HAROLD M. JONES & ASSOCIATES INC.

CONSULTING GEOLOGISTS

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A GEOPHYSICAL REPORT ON THE

SUE CLAIMS

S00 RIVER, WHISTLER AREA

VANCOUVER, B.C.

VANCOUVER MINING DIVISI	LOG NO:	0118	RD.
92 J / 2 E	ACTION:		
	FILE NO:		e e e e e e e e e e e e e e e e e e e

for

DECADE INTERNATIONAL DEVELOPMENT CORP.

1520 West 6th Avenue Vancouver, B.C.

V6J 1R2

by

HAROLD M. JONES, P.ENG.

January 4, 1990

FILMED



(P)

GEOLO ASSES



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SUMMARY

The Sue 1-6 claims are located in southwestern British Columbia along the Soo River, approximately 15 kilometers due north of the Whistler ski village and 108 km north of Vancouver. They are accessible from Vancouver by a paved highway and a short section of logging road.

Work on and in the vicinity of the Sue 1 to 4 claims by Riocanex between 1978-1980 was successful in locating areas of coincident copper - zinc - lead geochemical anomalies. Later geochemical work by the present claim owner located an area anomalous in cobalt which was coincident with a large Cu - Zn - Pb anomaly located by Riocanex.

Between May 4-22, 1988 Decade International Development Ltd. conducted a program consisting of geological mapping, geochemical soil sampling and UTEM (time domain electromagnetic) surveying on the Sue claims. This work was centered around the area from which significant cobalt geochemical assays were obtained. The object of the program was to check the possibility that cobalt in the soils might be reflecting a buried massive sulphide deposit.

The claims are located within a roof pendant of Lower Cretaceous Gambier Group volcanic and sedimentary rocks in the Coast Range Plutonic Complex. They are underlain by a package of volcanic pyroclastic rocks ranging from rhyolitic to andesitic. These include tuffs, lapilli tuffs and volcanic breccias. Granitic intrusives crop out on the southeast edge of the surveyed area.

The volcanics appear to be in poorly defined groups. Rhyolitic - dacitic rocks dominate in the central part of the claims area, grading northeasterly into dacitic - andesitic units and finally into dominantly andesitic units.

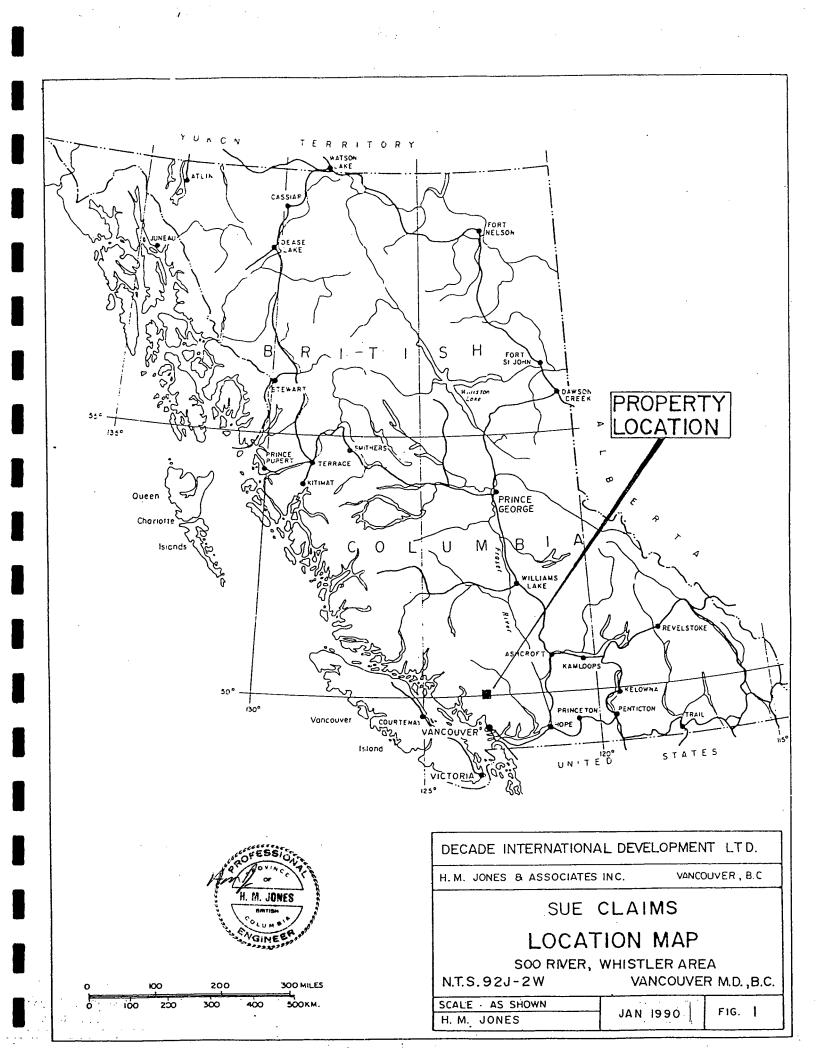
The 1988 geochemical assay results indicate that cobalt, copper and zinc anomalous values transect all rock units, indicating a possible structural control not recognized to date. Cobalt is more widespread than originally thought.

UTEM geophysical data indicates several conductors which are most likely due to geological contacts and one major but weak one not attributed to a contact. The cause of the latter one is unknown.

The 1989 I.P. Survey showed that the area covered has a low chargeability background. A moderate increase in chargeability was recorded at the northeast end of each line. The stronger chargeability responses are associated with generally lower areas of resistivity.

The I.P. Survey expenditures totalled \$5,676.60 and was applied as assessment work.

