GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION, RESISTIVITY, HORIZONTAL LOOP EM,

VLF-EM AND MAGNETIC SURVEYS

OVER THE NORTHWEST PORTION OF THE

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA M.D., BRITISH COLUMBIA

PROPERTY : On Kasaan Bay 14 km due east of the town of Fort Ft. James, B.C.
: 54° 26' North Latitude
125° 30' West Longitude
: N.T.S. 93K/7E, 8W

WRITTEN FOR : X-CAL RESOURCES LTD.
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Goldbridge, B.C., V0K 1P0

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DATED : May 7, 1987

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SUMMARY

Induced polarization, resistivity, horizontal loop EM, VLF-EM and magnetic surveys were carried out during February and March, 1987 over the northwest portion of the Snowbird property located on Kasaan Bay, 14 km due east of the town of Fort St. James, British Columbia. The property is easily accessible by 2-wheel drive vehicle. The terrain consists of mostly gentle to some steep slopes covered with pine and spruce on the slopes and poplars and birch with thin underbrush on the flats.

The property is underlain by sediments and volcanics of the Pennsylvanian Cache Creek group. The rocks consist of argillites, shales, banded chert, quartzite, limestone, andesite tuffs and breccias, and serpentine. The mineralization of interest occurs within two northwesterly-striking quartz-ankerite-mariposite veins dipping to the northeast and labelled the Main vein and the Pegleg vein, respectively. The veins consist of stibnite as massive fracture-fillings and disseminations and commonly assay 0.2 to 0.7 oz/ton gold with one spectacular assay of 248 oz/ton gold over a 0.5-foot section.

The IP and resistivity surveys were carried out using a Huntec receiver operating in the time-domain mode with the dipole-dipole array at up to 7 separations. The dipole lengths and reading intervals used were 15 m and 30 m. 15.65 line km were done. The readings were plotted on pseudosections, contoured and interpreted. In addition, the n=5 separation for the IP and resistivity data was plotted on two survey plans, respectively, and contoured.

The horizontal loop electromagnetic survey, which totalled 10.74

km, was carried out with an Apex Parametrics MaxMin II electromagnetometer in the horizontal loop mode. The coil spacing was 100 m, the reading interval, 25 m, and five frequencies were read, 222, 444, 888, 1777 and 3555 Hz. In some places, the reading interval was reduced to 12.5 m. The EM readings were profiled and interpreted where possible for location, dip, depth to top, and conductivity-thickness.

The VLF-EM survey was carried out with a Sabre model 27 receiver using the Seattle transmitter with readings spaced 15, 25 or 30 m apart. The readings were Fraser-filtered, plotted, and contoured. The number of kilometres totalled 6.3.

The magnetic survey, which totalled 7.11 km, was carried out with a Scintrex proton precession magnetometer at a reading interval of 15, 25, or 30 m. The data was corrected for diurnal variations, plotted and contoured.

CONCLUSIONS

1. The IP survey has mapped an anomalous zone several hundred meters wide across the grid area striking in a NW - SE direction. It therefore has a minimum strike length of 2000 m being open to both the northwest and to the southeast. It envelopes the known gold veins and therefore strongly indicates that gold mineralization occurs across the whole grid area.

2. Within the IP anomalous zone are nine IP anomalies that have been labelled by the upper case letters A to I. Some occur as pairs and therefore the anomaly pair may be caused by the electrode effect of one IP source. However, there is also strong evidence that anomaly pairs, at least in some cases, are caused by two separate, though perhaps associated, sources.

3. The anomalies of strongest interest are A and B, both of which are related to the Main and Pegleg veins. A and B appear to strike across much of the grid area for a minimum NW - SE strike length of 1500 m being open at the northwest end. Anomalies G and H may be the southeastern faulted-off extension of A and B which would therefore increase the minimum length to 2000 m and would be open to the southeast as well. This therefore substantially increases the potential strike length of the Main and Pegleg veins.

4. Anomalies C and D have strong economic interest as well because of their proximity to anomalies A and B, and their similar geophysical signature to A and B. The strike length is at least 400 m and is open to the northwest.

5. IP anomaly F, by drill testing during the course of the survey, was found to be caused by a graphitic shear with minor pyrite. The associated resistivity low was found to be caused by water-filled sheared argillite.

6. Anomaly E could well be caused by the electrode effect of the same causative source as anomaly F. However, it should be drill-tested because of its high values.

7. Both the IP and resistivity survey plan maps show four possible northerly-to-northeasterly cross faults across the anomalous zones. This indicates the Main and Pegleg veins are not continuous, but faulted in several places across the strike length.

8. Anomaly I occurs at depth at the northwestern end of the grid and is therefore open to the northwest. Because of its adjacent resistivity low which correlates with an HLEM conductor, anomaly I is of prime exploration interest.

9. The bedrock resistivities are generally low over much of the property, indicating most of the bedrock to be sediments. The resistivity survey has also mapped alteration zones associated with mineralization as well as fault and shear zone systems.

10. The resistivity highs appear to be caused by argillites as well as possibly andesites.

11. The HLEM survey revealed numerous conductors, 15 of which were numbered I through to XV. Conductor V appears to be caused by the alteration associated with the main mineral zone.

12. Most of the conductors correlate with resistivity lows and thus the causative sources are likely fault, shear and alteration zones. Massive sulphides could also be a causative source.

13. The VLF-EM conductors mapped on the property have mapped the edges of wider conductive zones such as the main alteration zone as well as the water-filled shear zone of IP anomaly F. A broken VLF-EM conductor correlates directly with the main zone.

14. The magnetic survey has shown the magnetic field over the grid area to be moderately quiet indicating the underlying rock-types to be sediments and/or non-magnetic volcanics. Lineal magnetic lows are probably due to geological structure such as fault, shear, and contact zones.

RECOMMENDATIONS

From the amount of data accumulated, a list of test drill holes on the Snowbird property has been compiled. These drill holes are proposed to intersect new anomalies, and to confirm or reject proposed geophysical interpretations. The locations and orientations of the proposed drill holes were determined in collaboration with Brian Game, geologist, and Chris Sampson, consulting geological engineer. It is proposed to drill all vertical holes with a rotary drill (reverse circulation) and all angle holes with a diamond drill. As the drilling progresses, it is fully expected the geophysical interpretation will change and the proposed drill program, as a result, will change.

Drill Hole #	IP Target Anomaly	Line & Station	Depth, Bearing/Dip	Explanation
1	G or H	7+00S, 1+85E	95 m Vertical	to intersect chargeability and resistivity anomalies, and possibly conductor III
2	G	7+00S, 1+15E	85 m Vertical	this target is dependent upon the results of the drilling on line 6+00S, considering this anomaly may be the electrode effect of anomaly H.
3	G	6+00S, 0+70E	125 m 045/-45°	shows a direct correlation of chargeability and resistivity anomalies
4	G	6+00S, 1+30E	100 m 045/-45°	chargeability and resistivity anomalies, and a possible EM conductor
5	G	6+00S, 1+90E	100 m 045/-45°	chargeability and resistivity anomalies, and a possible EM conductor

Drill Hole #	IP Target Anomaly	Line & Station	Depth, Bearing/Dip	Explanation
6	H	6+00S, 3+10E	100 m 225/-45°	chargeability and resistivity anomalies, and a probable EM conductor
7	H	6+00S, 3+70E	120 m 225°/-45°	shows good chargeability and resistivity responses, and probable EM conductor II
8	H	6+00S, 4+30E	125 m 225/-45°	chargeability and resistivity anomalies, and EM conductor I
9	E	5+00S, 2+90E	80 m vertical	good IP results, and a probable EM conductor, of uncertain dip and location
10	G	5+00S, 1+90E	80 m vertical	dip of correlating EM conductor is unknown
11	A	5+00S, 0+75E	100 m vertical	to intersect anomaly A, good chargeability and resistivity
12	B	4+00S, 0+60W	100 m vertical	to test the possible existence of a SW-dipping zone
13	B	4+00S, 0+00	60 m vertical	to test the causative source of anomaly B, drill hole will intersect the anomaly above a known alteration zone, perhaps giving a good idea of attitude
14	D	4+00S, 2+35E	60 m vertical	anomaly D appears to have some northeast dip, with a good chargeability/resistivity correlation
15	C	3+00S, 1+45E	55 m vertical	tests anomaly C, and probable conductor VIII
16	B	0+65S, 0+80W	100 m 045/-45°	diamond drill hole beneath shaft
17	D	0+00, 1+45E	50 m vertical	strong chargeability and resistivity responses, correlates with probable conductor VIII

Drill Hole #	IP Target Anomaly	Line & Station	Depth, Bearing/Dip	Explanation
18	A	3+00N, 0+80E	80 m vertical	high chargeability and low resistivity zone
19	B	6+00N, 2+00W	120 m 045/-60°	to test IP anomaly B
20	B	6+00N, 1+50W	100 m 045/-60°	to test IP anomaly B
21	A	6+00N, 0+40W	100 m 225/-60°	HLEM conductor VII has been interpreted on this line with an uncertain dip NE
22	A	6+00N, 0+00W	100 m 225/-60°	IP anomaly A and HLEM conductor VII
23	A	6+00N, 0+60E	100 m 225/-60°	IP anomaly A and HLEM conductor VII
24	I_1	10+00N, 3+00W	100 m vertical	to test good chargeability and resistivity results, plus a weak, possible conductor at depth
25	I_2	10+00N, 3+70W	110 m vertical	good chargeability and resistivity, and a possible HLEM conductor at depth

The diamond drill holes and rotary drill holes are labelled by number on the maps and appropriate sections as DDH and RDH, respectively.

Total depth, diamond drill holes: 1290 metres.

Total depth, rotary drill holes: 1055 metres.

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INTRODUCTION

This report discusses the instrumentation, theory, field procedure and results of induced polarization (IP), resistivity, horizontal loop electromagnetic (HLEM), very low frequency electromagnetic (VLF-EM) and magnetic surveys carried out over a northwest portion of the Snowbird property, located near Fort St. James in the Omenica Mining Division of British Columbia.

The field work was completed from February 10 to March 26, 1987 under the supervision of the writer and under the field supervision of Patrick Cruickshank, geophysicist. He worked with a crew of one to three geophysical technicians and helpers.

The purpose of the IP survey was to extend the known mineralization (i.e., the Main and Pegleg veins) as well as to locate new zones. The area around the mineral zones is widely pyritized which will cause IP anomalies. However, it was expected that the targetted mineral zones should give higher anomalous readings, that is, anomalies within an anomalous zone.

The purpose of the resistivity work was to map the alteration surrounding the mineralization. The secondary purpose was to map lithology.

The purpose of the horizontal loop EM survey as well as the VLF-EM survey was the same as that of the IP survey, that is, to locate previously unknown mineralization. The VLF-EM was run in addition to the HLEM since it operates at a much higher frequency and therefore may give a different response on the property. For the same reason, the VLF-EM is usually effective in mapping faults and contact zones, which was therefore its secondary purpose.

The purpose of the magnetic survey was to map lithology and geological structure. Also it is quite possible there is some type of magnetic signature within the zone of mineralization.

Both the VLF-EM and magnetic surveys were carried out as fill-in to the other surveys.

All surveys were first tested over the main area of mineralization for their individual effectiveness in exploration.

Exploration on the property is under the supervision of C.J. Sampson, P.Eng., consulting geological engineer, who located the crew onto the property. Much of the following description of the property is taken from his January 1987 report on geochemical soil sampling, trenching and drilling.

PROPERTY AND OWNERSHIP

The property consists of 11 contiguous claims totalling 100 units as shown on Map 2 (first 3 claims not shown, but are covered by Snowbird 1 claim) and as described below:

Name of Claim	No of Units	Record Number	Expiry Date
Snowbird	1	1900	November 5, 1996
Campsite	1	1896	November 5, 1996
Shaft Fraction	1	8723	October 20, 1996
Boarchea	6	3008	May 15, 1988
Snowbird #1	18	7537	March 24, *
Snowbird #2	9	7538	March 24, *
Snowbird #3	20	7539	March 24, *
Snowbird #4	12	7540	March 24, *
Snowbird #5	20	7541	March 24, *
Snowbird #6	8	7542	March 24, *
Snowbird #7	4	7543	March 24, *

*The writer is unaware of the current expiry years.

All claims are owned by Pipawa Explorations Ltd. which is optioning the property to X-Cal Resources Ltd. of Goldbridge, B.C., and of Toronto, Ontario.

LOCATION AND ACCESS

The Snowbird property is located on Kasaan Bay and on Sowchea Bay, both on the southwestern shore of Stuart Lake. The east central property boundary is located about 14 km due east of the town of Fort St. James within central B.C.

The geographical coordinates for the center of the property are 54° 26' north latitude and 124° 30' west longitude.

Access is easily gained from the town of Fort St. James by travelling westerly along the southwestern shore of Stuart Lake. One travels about 3 km south of the center of Fort St. James to the first right, past the Stuart River bridge, which is the

Sowchea Road. One then travels for about 18.4 km to the main workings of the property, which is about 6 km past the Sowchea Bay recreation site picnic grounds.

PHYSIOGRAPHY

The property occurs within the western part of the Nechako Basin, a physiographic division of the Fraser Basin which is a physiographic division of the Interior Plateau System. The Fraser Basin consists of a flat or gently rolling topography that is covered with glacial drift and has few exposures of bedrock. This terrain is typical of the property itself, though along the southwestern edge it becomes moderately steep. The elevations vary from 680 metres (2,230 feet) a.s.l. on Stuart Lake to 1,040 metres (3,400 feet) a.s.l. along the southwestern edge of the Snowbird 4 claim to give an elevation difference of 360 m (1,170 feet).

The main water source, of course, is Stuart Lake. There are also several unnamed, generally northeast-flowing creeks that run through the property.

"The westernmost part of Snowbird 1, 2 and 4 claims on the slopes of the ridge containing Mount Nielsp is covered by mature stands of pine and some spruce, but most of the rest of the claim group, particularly the flat lying areas around the old mine buildings, is covered by poorly developed stands of poplars with some birch and thin underbrush mostly composed of wild roses."

HISTORY

The following is quoted from Sampson's report, who took his information from a 1986 report by D. Dunn.

"The property was first staked in 1920 and some development work was done on the Snowbird, Campsite and Shaft Fraction Claims, and then the property was allowed to lapse. The showing area was re-staked by T.E. Neilson in November 1937. Some work was done, with about 54 tons of antimony ore hand cobbed and sold.

"In 1939, Dr. V. Dolmage and R.H. Stewart examined the surface showings and secured an option on the property for Pioneer Gold Mines Ltd.

"Pioneer sank an inclined shaft on the 'Main Vein' in a quartz stringer zone to a depth of 45 m. They also drove an adit and drifted on the massive stibnite 'Cross Vein' for a distance of 45 m. They shipped 36 tons of crude ore and later permitted their option to lapse.

"In 1942 C.M. & S. held an option on the property and drilled seven holes on the quartz stringer zones of the Shaft Fraction. They were unable to secure extensions of their option and it was terminated.

"In 1943 Leta Exploration Ltd. held the property under option and drilled 308 m of diamond drilling on the quartz stringer zones.

"About 1947, Inland Mining Co. Ltd. of Los Angeles stoped out additional ore from the 'Cross Vein'. Records for their shipments are 13.22 tons of 55% Sb; 17.88 tons of 58.8% Sb; and 35 tons of 60% Sb.

"During the period, October 28th to December 5th of 1970, Consolidated Shunsby Mines Ltd. of Ontario contracted a geochemical survey of an 8 claim portion of the property to E.L.C. Geophysics of Vancouver, B.C.

"In 1974, Westwind Mines Ltd. carried out 280 m of diamond drilling on the quartz stringer zones."

After X-Cal acquired the property, they carried out a program of trenching by a Caterpillar 225 backhoe during October 1986. The 10 trenches were dug to test VLF-EM anomalies from a survey done in May 1986. They also carried out a program of soil sampling. In November and December of 1986 X-Cal then diamond drilled 10 holes.

GEOLOGY

a) General

The following is quoted from Armstrong who describes the property in the G.S.C. Memoir for the area. The property was known as the Stuart Lake antimony mine.

"The claims on which the showings occur are underlain by northwesterly trending and steeply dipping, interbedded argillites, slates, quartzites, and greenstones of the Cache Creek group. The greenstones appear to comprise chloritized andesitic and dacitic lava flows, breccias, and tuffs. Diorite was observed in several places cutting the sedimentary formations.

"A zone of altered rocks, consisting mainly of cream-coloured, buff weathering aggregates of ankeritic carbonate, quartz, serpentine, and mariposite, and intersected by a network of quartz veins and lenses, crosses the property. This zone is about 150 feet wide, strikes northwesterly about parallel with the bedding of the Cache Creek formations, and dips from 40 to 50 degrees northeast. On the northeast side it grades into argillite, and on the southwest it is drift covered. At the surface it consists mainly of ankeritic carbonate, quartz, and patches of volcanic rock. In diamond-drill holes, much serpentine was encountered, and many specimens show carbonate replacing serpentine. Mariposite, an apple-green mica, is disseminated throughout the zone. Drill-holes indicate considerable brecciation along this zone. The origin of the breccias is doubtful; it has been suggested by some that they are fault breccias and by others that they are volcanic breccias. Although only a very cursory examination of the property was made by the writer, he believes that this band of carbonate rocks lies along a zone of faulting, shearing, and brecciation that provided channelways for later carbonatizing and mineralizing solutions, resulting in the rocks now exposed."

b) Mineralization

The X-Cal work is significantly enhancing the potential of gold mineralization on the Snowbird property as the following quote from the Summary in Sampson's report indicates.

"Around the inclined shaft in holes:

P10	0.167 oz/ton	3.0 ft.	
C-4	0.24 oz/ton	5.0 ft.	C holes by Cominco 1943
W-4	0.12 oz/ton	4.0 ft.	W holes by Westwind 1974
C-3	0.35 oz/ton	5.0 ft.	P holes by Prism 1980
P-7	0.584 oz/ton	8.0 ft.	X holes by X-Cal 1986
X86-2	0.27 oz/ton	13.94 ft.	
(includes	0.637 oz/ton	3.23 ft.)	
C-1	0.27 oz/ton	2.5 ft.	
C-2	0.35 oz/ton	5.0 ft.	

In particular X-Cal hole X86-2 showed that good grade gold mineralization extends down dip. X86-2 and Prism P-10 are the deepest intersections on the vein system to date at 220 and 180 ft. below surface respectively.

"The area approx. 400 ft. grid south of the inclined shaft is shown by holes:

P-6	0.698 oz/ton	3 ft.
X86-6	248.16 oz/ton	0.5 ft.
X86-7	0.715 oz/ton	3.3 ft.

The intersection in hole X86-6 (248.16 oz/t Au, 84.58 oz/t Ag, 0.03% Sb) although narrow (0.5 ft.) is significant as it represents the first intersection of high grade visible gold encountered in exploration programmes on the Snowbird property and indicates that high grade shoots probably occur within the vein system."

The X-Cal drill holes encountered argillite and cherty argillite in the hanging wall above the quartz-ankerite-mariposite alteration zone, and the same rock-types in the footwall along with some andesite. The highest values of gold occur in an area of massive fracture-filling stibnite within a quartz vein.

The X86-7 intersection occurs in a serpentinized material with minor quartz flooding, weak mariposite, and minor disseminated pyrite.

Of interest to the IP survey is that massive black pyritic argillite occurred throughout the drill intersections.

INDUCED POLARIZATION-RESISTIVITY SURVEY

a) Instrumentation

The transmitter used for the induced polarization-resistivity survey was a Model IPT-1, manufactured by Phoenix Geophysics Ltd. of Markham, Ontario. It was powered by a 2.0 kw motor-generator, Model MG-2, also manufactured by Phoenix.

The receiver used was a model Mark IV manufactured by Huntec ('70) Limited of Scarborough, Ontario. This is state-of-the-art equipment, with software-controlled functions, programmable through the front panel.

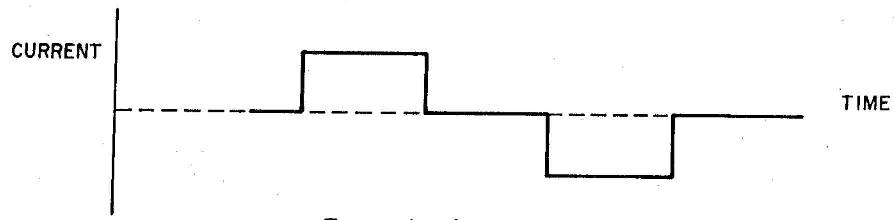
The Mark IV system is capable of time domain, frequency domain, and complex resistivity measurements.

b) Theory

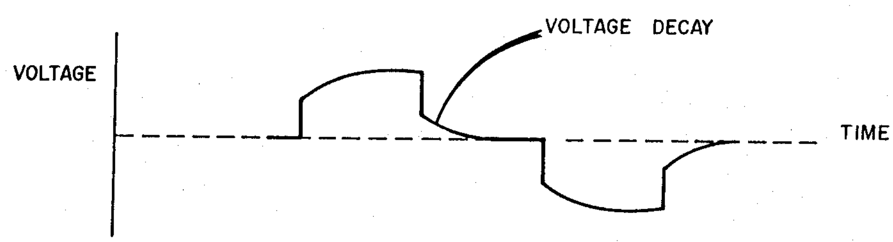
When a voltage is applied to the ground, electrical current flows, mainly in the electrolyte-filled capillaries within the rock. If the capillaries also contain certain mineral particles that transport current by electrons (most sulphides, some oxides and graphite), then the ionic charges build up at the particle-electrolyte interface, positive ones where the current enters the particle and negative ones where it leaves. This accumulation of charge creates a voltage that tends to oppose the current flow across the interface. When the current is switched off, the created voltage slowly decreases as the accumulated ions diffuse back into the electrolyte. This type of induced polarization phenomena is known as electrode polarization.

A similar effect occurs if clay particles are present in the conducting medium. Charged clay particles attract oppositely-charged ions from the surrounding electrolyte; when the current stops, the ions slowly diffuse back to their equilibrium state. This process is known as membrane polarization and gives rise to induced polarization effects even in the absence of metallic-type conductors.

Most IP surveys are carried out by taking measurements in the "time-domain" or the "frequency-domain".



Transmitted Waveform



Recorded Voltage

Time-domain measurements involve sampling the waveform at intervals after the current is switched off, to derive a dimensionless paramater, the chargeability, "M" which is a measure of the strength of the induced polarization effect. Measurements in the frequency-domain are based on the fact that the resistance produced at the electrolyte-charged particle interface decreases with increasing frequency. The difference between apparent resistivity readings at a high and low frequency is expressed as the percentage frequency effect, "PFE".

The quantity, apparent resistivity, ρ_a , computed from electrical survey results is only the true earth resistivity in a homogenous sub-surface. When vertical (and lateral) variations in electrical properties occur, as they always will in the real world, the apparent resistivity will be influenced by the various layers, depending on their depth relative to the electrode spacing. A single reading cannot therefore be attributed to a particular depth.

The ability of the ground to transmit electricity is, in the absence of metallic-type conductors, almost completely depending on the volume, nature and content of the pore space. Empirical relationships can be derived linking the formation resistivity to the pore water resistivity, as a function of porosity. Such a formula is Archie's Law, which states (assuming complete saturation) in clean formations:

$$\frac{Ro}{Rw} = 0^{-2}$$

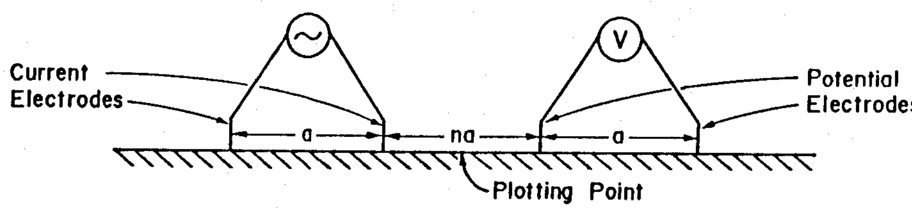
Where: Ro is formation resistivity
Rw is pore water resistivity
0 is porosity

c) Survey Procedure

The IP and resistivity measurements were taken in the time-domain mode using an 8-second square wave charge cycle (2-seconds positive charge, 2-seconds off, 2-seconds negative charge, 2-seconds off). The delay time used after the charge shuts off was 200 milliseconds and the integration time used was 1,500 milli-seconds divided into 10 windows.

The configuration used in the field was the dipole-dipole array shown as follows:

DIPOLE-DIPOLE ARRAY



The electrode spacing (or dipole length) is denoted at 'a' and was chosen as 15 m. The 'n' was read to five dipole separations ('na') resulting in a total separation of 75 m. This gives a theoretical depth penetration of 45 m which depends not only on the 'na' spacing but also on the ground resistivity. The 15 m dipole was run on lines 3+00S to 1+00N and the western part of line 4+00S. The dipole length was increased to 30 m over the rest of the survey area because of suspected deeper overburden. The 'n' was read to 5 so that the dipole separation became 150 m for a theoretical depth penetration of 90 m. On the northwestern part of the survey, the 'n' was increased to 7 and thus the dipole separation increased to 210 m and the theoretical depth penetration to 120 m.

The dipole-dipole array was chosen because of its symmetry. Non-symmetrical arrays such as pole-dipole present interpretational difficulties.

Stainless steel stakes were used for current electrodes. Normally the potential electrodes are comprised of metallic copper in copper sulphate solution, in non-polarizing, unglazed, porcelain pots. However, the frozen ground necessitated the use of stainless steel stakes for the potential electrodes as well.

The survey's baseline runs in a direction of due NW-SE and the survey lines on which the IP and resistivity readings were taken occur every 100 m at a direction perpendicular to the baseline. The lines were cut for the IP, resistivity and HLEM surveys while the surveys were in progress. The IP/resistivity surveys covered 15.645 km.

The survey's progress was somewhat hampered by frozen ground making the planting of the electrodes somewhat difficult. Snow cover up to about 1 m deep also slowed progress.

d) Compilation of Data

The chargeability (IP) values are read directly from the instrument and no data processing is therefore required prior to plotting. The resistivity values are derived from current and voltage readings taken in the field. These values are combined with the geometrical factor appropriate for the dipole-dipole array, to compute the apparent resistivities.

The chargeability and resistivity data to the fifth separation were plotted in survey plan form on Maps 3 and 4, respectively, at a scale of 1:2,000. They were plotted at the midway point between the receiver dipole and the transmitter dipole. The chargeability data were contoured at a 10 milli-second contour interval, and the resistivity data, at a logarithmic contour interval.

The IP and resistivity pseudosections are plotted on Map #'s 8 to 28 at a scale of 1:1,000. Each value is plotted at the intersection of a 45° line from the midpoint of the receiver dipole and a 45° line from the midpoint of the current dipole. The data were contoured using the same intervals as for the survey plans.

HORIZONTAL LOOP ELECTROMAGNETIC SURVEY

a) Instrumentation and Theory

A MaxMin II portable 2-man electromagnetometer, manufactured by Apex Parametrics Ltd. of Toronto, Ontario was used for this survey. This instrument is designed for measuring the electromagnetic field which results from a conductive body; that is a structure which conducts electricity better than barren rock-types do. This particular instrument has the advantage of flexibility over most other EM units in that it can operate with different modes and frequencies as well as having a variety of distances between transmitter and receiver. Five frequencies can be used (222, 444, 888, 1777 and 3555 Hertz) and six different coil separations (25, 50, 100, 150, 200 and 250 metres).

In all electromagnetic prospecting, a transmitter induces an alternating magnetic field (called the primary field) by having a strong alternating current move through a coil of wire. This primary field travels through any medium and if a conductive mass such as a sulphide body is present, the primary field induces a secondary alternating current in the conductor and this current in turn induces a secondary magnetic field. The receiver picks up the primary field and, if a conductor is present, the secondary field. The fields are expressed as a vector which has two components, the in-phase (or real) component and the out-of-phase (or quadrature) component. The results are expressed as the percent deviation of each component from what the values would be if no secondary field (and therefore no conductor) was present.

Since the fields lose strength proportionally with the distance they travel, a distant conductor has less of an effect than a close conductor. Also, the lower the frequency of the primary field, the further the field can travel and therefore the greater the depth penetration.

The MaxMin II EM unit can vary the strength of the primary field and so use different separations between transmitter and receiver coils, change the frequency of the primary field for varying depth penetrations, and use three different ways of orienting the coils to duplicate the survey in three styles so that more accuracy is possible in the interpretation of the data.

The use of the MaxMin II electromagnetometer allows for better discrimination between low conductive structures such as clay beds and barren shear zones and more conductive bodies like massive sulphide mineralization. It also gives several different types of data over a given area so that statistical analysis can result in less error in the interpretation.

b) Survey Procedure

The electromagnetic survey was carried out with the slope separation between the transmitter and receiver measured to an accuracy of 100 m ± 0.3 m. Readings were taken every 25 m, except where the EM field changed rapidly, then the readings were taken every 12.5 m.

The receiver operator read and recorded the in-phase and out-of-phase responses. Calibration and phase mixing tests were also conducted three times a day and the appropriate corrections made when necessary.

All five frequencies were read by the receiver operator, which were 222, 444, 888, 1777, and 3555 Hz.

A total of 10.74 km of electromagnetic survey was carried out over all or portions of lines 10+00S through to 10+00N.

c) Compilation of Data and Interpretation Methods

The EM data for all five frequencies were profiled on a separate drawing for each line (Maps 29 to 49, respectively) at a horizontal scale of 1:2,500. The in-phase data and the out-of-phase data of two frequencies were profiled. The plotting point is taken at the mid-point between the transmitter and the receiver. The vertical scale used for both the in-phase and out-of-phase data was 1 cm = 20%.

Quantitative interpretation was carried out wherever anomalous readings (and thus, conductors) were encountered. All five frequencies were plotted at an exaggerated vertical scale in order to facilitate comparison and curve matching with type-curves.

These plots were strictly working copies and therefore are not given as part of this report. Type-curves are produced either by computer models or actual scale models tested under laboratory conditions. The type-curves used were those published by the Geological Survey of Finland. The quantitative interpretation included:

(1) the location of the top of the conductor,
(2) the depth to the top of the conductor,
(3) the dip of the conductor, and
(4) the conductivity-thickness of the conductor.

Conductivity-thickness is always described as a product since a poorly conductive, thick conductor can give the same EM profile as a highly conductive, thin conductor.

The EM-mapped conductors have been divided into 3 classes, definite, probable, and possible conductors. Often, very little quantitative information can be interpreted from the probable and possible conductors, usually because of noise problems and/or a low response parameter. On this property, it is more likely the possible conductors are reflecting faults.

However, on this property, very little information could be obtained from the definite conductors as well. Many of the problems as discussed below distorted the shape of the EM response to most of the conductors with two of the biggest factors being geological noise and multiple conductors.

The trace of the top of each conductor has been drawn on a survey plan (Map 5), along with the 888 Hz profiles in order to facilitate easy correlation. The definite bedrock conductor is drawn in solid, the probable conductor, dashed, and the possible conductor, dotted.

d) Interpretation Pitfalls

One of the main problem with EM surveying is conductive overburden. If the overburden thickness is uniform, then the problem is minimized. The conductive overburden causes the in-phase and out-of-phase profiles to separate from each other and away from the zero line as well as alters the amplitude of the negative peak for both the in-phase and out-of-phase. One therefore moves the zero line to correlate with the background reading of the in-phase profile and/or the out-of-phase profile and then uses special quantitative interpretation procedures. Conductive overburden occurs throughout the survey area.

