 377':- few bands of Magnetite.
	379				Banded, CHERTY IRON FORMATION: as before ...
		387	8	100	384':- Magnetite layers @ 73° & 77° to c.a. (Drag Fold?)
	387				Banded CHERT (Siliceous FeFm): as before ...
				(0)	391-92':- core ground; Fault Zone.
		402	15	93%	
	402				Quartz-Chlorite SCHIST (altered DACITE):
					siliceous, schistose flow of intermediate composition;
					highly brecciated in part (fragments elongated parallel
					to schistosity; Chloritic matrix).
					414':- highly brecciated; few specks Pyrite.
		426	24	100%	420':- Sch. & elongated fragments @ 67° to c.a.
		E N D	O F	H O L E	

KENNETH H. DARKE CONSULTANTS LIMITED

REGISTERED PROFESSIONAL ENGINEER
K. H. DARKE
PROVINCE OF ONTARIO

Whitney Township, Ont.;
Claim Group "B":

ORO MINES LIMITED (WHITNEY LAKE)
D. D. HOLE No. B-9

B-9

Loc. Min. Claim P.94858 Dip collar : 90° Bearing collar : ..... Length: 303 ft.
Picket Line 12+00 W ..... : .... : ..... Collar el. : .....
Station 24+00 S ..... : .... : ..... Bottom el. : .....

Drilled by: Bradley Core size: AX Begun: Jan. 16/71 Ended: Jan. 18/71 Logged by: K.Darke, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
	0	20	20	0	Overburden
	20				CHERTY FRAGMENTAL (brecciated Siliceous TUFF): white; Chloritic alteration around fragments; abundant Pyrite throughout.
		25	5	80%	21-23':- 80% Py; weathered, vuggy sections. 23-25':- 20% Py as fracture fillings & cubes.
	25				Quartz-Chlorite SCHIST (DACITE): greyish-green, highly schistose flow; finely foliated & very fissile; amygdules - small, elongated white pods (Carbonate ?) parallel to schistosity.
				(60)	26-29':- core ground (Fracture Zone); contorted sch.
				(50)	32-35':- core ground (Fracture Zone).
				(0)	36-37':- core ground; Fault Zone.
				(65)	37-40':- core ground (Fracture Zone).
				(60)	40-45':- " " " "
					47':- Schistosity @ 60° to core axis. 57':- Sch. @ 65° & lineation (bedding?) @ 73° to c.a. 58':- " @ 66° & " " @ 70° " "
				(0)	81-83':- core ground; Fault Zone.
					96':- Schistosity @ 72° to c.a. 99':- " @ 74° " "
				(0)	106-13':- core ground; Fault Zone.
		118	93	83%	
	118				CHERTY FRAGMENTAL (brecciated Siliceous TUFF):
		123	5	100	Chloritic alteration around fragments; minor Pyrite.
	123	124	1	(0)	123-24':- core ground; Fault Zone.
	124				Quartz-Chlorite SCHIST (DACITE ?): ... as before; finely foliated (schistosity & lineation).
		131	7	100%	130':- Schistosity & lineation variable @ 58° & 63° to c.
	131				Chlorite-Graphite SCHIST & CHERTY FRAGMENTAL: local zones of Carbonate (lt. buff-weathering); minor sulphides (Pyrite, Pyrrhotite).
		139	8	"	134.2-35':- 10% Py,Po) in contorted Chl-Graphitic SCHIS
	139				Banded, CHERTY IRON FORMATION: alternating bands (layers) of Magnetite (crystalline, "shiny" jet-black; somewhat thin, irregular layers), Chert (lt. gra & Chlorite; minor Pyrite.

D. D. Hole No. B-9

... continued on Page 2. ...

Loc. Map. Claim P.94658 Dip collar : ..... Bearing collar : ..... Length: 303 ft.

..... : ..... : ..... Collar el. : .....

..... : ..... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 1.					
...	(139)	.....	.....	.....	((Banded, CHERTY IRON FORMATION))
		148	9	100%	147':- Chl., Chert & Magnetite bands @ 62° to core axis.
	148				CHLORITE-CARBONATE SCHIST: granular texture
					due to small, elongated pods of grey Carbonate in a
9845					dk. green Chloritic matrix.
9846					153':- Sch. & lineation @ 65° to c.a.
		175	27	"	168':- abundant Carbonate; Sch. @ 65° to c.a.
	175	.....	.....	.....	..... gradational change; conformable contact.
	175				MAGNESITE: massive Carbonate, crystalline
					rock; somewhat speckled texture due to differently
9847					coloured crystals (white, lt. green, black) ... overall
to					colour is a 'silvery' bluish-white; a few layers &
9850 inclusive.					blebs of white to lt. green Talc & Carbonate; some
					poorly-developed lineation (schistosity ?).
					177':- lineation @ 73° to core axis.
					200':- " @ 61° " " "
					203':- " @ 67° " " "
					206':- " @ 70° " " "
					216':- " @ 72° " " "
				(57%)	..223-30':- core ground; Fracture Zone.
					227':- lineation @ 63° & rough fract. @ 80° to c.a.
					233':- Carbonate strg. (1/8") & indistinct lineation @ 74° to core axis.
					241':- lineation @ 71° to c.a.
					249':- " @ 60° " "
					251':- Carbonate strgs. (lineation) @ 63° to c.a.
					254':- distinct lineation @ 63° to c.a.
		259	84'	95%	259':- " " @ 65° " "
	259	.....	.....	.....	..... gradational change, conformable contact.
	259				CHLORITE-CARBONATE SCHIST: abundant Carbonate
9851		265	6	100%	ery talline in part; numerous white Carbonate stringers
	265	274	9	0	... core ground; Fault Zone.
	274				CHLORITE SCHIST: some Carbonate & CHERTY
		276	2	"	zones; few Pyrite cubes.
	276				CHLORITE SCHIST - CHERTY IRON FORMATION;

... continuation Page 3. ...

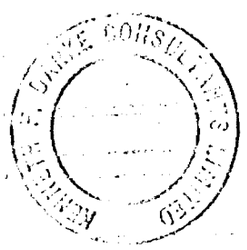
Loc. M[redacted] Claim P.94858 Dip collar : ..... Bearing collar : ..... Length: 303 ft.

.... : .... : ..... Collar el. : .....

.... : .... : ..... Bottom el. : .....

Drilled by: Core size: Begun: Ended: Logged by: KHD, P.Eng.

Samples	Footage drilled From	To	Len.	Rec. %	Geology
... continued from Page 2.					
...	(276)	.....	.....	.....	..... CHLORITE SCHIST - CHERTY IRON FORMATION:
					bands of Magnetite; abundant layers of Carbonate (lt.
					buff-weathering); some Pyrite.
		281	5	100%	280-81':- 10% Py as fracture fillings.
	281				Banded, CHERTY IRON FORMATION: alternating,
					well-defined layers of Magnetite (fine-grained) &
					Chert; numerous crosscutting Carbonate (white) strgs.
					281':- Magnetite & Chert layers @ 72° to core axis.
					285':- " & " " @ 80° " " "
					288':- " & " " @ 79° " " "
				(0)	..291-92':- ground core; Fault Zone.
					293':- banding @ 72° & 76° to c.a.; (Fold ?).
					294':- Magnetite & Chert bands @ 75° to c.a.
					298':- " & " " @ 71° " "
		300	19	95%	299':- " & " " @ 74° " "
	300				CHLORITE SCHIST - IRON FORMATION:- mainly
					Chloritic Schist with only a few, thin bands of Mag-
					netite; minor Carbonate (white) layers & pods.
					300':- Schistosity & Magnetite @ 81° to core axis.
					301':- " & " @ 78° " " "
					302':- lineation of thin, elongated pods & layers of Carbonate (white) @ 80° to c.a.
					302.7-303':- few thin layers Magnetite; minor Pyrite.
		303	3	100%	
		E N D	O F	H O	L E



SAN MINES LIMITED (OPTION)

MIN GROUP "S"