It is recommended that the geological mapping and geochemical soil sampling be extended to the north to cover the entire claims area. Dependent on the results of this work, additional I.P. surveying should be conducted.



INTRODUCTION

Harold M. Jones & Associates Inc. were commissioned by Decade International Development Ltd. to conduct assessment work on the Sue claims, located near Whistler, B.C. Previous work by the above identified a large area of coincident copper, lead, zinc and cobalt soil geochemical anomalies. Since the source of the anomalies was not obvious, a trial induced polarization - resistivity survey was conducted over the anomalous area. The purpose of this survey was to determine if it would locate mineralization, alteration or structure and if so, additional similar surveying would be recommended.

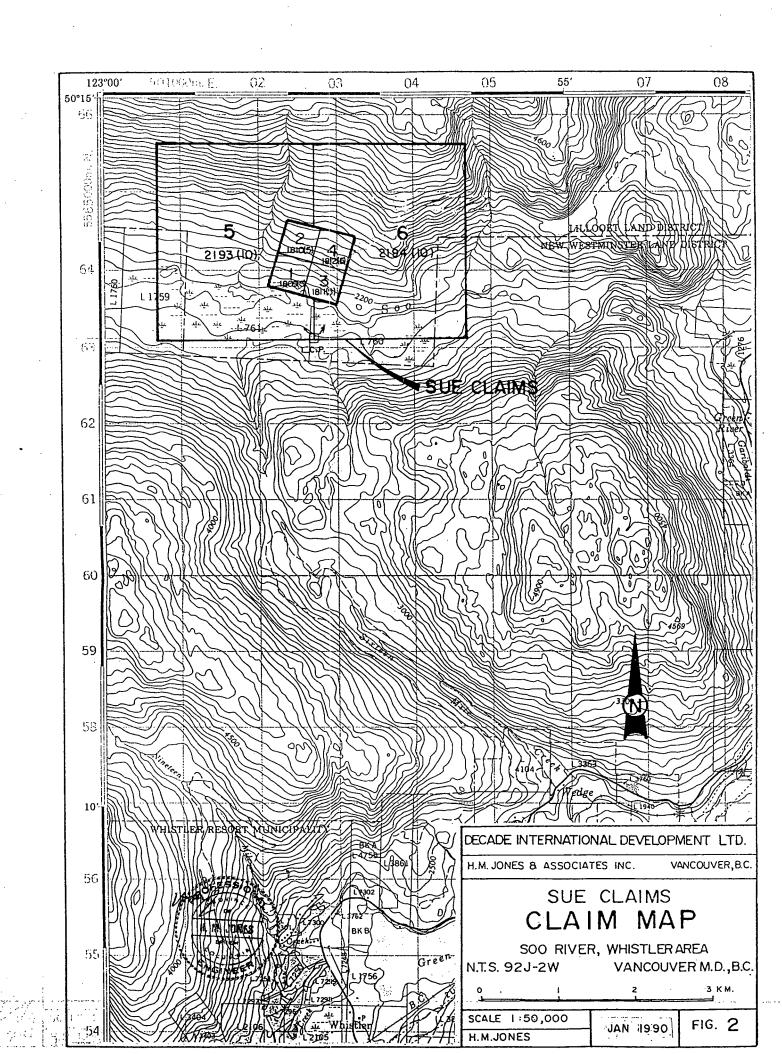
Between November 10-12, 1989, Peter E. Walcott and Associates Limited, under contract, conducted a limited induced polarization (I.P.) over the above anomalous zone. A description of this survey and the results obtained are summarized in the following report.

Location and Access

50° 14' North Latitude) 122° 58' West Longitude) to centre of claims

The claims are located in the Vancouver Mining Division approximately 15 km due north of the village of Whistler and 108 km north of Vancouver. They lie immediately north of Soo River, an east-flowing tributary of Green River.

The claims are readily accessible from Whistler Village by taking Highway 99 northward for approximately 18 km, then the Soo River logging road for approximately 8 km. This road passes through the southern part of the property. Only one short logging road provides limited access to the centre of the claims.



Topography and Vegetation

The claims lie on the south slope of the ridge separating Soo River from Rutherford Creek. Stopes are moderate to steep and fairly uniform. They are locally deeply dissected by the few creeks on the claims. Elevations range from Soo River at 610 m to the ridge top at 1,675 km.

The Soo River valley is an active logging area. Sue 1 claim has been essentially completely clear-cut. The remainder of the property is well forested with commercial-sized fir. Additional logging is planned for the claims area (pers. comm. with Richmond Plywood).

Property

The property consists of six claims (Figure 2). They are:

Claim Name	Record No.	Expiry Date*
Sue 1	1809	May 28, 1992
Sue 2	1810	11
Sue 3	1811	n .
Sue 4	1812	п
Sue 5	2193	October 28, 1991
Sue 6	2194	October 28, 1991

^{*} Pending acceptance of recently filed assessment work.

Sue I to 4 claims are owned by M.P. Warshawski, 6326 Montgomery Street, Vancouver, B.C. and are held under option by Decade International Development Ltd.

Sue 5 and 6 were staked for Decade International Development Ltd. who now beneficially own the claims.

Any legal aspects pertaining to the claims is beyond the scope of this report.

History

There is very little history on the Soo River area. During 1976-1977, Rainbow Syndicate conducted prospecting and reconnaissance geological mapping in the vicinity of the Sue claims. They located minor chalcopyrite as veinlets in metavolcanics within a pendant in the Coast Plutonic Complex.