More difficult problems are produced, however, if the thickness of the conductive overburden undulates, or if there exists a buried bedrock trough, or ridge. This can produce an EM profile similar in shape to that over a normal conductor. However, this feature will become minimal at lower frequencies, and, therefore, this type of "false conductor" can be sorted out.

A related problem to conductive overburden is conductive host rock. This can be seen when the in-phase decreases (goes more -ve) and the out-of-phase increases (goes more +ve) with increasing frequency. In other words the effect is opposite to that of conductive overburden so that on the 3,555 Hz frequency the in-phase profile is lower than the out-of-phase profile. There is some evidence this problem occurs on this property. The effect of conductive host rock is to lower the response parameter of a bedrock conductor since the conductivity contrast between the bedrock and the conductor is lessened. In other words, it becomes more difficult for the EM system to respond to a bedrock conductor occurring within conductive host rock.

The dip of the conductor is probably the most difficult piece of information to interpret from the EM profiles. The major cause is non-uniform conductive overburden which tends to affect the shape (from which the dip is taken) of the EM profile over a conductor. Another cause of the problem is 2 closely spaced conductors, as occurs on this survey, so that one affects the shape of the other.

Another problem is geological noise which is produced from such features as faults, fracture zones, contacts, alteration zones, and graphitic horizons. This can also affect the shape of the EM profile over a conductor.

In some cases, an interpretation can be carried out using 2 different models. The most common problem is deciding whether the causative source is one wide conductor or two narrow conductors. Often the interpretation for each case produces similar results (i.e. similar dip, similar depth-to-top).

VLF-EM SURVEY

a) Instrumentation and Theory

A VLF-EM receiver, Model 27, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF-EM), which for this survey is transmitted at 24.8 KHz from Seattle, Washington.

The VLF-EM uses a frequency range from 16 to 24 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization. (In places it can be used instead of IP). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

b) Field Procedure

The VLF-EM survey was only partially done over the IP survey grid and consisted of 6.3 km.

The dip angle readings were taken every 15, 25 or 30 m (depending on the station spacing of the line) facing towards the transmitter at Seattle.

c) Compilation of Data

The VLF-EM dip angle readings were reduced by applying the Fraser-filter and the filtered results subsequently plotted on a base map (Map #6). The filtered data were plotted between actual reading stations. The positive dip-angle readings were then contoured at an interval of 5°.

The Fraser-filter is essentially a 4-point difference operator, which transforms zero crossings into peaks, and a low pass smoothing operator which induces the inherent high frequency noise in the data. Therefore, the noisy, non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor that does not show up as a crossover on the unfiltered data quite often shows up on the filtered data.

MAGNETOMETER SURVEY

a) Instrumentation and Theory

The magnetic survey was carried out with a model MP-2 proton precession magnetometer, manufactured by Scintrex Limited of Concord, Ontario. This instrument reads out directly in gammas to an accuracy of ±1 gamma, over a range of 20,000 - 100,000 gammas. The operating temperature range is -35° to +50° C, and its gradient tolerance is up to 5,000 gammas per metre.

Only two commonly occuring minerals are strongly magnetic, magnetite and pyrrhotite; magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Magnetics is also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

b) Field Procedure

Readings of the Earth's total magnetic field were taken at the 15, 25, or 30 m stations along the same IP survey lines. The diurnal variation was monitored in the field by the closed loop method to enable the variation to be removed from the raw data prior to plotting.

Like the VLF-EM survey, the magnetic survey was only partially done over the IP survey grid and consisted of 7.11 km.

c) Compilation of Data

The total magnetic field values were plotted on a base map (Map #7) at a scale of 1:2,000 and contoured at a 100-gamma interval.

DISCUSSION OF RESULTS

a) Induced Polarization - Resistivity

The IP and resistivity surveys have added significantly to the exploration potential of the Snowbird property by showing very promising possibilities for the occurrence of mineralization both in extent and in the number of probable zones.

The exploration to date has focussed primarily on a northwest-striking, northeast-dipping alteration zone hosting two gold-bearing veins, labelled the Main and the Pegleg, respectively. However, the IP survey has located nine anomalous zones in total which have been labelled by the capital letters A to I, respectively. These strongly indicate additional mineralization of economic interest. ~~These strongly indicate additional mineralization of economic interest.~~ Drilling has been completed, in two stages, between lines 4+00S and 3+00N, and the results have helped in the interpretation of the geophysics.

Over much of the survey area, the IP (chargeability) readings are commonly above 20 msec. This is unusually high and indicates a background content of sulphides, undoubtedly the disseminated pyrite within the black argillite. From the IP survey, these high background values appear to occur within a few hundred metres to the northeast and to the southwest of the known mineral zones. The longer IP lines show the true background to be about 5 to 10 msec. which is much more normal. As a result of the above, one is looking for anomalous highs within the high background zones, that is, readings that are significantly above 30 msec.

Regardless of how each of the IP anomalies relate to the gold mineralization, what seems definite is that the IP anomalous zone (which covers most of the property) envelopes the known mineralization on the property. This anomalous zone strikes for 2000 m across the grid in a NW - SE direction and is open at both ends. This therefore strongly indicates that the gold mineralization occurs within zones striking across the grid, for a minimum strike length of 2000 m.

The resistivity background of the bedrock within the grid area is unusually low. Values are most commonly below 50 ohm-m which is indicative of sedimentary bedrock. Values significantly lower are indicative of fault, shear, and/or alteration zones. Values on the grid area have been measured down to 0.3 ohm-m which is unusually low and therefore indicates a zone of high conductivity. Values this low occur within the resistivity low within zone F which was subsequently drilled. It showed the causative source of the low to be a water-filled sheared argillite. Other ultra-lows, however, are known to be caused by alteration zones associated with mineralization.

Narrow, lineal-shaped resistivity lows are more indicative of fault or shear zones.

Resistivity lows throughout the property have a side-by-side correlation with IP highs which always occur above the lows. This agrees with the known mode of mineralization on the Snowbird property since the mineralization (which causes the IP high) always occurs on the hanging wall side of the alteration zone (which causes the resistivity low).

The resistivity highs, say above 100 ohm-m, in correlating with diamond drill results, are caused by argillite. It therefore indicates the argillite to be relatively fresh. Within one area, a resistivity high reaches a value of 3300 ohm-m. This is more indicative of a volcanic or intrusive rock-type.

Anomalies A and B, which correlate with the known mineralization of the Main zone, are associated together throughout all sections, displaying a character which permits a confident estimation of strike length. It must be noted here that interpretation of the anomaly pair is ambiguous, and may represent either two separate alteration systems; one dipping to the northeast and the other to the southwest, or a single, wide alteration system dipping to the northeast. The evidence to support either possibility is presented below, and can only be verified by drilling into anomaly B.

Anomaly A is a lineal high chargeability zone dipping to the northeast and abutting to anomaly B, which dips in an opposite direction to the southwest. This anomaly pair has been traced from line 5+00S to 8+00N. To the southeast, however, from line 5+00S, there appears to be a 220 m shift to the northeast, possibly caused by faulting. The anomaly pair then continues to line 10+00S but has been labelled as anomalies G and H respectively, since this anomaly pair could possibly be an entirely different system. Furthermore, to the northwest of line 8+00N the A/B pair appears to continue, but at depth. However, because it is at depth, it is somewhat difficult to be certain of which anomaly is A or B. Nevertheless, if all of the above proves out, then the minimum strike length of the A/B pair is 2,000 m with it being open at both ends.

Of striking significance with anomalies A and B is the close association between them. The resistivity sections of lines 3+00S to 5+00S show the two anomalies to be connected, implying associated alteration and perhaps mineralization. This view has been supported by drill hole 87-21 on line 4+00S. The drill hole can be shown on both pseudosections to intersect anomaly B, although at an angle almost parallel to the dip of the anomaly. This orientation would explain the width of alteration encountered in this hole, which is the widest yet recorded. This suggestion is further supported by the gold results of drill hole 86-10, which apparently struck through anomaly B on line 3+00S.

It must be noted at this point, that the sweeping effect of IP surveys could produce an anomaly of this nature from a single wide dipping source. The response encountered, though, could be produced by either of these two scenerios but must be considered nonetheless. Drilling across anomaly B in one or two locations should verify which interpretation is correct.

The anomaly pair A/B strikes northwest-southeast on the southern half of the grid, and appears to strike to the north on the northern half of the grid. Looking at the chargeability and resistivity pseudosections, the distinct character of the zones seems to be offset northeast after line 5+00S by approximately 220 metres. However, the presence of another anomaly twin system to the northeast of this system, plus a look at the chargeability and resistivity plan contour maps, suggests otherwise. A similar, but less dramatic, discontinuity occurs between lines 1+00S and 2+00S, and another one occurs between lines 4+00N and 6+00N. These results suggest the presence of a northeast-southwest-trending strike-slip fault system. This feature could possibly be delineated by a MaxMin test line parallel to the baseline.

Anomalies G and H on lines 6+00S to 10+00S show a very similar anomaly character to the A/B anomaly pair. The strongest responses occur on line 6+00S. The wide separation and two distinct chargeability highs suggest the possibility of two separate opposing zones, or one very wide causative source. The anomalies become less clear to line 10+00S, although they still maintain high values, suggesting a widening of the alteration zone, or more separation of the two causative sources. On line 10+00S, the chargeability reaches a high of 91 msec, averaging about 80 msec for anomaly H and about 69 msec for anomaly G.

Available drill results have accurately determined the attitude of the main alteration zone, and have provided good correlation with the geophysics. Four drill holes on line 2+00S have shown the main alteration zone to exist within the A/B anomaly pair, and have even located a second sub-parallel zone directly coincident with anomaly A.

From near line 1+00N, anomalies A and B appear to curve to the north across the baseline, where they disappear after line 8+00N. The anomalies gradually deepen to line 8+00N, suggesting the structure plunges to the north. It seems significant to note that this trend parallels the small valley which runs along much of the Snowbird claim, suggesting that there could be a fault trending in this area, or possibly the small valley is caused by the interaction of two cross-faults. Extrapolation to the surface of anomaly B on many of these northern lines often parallels, and could coincide with, the topographic rise.

It should be noted that the sections from 1+00S to 5+00N by themselves are difficult to accurately interpret. By line 6+00N, the character of the anomaly A/B pair has become reasonably clear again, and thus comparison with the survey plan makes the interpretation more confident.

Anomaly C is a resistivity low-chargeability high sub-parallel to anomaly A. However the chargeability anomaly is not consistently linear. This anomaly appears on several of the lines, and is consistently about 50 to 65 metres northeast of anomaly A. Anomaly C appears mainly at depth, and appears to have very little strike length. The orientation of anomaly C is similar to that of anomaly A, suggesting it could be formed by a sub-parallel fault system.

Correlating known down-hole geology of the previous drill holes with the corresponding pseudosections, it is quite possible the causative source is altered argillite and graphite with pyrite.

Anomaly D is another anomaly which is sub-parallel to anomaly A, with a separation from A of about 130 to 150 m northeast along the plot level n = 5. It appears between lines 4+00S and 0+00, being open to the north. An accompanying resistivity anomalous low suggests a structural causative source, which is most likely due to the presence of sulphides and/or graphitic rock. The IP survey further to the north did not extend far enough northeast on each line to trace anomaly D, although because of the association so far, it is likely to continue northwesterly with anomaly A.

Anomaly E is a strong anomaly at depth, and dips in a southwesterly direction towards anomaly A. On lines 4+00S and 5+00S, it is apparent that anomaly D could be related to anomaly E at depth. The coincident resistivity low suggests that this causative source is a sulphide zone with perhaps argillite and graphite. The chargeability on this southwest-dipping anomaly is very high at depth, suggesting that it is not caused by IP electrode effect. The presence of an EM anomaly, as discussed below, also lends strength to the argument that this is a separate causative source from either anomaly A or anomaly F.

The strike of anomaly E suggests that it could be associated with, or even an extension of, anomaly G.

Anomaly F is a very strong IP/resistivity anomaly. Both pseudo-sections suggest that the causative source dips northeast, following the topographic rise. The chargeability reaches a high of 88 msec above, and adjacent to, the wide resistivity low which reaches a low of less than 0.3 ohm-metres.

This causative source was investigated by drill hole 87-23, which found a plausible explanation for the good IP/resistivity results. A graphitic fault zone with minor amounts of pyrite produced the chargeability high while a highly-fractured, water-filled argillite fault zone produced the wide resistivity low. This wet zone explains the strong EM response as well, and suggests the possibility of a similar interpretation of anomaly H, below.

Anomaly G is a west-northwest striking anomaly with an apparent minimum strike length of 500 metres and open to the southeast from 10+00S. It strikes across lines 6+00S to 10+00S, and possibly appears on line 5+00S at depth. This anomaly apparently dips to the southwest, and is strongest on lines 6+00S and 7+00S reaching a chargeability high of 132 msec and an adjacent resistivity low of less than 1 ohm-metre (values were so low an accurate reading was not possible).

As explained above, this anomaly could be directly related to, or an extension of, anomaly E of line 5+00S. The strike of anomaly G, however, trends toward anomaly A where it appears on, and disappears from line 5+00S. This trend, and similar responses, indicate a possible relationship even with anomaly A or B. The sudden disappearance of anomaly A south of line 5+00S, along with the behaviour of anomalies E, F, G and H support the view that a fault possibly exists in this area striking roughly northeast.

Anomaly H strikes approximately north-northwest in the south-eastern corner of the grid, with an approximate minimum length of four hundred metres. It apparently dips to the northeast. This anomaly appears open to the south beyond 10+00S, but with anomaly G has become less clearly defined on 10+00S. This lack of definition could mean a greater amount of fracture-filling and/or disseminated sulphides within the host rock. Because of the strike of this anomaly towards the bay and perhaps, towards anomaly F, it is very possible that this anomaly has as a causative source a water-filled argillite shear zone with pyrite and graphite. The strength of this IP anomaly, however, warrants a drill hole for investigation.

Anomaly I is actually two sub-parallel adjacent chargeability highs dipping northeasterly at depth at the extreme southwestern end of line 10+00N. This anomaly system was located by measuring to n = 7 on the IP survey, as it appears very deep below overburden.

Anomaly I1 has a coincident resistivity low with the same attitude, suggesting that the causative source is a sulphide zone. Anomaly I2 is a high chargeability zone reaching a maximum value of 77 msec at n = 6, with no coincident local resistivity low.

The strike length of this zone is difficult to project, although a similar, but less well defined, system occurs on line 9+00N at its southwestern end. A good correlation, albeit a small one, is with a possible EM conductor on line 10+00N. Because of the thickness of the overburden, it is impossible to obtain any sible to obtain any quantitative information on this conductor. These correlations do, however, show the potential of the zone as a promising drill target.

There are several possible explanations for the existence of this zone. The location of this zone on the pseudosection is significant, for this anomaly could be the twin to another anomaly as with the A/B pair and the E/F and G/H pairs. If anomaly I is an extension of anomaly A then this could mean that anomaly A does not plunge north of line 8+00N, but is actually offset by a fault system striking roughly northeast into Kasaan Bay. Another possibility is that there is no such fault whatsoever, but that this anomaly represents a new alteration zone altogether. Either way, anomaly I appears open to the northwest and shows good potential as a drill target.

b) Horizontal Loop EM Survey

The horizontal loop EM survey was done on every line on the Snowbird grid but did not completely cover every line. The data was found to be very difficult to interpret, however, due to the closely-spaced separate conductors affecting each others' response. However, each of the conductors' location is possible to plot on the base map with many showing good correlation with IP anomalies.

Conductors I and II are 400 and 300 m long, respectively, in the south-eastern corner of the grid. Due to their weak in-phase response and proximity to each other, they are impossible to quantitatively interpret. They strike north-northeast and are immediately adjacent to IP anomaly H, strongly suggesting a structural causative source.

It is impossible to determine the dips of these conductors or that of conductor III because of the effect that each has on the adjacent response. However, the IP/resistivity pseudosections suggest the dip is to the northeast.

These conductors display a similar response, although weaker, to the wet argillite-graphite conductor that was drilled on line 4+00S by drill hole 87-23. It is quite possible that this conductor pair represents a similar geological structure, but one drill hole into the IP anomaly could determine its causative source.

Conductor III strikes at least 300 m in roughly a NNW direction, from line 10+00S to 7+00S. Upon examining the Max/Min profiles, the character of profiles 7+00S and 6+00S suggest that conductor III could widen and suddenly shift northward. This shift could be caused by a northeasterly striking fault. From line 6+00S this conductor may strike northwest again, becoming conductor XIII and perhaps conductor XI. Conductor III parallels IP anomaly G along much of its strike length, suggesting the same causative source. Considering the large separation between IP anomalies G and H, it is possible that the southwest dip of anomaly G represents the true general attitude of the causative source at this point. It is also possible that this separation represents a very wide alteration or sulphide zone, with three separate conductors dipping generally northeast. This ambiguity could be clarified by the careful placement of one drill hole through anomaly G/conductor III bearing 045°. Should this produce no conclusive evidence of a southwest dipping structure then this drilling direction should be abandoned, and drilling continued in the original trend on a bearing of 225°.

A weaker, possible conductor appears alongside conductor III on line 7+00S, and is labelled IIIa. This conductor is at least 200 m long to line 5+00S, from where it may extend to become part of conductor VI.

Conductor IV is a weak, possible conductor striking northwesterly between lines 10+00S and 8+00S. As the vertical sections exhibit a shallow trough for the highest frequencies of both in-phase and out-of-phase, this conductor could be due to an overburden feature, such as a shallow underground stream.

Conductor V occurs coincident with anomaly A, striking northwest from line 4+00S to 0+00. This conductor is classified as a medium-to-poor conductor, with a good response only at the higher frequencies. The conductive zone is probably a thin graphitic zone with little depth extent.

Conductor VI has a good strike length of at least five hundred metres as it strikes roughly northwest across the northeast ends of lines 4+00S to 1+00N. This conductor parallels IP anomaly D along its mapped strike length, occurring as a very poor, possible conductor on lines 4+00S to 2+00S, becoming a medium-to-good conductor by line 1+00N, with good depth extent. Again it was impossible to quantitatively interpret this anomaly due to the interference of adjacent conductors, and the limited extent of the horizontal loop survey. But it is reasonable to assume that this conductor continues striking to the northwest from line 1+00N. Because of the close correlation with IP/resistivity anomaly D and given the known geology of the property, it is a good possibility that this conductor is due to graphitic rock, or shear, along with an adjacent sulphide mineralization zone. This supports IP anomaly D as having good potential and thus is a good drill target.

Conductor VII is a long conductor striking about northwesterly in an arc from line 3+00S to 3+00N, then from 5+00N to 8+00N. It is important to note that this is only a possible conductor from line 3+00S to 3+00N as the in-phase and quadrature responses dip the same amount. A significant correlation here is the coincidence with the topographic valley which forms the creek and beaver pond, suggesting that this conductor could be an overburden anomaly.

Conductor VII is disjointed from lines 3+00N to 6+00N, and extrapolation northward from 3+00N suggests this conductor to strike slightly northeast of where it appears on lines 6+00N and 7+00N. This could imply that the two occurrences may be separate conductors, or that a fault exists, striking roughly northeast across the conductor. The general trend of this conductor supports the conclusion that the alteration system curves to the north and then back south across the baseline.

The EM responses of this conductor on lines 6+00N and 7+00N were probable and definite, and an interpretation was attempted on each line. Line 6+00N produced a dip of approximately 50° northeast from a depth of about 18 metres. This is a reasonable depth estimate, as there occurs a large outcrop only about sixty metres north of this response. The response of line 7+00N was less accurate, yielding a dip of between 55 and 80 degrees northeast from a depth of about 32 metres. Both of these estimates, due to the nature of the data, are rough and are therefore intended to only produce an idea of how deep the conductive zone is and where it dips.

It must be noted that the EM sections indicate that although the overburden is relatively deep around this part of the grid, the interpretable responses suggest that these conductors are bedrock-type. It is possible that conductor VII on line 6+00N is immediately beside an overburden valley, which could be an explanation of the in-phase/quadrature responses.

Conductor VIII appears as two short lengths of weak conductor responses striking generally northwest. This conductor is a generally poor conductor which parallels IP anomaly C, suggesting the interpretation that there could be graphitic argillites with sulphides. Orientation and depth are impossible to interpret, but this conductor is relatively shallow.

Conductor IX is a weak, deep and apparently poor conductor, although its mere presence is significant. This conductor has virtually no strike length, as it appears only on the extreme southwest end of line 10+00N, directly above the upward extrapolation of IP anomaly I. The EM sections indicate a *thinning out of* the conductive overburden as well, which would explain the response of the IP survey. This minor correlation must not be overlooked, for it is a suggestion again that a conductive body exists at the northwest corner of the grid.

Conductor X is a weak, possible conductor which occurs at the northeast ends of lines 2+00S and 3+00S, correlating with IP anomaly D. This is a similar situation to conductor VI, suggesting a sub-parallel sulphide structure.

Conductors XI and XII are one-point conductors on line 4+00S, directly correlating with IP anomalies E and F. These adjacent conductors are the strongest on the whole property, which is explained by nearby drill results. Drill hole 87-23 intersected two parallel highly conductive zones. The graphitic zone encountered is probably too narrow to produce as strong a response as that possible from the highly fractured, water-filled argillite. The horizontal loop EM responses show a stronger shoulder to the north of this EM conductive zone, indicating that both conductors are sub-parallel, dipping northeasterly. If conductor XI were dipping southwesterly, it would be expected that the southern shoulder would also be high. The presence of conductor VI could be contributing, in this case, to lowering that shoulder.

Conducter XIII is a medium-to-poor conductor occurring from line 5+00S at about 2+65E to line 7+00S. The horizontal loop EM survey did not bracket this conductor effectively but was able to estimate its location as correlating with anomaly G on line 5+00S. This correlation suggests that anomaly G is a potentially good drill target. The interpretation on Map #5 suggests also that this conductor is an extension of conductor III.

Conductor XIV is a medium-to-good conductor appearing on lines 2+00N and 3+00N crossing the baseline and correlating with a deep resistivity low. The horizontal loop EM profiles show that this is a good conductor at depth as well, but a medium-to-poor conductor near the surface. The northern shoulder of this conductor does not exist, due to the proximity of conductor XV, making quantitative interpretation impossible. The good correlation suggests a good drill target.

Conductor XV is a very good conductor on most lines, but because of the short horizontal loop EM profiles, its exact location was not able to be determined. Generally, it parallels IP anomaly A from 2+00N to 5+00N, to its northeast.

c) VLF-EM

The VLF-EM survey was conducted between line 2+00N and half of lines 6+00S and 7+00S. This survey revealed two main anomalies striking generally northwest across these lines.

The southern anomaly is a lineal anomaly reaching a high of 34° and is broken as it strikes between lines 2+00N and 5+00S. It occurs between HLEM conductors V and VII, is sub-parallel to the baseline on its southern side and strikes in generally the same trend as HLEM conductor VII. This behavior is similar to the expression of the main alteration zone, suggesting that it is picking up either the boundary of the causative source of the IP anomaly A/B pair, or the boundary of a single wide alteration zone.

The northern anomaly occurs from lines 0+00 to 4+00S, at about 2+25W to 2+75W between HLEM conductors VI and X and on the southern edge of the conductive zone containing conductors XI and XII. This anomaly sub-parallels, and is south of, the cliff face, splitting into two anomalies from 2+00S to 3+00S. There is also some correlation with HLEM conductor V, and partial correlation with other conductors to the northwest. Conductor V with the correlating VLF-EM anomaly are sub-parallel but offset, indicating that the VLF-EM is responding to the edge of a wide conductive zone.

VLF-EM often parallels HLEM conductors on this property since VLF only maps the edges of a wide conductive zone, while HLEM is able to locate a stronger conductor within a conductive zone. Furthermore, VLF-EM operates at a much higher frequency and is thus much more responsive to overburden irregularities.

d) Magnetic Survey

Generally, the magnetic field is very quiet on the Snowbird grid, for the most part varying between 850 to 950 gammas, which is indicative of sediments or non-magnetic volcanics.

The magnetic field shows a general NW - SE trend, part of which could be due to the bias of the grid. This trend appears to follow the general strike of the Cache Creek volcanics and sediments. A system of magnetic lows on this property often correlates with HLEM conductors. This occurs since the HLEM responses are reflecting alteration zones and/or structure both of which are usually non-magnetic. This system of magnetic lows apparently reflects the main mineral zone, although because of its low contrast within the magnetic background, is not strongly useful for interpretation.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

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GEOPHYSICIST'S CERTIFICATE

I, M.A. PATRICK CRUICKSHANK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a consulting geophysicist of Geotronics Surveys Ltd., with offices located at 530-800 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1986) and hold a B.A.Sc. degree in Geophysics Engineering.
2. I have been practising my profession for one year.
3. I am registered with the British Columbia Association of Professional Engineers as an Engineer-in-Training, in geophysics.
4. This report is compiled from data obtained from induced polarization, resistivity, horizontal loop EM, VLF-EM, and magnetic surveys carried out by a crew of Geotronics Surveys Ltd., under my field supervision and under the supervision of David G. Mark, geophysicist, from February 10 to March 26, 1987.
5. I do not hold any interest in X-Cal Resources Ltd., nor in any of the properties discussed in this report, nor will I receive any interest as a result of writing this report.

Patrick Cruickshank
Geophysicist

May 7, 1987

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a consulting geophysicist of Geotronics Surveys Ltd., with offices located at 530-800 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.

2. I have been practising my profession for the past 19 years and have been active in the mining industry for the past 22 years.

3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association for Exploration Geophysicists.

4. This report is compiled from data obtained from induced polarization, resistivity, horizontal loop EM, VLF-EM, and magnetic surveys carried out by a crew of Geotronics Surveys Ltd., under my supervision and under the field supervision of Patrick Cruickshank, geophysicist, from February 10 to March 26, 1987.

5. I do not hold any interest in X-Cal Resources Ltd., nor in any of the properties discussed in this report, nor will I receive any interest as a result of writing this report.

David G. Mark
Geophysicist

May 7, 1987
39/G397

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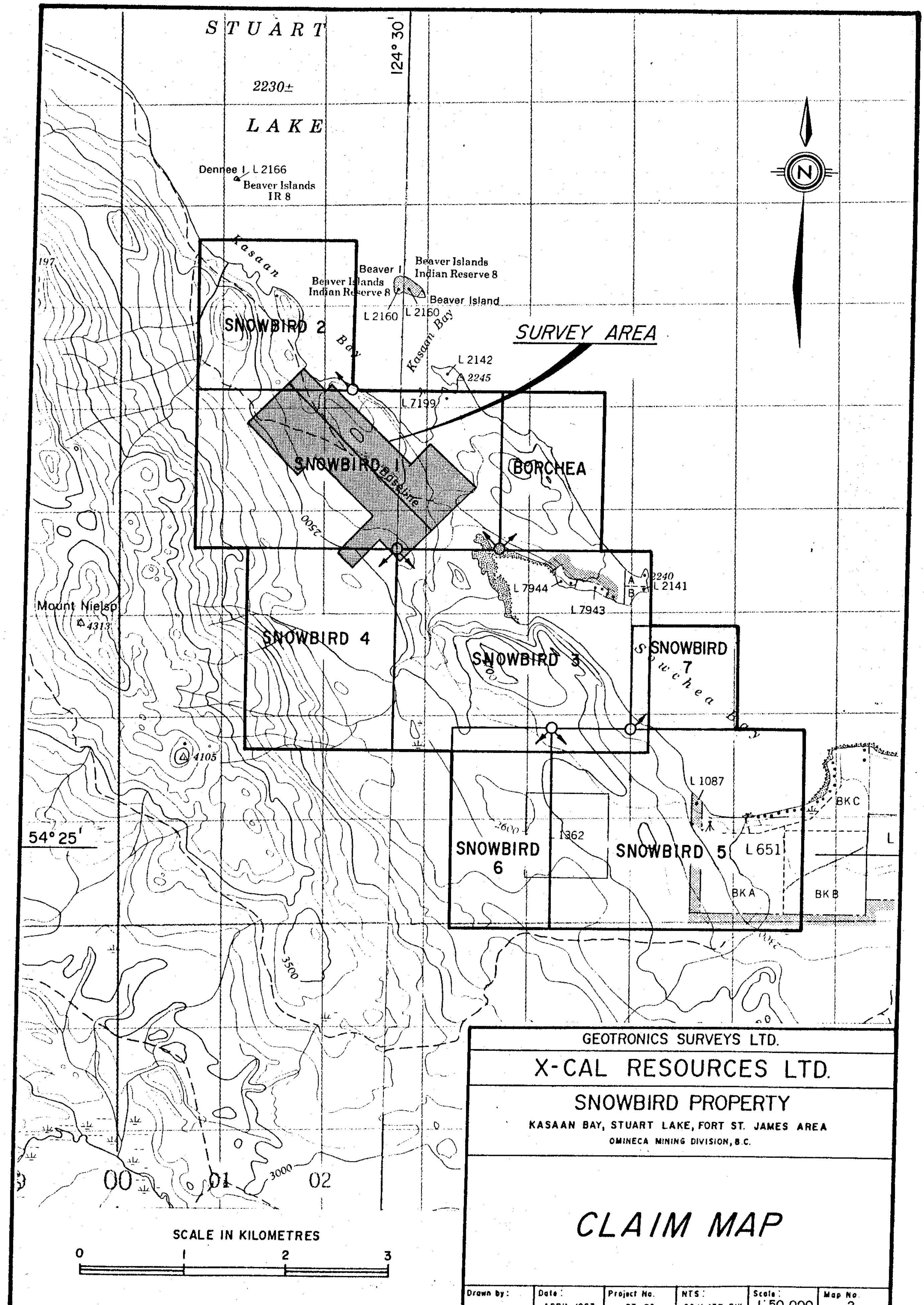
SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA MINING DIVISION, B.C.

