



A Combined Report
On The Geology, Horizontal Loop E.M.
And Magnetometer Surveys,
And Diamond Drilling Of The
Julia 1-20, 37-70 Mineral Claims

Watson Lake Mining District
Yukon Territory
NTS 105 H 5, 105 G 8
Lat. $61^{\circ}25'N$; Long. $130^{\circ}00'W$



Owned by Welcome North Mines Ltd.
and Esperanza Explorations Ltd.
Under Option to Arbor Resources Inc.
Operated by Esso Resources Canada Limited

by

C.A. Aird, P. Eng.

090858

July 31, 1981

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

\$ 27,000.00

~~Resident Geologist or
Resident Mining Engineer~~

~~Considered as representation work under
Section 53 (4) Yukon Quartz Mining Act.~~

Ruth Sebicki *Oct 1/81*
~~Commissioner of Yukon Territory~~
for

102000

FROM: Mining Recorder at ... WATSON LAKE

Supervising Mining Recorder at Whitehorse, Y.T.



FOR ACTION ARE:

NEW APPL'N for PLACER LEASE to PROSPECT: Name:

RENEWAL APPL'N PLACER LEASE to PROSPECT: Name:

AFFIDAVIT of EXPENDITURE on PLACER LEASE. Name:

ASSIGNMENT of PLACER LEASE No.

From: _____ To: _____

GROUPING APPL'N UNDER SEC. 52(2) PLACER MINING ACT.

Owner: _____

DIAMOND DRILL LOGS:

Claims: _____ Claim sheet no: _____

QUARTZ ASSESSMENT REPORT

Claims: Julia 1-20, 37-70

Claim sheet no. 105-H-5+G/8

Type of report:

Diamond Drilling
Geological Mapping
Geophysical Survey

Submitted by:

Esso Minerals Canada

Cls. work performed on:

Julia 1-10

\$ Req. for ren. application

\$ 27,000⁰² ✓

[Signature]

Signature

REPLY ACTION:

Date Ret. _____

090858

Signature _____



Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)



I (Name)	ARBOR RESOURCES INC.	Occupation
(Postal Address)	706-675 West Hastings Street, Vancouver, B.C.	

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT :-

- I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
- I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

YA 56379 JULIA 1

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVERSARY DATES

situated at Lat. 130°00'W Long. 61°22'N Claim Sheet No. 105 H5
 in the Watson Lake Mining District, to the value of at least \$12,852.00
 dollars, since the 8th day of June 19 81
 to represent the following mineral claims under the authority of Grouping Certificate No. Application 2986
 (Here list claims to be renewed by number and name in numerical order) enclosed.

YA	56379	JULIA 1
YA	56518-56524	JULIA 11-17
YA	56528-56535	JULIA 37-44

- The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

DIAMOND DRILLING. (D.D. HOLE #3)

Sworn before me at Vancouver
 this 13th day of August 1981
W Bay

A Commissioner for Oaths for Yukon Territory.

A. F. Karchewski
 Applicant.
 A. F. KARCHEWSKI

CYRIL JAMES ARTHUR DAY
 A Notary Public in and for
 the Province of British Columbia



Department of Indian Affairs and Northern Development
YUKON QUARTZ MINING ACT

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(Postal Address)	706-675 West Hastings Street, Vancouver, B.C.	

MAKE OATH AND SAY, THAT :-

- I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
- I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

YA 56380-56382 JULIA 2 - 4
YA 56384 JULIA 6

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVERSARY DATES

situated at Lat. 130°00' W Long. 61°22' N Claim Sheet No. 105 H5
in the Watson Lake Mining District, to the value of at least \$10,000.00
dollars, since the 8th day of June 19 81
to represent the following mineral claims under the authority of Grouping Certificate No. 2987 Application enclosed.
(Here list claims to be renewed by number and name in numerical order)

YA 56380 - 56382 JULIA 2 - 4
YA 56384 JULIA 6
YA 56525-56527 JULIA 18 - 20
YA 56536 + 56537 JULIA 45 & 46
YA 56539 JULIA 48

- The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Geological mapping
Geophysical surveys

Sworn before me at Vancouver
this 13th day of August 19 81
Day

A Commissioner for Oaths for Yukon Territory.

A. F. Karchewski
Applicant.

A. F. KARCHEWSKI

CYRIL JAMES ARTHUR DAY
A Notary Public in and for
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Department of Indian Affairs and Northern Development
YUKON QUARTZ MINING ACT

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(Postal Address)	706 - 675 West Hastings Street, Vancouver, B.C.	

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

YA 56383	JULIA 5
YA 56385	JULIA 7
YA 56387 & 56388	JULIA 9 & 10

situated at Lat. 130°00'W; Long. 61°22'N Claim Sheet No. 105G8 ; 105H5
in the Watson Lake Mining District, to the value of at least \$10,000.00
dollars, since the 8th day of June 19 81,

to represent the following mineral claims under the authority of Grouping Certificate No. Application enclosed
(Here list claims to be renewed by number and name in numerical order)

YA 56383	JULIA 5
YA 56385	JULIA 7
YA 56387 & 56388	JULIA 9 & 10
YA 56552 - 56555	JULIA 61 - 64
YA 56652 + 56653	JULIA 69 & 70

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Geological mapping
Geophysical surveys

Sworn before me at Vancouver
this 13th day of August 19 81
Libby

A. Commissioner for Oaths for Yukon Territory.

CYRIL JAMES ARTHUR DAY
A Notary Public in and for
the Province of British Columbia

A. F. Karchewski
Applicant.

A. F. KARCHEWSKI

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVERSARY DATES



Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

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(This form required in duplicate with sketch showing location of work.)



I (Name)	ARBOR RESOURCES INC.	Occupation
(Postal Address)	706 - 675 West Hastings Street, Vancouver, B.C.	

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT :-

- I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
- I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

YA 52386 JULIA 8

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVERSARY DATES

situated at Lat. 130°00'W ; Long. 61°22'N Claim Sheet No. 105 G 8

in the Watson Lake Mining District, to the value of at least \$25,704.00

dollars, since the 8th day of June 19 81

to represent the following mineral claims under the authority of Grouping Certificate No. Application enclosed
(Here list claims to be renewed by number and name in numerical order)

YA 52386	JULIA 8
YA 56538	JULIA 47
YA 56540	JULIA 49
YA 56542	JULIA 51
YA 56544 - 56551	JULIA 53 - 60
YA 56556 - 56559	JULIA 65 - 68

- The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Diamond drilling (D.D. Holes # 1 and 2)

Sworn before me at Vancouver
 this 13th day of August 19 81

[Signature]

A Commissioner for Oaths for Yukon Territory.

[Signature]
 A.F. KARCHEWSKI Applicant.

CYRIL JAMES ARTHUR DAY
 A Notary Public in and for
 the Province of British Columbia

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2	H.L.E.M. Survey Tx-Rx Separation = 100, 150 meters Lines 17+50N - 18+50N	1:2500	In Pocket
3	H.L.E.M. Survey Tx-Rx Separation = 100, 150 meters Lines 19+50N - 20+50N	1:2500	In Pocket
4	H.L.E.M. Survey Tx-Rx Separation = 30 meters Line - Boulder Creek	1:2500	In Pocket
5	Magnetometer Survey	1:2500	In Pocket
6	Geology	1:2500	In Pocket

SUMMARY

Esso Resources Canada Limited entered into a joint venture agreement with Arbor Resources Inc. and carried out a programme of work between June 9 and July 21, 1981.

The work consisted of geologic mapping at 1:2500 scale, horizontal loop E.M. surveys, a magnetometer survey and limited geochemical stream silt sampling. These surveys were followed by three diamond drill holes from two sites, totalling 1080 feet (329 m).

