



42A03SE0250 2.12073 ENGLISH

010

GEOLOGY AND GEOCHEMISTRY OF THE
ENGLISH - ZAVITZ PROPERTY
PROJECT 1673

ENGLISH AND ZAVITZ TOWNSHIPS
PORCUPINE MINING DISTRICT, ONTARIO
42A/3

ESSO MINERALS CANADA
BOX 290
TIMMINS, ONTARIO P4N 7N6

BY

DANE A. BRIDGE
JANUARY, 1989

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MINING LANDS SECTION



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TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
SUMMARY	1
LOCATION AND ACCESS	2
CLAIMS	2
VEGETATION AND TOPOGRAPHY	5
GENERAL GEOLOGY	8
PROPERTY GEOLOGY	8
General Statement	8
Felsic and Sedimentary Rocks	9
Ultramafic Rocks	10
Basalt	10
Aplite and Chlorite Granite	11
Diabase	11
Syenite	12
43N SHOWING	12
GRID AND MAGNETIC SURVEY	12
SOIL SAMPLING	13
GOLD SHOWINGS IN THE AREA	14
WORK DONE	15
RECOMMENDATIONS	15
PROPOSED BUDGET	16
REFERENCES	17
STATEMENT OF QUALIFICATIONS	18
APPENDIX 1	Sample Descriptions and Assays
APPENDIX 2	Whole Rock Analyses, Interpretation, Jensen and AFM Diagram
APPENDIX 3	Soil Sample Analyses

PAGE

APPENDIX 4	Certificate of Payment of Invoices	
APPENDIX 5	HSK Minerals drilling results, December 7, 1987, Northern Miner	
FIG. 1	Location Map	3
FIG. 2	Claim Map	4
FIG. 3	General Geology, after Bright	6
FIG. 4	General Geology, after Pyke	7
FIG. 5	Jensen Cation Diagram	Appendix 2
FIG. 6	AFM Diagram	Appendix 2
MAP 1	Geology, East Half	In pocket
MAP 2	Geology, West Half	In pocket
MAP 3	43 N Showing	In pocket
MAP 4	L40N Area	In pocket
MAP 5	L36N Area	In pocket
MAP 6	Soil Geochemistry	In pocket

INTRODUCTION

This report documents geological mapping, rock sampling for gold and whole rock analysis and soil sampling with analysis for seven elements. Assessment credits are claimed for linecutting and geological mapping on the claims and portions of claims mapped. Assessment credits are claimed for the analytical costs only for rock samples collected during field mapping and sampling of trenches excavated by machine stripping and for soil samples. The report describes all rock samples and locates all sample sites for rock samples and interprets the results of soil sampling.

Geological mapping has been done on eighteen claims (996972, 997504-506, 997700, 701, 704, 705, 708, 709, 716-719, 721-723). Assessment credits for linecutting and geology are claimed on sixteen claims as follows:

<u>CLAIM</u>	<u>DAYS CREDITS</u>
996972	5
997505	20
997700	10
997701	40
997702	30
997704	10
997705	10
997708	20
997709	5
997716	25
997717	30
997718	40
997719	40
997721	20
997722	40
997723	30

Assessment credits are claims for assaying, analysis of soil samples and whole rock analyses. Sample descriptions and assay results for all samples along with certification of payments of invoices totaling \$3160.00 is in Appendix 1. Soil sampling and interpretation is discussed in the test.

SUMMARY

A previously unknown and unexplored gold occurrence has been located on a forty-four claim block, 100% owned by Esso Resources Canada Limited, in English and Zavitz Townships. Gold mineralization was discovered in June, 1987 during a

reconnaissance traverse.

Gold has been located on the property in carbonate altered ultramafic rocks (up to 67 ppb Au), in quartz veined and pyritic aplite (up to 76 ppb Au), in iron formation (up to 525 ppb Au) and in a band of quartz veined and pyritic Fe-tholeiitic basalt (up to 1200 ppb or 0.035 oz/ton Au). The gold mineralization in Fe-tholeiitic basalt, called the 43N Showing, is considered significant. The showing is in a band of basalt near the margin of a 200 to 400 m wide, and at least 3 km long band of carbonate altered ultramafic rocks. The carbonate ultramafic rocks indicate that a strong hydrothermal alteration event with associated gold has occurred in the area. The 43N Showing can be traced for 130 m by anomalous gold values in soils and is indicated to extend for at least 600 m by slightly anomalous gold values in soils. Mg-tholeiitic basalts near the 43N Showing locally have zones of carbonate alteration with areas of weak shearing.

Trenching and sampling of IP chargeability anomalies indicated that low gold values (up to 260 ppb) occur with pyritization in carbonate ultramafic rocks.

LOCATION AND ACCESS

The property is located about 38 km south of Timmins, Ontario in southeastern English Township and southwestern Zavitz Township (Figure 1). Access to the property is via all weather roads south of Timmins on Pine Street. 57.5 km south of Timmins the Matachewan Highway leads east. At a point 7.5 km east a powerline crosses the highway. Going north on the powerline access road a bridge spans to the Redstone River at the 5.0 km point. This is the best camp site for working on the claims. The powerline road continues about 2 km north on the claims to line 41N. Four wheel drive is needed for the last 1 km because of a large swamp and ruts. Driving time from Timmins to line 41N is about 1 1/2 hours.

CLAIMS

The property consists of forty-four claims in English and Zavitz Townships (Figure 2). The claims are 100% owned by Esso Resources Canada Limited.

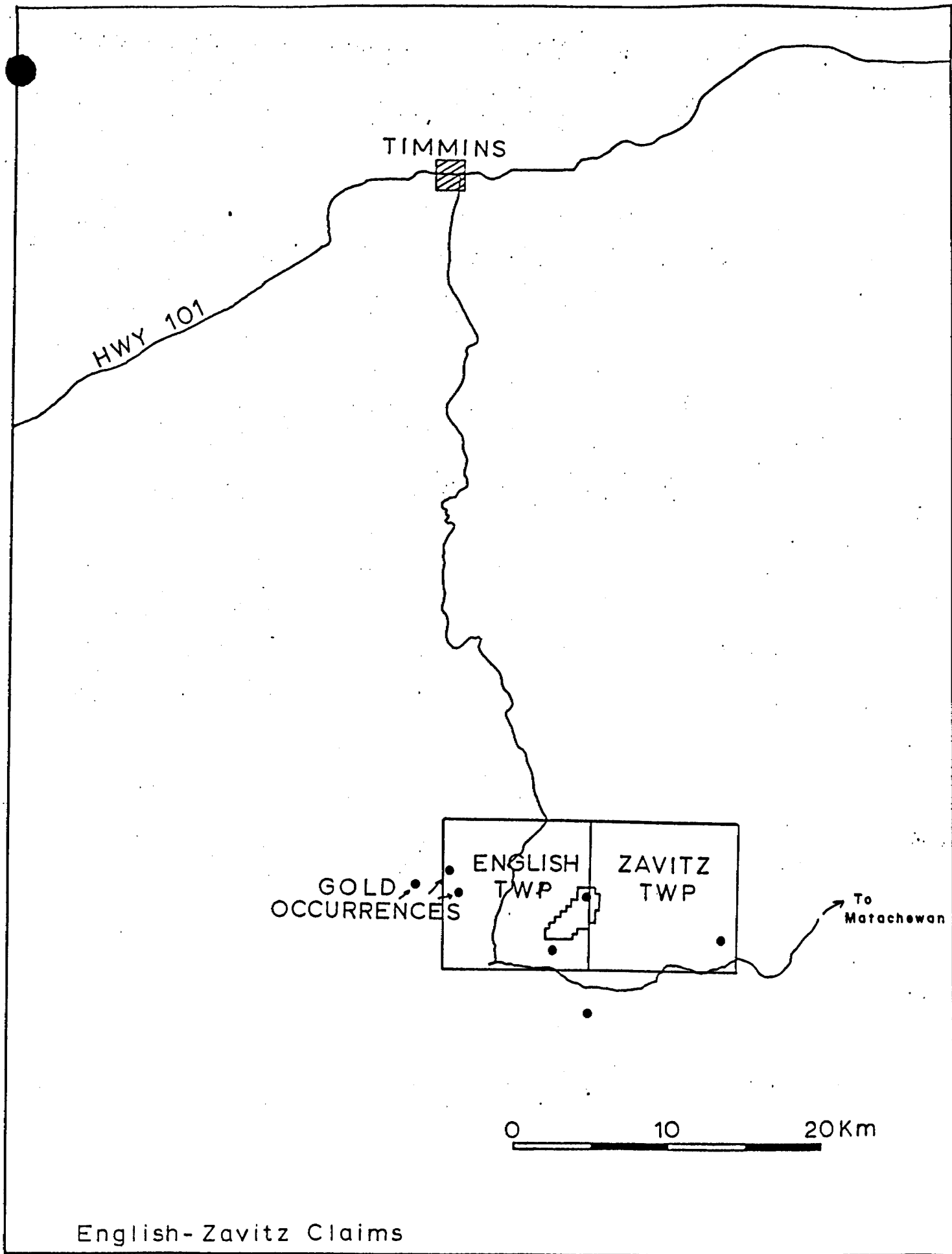


Fig. 1: Location Map

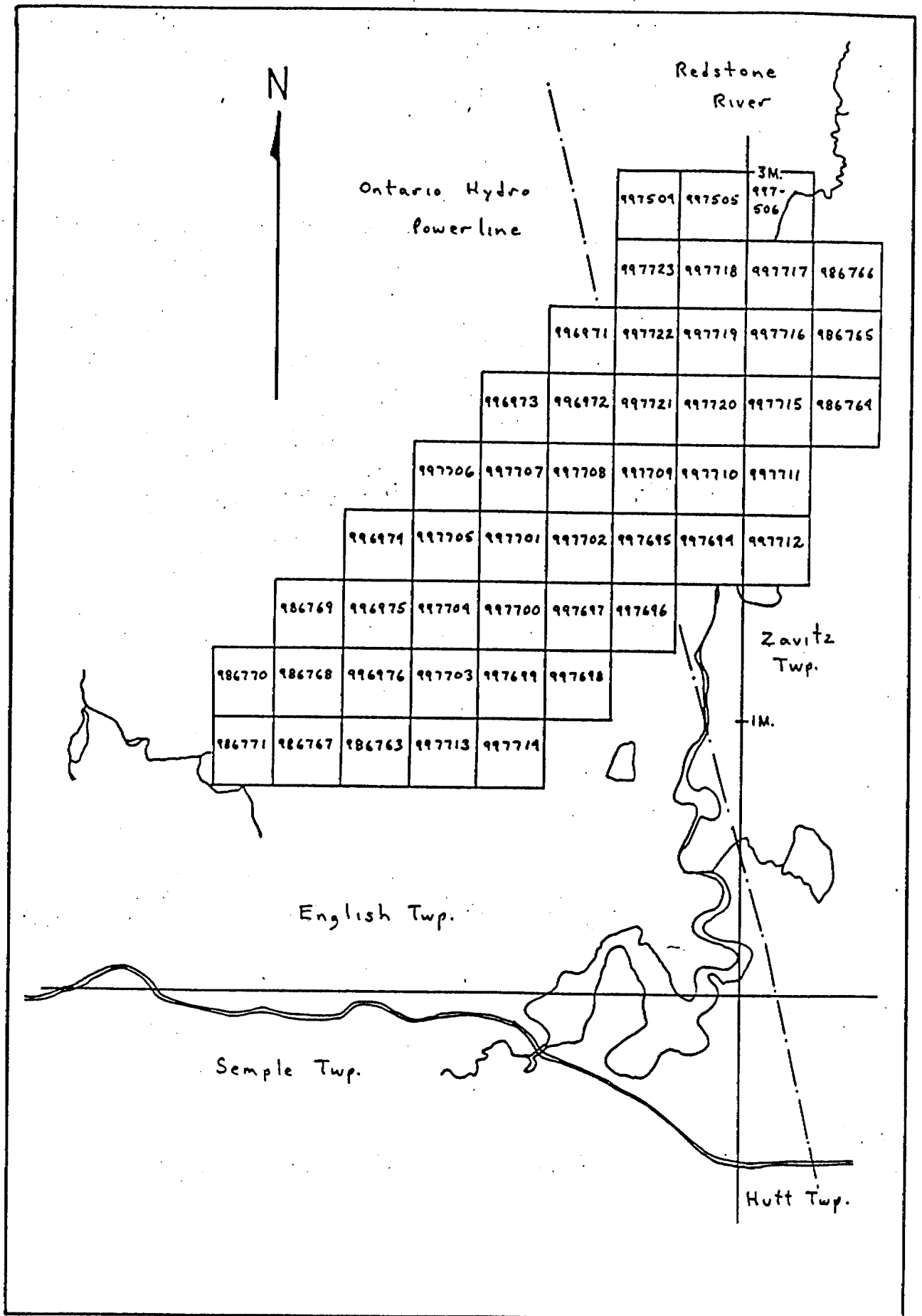


Fig.2: Claim Map

English Township Claims

<u>CLAIMS</u>	<u>NO. OF CLAIMS</u>	<u>RECORDING DATE</u>
986767-986771	5	July 2, 1987
996971-996976	6	July 2, 1987
997694-997710	17	July 2, 1987
997713-997714	2	July 2, 1987
997718-997723	6	July 2, 1987
997504-997505	2	August 31, 1987

Zavitz Township Claims

<u>CLAIMS</u>	<u>NO. OF CLAIMS</u>	<u>RECORDING DATE</u>
986765-986766	2	July 2, 1987
997715-997717	3	July 2, 1987
997506	1	August 31, 1987

The southern property boundary adjoins claims being explored by Placer-Dome. Open ground exists on the other sides of the claim blocks.

VEGETATION AND TOPOGRAPHY

The diabase outcrop areas and immediately adjacent rocks are areas of relatively high relief. South and east of the diabase the topography is flat and swampy.

Vegetation on the property is mainly spruce and cedar with mixed areas containing birch and poplar. Locally, isolated red pine occurs in well drained areas. Much of the spruce has been killed by spruce budworm. The killed areas are now overtaken by alder and raspberry.

The swampy areas on the claims are dominated by cedar. Open bullrush swamp occurs in the southeast portion of Map 1.