LOCATION MAP

Drawn by:	Date:	Project No.	NTS:	Scale:	Map No.
	APRIL, 1987	87-03	93 K/7E, 8W	1:8,000,000	1


STUART LAKE
2230±
124° 30'
Dennee I. L 2166
Beaver Islands IR 8
Kasaan Bay
Beaver I
Beaver Islands Indian Reserve 8
Beaver Island
L 2160
SNOWBIRD 2
SURVEY AREA
L 2142
2245
L 7199
SNOWBIRD 1
BORCHEA
2500
L 7944
L 7943
2240
L 2141
Mount Nielsp
4313
SNOWBIRD 4
SNOWBIRD 3
SNOWBIRD 7
Sowchea Bay
4105
L 1087
BK C
54° 25'
1362
SNOWBIRD 6
SNOWBIRD 5
L 651
BK A
BK B
3500
3000
00
01
02
SCALE IN KILOMETRES
0 1 2 3
GEOTRONICS SURVEYS LTD.
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.
CLAIM MAP
Drawn by:
Date: APRIL, 1987
Project No. 87-03
NTS: 93 K/7E, 8W
Scale: 1:50,000
Map No. 2

ALL MAPS 50% REDUCED

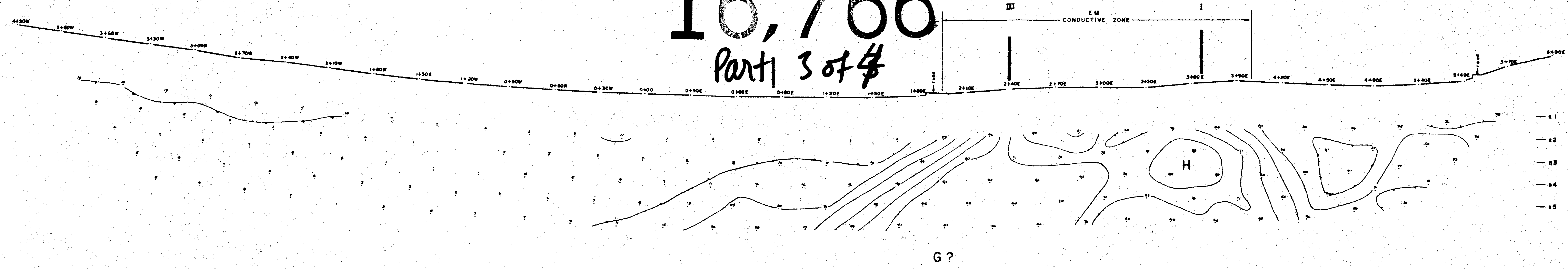
Grid Maps Reduced to 1:4,000

Pseudosections Reduced to 1:2,000

NORTHEAST →

APPARENT CHARGEABILITY

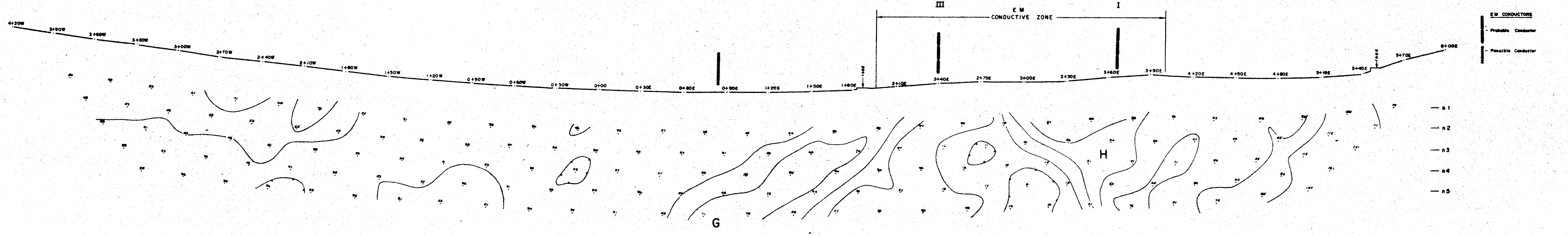
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS

⊂ - INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc.

⊂ - RESISTIVITY LOW

INSTRUMENTATION

RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE

PLOTTING METHOD

DIPOLE-DIPOLE ARRAY

Fieldwork from Feb. 10 - Mar. 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987.

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X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST JAMES AREA
OMINECA MINING DIVISION, B.C.

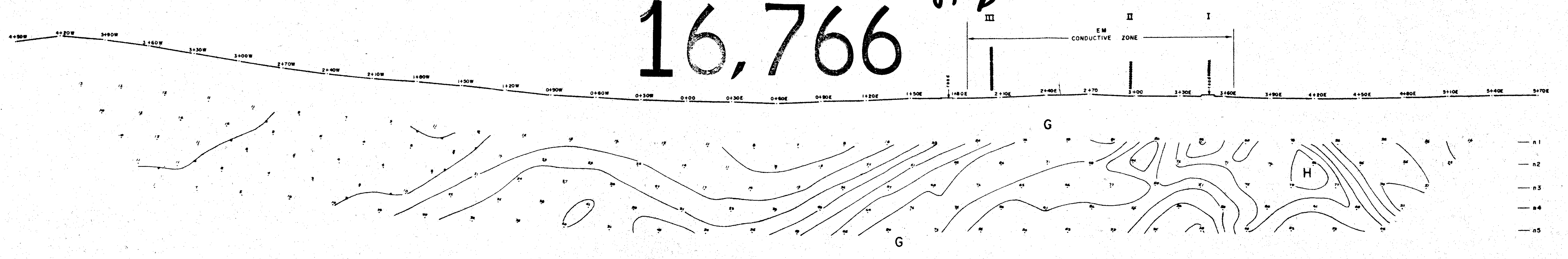
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 10+00S

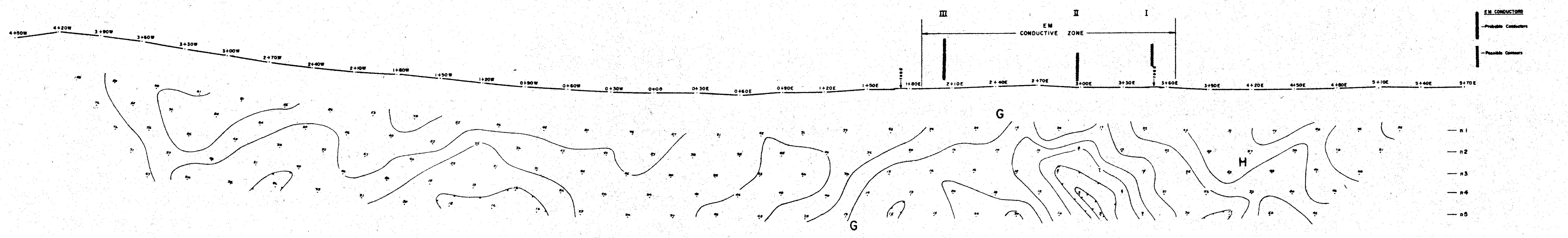
Drawn by	Date	Project No.	NTS	Scale	Map No.
P.C., B.W.S.	APRIL, 1987	87-05	93 K/7E, 8W	1:1000	8

GEOLOGICAL BRANCH ASSESSMENT REPORT

16,766

Part 3 of 4





50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc.

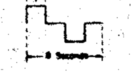
– RESISTIVITY LOW

INSTRUMENTATION

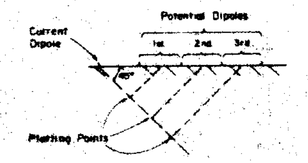
RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2

SURVEY PARAMETERS

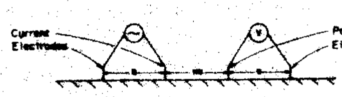
SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE



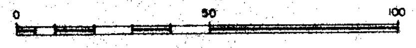
PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb. 10 – Mar. 28, 1987



To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

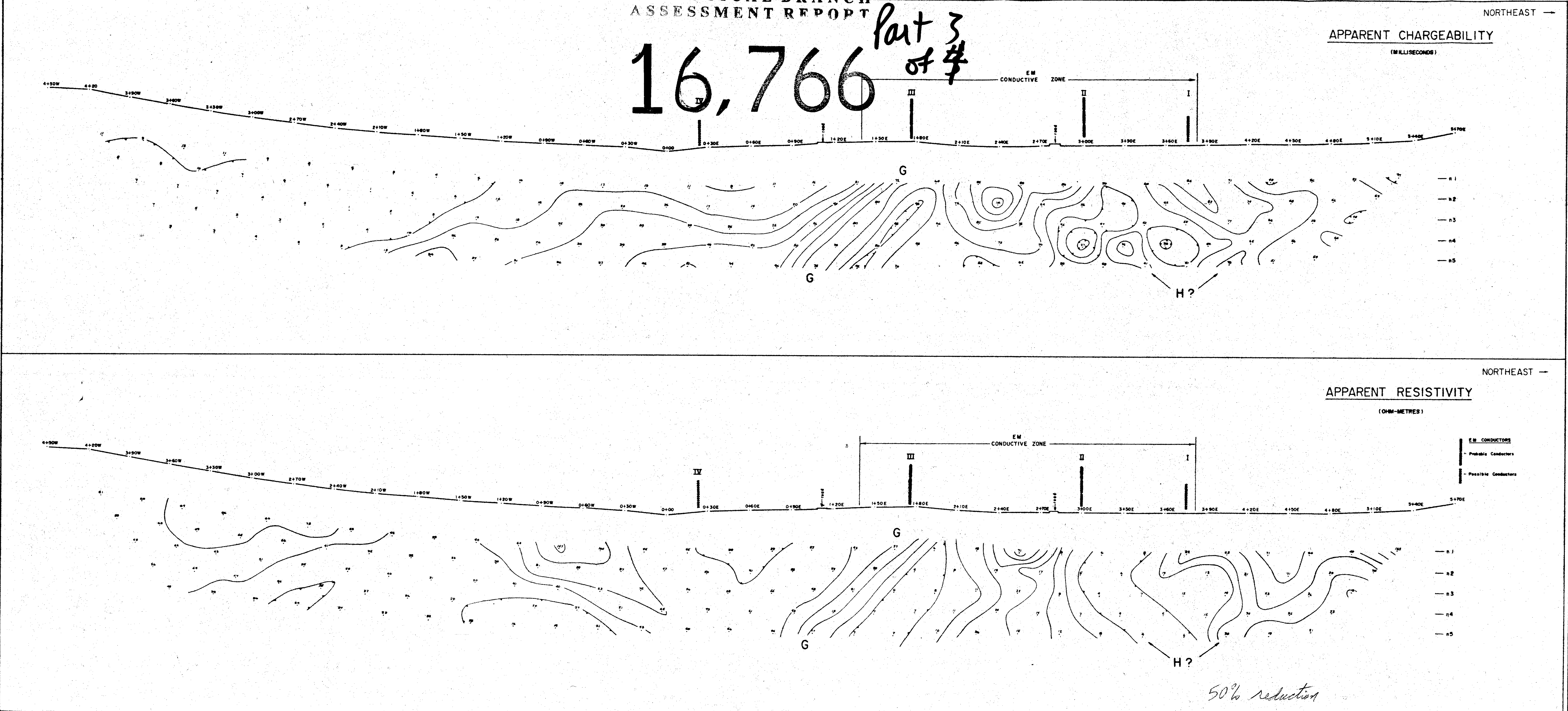
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 9+00S

Drawn by	Date	Project No.	NTS	Scale	Map No.
P.C., B.W.S.	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	9

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4



LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4, etc.
- RESISTIVITY LOW

INSTRUMENTATION

RECEIVER : HUNTEC MODEL MK. IV
TRANSMITTER : PHOENIX IPT-1
GENERATOR : PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE : TIME DOMAIN
ARRAY : DIPOLE - DIPOLE
DIPOLE LENGTH : 30 metres
DIPOLE SEPARATION : n = 1 to 5
DELAY TIME : 200 MILLISECONDS
INTEGRATION TIME : 1500 MILLISECONDS
CHARGE CYCLE : 8 SECOND SQUARE WAVE

2 Seconds
8 Seconds

PLOTTING METHOD

Potential Dipoles
Current Dipole
1st 2nd 3rd
Plotting Points

DIPOLE-DIPOLE ARRAY

Current Electrodes
Potential Electrodes

Fieldwork from Feb. 10 - Mar 26, 1987

METRES
0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 8+00S

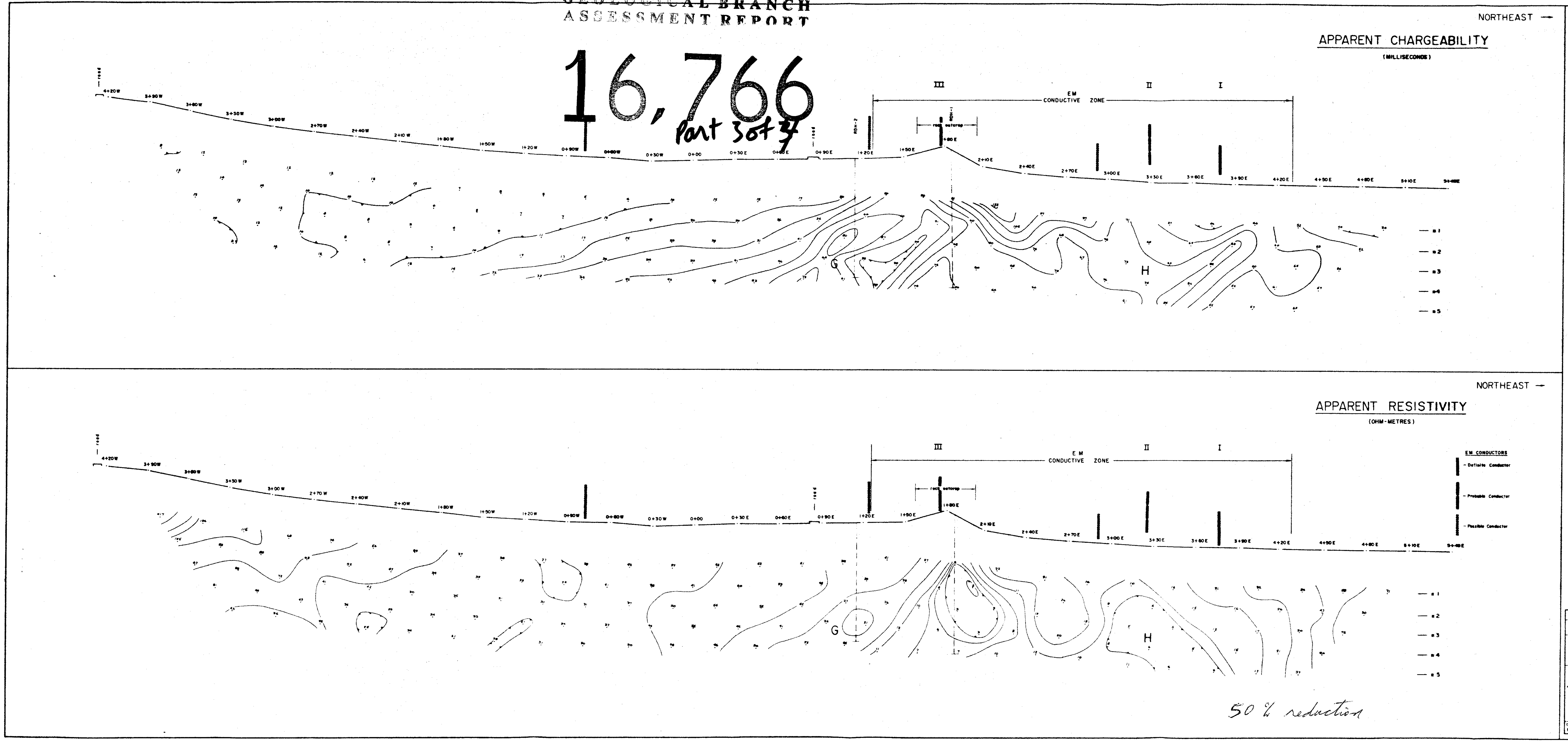
Drawn by	Date	Project No	NTS	Scale	Map No.
P.C., B.W.S.	APRIL, 1987	87-05	93 K/7E, 8W	1:1000	10

50% reduction

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4



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LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc.

– RESISTIVITY LOW

INSTRUMENTATION

RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE

PLOTTING METHOD

DIPOLE-DIPOLE ARRAY

Fieldwork from Feb 10 - Mar 26, 1987

METRES
0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 7+00S

Drawn by	Date	Project No	NTS	Scale	Map No
PC, BWS	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	11

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc

– RESISTIVITY LOW

INSTRUMENTATION

RECEIVER HUNTEC MODEL MK IV

TRANSMITTER PHOENIX IPT-1

GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN

ARRAY DIPOLE - DIPOLE

DIPOLE LENGTH 30 metres

DIPOLE SEPARATION n = 1 to 5

DELAY TIME 200 MILLISECONDS

INTEGRATION TIME 1500 MILLISECONDS

CHARGE CYCLE 8 SECOND SQUARE WAVE

PLOTTING METHOD

DIPOLE DIPOLE ARRAY

METRES

0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY

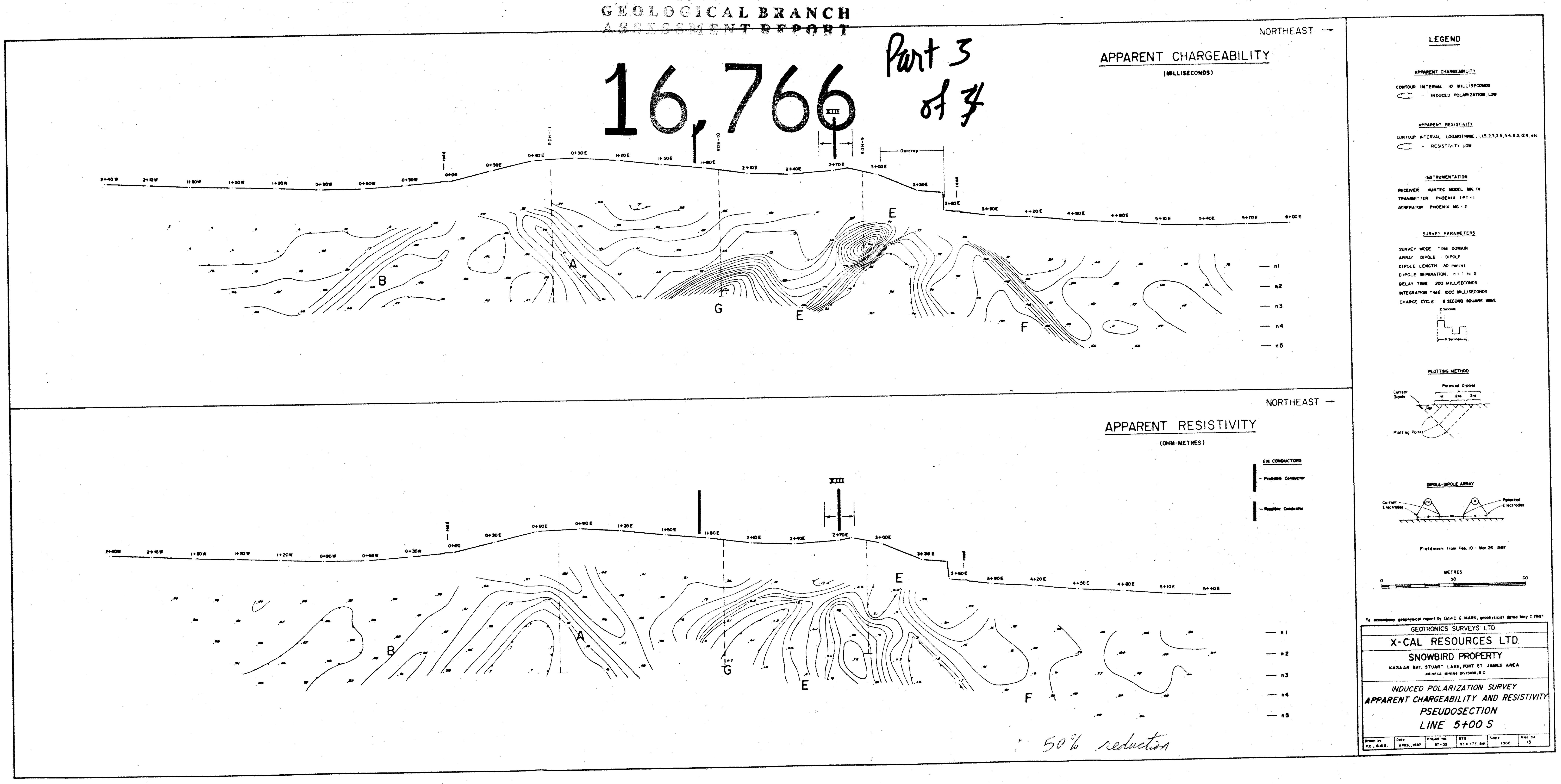
APPARENT CHARGEABILITY AND RESISTIVITY

PSEUDOSECTION

LINE 6+00 S

Drawn by	Date	Project No	NTS	Scale	Map No
P.C., B.W.S.	APRIL, 1987	87-05	93K/7E, 8W	1:1000	12

50% reduction

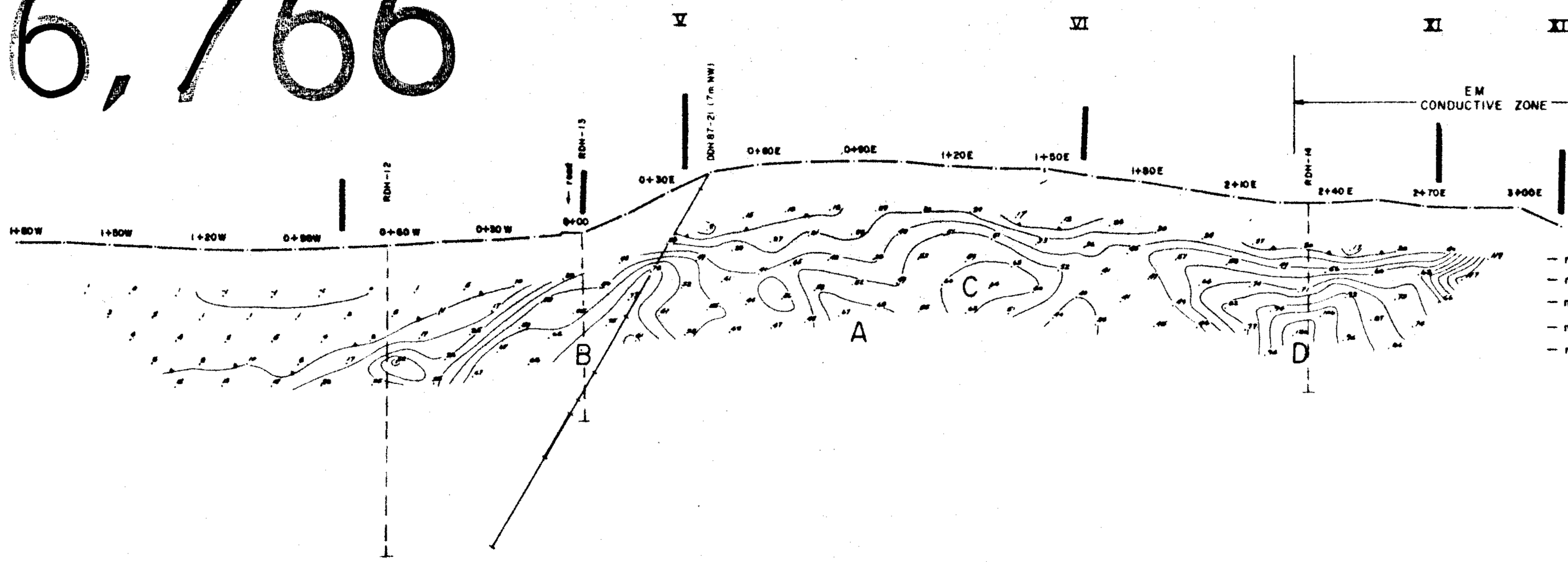

GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,766
Part 3 of 7
NORTHEAST →
APPARENT CHARGEABILITY
(MILLISECONDS)
NORTHEAST →
APPARENT RESISTIVITY
(OHM-METRES)
EM CONDUCTORS
Probable Conductor
Possible Conductor
LEGEND
APPARENT CHARGEABILITY
CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW
APPARENT RESISTIVITY
CONTOUR INTERVAL LOGARITHMIC, 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc
- RESISTIVITY LOW
INSTRUMENTATION
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2
SURVEY PARAMETERS
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE
2 Seconds
8 Seconds
PLOTTING METHOD
Potential Dipoles
Current Dipole
Plotting Points
DIPOLE-DIPOLE ARRAY
Current Electrodes
Potential Electrodes
Fieldwork from Feb. 10 - Mar. 26, 1987
METRES
0 50 100
To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987
GEOTRONICS SURVEYS LTD.
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 5+00 S
Drawn by P.C., B.W.S.
Date APRIL, 1987
Project No. 87-05
NTS 93 K/7E, 8W
Scale 1:1000
Map No. 13
50% reduction

Part 3 of 4

NORTHEAST →

APPARENT CHARGEABILITY

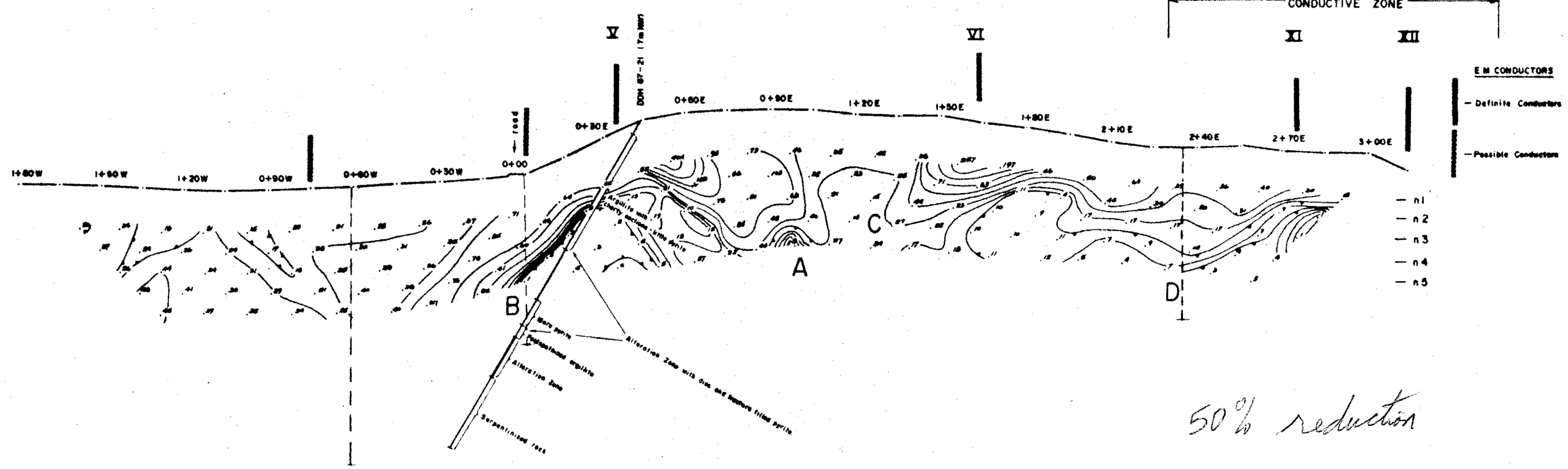
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4, etc.

– RESISTIVITY LOW

INSTRUMENTATION

RECEIVER HUNTEC MODEL MK IV

TRANSMITTER PHOENIX IPT-1

GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN

ARRAY DIPOLE - DIPOLE

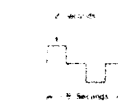
DIPOLE LENGTH 15 metres

DIPOLE SEPARATION n = 1 to 5

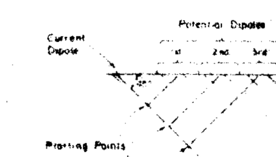
DELAY TIME 200 MILLISECONDS

INTEGRATION TIME 1500 MILLISECONDS

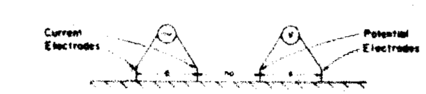
CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb 10 - Mar 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY

APPARENT CHARGEABILITY AND RESISTIVITY

PSEUDOSECTION

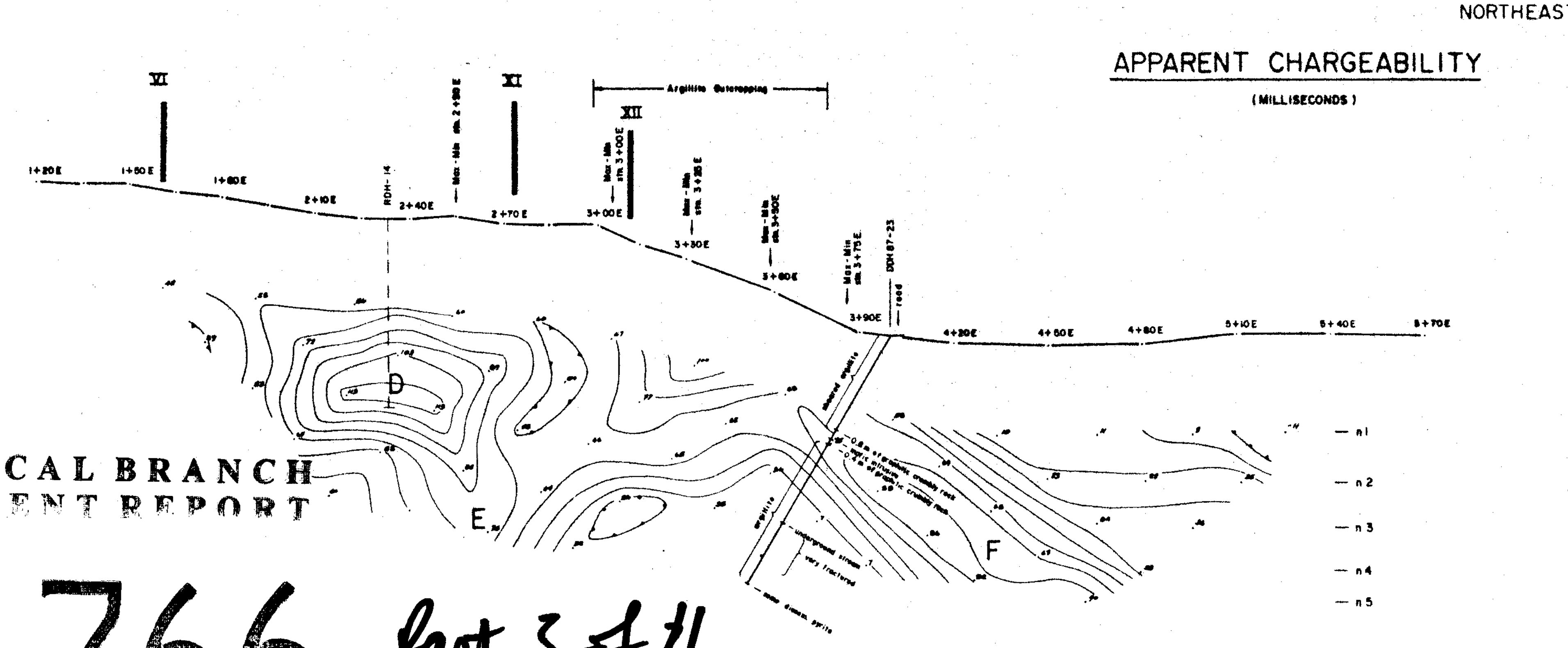
LINE 4+00S

Drawn by	Date	Project No	NTS	Scale	Map No
RC, BWS	APRIL 1987	87-03	93K/7E,8W	1:1000	14a

NORTHEAST →

APPARENT CHARGEABILITY

(MILLISECONDS)