Two types of pyritic mineralization were tested. One consisting of small, conformable massive bodies and the other consisting of relatively larger, disseminated and stockwork pyritic bodies which may be discordant.

Both types of deposits contain minor amounts of copper, zinc, silver and gold, however, the grade of the drill intersections obtained is too low to be attractive at the present time. No additional work is recommended.

INTRODUCTION

Esso Resources Canada Limited entered into a joint venture with Arbor Resources Inc. to explore the Julia 1-20 and 37-70 mineral claims in the Watson Lake Mining District of the Yukon Territory.

Esso Minerals Canada, a division of Esso Resources, carried out geologic mapping, geochemical stream silt sampling, geophysical H.L.E.M. surveys and a magnetometer survey, followed by 1080 feet of diamond drilling in three holes from June 9, 1981 to July 21, 1981.

Geologic mapping and core logging was done under the supervision of A. Stewart, B.Sc. and the geophysical surveys were supervised and interpreted by G. Cooper, B.Sc. A statement of their qualifications is attached at the end of this report.

Geological field assistants, C. Hrkac and F. Seki and geophysical operators P. Flood, J. Hunt and K. Simpson were ably employed on the above surveys.

LOCATION AND ACCESS

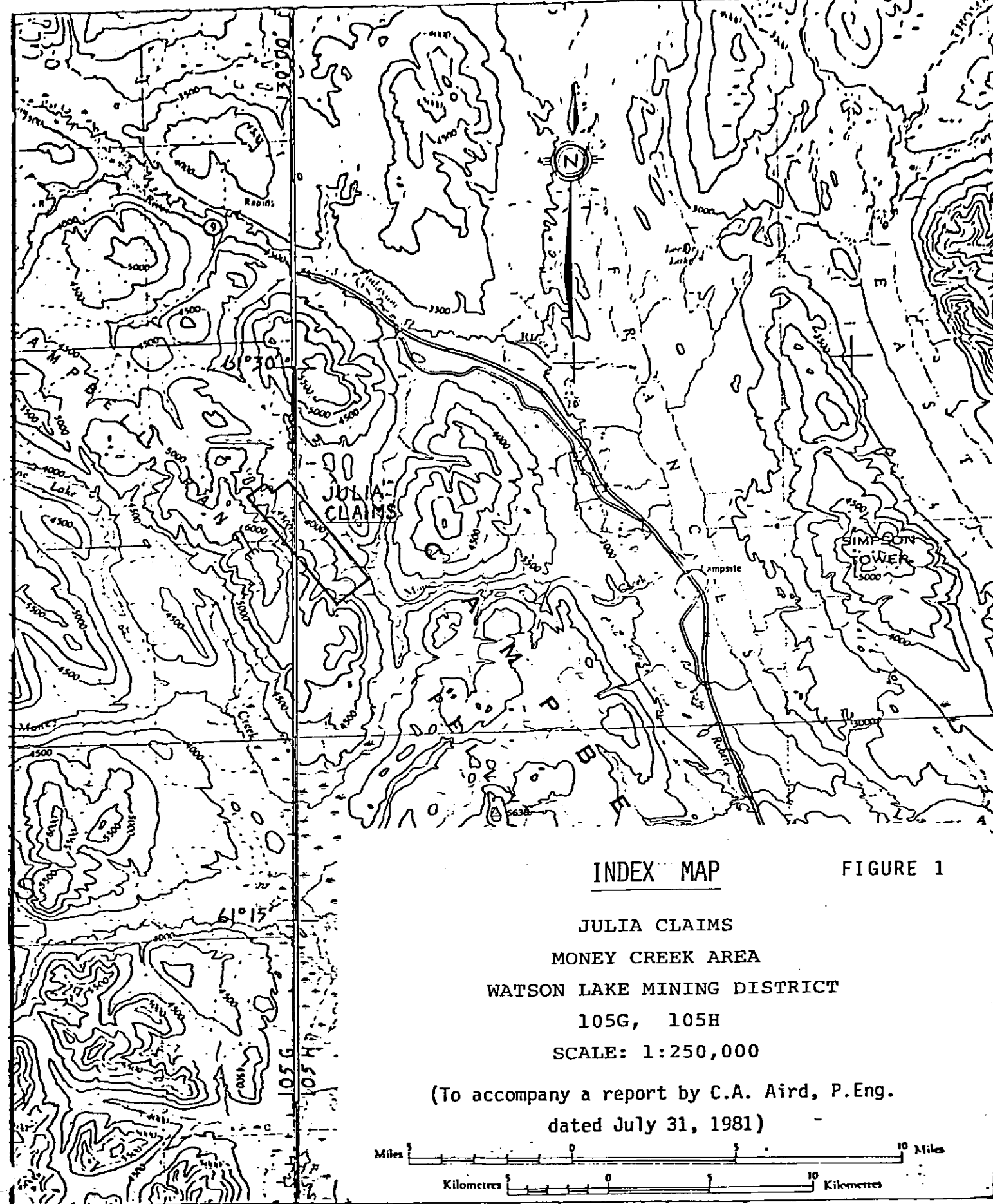
The Julia 1-20 and 37-70 mineral claims are situated in the Campbell Range at Lat. 61 25'; Long. 130 00', in the Watson Lake Mining District, about 160 kilometres northwest of Watson Lake, in the Yukon Territory.

The property occupies part of the headwaters of Money Creek which drains into Frances Lake, 20 kilometres to the east and just east of the Watson Lake River highway.

Elevations on the property range from 1225 metres (4000 feet) to 1675 metres (5500 feet). The area of interest lies above timberline but the lower areas are tree covered. Water is abundant in three small streams designated Camp Creek, Boulder Creek and Welcome North Creek, from north to south, respectively.

Access to the property was initially entirely by helicopter from Watson Lake to a camp on Camp Creek. Later, a drill camp was established at Caesar Creek on the highway and a helicopter used to commute to the property.

Scheduled air service is provided by C.P. Air at Watson Lake.

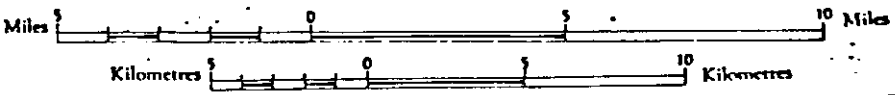


INDEX MAP

FIGURE 1

JULIA CLAIMS
MONEY CREEK AREA
WATSON LAKE MINING DISTRICT
105G, 105H
SCALE: 1:250,000

(To accompany a report by C.A. Aird, P.Eng.
dated July 31, 1981)



PROPERTY

The property is comprised of the following 54 mineral claims in the Watson Lake Mining District of the Yukon Territory.

Claim	Grant Nos.	Expiry Date
Julia 1-10	YA 56379-YA56388	August 19, 1981
Julia 11-20	YA 56518-YA56527	September 8, 1981
Julia 37-68	YA 56528-YA56559	September 8, 1981
Julia 69-70	YA 56652-YA56653	September 8, 1981

The claims have been tagged as required by the Yukon Quartz Mining Act.

All of the above claims are held under option by Arbor Resources Inc. from Welcome North Mines Ltd. and Esperanza Exploations Ltd., joint owners of the claims.