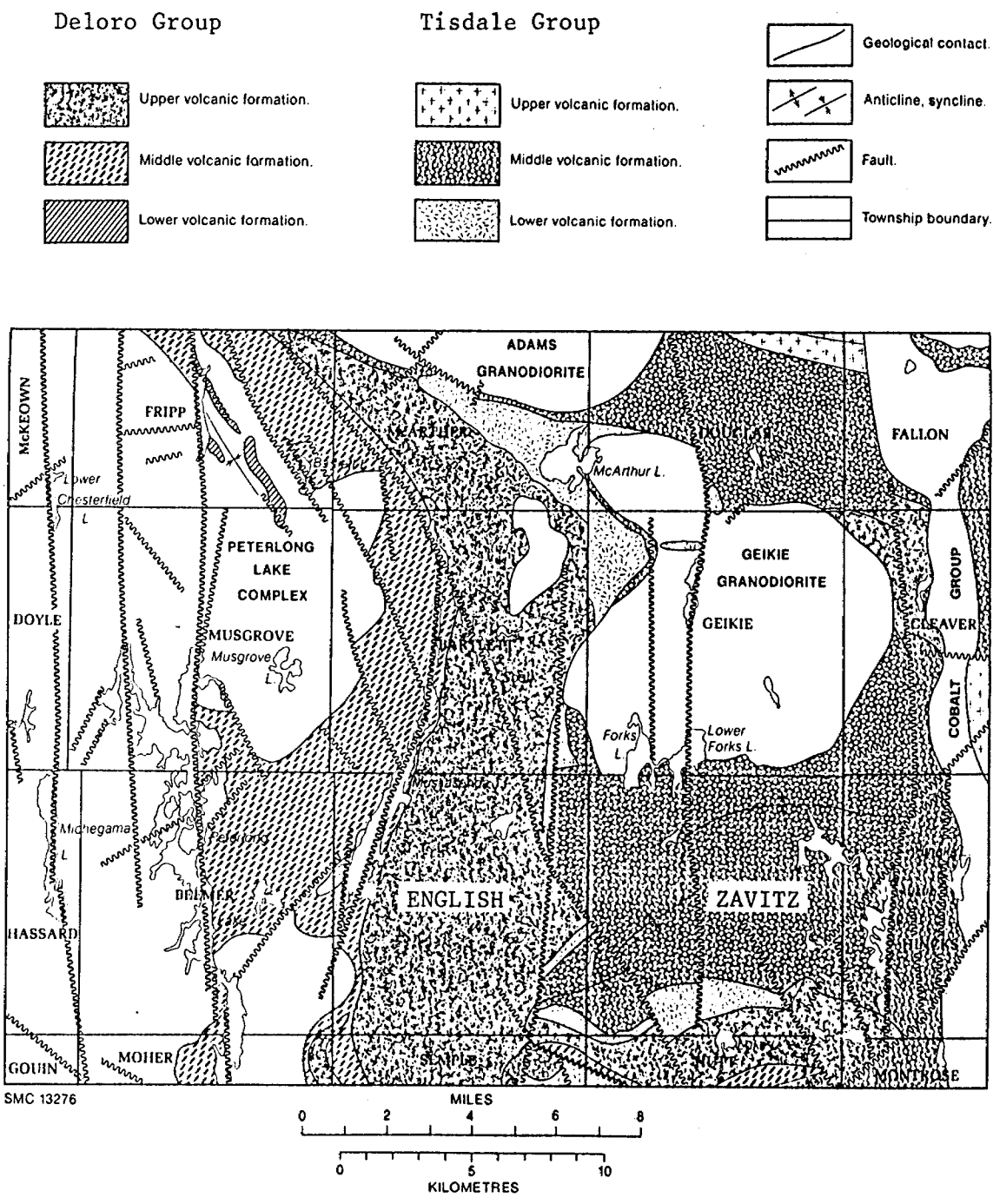
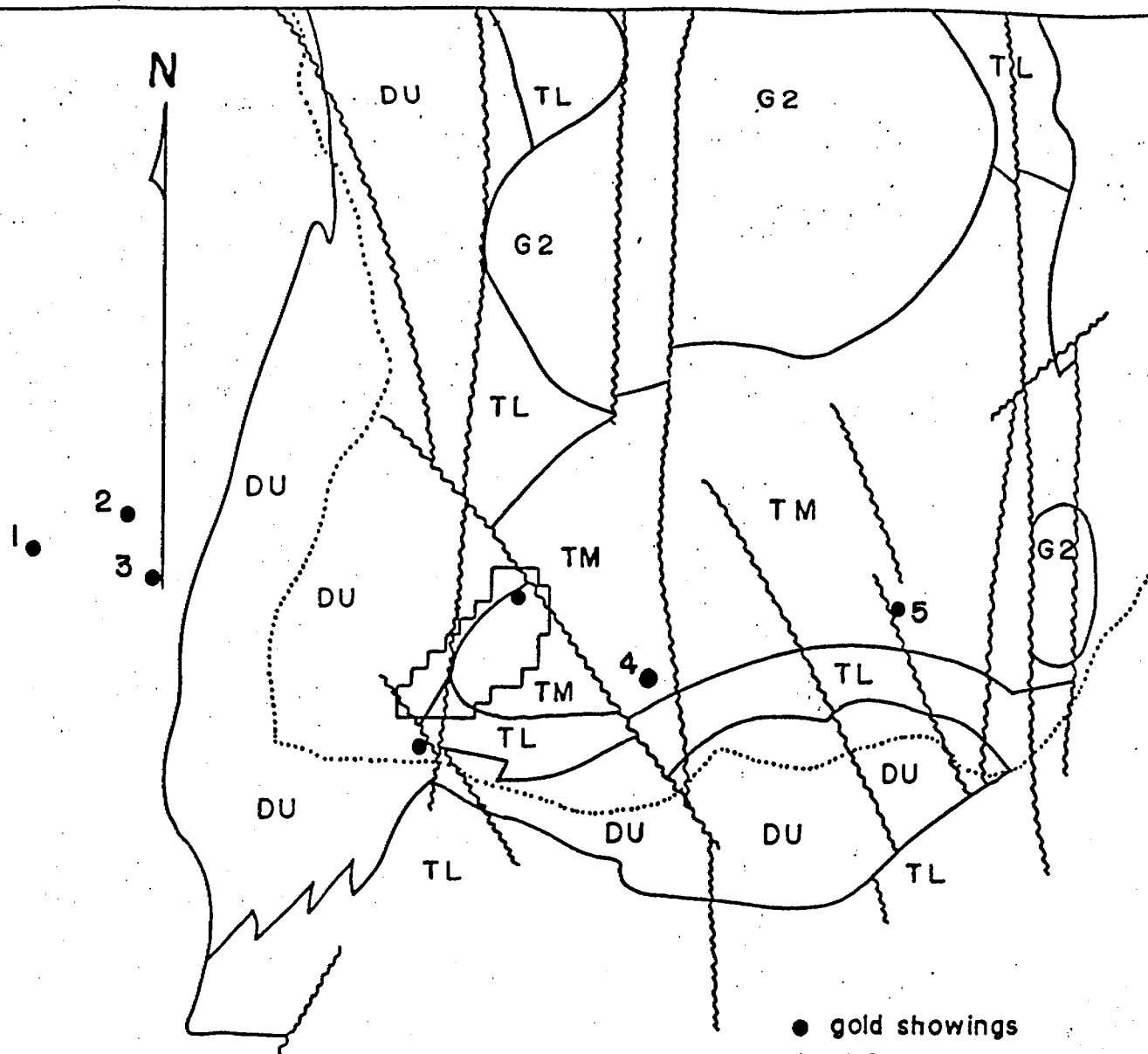


Fig. 4: General Geology, after Pyke (1978). The northeast striking band of Tisdale Group, Lower Volcanic Formation on the English Zavitz township boundary is the band of carbonate altered ultramafic rock referred to in this report.



G2

Late- to post- kinematic granitoids.
Cycle 3

TM

Tisdale Group, Middle Formation
Mainly Fe- rich and Mg- rich tholeiitic basalt

TL

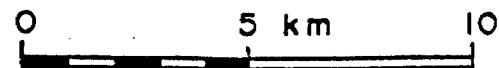
Tisdale Group, Lower Formation
Mainly ultramafic and basaltic komatiite and Mg- rich tholeiitic basalt
Cycle 2

DU

Deloro Group, Upper Varied Division
Mainly calcalkalic volcanic rocks

..... road

- gold showings
- 1 Sylvanite
- 2 Nelson
- 3 Boychuck
- 4 Vipond
- 5 Fiset



General Geology, English - Zavitz Property

after OGS-MEQR MAP 2484, 1983

Fig. 3.

GENERAL GEOLOGY

The Townships of English and Zavitz were mapped by Bright in 1967 and 1968 and included in an area of regional mapping by Pyke in 1972. Bright's final report on the area (1984) provides a 1 inch to 1/2 mile geology map of the area. Figure 3 is from ODM Map 2484 (1983). The oldest volcanic cycle in the area is the Archean Deloro Group. In the figure area the upper sequence of the Deloro Group is preserved consisting of calc-alkalic volcanic rocks, minor mafic volcanic rocks and oxide and sulphide iron formations. The Deloro Group rocks are overlain by the Lower and Middle Formations of the Tisdale Group. The Lower Formation, mainly ultramafic and basaltic komatiite and magnesium-rich tholeiitic basalt, occurs across the property but is not completely shown in Figure 3. It is overlain by the Middle Formation, mainly iron and magnesium-rich tholeiitic basalts, to the east on the claim block. The area has been folded into tight isoclinal folds along roughly east-west fold axes, intruded by granitoids, and faulted by mainly north-south faults.

The property is on the contact between the Deloro and Lower Formation Tisdale Group. Most gold producers in the Porcupine camp are near this contact and in the Lower or Middle Formation of the Tisdale Group. Bright's Map 2290 indicates carbonate alteration in outcrops, along a powerline and northwest of Steve Lake, interpreted to be felsic rocks of the Deloro Group. Field examination indicated the rocks to be carbonate altered ultramafic rocks which were probably derived from the Lower Formation of the Tisdale Group. Map 2345 by Pyke (1978) interprets the area of carbonate altered ultramafic rocks to the Tisdale Group (Fig. 4). A reconnaissance traverse located quartz-tourmaline veining with 640 ppb Au in an area of mafic volcanic rocks enclosed by carbonate altered ultramafic rocks. Claims were staked over the open portion of the carbonate altered ultramafic rocks.

PROPERTY GEOLOGY

General Statement

The property geology is shown on Maps 1 and 2. A diabase dyke striking about 040° appears to separate Deloro Group rocks on the west from mafic and ultramafic Tisdale Group rocks on the east. Iron formation occurs along the west contact of the diabase in a thin sedimentary band at the top of a felsic volcanic section. Locally (L47-48N, 230-320E) carbonate altered ultramafic rocks occurs within Deloro Group lithologies.

A 200 to 400 m wide band of carbonate altered ultramafic rocks occurs on the east side of the diabase dyke. It contains

lenses of tholeiitic basalts and is overlain by basalt to the east. This mafic-ultramafic section is probably within the Tisdale Group. However, two small outcrops of felsic volcanic rocks occur in it (L46, 725 and 895E) indicating that it may be Deloro Group. Bright (1984) includes it with the Deloro Group (Fig. 3), but Pyke (1978) interprets it to be Lower Formation Tisdale group (Fig. 4).

The band of carbonate altered ultramafic rocks is 3000 m long and open. It is terminated, probably on claim P-997506, by a northwest striking right lateral fault which has not been located on the property but is known from regional geology (Fig. 3). The ultramafic rocks probably continue to the south boundary of the property and onto ground being explored by Placer-Dome.

Gold occurs in a lens of mafic volcanic rocks, enclosed by carbonate altered ultramafic rocks, and associated with quartz veining and pyrite. Gold also occurs in aplite bodies intruded into the ultramafic rocks associated with quartz veining and pyrite. Sulphide-oxide facies iron formation on the west side of the diabase dyke locally contains anomalous gold.

Felsic and Sedimentary Rocks

The oldest rocks on the property are the predominately felsic volcanic rocks of the Deloro Group. They occur on the west of the diabase dyke which roughly follows the baseline on the property. They vary from massive, aphanitic rhyolite to lapilli tuff and block tuff with a chloritic matrix. The rhyolites are locally magnetic with areas and crude bands of disseminated magnetite. They are interbedded with silica-oxide-sulphide facies iron formation which locally is cut by quartz veins and contains anomalous gold (Map 4). The only other sedimentary rocks observed were banded cherts associated with oxide facies iron formation.

Massive and locally tuffaceous basalt occurs on the west side of the diabase dyke in a few localities. It has not been observed in contact with felsic rocks and can not be separated megascopically from the basalts on the east side of the diabase.

Bedding in the felsic and sedimentary rocks is quite variable. On a regional scale the area is on the north limb of a syncline striking 050° . Observed bedding varies from 035° to 090° with dips from 45° N through to vertical and to 70° SE around L40 and 48. Bedding on L22N is $145^{\circ}/45^{\circ}$ NE, roughly at right angles to the regional trend. Foliation is very poorly developed. Two observations of foliation or shearing were consistent with the regional trend and were $035-045^{\circ}/70^{\circ}$ SE.

Ultramafic Rocks

A 200 to 400 m wide band of ultramafic rocks occurs on the west side of the diabase dyke and locally single outcrops occur on the east side. The ultramafic rocks are altered to a chlorite-actinolite-talc assemblage and locally exhibit spinifex texture and polygonal jointing. Most of the ultramafic outcrops are converted to a light to medium green carbonate-chlorite rock which is mainly ankerite and only locally calcitic. Sampling for gold has indicated mainly background values with two locations with 67 and 60 ppb Au respectively (2940N, 230E, and L38N, 200E). Old pits occur in an outcrop area along the powerline (Map 5) where quartz veins up to 1.0 m thick cut the carbonate altered ultramafic rocks.

The carbonate altered ultramafic rock is commonly massive and medium-grained. Rarely it contains up to 2% disseminated pyrite and 2% quartz veins.

Ten samples of ultramafic rocks were analyzed and plotted on the Jensen cation diagram (Fig. 5). They plot in the basaltic and ultramafic komatiite fields and are probably Lower Formation Tisdale Group. One outcrop mapped as chloritic basalt is basaltic komatiite from the Jensen plot.

Basalt

A section of basalt with an unknown thickness occurs along the east side of the ultramafic rocks and locally is within them. The basalts are mainly fine-grained, massive and locally amygdaloidal or vesicular. They are chloritic, very dark colored and non-magnetic to strongly magnetic. Foliation is absent to weak and locally moderately strong in areas of carbonate alteration around L41N, 750E.

On a Jensen cation plot (Fig. 5) one sample plots in the Mg-tholeiitic field and two plot in the calc-alkaline basalt field. All three samples fall in the tholeiitic field on an AFM diagram (Fig. 6). This indicates that the basalts are leucoxene-bearing basalt outcrops on strike with the 43° N showing are Fe-tholeiitic basalts on both the Jensen and AFM diagrams.

The basaltic section appears to consist of both Mg-and-Fe-tholeiitic flows. The Fe-tholeiites are leucoxene-bearing or strongly magnetic where cut by quartz vein stockworks, or very chloritic. One outcrop mapped as chloritic basalt chemically is a basaltic komatiite (Sample 3054).

Basalts probably underlie the portion of the property southwest of L39N between the ultramafic band and Steve Lake-Redstone River. This area is unmapped and mainly covered by cedar or bullrush swamp.

Aplite and Chloritic Granite

A granitic rocks occurs as small, isolated outcrops or patches of outcrops possibly comprising elongate stocks 200 m long by 50 m wide. The rock is commonly a pale pink to grey aplite or less commonly a granite with abundant chlorite that weathers like lamprophyre. The aplite is massive, hard, unaltered, but locally is intensely fractured and filled with up to 15% quartz vein stockwork and minor to 5% disseminated pyrite. This mineralized aplite contains up to 76 ppb Au. A soil sample of 5000 ppb Au on L44N is over an aplite subcrop area.

The aplite has been observed to intrude carbonate altered ultramafic rocks and occurs close to the 43°N showing. The association of quartz veining, disseminated pyrite and some anomalous gold values may indicate that the aplites are pre-gold mineralization and may have intruded into zones of deformation and alteration like the porphyries in the Porcupine Camp.

One sample of aplite (3069, 11 on plot) was analyzed and plotted on the Jensen cation diagram (Fig. 5). Chemically it is Mg-tholeiitic basalt rather than plotting in the expected rhyolite or dacite field. This may indicate that the rock called aplite is an altered basalt but there is no field evidence to support such an interpretation. On a standard AFM plot the aplite falls in the calc-alkaline field (Fig. 6).

Diabase

A 50 to 200 m wide diabase dyke crosses the property roughly along the baseline. The diabase appears to separate Deloro Group rocks to the west from Tisdale group rocks to the east and may have intruded along an existing zone of structural weakness and alteration. The diabase consists of a medium to coarse-grained leucodiabase phase which is commonly weakly or non-magnetic and a strongly magnetic fine-grained phase. Iron formation or strongly magnetic rhyolite commonly occurs along the west side of the diabase making it difficult to determine the exact location of the diabase contact from magnetics.

Syenite

A diabase outcrop on L27N is cut by a medium to coarse-grained syenite dyke.

43N SHOWING

Gold values have been located on the property in four rock types all closely related to the 200 to 400 m wide band of carbonate altered ultramafic rocks (Map 1). Although economic grades are not indicated from surface sampling, a long and wide zone of hydrothermally altered rocks with associated quartz veining, pyritization and gold is present. Gold has been located in carbonate ultramafic rocks (up to 67 ppb Au), in quartz veined and pyritic aplite (up to 76 ppb Au) and in Fe-tholeiitic basalt (up to 1200 ppb Au).

The 43N Showing is a mineralized area located at 43N, 550E (Map 3). A poorly exposed subcrop area of Fe-tholeiitic basalt is locally cut by a strong quartz vein stockwork with disseminated pyrite in veins and in vein wallrocks (Map 3). The basalt is fine-grained, chloritic and strongly magnetic. It is cut by a random stockwork of quartz veins from 1 mm to 2 cm thick. The best mineralized areas contains 3 to 5% quartz veining and 5% pyrite.

The size and abundance of the quartz veins and the presence of wallrock pyrite is similar to that locally seen in aplite unit. The mineralization in basalt may be related to an aplite contact zone although the immediate contact rocks are carbonate ultramafic rocks from 4240N to 4350N.

Soil geochemistry indicates that anomalous gold values in basalt along the ultramafic and locally aplite contact can be traced for at least 600 m. Although the 43N Showing does not have economic grades at surface, it appears to be part of a mineralized trend which has never been explored by surface work or diamond drilling.

GRID AND MAGNETIC SURVEY

A grade had been cut on the property for Chevron Minerals in 1982. A portion of this grid was rehabilitated in August for mapping control. Chevron had a ground magnetometer survey done in 1982 which was filed for assessment work. EMC has the original mylar mag maps on loan from Chevron.

The diabase dyke and iron formation areas are discernable as strong magnetic highs. The small areas of aplite form local magnetic lows with areas of relatively flat magnetics. The 43N

Showing lies in a 020° trend between a magnetic low on the west due to aplite and a high trend on the east apparently within carbonate altered ultramafic rocks.