In 1978, Riocanex examined the Soo River area as part of a regional program of exploring the Gambier Group rocks. The presence of rhyolitic and dacitic rocks in the area prompted them to conduct a stream silt sampling program. This work resulted in them locating one stream anomalous in copper and zinc. Further sampling was conducted in 1979, the results of which indicated that the anomalous portions of the creek was restricted to the section underlain by volcanic rocks. Four claims, Soo A, B, C and D were staked in late 1979 to cover the area of interest.

In 1980, Riocanex conducted a program of geological mapping, geochemical soil sampling, and electromagnetic and magnetic geophysical surveys. The results of this work indicated one large and a number of smaller areas anomalous in copper with partially coincident zinc and lead anomalies. The VLF-EM and Max-Min geophysical surveys generally reflected the northwest geological trend. However, both surveys recorded a "high" at one station. This occurred within a large zinc geochemical anomaly and upslope from the large copper anomaly. The survey area was underlain by volcanics of rhyolitic, dacitic and andesitic composition. Epidote stringers occurred throughout, some of which contained minor chalcopyrite. Pyrite occurred throughout as minor disseminations and up to 5% in quartz sericite schists.

Mike Warshawski, prospecting in the area in 1983, tested many streams in the area using a heavy metals kit. He found one creek within the Riocanex property as being anomalous. Assays from silts in this creek revealed that it was anomalous in cobalt as well as copper and zinc. He collected a number of soil samples which also returned anomalous cobalt assays.

In 1985, four two-post claims - Sue 1 to 4 - were staked for M. Warshawski. A number of soil samples were collected and assayed by the I.C.P. method. The results indicated a significant cobalt anomaly coincident with Riocanex's copper and zinc anomalies.

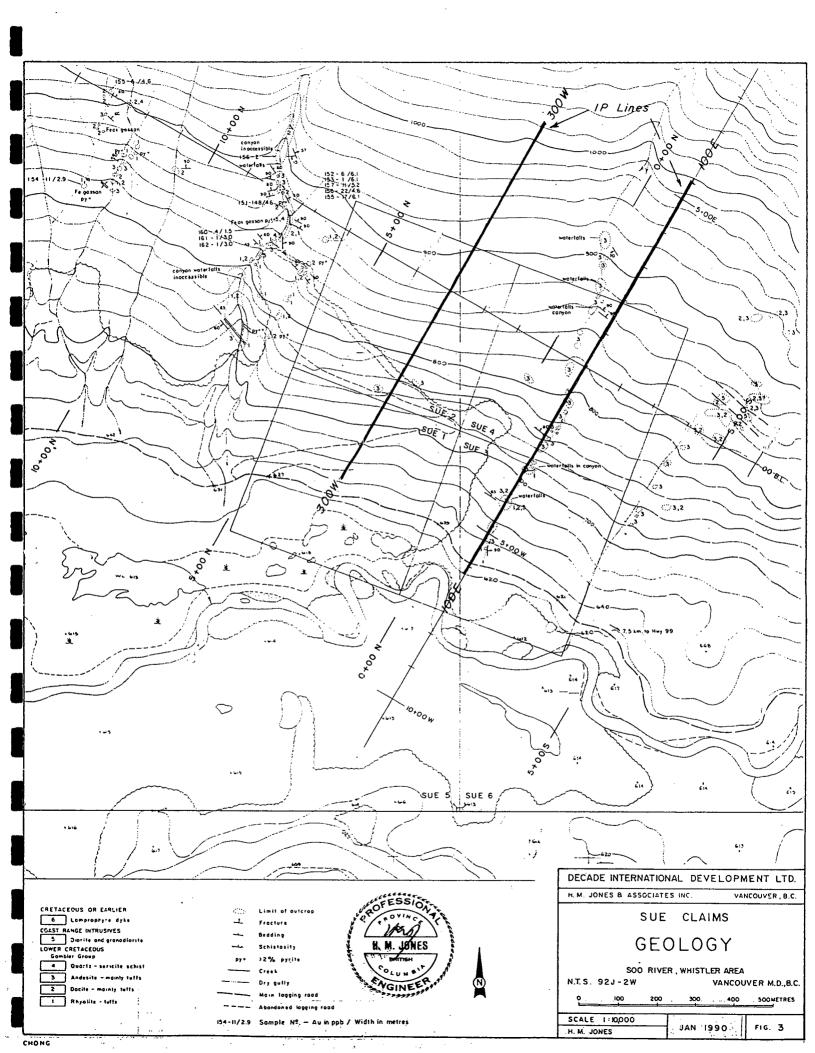
In 1987, Decade International Development Ltd. optioned the Sue 1 to 4 and had two 20 unit claims staked to give better coverage of the area of interest. In 1988, they conducted a program of geological mapping, soil sampling and UTEM geophysical surveying over a part of the property. The results of this work indicated a large area to be geochemically anomalous in copper, cobalt, zinc and lead but that the anomalies were still open upslope. Several weak UTEM conductors were located which were thought to reflect geological contacts (see Jones, 1988 - filed for assessment work credits).

GEOLOGY

Regional Geology

The Sue claims are underlain by Lower Cretaceous Gambier Group rocks which form a pendant within the Cretaceous to Tertiary Coast Plutonic Complex.

The Gambier Group rocks consist of intermediate to acid marine volcanics and sediments. Andesites dominate the volcanic portion of the pendant in the claims area. They range in lithology from flows and flow breccias to tuffs, lapilli tuffs, and agglomerates. Dacites, principally tuffs but also flows, flow breccias, lapilli tuff, agglomerates and crystal tuffs represent less than 10% of the volcanic portion of the pendant, although locally they are the dominant rocks. Most of the dacites contain minor disseminated pyrite with local concentrations up to 2-3%. Rhyolites form a minor part of the volcanic section.



Sediments comprise a substantial proportion of the exposed rocks in the pendant. They include shales, greywackes, quartzites, and arkosic quartzites and cherts. Minor disseminated pyrite is common throughout the sediments.