(Southeastern Portion - 10 claims)

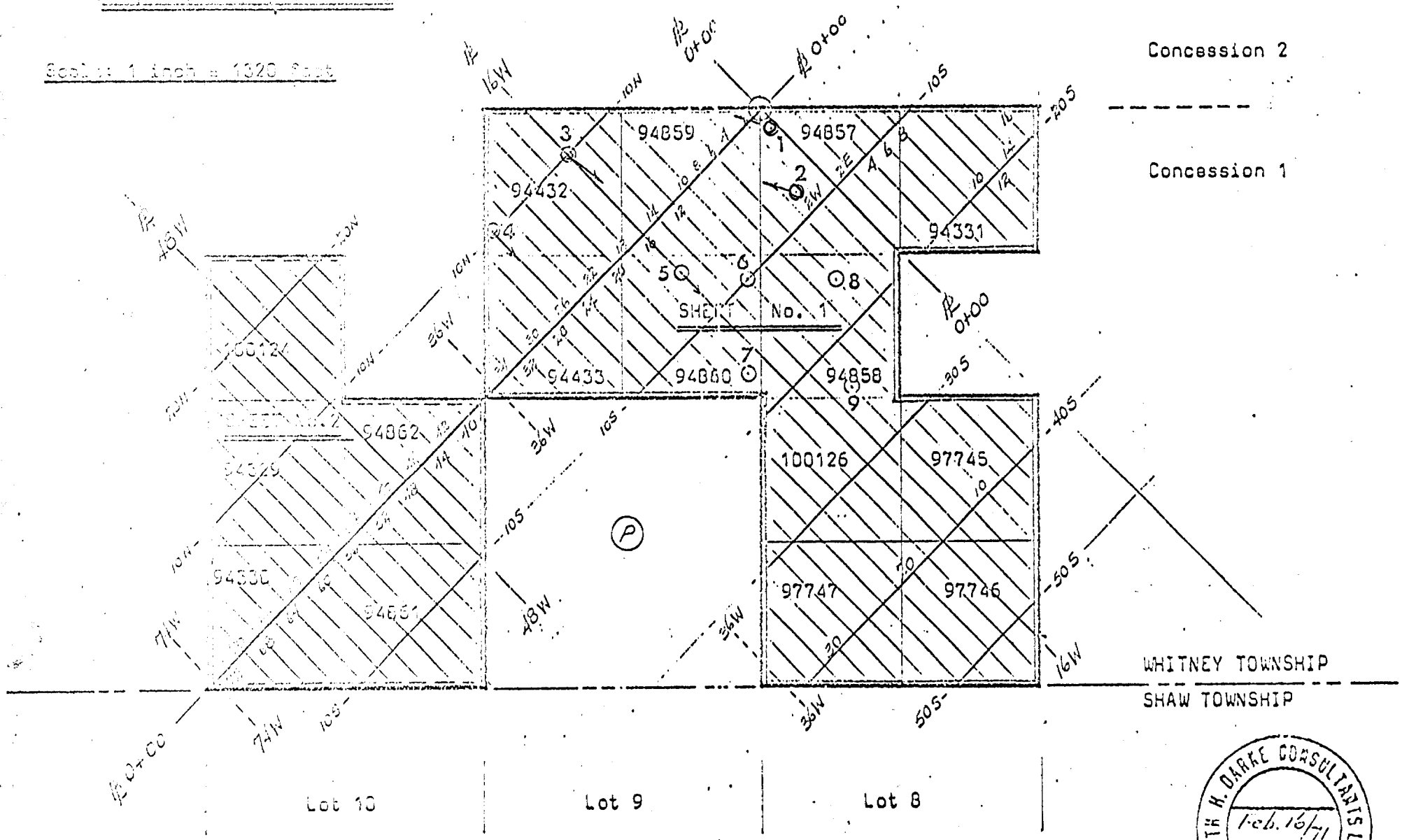
Pontiac Porphyritic Trio

WHITNEY TOWNSHIP, ONTARIO

Porcupine Mining Division

LOCATION OF DIAMOND DRILL HOLES NO. 8-1 to 8-9 inclusive

Scale: 1 inch = 1320 feet



KENNETH H. DARKE CONSULTANTS LIMITED
Feb. 16/71

KENNETH H. DARKE CONSULTANTS LTD.

APPENDIX E

Assays & Chemical Analyses

• CHEMICAL RESEARCH AND ANALYSIS
• CONTRACT LABORATORIES

TECHNICAL SERVICE LABORATORIES
DIVISION OF KRUGER TECHNICAL ENTERPRISES LIMITED
355 KING ST. W., TORONTO 2B, ONT., CANADA
TELEPHONE: 362-4248 · AREA 416
CABLE ADDRESS · TECSERV TORONTO

CERTIFICATE OF ANALYSIS

FROM Oro Mines Limited,
Suite 511,
850 West Hastings St.
Vancouver 1, B.C.

REPORT NO.
T-21812

OF Drill Core: WHITNEY TOWNSHIP, ONT.: DDHs #B-5 to 9 inclusive.

ple No.	Carbon Dioxide (CO_2)%	Calcium Oxide (CaO)%	Magnesium Oxide (MgO)%
6816	8.05	8.17	3.69
6817	10.61	10.30	18.19
6818	13.39	3.19	32.26
6819	23.06	0.22	35.46
6820	15.51	5.26	19.72
6821	17.49	0.23	33.21
6822	24.89	6.89	26.24
6823	7.39	7.56	8.39
6824	18.88	2.07	34.22
6825	22.69	0.33	35.11
6826	21.81	0.17	35.18
6827	21.67	0.28	34.32
6828	22.32	8.12	30.69
6829	11.27	8.51	4.57
6830	22.17	5.09	26.64
6831	23.86	0.39	33.07
6832	26.57	6.77	32.61
6833	19.61	1.28	34.42
6834	21.81	0.27	35.08
6835	19.83	0.84	35.20

4-

6-(7)

*NOTE:- samples taken by:

REGISTERED PROFESSIONAL ENGINEER
K. H. DARKE
PROVINCE OF ONTARIO

Rejects discarded after two months

April 6/71

SIGNED: H. Rudlin

CTA

Samples

VANCOUVER, SMITHERS, TORONTO, MONCTON, and SPOKANE, WASH.

Submitted by K.H. Darke

TECHNICAL SERVICE LABORATORIES
DIVISION OF ENGINEERING ENTERPRISES LIMITED
355 KING ST. W., TORONTO 2C, ONT., CANADA
TELEPHONE: 362-4248 - AREA 416
CABLE ADDRESS - TECSERV TORONTO

CERTIFICATE OF ANALYSIS

Cro Mines Limited,
Suite 511,
850 West Hastings St.
Vancouver 1, B.C.

REPORT NO.
T-21812

Drill Core: WHITNEY TOWNSHIP, ONTARIO PROPERTY; DDH's 8-7,8, & 9.

Sample No.	Carbon Dioxide (CO_2)%	Calcium Oxide (CaO)%	Magnesium Oxide (MgO)%	
S36	19.40	1.01	33.79	4
S37	13.54	7.11	29.71	
S38	7.54	10.86	9.41	
S39	8.34	8.01	12.18	
S40	12.88	7.22	28.43	
S41	21.59	1.23	34.37	4
S42	22.47	1.12	34.81	(S)
S43	21.23	0.45	33.65	
S44	13.98	3.92	31.32	
S45	9.29	10.64	8.83	
S46	14.13	8.12	26.64	4
S47	20.71	3.92	32.29	
S48	22.83	2.18	34.03	
S49	22.25	1.40	33.15	
S50	19.91	2.29	32.76	
S51	22.18	10.69	24.43	

*NOTE:- samples taken by:

K. H. DARKE
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

Pulps and Rejects discarded after two months

April 6/71

SIGNED: [signature]

CTA

VANCOUVER, SMITHERS, TORONTO, MONCTON, and SPOKANE, WASH.

Submitted by K.H. Parke

S415-416) ? 54.0 (O.D.M.) ?
S420) ... "Out crop" ? " ?