SOIL SAMPLING

A soil sampling orientation study was done in the 43N Showing area. It indicated that gold mineralization can be traced over 600 m by slightly anomalous gold values in soil and over 130 m by definitely anomalous gold with widths of up to 50 m.

A total of 165 soil samples were collected on lines 39N to 45N (Map 6). The samples were collected in a moderately well drained area which also included wet cedar swamp. There is no true soil horizon in the area. Most samples were of oxidized till below a 5 to 20 cm thick zone of grey, bleached till. Locally the samples consisted of A horizon directly on bedrock or peat in cedar swamp. It was not possible, even in the relatively small sample area of 600 m by 95 to 450 m, to consistently sample one medium.

Samples were dried screened to -80 mesh and analyzed for Au by A.A. and Cu, Pb, Zn, As, Ag and Mo by I.C.P. Four populations of gold values have been determined:

<u>Range in ppb</u>	<u>No. of Samples</u>	<u>% of Total</u>	<u>Interpretation</u>
5 to 10	130	78.8	Background
20 to 50	17	10.3	Possibly anomalous
55 to 100	5	3.0	Probably anomalous
> 100	11	6.7	Anomalous

The anomalous gold values occur between 4270N and 4300N along the strike of the 43N Showing at contacts between quartz veined aplite and basalt. The possibly to probably anomalous gold values extend the anomaly for 600 m along the ultramafic-basalt-aplite contact area. The area south of L43N has very sparse outcrop and may have deeper overburden cover which would impede bedrock gold anomalies from reaching the overburden surface.

Possibly anomalous values of 20 to 30 ppb Au occur on L40N and 42N around 750E. They roughly coincide with an area of basalt outcrops with minor zones of carbonate alteration.

There are no significant anomalies in Cu, Pb, Zn, As, Ag and Mo. There are no positive correlations between these metals and Au. Thus the Au does not appear to be associated with any primary concentrations of base metals in mafic volcanic rocks or with polymetallic sulphide veining.

GOLD SHOWINGS IN THE AREA

Gold showings in and around English and Zavitz Townships are commonly associated with quartz or quartz-carbonate veining in shear and pyritized basalts, or less commonly, with quartz veins in sheared portions of late, porphyritic syenite stocks. The associated shear or fracture zones are commonly oriented about N-S or E-W.

Bright (1984) has described most of the gold showing in the region. Four significant and one minor prospect are described briefly from Bright's information, Hollinger file data and E.M.C. reconnaissance sampling (Fig. 3).

Two prospects occur in western English Township at the south end of Muskasenda Lake. The Boychuck or Transterre or South Muskasenda Showing has quartz and quartz-carbonate vein stockworks with sulphide in sheared and chloritized gabbro. The most prominent vein systems are 020° and 050°. O.G.S. grab sampling from 020° veins assayed up to 13.4 oz/ton Au.

The Nelson or Boychuck property now being explored by HSK Minerals has a 080° shear in Deloro Group basalt. Chip sampling on quartz-sulphide-calcite veins by E.M.C. assayed up to 0.46 oz/ton Au over 1 m. The shear is exposed over a 180 m strike and does not appear to persist beyond that distance. HSK Minerals announced drilling results in the December 7, 1987 Northern Miner (Appendix 5).

The Sylvanite occurrence at Telluride Lake in Beemer Township may be related to the 080° Nelson shear zone. Quartz lenses have produced trace to 0.37 and 0.44 oz/ton Au assays over 0.9 to 1.2 m widths.

Numerous prospects occur in English and Semple Townships on the claims south of the EMC English-Zavitz claims. They have been worked by numerous companies with Hollinger and Amax having done the most work. Most showings are quartz vein related in iron formation or vein and sulphide zones in shears in mafic to felsic volcanic rocks. Anomalous gold values and assays in the 0.1 to 0.2 oz/ton Au range are common over narrow widths. No significant structural controls have been identified.

Gold occurs near the east boundary of Zavitz Township in the Fiset or Robinson occurrence explored by Noranda and now held by Allerston. Previous work indicates 020° to 030° and 074° vein trend with veining in sheared porphyritic syenite. A small bulk sample from the 074° vein is reported to have assayed 0.75 oz/ton Au. Outcrop exposure is poor and the shearing or veins are not currently exposed.

A minor showing called the Vipond or Heard occurs 3 km ESE of Steve Lake. It has an area of mineralized aplite and quartz veins cutting basalt with no reported gold and an unconfirmed assay of 0.11 oz/ton au in sheared and carbonated tuff. Minor gold assays were obtained from an outcrop of "pyritized greenstone".

WORK DONE

A portion of a 1982 grid was rehabilitated in 1987 by summer students and the northern half of the trend of carbonate altered ultramafic rocks was mapped.

Linecutting was done by J. Kirkman, D. Manchuk, and D. Wendell, August 10 to 19, 1987.

Geological mapping and sampling was done by D. Bridge August 10-12, 14-19, September 23, October 9th, 1987, and September 8 and 9, 1988. A. Verville mapped on September 23, 1987.

Soil sampling was done by A. Verville on October 9 and 22, 1987.

IP surveying was done in December, 1987 on eight lines by JVX Ltd. The survey employed the time domain system and was field for assessment credits (Bridge, 1988a).

Machine stripping, trenching and sampling was done in May, 1988 by Dave Larche, Joe MacPherson and Andre Verville. The work was filed by D. Bridge (1988b) for assessment credits.

RECOMMENDATIONS

Weak pyritization and slightly elevated gold values have been located in carbonate altered ultramafic rocks and at Fe-tholeiitic basalt-ultramafic contacts. IP surveying followed by diamond drilling is recommended to explore the area south of line 38N. Most of the unexplored area is in cedar swamp or open bullrush swamp. Hence, surveying and drilling would have to be done during the winter.

PROPOSED BUDGET

Geophysics

10 km of IP @ \$1500/km	\$ 15,000.00
40 km of mag @ \$150/km	6,000.00
Interpretation and Reports	6,000.00

Transportation

Truck, 2 months @ \$1500/mo	3,000.00
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Diamond Drilling

5,200m holes @120/m includes mob-demob, road building, splitting and assaying	120,000.00
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Core Logging and Reports	12,000.00
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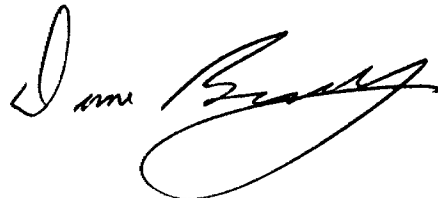
Linecutting

40 km @ \$400/km including camp costs	16,000.00
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Subtotal	178,000.00
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10% Direct Support Costs	<u>17,800.00</u>
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TOTAL	\$ 195,800.00
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REFERENCES

Bridge, D.A., 1988a,
Induced Polarization Survey, English-Zavitz Property, Unpub.
Esso Minerals Canada report, 19 p.

Bridge D.A., 1988b,
Power Stripping in English Township, Assessment Report

Bright, E.G., 1984,
Geology of the Ferrier Lake - Canoeshed Lake Area, O.G.S.
Report 23a, 60 p. (includes Maps 2289, 2290, 2291)

Pyke, D.R., 1978,
Geology of the Peterlong Lake Area, O.G.S. Report 171, 53 p.
(includes Map 2345)

STATEMENT OF QUALIFICATIONS

I, Dane Bridge, of 205 Cherry Street, Timmins, Ontario, certify that:

I am a graduate in Geology of the University of Manitoba with a B.Sc. Hons. in 1969 and a M.Sc. in 1972.

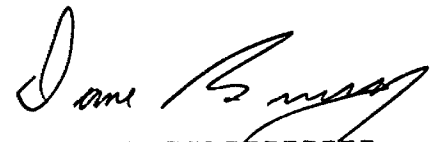
I have been practicing geology continuously since graduation.

I am a member of the Geological Association of Canada, The Canadian Institute of Mining and the Prospectors and Developers Association.

I have no interest in the English-Zavitz property.

I have supervised all phases of exploration on the property.

Dated January, 1989



Dane Bridge

APPENDIX 1

<u>SAMPLE AND ASSAY NO.</u>	<u>DESCRIPTION</u>	<u>GOLD ASSAY ppb Au</u>
3013	Aphanitic basalt with quartz veining and disseminated pyrite, grab with 20% quartz veining and 5% pyrite	640
E01 3045	Aphanitic, pinkish-beige aplite, 15% quartz veining, 5% fine to medium disseminated pyrite, 1.7 m chip	68
E02 3046	Fine-grained to aphanitic pinkish-beige aplite, average 3% fine disseminated pyrite, 2% quartz veining, 0.6 m chip	76
E03 3047	Dark green, carbonate altered, spinifex-textured ultramafic, slightly calcitic, average 1% disseminated pyrite, composite grab	3
E04 3048	Medium to light green, carbonate-altered ultramafic, moderately calcitic, 30% quartz veining, trace pyrite, grab	13
E07 3049	Light grey-green, probably moderately carbonate altered ultramafic, average 2% disseminated pyrite, <1% quartz veining, grab	67
E10 3050	Green and beige carbonate-chlorite altered ultramafic, weakly calcitic, 2% pyrite, grab with 20% quartz veins	3
E11 3051	Light green carbonate altered ultramafic rock, weakly calcitic, 2% pyrite, grab with 5% quartz veins	4
E12 3052	Light greenish-grey, coarse-grained carbonate altered ultramafic, <1% quartz veins, trace pyrite, non-calcitic	3

<u>SAMPLE AND ASSAY NO.</u>	<u>DESCRIPTION</u>	<u>GOLD ASSAY ppb Au</u>
E18 3053	Light green carbonate altered ultramafic, 2% pyrite, grab with 8% quartz-calcite-tourmaline veins	10
E37 3054	Fine-grained, dark greenish-black, chloritic basalt	2
E45 3055	Fine-grained, greenish-grey carbonate-chlorite altered ultramafic	2
E46 3056	0.15 m zone in above with 5% fine to 4 mm pyrite	5
E51 3057	Chlorite-sericite schist probably derived from felsic rock	1
E60 3058	Aphanitic felsic rock with 3% disseminated pyrite	3
3059	0.6 m chip across magnetite-chert bed with 30% pyrite and 5% quartz veining	525
3060	0.5 m chip across magnetite-chert bed with 20% pyrite	105
3061	0.45 m chip across chert-magnetite bed with 8% pyrite	15
E63 3062	Grab of matrix to felsic block-lapilli tuff, matrix is magnetite and felsic tuff with 5% disseminated pyrite	10
E65 3063	0.7 m chip, felsic lapilli tuff with 5% disseminated pyrite	3
E66 3064	Felsic lapilli tuff with 2% disseminated pyrite	2
E61 3065	Chlorite-actinolite?-talc rock probably derived from ultramafic	2
E62 3066	Chlorite-actinolite?-talc rock probably derived from ultramafic	1

<u>SAMPLE AND ASSAY NO.</u>	<u>DESCRIPTION</u>	<u>GOLD ASSAY ppb Au</u>
E70 3067	Green-grey carbonate rock with quartz filled amygdules, probably derived from basalt	5
E70 3088	Moderately carbonate altered massive and vesicular basalt with minor sericite	20
E70A 3089	Fine-grained medium-green fresh to very slightly carbonate altered basalt	10
E71 3068	Quartz-carbonate vein from ultramafic rubble	3
E72 3090	Fine-grained, medium to dark green, leucoxene-bearing basalt	10
E73 3091	Fine-grained, dark green leucoxene-bearing basalt	10
E74 3069	Moderately magnetic aplite with 2% disseminated pyrite	2
E76 3070	Medium green carbonate-chlorite altered ultramafic, grab with 2% quartz veins and 2% pyrite	5
E82 3071	Dark, green-grey carbonate-chlorite altered ultramafic, 1-2% quartz-carbonate veins, trace pyrite	4
E83 3072	Dark green carbonate-chlorite altered ultramafic, 2% quartz-carbonate veins, 2% pyrite	3
E96 3073	Chert-magnetite with 2-3% quartz veining, 2% pyrite	8
E96 3074	Grab of 20% quartz veins in chert with 5% disseminated pyrite, trace chalcopyrite	10
E106 3075	Light green carbonate ultramafic, grab with 8% pyrite, 5% quartz-carbonate veining	60
E110 3076	Medium green carbonated ultramafic 0.25 m chip with 15% quartz-carbonate veins, 5% pyrite	20

SAMPLE AND
ASSAY NO.

DESCRIPTION

GOLD ASSAY
ppb Au

E110 3077	Sheared carbonate-chlorite altered ultramafic, 0.35 m chip with 25% quartz vein, 3% pyrite	40
E112 3078	Off-white possibly silicified aplite with 25% quartz veining and 2% pyrite, grab	40
E118 3079	Medium grey, fine-grained intrusive rock (like aplite) with 10% quartz veins and 5% pyrite, grab	30
E119 3080	Light green carbonate altered ultramafic, grab with 20% quartz-carbonate veining and 1% pyrite	20
E121 3081	Mottled green and pink carbonate altered ultramafic with possible silica and/or K-feldspar alteration, 1-2% pyrite, grab	20
E133 3971	Weakly carbonate altered vesicular basalt, sample is grab of moderately altered basalt with 10% disseminated pyrite, <1% chalcopyrite, and 2% quartz veining	20
E135 3972	Aphanitic, chloritic, very weakly magnetic basalt, grab sample, composite of three rubble blocks with 5% quartz veining, 15% pyrite	460
E136 3973	Aphanitic basalt, strongly magnetic, weakly silicified? grab sample, composite of three rubble blocks with 3% quartz veining, 5% pyrite	380
E137 3974	Aphanitic, chloritic, weakly magnetic basalt, 3% quartz veining and 5% pyrite mainly in wallrock at vein margins, grab	1200
E138 3975	Aphanitic to fine-grained chloritic, strongly magnetic basalt, 3% quartz veining, 5% pyrite, grab of rubble	370

SAMPLE AND
ASSAY NO.

DESCRIPTION

GOLD ASSAY
ppb Au

E139
3976

Aphanitic basalt with 2 cm quartz veins and abundant disseminated pyrite in vein wallrock, grab with 50% quartz vein, 15-20% pyrite

430

Sample Descriptions for Sampling in Trenches

From L38n to L44N

<u>TRENCH</u>	<u>SAMPLE</u>	<u>DESCRIPTION</u>	<u>Au in ppb</u>
A1	1401	aplite, 2-5% py	10
A1	1402	carbonate altered ultramafic, 3% py	10
A1	1403	quartz veins in syenite, trace py, hematite, cpy	10
A1	1404	syenite, 5% py	10
A1	1405	syenite, 10% py, minor quartz veining	40
A1	1406	carbonate altered ultramafic, 3% py	10
A2	1407	ultramafic, 2% py, minor quartz veining	20
A2	1408	silicified syenite, 10% py	10
A2	1409	aplite, 5% py	10
A2	1410	5-8 cm quartz vein with 3% py, 10% py in carbonate altered ultramafic	10
A2	1411	silicified ultramafic?, 2% py	10
A3	1412	quartz veined aplite, 5% py	20
A3	1413	carbonate altered ultramafic, 7% py	20

<u>TRENCH</u>	<u>SAMPLE</u>	<u>DESCRIPTION</u>	<u>Au in ppb</u>
B	1414	3 cm quartz vein, 5% py	230
B	1415	quartz vein, 020°/60N, <1% py on contacts	60
B	1416	3 cm quartz vein, 070°/70N, trace py	260
C1	1417	silicified aplite, 10% py	10
C1	1418	aplite, trace hematite, 3% py, 1% quartz veining	30
C1	1419	carbonate altered ultramafic, 2% py, 1% quartz veining'	90
C1	1420	aplite, silicified?, minor quartz veining, 3% py	60
C1	1421	aplite, 10% py	40
C2	1422	aplite, 3% py	10
C2	1423	quartz vein in aplite	20
C2	1424	carbonate altered ultramafic, 2% py	10
C2	1426	quartz-veined, carbonate altered and silicified aplite?, 3% py	10
D	1427	carbonate altered ultramafic with quartz veinlets, average 1% py	140
E	1428	quartz vein, trace py	10
F	1429	chloritic syenite	40
F	1430	carbonate altered, sheared ultra- mafic, trace py	10
G	1431	silicified Fe-tholeiite	20
G	1432	Fe-tholeiite or ultramafic	10
C3	1433	quartz vein with 5% pyrite in carbonate altered ultramafic	30
C3	1434	silicified aplite?, 10% py	50
C3	1435	carbonate altered ultramafic, 1% py	10

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TELEX: VIA USA 7601067 UC

Certificate of ASSAY

Company: ESSO MINERALS CANADA
Project: 1673
Attention: D. BRIDGE

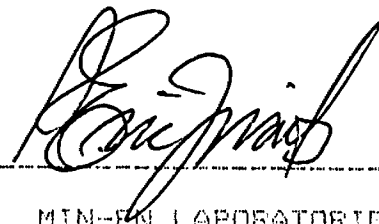
File: 72-568/F1
Date: JUNE 24/87
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
3012	0.01	0.001
3013	0.64	0.019

Note: Sample 3013 was collected before the claims were staked. The cost for sample 3013 is not claimed for assessment credits.