HISTORY

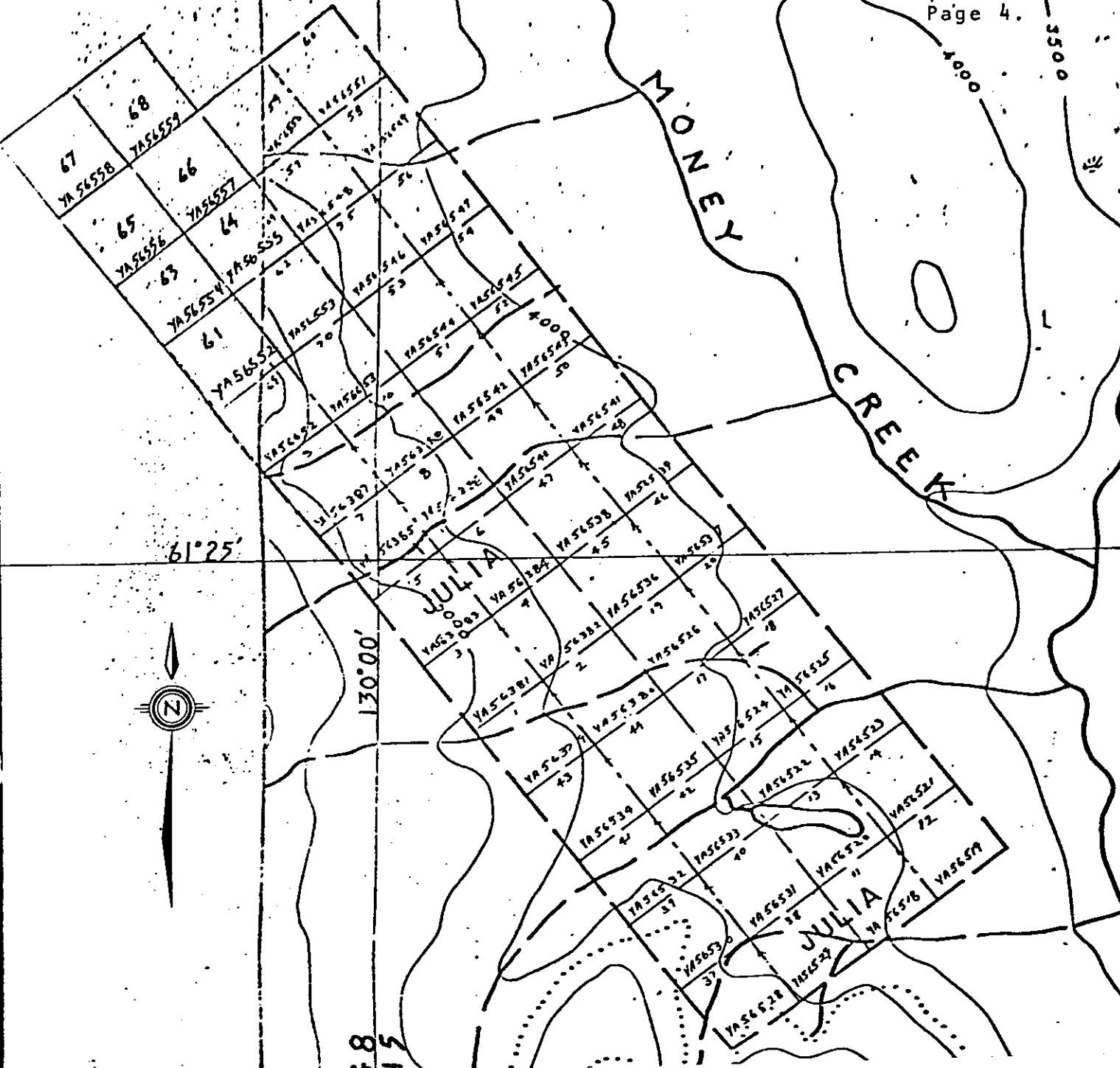
The Julia 1-10 mineral claims were staked following a discovery by Pete Risby, prospecting for the Welcome North-Esperanza group of companies.

While examining several gossans in the area he located several angular boulders up to one metre in diameter composed of massive pyrite with minor amounts of chalcopyrite in the bed of Boulder Creek about 50 metres downstream from a large gossan. No bedrock source for the boulders was found at that time.

Selected samples by the owners in 1980 assayed from 0.44% copper and 0.04 ounces of gold per ton to 0.98% copper and 0.06 ounces of gold per ton including one silver assay value of 0.83 ounces per ton.

Immediately following this discovery, the Julia 1-10 mineral claims were optioned by Arbor Resources.

A geochemical soil survey and an E.M. 16 geophysical survey was done by Montgomery Consultants Ltd. for Arbor Resources in August 1980. Soils were analyzed for copper, lead, zinc, gold and silver. Anomalous values (up to 6000 ppm) in copper were obtained over the large gossan on Boulder Creek and weaker anomalous values were obtained near Welcome North



105 G 8
105 H 5

CLAIM MAP

FIGURE 2

JULIA 1-20, 37-70 M.C.'s
 MONEY CREEK AREA
 WATSON LAKE MINING DISTRICT
 105-G-8, 105-H-5
 SCALE: 1/2 MILE TO 1 INCH (1:31680)
 (To accompany a report by C.A. Aird, P.Eng.
 dated July 31, 1981)



Creek and near a gossanous area south of Camp Creek. Weakly anomalous values in zinc somewhat coincide with the three copper zones but silver, lead and gold values are low and dispersed, with the exception of one high gold value (1650 ppb) south of Welcome North Creek.

An E.M. 16 anomaly along the baseline is in part coincident with the large gossan but is largely unexplained in terms of recent geologic mapping.

An additional 44 mineral claims were recorded in September 1980 and added to the option agreement with Arbor Resources Inc. On May 22, 1981 Arbor Resources entered into a joint venture agreement with Esso Resources Canada Limited giving Esso the right to explore the property.

REGIONAL GEOLOGY

Notes by Roots, Green, Roddick and Blusson on Map 6-1966 of the Geological Survey of Canada describe the area as underlain by Unit 13 b, comprised of greenstone and believed to be of Devonian and (?) Mississippian in age. Associated sedimentary rocks are described as unmetamorphosed and of pelitic composition.

GEOLOGY OF THE JULIA PROPERTY

A sequence of green and maroon coloured basaltic and or andesitic, pillowed lavas, pillow breccias and tuffs together with intercalated beds of pale green to maroon and gray-black, argillaceous and cherty, tuffaceous sediments strike northwesterly and dip apparently in a homoclinal fashion to the northeast at roughly sixty degrees

Metamorphism is of low grade regional type characterized by epidote alteration and weak foliation sub parallel to bedding. Jointing is present in varying degrees, being particularly obvious in the cliffs above Camp Creek. Folding has not been observed on the claims although a reversal in foliation is noted in a gossanous outcrop south of Camp Creek. To the northwest, gentle folds were seen suggesting that the sequence occupies the eastern limb of a major fold. Lineations of five degrees suggest a shallow plunge to the northwest.

MINERALIZATION

Poorly exposed beds of massive pyrite, 1.5 metres in width, containing minor amounts of chalcopyrite, subcrop in the stream channels of Boulder and Welcome North Creeks. The Welcome North Creek occurrence was discovered by Esso personnel and a grab sample assayed 0.167% copper, 0.05% zinc, 0.63 ounces of silver and 0.018 ounces of gold per ton.

Additional mineralization occurs in several gossanous areas underlain by siliceous and clay altered rock containing mainly pyrite, with minor chalcopyrite and brown sphalerite, both disseminated and in fractures. The largest of these areas, just southwest of the massive sulphides in Boulder Creek, extends southerly for 250 metres with an apparent width of 80 metres.

GEOPHYSICS

Nineteen line kilometers of horizontal loop EM and 18 line kilometers of magnetometer surveying were carried out. The EM survey was carried out using the Scintrex RARE-GEM and the Apex Parametrics MAX-MIN II EM systems. The magnetometer survey was carried out using a Geometrics G-816 proton precession magnetometer.

1. Horizontal Loop EM Survey

a) Procedure and Theory:

The EM survey was started using the Scintrex prototype RARE-GEM system. Due to equipment malfunction of this system the survey was completed using the Apex Parametrics Max-Min II EM system.