K. H. DARKE
REGISTERED PROFESSIONAL ENGINEER

LIMITED

MILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 2656 PAGE 1 of 1

Alamo Petroleum Ltd.,
55 Yonge Street, Suite 310,
TORONTO, Ontario.
M5E 1J4

Attn: R.S. Middleton

RECEIVED Mar. 29, 1976 INVOICE NO. 2656

SAMPLE(S) OF 24 pulps SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	%SiO_2	%Al_2O_3	%Fe_2O_3
9818	33.9	1.9	10.1
19	30.9	0.8	5.99
9820	42.2	9.2	5.18
21	33.4	1.8	8.35
24	33.5	1.7	6.70
25	32.9	1.2	6.44
26	33.2	1.2	7.05
27	33.0	1.5	7.50
28	32.6	1.8	7.01
9831	32.3	1.4	6.47
32	29.9	1.0	5.42
33	32.4	1.7	6.60
34	33.0	1.4	7.39
35	33.2	1.5	8.10
36	34.1	1.9	7.78
9840	37.9	3.3	10.3
41	32.9	1.5	6.77
42	32.5	1.4	6.94
43	33.9	1.6	7.48
44	37.5	3.8	8.79
47	32.9	1.6	8.02
48	31.9	1.1	6.74
49	31.8	1.4	7.13
9850	33.1	1.9	7.74

Note: Total iron as Fe_2O_3

X-RAY ASSAY LABORATORIES LIMITED

DATE Apr. 1, 1976 CERTIFIED BY D. Kuzmin

LIMITED

...ILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 1315 PAGE 1 of 1

Rosario Resources Corporation,
Suite 310, 55 Yonge Street,
TORONTO, Ontario.
M5E 1J4

Attn: R. Middleton

...ED Apr. 9, 1975 INVOICE NO. 1315

...E(S) OF 1 rock SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

HERSTON — MAGNESITE

...ple	%SiO_2	%Al_2O_3	%CaO	%MgO	Au ppb
...Tag	31.9	0.9	0.18	33.8	X

...ple	Ag ppm	Ni ppm	%L.O.I.
...Tag	X	450	22.2

...: X — less than 30 ppb Au
less than 0.5 ppm Ag

X-RAY ASSAY LABORATORIES LIMITED

CERTIFIED BY

Apr. 22, 1975

ASSAYERS - ANALYTICAL CHEMISTS - SPECTROGRAPHERS

X-RAY ASSAY LABORATORIES
LIMITED
45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 090 PAGE 1 of 1

TO. Alamo Petroleum Ltd.,
55 Yonge Street,
Suite 310,
Toronto, Ontario.
M5E 1J4
Attn: R.S. Middleton

RECEIVED July 8, 1976 INVOICE NO. 090

SAMPLE(S) OF 41 rocks SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	Zn ppm	Ag ppm	Au ppb	Sample	Zn ppm	Ag ppm	Au ppb
Q-1	49	0.5	30	Q-30	71	X	X
2	28	25	770	31	95	X	X
3	32	35	1590	32	61	X	X
4	230	0.5	80	33	86	X	X
5	110	0.5	80	34	105	X	X
6	120	X	80	35	150	X	X
7	69	X	70	36	95	X	X
8	46	X	80	37	89	X	X
9	120	0.5	50	38	110	X	X
10	56	15	70	39	80	X	X
11	150	1	120	40	125	X	X
12	33	X	80	UM-64	18	X	X
13	68	X	60	UM-65	66	X	X
14	900	35	310				
15	22	X	70				
16	64	X	80				
17	97	3	60				
18	29	X	80				
19	60	50	870				
20	150	X	X				
21	39	50	340				
23	46	0.5	80				
24	5	0.5	X				
25	110	X	X				
26	76	X	X				
27	89	X	X				
28	22	X	X				
Q-29	20	X	X				

Note: X -- less than 0.5 ppm Ag
less than 30 ppb Au

X RAY ASSAY LABORATORIES LIMITED

CERTIFIED BY J. Stewart

DATE July 21, 1976

X-RAY ASSAY LABORATORIES

LIMITED

45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 178 PAGE 1 of 1

TO. Alamo Petroleum Ltd.,
55 Yonge Street, Suite 310,
TORONTO, Ontario.
M5E 1J4

Attn: R. Middleton

RECEIVED Jul. 19, 1976 INVOICE NO. 178

SAMPLE(S) OF 24 rocks SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	Zn ppm	Ag ppm	Au ppb
Q-41	39	X	X
42	130	20	100
43	69	15	250
44	55	X	X
45	32	0.5	X
-46	20	X	X
-47	13	X	X
-48	27	X	X
-49	21	X	X
-50	190	10	X
-51	43	0.5	X
-52	19	X	X
-53	28	X	X
54	49	2	X
55	98	0.5	X
56	98	0.5	X
57	10	0.5	X
58	61	0.5	150
59	79	7	220
60	3930	10	220
61	87	1	820
62	1290	4	X
Q-63	37800	25	1650

Sample	%Cu	%Zn	%As	%Pb	Au oz./ton	Ag oz./ton
Q-64	0.27	5.06	0.38	0.34	0.03	0.99

Note: X — less than 0.5 ppm Ag
less than 30 ppb Au

X RAY ASSAY LABORATORIES LIMITED

DATE Aug. 6, 1976 CERTIFIED BY

X-RAY ASSAY LABORATORIES

LIMITED

45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 2950 PAGE 1 of 2

TO. Alamo Petroleum Ltd.,
55 Yonge Street, Suite 310,
TORONTO, Ontario.
M5E 1J4
Attn: R. Middleton

RECEIVED June 8, 1976 INVOICE NO. 2950

SAMPLE(S) OF 20 rocks SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	$\%SiO_2$	$\%Al_2O_3$	%CaO	%MgO	$\%Fe_2O_3$ total
-354	31.9	0.7	0.76	34.3	7.83
-355	31.7	1.0	0.45	34.3	6.60
-356	31.5	1.3	0.95	32.5	7.58
-357	30.5	1.1	0.49	34.3	6.72
-358	34.6	1.2	0.42	34.6	6.33
-359	34.8	2.4	0.87	31.7	10.5
-360	34.8	0.7	0.43	33.3	9.14
-361	34.5	1.8	1.28	32.2	8.82
-362	30.8	1.2	0.28	33.9	9.64
-363	36.8	1.9	1.55	31.5	8.63
-364	35.3	3.6	0.34	30.9	12.3
-365	31.3	0.9	0.24	33.3	10.3
-366	36.3	2.5	0.27	32.9	8.11
-367	31.2	1.1	0.29	33.1	9.54
-368	35.6	1.8	0.40	32.5	8.12
-369	36.2	1.9	0.64	31.6	9.33
-370	32.9	1.4	0.34	33.5	8.51
-371	25.7	1.2	0.32	34.9	10.2
-372	30.8	1.1	0.43	35.7	7.30
-373	35.3	0.8	0.30	34.4	8.58

X-RAY ASSAY LABORATORIES LIMITED

CERTIFIED BY

DATE June 23, 1976

X-RAY ASSAY LABORATORIES

LIMITED

45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-5755

Certificate of Analysis

NO. 167 PAGE 1 of 1

TO. Alamo Petroleum Ltd.,
55 Yonge St. Suite 310,
TORONTO, Ontario.
M5E 1J4
Attn: R.P. Bowen

RECEIVED Jul. 26, 1976 INVOICE NO. 167

SAMPLE(S) OF 12 rocks SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	Cu ppm	Zn ppm	Ag ppm	Au ppb
Q-19B	115	36	40	340
V-1		71	X	60
2		74	X	90
3		52	X	160
4		49	X	60
D-1		51	X	60
2		22	1	80
3		54	0.5	140
4		20	X	60
S-1		56	X	60
2		38	X	60
S-3		30	X	60