The Gambier Group rocks host the Britannia Mine, a volcanogenic massive sulphide deposit which was a successful producer of copper for many years.

Property Geology

Outcrop is very sparse on the property except in the northeast corner of Sue 6 claim where precipitous cliffs are common. Other than in this area, outcrop is mostly restricted to creek gulleys and canyons. While creeks are common and are often in deeply incised gulleys, many do not expose bedrock.

The claims are underlain primarily by volcanic rocks which are rhyolitic, dacitic or andesitic in composition. Most appear to be pyroclastics, and include tuffs, lapilli tuffs and volcanic breccias. Some flow units may also be present. All units are interbedded and difficult to correlate due to the poor outcrop exposures. Contacts and bedding are rarely seen but where observed they strike north 40-50° west and dip 60-65° to the northeast.

Rhyolitic and dacitic tuffs, often mapped in the field as rhyodacites, with lesser andesitic tuffs form a distinct unit trending through the central part of the grid (all co-ordinates refer to 1988 grid). They are well exposed along a creek which lies between lines 7N and 9N and a small parallel stream lying to the southeast of it. The rhyolitic and dacitic rocks are locally strongly fractured, heavily iron-stained and well mineralized with disseminated pyrite (2-5% pyrite), especially near line 8N from 0W to 1W. Quartz-sericite schist, also very pyritic, occurs in areas of shearing.

This unit grades into an andesitic-dacitic unit near line 8+50N, at 0+50E. Upstream from this point the creek is within a steep-walled canyon characterized by massive volcanics as compared to the highly fractured rhyolite-dacite unit located immediately downstream.

Similar rhyolitic and dacitic rocks occur at the lower end of the creek which follows grid line 1S, but the andesitic content is higher. In this creek, the rhyolite-dacite unit grades upward into mostly interbedded andesites and dacites. Further upstream massive andesite is the dominant rock.

Medium to coarse grained granite outcrops near line 45, 1E. It appears to be dyke-like and striking approximately N50°W. Slightly northeast of here a dacite outcrop is feldspathized, has a somewhat granitic texture, and may contain a granite dyke. This area appears to be altered due to its close proximity to the contact between the pendant and the Coast Range Plutonic Complex.

ALTERATION AND MINERALIZATION

Rhyolitic rocks within the rhyolite-dacite unit are locally strongly sheared and altered to quartz-sericite schists, occasionally accompanied by narrow quartz veinlets.

Andesitic rocks are often weakly to moderately chloritized. Several small exposures were seen where shearing altered these rocks to chlorite schist.

Epidote is common throughout the andesitic and to a lesser degree the dacitic rocks as small grains and masses as well as fine stringers, some accompanied by quartz.

Pyrite is ubiquitous throughout all rocks, but commonly is much more abundant in the highly fractured rhyolitic and dacitic units and in the quartz-sericite schists. Pyrite concentrations from 2% to 5% are common in these rocks, especially is the schists.

Minor chalcopyrite was seen on the property by Riocanex personnel during their work in 1980. It occurred in narrow quartz-epidote stringers.