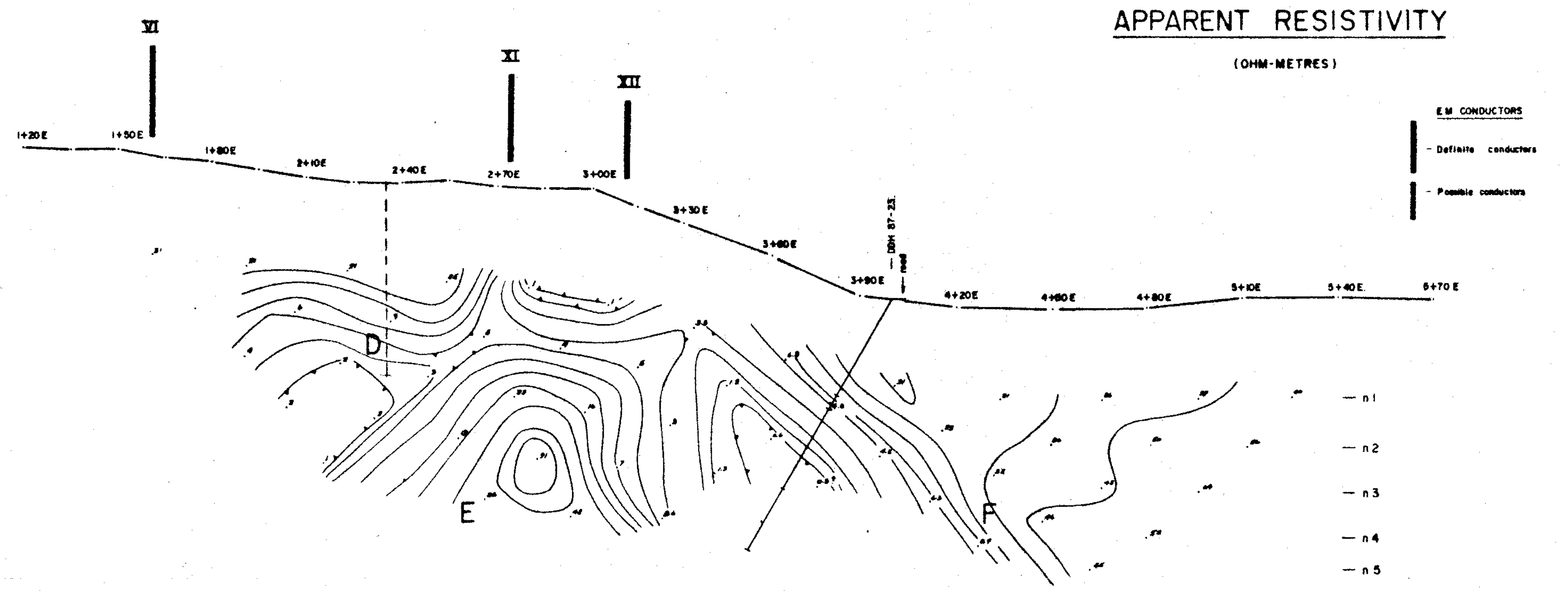
GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766 Part 3 of 4

NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc

- RESISTIVITY LOW

INSTRUMENTATION

RECEIVER HUNTEC MODEL MK IV

TRANSMITTER PHOENIX IPT-1

GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN

ARRAY DIPOLE - DIPOLE

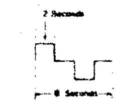
DIPOLE LENGTH 30 metres

DIPOLE SEPARATION n = 1 to 5

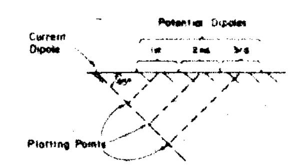
DELAY TIME 200 MILLISECONDS

INTEGRATION TIME 500 MILLISECONDS

CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY

Fieldwork from Feb. 10 - Mar. 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

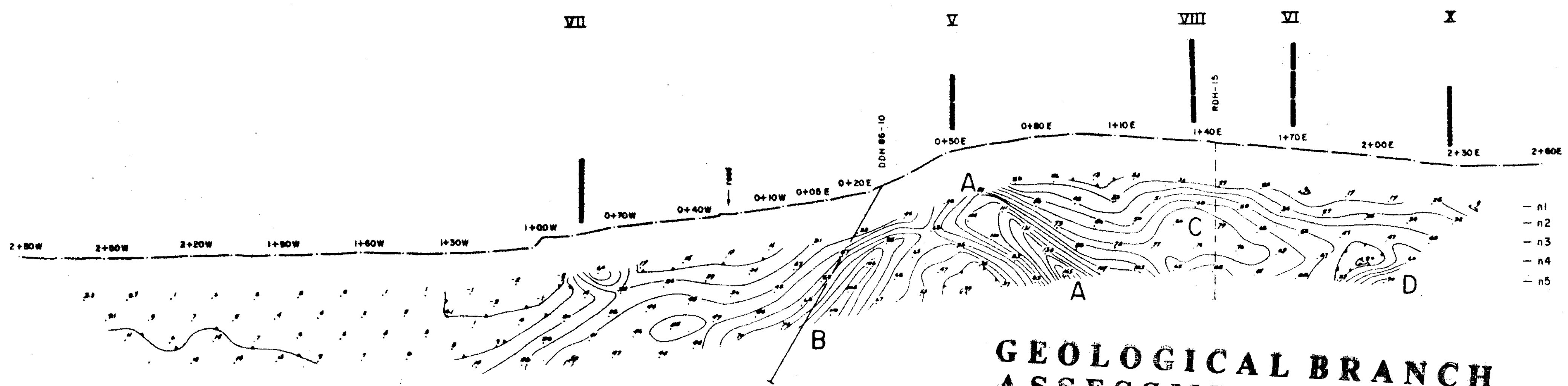
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 4+00 S

Drawn by	Date	Project No.	NTS	Scale	Map No.
PC, BWS	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	14 b

NORTHEAST →

APPARENT CHARGEABILITY

(MILLISECONDS)



GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4

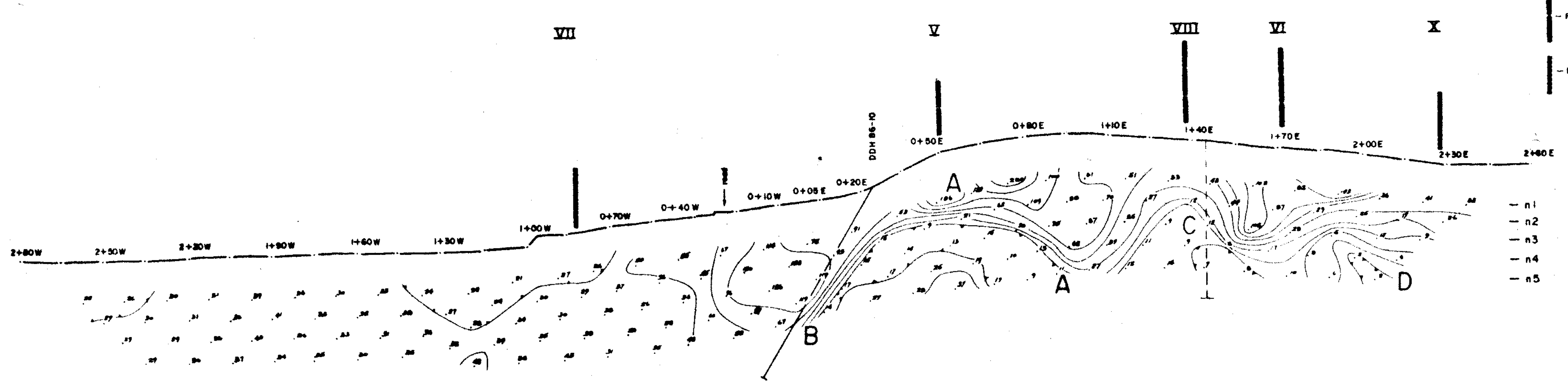
NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)

EM CONDUCTORS

- Probable Conductors
- Possible Conductors



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc.

RESISTIVITY LOW

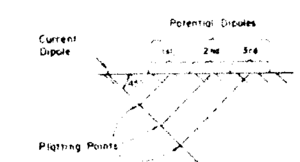
INSTRUMENTATION

RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

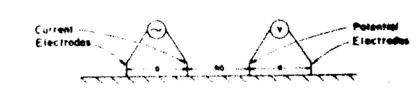
SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 15 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE

PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb 10 - Mar 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

GEOTRONICS SURVEYS LTD

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST JAMES AREA

OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 3+00S

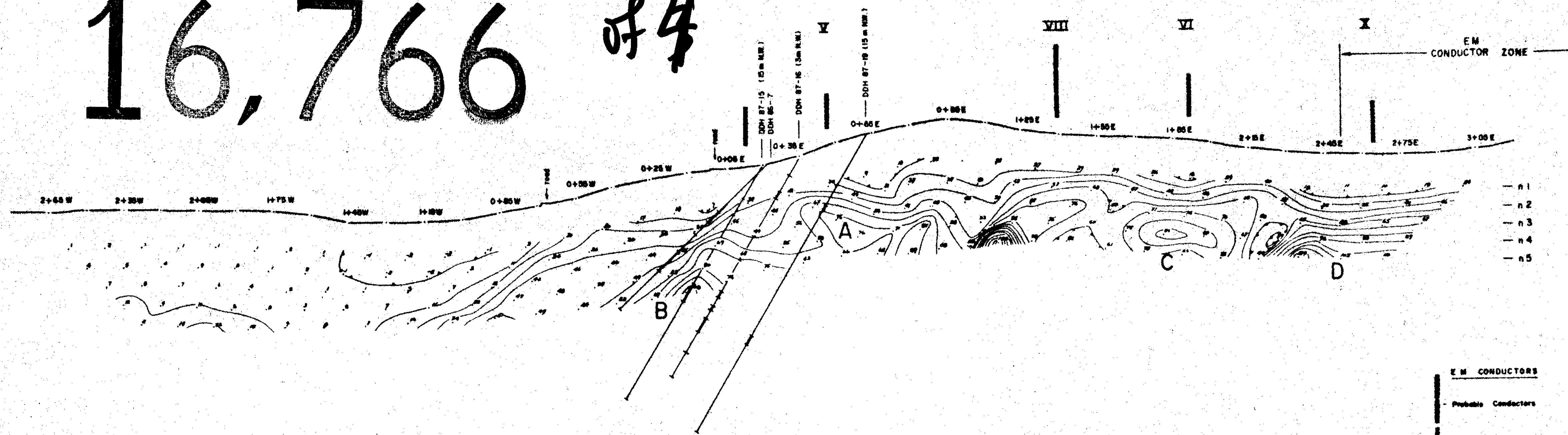
Drawn by	Date	Project No	NTS	Scale	Map No
P.C., B.W.S.	APRIL, 1987	87-05	93 K/11, 14	1:1000	15

Part 3 of 4

NORTHEAST →

APPARENT CHARGEABILITY

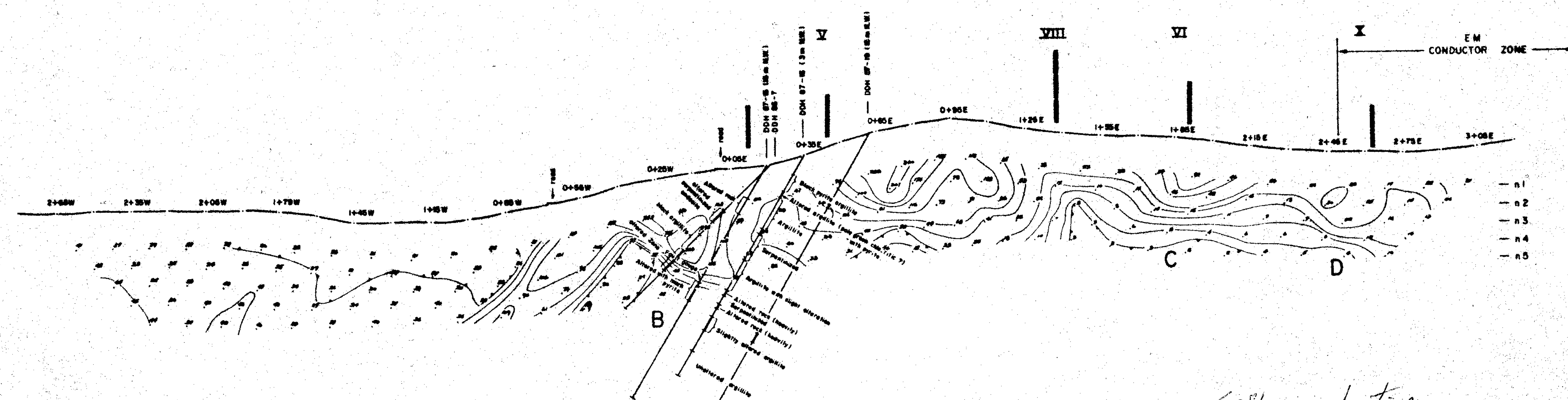
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc.

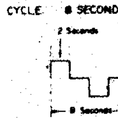
– RESISTIVITY LOW

INSTRUMENTATION

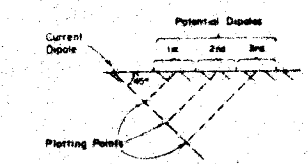
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

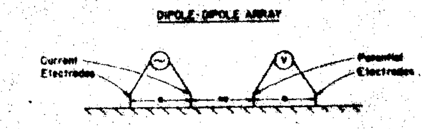
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE – DIPOLE
DIPOLE LENGTH 15 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb 10 – Mar 28, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987.

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 2+00 S

Drawn by	Date	Project No	NTS	Scale	Map No
PC, B.W.S	APRIL, 1987	87-05	93 K/7E, 8W	1:1000	16

MAP # 16

GEOLOGICAL BRANCH
ASSESSMENT REPORT

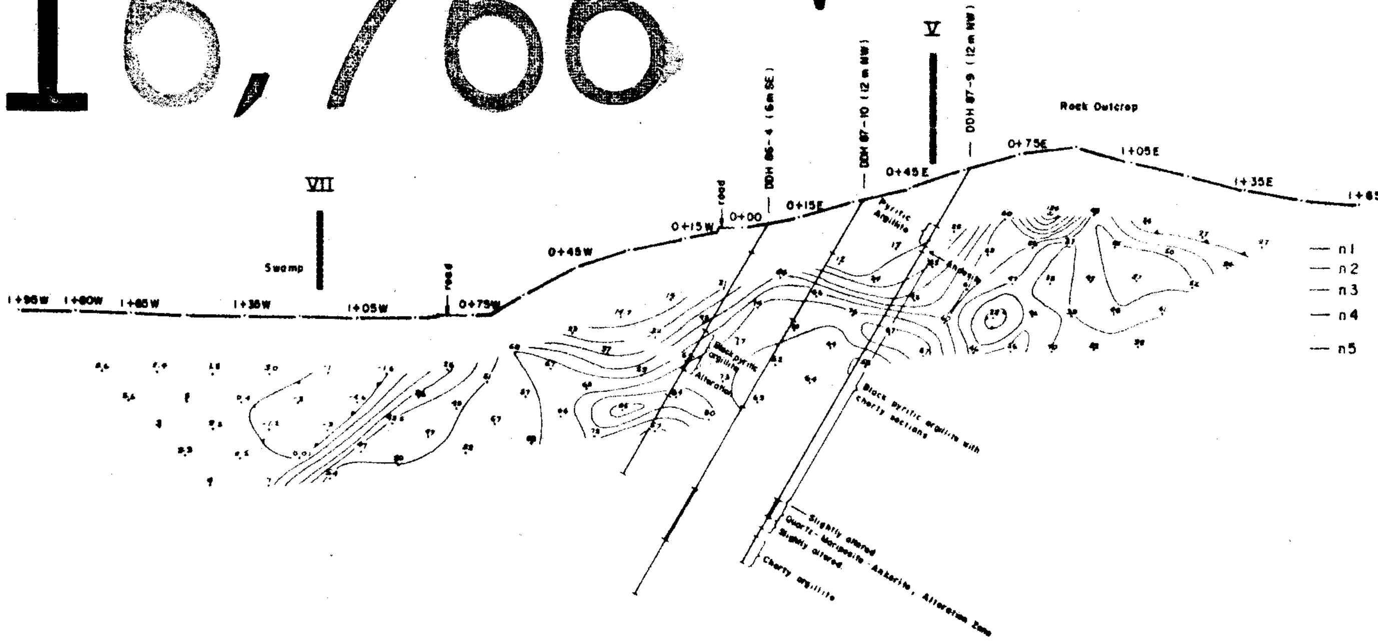
16,766

Part 3 of 4

NORTHEAST →

APPARENT CHARGEABILITY

(MILLISECONDS)



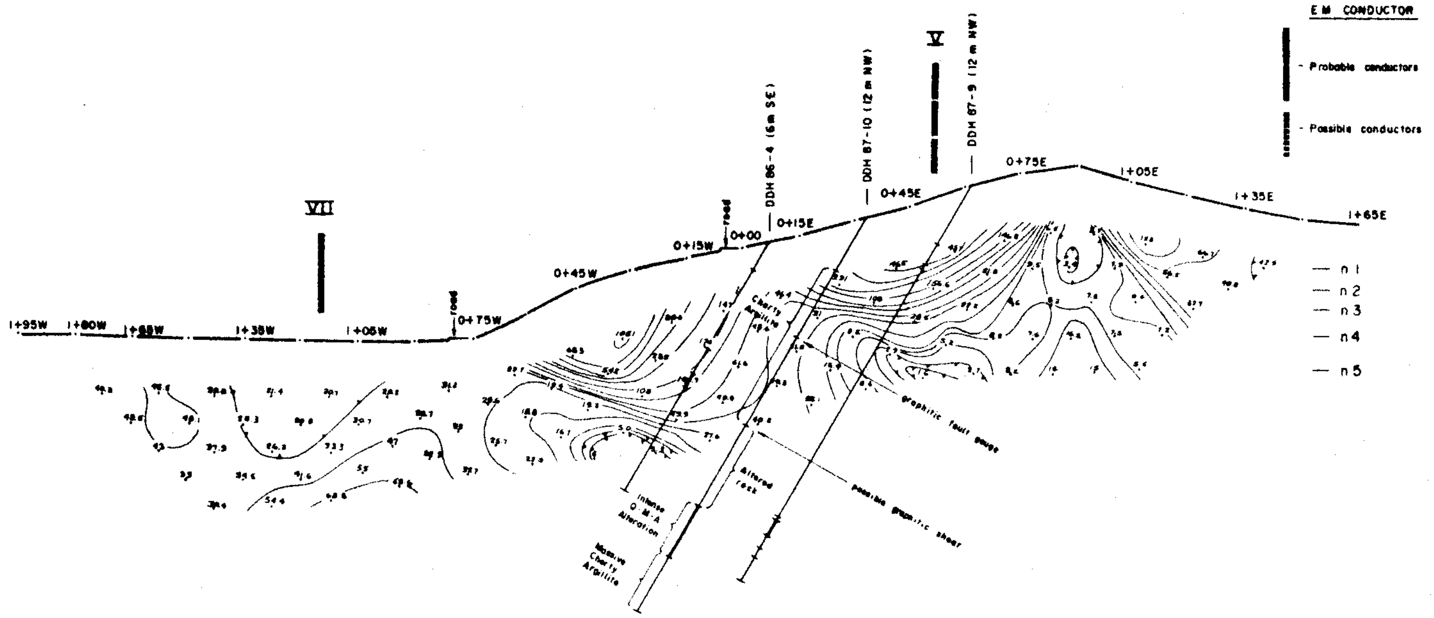
NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)

E M CONDUCTOR

- Probable conductors
- Possible conductors



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL : 10 MILLISECONDS

- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1, 1.5, 2.5, 3.5, 5.4, 8.2, 12.4, etc

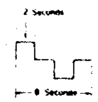
- RESISTIVITY LOW

INSTRUMENTATION

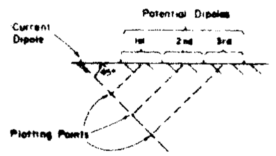
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 15 metres
DIPOLE SEPARATION n : 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY

Fieldwork from Feb 10 - Mar 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST JAMES AREA
OMINECA MINING DIVISION, B C

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 1+00S

Drawn by	Date	Project No	NTS	Scale	Map No
P.C., B.W.S	APRIL, 1987	87-03	93 K / 7E, 8W	1 : 1000	17

GEOLOGICAL BRANCH
ASSESSMENT REPORT

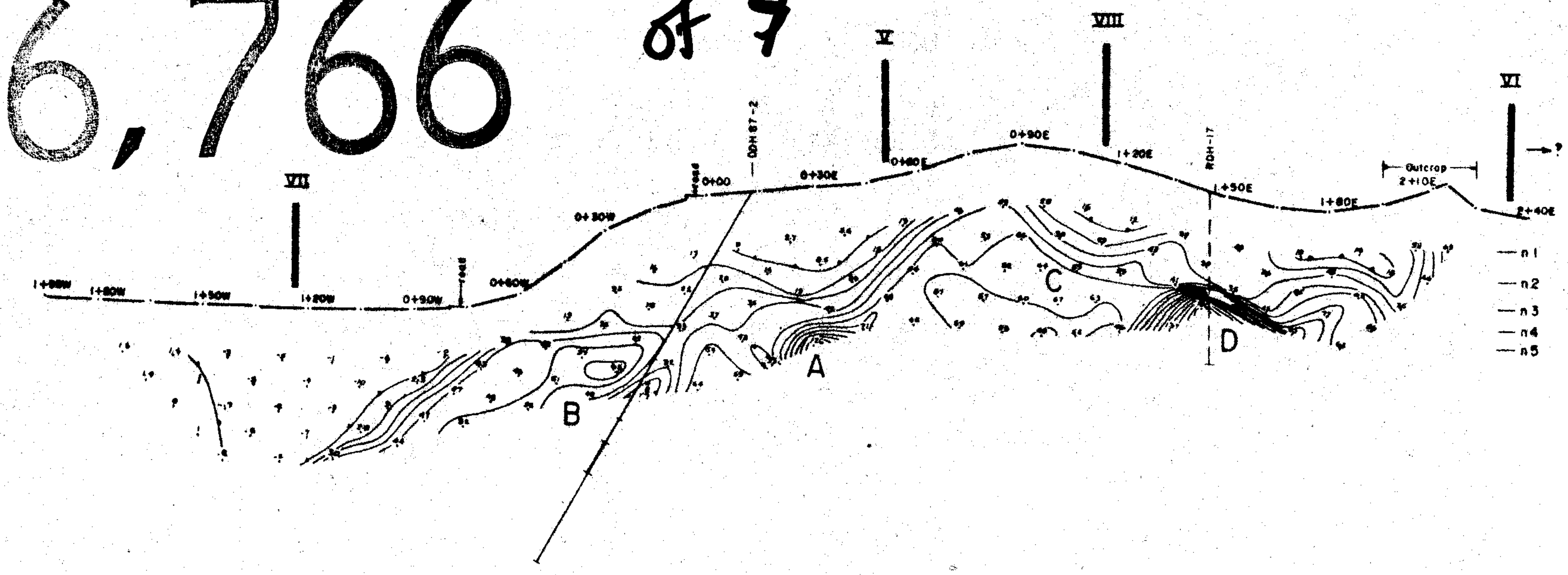
16,766

Part 3 of 4

NORTHEAST →

APPARENT CHARGEABILITY

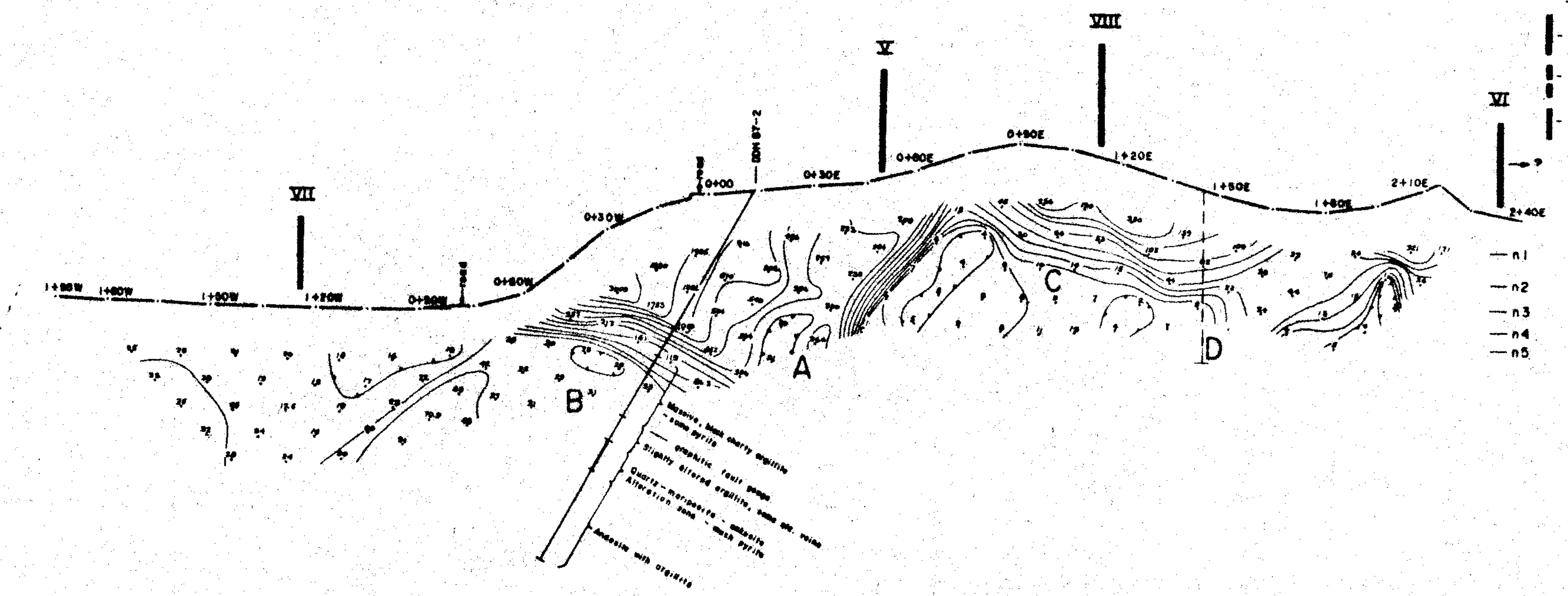
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



EM CONDUCTORS

- Definite Conductors
- Probable Conductors
- Possible Conductors

50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS

- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL . LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc

- RESISTIVITY LOW

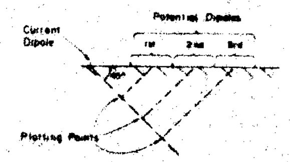
INSTRUMENTATION

RECEIVER : HUNTEC MODEL MK IV
TRANSMITTER : PHOENIX IPT-1
GENERATOR : PHOENIX MG-2

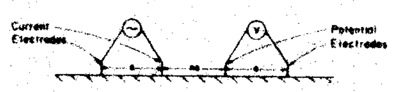
SURVEY PARAMETERS

SURVEY MODE : TIME DOMAIN
ARRAY : DIPOLE - DIPOLE
DIPOLE LENGTH : 15 metres
DIPOLE SEPARATION : n = 1 to 5
DELAY TIME : 200 MILLISECONDS
INTEGRATION TIME : 1500 MILLISECONDS
CHARGE CYCLE : 8 SECOND SQUARE WAVE

PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb 10 - Mar 26, 1987

METRES
0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

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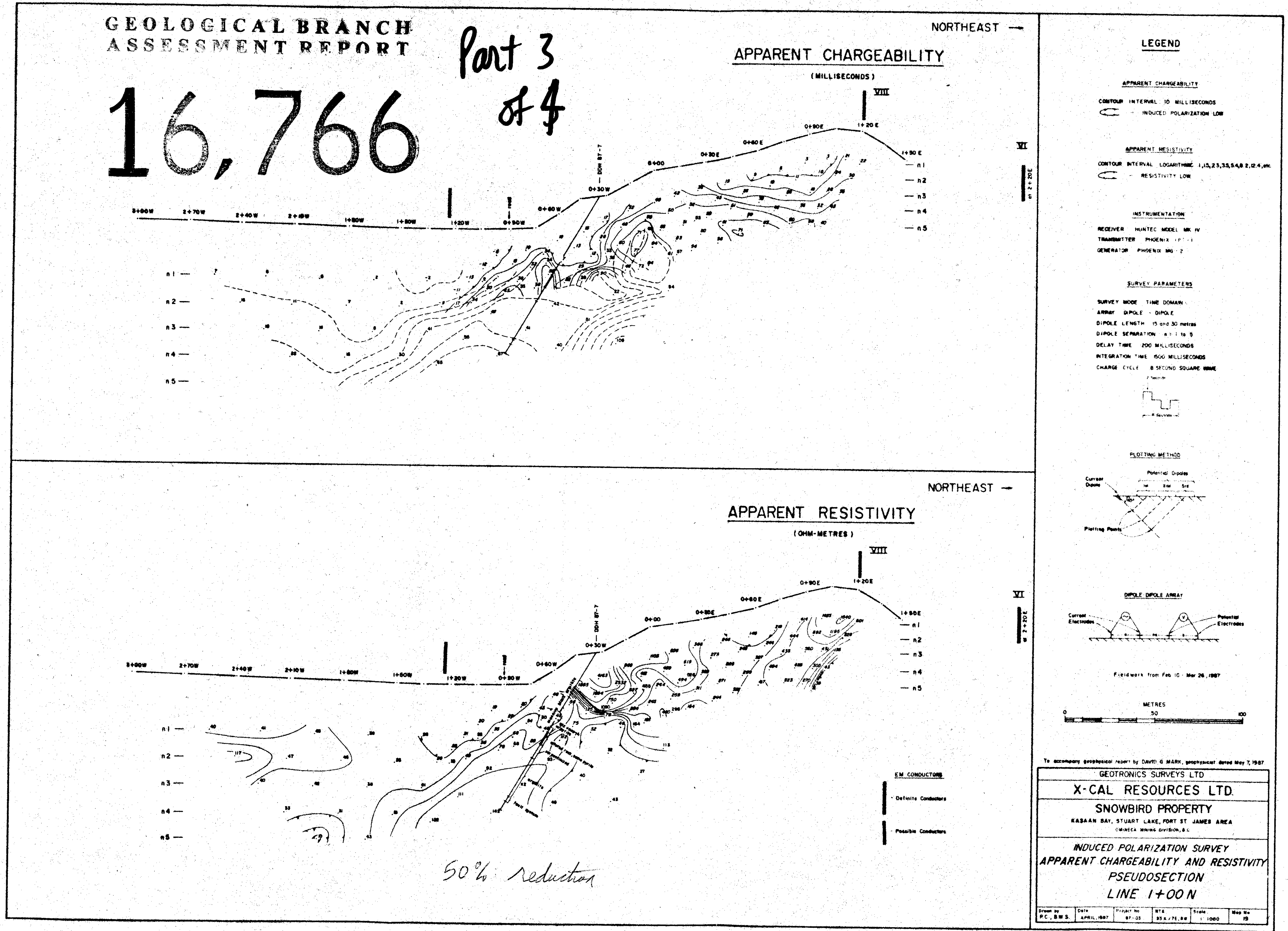
SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 0+00S

Drawn by	Date	Project No	NTS	Scale	Map No
P.C., B.W.S.	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	18



GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,766
Part 3 of 4
NORTHEAST →
APPARENT CHARGEABILITY
(MILLISECONDS)
NORTHEAST →
APPARENT RESISTIVITY
(OHM-METRES)
DDH 87-7
EM CONDUCTORS
- Definite Conductors
- Possible Conductors
50% reduction
LEGEND
APPARENT CHARGEABILITY
CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW
APPARENT RESISTIVITY
CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc.
- RESISTIVITY LOW
INSTRUMENTATION
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2
SURVEY PARAMETERS
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 15 and 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE
PLOTTING METHOD
Potential Dipoles
Current Dipole
Plotting Points
DIPOLE-DIPOLE ARRAY
Current Electrodes
Potential Electrodes
Fieldwork from Feb 10 - Mar 26, 1987
METRES
0 50 100
To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987
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SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 1+00 N
Drawn by P.C., B.W.S.
Date APRIL, 1987
Project No 87-03
NTS 93 K/7E, 8W
Scale 1:1000
Map No 19