Note: X — less than 0.5 ppm Ag

X-RAY ASSAY LABORATORIES LIMITED

DATE Aug. 5, 1976 CERTIFIED BY A. Hogan

X-RAY ASSAY LABORATORIES

LIMITED

45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-6755

Certificate of Analysis

NO. 2950 PAGE 2 of 2

Alamo Petroleum Ltd.,
55 Yonge Street, Suite 310,
TORONTO, Ontario.
M5E 1J4
Attn: R. Middleton

Sample	Ti ppm	Cr ppm	Ni ppm	% CO_2
	ppm			
354	1600	210	240	21.4
355	1000	210	280	23.1
356	1600	280	280	20.5
357	1600	260	280	21.8
358	800	240	260	18.4
359	2000	170	320	12.4
360	600	85	250	18.7
361	1600	120	240	16.3
362	1800	180	220	20.1
363	1400	76	250	14.8
364	2000	90	190	12.9
365	1400	54	210	15.4
366	2200	190	140	14.2
367	1800	94	170	19.7
368	2000	110	160	15.9
369	1800	160	130	14.1
370	1400	150	200	18.6
371	1400	140	320	23.7
372	2600	140	190	21.7
373	1200	96	150	18.1

X-RAY ASSAY LABORATORIES LIMITED

DATE June 23, 1976

CERTIFIED BY

X-RAY ASSAY LABORATORIES
LIMITED
45 LESMILL ROAD DON MILLS ONTARIO M3B 2T8 445-3755

Certificate of Analysis

NO. 118 PAGE 1 of 1

TO. Alano Petroleum Ltd.,
55 Yonge Street, Suite 310,
Toronto, Ontario.
M5E 1J4
Attn: R. Middleton

RECEIVED July 19, 1976 INVOICE NO. 118

SAMPLE(S) OF 5 rocks SUBMITTED TO US SHOW RESULTS AS FOLLOWS:

Sample	%SiO_2	%Al_2O_3	%CaO	%MgO	%Fe_2O_3
UM-1	29.5	0.70	0.29	39.5	8.09
.7	41.9	10.7	7.70	20.8	9.70
.45	32.6	2.40	0.28	38.8	6.98
.60	38.5	2.20	0.42	37.3	11.1
UM-500	26.4	0.30	0.25	39.3	~~48.6~~ 4.86

28 July 76 JPS

Sample	Cr ppm	Ni ppm
UM-1	850	940
7	1240	160
45	315	1250
60	220	1560
UM-500	53	240

X RAY ASSAY LABORATORIES LIMITED

DATE July 26, 1976 CERTIFIED BY J. Bowman

Ontario

42A06NE0059 2.2257 WHITNEY 900

File 2.2257

RECEIVED
DEC 1 1976
PROJECTS UNIT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Geological

Township or Area Whitney

Claim Holder(s) Alamo Petroleum Ltd.
Suite 310 - 55 Yonge St. Toronto

Survey Company

Author of Report R.S. Middleton

Address of Author 7 Fiesta Ln, TORONTO

Covering Dates of Survey April 30/76 - Aug 20/76
(line cutting to office)

Total Miles of Line Cut 39.96

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
--Electromagnetic	
--Magnetometer	
--Radiometric	
--Other	
Geological	40
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: November 1/76 SIGNATURE: R. Middleton
Author of Report or Agent

L.D. 2.706 & also SW

Res. Geol. _____ Qualifications this file -

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

See attached List
(prefix) (number)

Note 20 days for:
380506
443578
443579
Since line cutting is already recorded.

TOTAL CLAIMS 36

If space insufficient, attach list

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

ALAMO PETROLEUM LTD.

WHITNEY TWP CLAIMS

420074	40 Days
420075	"
420076	"
420077	"
420078	"
420079	"
420080	"
420081	"
420082	"
420083	"
420084	"
420085	"
420086	"
420087	"
443580	"
443581	"
443582	"
443583	"
443586	"
443587	"
444080	"
444083	"
444084	"
427444	"
451039	"
451040	"
451041	"
451042	"
451043	"
420330	"
420331	"
420332	"
420333	"
380506	20 Days
443578	20 Days
443579	20 Days

TOTAL: 36 Claims

File 2.2257

Ministry of Natural Resources

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

RECEIVED
DEC 1 1976
PROJECTS UNIT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Geological
Township or Area Whitney
Claim Holder(s) Alamo Petroleum Ltd
310 - 55 Yonge St.
Survey Company
Author of Report R. P. Bowen, R. S. Middleton
Address of Author 310 - 55 Yonge St. TORONTO
Covering Dates of Survey Nov 4-7/76 Nov 11/76
(line cutting to office)
Total Miles of Line Cut (applied to mag 3 mi)

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

DAYS per claim

Geophysical
--Electromagnetic
--Magnetometer
--Radiometric
--Other
Geological 20
Geochemical

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer ____ Electromagnetic ____ Radiometric ____
(enter days per claim)

DATE: Nov 24/76 SIGNATURE: * R. Middleton
Author of Report or Agent

2.7064 also on this file –

Res. Geol. ____ * Qualifications ____

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

P. 452637
(prefix) (number)
451063
413434
413433

If space insufficient, attach list

TOTAL CLAIMS 4

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION
RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

ALAMO PETROLEUM LIMITED

WHITNEY TWP CLAIMS

P. 452637	20 days	geology
451063	20 days	
413434	20 days	
413433	20 days	

TOTAL: 4 Claims

THE TOWNSHIP
OF 2.2257

WHITNEY

DISTRICT OF
COCHRANE

PORCUPINE
MINING DIVISION

SCALE: 1-INCH — 40 CHAINS

HOYLE TWP. M-287

TISDALE TWP. M-315

CODY TWP. M-270

SHAW TWP. M-311

VI V IV III II I

12 11 10 9 8 7 6 5 4 3 2 1

48°27'05"
81°04'27" approx.

LEGEND

PATENTED LAND	P
CROWN LAND SALE	C.S.
LEASES	L
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	M.
CANCELLED	C.
S.R.O. PATENTED	

NOTES

400' Surface rights reservation along the shores of all lakes and rivers.

This township lies within the Municipality of CITY of TIMMINS.

No disposition of sand and gravel on lands north of O.N.Ry., from May 8, 1964 until further notice. Form D.O.M. file 550.13

Any restakings within stippled area in Lots 5,6,7,8 Con. 4 and 5 subject to rights and privileges granted to Pamour Porcupine Mines Ltd. for tailings disposal.

DATE OF ISSUE
DEC - 3 1976
SURVEYS AND MAPPING BRANCH

X = geology
X = sampling

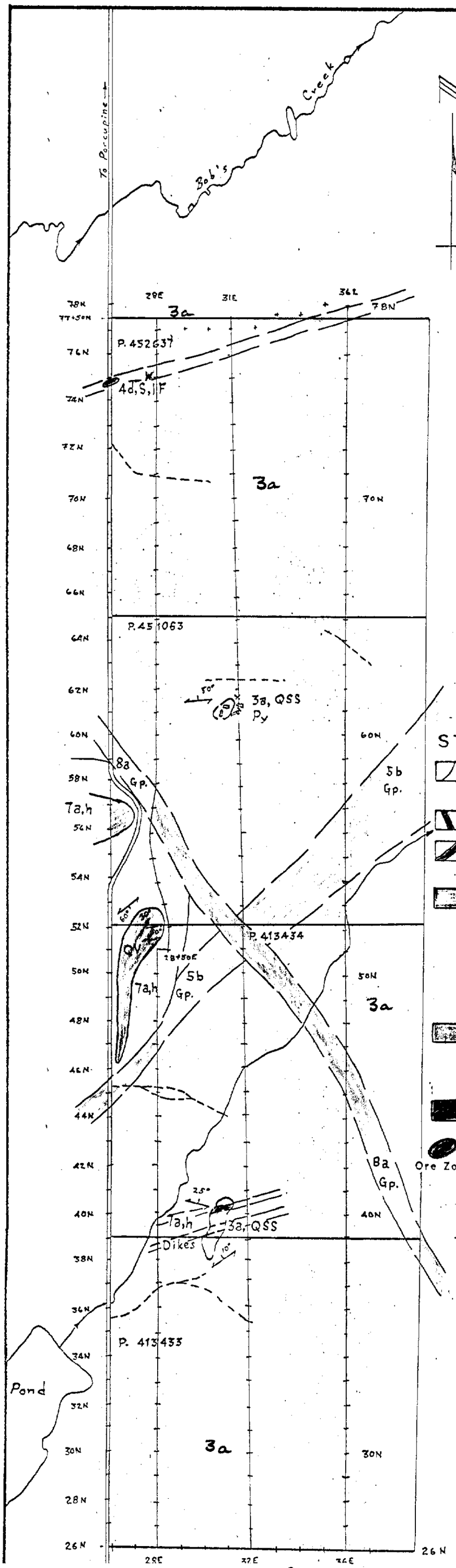
ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

Date 10th. JULY 1974(Rev.)
Whitney Block
Queen's Park, Toronto

M_319

42A06NE0059 2.2257 WHITNEY

200



CLAIM MAP WHITNEY TWP.