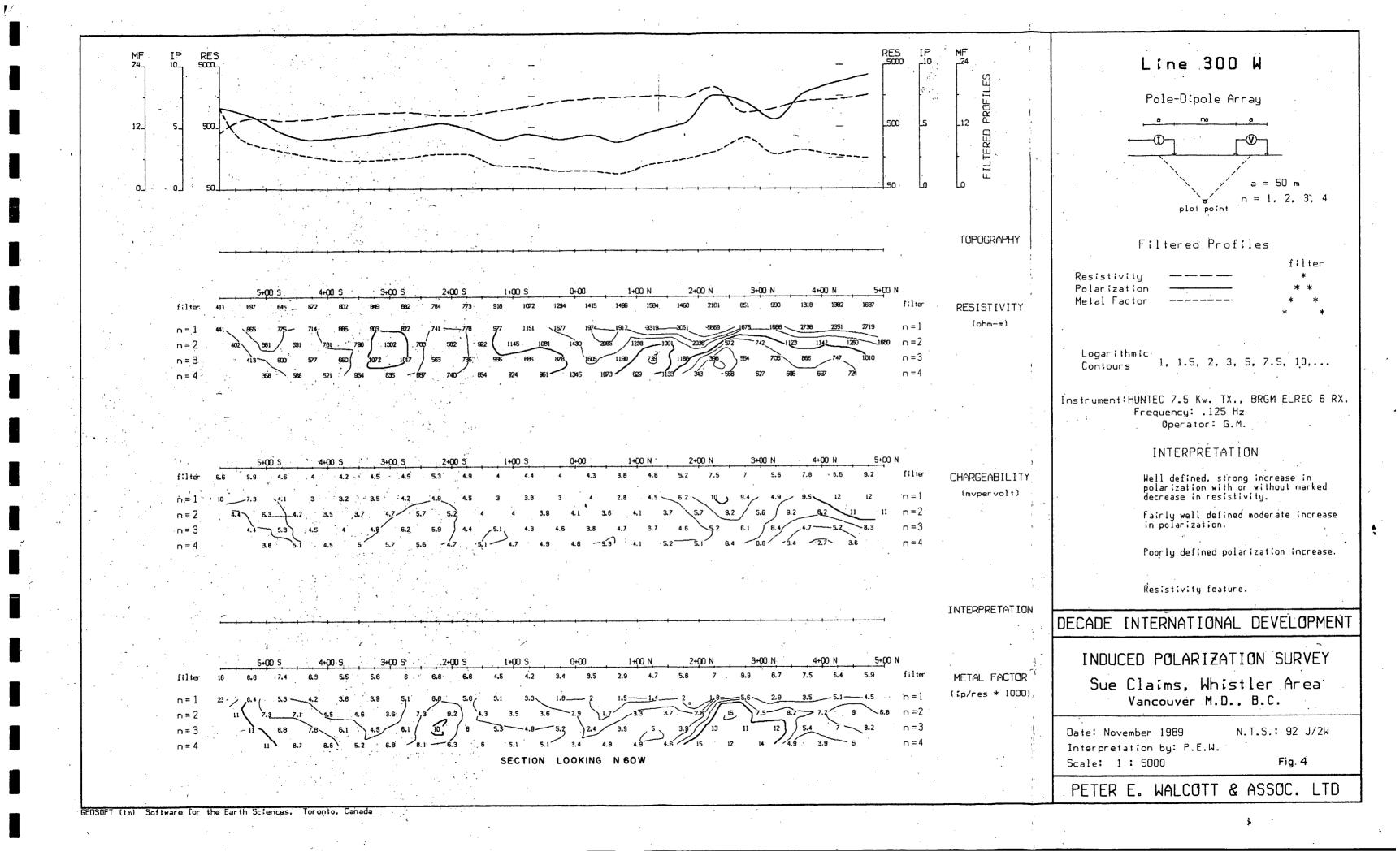
INDUCED POLARIZATION SURVEY

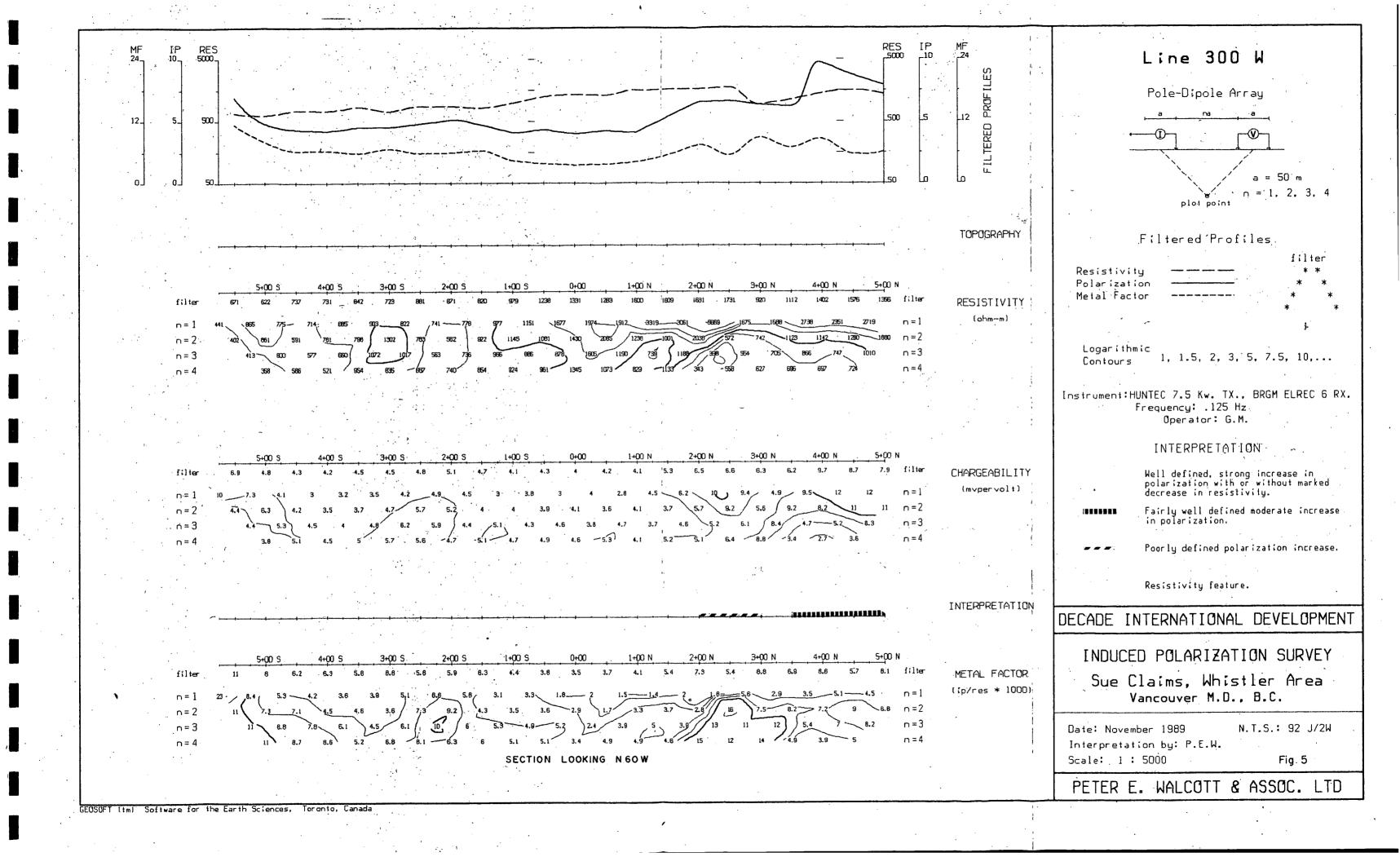
The Induced Polarization Survey was conducted over two 1988 grid lines - 3+00N and 1+00S - which were re-flagged prior to the survey. Line 1+00S was offset at 2+00W so that the survey crew could by-pass a narrow but deep creek canyon.