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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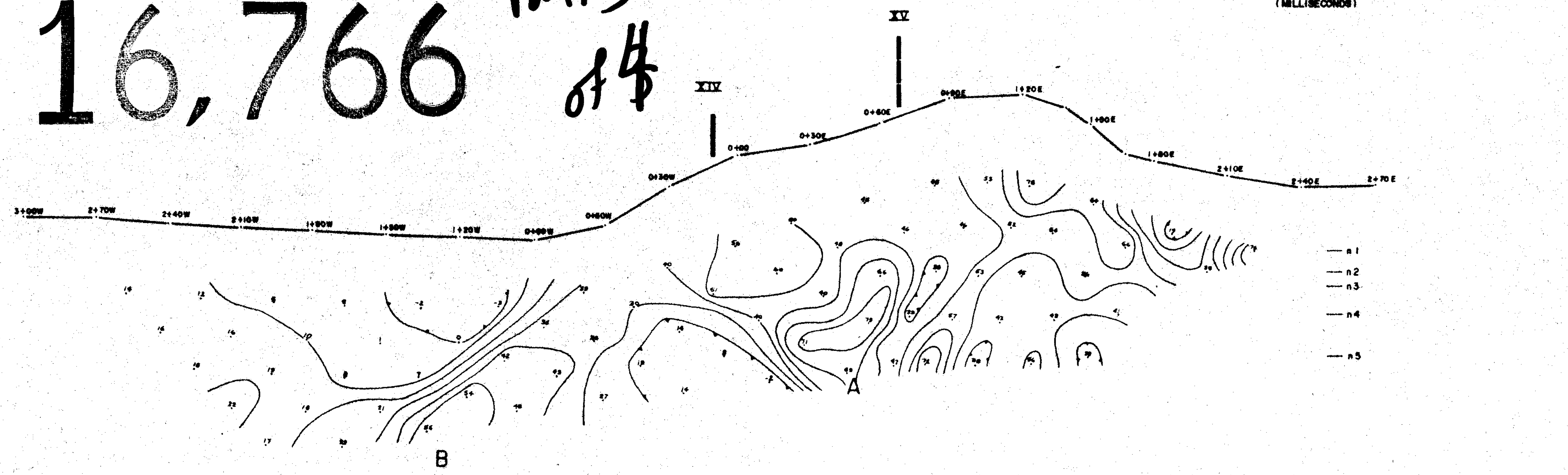
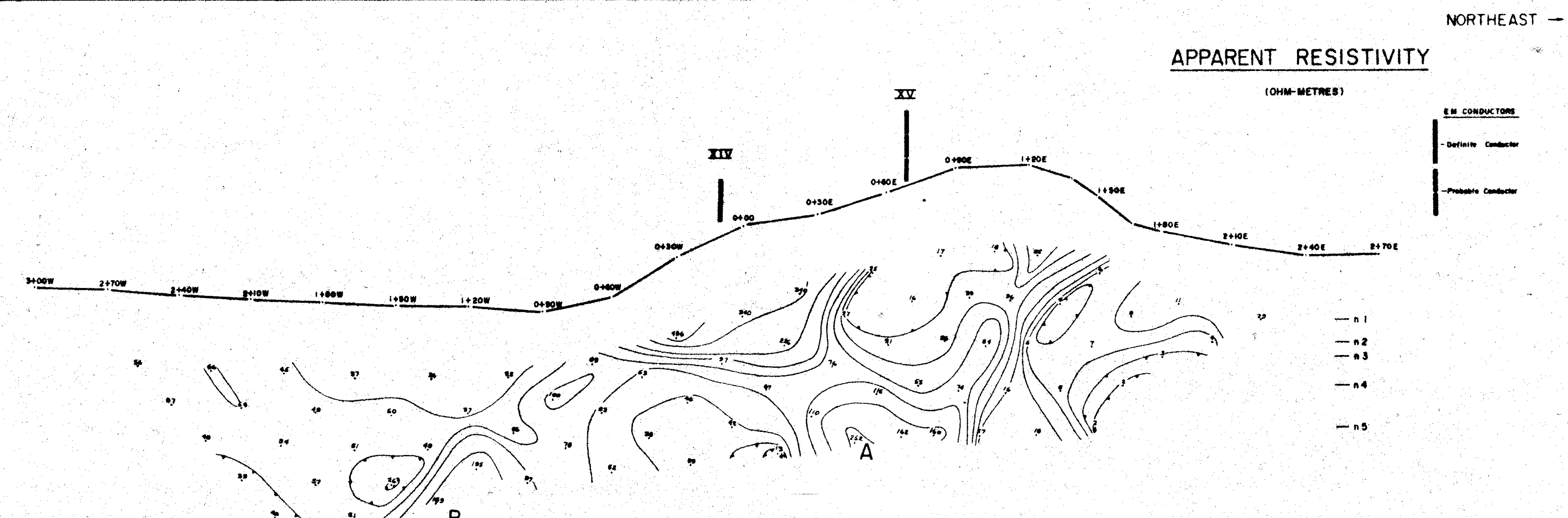
Part 3 of 4





50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

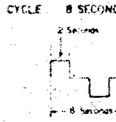
CONTOUR INTERVAL LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc.
- RESISTIVITY LOW

INSTRUMENTATION

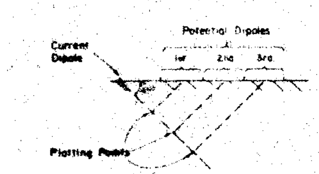
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

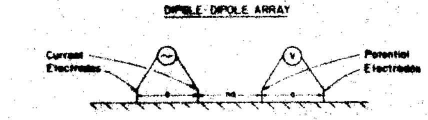
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION A = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb. 10 - Mar 26, 1987

METRES
0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987.

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

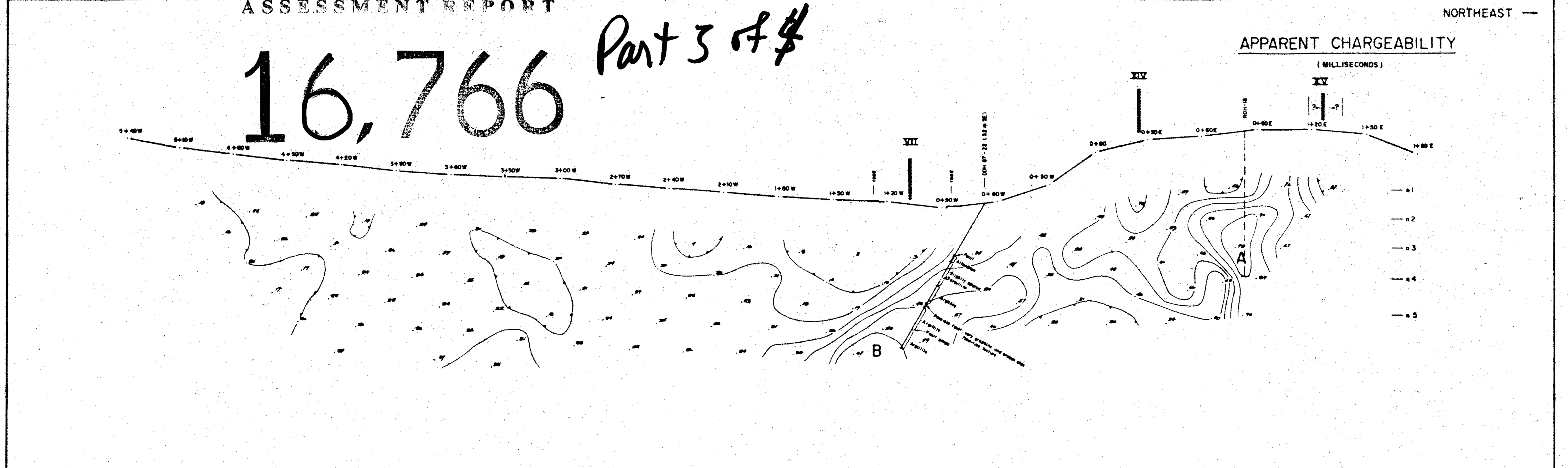
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 2+00N

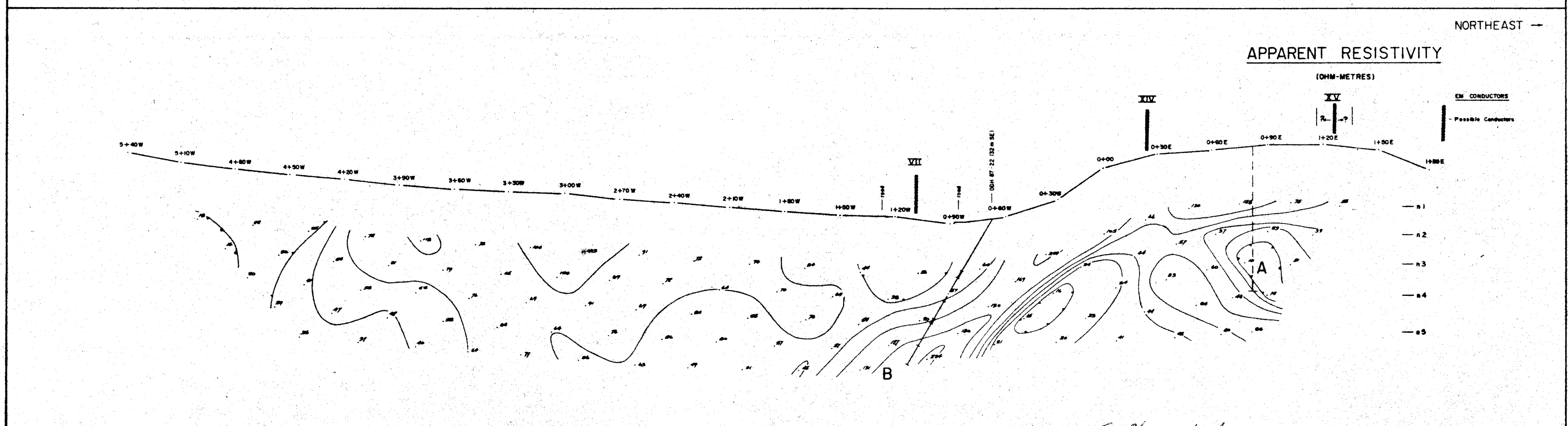
Drawn by	Date	Project No.	NTS	Scale	Map No.
F.C., B.W.S.	APRIL, 1987	87-05	93 K/7E, 8W	1:1000	20

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4





50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS
- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC 1, 1.5, 2.3, 3.5, 5.4, 8.2, 12.4, etc.
- RESISTIVITY LOW

INSTRUMENTATION

RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE

PLOTTING METHOD

DIPOLE-DIPOLE ARRAY

Fieldwork from Feb. 10 - Mar. 26, 1987

METRES 0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 3+00N

Drawn by	Date	Project No.	NTS	Scale	Map No.
P.C., B.W.S.	APRIL, 1987	87-05	93 K/7E, 8W	1:1000	21

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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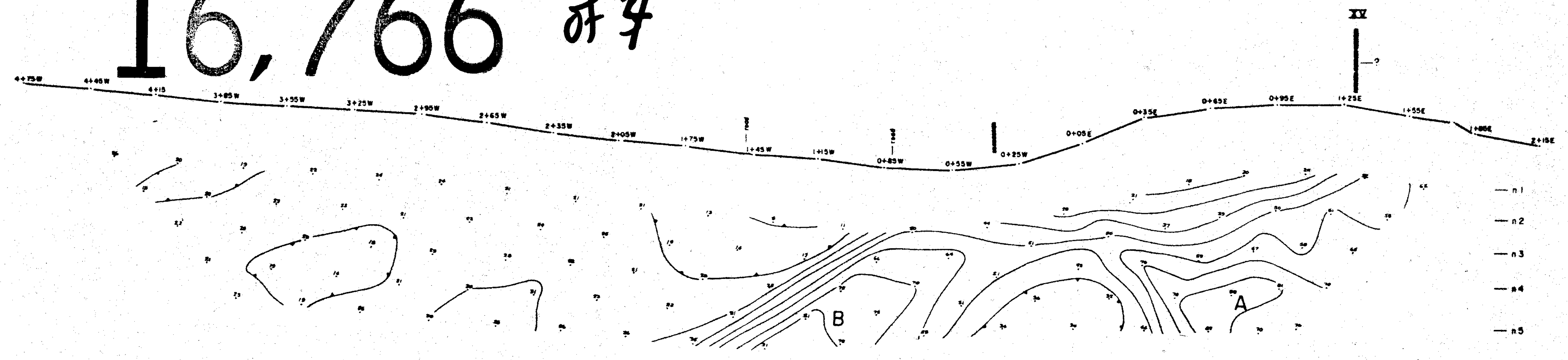
Part 3 of 4

NORTHEAST →

APPARENT CHARGEABILITY

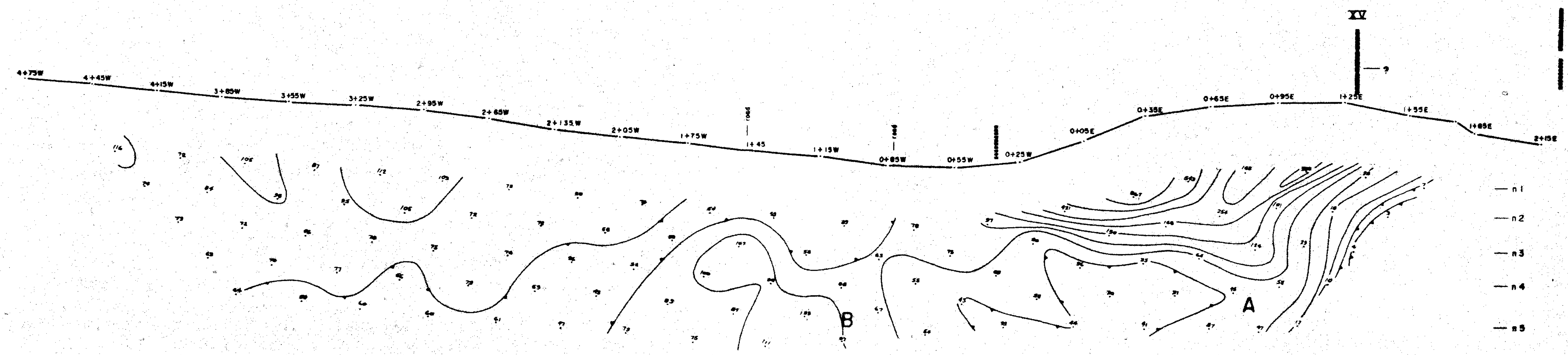
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



EM CONDUCTORS

- Probable Conductors
- Possible Conductors

50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL 10 MILLISECONDS

– INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1, 1.8, 2.3, 3.5, 5.4, 8.2, 12.4, etc.

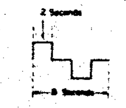
– RESISTIVITY LOW

INSTRUMENTATION

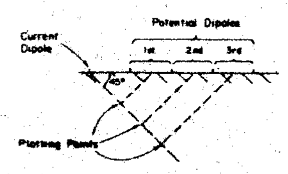
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2

SURVEY PARAMETERS

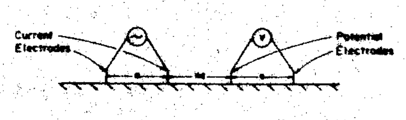
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb 10 - Mar 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987

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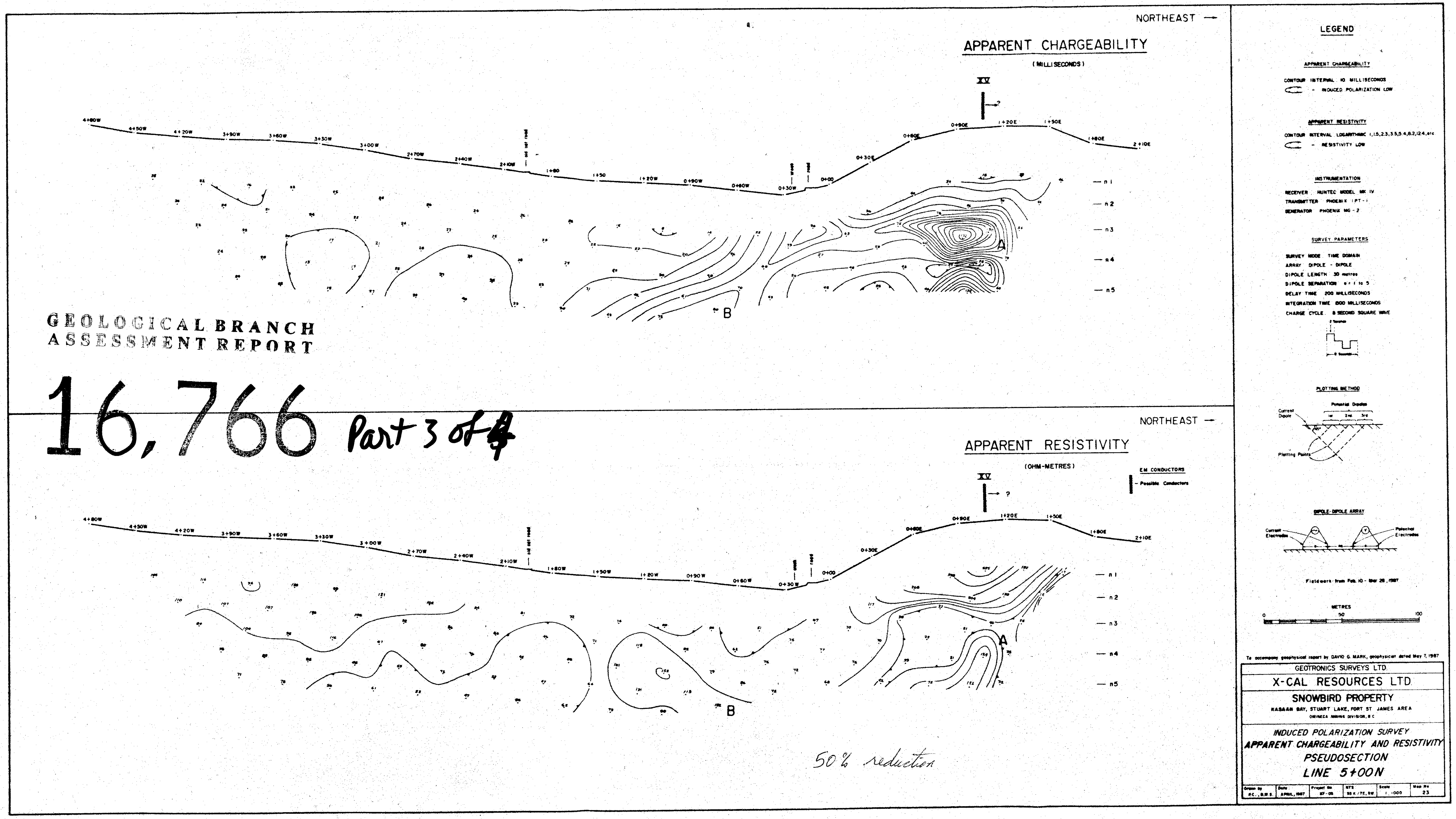
SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 4+00N

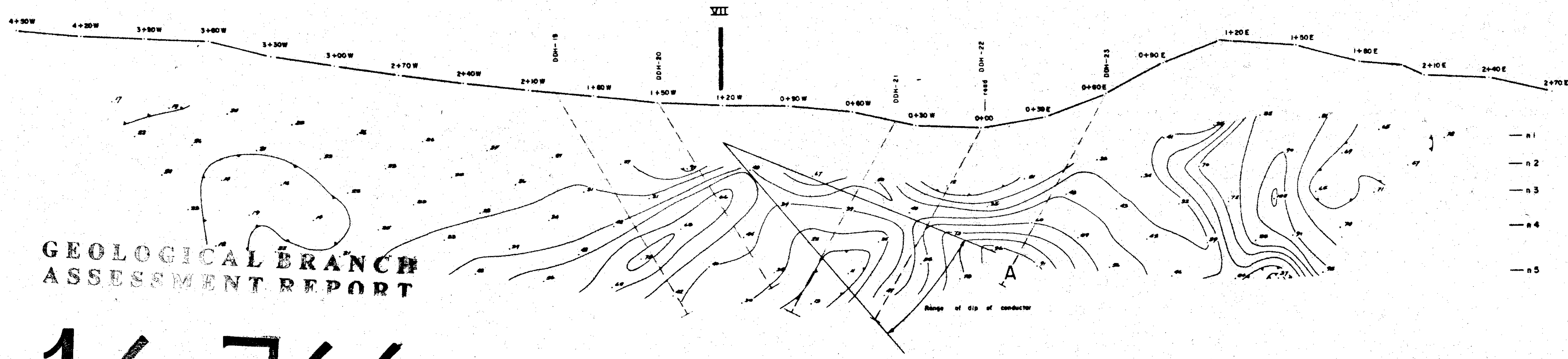
Drawn by	Date	Project No	NTS	Scale	Map No
B.C., B.W.S.	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	22


NORTHEAST
APPARENT CHARGEABILITY
(MILLISECONDS)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,766 Part 3 of 4
NORTHEAST
APPARENT RESISTIVITY
(OHM-METRES)
EM CONDUCTORS
Possible Conductors
50% reduction
LEGEND
APPARENT CHARGEABILITY
CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW
APPARENT RESISTIVITY
CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc
- RESISTIVITY LOW
INSTRUMENTATION
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2
SURVEY PARAMETERS
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE
PLOTTING METHOD
DIPOLE-DIPOLE ARRAY
METRES
To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987
GEOTRONICS SURVEYS LTD.
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 5+00N
Scale 1:1000
Map No 23

NORTHEAST →

APPARENT CHARGEABILITY

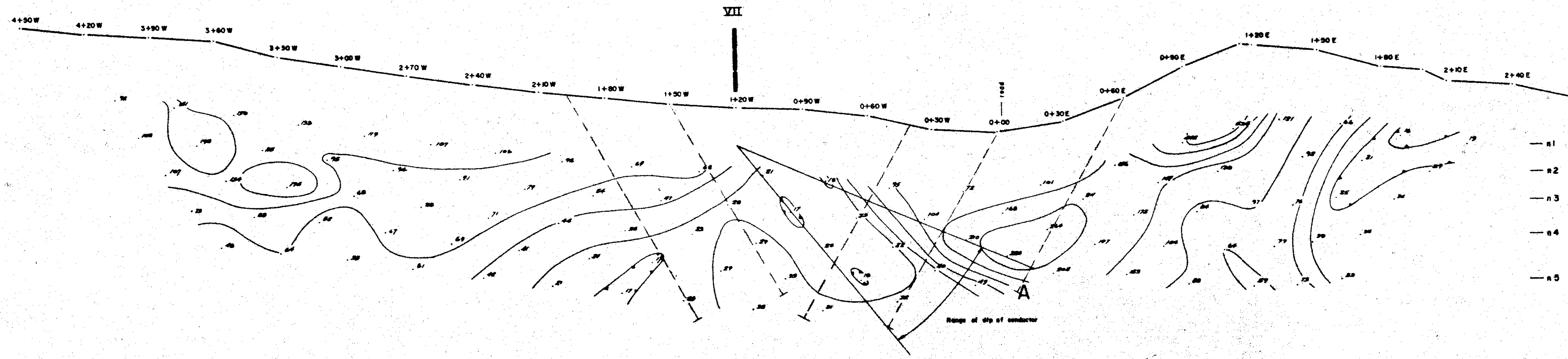
(MILLISECONDS)



NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)



EM CONDUCTORS

- Probable Conductors

50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS

- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4 etc.

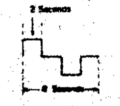
- RESISTIVITY LOW

INSTRUMENTATION

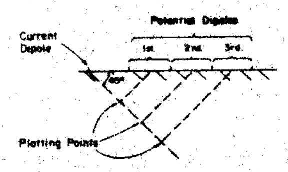
RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY

Fieldwork from Feb. 10 - Mar. 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

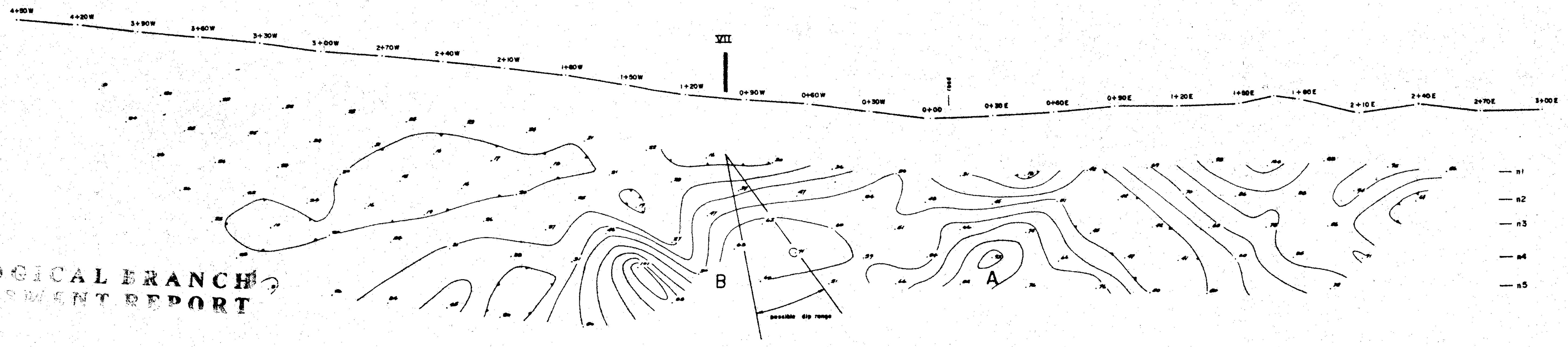
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 6+00N

Drawn by	Date	Project No.	NTS	Scale	Map No.
P.C., S.W.S.	APRIL, 1987	87-05	93K/7E, 8W	1:1000	24

NORTHEAST →

APPARENT CHARGEABILITY

(MILLISECONDS)



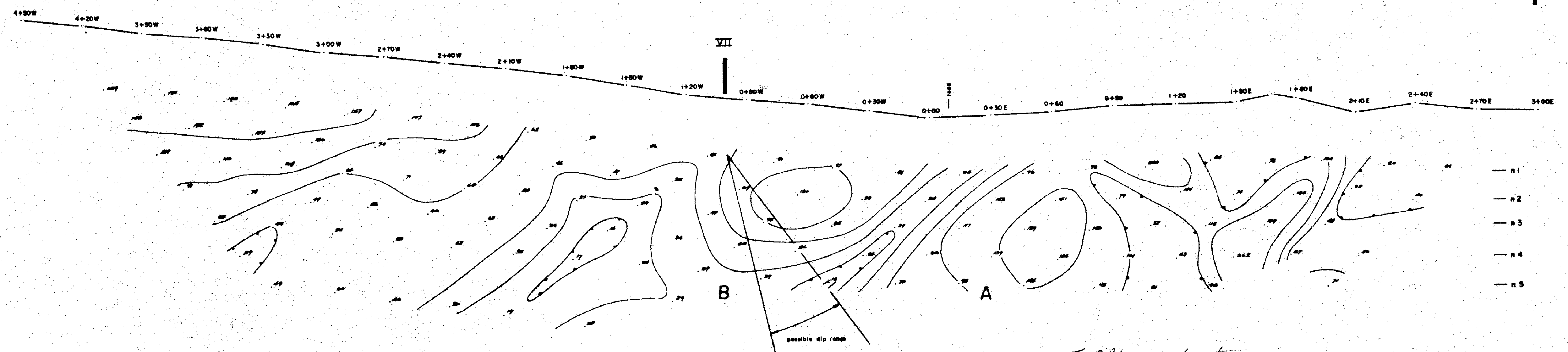
NORTHEAST →

APPARENT RESISTIVITY

(OHM-METRES)

EM CONDUCTORS

| - Definite Conductors



50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL : 10 MILLISECONDS

- INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL : LOGARITHMIC 1,1.5,2.5,3.5,5.4,8.2,12.4,etc.

- RESISTIVITY LOW

INSTRUMENTATION

RECEIVER : HUNTEC MODEL MK IV

TRANSMITTER : PHOENIX IPT-1

GENERATOR : PHOENIX MG-2

SURVEY PARAMETERS

SURVEY MODE : TIME DOMAIN

ARRAY : DIPOLE - DIPOLE

DIPOLE LENGTH : 30 metres

DIPOLE SEPARATION : n = 1 to 5

DELAY TIME : 200 MILLISECONDS

INTEGRATION TIME : 500 MILLISECONDS

CHARGE CYCLE : 8 SECOND SQUARE WAVE

PLOTTING METHOD

DIPOLE-DIPOLE ARRAY

Fieldwork from Feb. 10 - Mar. 26, 1987

METRES

0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY APPARENT CHARGEABILITY AND RESISTIVITY PSEUDOSECTION LINE 7+00 N

Drawn by	Date	Project No	NTS	Scale	Map No
P.C., B.M.S.	APRIL, 1987	87-03	93 K/7E, 8W	1:1000	25

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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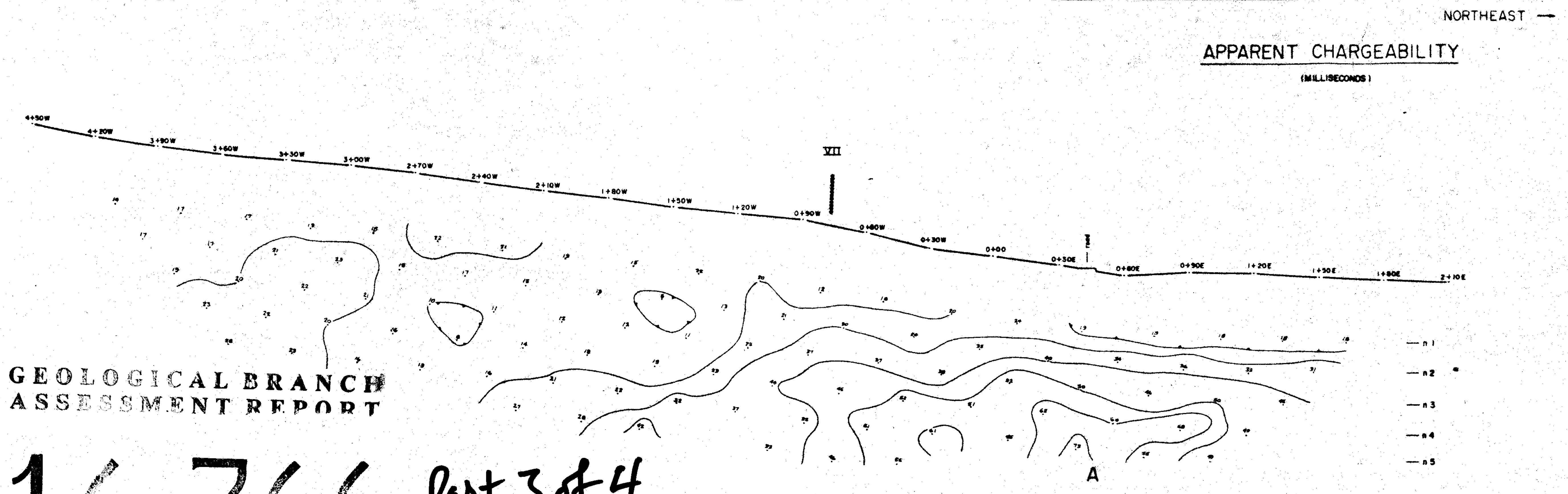
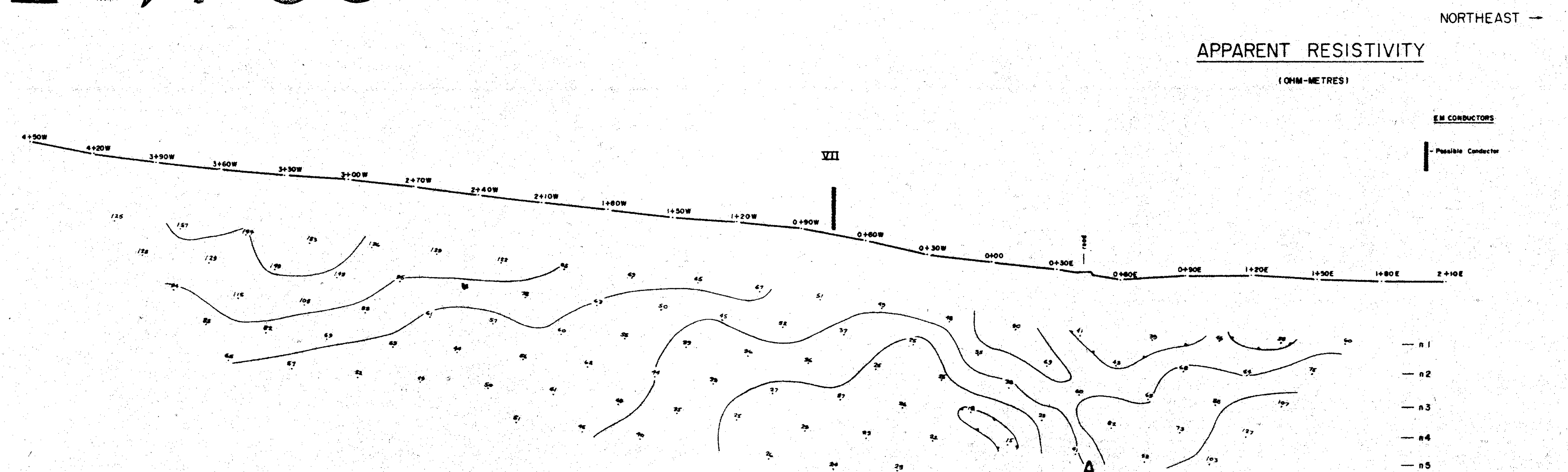




50% reduction

LEGEND

APPARENT CHARGEABILITY

CONTOUR INTERVAL: 10 MILLISECONDS

(contour symbol) - INDUCED POLARIZATION LOW

APPARENT RESISTIVITY

CONTOUR INTERVAL: LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc.