The Scintrex RARE-GEM system consists of a portable transmitter, with two transmitting coils and power supply, and a receiver with signal detection electronics. The transmitter and receiver coils are maintained in the vertical axis co-planar mode, commonly referred to as the horizontal loop mode.

The transmitter generates two frequencies simultaneously - one referred to as the "signal frequency" and the other as the "reference frequency". The electromagnetic fields produced by these frequencies penetrates the earth and are detected by the receiver coil. The receiver measures the ratio of the received "signal frequency" amplitude, H_S , over the received "reference frequency" amplitude, H_R . The value of $H_S/H_R - 1 \times 100$ is then digitally displayed on the receiver.

As there is no cable connecting the transmitter and receiver units, a constant separation is maintained between the two units by means of a signal meter located on the receiver. This signal meter is calibrated to the amplitude of the reference frequency in free space. The survey measuring point is considered to be at the midpoint of the transmitter-receiver separation.

The Apex Parametrics Max Min II Electromagnetic system consists of a transmitter coil, with power supply, and a receiver coil with signal detection electronics. The two units are connected by a cable which provides the transmitter output to the receiver. The cable also serves as a means of maintaining a fixed separation between the two units. The coils are maintained in a horizontal plane while measurements are being made, commonly referred to as the horizontal loop mode.

An electromagnetic field is generated by the transmitter coil. This field penetrates the earth and is detected by the receiver coil. In the absence of a conductor, the field detected by the receiver coil is identical to that received via the cable link from the transmitter and is cancelled. If a conductor is present, a secondary magnetic field is established within it. The resultant electromagnetic field detected at the receiver is a vector addition of the primary and secondary fields. The primary field is electronically removed and the remaining secondary field is separated into an "in-phase" component at 0° or 180° to the primary and a second component oriented at 90° or 270° to the primary so that it is "out-of-phase". These two components are then expressed as a percent of the primary field strength.

Both the in-phase and out-of-phase components are read at the receiver for a predetermined frequency or frequencies. For a particular frequency, a measure of apparent conductivity () is given by the ratio of the in-phase to out-of-phase components. Poor conductors are characterized by ratios much less than 1, fair to good conductors are around 1, while the excellent conductors will show a ratio greater than 1.

b) Results:

Readings were generally taken at 25 meter intervals along lines spaced 100 meters apart. Detailed surveying was carried out along lines spaced 50 meters apart in areas of interest.

The data is plotted in profile form on Maps 1 to 4 at a horizontal scale of 1:2500 and a vertical scale of 1 m = 10% of the primary field strength.

2. Magnetic Survey

a) Procedure and Theory:

A Geometrics G-816 portable proton magnetometer was used. This instrument measures the total magnetic field strength, by measuring the frequency at which protons (hydrogen atoms) precess about the direction of the earth's magnetic field. The magnetic field strength, which is directly proportional to the frequency, is digitally displayed.

Readings were taken at 25 meter intervals along the survey lines. To correct time variations of the magnetic field (diurnal), base stations were first established within the survey area. Readings were taken at these base stations at the beginning and end of each traverse. The differences in the readings at these base stations were linearly distributed over the other readings along the traverse.

b) Results:

The corrected magnetic readings are presented on Map 5 at a scale of 1:2500 and contoured at an interval of 100 gammas.

3. Interpretation of Results

The horizontal loop EM survey indicates five conductors. These are labelled A, B, C, D and E on Map 1.

Conductor A (Maps 1 & 14) - This conductor is located in Boulder Creek, east of the survey base line. The conductor was surveyed using both 50 and 100 meter Tx-Rx separations. Anomalous EM responses are observed with the 100 meter separation only - on line 14+00N at 0+80E and on the Boulder Creek survey line at 1+20E. The conductor is open to the north of the creek survey line. Interpreted depth to the top of the conductor is 30 meters.

Conductor B (Map 1) - This conductor is located just west of the survey base line on lines 13+00N to 14+00N. The observed, weak, out-of-phase responses indicated that it is a poor conductor. The weak EM responses may, in part, be due to the apparent short strike length of the conductor resulting in poor coupling with the Rx-Rx setup. The interpreted depth to the top of this conductor is 70 meters.

Conductor C (Maps 1 & 2) - This conductor is also located west of the survey base line and is observed on Line 17+50N at H25W, Line 18+00N at H30W and Line 18+50N at H50W. The weak out-of-phase responses observed using both the 100 and 150 meter separations suggest that this is a poor conductor. Interpreted depth to the top of the conductor is 60 meters.

Conductor D (Maps 1 & 3) - This conductor is located east of the base line and was surveyed using both the 100 and 150 metre Tx-Rx separations. The conductor is observed on Line 19+50 N at 2-25E, Line 20+00N at 2+00E and Line 20+50N at 1+50E. Survey results with the 150 metre separation suggest that this is a good conductor (Ratio IP/OP = 1.0). Interpreted depth to the top of this conductor is 60 metres.

Conductor E (Map 1) - This conductor is located on Line 21+00N at 2+25W and is open to the north and south. The EM response suggests it is a good conductor (IP/OP = 2.0) although the amplitude of the response is small (IP-2% OP -1%). The estimated depth to the top of this conductor is 70m.

The results of the magnetometer survey (Map 5) show anomalous values of 300 to 400 gammas above background (58,7008) in the area south of line 18+00N and west of the base line. None of the anomalies appear to be associated with mineralization but represent magnetic susceptibility contrasts due to differing rock types and/or alteration. ↙

4. Discussion of Results

Conductor A is located approximately 10 meters uphill (west) from the massive sulphide boulders in Boulder Creek. Since the boulders practically overlie massive sulphides in place, which dip northeasterly, Conductor A is thought to be caused by sulphide mineralization associated with the large gossan upstream from the massive sulphides.

Conductor D is partially located in a pyritic gossan. Therefore the cause of this conductor is probably due to sulphide mineralization although its strike is too far west of the bedrock strike trend to be due to stratabound mineralization, unless folding is present.

Conductors B, C, and E occur along a trend of N62°W. However, the strike direction of the bedrock in the area has been mapped as N20°W. A possible explanation for Conductors B, C and E could be mineralization occurring along a fault or shear.

Consideration should be given to testing the conductors in the following order:

DDH #	Location (if possible)	Direction	Dip	Length	Purpose
1	In Creek, 1+80E	250°	45°	100 M	to test A
2	20+50N, 2+50E	180°	45°	130 M	to test D
3	18+00N, 0+40W	220°	45°	130 M	to test C
4	13+50N, 0+55E	220°	45°	150 M	to test B
5	21+00N, 1+25W	220°	45°	150M	to test E
				Total	660M

GEOCHEMICAL STREAM SILT SAMPLING

Since soil sampling had been undertaken by Montgomery Consultants Ltd. no soil sampling was done by Esso. However, eleven silt samples were taken at 500 metre spacing on the three streams that cross the area of interest.

As expected Boulder Creek contained the highest values; 500 ppm copper, 2.3 ppm silver and 10ppb in gold. The other streams contained values ranging from 100 - 220 ppm. copper, 1.1 - 2.1 ppm. silver and 5 - 10 ppb. in gold.

DIAMOND DRILLING

Three holes, totalling 1080 feet (329m) were drilled as follows:

D.D.H.	Bearing	Dip	Depth
1	250°	-45°	401 ft. (121 m.)
2	295°	-45°	396 ft. (122 m.)
3	250°	-45°	272 ft. (83 m.)

Mineralized intersections and average assay values obtained are as follows:

D.D.H	From	To (ft)	Interval (ft)	Cu%	Zn%	Ag (ozs)	Au (ozs)
1	277	307	30 (9.1 m)	0.076	0.15	0.11	0.001
2	196	200	4 (1.2 m)	0.620	0.15	1.02	0.022
2	267	377	110 (33.5 m)	0.141	0.18	0.13	0.002

Hole no. 1 failed to intersect the massive sulphides in Boulder Creek but cut a lower zone of disseminated and stockwork sulphide mineralization consisting of pyrite, with minor chalcopyrite and traces of sphalerite in a quartz-clay altered rock believed to have been a tuffaceous sediment.