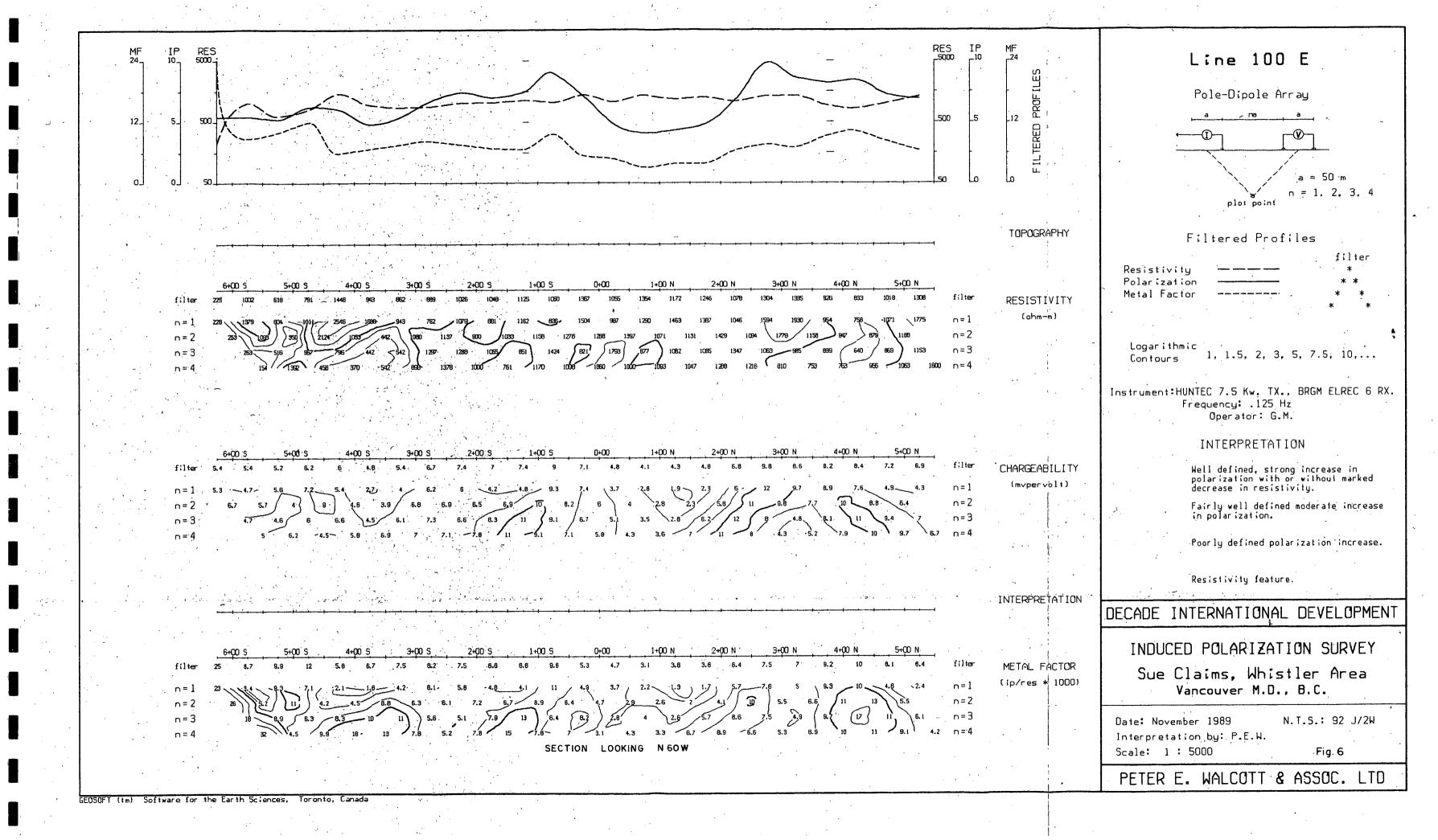
Line 3+00N was surveyed over 1,075 metres and Line 1+00S over 1,175 metres. Each trended N30°E. Stations were marked at 50 metre intervals on each line. On Figures 4 to 7, Line 3+00N is shown as 300W and running from south to north where as the original grid was designated from west to east. Similarly, Line 1+00S is shown as 100E and running from south to north instead of east to west (coordinates changed by geophysical contractor).