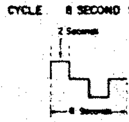
(contour symbol) - RESISTIVITY LOW

INSTRUMENTATION

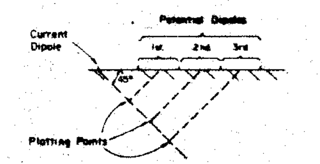
RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2

SURVEY PARAMETERS

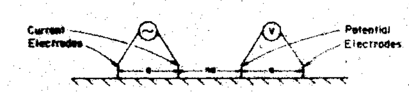
SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE



PLOTTING METHOD



DIPOLE-DIPOLE ARRAY



Fieldwork from Feb. 10 - Mar. 26, 1987

METRES
0 50 100

To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987

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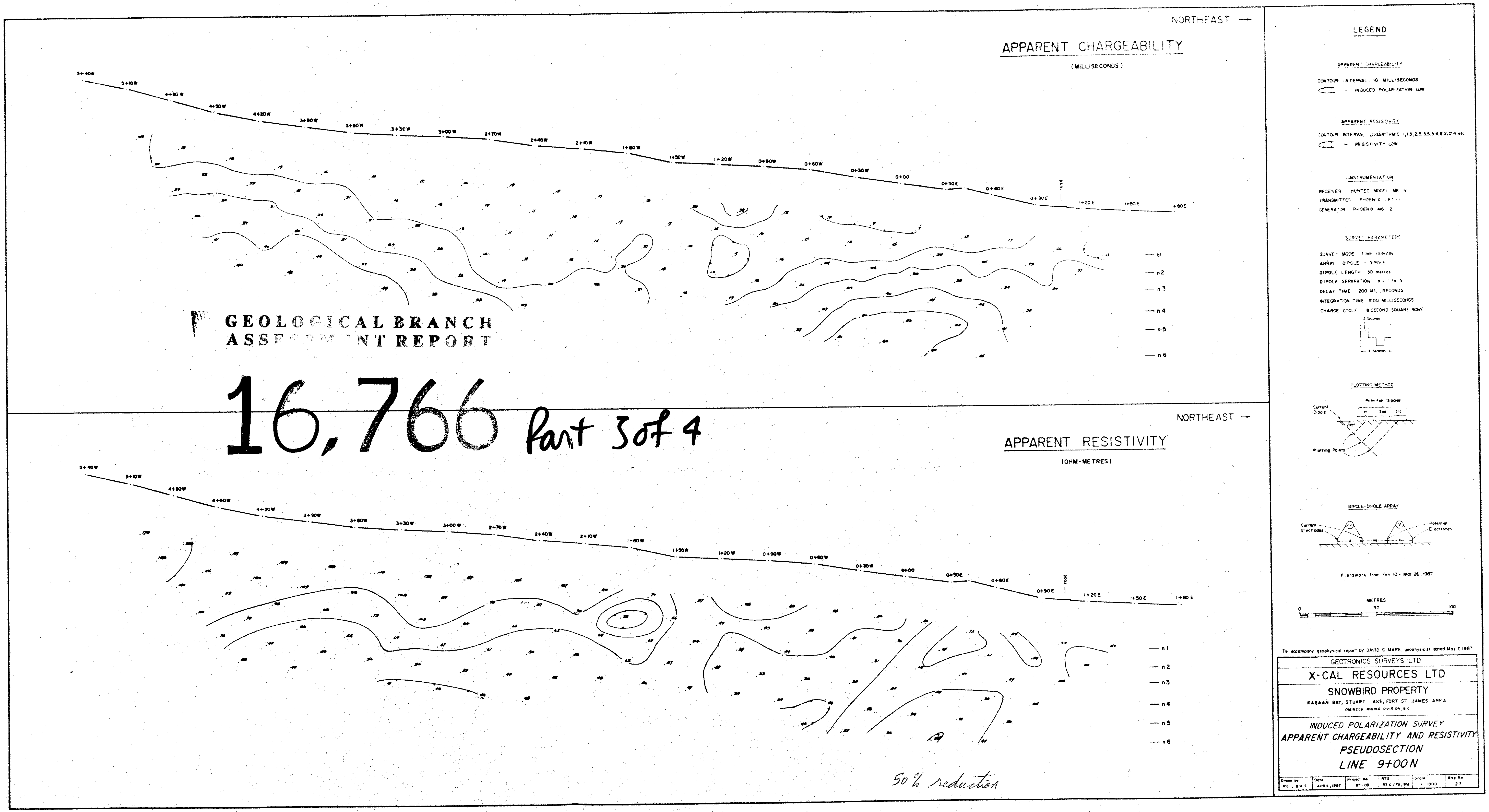
SNOWBIRD PROPERTY

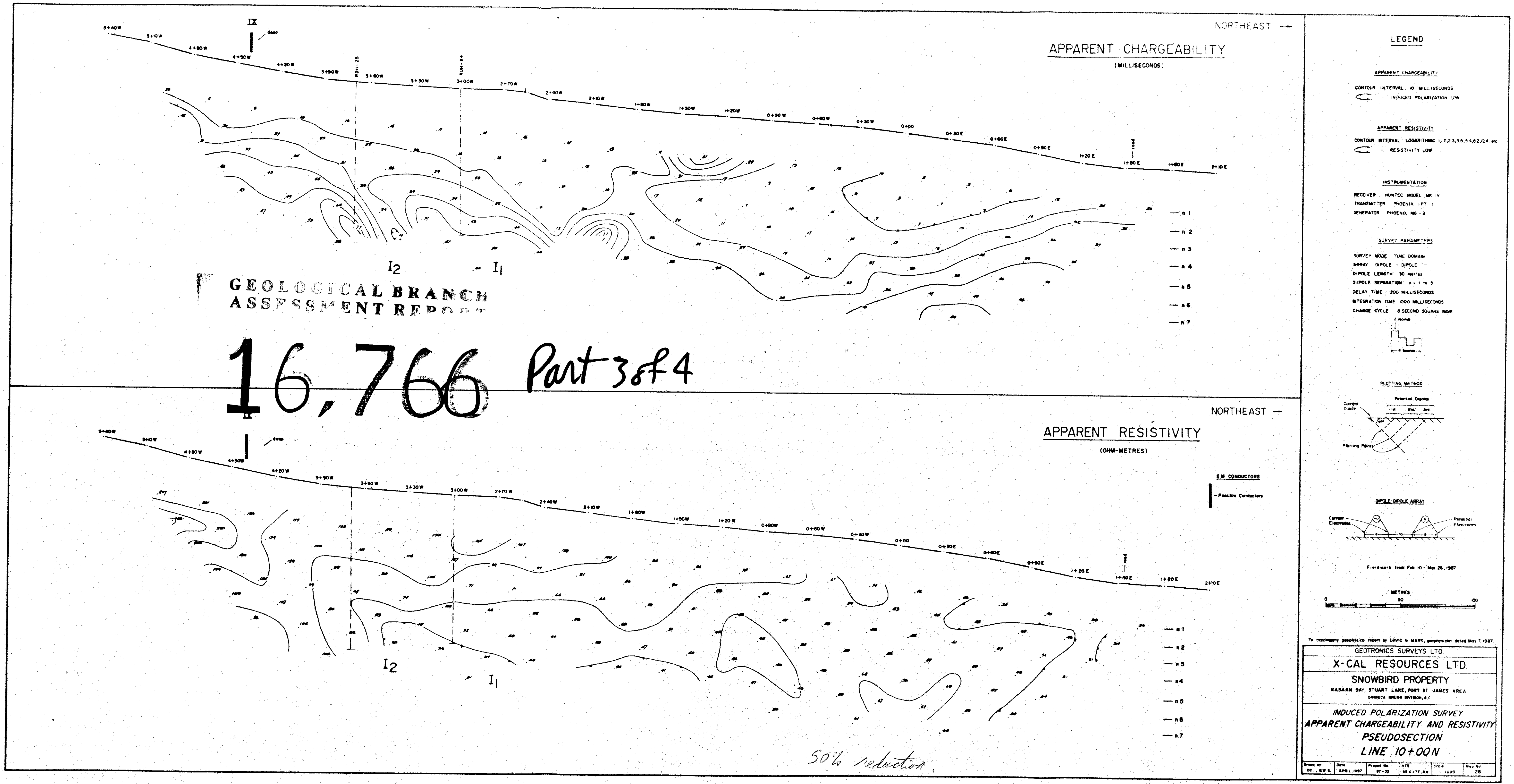
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 8+00N

Drawn by	Date	Project No.	NTS	Scale	Map No.
P.C., B.W.S.	APRIL, 1987	87-08	93 K/7E, 8W	1:1000	26

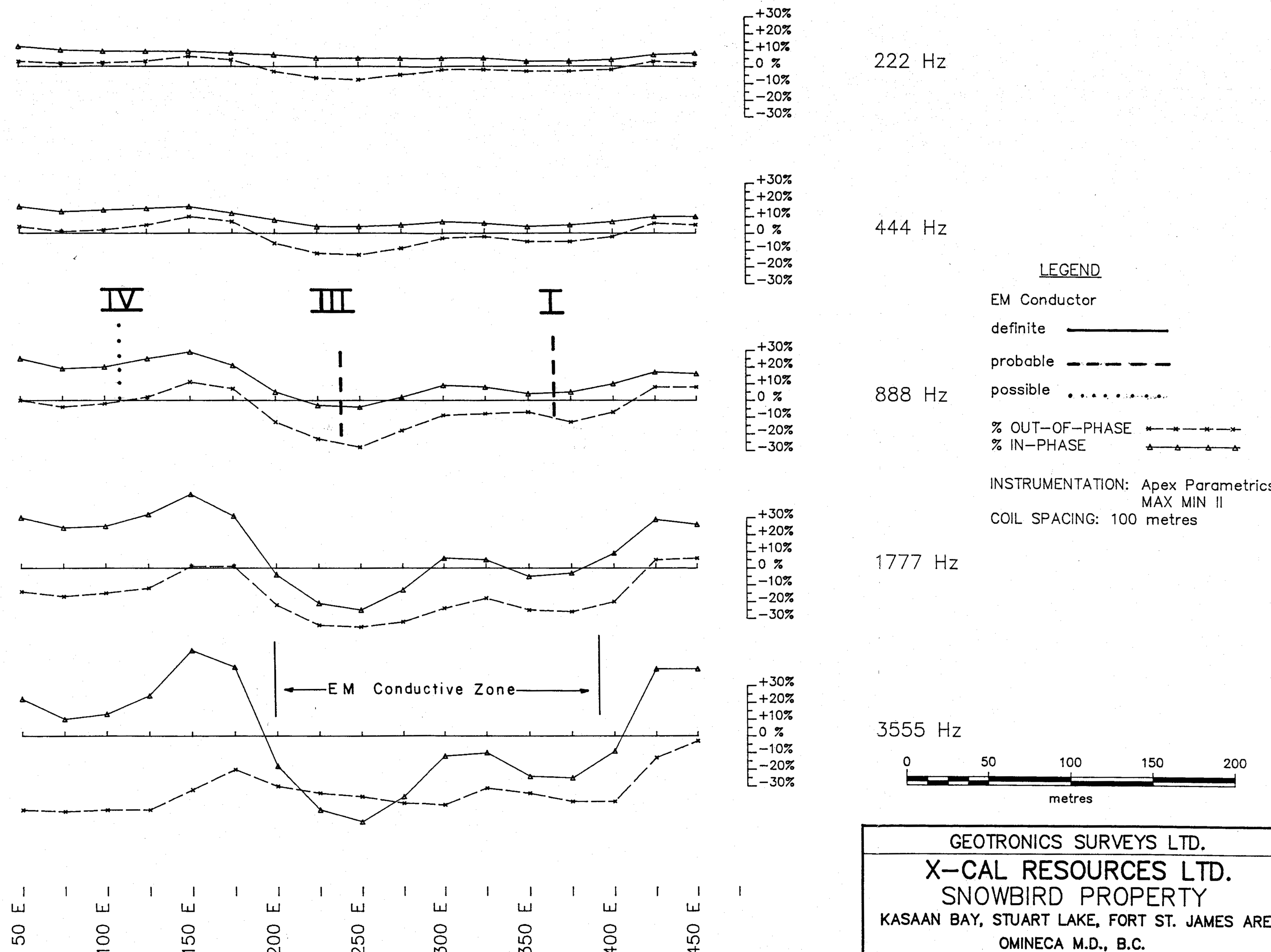


NORTHEAST
APPARENT CHARGEABILITY
(MILLISECONDS)
5+40W
5+10W
4+80 W
4+50W
4+20W
3+90W
3+60W
3+30W
3+00 W
2+70W
2+40W
2+10W
1+80W
1+50W
1+20W
0+90W
0+60W
0+30W
0+00
0+30E
0+60E
0+90E
road
1+20 E
1+50E
1+80E
n1
n2
n3
n4
n5
n6
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,766 Part 3 of 4
NORTHEAST
APPARENT RESISTIVITY
(OHM-METRES)
n1
n2
n3
n4
n5
n6
50% reduction
LEGEND
APPARENT CHARGEABILITY
CONTOUR INTERVAL 10 MILLISECONDS
- INDUCED POLARIZATION LOW
APPARENT RESISTIVITY
CONTOUR INTERVAL LOGARITHMIC 1,1.5,2.3,3.5,5.4,8.2,12.4,etc.
- RESISTIVITY LOW
INSTRUMENTATION
RECEIVER HUNTEC MODEL MK IV
TRANSMITTER PHOENIX IPT-1
GENERATOR PHOENIX MG-2
SURVEY PARAMETERS
SURVEY MODE TIME DOMAIN
ARRAY DIPOLE - DIPOLE
DIPOLE LENGTH 30 metres
DIPOLE SEPARATION n = 1 to 5
DELAY TIME 200 MILLISECONDS
INTEGRATION TIME 1500 MILLISECONDS
CHARGE CYCLE 8 SECOND SQUARE WAVE
2 Seconds
8 Seconds
PLOTTING METHOD
Potential Dipoles
Current Dipole
1st
2nd
3rd
45°
Plotting Points
DIPOLE-DIPOLE ARRAY
Current Electrodes
Potential Electrodes
a
na
a
Fieldwork from Feb. 10 - Mar 26, 1987
METRES
0
50
100
To accompany geophysical report by DAVID G MARK, geophysicist dated May 7, 1987
GEOTRONICS SURVEYS LTD
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST JAMES AREA
OMINECA MINING DIVISION, B.C.
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 9+00N
Drawn by P.C., B.W.S.
Date APRIL, 1987
Project No 87-03
NTS 93 K/7E, 8W
Scale 1:1000
Map No. 27



NORTHEAST
APPARENT CHARGEABILITY
(MILLISECONDS)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,766 Part 3 of 4
NORTHEAST
APPARENT RESISTIVITY
(OHM-METRES)
EM CONDUCTORS
Possible Conductors
50% reduction
LEGEND
APPARENT CHARGEABILITY
CONTOUR INTERVAL: 10 MILLISECONDS
INDUCED POLARIZATION LOW
APPARENT RESISTIVITY
CONTOUR INTERVAL: LOGARITHMIC 1,1.5,2,3,3.5,5,4,6,8,2,12,4, etc
RESISTIVITY LOW
INSTRUMENTATION
RECEIVER: HUNTEC MODEL MK IV
TRANSMITTER: PHOENIX IPT-1
GENERATOR: PHOENIX MG-2
SURVEY PARAMETERS
SURVEY MODE: TIME DOMAIN
ARRAY: DIPOLE - DIPOLE
DIPOLE LENGTH: 30 metres
DIPOLE SEPARATION: n = 1 to 5
DELAY TIME: 200 MILLISECONDS
INTEGRATION TIME: 1500 MILLISECONDS
CHARGE CYCLE: 8 SECOND SQUARE WAVE
PLOTTING METHOD
Current Dipole
Potential Dipoles
Plotting Points
DIPOLE-DIPOLE ARRAY
Current Electrodes
Potential Electrodes
Fieldwork from Feb. 10 - Mar. 26, 1987
METRES
0
50
100
To accompany geophysical report by DAVID G. MARK, geophysicist dated May 7, 1987
GEOTRONICS SURVEYS LTD.
X-CAL RESOURCES LTD
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.
INDUCED POLARIZATION SURVEY
APPARENT CHARGEABILITY AND RESISTIVITY
PSEUDOSECTION
LINE 10+00N
Drawn by: PC, B.W.S.
Date: APRIL, 1987
Project No: 87-08
NTS: 93 K/7E, 8W
Scale: 1:1000
Map No: 28

Part 3 of 4



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OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles - Line 10+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No 29

Geo-Comp Drawing File: sb/10s

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

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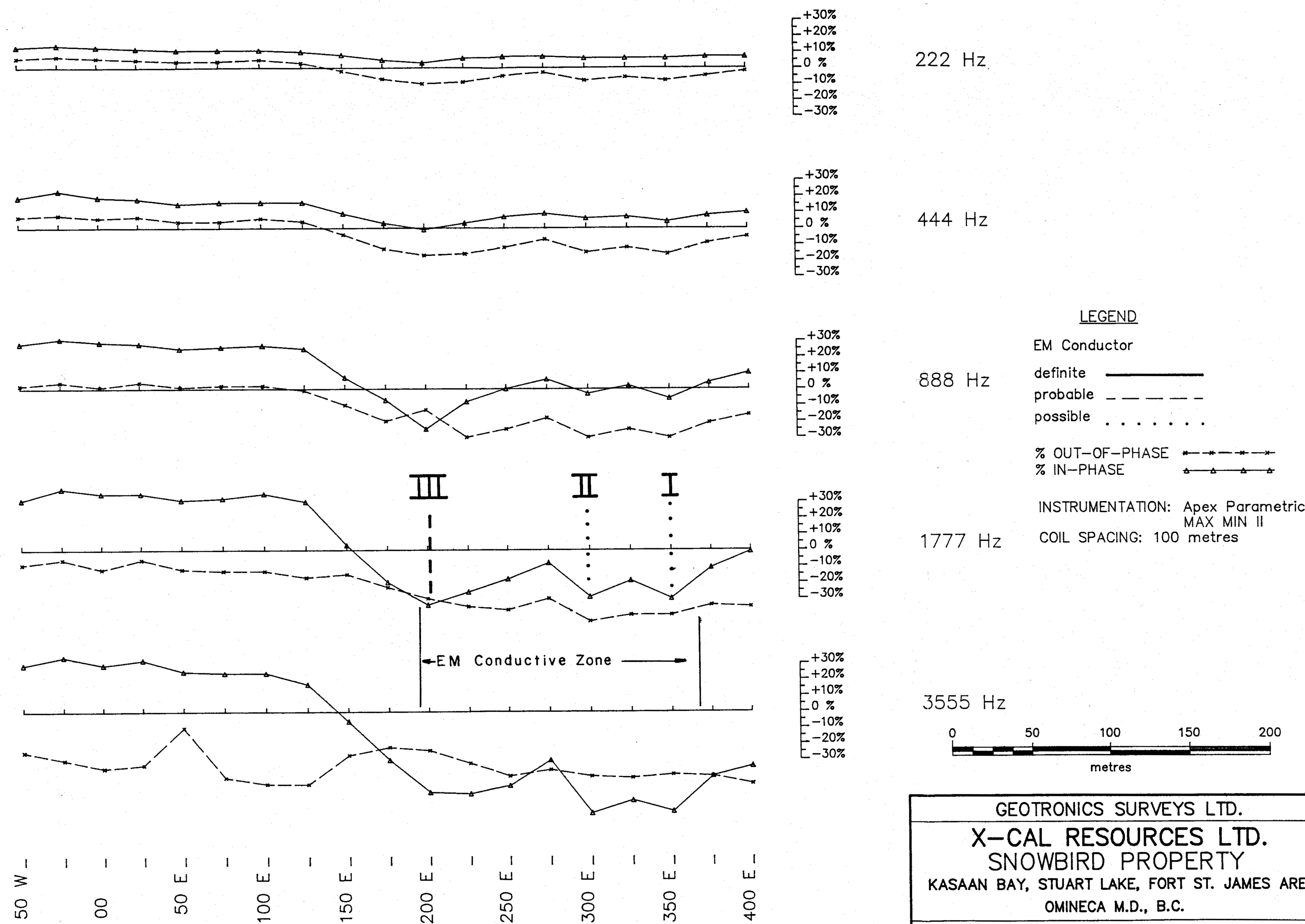

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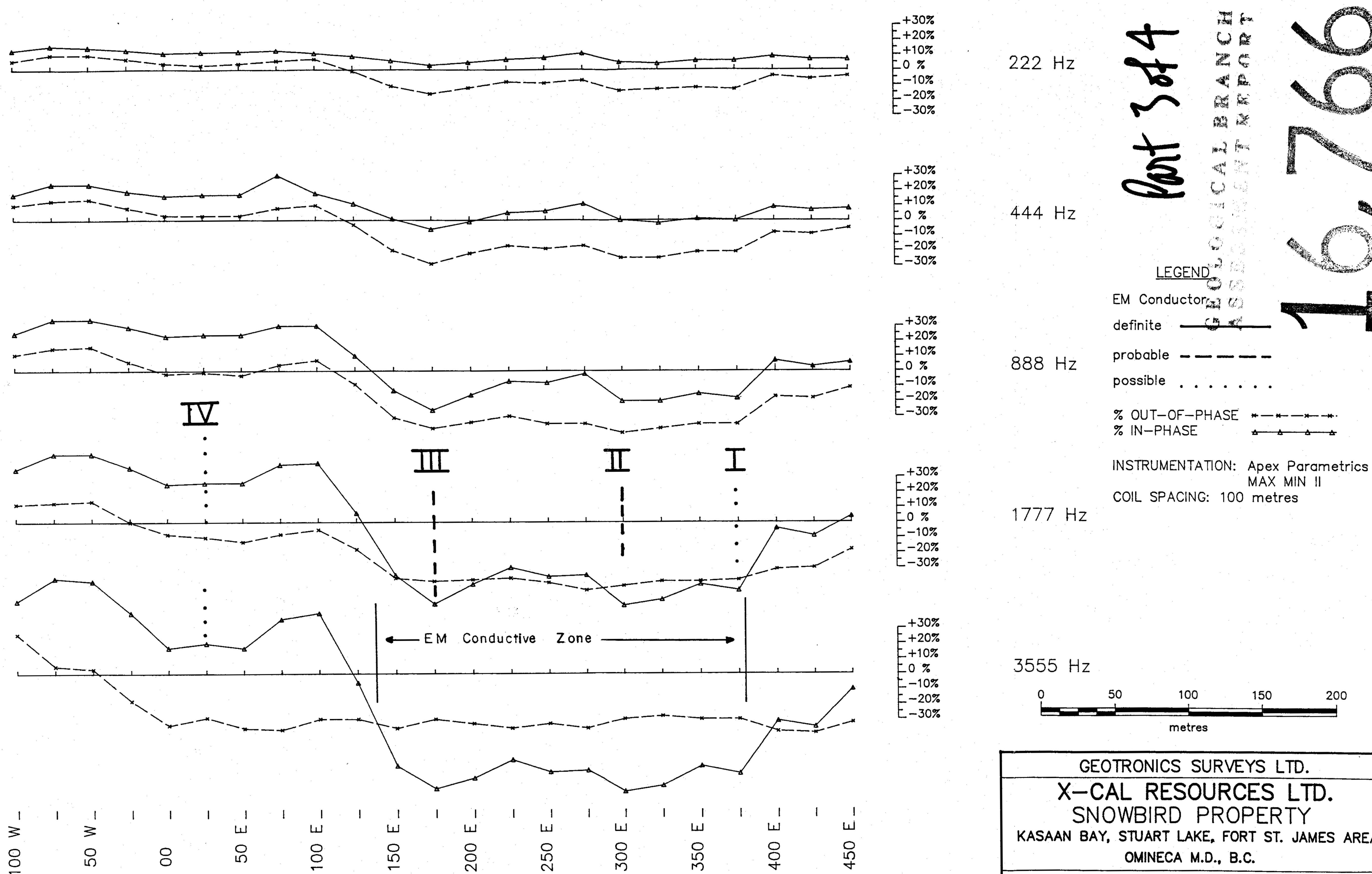
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 9+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.30

Geo-Comp Drawing File: sb/9s



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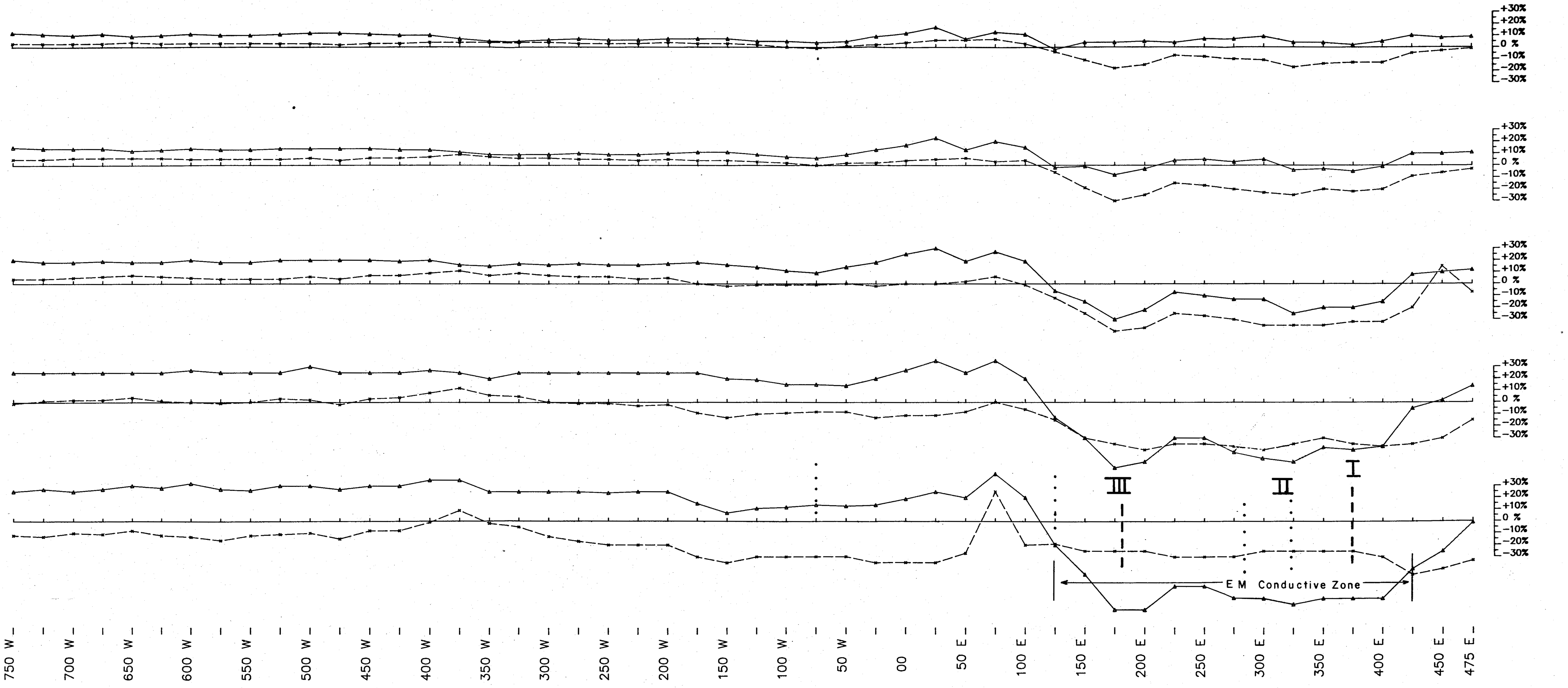
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles — Line 8+00S

Drawn by:	Date:	Job No.	Scale:	Map No.
Geo-Comp	Apr.'87	87-03	Vert. 1cm=25% Horiz. 1:2,500	31

Geo-Comp Drawing File: sb/8s



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MiN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA M.D., B.C.