Certified by



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TELEX: VIA USA 7601067 UC

Certificate of GEOCHEM

Company: ESSO MINERALS
Project: PORCUPINE 1673
Attention: D. BRIDGE

File: 72-833/P1
Date: AUGUST 26/1987
Type: ROCK GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	AU-FIRE PPB
3045	68
3046	76
3047	3
3048	13
3049	67
3050	3
3051	4
3052	3
3053	10
3054	2
3055	2
3056	5
3057	1
3058	3
3059	525
3060	105
3061	15
3062	10
3063	3
3064	2
3065	2
3066	1
3067	5
3068	3
3069	2
3070	5
3071	4
3072	3
3073	8
3074	10

Certified by

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**** Certificate of Assay ****

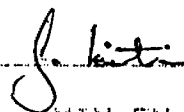
Company: ESSO MINERALS CANADA
Project: PORCUPINE 1673
Attention: D. BRIDGE

File: 72-956/P1
Date: SEPT 28/87
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON	Sample
3969	0.21	0.006	
3970	0.07	0.002	
3971	0.02	0.001	E 133
3972	0.46	0.013	E 135
3973	0.38	0.011	E 136
3974	1.20	0.035	E 137
3975	0.37	0.011	E 138

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TELEX: VIA USA 7601067 UC

Certificate of ASSAY

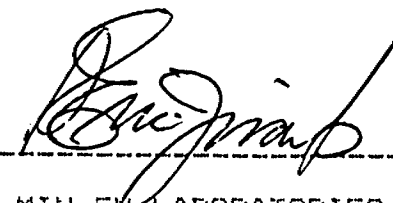
Company: ESSO MINERALS
Project: PORCUPINE 1673
Attention: D. BRIDGE

File: 72-846/P1
Date: AUGUST 29/1987
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
3075	.06	0.002
3076	.02	0.001
3077	.04	0.001
3078	.04	0.001
3079	.03	0.001
3080	.02	0.001
3081	.02	0.001

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TELEX: VIA USA 7601067 UC

Certificate of Assay

Company: ESSO MINERALS CANADA
Project: PORCUPINE 1673
Attention: D. BRIDGE

File: 72-956/P1
Date: SEPT 28/87
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
3969	0.21	0.006
3970	0.07	0.002
3971	0.02	0.001
3972	0.46	0.013
3973	0.38	0.011
3974	1.20	0.035
3975	0.37	0.011

Certified by



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*** Certificate of ASSAY ***

Company: ESSO MINERALS
 Project: 1673
 Attention: D. BRIDGE

File: 72-963/P1
 Date: OCT 6/87
 Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON	
3976	0.43	0.013	<i>English</i>
3977	1.40	0.041	
3978	1.52	0.044	<i>Holloway</i>
3979	0.03	0.001	
3980	5.78	0.169	
3981	0.61	0.018	<i>Rand Twp.</i>
3982	57.60	1.680	
3983	5.86	0.171	
3984	2.00	0.058	
3985	0.62	0.018	
3986	0.89	0.026	
3987	38.20	1.114	

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Company: ESSO MINERALS CANADA
Project: PORCUPINE 1673
Attention: D. BRIDGE

File: 72-1019/P1
Date: OCT 27/87
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
3088	.02	0.001
3089	.01	0.001
3090	.01	0.001
3091	.01	0.001

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TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of ASSAY

Company: ESSO MINERALS
Project: PORCUPINE 1673
Attention: J. MACPHERSON

File: 82-806/P1
Date: JUNE 2/88
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
1401	.01	0.001
1402	.01	0.001
1403	.01	0.001
1404	.01	0.001
1405	.04	0.001
1406	.01	0.001
1407	.02	0.001
1408	.01	0.001
1409	.01	0.001
1410	.01	0.001
1411	.01	0.001
1412	.02	0.001
1413	.02	0.001
1414	.23	0.007
1415	.06	0.002
1416	.26	0.008
1417	.01	0.001
1418	.03	0.001
1419	.09	0.003
1420	.06	0.002
1421	.04	0.001
1422	.01	0.001
1423	.02	0.001
1424	.01	0.001
1425	.01	0.001
1426	.01	0.001
1427	.14	0.004
1428	.01	0.001
1429	.04	0.001
1430	.01	0.001

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TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of ASSAY

Company: ESSO MINERALS CANADA
Project: PORCUPINE 1673
Attention: J. MACPHERSON

File: B2-806/P2
Date: JUNE 3/88
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
1431	.02	0.001
1432	.01	0.001
1433	.03	0.001
1434	.05	0.001
1435	.01	0.001
<hr/>		
1441	2.20	0.064
1442	5.03	0.147
1443	.05	0.001
1444	18.50	0.540
1445	.63	0.018
<hr/>		
1446	.03	0.001
1447	.32	0.009
1448	.01	0.001
1449	.03	0.001

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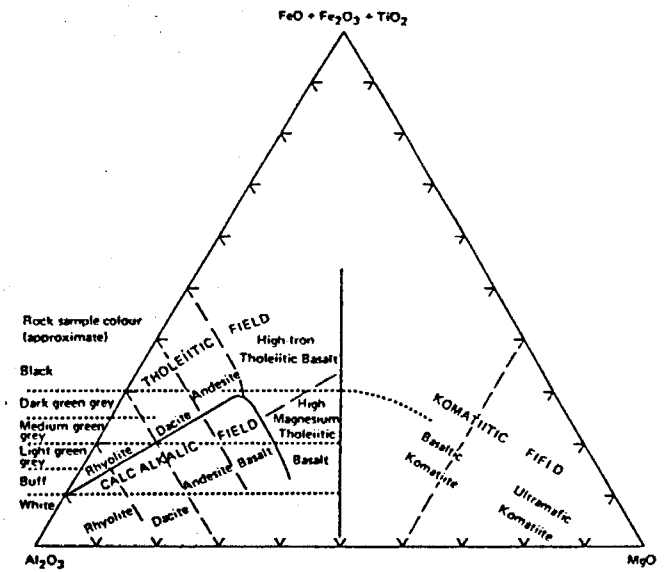
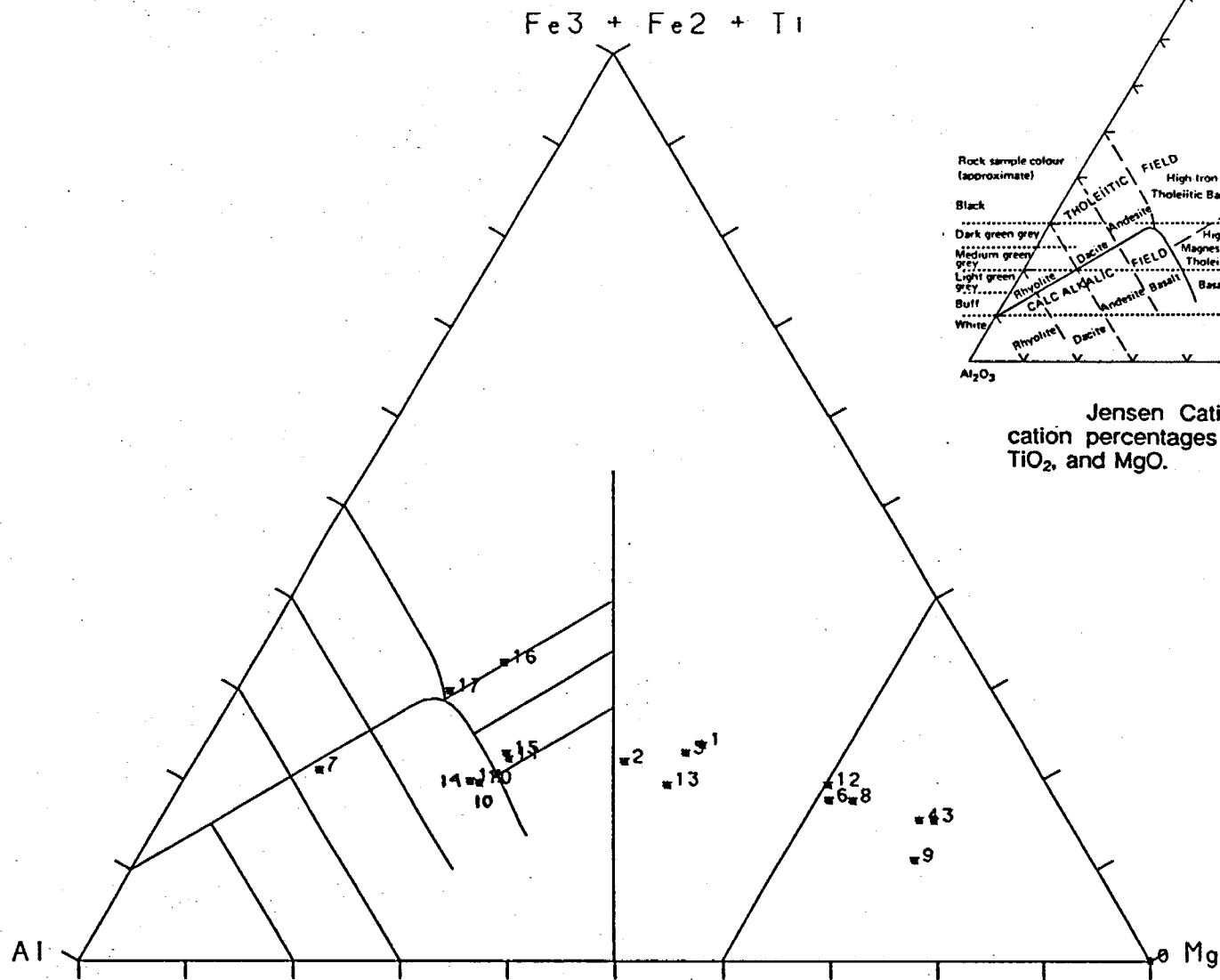
APPENDIX 2

ROCK TYPE

<u>SAMPLE NO.</u>	<u>FIELD INTERPRETATION</u>	<u>JENSEN PLOT INTERPRETATION</u>
1) 3047	Ultramafic with spinifex	Basaltic komatiite
2) 3049	Ultramafic	Basaltic komatiite
3) 3051	Ultramafic	Ultramafic komatiite
4) 3052	Ultramafic	Ultramafic komatiite
5) 3054	Chloritic basalt	Basaltic komatiite
6) 3055	Ultramafic	Ultramafic komatiite
7) 3057	Felsic Chlorite-sericite schist	Calc-alkalic andesite
8) 3065	Ultramafic	Ultramafic komatiite
9) 3066	Ultramafic	Ultramafic komatiite
10)3067	Amygdaloidal basalt	Calc-alkalic basalt
11)3069	Aplite	Mg-tholeiitic basalt
12)3071	Ultramafic	Ultramafic komatiite
13)3081	Ultramafic	Basaltic komatiite
14)3088	Vesicular basalt	Calc-alkalic basalt
15)3089	Basalt	Mg-tholeiitic basalt
16)3090	Leucoxene-basalt	Fe-tholeiitic basalt
17)3091	Leucoxene-basalt	Fe-tholeiitic basalt

The sample numbers 1 to 17 are numbers on the Jensen and AFM plots corresponding to the 3047 and 3091 assay sample numbers for whole rock analyses.

ENGLISH-ZAVITZ
JENSEN PLOT



Jensen Cation Diagram involving the cation percentages of Al_2O_3 , $FeO + Fe_2O_3 + TiO_2$, and MgO .

Figure 5: Jensen Cation Diagram

ENGLISH-ZAVITZ
AFM PLOT

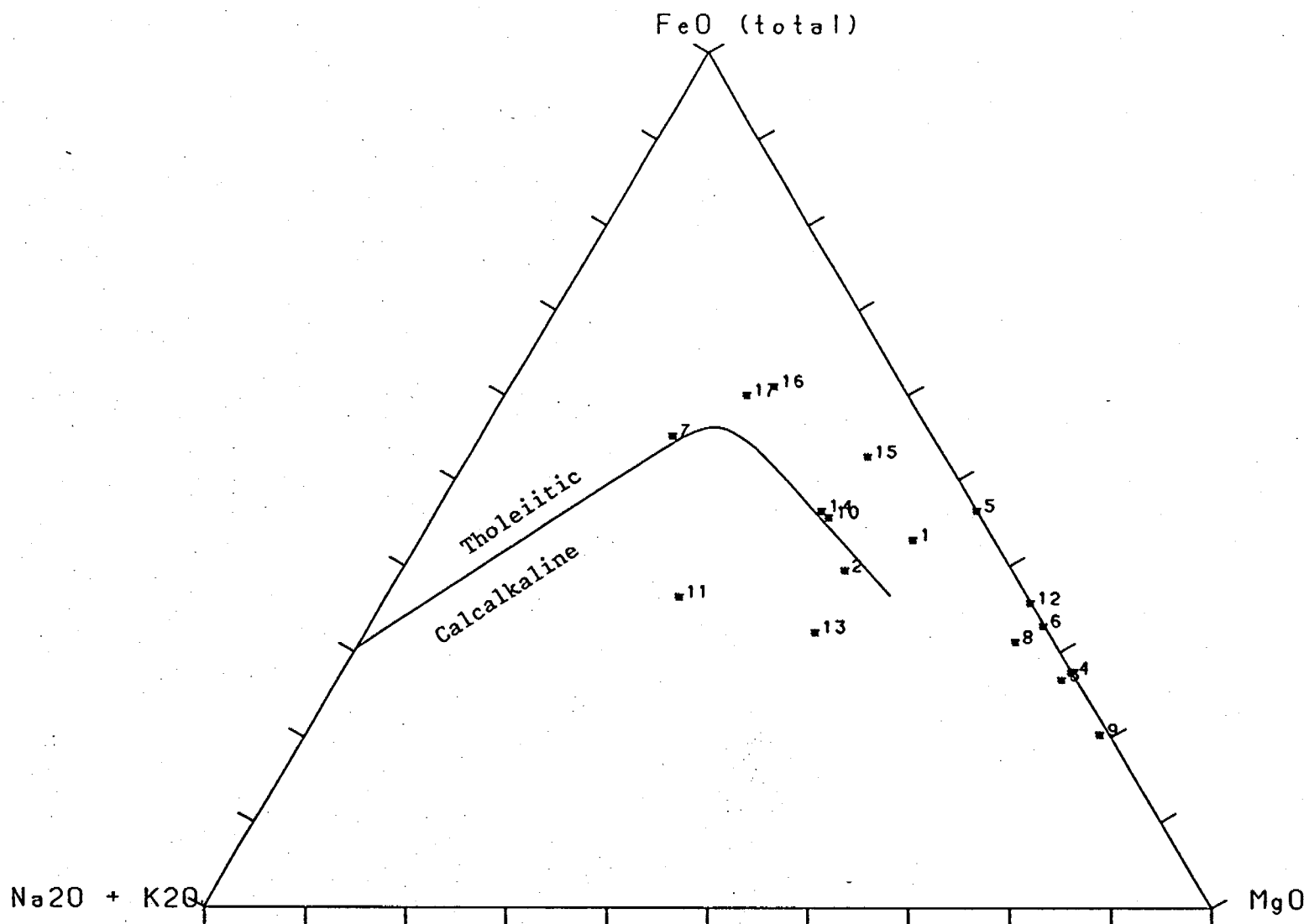


Figure 6: AFM Plot

Whole Rock Analyses from Trenches

<u>TRENCH</u>	<u>SAMPLE</u>	<u>DESCRIPTION</u>
A2	1436	aplite?, fine-grained silicified felsic intrusive with 5% py
A2	1437	silicified ultramafic or intrusive, 2% py
C1	1438	silicified aplite, 10% py
F	1439	weakly magnetic, chloritic hornblende syenite
G	1440	fine-grained Fe-tholeiitic basalt, trace py