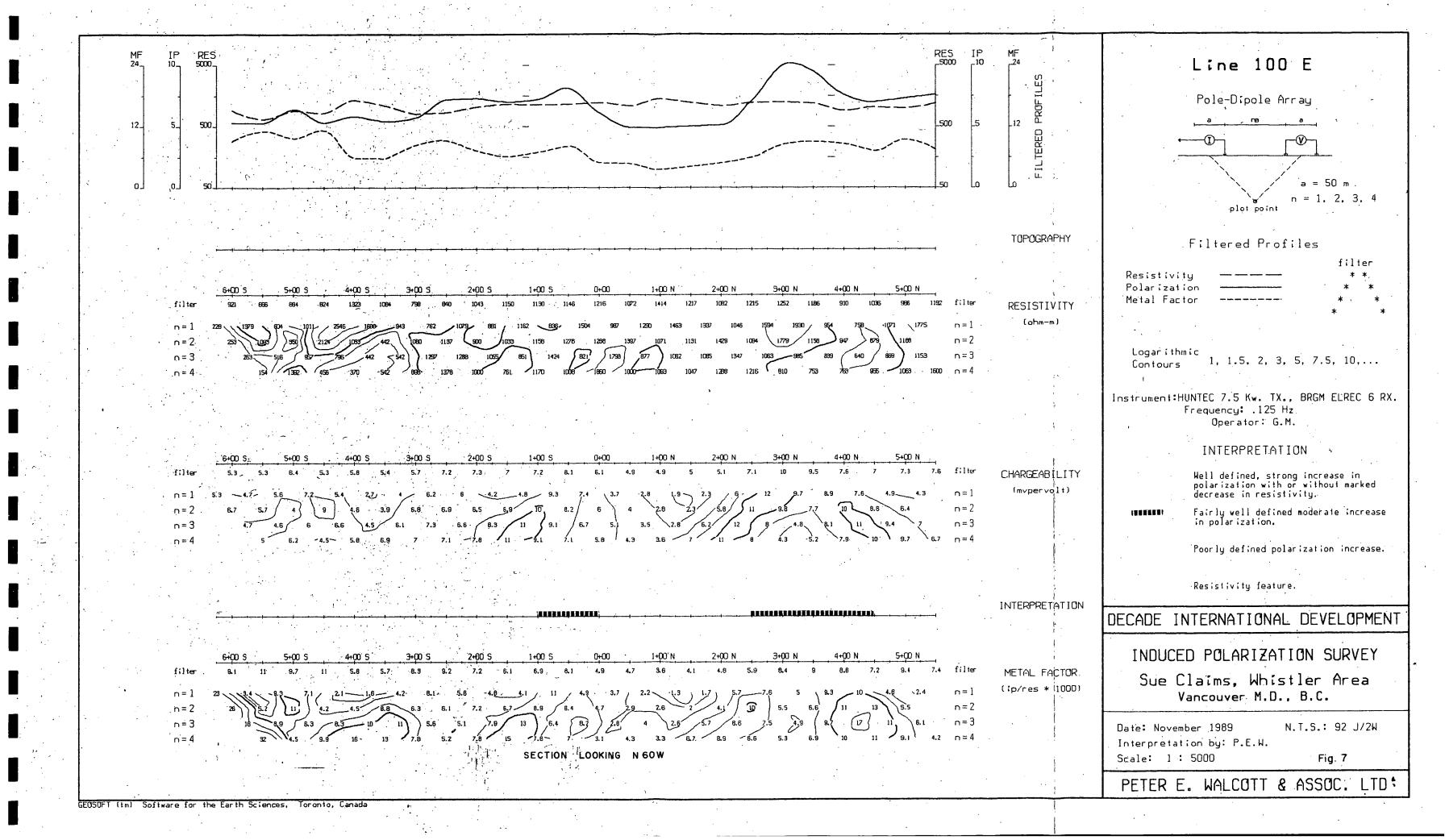
SURVEY SPECIFICATIONS (from Summary by Peter E. Walcott, P.Eng.)

The induced polarization (I.P.) survey was carried out using a pulse type system, the principal components of which are manufactured by Huntec Limited of Metropolitan Toronto, Ontario, and BRGM Instruments of Orleans, France.









The system consists basically of three units, a receiver (BRGM), a transmitter and a motor generator (Huntec). The transmitter, which provided a maximum of 7.5 kw d.c. to the ground, obtains its power from a 7.5 kw 400 c.p.s. three phase alternator driven by a gasoline engine. The cycling rate of the transmitter is 2 seconds "current-on" and 2 seconds "current-off" with the pulses reversing continuously in polarity. The data recorded in the field consists of careful measurements of the current (I) in amperes flowing through the current electrodes C_1 and C_2 , the primary voltage (V) appearing between the two potential electrodes, P_1 and P_2 , during the "current-on" part of the cycle, and the apparent chargeability (Ma) presented as a direct read-out in millivolts per volt using a 240 millisecond delay and a 1600 millisecond sample window by the receiver, a digital receiver controlled by a micro-processor - the sample window is actually the total of ten individual windows of 160 millisecond widths.

The apparent resistivity (Pa) in ohm metres is proportional to the ratio of the primary voltage and the measured current, the proportionality factor depending on the geometry of the array used. The chargeability and resistivity are called apparent as they are values which that portion of the earth sampled would have if it were homogeneous. As the earth sampled is usually inhomogeneous the calculated apparent chargeability and resistivity are functions of the actual chargeability and resistivity of the rocks.

The survey was carried out using the "pole-dipole" method of surveying. In this method the current electrode C_1 , and the potential electrodes, P_1 through P_5 , are moved in unison along the survey lines at a spacing "a" (the dipole) apart, while the second current electrode C_2 is kept constant at "infinity". The distance, "na", between C_1 and the nearest potential electrode generally controls the depth to be explored by the particular separation, "n", traverse.

The survey was carried out using a 50 metre dipole, and first to fourth separation measurements were made at 50 metre intervals along the lines.

In all some 2.5 kilometres of surveying were carried out using the above method.

The I.P. data is presented in pseudo-section form on individual line profiles which accompany this report as Figures 4 to 7.

DISCUSSION OF RESULTS (from Summary by Peter E. Walcott, P.Eng.)

The results of the test survey showed the area covered to exhibit a low chargeability background (4 to 6 millivolts per volt) above which four moderate increases in chargeability zones are discernable as can be seen from the respective pseudo-section plots (Figures 4 and 6). These are better emphasized on the filtered profiles (8 point average) where the anomaly on Line 3+00W is seen to be undelineated to the north (Figures 5 and 7).

No direct correlation exists between the chargeability and the calculated resistivity. However, the stronger chargeability responses are associated with generally lower areas of resistivity.

Rhyolitic and dacitic units and quartz-sericite schists, locally well pyritized, which are exposed in the creek canyon near line 8N (1988 grid) were thought to trend southeasterly through the survey area - Line 3+00N, between 1+00W - 4+00W.

No increase in chargeability was observed in this area, suggesting that similar mineralization is not present.

Lower resistivity results were obtained, as expected, at the extreme southwest end (grid west) of the survey lines where they entered the swampy flats adjacent to the Soo River.