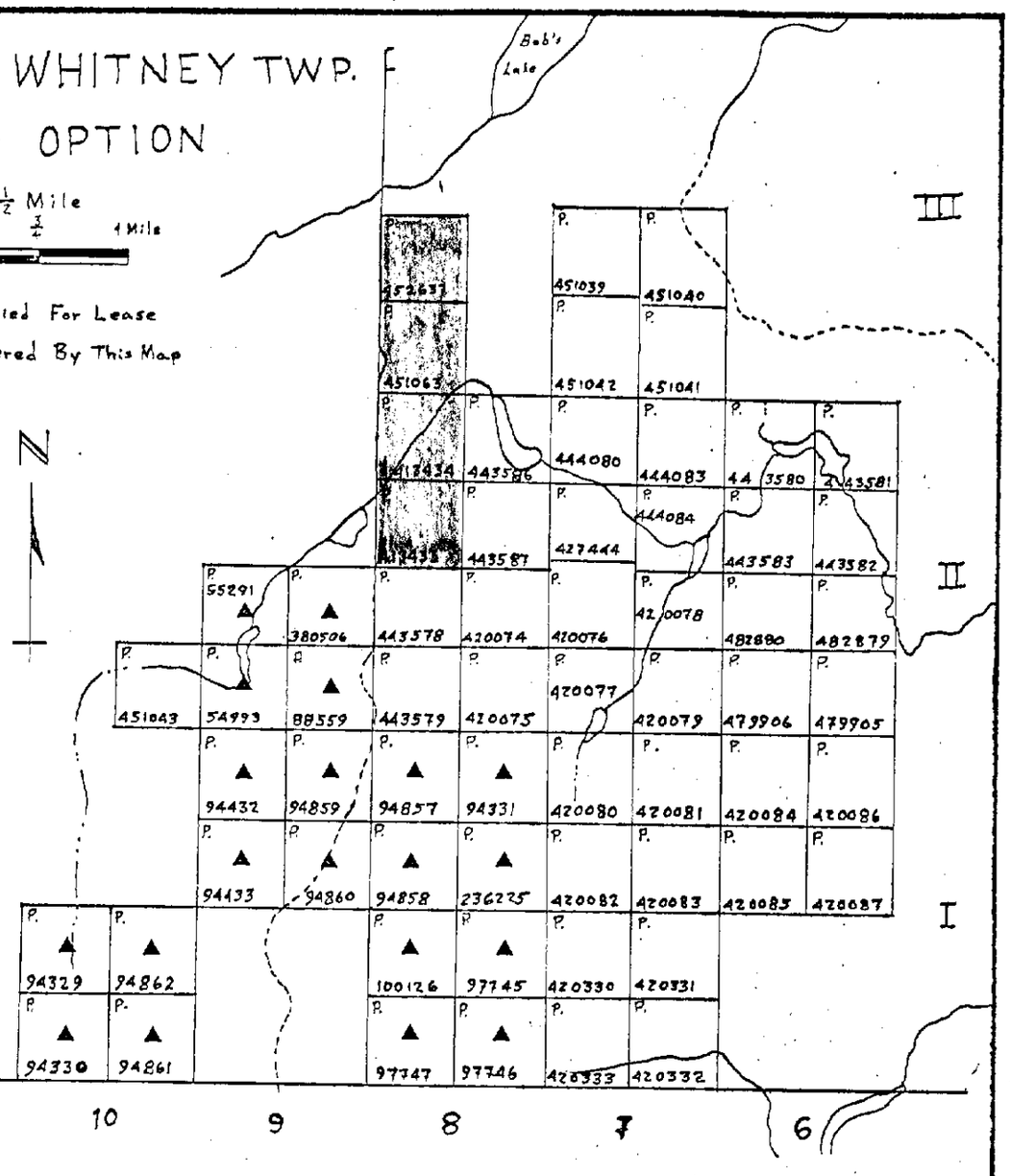
ROSARIO OPTION

Scale 1 Inch = ½ Mile

0 ¼ ½ ¾ 1 Mile

▲ Indicates Claims Applied For Lease

Indicates Claims Covered By This Map



SHAW TWP.

LEGEND

STRATIGRAPHIC UNITS

9 LAMPROPHYRE DIKE

8a DIABASE N-S

8b DIABASE E-W

7 FELSIC INTRUSIVES
- a Feldspar Porphyry
- b Quartz - Feldspar Porphyry
- h High Level Intrusive

6 MAFIC INTUSIVES
- Ch Chloritized

5 ULTRAMAFIC INTRUSIVES
- a Talc - Magnesite
- b Feridotite
- c Carbonated
- d Chloritized

4 METASEDIMENTS
- a Chert
- b Magnetite
- c Hematite
- d Pyrite
- e Pyrrhotite
- f Carbonate
- Gr-g Graphite - Graphitic Shale
- T Tuffaceous
- B Brecciated
- IF Iron Formation
- O Oxide
- S Sulfide

3 FELSIC VOLCANICS
- a Flows
- b Tuff - W Welded
- c Lapilli
- d Agglomerate - Breccia
- QSS Quartz - Sericite Schist
- Ch Chloritized

2 INTERMEDIATE VOLCANICS
- a Flows
- b Tuff - W Welded
- c Lapilli
- d Agglomrate - Breccia
- QSS Quartz - Sericite Schist
- Ch Chloritized

1 MAFIC VOLCANICS
- a Flows
- b Tuff - W Welded
- c Lapilli
- d Agglomerate
- Ch Chloritized
- Ca Carbonated

SYMBOLS

- 20° Strike & Dip (Bedding)
- 10° Foli tion
- 70° Joints
- 72°15' — 20° Lineation
- Drill Hole Vertical - Inclined
- ▲ Magnetic Base Station
- Gp. Interpreted from Ground Magnetics

REGISTERED PROFESSIONAL ENGINEER R. S. MIDDLETON PROVINCE OF ONTARIO

ROSARIO RESOURCES CORP.

LOT 8, CONCESSIONS II AND III
WHITNEY TOWNSHIP, ONTARIO

PLOTTED FROM LAND SURVEY MAP.