Hole no. 2 from the same site, angled 45° farther north, cut two feet of massive pyrite at the base of a maroon siltstone or argillaceous tuff bed. Below that was a layer of pillowed basalt and then the drill entered the same zone of disseminated and stockwork type of mineralization encountered in hole no. 1. By drilling at such an angle the width would seem to be exaggerated, however, the drill cut the zone sooner than expected suggesting that the zone is not stratigraphically controlled.

The possibility arises that these relatively large zones with lower sulphide content are feeder zones to the massive sulphide bodies. However, in both nos. 1 and 2 holes there is an interval of barren pillow basalt between the massive and disseminated mineralization and chlorite alteration is absent.

Drill hole no. 3 was drilled to test a 1.5 metre wide subcropping body of massive pyrite in Welcome North Creek, even though no conductor was obtained. It failed to cut either massive or disseminated sulphides.

CONCLUSIONS AND RECOMMENDATIONS

The discovery of massive sulphide boulders on the Julia claims has identified two types of mineralization in an interesting geologic environment.

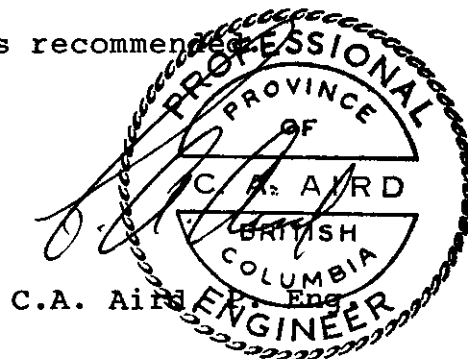
One consists of small massive pyrite lenses and the other consists of relatively larger disseminated and stockwork pyritic bodies.

Work done by Esso has shown that the former are narrow and probably rod shaped. They also probably have limited strike length as they appear to produce no conductive effects.

Conversely, the larger disseminated deposits are up to several hundred metres long and may be up to 30 metres wide with weak to moderate conductive effects.

Both types of deposits contain minor amounts of copper, zinc, silver and gold, however, the grades of the intersections obtained from both types is too low to be attractive at the present time.

Consequently, no further work is recommended.



BIBLIOGRAPHY

1. Report on the Julia Claims, Frances Lake Area, Yukon Territory on behalf of Arbour Resources Inc. by G.H. Giroux, P.Eng. , Montgomery Consultants Ltd., September 2, 1980.

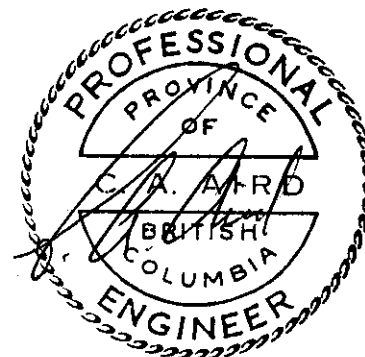
2. Geochemical and Geophysical Report on the Julia Claims, Stage I, Frances Lake Area, Yukon Territory on behalf of Arbour Resources Inc. by G.H. Giroux, P.Eng., Montgomery Consultants Ltd., June 1981.

3. Roots, Green, Roddick and Blusson; Geology of Frances Lake, Yukon Territory and District of Mackenzie. GSC Map 6 - 1966.

4. Wheeler, Green and Roddick; Geology of Finlayson Lake, Yukon Territory. GSC Map 8 - 1960.

COST STATEMENT

<u>LABOUR</u>						<u>TOTALS</u>
Geophysicist	June 8 - June 28	21	man	days	@ \$150/day	\$ 3,276.00
Operator	" "	21	"	"	@ 154/day	3,234.00
Operator	" "	21	"	"	@ 77/day	1,617.00
Operator	" "	21	"	"	@ 56/day	1,176.00
Sen. Geologist	June 24-25, July 19	3	"	"	@ 345/day	1,035.00
Geologist	July 1 - July 22	22	"	"	@ 156/day	3,432.00
Field Assistant	" "	22	"	"	@ 59/day	1,298.00
" "	" "	22	"	"	@ 58/day	1,276.00
" "	" "	11	"	"	@ 50/day	550.00
 <u>CAMP COSTS</u>						
Food and Equipment						\$ 9,267.00
 <u>TRANSPORTATION</u>						
Helicopter	45.0 hours @ \$390/hour					\$17,550.00
	25.7 " @ 450/hour					11,565.00
	3.8 " @ 525/hour					1,995.00
Truck rentals						948.00
 <u>CONTRACTED SERVICES</u>						
Diamond Drilling - D.J. Drilling Co. Ltd.						\$38,556.00
 <u>ANALYSES</u>						\$ 629.00
 <u>FUEL</u>						
1832 gallons JP4 @ \$2.00/gallon						\$ 3,664.00
 <u>REPORT PREPARATION</u>						
5 man days @ \$156/day						\$ 780.00
3 " " @ 345/day						1,035.00
Typing, drafting, printing						200.00
 TOTAL						 \$ 103,083.00



STATEMENT OF QUALIFICATIONS

I, Alfred Stewart, of North Vancouver, B.C.,
do hereby certify as follows:

- a) That I obtained a B.Sc. Honours degree in geology from the University of New Brunswick in 1976.
- b) That I have been practising my profession in Canada for five years.
- c) My experience includes the use of geophysical and geochemical exploration techniques in addition to geological experience.

Alfred Stewart

Alfred Stewart
Geologist
Esso Resources Canada
Limited

QUALIFICATIONSW.G. Cooper

W. G. Cooper attended the University of Waterloo, Waterloo, Ontario between 1975-1979 graduating with a B.Sc. (Honours) degree in Earth Sciences. From 1975 to 1979 Mr. Cooper was employed during the summer months by Esso Minerals Canada to conduct Magnetic, Electromagnetic, Gravity and Induced Polarization surveys. Since graduating he has been employed by Esso Minerals as a geophysicist, where his duties include geophysical field activities and training and supervision of summer field personnel. He is a member of the Society of Exploration Geophysicists and Prospectors and Developers Association.

W. G. Cooper

P. Flood

Patrick Flood is a summer student currently working for Esso Minerals Canada as a geophysical party chief. Mr. Flood attends the University of New Brunswick in St. John, New Brunswick where he is majoring in Geology. He has worked for the past 5 summers in minerals exploration. In his last two work terms he was employed by Gulf Minerals Canada Limited where his duties included field camp supervision, drill supervision, geophysical surveying, geological sampling and geological mapping.

J. Hunt

Jack Hunt is a summer student, working for Esso Minerals Canada as a geophysical assistant/operator. Mr. Hunt attends the University of Western Ontario in London, Ontario where he is majoring in geophysics. This is Mr. Hunt's first work term in mineral exploration.