CONCLUSION

It is concluded that while no chargeability response was obtained over an area thought to contain sulphide mineralization, an increase in chargeability was obtained at the northeast end (grid east) of the lines. Since the geochemical anomalies persist to the edge of the grid, additional exploration is warranted in this area.

RECOMMENDATION

The geological - geochemical survey should be expanded beyond the 1988 grid to cover the entire northern part of the property. Dependent on the results of this work, additional I.P. Surveying should be conducted.

Respectfully submitted,



REFERENCES

- Jones, H.M. (1987) A Geological Report on the Sue Claims, Soo River, Whistler Area, Vancouver Mining Division, 92 J / 2E, for Decade International Development Ltd.
- Jones, H.M. (1988) Geological Geochemical Geophysical Report, Sue Claims, Soo River, Whistler Area, Vancouver M.D., assessment for Decade International Development Ltd.
- McLeod, J.W. (1985) Geochemical Report on the Sue Claims, filed for assessment work.
- Woodsworth, G.J. (1977) Geology, Pemberton (923) Map Area, Geol. Surv. Can. Open File 482.
- Assessment Reports 6573, 6581 and 8576.

CERTIFICATE

I, Harold M. Jones, of the City of Vancouver, British Columbia, do hereby certify that:

- 1. I am a Consulting Geological Engineer with offices at 605 602 West Hastings Street, Vancouver, British Columbia.
- 2. I am a graduate of the University of British Columbia in Geological Engineering, 1956.
- 3. I have practised my profession as a Geological Engineer for over 30 years.
- 4. I am a member of the Association of Professional Engineers of British Columbia, Registration No. 4681.
- 5. I conducted geological mapping on the Sue claims and supervised the geochemical-geophysical program which was conducted on the property between May 4 22, 1988. I consulted on the recently completed I.P. Survey.
- 6. I have no interest in, nor do I expect to receive any interest, direct or indirect, in the Sue claims or in the securities of Decade International Development Corp.

Dated at Vancouver, B.C. this 4th day of January, 1990.

CERTIFICATION.

I, Peter E. Walcott, of the Municipality of Coquitlam, British Columbia, hereby certify that:

- 1. I am a graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.
- I have been practising my profession for the last twenty seven years.
- I am a member of the Association of Professional Engineers of British Columbia and Ontario.
- 4. I hold no interest, direct or indirect, in the securities or properties of Decade International Development Ltd., nor do I expect to receive any.

Peter E. Walcott, P.Eng.

Vancouver, British Columbia

November 1989

APPENDIX I

STATEMENT OF EXPENDITURES

APPENDIX I

STATEMENT OF EXPENDITURES

Grid Preparation	and Consulting
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did reparation and consuming			
H.M. Jones, P.Eng November 10, 19 One day at \$425	989 \$	425.00	
R. Kitchen - Field Assistant November 10, 1989 One day at \$130	-	130.00	
Sub-total		555.00	
Vehicle rental and meals		85.85	\$ 640.85
I.P. Survey - by contract at \$1,540 per day plus vehicles, room and board, etc. (see attached invoice)			4,435.75
Report and map preparation			 600.00
Total Expenditures			\$ 5,676.60



PETER E. WALCOTT & ASSOC. LTD.

605 RUTLAND COURT, COQUITLAM, B.C. V3J 3T8 • TEL. 939-0383

I N V O I C E

NO. 1891

 \mathbf{S}

DATE: Nov. 14th, 1989

Terms: On Receipt

To:	HAROLD M. JONES & ASSOCIATES INC. 605 - 602 W. Hastings St.,	G
	Vancouver, B.C.	E
Re:	I.P. Survey, Whistler Area, Decade International Develop.	o
1.	Provision of 2 men Nov. 10th, pack gear, drive	P
	Whistler \$300.00	H
2.	Provision of geophysicist, 2 operators, 2 helpers 7.5 kw unit with 6 channel receiver, computer &	Y
	printer, 2 days Nov. 11th & 12th at \$1,540.00	S
	per day 3,080.00	I
3.	Provision of 2 trucks at \$60.00 per day 240.00 gasoline 63.00, 51.90, 49.70, 30.00 194.60 434.60	C
4.	Room & board 16.59, 6.85, 176.40, .65, 12.28, 17.80, 26.90, 167.20, 41.20, 27.50, 9.84, 17.94, 40.00	A L
5.	2 Mylar, pseudo section plots 60.00	s
	\$4,435.75	E
		R
	PROJECT W-467 INVOICE NO. 1891	v
		I
		C
	Please note interest will be charged at the rate of 1 1/2%	E
per	month on all overdue accounts.	S

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PERSONNEL EMPLOYED ON SURVEY.

Name	Occupation	Address	Dates
Peter E. Walcott	: Geophysicist	Peter E. Walcott & As 605 Rutland Court, Coquitlam, B.C. V3J 3T8	soc.Nov.10th-12th 1989
G. McKenzie	Geophysical Operator	n	Nov. 11th-12th 1989
I. Francy	11	н .	Nov. 10th-12th . 1989
P. Storkle	Helper	n	Nov. 10th-12th, 1989
R. Wideman	н	u	Nov. 11th-12th,

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PERSONNEL EMPLOYED ON SURVEY.

Name	Occupation	Address	Dates
Peter E. Walcott	Geophysicist	Peter E. Walcott & 605 Rutland Court, Coquitlam, B.C.	Assoc.Nov.10th-12th 1989
G. McKenzie	Geophysical Operator	н .	Nov. 11th-12th 1989
I. Franey	11	н .	Nov. 10th-12th . 1989
P. Storkle	Helper	n	Nov. 10th-12th, 1989
R. Wideman	н	и	Nov. 11th-12th, 1989