COMPANY: ESSO MINERALS
PROJECT NO: PORCUPINE 1673
ATTENTION: D. BRIDGE

MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2

(ACT:LI26) PAGE 1 OF 1

FILE NO: 72-833

(604)980-5814 OR (604)988-4524* TYPE WHOLE ROCK ANALYSIS * DATE: AUGUST 28, 1987

(%)	3047	3049	3051	3052	3054	3055	3057	3065	3066	3067	3069	3071
AL2O3	10.47	12.50	4.76	5.27	11.90	9.05	14.52	7.12	6.87	16.11	14.17	8.07
BA	.007	.057	.029	.005	.005	.005	.038	.005	.005	.011	.030	.005
CAO	4.77	7.82	9.90	6.16	7.79	8.31	.17	10.70	8.71	9.78	6.86	12.71
FE2O3	12.46	10.35	8.92	8.97	12.75	11.28	6.72	9.98	6.78	8.64	9.34	11.57
K2O	.94	.04	.43	.03	.01	.05	2.17	.14	.03	.60	2.17	.03
MGO	12.81	10.39	21.65	21.26	13.29	20.61	2.08	18.77	23.79	6.71	6.71	18.82
MND2	.26	.25	.31	.16	.29	.25	.09	.30	.14	.30	.25	.44
NA2O	1.15	3.90	.02	.01	.01	.01	.67	.98	.27	1.99	5.86	.01
P2O5	.01	.37	.01	.02	.02	.02	.01	.02	.01	.01	.21	.02
SI02	46.52	44.63	37.18	42.01	42.67	42.08	69.19	48.02	48.64	49.33	48.24	40.65
SR	.01	.04	.02	.01	.01	.01	.02	.01	.01	.02	.03	.01
TI02	.54	.91	.23	.25	.58	.48	.42	.35	.36	.73	.79	.40
S	.43	2.65	.78	.02	.03	.09	.10	.23	.19	.04	.05	.02
LOI	7.10	3.99	13.47	13.20	4.90	3.90	1.60	.80	1.60	1.40	1.90	2.40

COMPANY: ESSO MINERALS
 PROJECT NO: PORCUPINE 1673
 ATTENTION: D.BRIDGE

MIN-EN LABS ICP REPORT
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(ACT:F31) PAGE 1 OF 1
 FILE NO: 72-833R
 DATE: AUGUST 28, 1987

(PPM)	3047	3049	3051	3052	3054	3055	3057	3065	3066	3067	3069	3071
AG	.7	1.6	.2	.2	1.5	.2	.7	1.1	.6	.7	1.4	.2
AL	31920	28970	17000	24550	63890	38830	26190	19360	22830	21670	10540	35630
AS	2	34	32	24	56	2	20	7	18	16	16	38
B	19	19	12	14	33	21	15	10	14	16	7	20
BA	43	538	249	27	36	26	52	13	12	27	166	28
BE	2.5	2.6	2.0	1.9	2.6	2.1	1.3	1.1	.9	1.5	1.8	2.3
BI	2	1	1	1	1	1	1	3	5	1	1	1
CA	30980	48420	60410	38000	52730	45100	2070	11370	15490	54170	37920	67900
CD	5.3	4.7	6.2	6.8	5.3	5.9	1.5	3.2	4.7	2.8	3.0	4.8
CO	41	24	36	41	42	35	13	18	21	18	14	27
CU	85	255	38	24	63	48	9	4	145	95	59	12
FE	82440	67290	55190	56240	91420	65710	43440	29560	20140	51290	54200	66520
K	840	120	580	70	50	90	1520	240	60	470	4720	110
LI	33	16	20	23	15	37	22	14	11	16	10	17
MG	60810	48180	89670	89860	61420	81910	11300	30480	43700	31270	30230	72500
MN	1135	1081	1307	697	1373	954	426	510	222	1149	971	1628
MO	4	1	1	1	2	6	1	2	2	2	2	3
NA	160	510	30	10	10	10	450	1320	130	1110	910	10
NI	452	157	821	1081	286	720	32	392	575	93	40	918
P	90	1150	30	20	90	60	340	60	40	130	870	50
PB	25	23	24	15	14	24	11	5	6	9	12	13
SB	4	2	7	2	4	9	4	4	3	5	1	1
SR	5	291	156	3	1	20	7	2	6	14	74	2
TH	4	3	1	4	2	1	1	1	1	3	2	6
U	1	4	5	2	1	3	2	1	2	8	4	4
V	73.4	150.4	44.6	68.6	166.7	103.9	22.3	40.0	57.1	77.1	131.5	104.9
ZN	64	125	36	28	79	65	72	75	39	59	64	41
GA	3	1	4	1	2	3	2	3	2	1	2	1
SN	1	1	1	1	3	1	1	1	1	1	1	3
W	4	4	3	1	5	1	3	6	5	7	2	2
CR	857	445	621	1206	94	1377	39	737	1005	213	194	1622

* TYPE ROCK GEOCHEM *

COMPANY: ESSO MINERALS CANADA
PROJECT NO: PORCUPINE 1673
ATTENTION: D.BRIDGE

MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(ACT:LI26) PAGE 1 OF 1
FILE NO: 72-946
DATE: AUGUST 29, 1987

* TYPE WHOLE ROCK *

(%)	3081
AL2O3	9.90
BA	.022
CAO	11.26
FE2O3	7.99
K2O	1.22
MGO	9.96
MNO2	.31
NA2O	3.95
P2O5	.03
SI02	44.01
SR	.01
TI02	.45
LOI	4.20
S	.40

PROJECT NO: PORCUPINE 1673

ATTENTION: D. BRIDGE

(PPM) 3081

CO 53

CU 168

NI 954

PB 22

ZN 25

CR 184

705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2

(604)980-5814 OR (604)988-4524

* TYPE ROCK GEOCHEM *

FILE NO: 72-846R
DATE: AUGUST 29, 1987

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604)980-5814 OR (604)988-4524

TELEX: 04-352828


CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS
PROJECT: PORCUPINE 1673
ATTENTION: D. BRIDGE

FILE: 72-833
DATE: AUGUST 26, 1987
TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	SR (%)	TIO2 (%)	S (%)	LOI (%)
3047	.01	.54	.43	7.10
3049	.04	.91	2.65	3.99
3051	.02	.23	.78	13.47
3052	.01	.25	.02	13.20
3054	.01	.58	.03	4.90
3055	.01	.48	.09	3.90
3057	.02	.42	.10	1.60
3065	.01	.35	.23	.80
3066	.01	.36	.19	1.60
3067	.02	.73	.04	1.40
3069	.03	.79	.05	1.90
3071	.01	.40	.02	2.40

Certified by 
MIN-EN LABORATORIES LTD.

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705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604) 980-5814 OR (604) 988-4524

TELEX: 04-352828

CERTIFICATE OF ASSAY

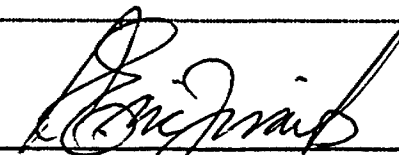
COMPANY: ESSO MINERALS
PROJECT: PORCUPINE 1673
ATTENTION: D. BRIDGE

FILE: 72-833
DATE: AUGUST 26, 1987
TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	MGO (%)	MNO2 (%)	NA2O (%)	P2O5 (%)	SiO2 (%)
3047	12.81	.26	1.15	.01	46.52
3049	10.39	.25	3.90	.37	44.63
3051	21.65	.31	.02	.01	37.18
3052	21.26	.16	.01	.02	42.01
3054	13.29	.29	.01	.02	42.67
3055	20.61	.25	.01	.02	42.08
3057	2.08	.09	.67	.01	69.19
3065	18.77	.30	.98	.02	48.02
3066	23.79	.14	.27	.01	48.64
3067	6.71	.30	1.99	.01	49.33
3069	6.71	.25	5.86	.21	48.24
3071	18.82	.44	.01	.02	40.65

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705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604)980-5814 OR (604)988-4524

TELEX: 04-352828

CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS
PROJECT: PORCUPINE 1673
ATTENTION: D. BRIDGE

FILE: 72-833
DATE: AUGUST 26, 1987
TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	AL2O3 (%)	BA (%)	CAO (%)	FE2O3 (%)	K2O (%)
3047	10.47	.007	4.77	12.46	.94
3049	12.50	.057	7.82	10.35	.04
3051	4.76	.029	9.90	8.92	.43
3052	5.27	.005	6.16	8.97	.03
3054	11.90	.005	7.79	12.75	.01
3055	9.05	.005	8.31	11.28	.05
3057	14.52	.038	.17	6.72	2.17
3065	7.12	.005	10.70	9.98	.14
3066	6.87	.005	8.71	6.78	.03
3067	16.11	.011	9.78	8.64	.60
3069	14.17	.030	6.86	9.34	2.17
3071	8.07	.005	12.71	11.57	.03

Certified by

MIN-EN LABORATORIES LTD.

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

705 WEST 15TH STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604)980-5814 OR (604)980-4524

TELEX: VIA USA 7601067

ENGLISH

CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS
PROJECT: PORCUPINE 1673
ATTENTION: D. BRIDGE

FILE: 72-846
DATE: AUGUST 29, 1987
TYPE: WHOLE ROCK ANALYSIS

We hereby certify the following assay results for samples submitted.

SAMPLE NUMBER 3081

AL2O3	%	9.90
BA	%	.022
CAO	%	11.26
FE2O3	%	7.99
K2O	%	1.22

MGO	%	9.96
MNO2	%	.31
NA2O	%	3.95
P2O5	%	.03
SI02	%	44.01

SR	%	.01
TIO2	%	.45
LOI	%	4.20
S	%	.40

Certified by

MIN-EN LABORATORIES LTD.

COMPANY: ESSO MINERALS
PROJECT NO: PORCUPINE 1673
ATTENTION: D. BRIDGE

MIN-EN LABS ICP REPORT
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(604)980-5814 DR (604)988-4524

(ACT:F31) PAGE 1 OF 1
FILE NO: 72-846R
DATE: AUGUST 29, 1987

(VALUES IN PPM)	CO	CU	NI	PB	ZN	CR
3081	53	168	954	22	25	184

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705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE (604)980-5814 OR (604)988-4524

TELEX: 04-352828

CERTIFICATE OF ASSAY


COMPANY: ESSO MINERALS CANADA
PROJECT: PORCUPINE 1673
ATTENTION: J. MACPHERSON

FILE: 82-806/P1
DATE: JUNE 6, 1988
TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	AL2O3 (%)	BA (%)	CAO (%)	FE2O3 (%)	K2O (%)
1436	16.65	.005	.01	3.60	.22
1437	13.24	.091	7.20	7.63	3.56
1438	16.88	.077	4.37	5.34	4.24
1439	13.37	.029	7.65	8.98	1.40
1440	8.86	.005	8.05	13.97	.04
1450	16.77	.101	4.99	6.23	2.75
1451	14.02	.025	7.85	14.19	1.72

Certified by



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705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHON (604) 980-5814 DR (604) 988-4524

TELEX: 04-352828

CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS CANADA

PROJECT: PORCUPINE 1673

ATTENTION: J. MACPHERSON

FILE: 82-806/P3

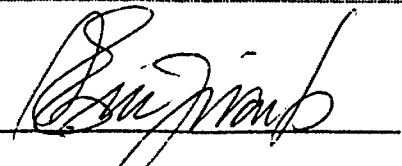
DATE: JUNE 6, 1988

TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	SR (%)	TIO2 (%)	S (%)	LOI (%)
1436	.02	.22	3.26	1.30
1437	.03	.64	2.68	4.30
1438	.03	.86	2.94	1.50
1439	.03	.86	.57	2.10
1440	.01	.45	.69	2.00
1450	.08	.79	.64	.50
1451	.02	1.22	.16	2.20

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Specialists in Mineral Environments

705 WEST 15th STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHD (604)980-5814 OR (604)988-4524

TELEX: 04-352828

CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS CANADA
PROJECT: PORCUPINE 1673
ATTENTION: J. MACPHERSON

FILE: 82-806/P2
DATE: JUNE 6, 1988
TYPE: WHOLE ROCK ANALYSIS

We hereby certify that the following are assay results for samples submitted.

SAMPLE NUMBER	MGO (%)	MNO2 (%)	NA2O (%)	P2O5 (%)	SI02 (%)
1436	.37	.01	8.92	.03	63.03
1437	7.97	.18	2.77	.42	47.03
1438	3.07	.08	3.60	.92	53.85
1439	7.54	.21	5.82	.50	48.77
1440	16.62	.38	.71	.18	44.69
1450	2.98	.13	5.19	.70	56.02
1451	6.65	.25	1.51	.16	47.74

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Specialists in Mineral Environments
705 WEST 15TH STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604) 980-5814 OR (604) 988-4524

TELEX: VIA USA 7801067

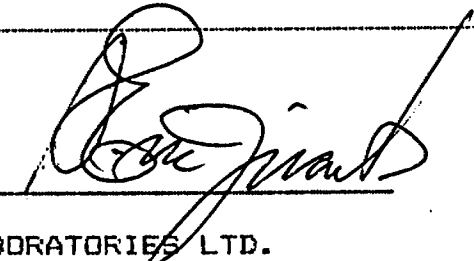
CERTIFICATE OF ASSAY

COMPANY: ESSO MINERALS
PROJECT: PORCUPINE 1673
ATTENTION: D. BRIDGE

FILE: 72-1019
DATE: OCT 27, 1987
TYPE: WHOLE ROCK

We hereby certify the following assay results for samples submitted.

SAMPLE NUMBER		3088	3089	3090	3091
AL2O3	%	16.01	13.86	13.04	14.13
BA	%	.010	.006	.007	.023
CAO	%	9.64	10.90	6.64	8.07
FE2O3	%	8.52	9.55	14.30	12.25
K2O	%	.61	.31	.41	1.17
MGO	%	6.34	6.46	5.52	4.41
MNO2	%	.30	.37	.34	.28
NA2O	%	1.96	.95	2.31	1.80
P2O5	%	.10	.10	.11	.11
SI02	%	50.77	47.54	51.01	48.56
SR	%	.02	.01	.01	.01
TIO2	%	.74	.64	1.03	.80
LOI	%	2.70	.50	1.60	2.60
S	%	.08	.02	.01	.02

Certified by 

MIN-EN LABORATORIES LTD.

(VALUES IN PPM)	AG	AS	CU	MO	PB	ZN	AU-PPB
L39N 450E	1.3	10	39	1	23	50	5
L39N 475E	.9	7	64	1	28	34	10
L39N 500E	.9	1	6	1	15	26	5
L39N 525E	1.0	5	11	1	14	44	5
L39N 550E	.6	2	8	1	21	18	5
L39N 575E	.4	4	3	1	9	6	10
L39N 600E	1.0	6	9	1	12	38	50
L39N 625E	.7	4	3	1	8	11	5
L39N 650E	1.0	1	4	1	11	15	5
L39N 675E	.7	4	12	1	12	23	10
L39N 700E	.6	1	7	1	11	16	5
L40N 450E	.6	7	5	1	12	15	10
L40N 475E	.9	1	4	1	12	15	10
L40N 500E	1.0	7	6	1	15	24	5
L40N 525E	1.7	5	72	1	15	42	5
L40N 550E	1.0	6	7	1	14	39	5
L40N 575E	1.2	8	12	1	13	32	80
L40N 600E	1.4	10	23	1	15	45	40
L40N 625E	.6	2	5	1	11	20	5
L40N 650E	.9	9	45	1	11	27	10
L40N 675E	1.0	7	21	1	7	37	10
L40N 700E	.9	4	6	1	10	21	20
L40N 725E	.5	4	3	1	9	10	5
L40N 750E	4.6	13	127	1	59	185	10
L40N 775E	1.2	6	64	1	21	20	20
L40N 800E	1.3	14	12	1	29	18	30
L41N 375E	.6	6	4	1	12	10	10
L41N 400E	.9	7	6	1	13	17	5
L41N 425E	.7	1	5	1	11	19	10
L41N 450E	.8	2	7	1	9	12	5
L41N 475E	.7	18	12	1	27	53	5
L41N 500E	.5	3	11	1	14	18	5
L41N 525E	.6	3	17	1	20	26	10
L41N 550E	.8	3	7	1	12	23	5
L41N 575E	.5	3	27	1	12	22	5
L41N 600E	.8	6	22	1	16	21	5
L41N 625E	.5	2	3	1	11	11	5
L41N 650E	1.0	8	43	1	13	38	10
L41N 675E	.9	6	24	1	6	29	5
L41N 700E	.9	4	4	1	10	16	10
L41N 725E	.7	1	4	1	9	14	10
L41N 750E	.6	4	5	1	12	20	5
L41N 775E	.7	4	12	1	10	19	5
L41N 800E	1.0	7	86	1	11	12	5
L42N 375E	.8	1	3	1	10	12	5
L42N 400E	1.1	1	6	2	15	31	5
L42N 425E	.9	2	3	1	12	27	5
L42N 450E	.8	4	3	1	14	21	5
L42N 475E	.8	2	3	1	10	13	10
L42N 500E	.8	6	5	1	14	14	5
L42N 510E	.8	11	34	1	15	22	5
L42N 520E	.6	11	16	1	18	30	30
L42N 530E	.6	11	14	1	26	39	10
L42N 540E	.5	12	10	1	29	29	10
L42N 550E	.7	15	8	1	23	28	5
L42N 560E	.5	5	3	1	10	10	5
L42N 570E	1.6	11	28	1	27	50	5
L42N 580E	1.0	8	13	1	15	26	5
L42N 590E	.5	3	2	1	10	11	5
L42N 600E	1.2	11	8	1	18	36	5