HORIZONTAL LOOP EM

Profiles – Line 7+00S

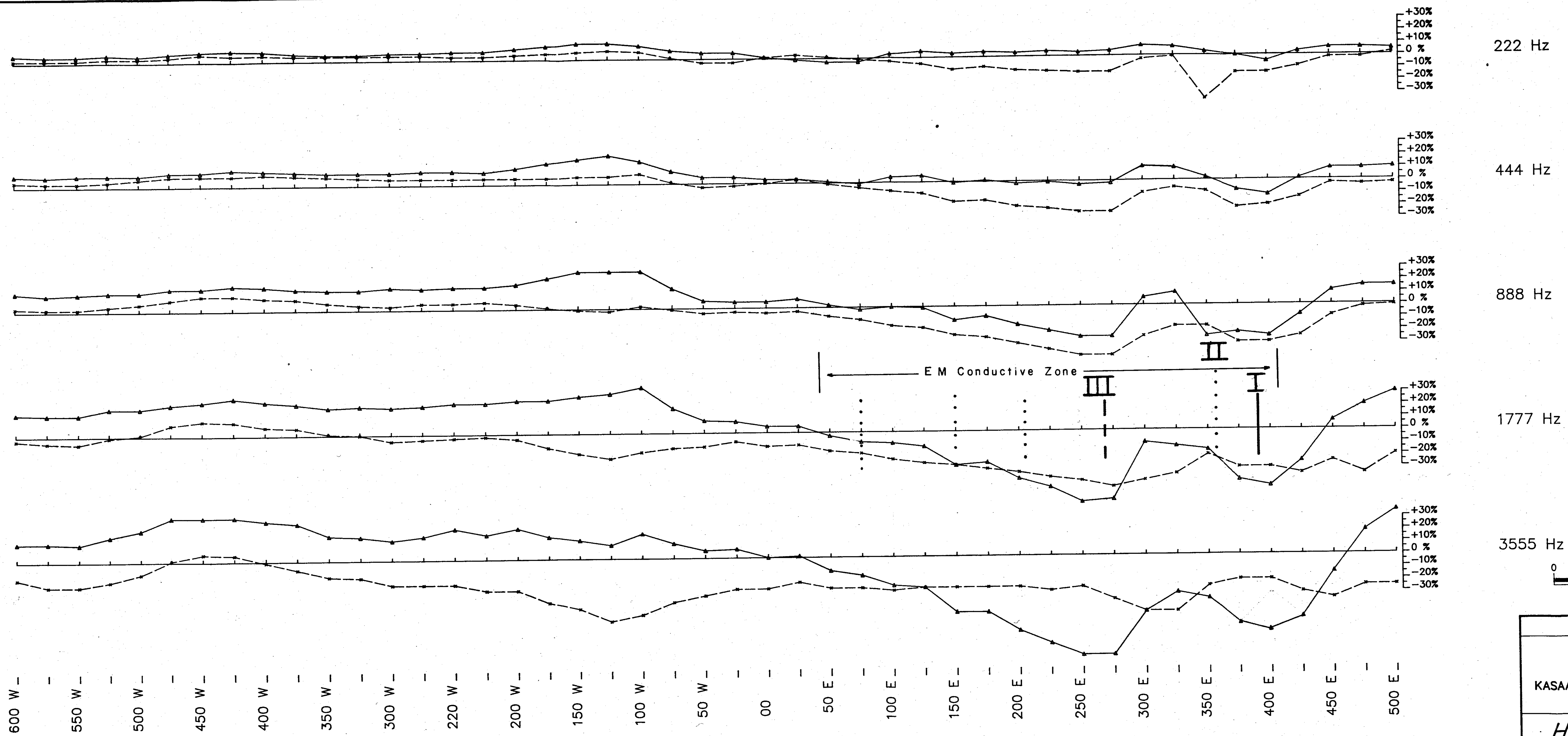
Drawn by:	Date:	Job No.	Scale:	Map No.
Geo-Comp	Apr.'87	87-03	Vert. 1cm=25% Horiz. 1:2,500	32

Geo-Comp Drawing File: sb/7s

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4



LEGEND

EM Conductor

definite ————

probable — — — —

possible . . . .

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

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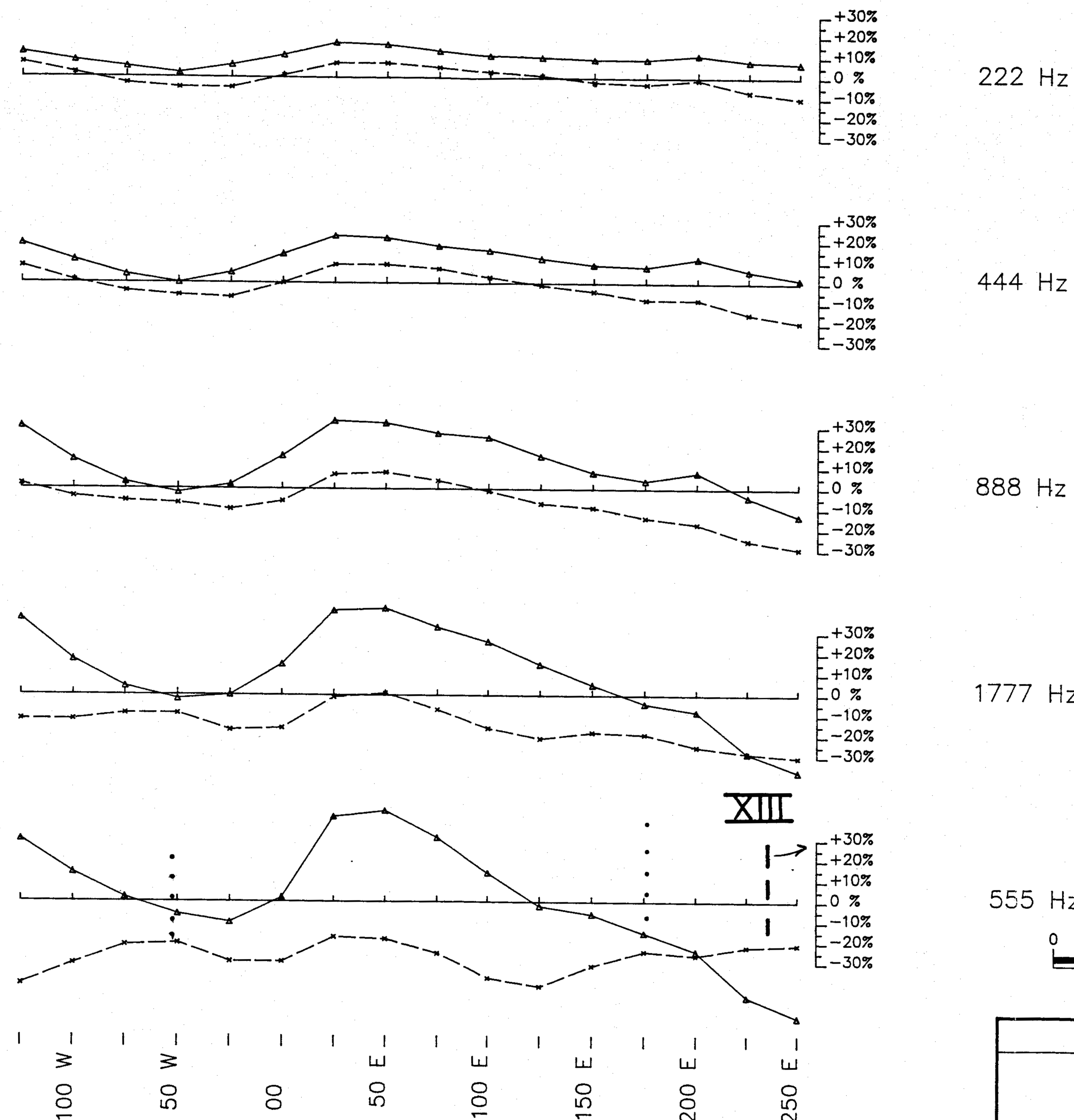
HORIZONTAL LOOP EM

Profiles – Line 6+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.33

Geo-Comp Drawing File: sb6s

Part 3 of 4



LEGEND

EM Conductor

definite

probable — — — —

possible . . . . . .

% OUT-OF-PHASE
% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200
metres

GEOTRONICS SURVEYS LTD.

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SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles — Line 5+00S

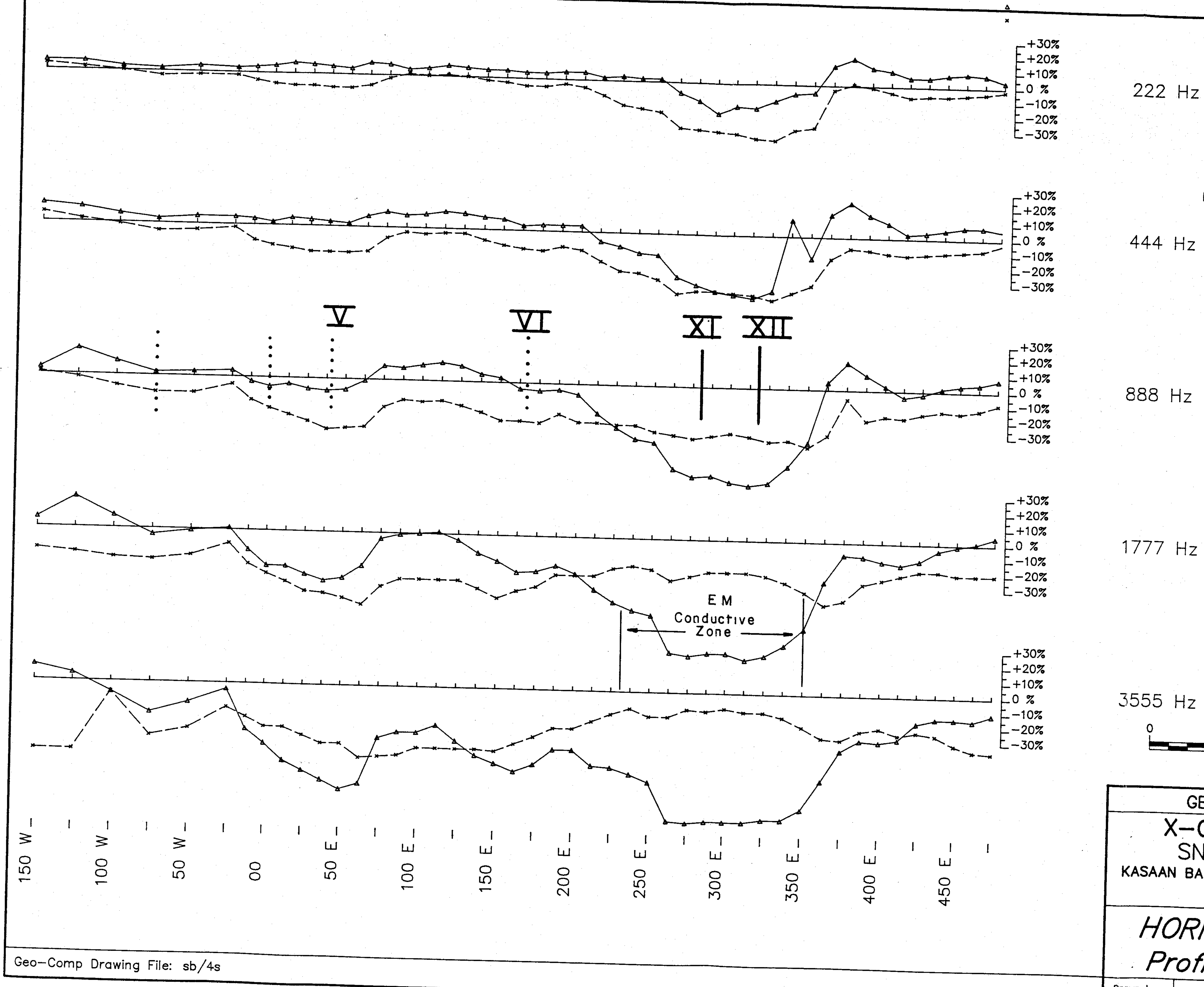
Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.34

Geo-Comp Drawing File: sb/5s

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4



LEGEND

EM Conductor

definite ————

probable — — —

possible . . . .

% OUT-OF-PHASE ×-×-×-×

% IN-PHASE △—△—△

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

MINECA M.D., B.C.

HORIZONTAL LOOP EM

Profiles – Line 4+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.35

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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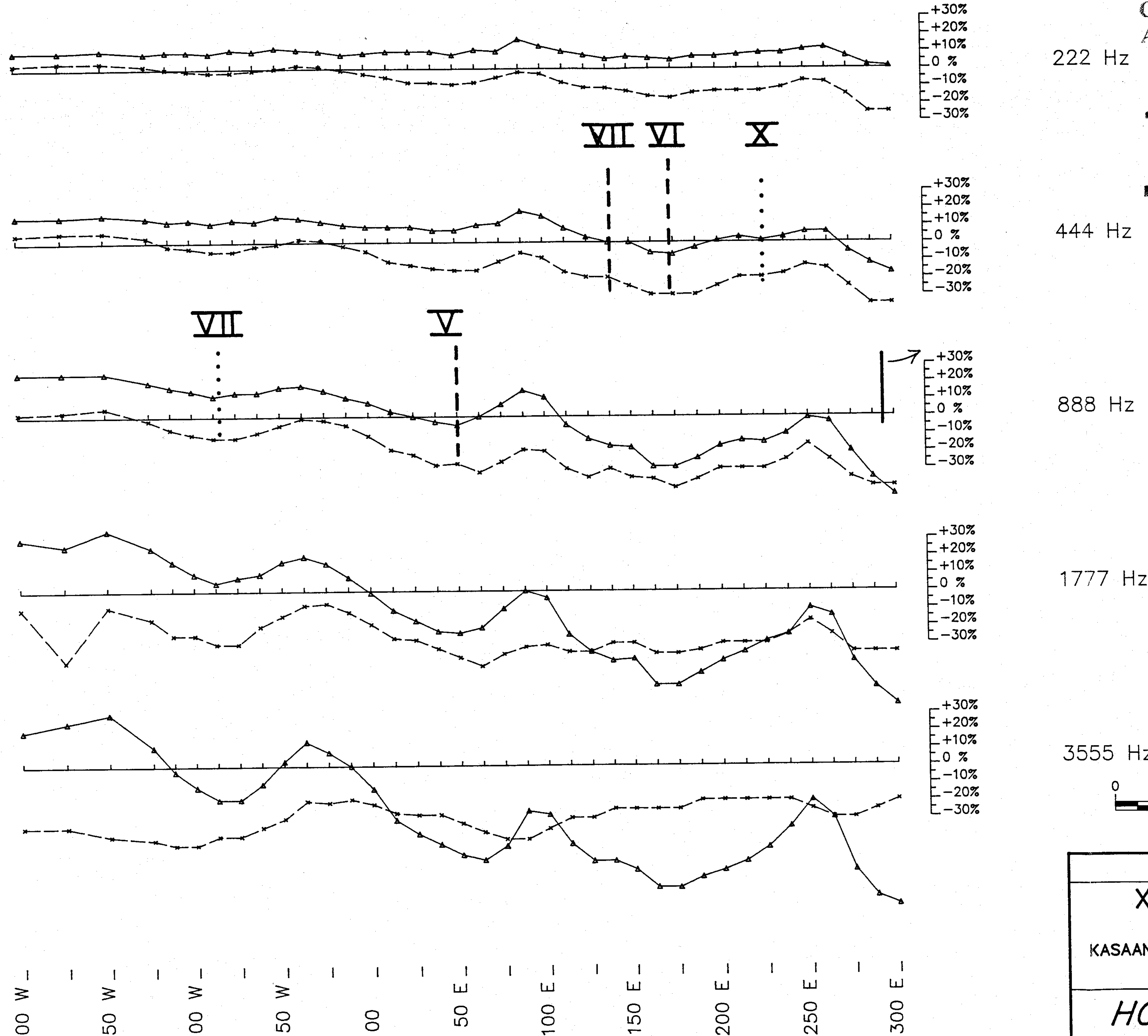
Part 3 of 4



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

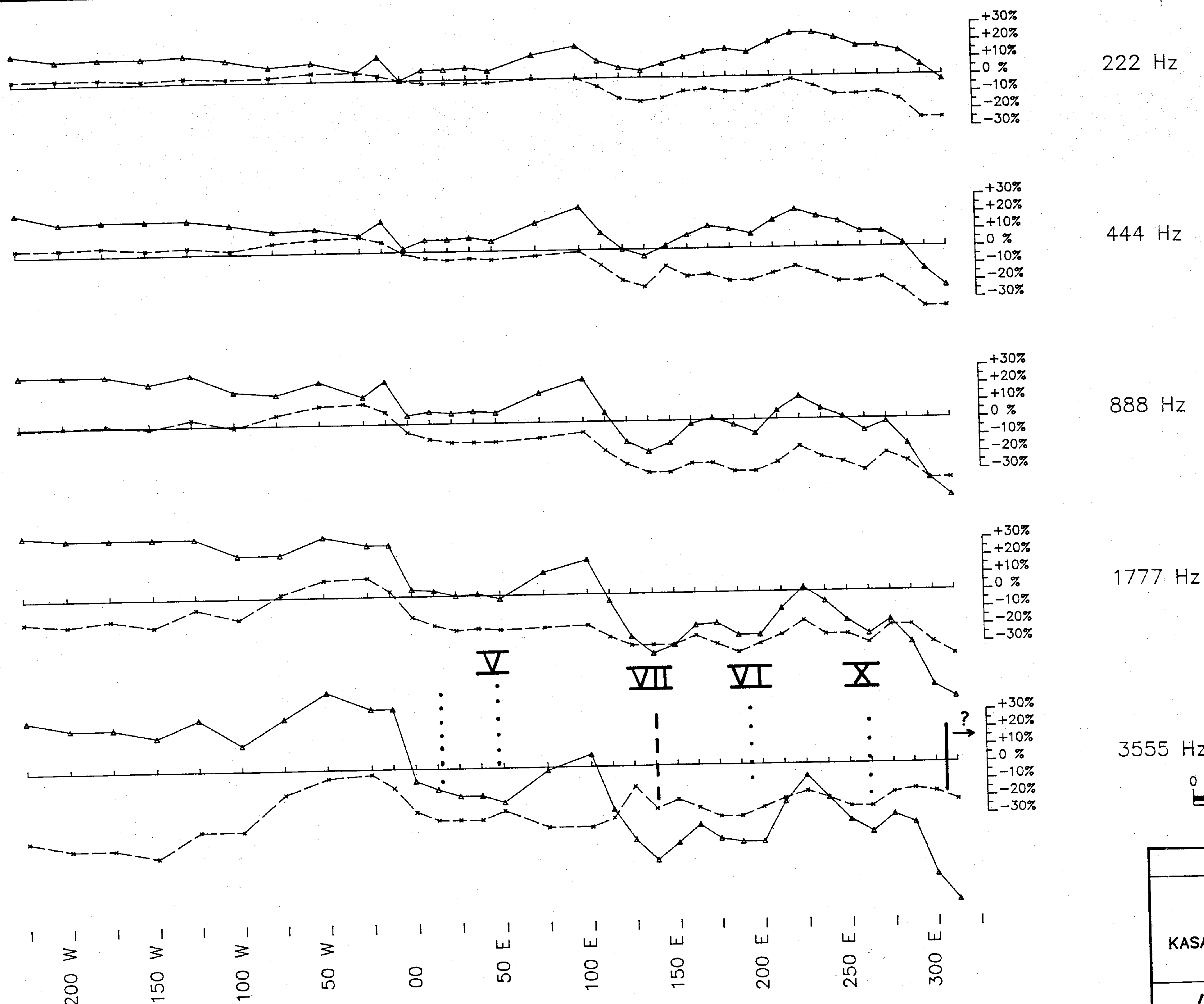
OMINECA M.D., B.C.

HORIZONTAL LOOP EM

Profiles – Line 3+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.36

Geo-Comp Drawing File: sb/3s



Part 3 of 4

LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

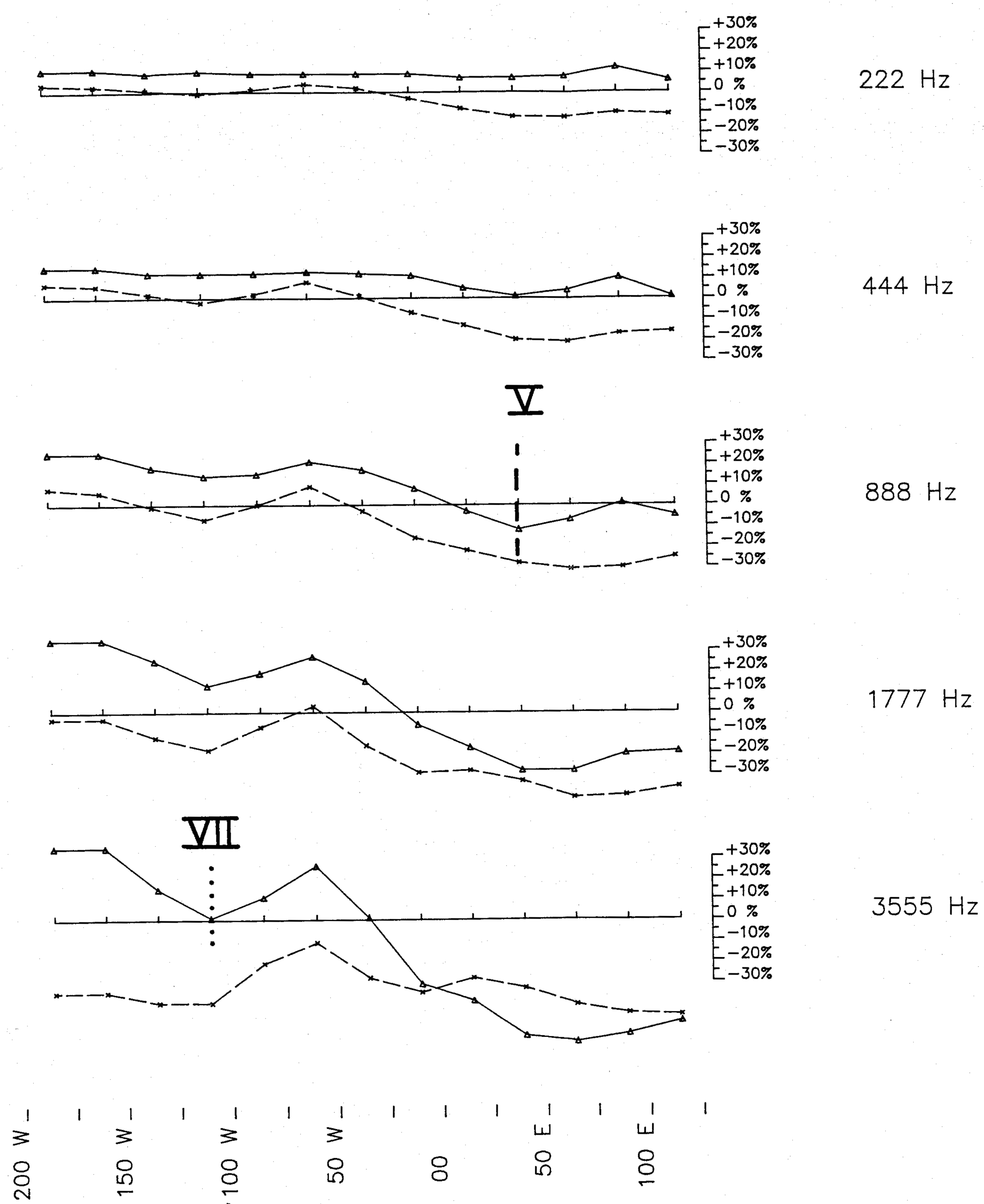
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 2+00S

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No. 37

Geo-Comp Drawing File: sb/2s



LEGEND

EM Conductor

definite ————

probable – – – –

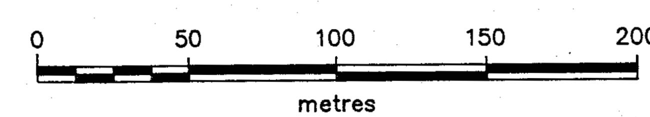
possible . . . .

% OUT–OF–PHASE

% IN–PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres



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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

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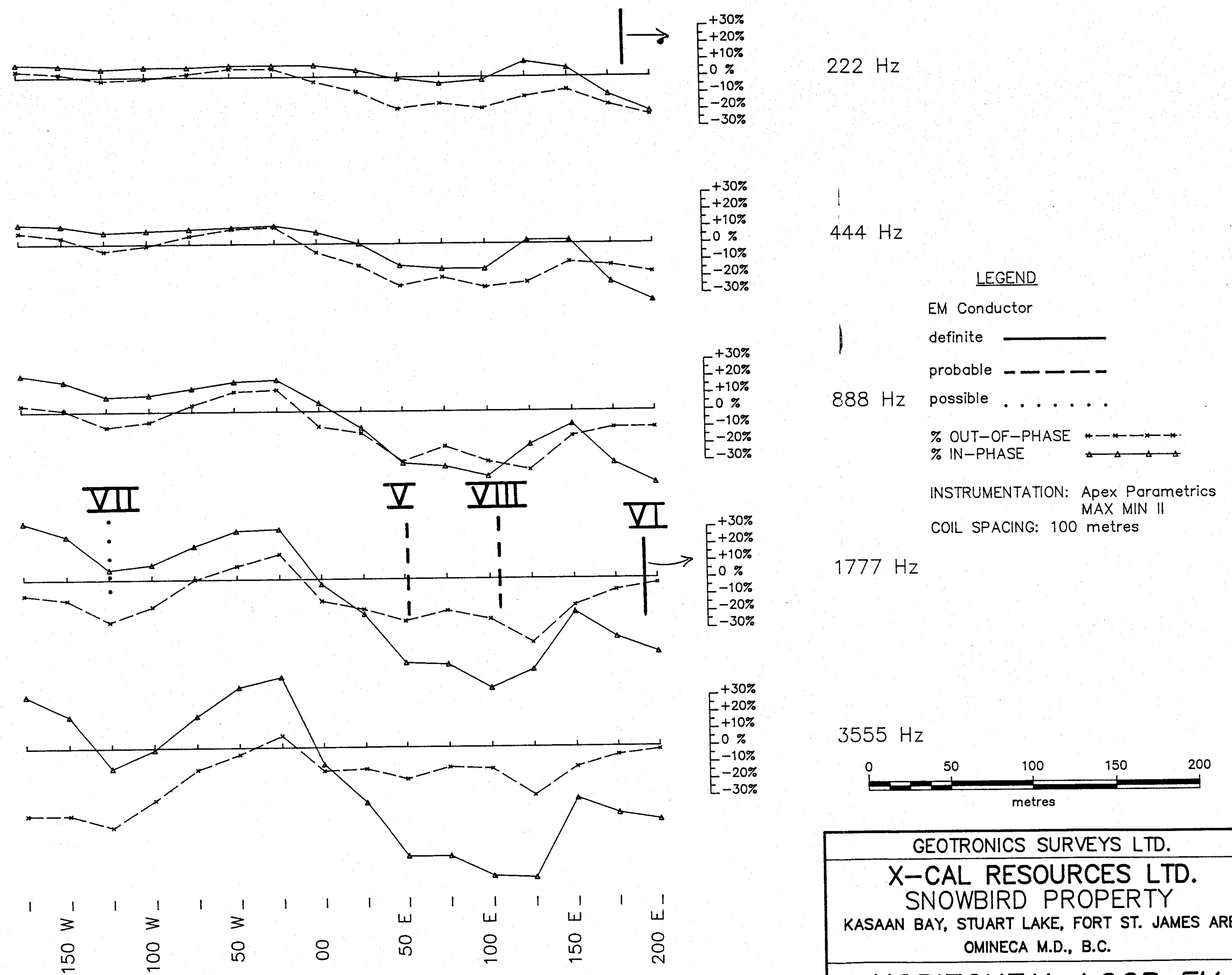
HORIZONTAL LOOP EM
Profiles – Line 1+00S

Drawn by: Geo–Comp	Date: Apr.'87	Job No. 87–03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.38

Geo–Comp Drawing File: sb/1s



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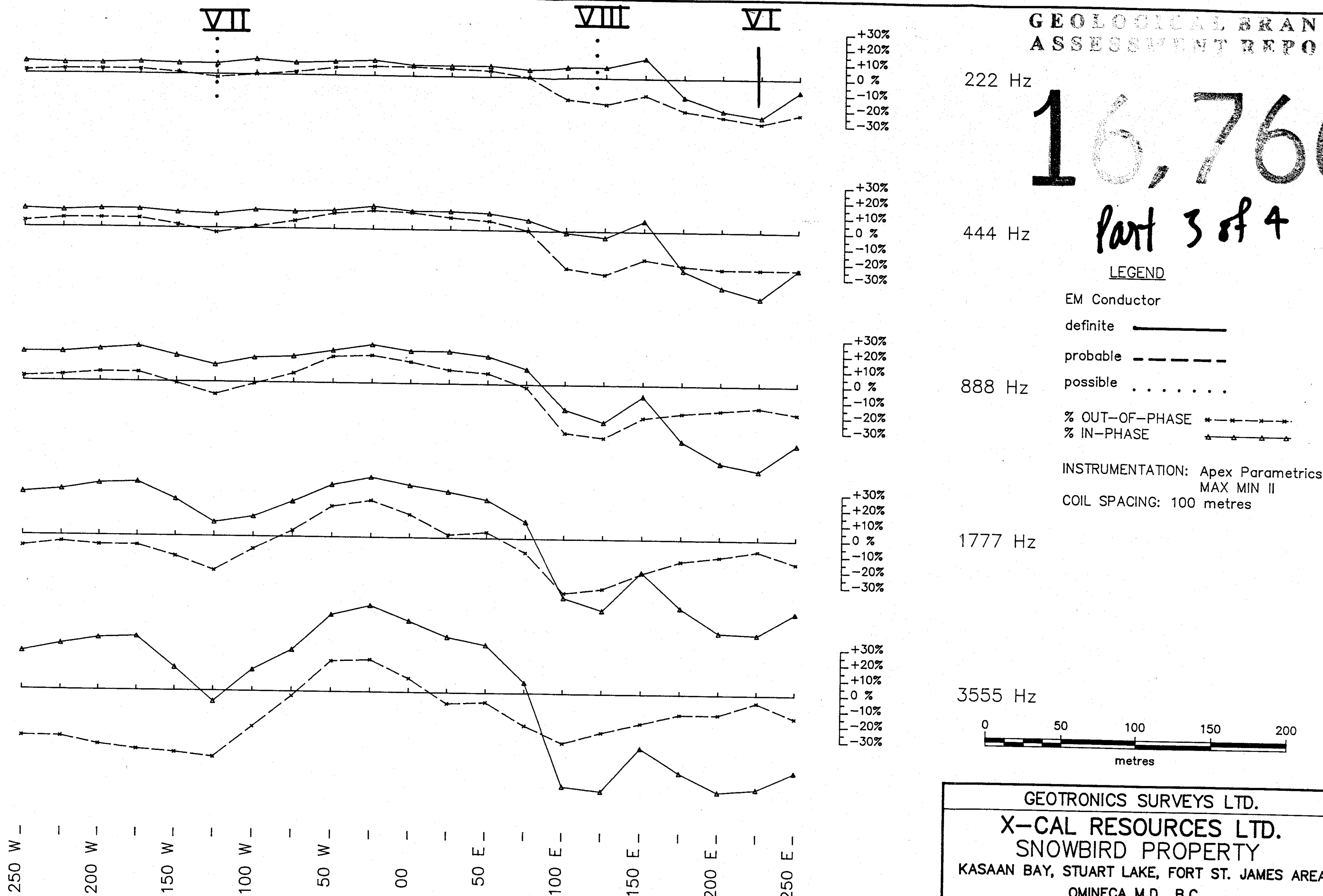
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 0+00

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.39

Geo-Comp Drawing File: sb/0



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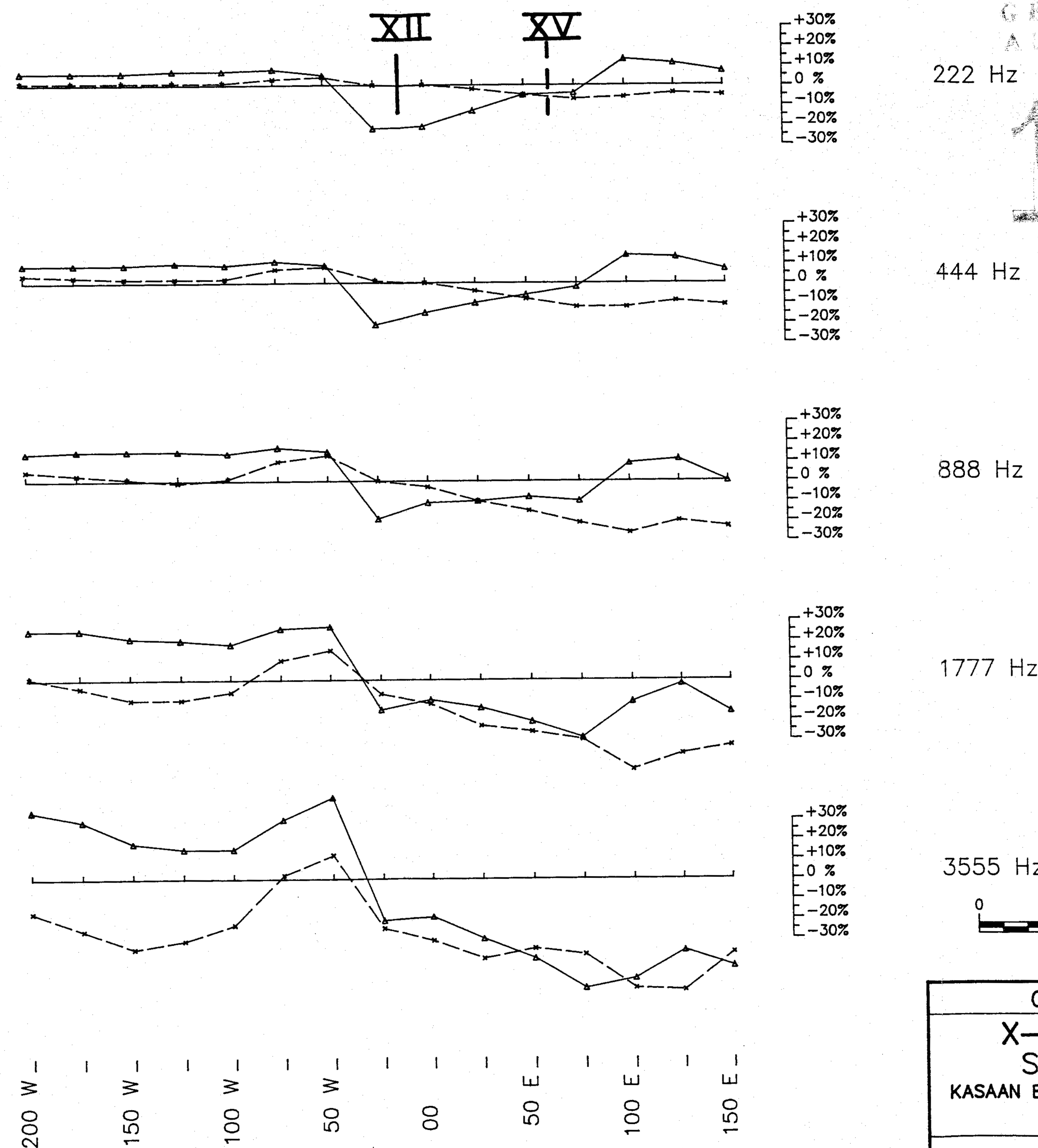
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 1+00N

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No. 40

Geo-Comp Drawing File: sb/1n

Part 3 of 4



LEGEND

EM Conductor

definite ————

probable — — — —

possible . . . .