SCALE 1" = 400' | DRAWN BY: R.P. BOWEN

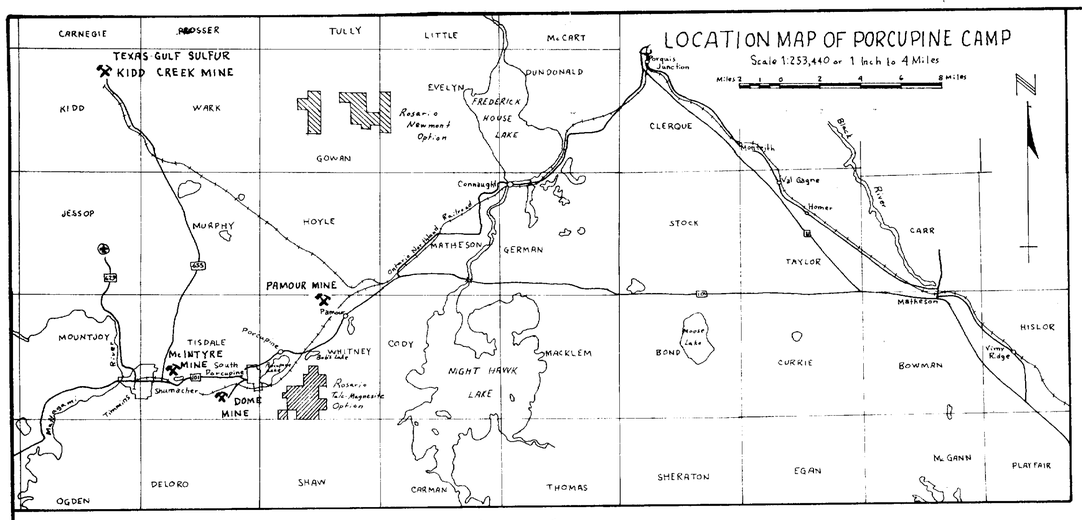
GEOLOGY MAP

GEOLOGY BY: R.P. BOWEN | SHEET 2

2.2257

LOCATION MAP OF PORCUPINE CAMP

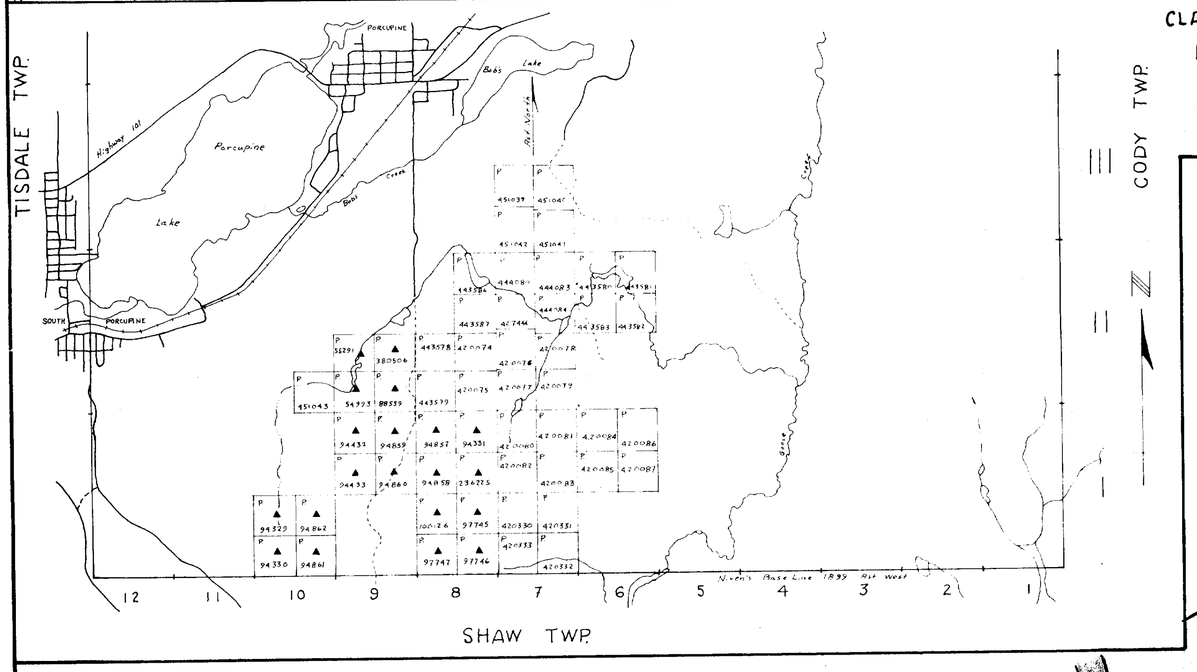
Scale 1:253,440 or 1 Inch to 4 Miles



CLAIM MAP WHITNEY TWP.
ROSARIO OPTION

Scale 1 Inch = ½ Mile

▲ Indicates Claim Taken To Lease



CODY TWP.

2 W 0 2 E 4 E 6 E 8 E 10 E

24 N

22 N

20 N

18 N

16 N

14 N

12 N

10 N

8 N

Peridotite

UM-1

354 Sta.2

55

75 Sta.1 355

40

40

Talc-Magnesite

356 Sta.3

30

357 Sta.4

80

65 Sta.5 358

20 55

Peridotite

Asbestoes Veinlets < 1 cm - < 15 cm

UM-5

10

Peridotite

10

1F QV

25

UM-7

Def. 10 cm wide 3 m long

UM-16

UM-15

Talcose. 50

Sta.6 359

UM-6

Lamp 1

Lamprophyre Dikes

Sta.7 373

25

Sub-Vert.

Sta.8 372

80

75

30

A5

35

Lamprophyre Material

Sta.14 369

30

Sta.13 368

10

75

Disseminated Specular Hematite instead of magnetite

35

Sta.12 367

QV

Sta.9 371

35

Sta.11 370

35

Union Carbide Sample

QV

20

Lamp Veinlet - 12 4" x 1.5'

Sta.10

QV 9b Felsic Intrusive, Porphyritic

4/88559

2/55291

1/54933

3/380506

25

Sta.18

361

366 Sta.17

365 Sta.16

Sta.15

20

Sta.20

362

Sta.21

REGISTERED PROFESSIO

R.S. MIDDLE

PROVINCE OF ON

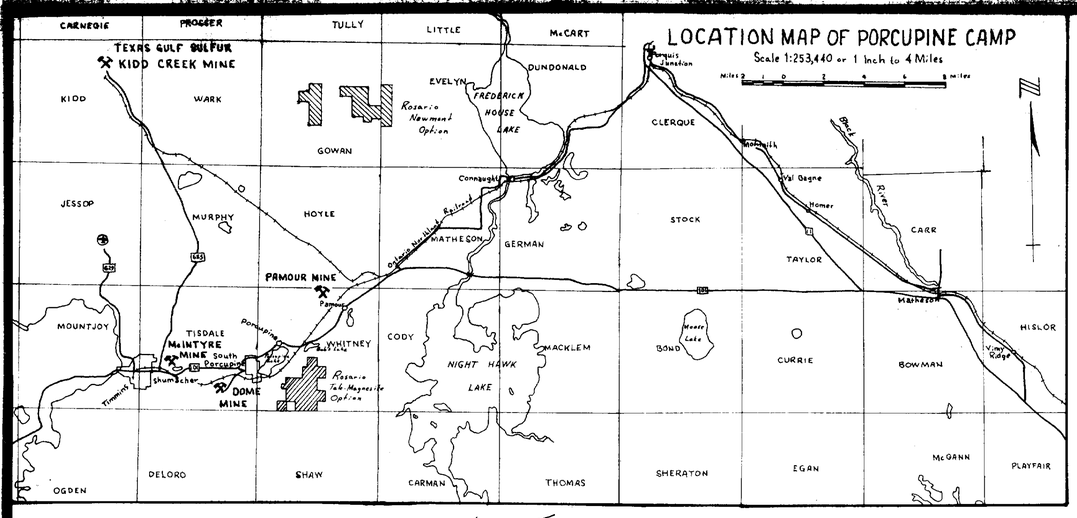
14 E
16 E
18 E
20 E
22 E
24 E
26 E

14 S
16 S
18 S
20 S
22 S
24 S
26 S
28 S
30 S

Talc. I.F.
Quartz Sericite Schist
Chlorite-Graphitic I.F.
Tight folding
Talc-Magnesite
Over burden Obscures Geology
Carbonated Ultra-Mafics Ovarlie I.F.
Compass Erratic
D.D.H. B-2
R&A Vert. Projection
Over burden
Talc-Magnesite
Graphitic I.F.
Dacite
Andesite Chlorite-Carbonate Schist
Talc-Magnesite
Sta.22
17+85E/14+60S
Sta.23
375
16+17E/15+79S
Andesite Chlorite-Carbonate Schist
Banded-Chert-Magnetite I.F.
50°
376
Sta.24
18+60E/16+32S
Road
Talc-Magnesite
Chert-Magnetite I.F.
40°
Sta.25
18+60E/17+45S
Talc-Magnesite
Road
Sta.26
378
18+24E/18+46S
20°
Serpentinized Peridotite
Talc-Magnesite
35°
Sta.29
22+87E/24+08S
22+60E/24+16S
Road
D.D.H. B-7
-90° T.D. 300'
70°
Claim Line
25+33S
Talc-Magnesite
Sta.31
24+75E/27+78S
30°

LOCATION MAP OF PORCUPINE CAMP

Scale 1:253,440 or 1 Inch to 4 Miles



CLAIM MAP WHITNEY TWP.
ROSARIO OPTION

Scale 1 Inch = ½ Mile

▲ Indicates Claim Taken To Lease

TISDALE TWP.