STATEMENT OF QUALIFICATIONS

I, Kirk W. Simpson of 84 - 3441 E. 49th Avenue,
Vancouver, B.C. do hereby certify that:

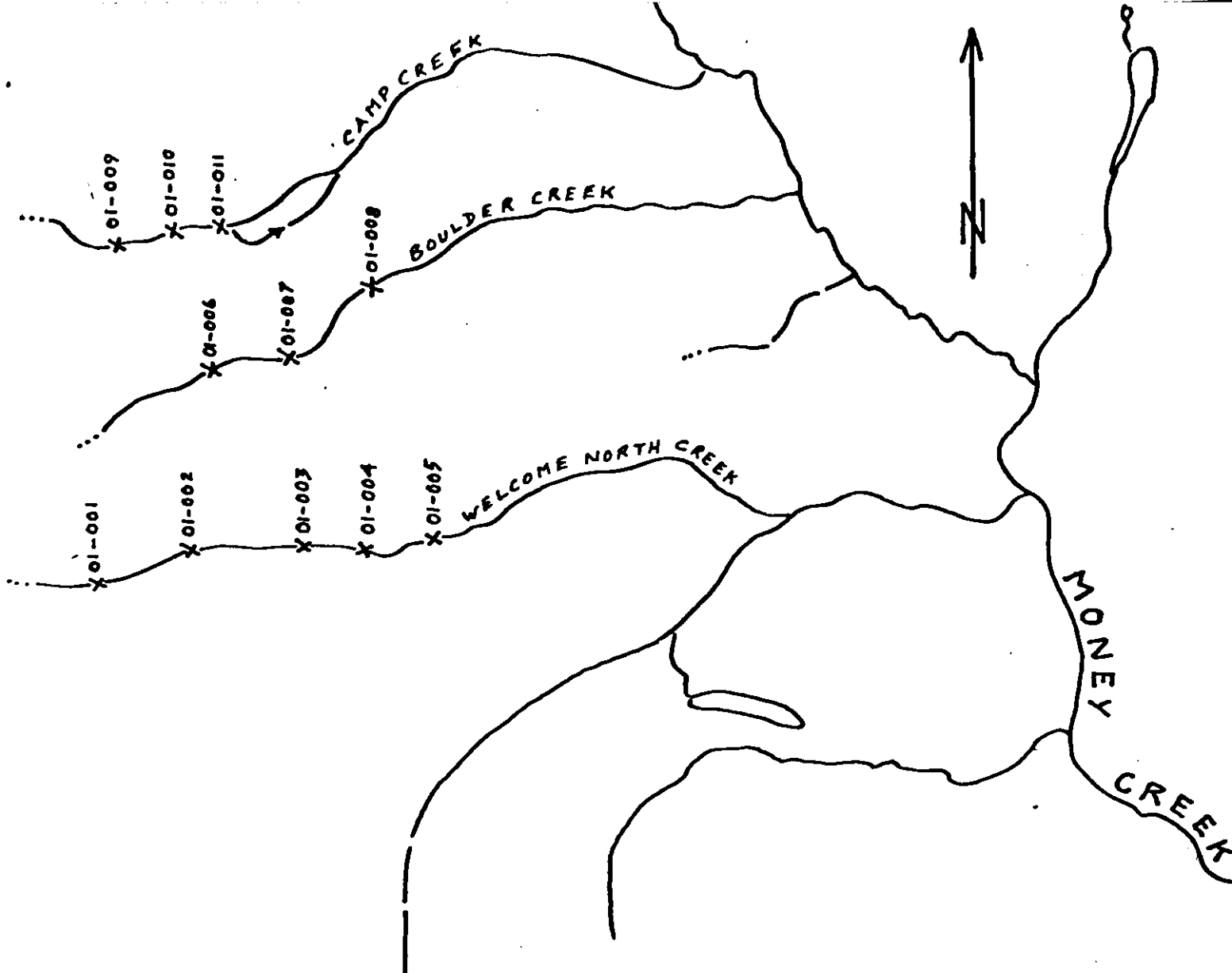
1. I am a 1979 graduate of the Northern Alberta
Institute of Technology in Mining.

2. I have been employed since that time by Esso
Minerals Canada where I have been trained in
the operation of horizontal loop, ground E.M.
equipment and magnetometers.



K. W. Simpson

APPENDIX



SILT SAMPLE LOCATION SKETCH



SKETCH FROM OVERLAY OF
AIRPHOTO A12185-228

(Canada Fed. Govt.)

Scale: Approx. 1:30,000

To accompany a Report by C.A. Aird, P.Eng.
dated July 31, 1981

DRILL LOG



PROJECT <i>ARBOR 2401</i>	GROUND ELEV.
HOLE NO. <i>1</i>	BEARING <i>250°</i>
LOCATION <i>JULIA CLAIMS WATSON LAKE MINING DIST.</i>	DIP <i>-45°</i>
	TOTAL LENGTH <i>122.25 m (401 ft.)</i>
LOGGED BY <i>A. Stewart</i>	HORIZONTAL PROJECT
DATE <i>July 1981</i>	VERTICAL PROJECT
CONTRACTOR <i>D.J. Drilling Ltd.</i>	ALTERATION SCALE
CORE SIZE <i>BQ</i>	 <p>absent slight moderate intense</p>
DATE STARTED <i>July 15, 1981</i>	TOTAL SULPHIDE SCALE
DATE COMPLETED <i>July 17, 1981</i>	 <p>traces only < 1% 1% - 3% 3% - 10% > 10%</p>
DIP TESTS	
COMMENTS	LEGEND

DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ.
					A	B	C	D	E		
100				46.3 blocky core, minor fault gouge at 46.3 & 47.6							
75											
50.0	50			50.6 brecciated quartz vein							
				50.9-54.0 Intermediate Tuff - waxy, apple green, fissile, fig. plag.							
55.0				54.0-86.0 Basalt - green, massive w/ epidote & hematite, plus qtz & calcite seams.							
60.0											
65.0	100										
70.0											
75.0				73.5 minor fault gouge							
80.0											
85.0	90			86.0 minor fault gouge							
				86.0-93.3 Mafic Tuff - dark green & white mottled, moderately fissile							
90.0	100			S ₁ @ 15°-40° to C.A.							

MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLES			SAMPLE NUMBER	ASSAYS			
		FROM	TO	WIDTH		% Cu	% Zn	ozs Ag	ozs Au
51.2 minor diss. pyrite on fractures.	2%								
86.3-93.3 heavy diss. pyrite in fractured tuff, v. minor cpy. except 2cm. good cpy at 93.0.	20%	84.4	87.5	3.1	9985	.013	.07	.10	.001
		87.5	90.5	3.0	9986	.073	.14	.12	.001

DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ
					A	B	C	D	E		
95.0				93.3-122.25. Basalt - massive, w/numerous epidote and minor jasper or hematitic fractures.							
100.0											
105.0				105.5 minor fault gouge							
110.0											
120.0											
122.25				END OF HOLE							

DRILL LOG

PROJECT <i>ARBOR 2401</i>	GROUND ELEV.
HOLE NO. <i>2</i>	BEARING <i>295°</i>
LOCATION <i>JULIA CLAIMS WATSON LAKE MINING DIST.</i>	DIP <i>-45°</i>
	TOTAL LENGTH <i>120.7 m (396 ft.)</i>
LOGGED BY <i>A. Stewart</i>	HORIZONTAL PROJECT
DATE <i>July 1981</i>	VERTICAL PROJECT
CONTRACTOR <i>D.S. Drilling Ltd.</i>	ALTERATION SCALE  <ul style="list-style-type: none"> absent slight moderate intense
CORE SIZE <i>BQ</i>	TOTAL SULPHIDE SCALE  <ul style="list-style-type: none"> traces only < 1% 1% - 3% 3% - 10% > 10%
DATE STARTED <i>July 17, 1981</i>	
DATE COMPLETED <i>July 18, 1981</i>	
DIP TESTS	
COMMENTS	LEGEND

DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ.
					A	B	C	D	E		
				0 - 1.8 Overburden							
				1.8 - 18.6 Basalt - massive, pillowed, minor epidote & jasper veining.							
5.0	80										
	90										
10.0											
15.0											
20.0	100			18.6 - 23.5 Basalt - maroon, pillowed. Abundant hematite rich fractures.							
25.0				23.5 - 27.7 Basalt - massive, green.							
30.0	90			27.7 - 41.8 Intermediate Tuff - also cherty. Gray-green, waxy. Foliation & laminations at 50° to C.A. Numerous sub-vertical rusty fractures. Very blocky section.							
35.0	80										
40.0	50										
	80										
45.0	40			41.6 minor fault gouge.							
	90			41.8 - 50.0 Basalt - massive, pillowed. Numerous epidote & hematitic fractures.							
	100			47.9 minor fault gouge.							



MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLES			SAMPLE NUMBER	ASSAYS			
		FROM	TO	WIDTH		% Cu	% Zn	ozs Ag	ozs Au
59.8-60.4 Massive pyrite, minor cpy. cpy (2cm) at upper etct.	80%	59.8	61.0	1.2	9973	.620	.15	1.02	.022
82.0-84.4 Banded & diss. pyrite, minor chalcopryrite.	15%	81.4	84.4	3.0	9974	.097	.14	.16	.001
84.4-87.5 Banded & diss. pyrite, minor chalcopryrite	25%	84.4	87.5	3.1	9975	.128	.24	.21	.002
87.5-90.5 Banded & diss. pyrite minor chalcopryrite	20%	87.5	90.5	3.0	9976	.099	.12	.11	.001

DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ
					A	B	C	D	E		
95.0				91.5-113.7 Basaltic Tuff - mottled green & white. Minor slumping.							
100.0				100.0 minor fault gouge							
105.0											
110.0				111.8-113.7 feldspathic section.							
115.0				113.7-120.7 Basalt - massive, green, pillowed. Epidote on fractures.							
120.7				END OF HOLE							

ESSO RESOURCES CANADA LIMITED

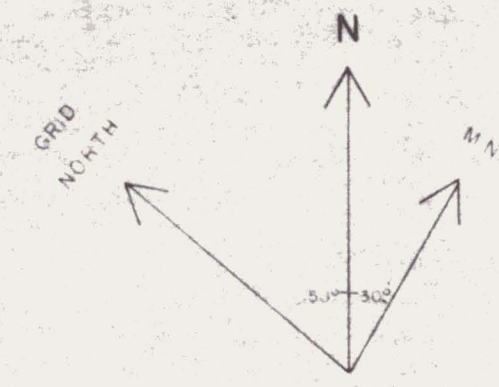
ESSO MINERALS CANADA

DRILL LOG

PROJECT <i>ARBOR 2401</i>	GROUND ELEV.
HOLE NO. <i>3</i>	BEARING <i>250°</i>
LOCATION <i>JULIA CLAIMS WATSON LAKE MINING DIST.</i>	DIP <i>-45°</i>
	TOTAL LENGTH <i>82.9 m. (272 ft.)</i>
LOGGED BY <i>A. Stewart</i>	HORIZONTAL PROJECT
DATE <i>July 1981</i>	VERTICAL PROJECT
CONTRACTOR <i>D.J. Drilling Ltd.</i>	<p style="text-align: center;">ALTERATION SCALE</p>  <p>absent slight moderate intense</p>
CORE SIZE <i>BQ</i>	
DATE STARTED <i>July 19, 1981</i>	<p style="text-align: center;">TOTAL SULPHIDE SCALE</p>  <p>traces only < 1% 1% - 3% 3% - 10% > 10%</p>
DATE COMPLETED <i>July 20, 1981</i>	
DIP TESTS	
COMMENTS	LEGEND

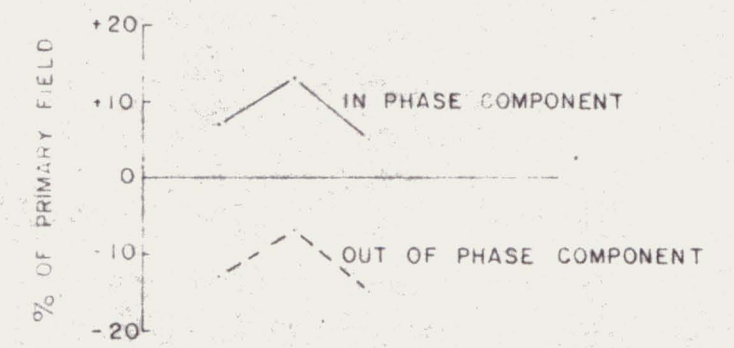
DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ.
					A	B	C	D	E		
				0 - 2.7 Overburden							
5.0	80 90			2.7 - 20.4 Basalt Breccia (or mud flow) Large blocks of green pillowed basalt in a red hematitic mud matrix. Est. 70% fragments. Minor chert & jasper frags. Conde cleavage. Bedding? 80° to C.A.							
10.0	80 80			9.1 - 15.2 Abundant red mud in matrix. est. 50%							
15.0	100										
20.0	80 80			20.4 - 41.5 Intermediate Tuff - soft, waxy, green, schistose w/ abundant white & pink angular chert clasts. Overall colour is green. Very friable, blocky core.							
25.0	50 80 80										
30.0	90										
35.0	80										
40.0	80 100			41.5 - 43.0 Basalt Breccia - flow top breccia? Basalt fragments in a muddy matrix.							
45.0	100			43.0 - 82.9 Basalt - massive pillowed basalt. Light & dark green							

DEPTH (m)	% CORE REC	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACTURE INTENSITY	% VEIN QTZ
					A	B	C	D	E		
43.0				Basalt (cont'd) - coloured w/ minor hematitic staining on fractures.							
50.0	100			48.8-50.0 Possible inter flow etc. Olive green w/ hematitic mud in fractures.							
55.0				54.9-55.8 Barren qtz. vein. Minor fault gouge.							
60.0	95										
65.0											
70.0											
75.0	100										
80.0											
82.9				END OF HOLE							



To Accompany A Report by C.A. Aird, P. Eng.
 Dated July 31, 1981

INSTRUMENT Apex Parametrics Max-Min II
 TX-RX SEPARATION: 100, 150 metres
 FREQUENCY: 1777 Hz