English-Zavitz
 Soil Samples
 Page 1 of 9

COMPANY: ESSO MINERALS
 PROJECT NO: PORCUPINE 1673
 ATTENTION: D. BRIDGE

MIN-EN LABS ICP REPORT
 705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
 (604) 980-5814 OR (604) 988-4524

(ACT:F31) PAGE 1 OF 1
 FILE NO: 72-1035/P3+4
 * TYPE SOIL GEOCHEM * DATE: OCT 21, 1987

(VALUES IN PPM)	AG	AS	CU	MO	PB	ZN	AU-PPB
L42N 610E	.8	2	7	1	15	65	5
L42N 620E	.7	7	5	1	13	44	5
L42N 630E	.7	1	3	1	14	19	5
L42N 640E	.6	2	3	1	10	13	10
L42N 650E	1.1	8	17	1	16	44	5
L42N 675E	1.6	12	52	1	20	35	5
L42N 700E	1.3	6	39	1	25	37	5
L42N 725E	.9	1	92	1	15	27	20
L42N 750E	1.4	4	83	1	23	49	5
L42N 775E	.5	1	8	1	10	11	5
L42N 800E	.7	4	17	1	12	28	5
L42N 825E	.9	8	68	1	23	22	5
L43N 375E	1.0	10	38	1	42	39	5
L43N 400E	.9	3	5	1	14	20	10
L43N 425E	.8	6	4	1	12	17	5
L43N 450E	.9	7	5	1	43	51	5
L43N 475E	.8	1	5	1	20	34	5
L43N 575E	1.4	10	36	1	36	161	20
L43N 600E	.8	7	6	1	16	21	5
L43N 625E	.9	15	20	1	10	42	5
L43N 650E	1.0	3	7	1	9	39	5
L43N 675E	.9	15	6	1	12	36	5
L43N 700E	.6	3	3	1	10	12	5
L43N 725E	1.1	1	14	1	10	51	5
L44N 400E	.5	4	4	1	11	11	5
L44N 425E	.9	7	7	1	13	22	5
L44N 450E	1.9	11	41	3	24	35	10
L44N 475E	.7	1	3	1	13	12	20
L44N 500E	1.1	6	62	1	37	90	300
L44N 525E	1.2	12	46	1	10	66	450
L44N 550E	.9	1	8	1	19	50	5
L44N 575E	.3	12	10	1	32	46	5
L44N 600E	.6	10	8	1	18	19	5
4300N 500E	.8	1	4	1	11	25	10
4300N 510E	1.1	6	10	1	16	44	5
4300N 520E	.7	2	8	1	13	24	10
4300N 525E	1.0	11	7	1	10	27	5
4300N 530E	1.0	1	10	1	11	22	10
4300N 550E	1.4	5	38	1	27	72	200
4300N 555E	.7	3	9	1	9	19	5
4300N 560E	.6	2	7	1	11	20	5
4320N 520E	2.0	10	20	2	19	70	10
4320N 525E	.9	8	6	1	11	19	5
4320N 530E	1.0	16	14	1	8	49	50
4320N 535E	.9	8	26	3	11	40	130
4320N 545E	1.2	2	22	1	21	61	10
4320N 555E	.8	6	5	1	16	23	5
4340N 510E	1.3	6	17	1	15	49	5
4340N 515E	1.0	9	13	1	14	36	5
4340N 520E	1.2	10	8	1	15	28	5
4340N 525E	1.0	1	7	1	12	23	5
4340N 530E	1.3	11	9	1	12	29	5
4340N 545E	2.1	8	90	5	25	73	500
4340N 555E	.9	9	10	1	13	23	5
4270N 525E	1.0	9	7	1	13	19	5
4270N 530E	1.0	10	16	1	12	33	5
4270N 535E	1.0	8	16	1	11	26	5
4270N 540E	1.0	10	15	1	7	32	10
4270N 545E	.9	7	37	2	12	70	5
4270N 555E	1.0	13	55	1	18	42	80

English-Zavitz
Soil Samples
Page 2 of 4

COMPANY: ESSO MINERALS
PROJECT NO: PORCUPINE 1673
ATTENTION: D. BRIDGE

MIN-EN LABS ICP REPORT
705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 1
FILE NO: 72-0135/P5
* TYPE SOIL GEOCHEM * DATE: OCT 23, 1987

(VALUES IN PPM)	AG	AS	CU	MO	PB	ZN	AU-PPB
4270N 560E	.3	12	21	1	15	42	195
4270N 565E	.4	4	19	1	14	24	5
4270N 570E	.5	5	7	1	9	24	5
4270N 575E	.6	1	5	1	9	26	5
4270N 585E	.6	6	13	1	13	25	10
4270N 590E	.6	4	9	1	14	21	10

English-Zavitz Soil Samples
Page 3 of 4

(VALUES IN PPM)	AS	AS	CU	MO	PR	ZN	AU-PPB
4370N 490E	1.1	28	21	1	22	108	60
4370N 500E	1.6	16	64	1	41	136	25
4370N 505E	.9	14	9	1	7	45	5
4370N 510E	.4	1	2	1	7	9	10
4370N 515E	.5	8	9	1	5	21	10
4370N 520E	.5	4	14	1	8	28	35
4370N 525E	.6	1	8	1	10	17	80
4370N 530E	.6	1	6	1	8	15	30
4370N 535E	.9	8	7	1	8	24	5
4370N 540E	3.6	10	126	2	8	43	190
4370N 545E	.8	4	23	1	9	17	10
4370N 550E	.8	1	12	1	11	19	5
4370N 560E	.8	9	7	1	11	38	5
4370N 570E	.8	2	8	1	10	21	10
4400N 485E	.7	1	12	2	20	30	5000
4400N 490E	.5	3	9	1	13	29	85
4400N 495E	1.1	7	30	2	5	63	5
4400N 505E	.7	9	32	1	15	46	30
4400N 510E	1.3	4	51	1	21	155	25
4400N 515E	.9	5	32	1	10	69	185
4400N 520E	.9	3	28	2	20	106	110
4400N 530E	1.4	20	69	3	18	106	880
4400N 535E	.4	5	4	1	6	14	5
4400N 540E	.8	1	9	1	8	18	5
4400N 545E	1.3	21	44	1	38	69	10
4500N 445E	.9	3	26	1	10	24	5
4500N 455E	.8	7	7	1	5	17	5
4500N 465E	1.1	1	16	1	13	32	5
4500N 475E	.6	22	19	1	27	55	5
4500N 485E	.9	14	19	1	7	34	5
4500N 495E	.4	1	3	1	10	13	40
4500N 505E	.3	1	6	1	12	14	45
4500N 510E	1.0	9	20	1	10	50	10
4500N 515E	1.0	23	25	1	17	74	5
4500N 520E	1.7	15	27	1	23	106	5
4500N 525E	1.8	35	67	3	33	109	35
4500N 530E	.9	27	33	2	13	62	10
4500N 535E	1.4	16	36	1	22	21	5
4500N 540E	1.7	26	19	1	74	65	10

English Zavitz Soil Samples
Page 9 of 9



S.B. MacEACHERN
Regional Exploration Manager

ESSO MINERALS CANADA

120 ADELAIDE STREET WEST, P.O. BOX 4029, STATION "A"
TORONTO, ONTARIO M5W 1K3
TELEPHONE: (416) 968-5200
FAX: (416) 968-4848

December 20, 1988
File: 16.73.B02
English-Zavitz

Mining Lands Section,
Ministry of Northern Development
& Mines,
880 Bay Street,
Toronto, Ontario
M5S 1Z8

Dear Sir:

Re: English-Zavitz Property Analytical Costs for Gold Assays,
Whole Rock Analyses and Soil Samples

I certify that \$3,160.00 has been paid to Min-En Laboratories Limited for assaying of samples from Esso Mineral Canada's English-Zavitz property. Invoice dates, number of samples and costs are as follows:

<u>Invoice Number</u>	<u>Date</u>	<u>No. of Samples</u>	<u>Cost per Sample</u>	<u>Total</u>
5496C	Aug. 26/87	30	\$ 9.75	\$ 292.50
5496C	Aug. 26/87	12	31.50	378.00
5908C	Sept. 28/87	7	11.50	80.50
6286C	Oct. 26/87	126	9.90	1,247.40
6329C	Nov. 2/87	4	36.50	146.00
6341C	Nov. 2/87	2	16.00	32.00
6362C	Nov. 2/87	39	9.90	386.10
8968C	June 6/88	35	12.25	428.75
8968C	June 6/88	5	33.75	<u>168.75</u>
				<u>\$3,160.00</u>

Yours truly,

R. Civello,
Accountant

LRC1220.1
06DATAKO

HSK gets gold at Muskasenda near Timmins

A drill program conducted by HSK Minerals on the company's Muskasenda Lake property has resulted in a gold discovery. The project is located in English and Beemer twps., 26 miles south of Timmins, Ont.

A 2,756-ft drill program intersected widespread anomalous gold values in an 80-ft-wide shear zone. The best results came from silicified sections of the shear carrying 5%-15% disseminated sulphide minerals. These results are listed below.

Hole	Interval (ft)	Width (ft)	Grade oz gold/ton
1	15.0- 34.0	19.0	0.018
2	0.0- 5.0	5.0	0.051
	17.5- 35.5	18.0	0.026
3	14.5- 31.5	17.0	0.156
4	8.0- 20.6	2.6	0.018
	45.0- 51.0	6.0	0.050
5	100.5-107.5	7.0	0.020
8	178.0-188.0	10.0	0.130
9	118.0-123.0	5.0	0.027
11	233.0-239.0	6.0	0.12
	268.0-273.0	5.0	0.139

Although most of the results are uneconomic, the results are deemed encouraging as they are associated with a major shear zone striking for a minimum 3,000 ft. As a result of this initial success, HSK has staked an additional 232 claims which tie on to the original property. A 1988 drill program will test the entire strike length of the zone.

HSK Minerals drilling results, December 7, 1987

Northern Miner



900

Mining Lands Section
3rd floor, 880 Bay Street
Toronto, Ontario
M5S 1Z8

Telephone: (416) 965-4888

Your file: W8906-140,142
Our file: 2.12073

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE

MAY - 1 1989

RECEIVED

April 28, 1989

Mining Recorder
Ministry of Northern Development and Mines
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

Re: Notice of Intent dated March 20, 1989 Geological
Survey submitted on Mining Claims P 996972 et al
in the Townships of English and Zavitz.

The assessment work credits, as listed with the above-mentioned Notice of Intent,
have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your
records.

Yours sincerely,

W.R. Cowan
Provincial Manager, Mining Lands
Mines & Minerals Division

AB:eb
Enclosure

cc: Mr. G.H. Ferguson
Mining and Lands Commissioner
Toronto, Ontario

Resident Geologist
Timmins, Ontario

Esso Resources Canada Ltd.
Toronto, Ontario

Esso Minerals Canada
Timmins, Ontario



Recorded Holder
Esso Resources Canada Limited

Township or Area
English and Zavitz Townships

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological <u>32</u> days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	P 996972 997700-1-2-4-5-8-9 997716-17-18-21-22-23

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

not sufficiently covered by the survey insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Recorded Holder
Esso Resources Canada Limited

Township or Area
English and Zavitz Townships

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
<p>Geophysical</p> <p>Electromagnetic _____ days</p> <p>Magnetometer _____ days</p> <p>Radiometric _____ days</p> <p>Induced polarization _____ days</p> <p>Other _____ days</p>	<p>P 997505</p>
<p>Section 77 (19) See "Mining Claims Assessed" column</p>	
<p>Geological <u>15</u> days</p>	
<p>Geochemical _____ days</p>	
<p>Man days <input type="checkbox"/> Airborne <input type="checkbox"/></p> <p>Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/> Credits have been reduced because of partial coverage of claims.</p> <p><input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.</p>	

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

not sufficiently covered by the survey insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Ministry of Northern Development and Mines

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT No. W 8906-141

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

Mining Act 2.12073

Type of Survey(s) Geochemical Township or Area English, Zavitz Twps.
 Claim Holder(s) Esso Resources Canada Limited Prospector's Licence No. T-872
 Address P.O. Box 4029, Terminal A, Toronto, Ont. M5W 1K3
 Survey Company Esso Minerals Canada Date of Survey (from & to) 10 08 87 to 24 05 88 Total Miles of line Cut 13.8
 Name and Address of Author (of Geo-Technical report) Dane Bridge, Box 290, Timmins, Ont P4N 7N6

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits	Geophysical	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P	986766	25			
	996971	24			
	996972	22			
	997707	25			
	997708	10			
	997709	25			
	997710	25			
	997715	22			
	997720	22			
	997721	10			

RECEIVED
MAR 15 1989

MINING LANDS SECTION

RECORDED
JAN 10 1989

FORCU
REC
JAN 10 1989
1:05 P.M.

Expenditures (excludes power stripping)

Type of Work Performed Geochemical
 Performed on Claim(s) see attached list

Calculation of Expenditure Days Credits
 Total Expenditures \$ 3,160.00 ÷ 15 = 210.6 Total Days Credits

Instructions
 Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Total number of mining claims covered by this report of work. 10

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
210	Jan 10/89	[Signature]
	Date Approved as Recorded	Branch Director
		[Signature]

Date Jan 9/89 Recorded Holder or Agent (Signature) [Signature]

Certification Verifying Report of Work
 I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Dane Bridge, Box 290, Timmins, Ont.



Ministry of Northern Development and Mines

Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT NO. W 8906-142

- Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

2.120/3

Mining Act

Type of Survey(s) Geological including Linecutting		Township or Area English, Zavitz Twps.	
Claim Holder(s) Esso Resources Canada Limited		Prospector's Licence No. T-872	
Address P.O. Box 4029, Terminal A, Toronto, Ont. M5W 1K3			
Survey Company Esso Minerals Canada		Date of Survey (from & to) 10/08/87 to 02/88	Total Miles of line Cut 22.2 km (13.8 mi)
Name and Address of Author (of Geo-Technical report) Dane Bridge, Box 290, Timmins, Ontario P4N 7N6			

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
Geological and Linecutting based on 40 days coverage as shown in column on right		
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	Days per Claim
	Magnetometer	
	Radiometric	

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
	996972	10			
	997505	20			
	997700	10			
	997701	40			
	997702	30			
	997704	10			
	997705	20			
	997708	20			
	997709	5			
	997716	25			
	997717	30			
	997718	40			
	997719	40			
	997721	20			
	997722	10			
	997723	30			

RECEIVED

MAR 15 1989

MINING LANDS SECTION

RECORDED

JAN 10 1989

JAN 10 1989

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded **600** Date Recorded **JAN. 10/89** Mining Record *[Signature]*

Date Approved as Recorded *[Signature]* Branch Director

Date **Jan 9/89** Recorded Holder or Agent (Signature) *[Signature]*

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying



Ontario

Ministry of Northern Development and Mines

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT No. W 8906-140

Instructions: -- Please type or print. -- If number of mining claims traversed exceeds space on this form, attach a list. Note: -- Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.

Re: Range of Survey Dates for Mining Act Work Filed to date as listed

Form header section containing: Type of Survey(s), Claim Holder(s), Address, Survey Company, Name and Address of Author, Township or Area, and Total Miles of line Cut.

Credits Requested per Each Claim in Columns at right

Table for Special Provisions: Electromagnetic, Magnetometer, Radiometric, Other, Geological, Geochemical.

Table for Man Days: Electromagnetic, Magnetometer, Radiometric, Geological, Geochemical.

Table for Airborne Credits: Electromagnetic, Magnetometer.

Expenditures (excluding power stripping)

Form for Expenditures: Type of Work Performed, Performed on Claim(s).

Calculation of Expenditure Days Credits: Total Expenditures \$ ÷ 15 = Total Days Credits

Instructions: Total Days Credits may be apportioned at the claim holder's choice.

Date: March 6/89, Recorded Holder or Agent (Signature)

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto...

Name and Postal Address of Person Certifying: Dane Bridge, Box 290, Timmins, P9N 7N6

Mining Claims Traversed (List in numerical sequence)

Table for Mining Claims Traversed with columns for Prefix, Mining Claim Number, Expend. Days Cr., and Mining Claim Number.

RECORDED MAR - 6 1989

For Office Use Only: Total Days Cr. Recorded 20, Date Recorded MAR-6/89, Mining Recorder signature.