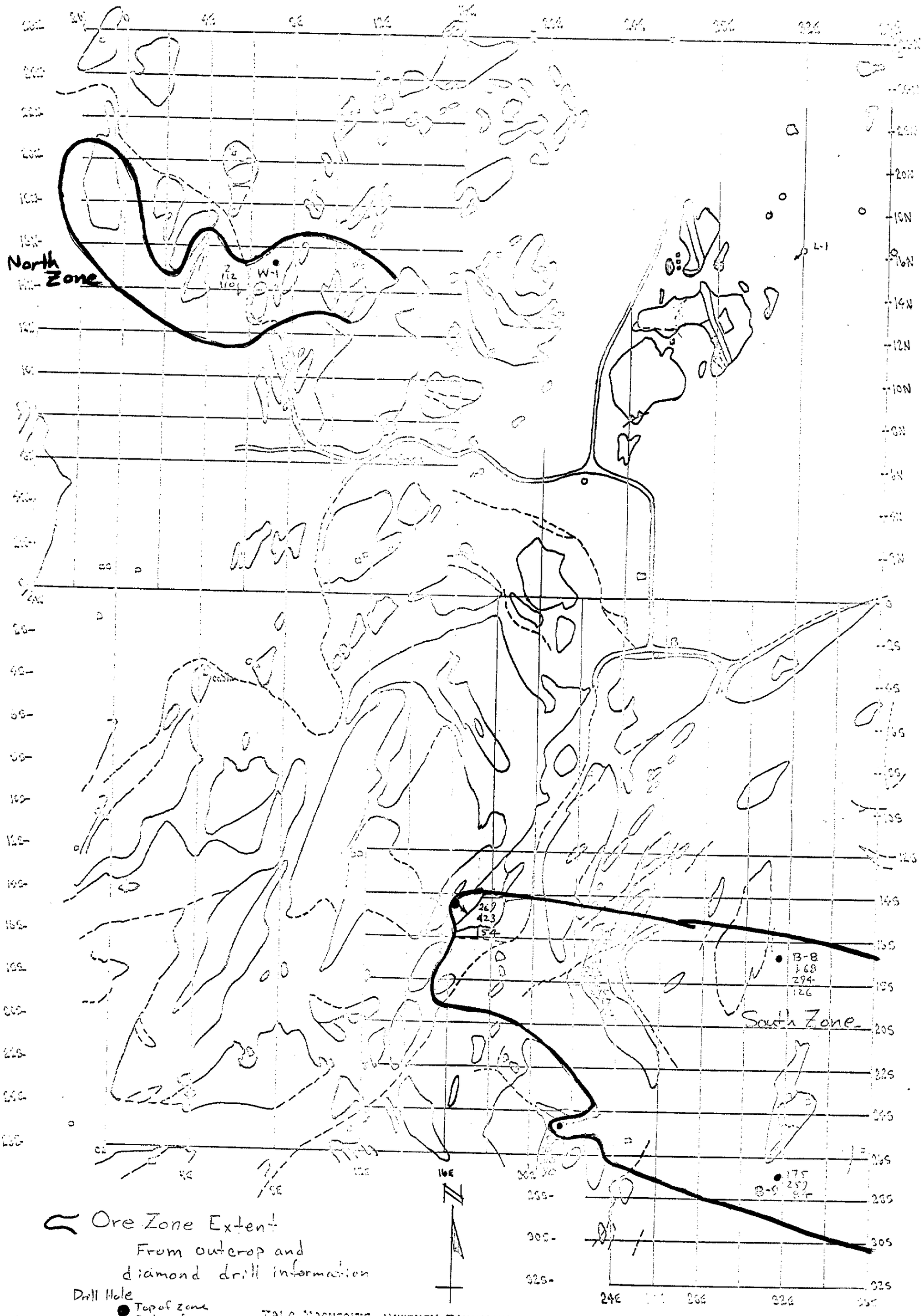
CODY TWP.

SHAW TWP.

P. 451039 P. 451040 P. 451042 P. 451041 P. 444080 P. 443583 P. 443585 P. 427444 P. 444084 P. 443591 P. 420074 P. 420075 P. 94329 P. 94862 P. 94857 P. 94331 P. 420080 P. 420081 P. 420084 P. 94330 P. 94861 P. 94858 P. 236225 P. 420082 P. 420083 P. 420085 P. 94432 P. 94860 P. 94859 P. 94433 P. 420330 P. 420331 P. 97747 P. 97746 P. 420333 P. 420332 P. 443586 P. 443587 P. 443578 P. 443579 P. 420076 P. 420077 P. 420078 P. 420079 P. 94434 P. 94432 P. 94857 P. 94331 P. 94859 P. 94860 P. 94858 P. 94433 P. 100126 P. 97746 P. 420333 P. 420332 P. 451043 P. 55291 P. 380506 P. 88589

Marsh, Pond, Sand, Beaver Pond, Gravel Pit, Cedar Swamp, Alders, Poplars, Sand Island, Base Line, Survey Line, Astronomic North, Astronomic West, TOWNSHIP BOUNDARY

SHAW TWP.



Pg 31 in report.

LOCATION MAP OF PORCUPINE CAMP

Scale 1:253,440 or 1 Inch to 4 Miles

Miles 2 1 0 2 4 6 8 Miles

Porquis Junction, CLERQUE, Black River, Val Gagne, Homer, STOCK, CARR, TAYLOR, Matheson, HISLOP, Mesomike Lake, BOND, CURRIE, BOWMAN, Vimy Ridge, SHERATON, EGAN, McGANN, PLAYFAIR

CLAIM MAP WHITNEY TWP.
ROSARIO OPTION

Scale 1 Inch = ½ Mile

0 ¼ ½ ¾ 1 mile

▲ Indicates Claim Taken To Lease

CODY TWP.

Gate City of Timmins

City Dump Closed 1 April 76

P. 451039 P. 451040 P. 451042 P. 451041 P. 444080 P. 444083 P. 443580 P. 443581 P. 443587 P. 427444 P. 444084 P. 443582 P. 443583 P. 443578 P. 420076 P. 420074 P. 420078 P. 443579 P. 420077 P. 420075 P. 420079 P. 420082 P. 420083 P. 420084 P. 420086 P. 420085 P. 420087 P. 420330 P. 420331 P. 420333 P. 420332 P. 236225 P. 100126 P. 97745 P. 97747 P. 97746 P. 94331 P. 94432 P. 94857 P. 94858 P. 94433 P. 54993 P. 55291 P. 88559 P. 388508

Base Line 6+00 North

Pond

TOWNSHIP BOUNDARY

Astronomic West

SHAW TWP.