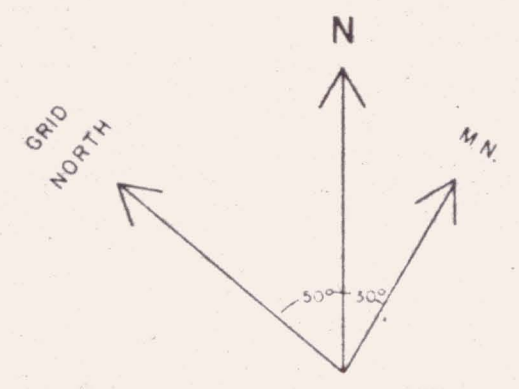
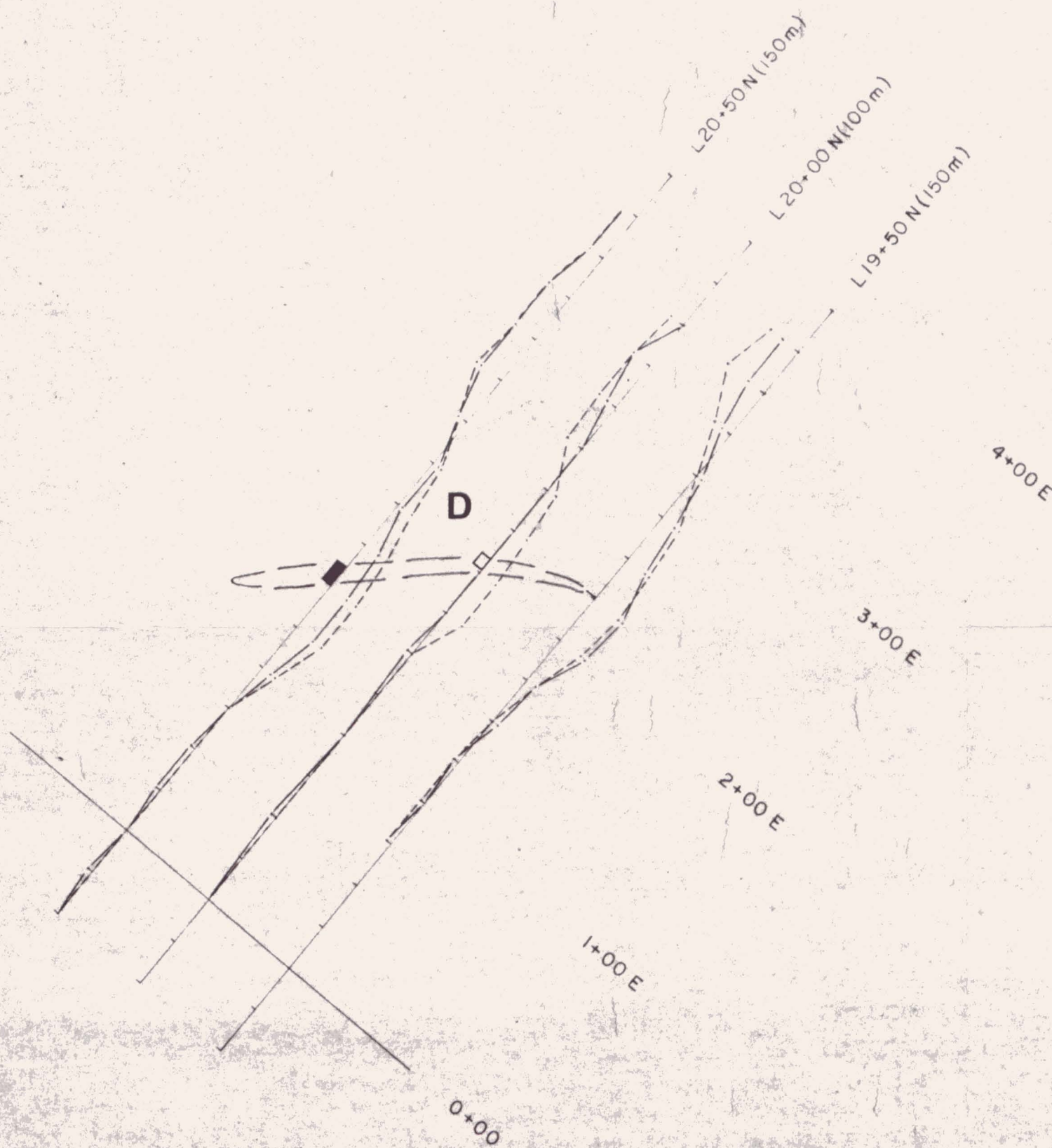


— DEFINITE ANOMALY
 - - - POSSIBLE ANOMALY



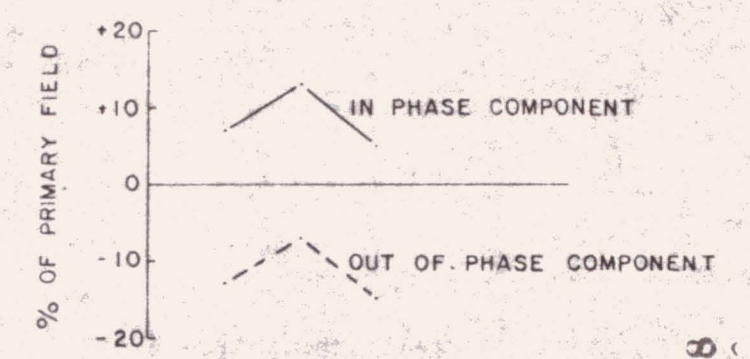
MAP No 2

ESSO MINERALS CANADA DIV'N OF ESSO RESOURCES CANADA LIMITED PROSPECT JULIA H.L.E.M. SURVEY 090858		
ACCOUNT No MD01	FILE No 24-01	TORONTO
SCALE 0 25 50 100 metres	DATE JUNE 1981	
AUTHOR K. SIMPSON	NTS 105 G&H	DWG No 103 442



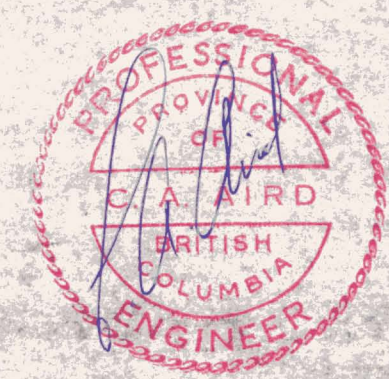
To Accompany A Report by C.A. Aird, P. Eng.
Dated July 31, 1981

INSTRUMENT: Apex Parametrics Max-Min II
TX-RX SEPARATION: 100, 150 metres
FREQUENCY: 1777 Hz



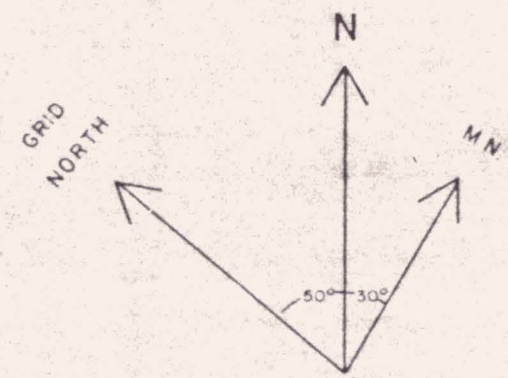
— DEFINITE ANOMALY
- - - POSSIBLE ANOMALY

950060



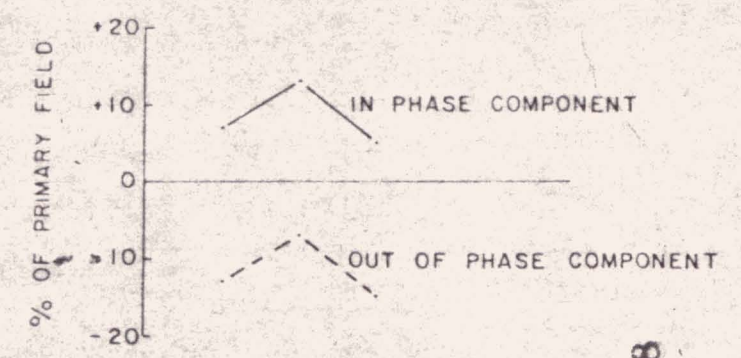
MAP No 3

ESSO MINERALS CANADA DIV'N OF ESSO RESOURCES CANADA LIMITED		
PROSPECT: JULIA		
H.L.E.M. SURVEY		
ACCOUNT No M001	FILE No 24:01	TORONTO
SCALE 0 25 50 100 metres	DATE JUNE 1981	
AUTHOR K. SIMPSON	NTS 105 G&H	DWG No 10,443



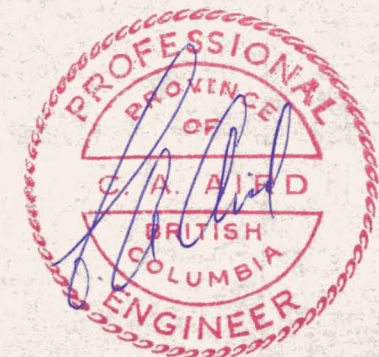
To Accompany A Report by C.A. Aird, P. Eng.
Dated July 31, 1981

INSTRUMENT Apex Parametrics Max-Min II
TX-RX SEPARATION 50 metres
FREQUENCY 1777 Hz



— DEFINITE ANOMALY
- - - POSSIBLE ANOMALY

090858



MAP No 4

ESSO MINERALS CANADA DIV'N OF ESSO RESOURCES CANADA LIMITED		
PROSPECT: JULIA		
H.L.E.M. SURVEY		
ACCOUNT No MDOI	FILE No 24:01	TORONTO
SCALE 0 25 50 100 metres		DATE JUNE 1981
AUTHOR K. SIMPSON	NTS 105 G&H	DWG. No 10,444