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) GEOCHEMICAL
Township or Area ENGLISH AND ZAVITZ
Claim Holder(s) ESSO RESOURCES CANADA LIMITED
Box 4029 TERMINAL A TORONTO
Survey Company ESSO MINERALS CANADA
Author of Report DANE BRIDGE
Address of Author Box 290 TIMMINS
Covering Dates of Survey 10/08/87 TO 24/05/88
Total Miles of Line Cut 13.8

MINING CLAIMS TRAVERSED
List numerically

- P- 996972
P- 997504
P- 997505
P- 997506
P- 997800
P- 997701
P- 997702
P- 997705
P- 997707
P- 997708
P- 997709
P- 997716
P- 997717
P- 997718
P- 997719
P- 997721
P- 997722
P- 997723
Y

If space insufficient, attach list

Table with 2 columns: SPECIAL PROVISIONS CREDITS REQUESTED, DAYS per claim. Includes rows for Geophysical (Electromagnetic, Magnetometer, Radiometric, Other) and Geochemical.

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

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

DATE: _____ SIGNATURE: 2.11112
Author of Report or Agent

JAN 10 1988

Res. Geol. _____ Qualifications _____

Previous Surveys

Table with 4 columns: File No., Type, Date, Claim Holder. Includes a grid for recording survey data.

TOTAL CLAIMS 18

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 _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____
(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____
(specify for each type of survey)

Accuracy _____
(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken SEE ATTACHED LIST

Total Number of Samples 165 SOILS, 103 ROCKS = 268 SAMPLES ANALYTICAL METHODS

Type of Sample SOIL AND ROCK
(Nature of Material)

Average Sample Weight 200 GRAMS (SOILS)

Method of Collection MATTOK AND TROWL

Soil Horizon Sampled B, OR OXIDIZED TILL

Horizon Development POOR AND A

Sample Depth 5-20 CM

Terrain FLAT

Drainage Development POOR

Estimated Range of Overburden Thickness 10 CM TO 3 M

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis - 80 MESH

General AU BY FIRE ASSAY
OTHERS BY ZCP

Values expressed in: per cent
p. p. m.
p. p. b.

(Cu) (Pb) (Zn) Ni, Co, (Ag) (Mo) (As) (circle)

Others AU

Field Analysis (_____ tests)

Extraction Method ACID DIGESTION

Analytical Method I. C. P.

Reagents Used AQUA-REGIA

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory MIN-EN LABS.

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____



ESSO MINERALS CANADA

THIRD FLOOR, HOLLINGER BUILDING
637 ALGONQUIN AVENUE EAST, P.O. BOX 290
TIMMINS, ONTARIO P4N 7N6
TELEPHONE: (705) 267-6680

DANE A. BRIDGE
District Geologist, Timmins

File: English - Zavitz
1673 A01 and C900

January 10, 1989

Mining Lands Section
Mineral Development and Lands Branch
Third Floor
880 Bay Street
Toronto, Ontario
M5S 1Z8

Dear Sir:

Re: Geology and Geochemistry of the English - Zavitz Property

Enclosed are two copies of the above assessment report. The original reports of work and geochemical data statement were filed with the Timmins Mining Recorder. Copies are attached to the front of each of the two enclosed assessment reports.

The copy of the report with this letter attached contains the original Certificate of Payment of Invoices (Appendix 4).

Yours truly,


Dane Bridge

RECEIVED

JAN 19 1989

MINING LANDS SECTION

cc: J. Pirie

R. Hall

Encl.

Bartlett Twp. - M.262

THE TOWNSHIP OF ENGLISH

ENGLISH

DISTRICT OF SUDBURY

PORCUPINE MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

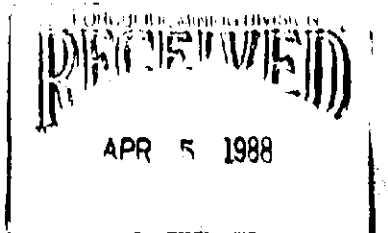
- PATENTED LAND (P)
- CROWN LAND SALE (C.S.)
- LEASES (L)
- LOCATED LAND (Loc.)
- LICENSE OF OCCUPATION (L.O.)
- MINING RIGHTS ONLY (M.R.O.)
- SURFACE RIGHTS ONLY (S.R.O.)
- ROADS
- IMPROVED ROADS
- KING'S HIGHWAYS
- RAILWAYS
- POWER LINES
- MARSH OR MUSKEG
- MINES
- CANCELLED
- PATENTED S.R.O.

NOTES

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

gas withdrawn from staking under Section of the Mining Act (R.S.O. 1970).

No.	File	Date	Disposition
W 18/77	83582	28/2/77	S.R.O.
W 19/78	188543	10/4/78	S.R.O.
W 30/78	192219	2/6/78	S.R.O.



#5

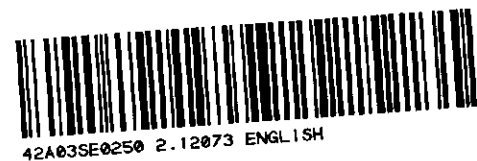
PLAN NO. - M.787

ONTARIO MINISTRY OF NATURAL RESOURCES SURVEYS AND MAPPING BRANCH

Beemer Twp. - M.656

Zavitz Twp. - M.1189

Semple Twp. - M.1100



200

42A035E0250 2.12073 ENGLISH

Geikie Twp.(M.320)

THE TOWNSHIP
OF

ZAVITZ

DISTRICT OF
SUDBURY

PORCUPINE
MINING DIVISION

NOV 4 1988

SCALE: 1-INCH 40 CHAINS

LEGEND

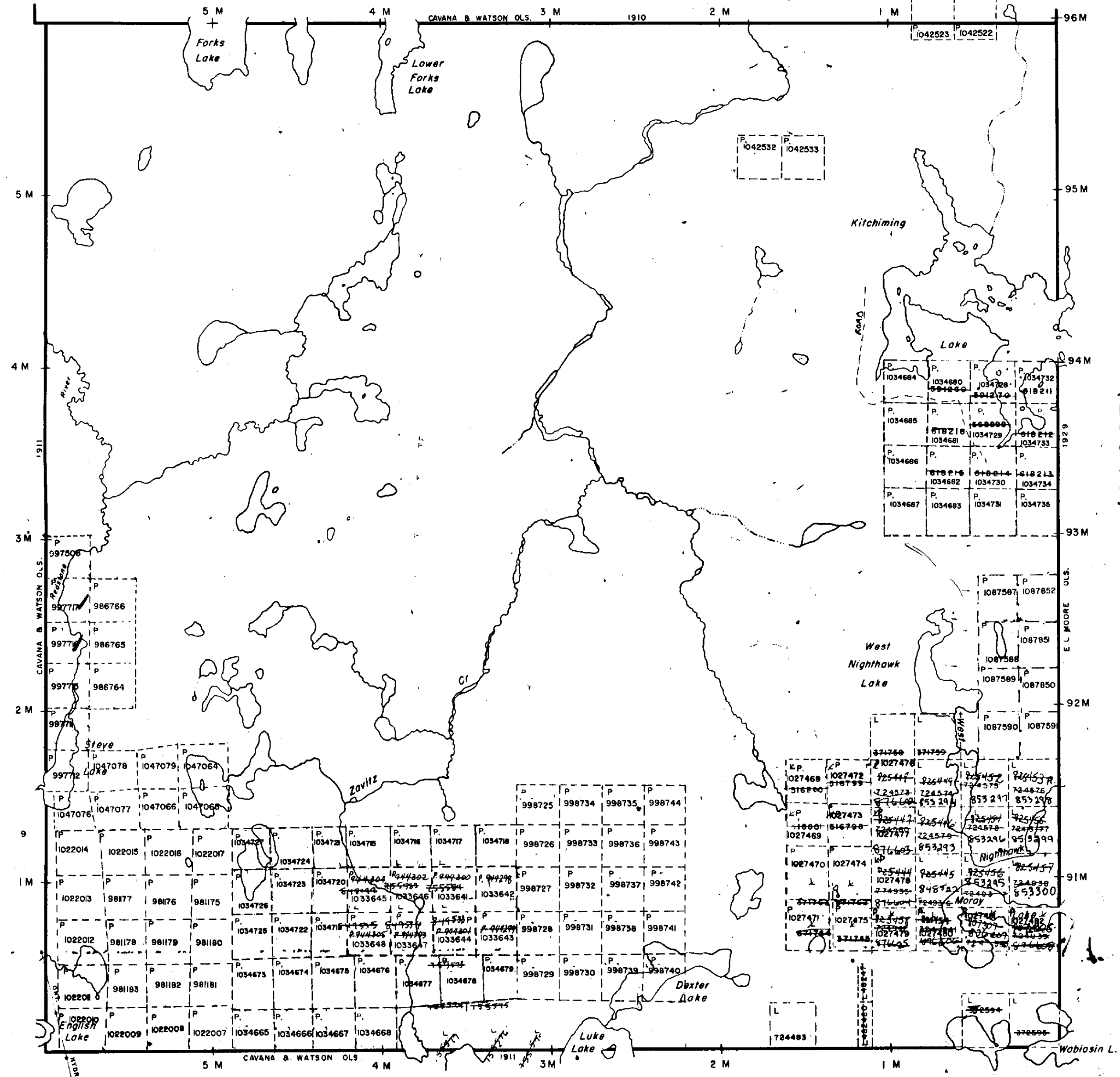
- PATENTED LAND (P)
- CROWN LAND SALE C.S.
- LEASES (L)
- LOCATED LAND Loc.
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS
- IMPROVED ROADS
- KING'S HIGHWAYS
- RAILWAYS
- POWER LINES
- MARSH OR MUSKEG
- MINES
- CANCELLED

NOTES

400' SURFACE RIGHTS RESERVATION ALONG THE SHORES OF ALL LAKES AND RIVERS.

English Twp.(M.787)

Hincks Twp.(M.223)

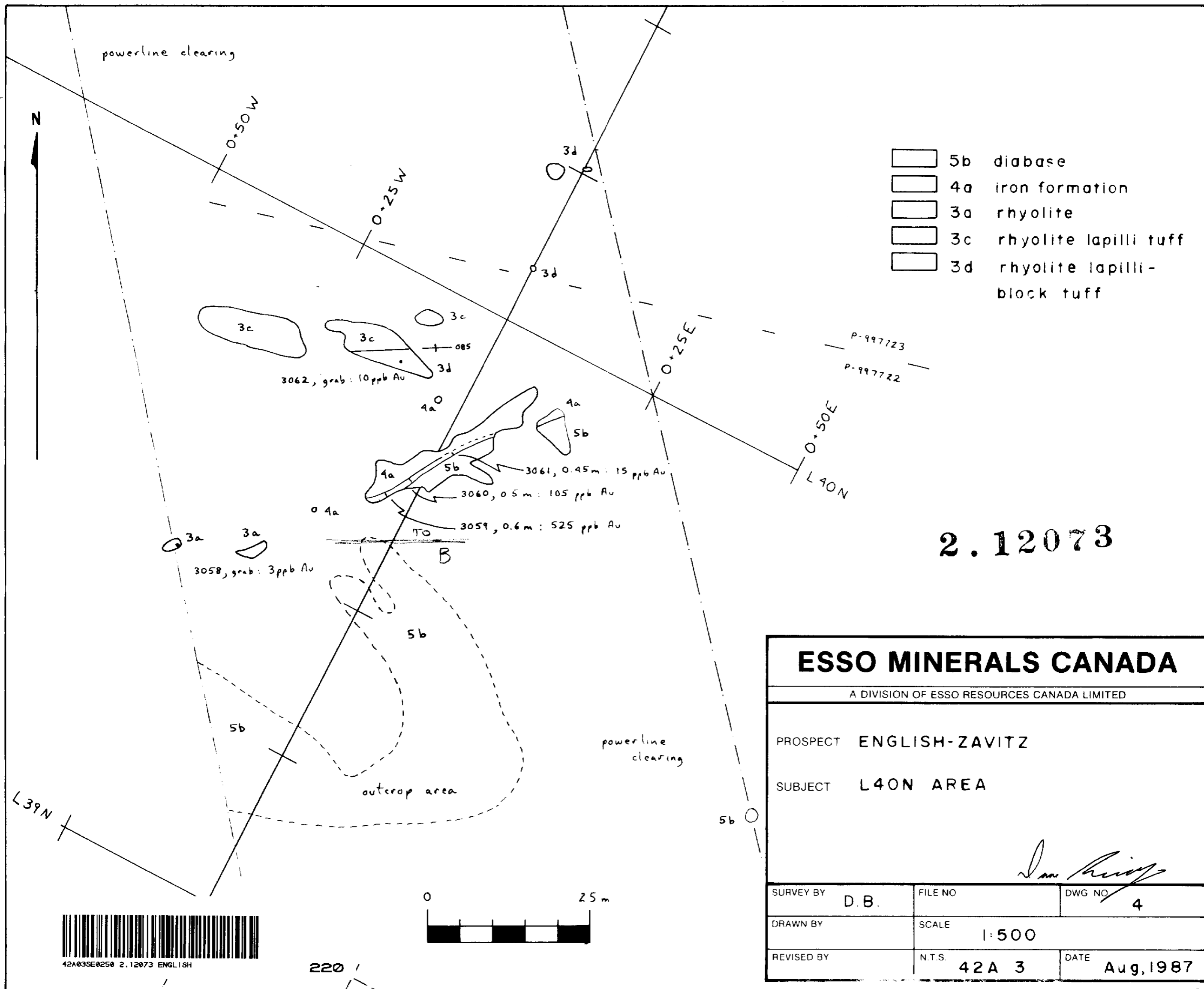


Hutt Twp.(M.943)

PLAN NO. M. 1189

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH





- 5b diabase
- 4a iron formation
- 3a rhyolite
- 3c rhyolite lapilli tuff
- 3d rhyolite lapilli-block tuff



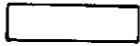

2.12073

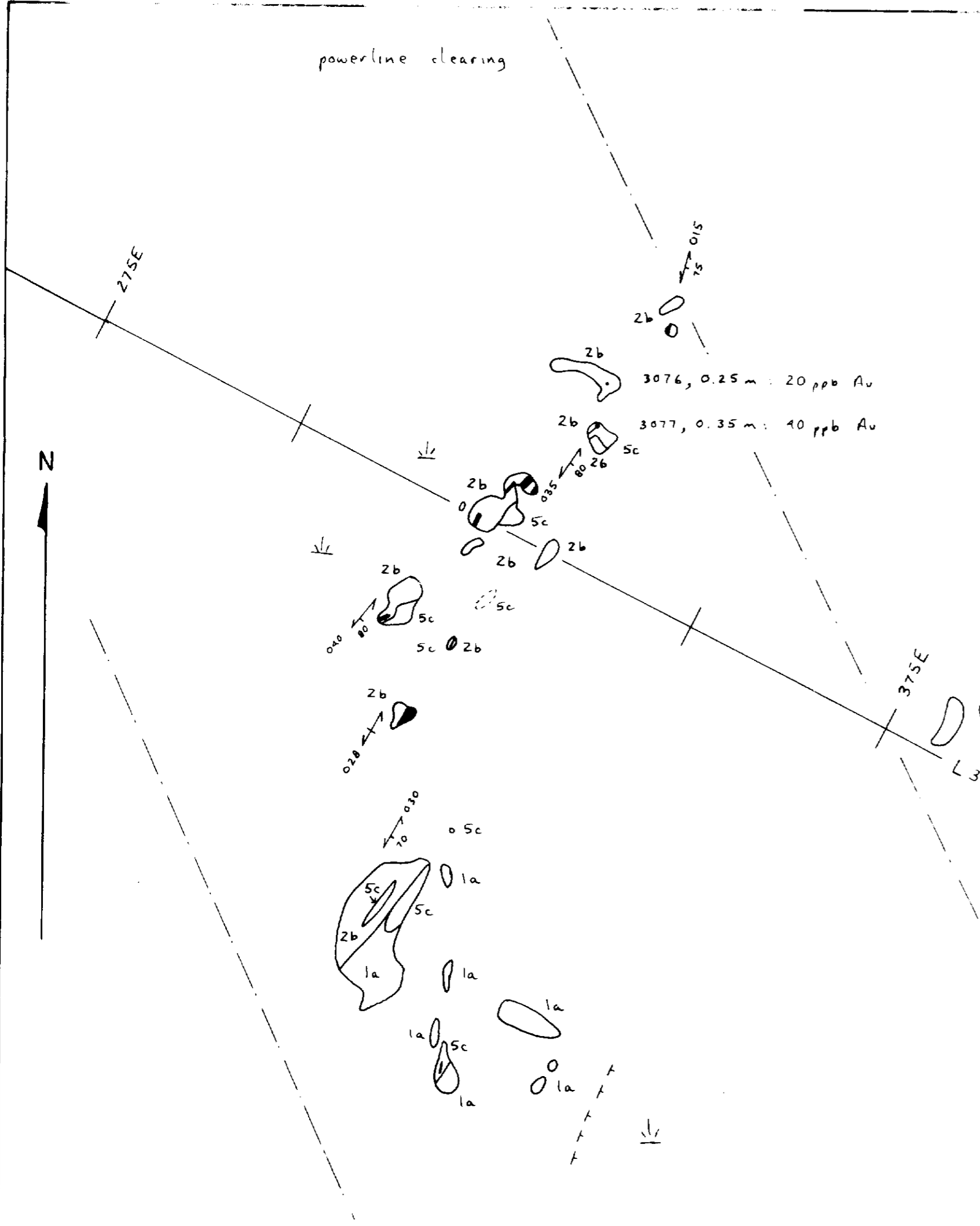
ESSO MINERALS CANADA		
A DIVISION OF ESSO RESOURCES CANADA LIMITED		
PROSPECT ENGLISH-ZAVITZ		
SUBJECT L40N AREA		
<i>Don King</i>		
SURVEY BY D.B.	FILE NO	DWG NO 4
DRAWN BY	SCALE 1:500	
REVISED BY	N.T.S. 42A 3	DATE Aug, 1987