LEGEND

STRATIGRAPHIC UNITS

- 9 LAMPROPHYRE DIKE
- 8a DIABASE N-S
- 8b DIABASE E-W
- 7 FELSIC INTRUSIVES
  - a Feldspar Porphyry
  - b Quartz - Feldspar Porphyry
  - h High Level Intrusive
- 6 MAFIC INTUSIVES
  - Ch Chloritized
- 5 ULTRAMAFIC INTRUSIVES
  - a Talc - Magnesite
  - Ore Zone
  - b Feridotite
  - c Carbonated
  - d Chloritized
- 4 METASEDIMENTS
  - a Chert
  - b Magnetite
  - c Hematite
  - j Pyrite
  - e Pyrrhotite
  - f Carbonate
  - Gr-g Graphite-Graphitic Shale
  - T Tuffaceous
  - B Brecciated
  - IF Iron Formation
  - O Oxide
  - S Sulfide
- 3 FELSIC VOLCANICS
  - a Flows
  - b Tuff - W Welded
  - c Lapilli
  - d Agglomerate - Breccia
  - QSS Quartz - Sericite Schist
  - Ch Chloritized
- 2 INTERMEDIATE VOLCANICS
  - a Flows
  - b Tuff - W Welded
  - c Lapilli
  - d Agglomerate - Breccia
  - QSS Quartz-Sericite Schist
  - Ch Chloritized
- 1 MAFIC VOLCANICS
  - a Flows
  - b Tuff - W Welded
  - c Lapilli
  - d Agglomerate
  - Ch Chloritized
  - Ca Carbonated

SYMBOLS

- Strik & Dip (Bedding)
- Foliation
- Joints
- Lineation
- Drill Hole Vertical - Inclined
- Magnetic Base Station
- Interpreted Contact
- Fault

III

I

N

REGISTERED PROFESSIONAL ENGINEER R. S. MIDDLETON PROVINCE OF ONTARIO

ROSARIO RESOURCES CORP.

ALLERSTON CLAIM GROUP
WHITNEY TOWNSHIP, ONTARIO

PLOTTED FROM LAND SURVEY MAP

SCALE 1" = 400' DRAWN BY: R.P. BOWEN

GEOLOGY MAP

GEOLOGY BY: R.P. BOWEN ASSISTED BY: J. WINTERS

R.P. Bowen

SHEET 1

2.22257

2E 4E 6E 8E 10E 12E 14E

24N

22N

20N

18N

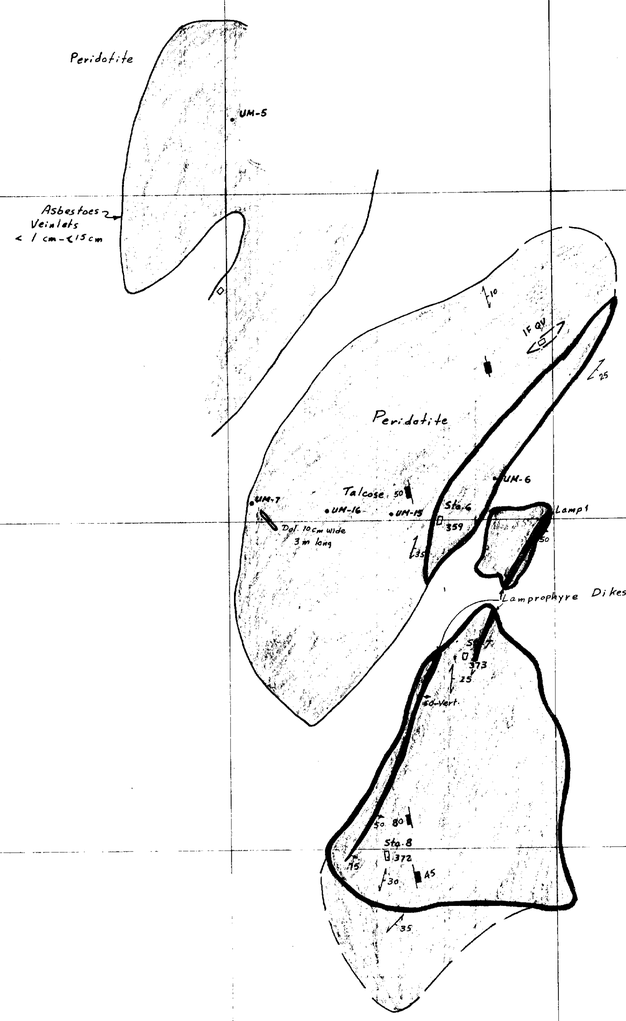
16N

14N

12N

10N

8N



N

R. P. MIDDLETON
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

ROSARIO RESOURCES CORP.

WHITNEY TOWNSHIP---------ONTARIO
NORTH – ZONE

DETAIL GEOLOGY MAP

GEOLOGY BY : R.P. BOWEN	SCALE : 1"=50'
ASSISTED BY : J WINTERS	DATE :

2.2257

22 E | 24 E | 26 E | 28 E | 30 E | 32 E | 34 E

14S

16S

18S

D.D.H. B-8
T.D. 426'

20S

22S

Carbonated Ultramafics
QV

24S

Carbonated I.F. & Mineral Ultramafics

Sta. 32
384
32E/25S
20°

Qtz. Carb. Py-Po I.F.

QV
Non-Magnetic Tuffaceous ?

26S

D.D.H. B-9
T.D. 303'

Carbonated Ultramafics

Talc-Magnesite
35°
Sta. 29
22+87E/24+08S
22+60E/24+16S

Road
D.D.H. B-7
T.D. 300'

Claim Line
26+33S
Talc-Magnesite

Sta. 31
24+75E/27+78S
30°

28S

30S

22 E | 24 E | 26 E | 28 E | 30 E | 32 E

REGISTERED PROFESSIONAL ENGINEER
S. HADDLETON
PROVINCE OF ONTARIO

ROSARIO RESOURCES CORP.

WHITNEY TOWNSHIP--------ONTARIO
SOUTH – ZONE

DETAIL GEOLOGY MAP

GEOLOGY BY : R.P. BOWEN	SCALE : 1" = 50'
ASSISTED BY : J.WINTERS	DATE :

2.2257

CLAIM MAP WHITNEY TWP.
ROSARIO OPTION

Scale 1 Inch = ½ Mile

0 ¼ ½ ¾ 1 Mile

▲ Indicates Claim Taken To Lease

CODY TWP.

N

Gate City of Ramins

C.I. Dump Closed 1 April 76

P. 451039 P. 451040 P. 451042 P. 451041

P. 443586 P. 444080 P. 444083 P. 443580 P. 443581

P. 443587 P. 427444 P. 444084 P. 443583 P. 443582

P. 443578 P. 420074 P. 420076 P. 420078

P. 443579 P. 420075 P. 420077 P. 420079

P. 94857 P. 94331 P. 420080 P. 420081 P. 420084 P. 420086

P. 94858 P. 236225 P. 420082 P. 420083 P. 420085 P. 420087

P. 100126 P. 97745 P. 420330 P. 420331

P. 97747 P. 97746 P. 420333 P. 420332

Marsh, Pond, Sand, Beaver Pond, Sand Island, Alders, Poplars, Cedar Swamp

Base Line 53 North

Base Line 0 North

TOWNSHIP BOUNDARY

Astronomic West

Astronomic North

SHAW TWP.

8 7 6

III II I

LEGEND

INDICATES ASSAYS

354 BULK SAMPLES - TALC-MAGNESITE

UM-7 MAFIC-ULTRAMAFICS UM SERIES

Q-17 FELSIC VOLCANICS - IRON FORMATION

Q SERIES
V SERIES - MAFIC-INTERMEDIATE VOLCANICS
D SERIES
S SERIES

ALL OTHER SAMPLES

UM-13
Q-1
V-2
D-3
S-2

FOR THIN SECTION

354 T 354 T Assay or Rock Analysis also Available

UM-25 ⊙ Thin Section only

REGISTERED PROFESSIONAL ENGINEER R. P. BOWEN PROVINCE OF ONTARIO

ROSARIO RESOURCES CORP.

ALLERSTON CLAIM GROUP
WHITNEY TOWNSHIP, ONTARIO

PLOTTED FROM LAND SURVEY MAP

SCALE 1" = 400' DRAWN BY: R.P. BOWEN

SAMPLE LOCATION MAP

GEOLOGY BY: R.P. BOWEN ASSISTED BY: J. WINTERS

2.2257