220

powerline clearing

-  quartz vein
-  5c aplite
-  2b carbonate altered ultramafic
-  1a basalt



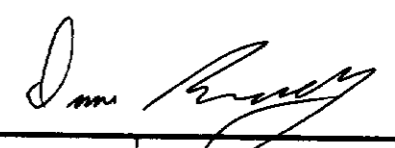
2.12073

ESSO MINERALS CANADA

A DIVISION OF ESSO RESOURCES CANADA LIMITED

PROSPECT ENGLISH-ZAVITZ

SUBJECT L36N AREA

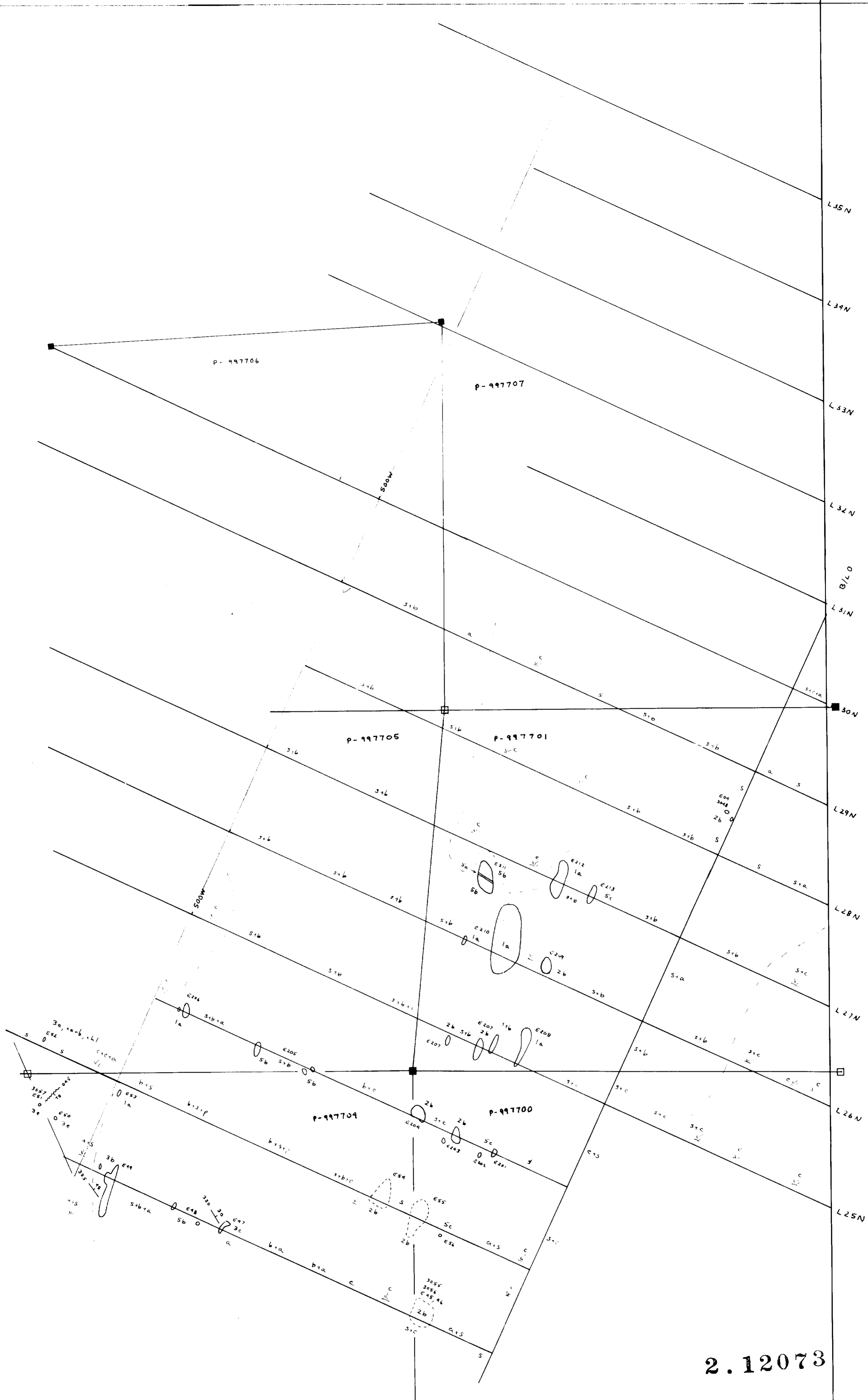


SURVEY BY	D. B.	FILE NO		DWG NO	5
DRAWN BY		SCALE	1:500		
REVISED BY		N.T.S	42A/3	DATE	Aug, 1987



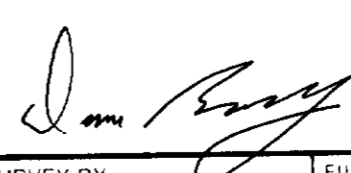
42A035E0250 2.12073 ENGLISH

230

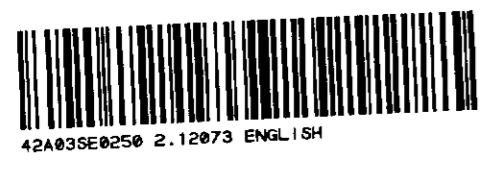


2.12073

see Map I for legend

ESSO MINERALS CANADA		
A DIVISION OF ESSO RESOURCES CANADA LIMITED		
PROSPECT	ENGLISH-ZAVITZ	
SUBJECT	GEOLOGY, WEST HALF	
		100m
SURVEY BY	FILE NO	DWG NO
D. B.		2
DRAWN BY	SCALE 1:2500	
REVISED BY	NTS 42A/3	DATE Aug, 1987

1:2500



L44N

5c, 2b

5c

1a

2b

500E

subcrop

600E

- 5c aplite
- 2b carbonate altered ultramafic
- 1a basalt

○ E36
5c

○ 2b

2b

E35

2b

○

x

E135, 3972, 460 ppb Au

x

E136, 3973, 380 ppb Au

x

E139, 3976, 430 ppb Au

x

E137, 3974, 1200 ppb Au

2b

x

E138, 3975, 370 ppb Au

E13

E14

L43N

E140

2b

1a

○ E15

outcrop area

○

1c

○ E15a

1a

2.12073

43 N SHOWING
MAP 3

100m

600E

L42N

500E

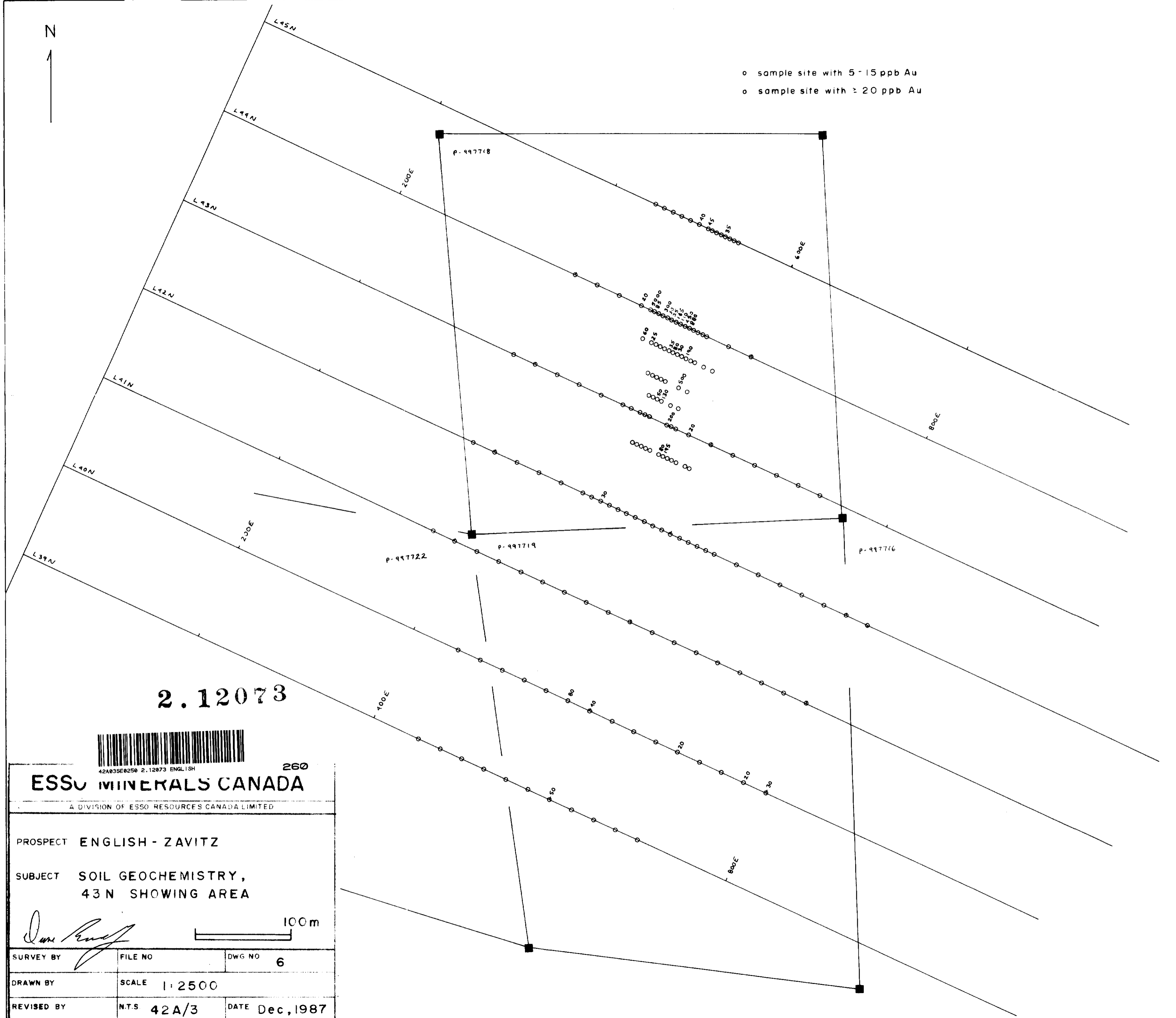


42A035E0250 2.12073 ENGLISH

250



- o sample site with 5 - 15 ppb Au
- o sample site with ≥ 20 ppb Au



2.12073



260

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PROSPECT ENGLISH - ZAVITZ

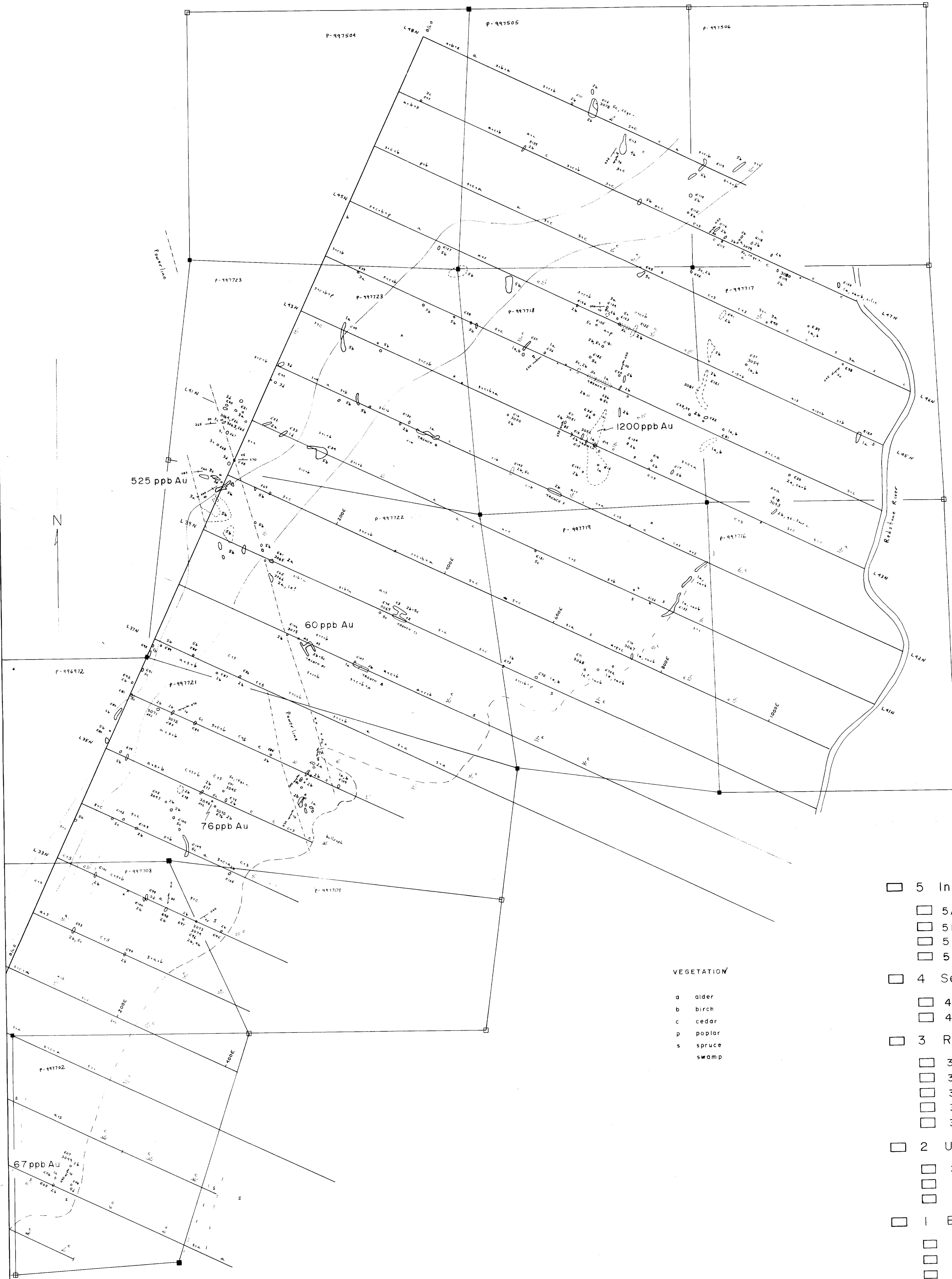
SUBJECT SOIL GEOCHEMISTRY,
43 N SHOWING AREA



SURVEY BY	FILE NO	DWG NO
DRAWN BY	SCALE	6
REVISED BY	N.T.S	DATE Dec, 1987

1:2500

42A/3



VEGETATION

- a alder
- b birch
- c cedar
- p poplar
- s spruce
- swamp

LEGEND

- 5 Intrusive Rocks
 - 5A Syenite
 - 5B Diabase
 - 5C Aplite
 - 5D Fine to med grained granite with chlorite
- 4 Sedimentary Rocks
 - 4A Iron formation - chert, magnetite, pyrite
 - 4B Iron formation - chert with minor magnetite
- 3 Rhyolite
 - 3A Massive, aphanitic
 - 3B Ash tuff
 - 3C Lapilli tuff
 - 3D Lapilli-block tuff with chlorite matrix
 - 3E Sericite-chlorite schist
- 2 Ultramafic Rocks
 - 2A Chlorite-actinolite- talc
 - 2B Carbonate-chlorite
 - 2C Spinifex texture
- 1 Basalt
 - 1A Massive, aphanitic
 - 1B Chloritic
 - 1C Carbonate altered
 - 1D Mafic tuff
 - 1E Vesicular
 - 1F Leucoxene-bearing

2.12073

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A DIVISION OF ESSO RESOURCES CANADA LIMITED			
PROSPECT ENGLISH-ZAVITZ			
SUBJECT GEOLOGY, EAST HALF			
<i>John Egan</i>			
DRAWN BY	D.B.	FILE NO.	1000
SCALE	1:2500	DATE	1
REVISION BY	U.B.	NO.	42 A/3
DATE	Nov, 88	DATE	Aug, 1987