% OUT-OF-PHASE —×—×—×—

% IN-PHASE —△—△—△—

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200
metres

GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 2+00N

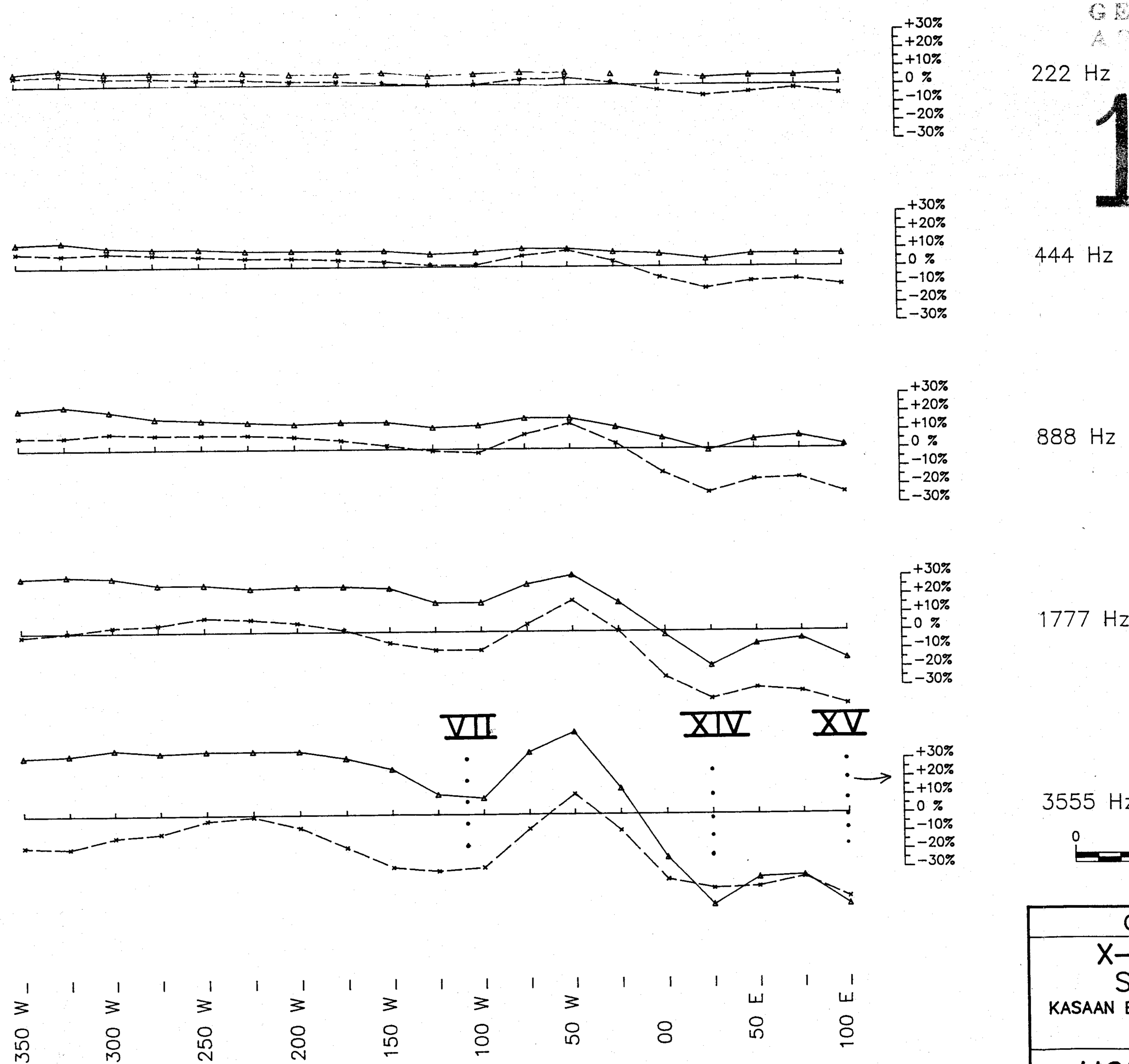
Drawn by:	Date:	Job No.	Scale:	Map No.
Geo–Comp	Apr.'87	87–03	Vert. 1cm=25% Horiz. 1:2,500	41

Geo–Comp Drawing File: sb/2n

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,766

Part 3 of 4



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 3+00N

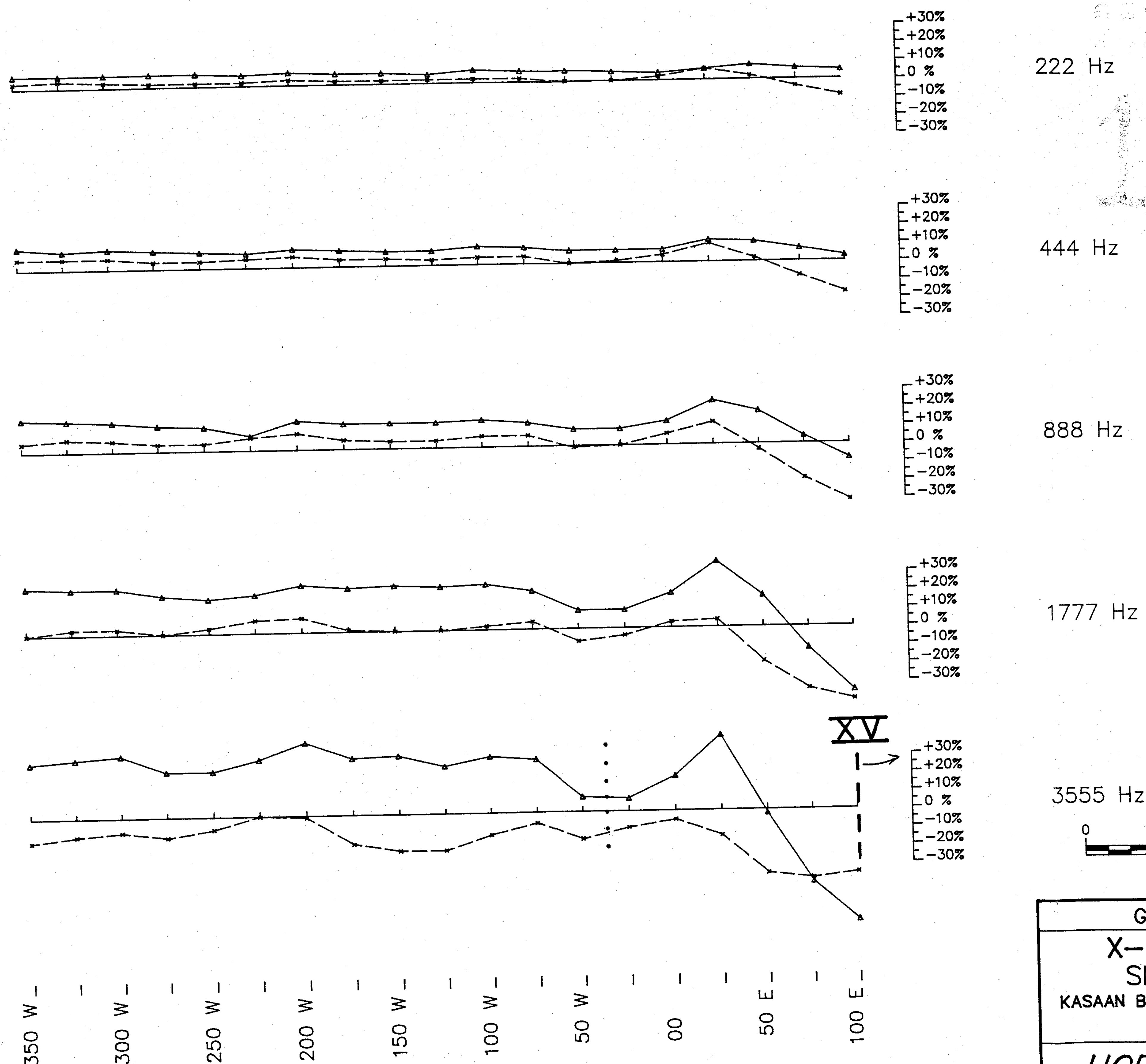
Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No.42

Geo-Comp Drawing File: sb/3n

GEOLOGICAL BRANCH ASSESSMENT REPORT

16,766

Part 3 of 4



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

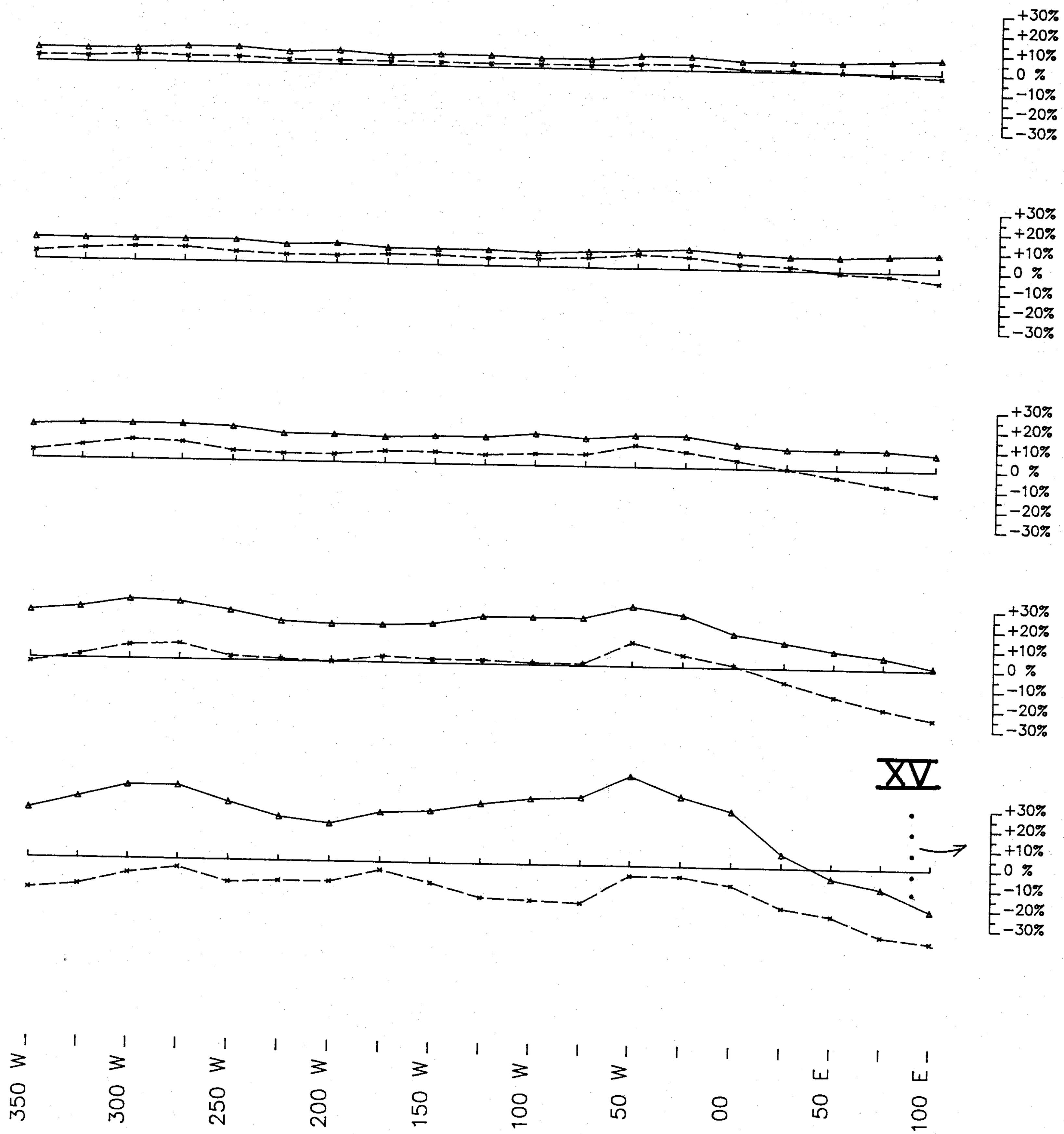
OMINECA M.D., B.C.

HORIZONTAL LOOP EM

Profiles – Line 4+00N

Drawn by:	Date:	Job No.	Scale:	Map No.
Geo-Comp	Apr.'87	87-03	Vert. 1cm=25% Horiz. 1:2,500	43

Geo-Comp Drawing File: sb/4n



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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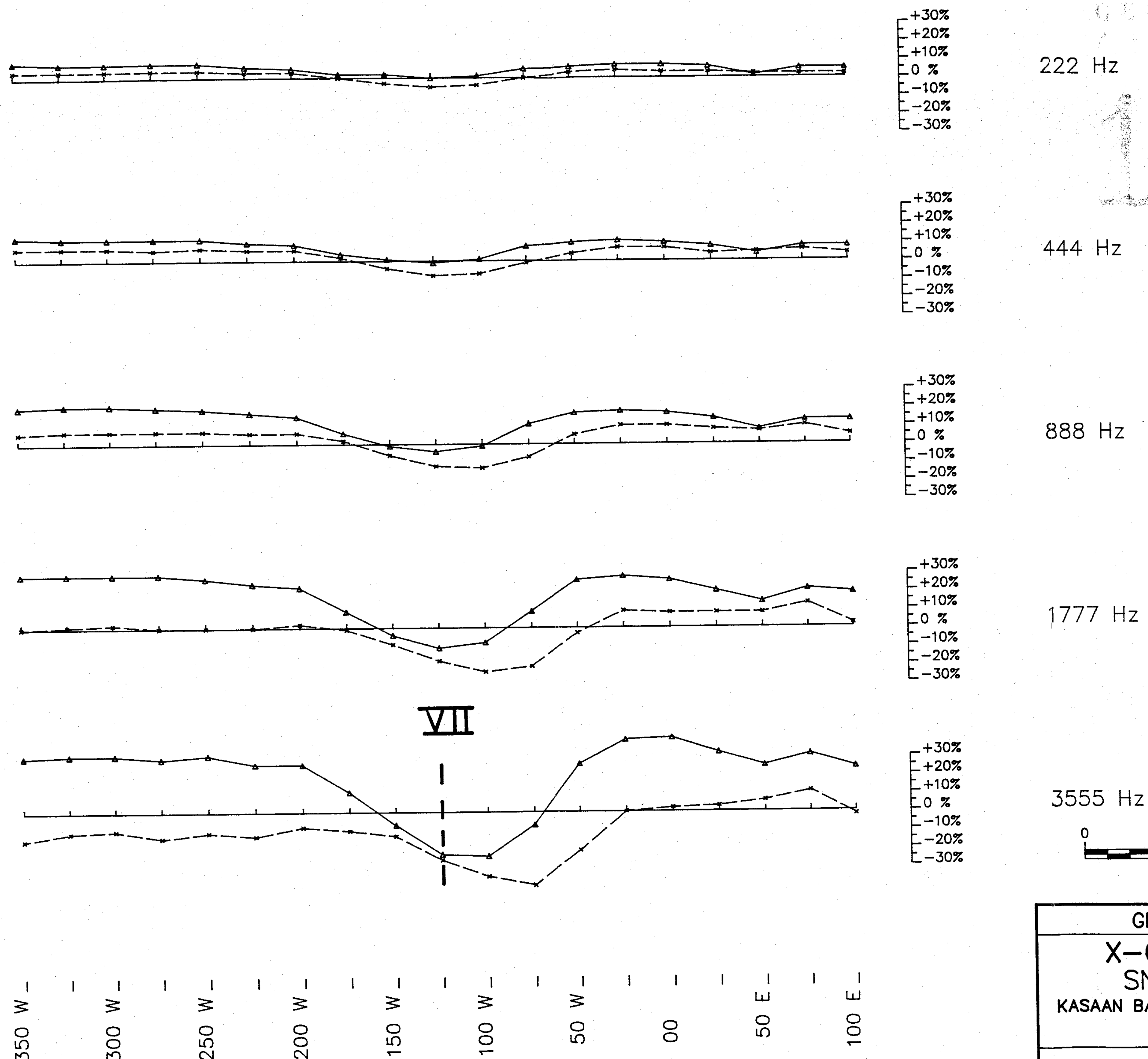
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 5+00N

Drawn by:	Date:	Job No.	Scale:		Map No.
Geo-Comp	Apr.'87	87-03		Vert. 1cm=25% Horiz. 1:2,500	44

Geo-Comp Drawing File: sb/5n



LEGEND

EM Conductor

definite ————

probable — — — —

possible . . . .

% OUT-OF-PHASE —x—x—x—

% IN-PHASE —▲—▲—▲—

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200
metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

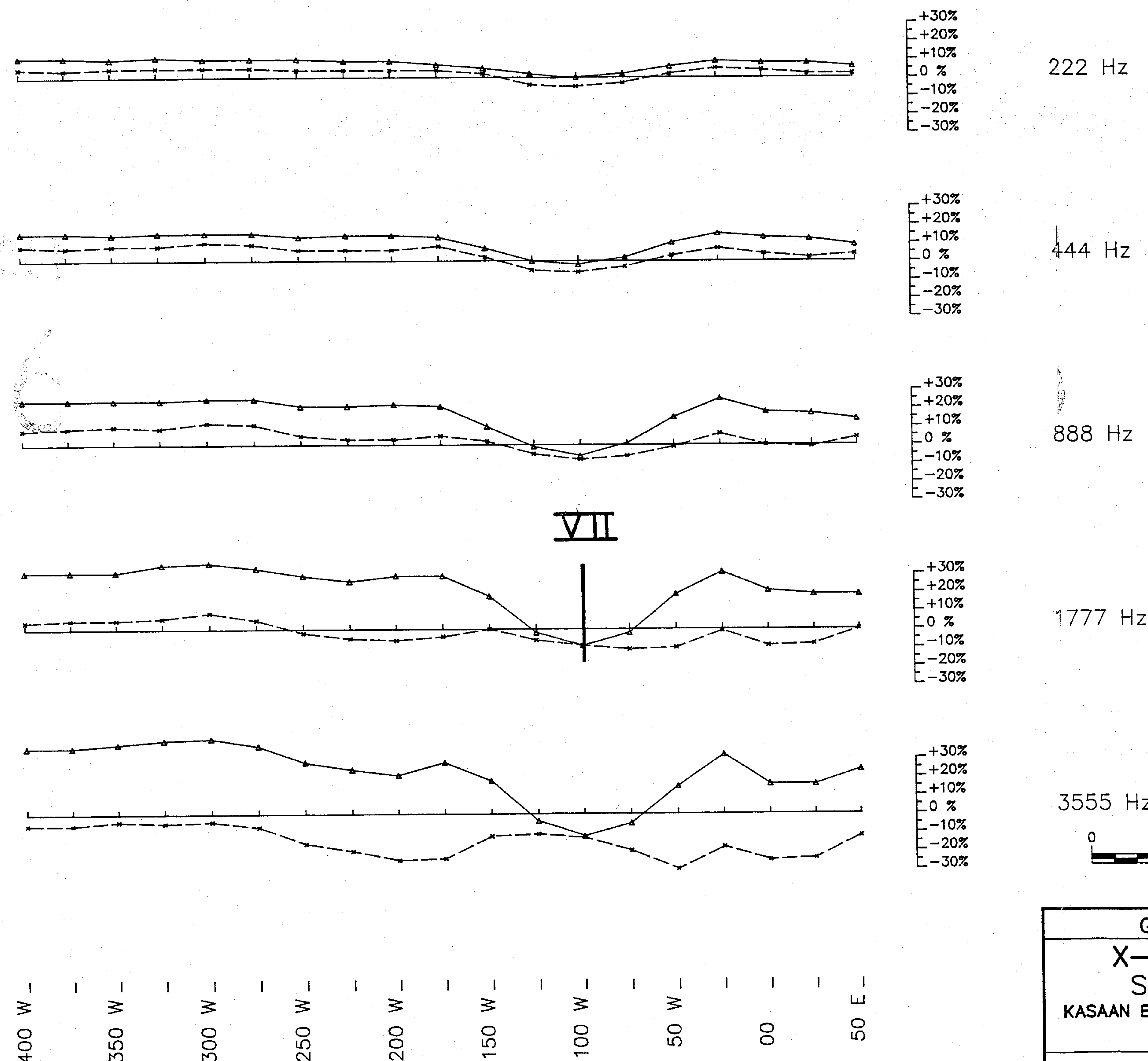
HORIZONTAL LOOP EM
Profiles — Line 6+00N

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No. 45

Geo-Comp Drawing File: sb/6n

16,766

Part 3 of 4



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

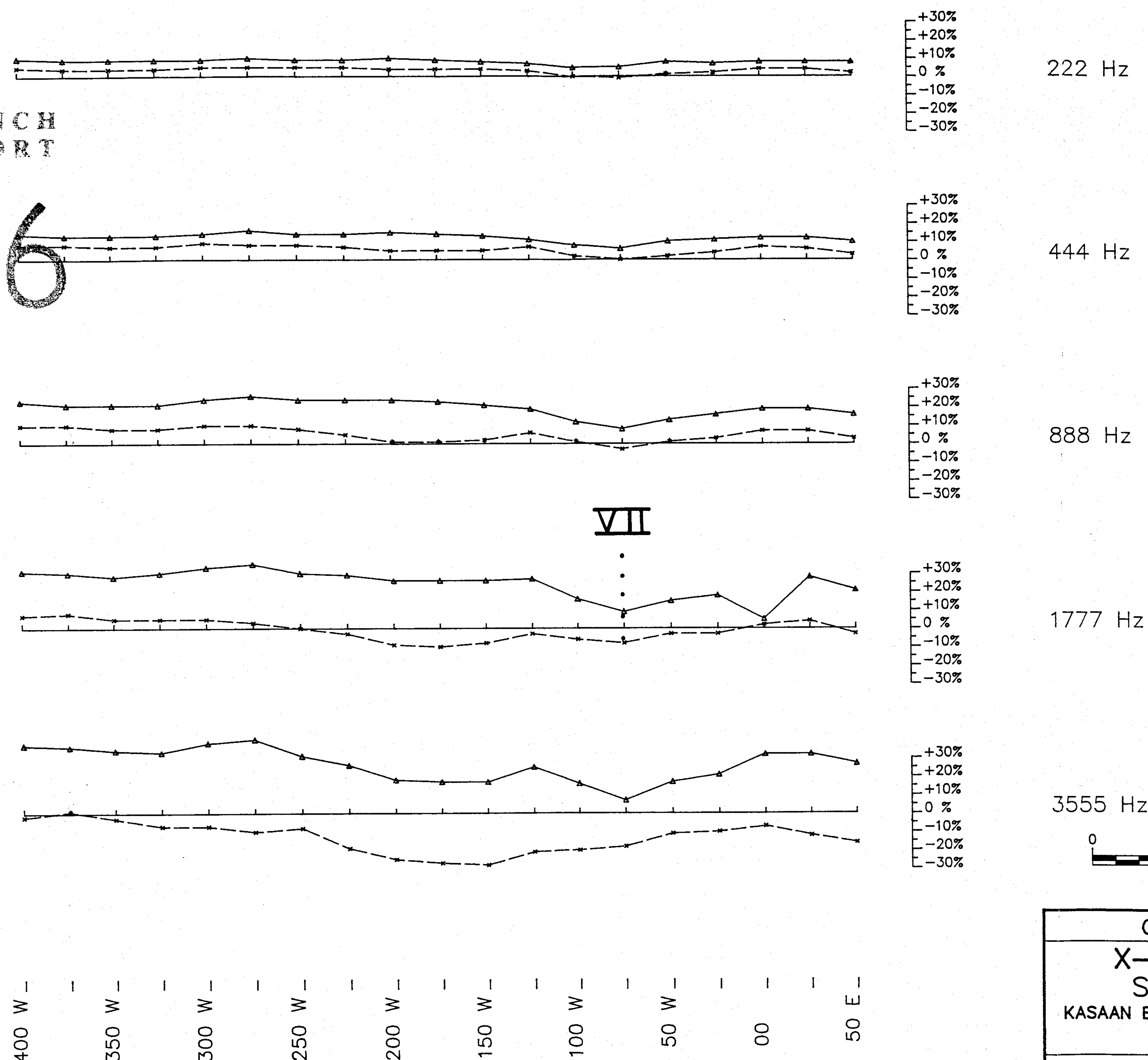
OMINECA M.D., B.C.

HORIZONTAL LOOP EM

Profiles — Line 7+00N

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No. 46

Geo-Comp Drawing File: sb/7n



LEGEND

EM Conductor

definite

probable

possible

% OUT-OF-PHASE

% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

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SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA M.D., B.C.

HORIZONTAL LOOP EM

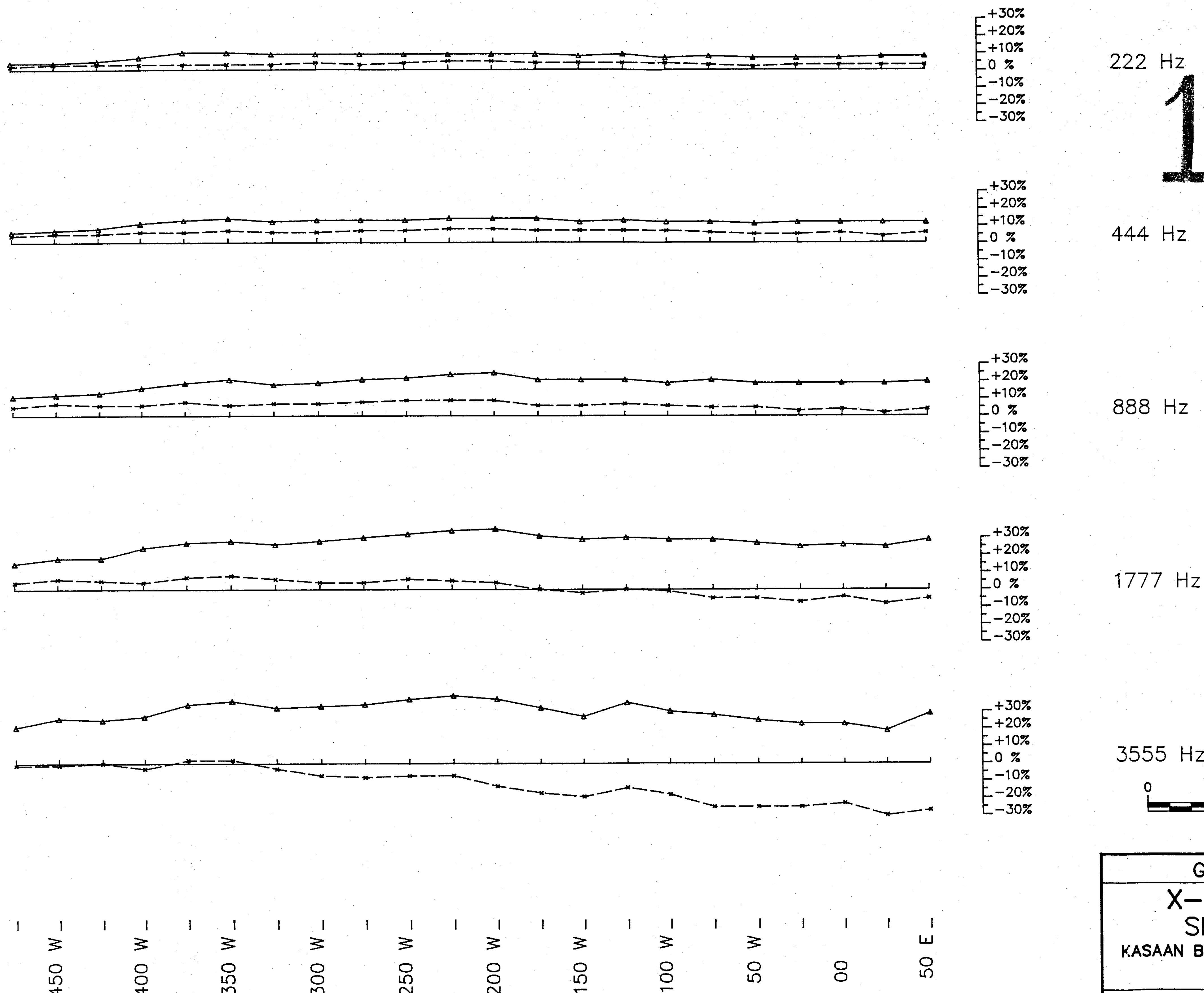
Profiles – Line 8+00N

Drawn by: Geo-Comp	Date: Apr.'87	Job No. 87-03	Scale: Vert. 1cm=25% Horiz. 1:2,500	Map No. 47

Geo-Comp Drawing File: sb/8n

L BRANCH
REPORT

16,766
Part 3 of 4



LEGEND

EM Conductor
definite
probable
possible
% OUT-OF-PHASE
% IN-PHASE

INSTRUMENTATION: Apex Parametrics MAX MIN II
COIL SPACING: 100 metres

0 50 100 150 200
metres

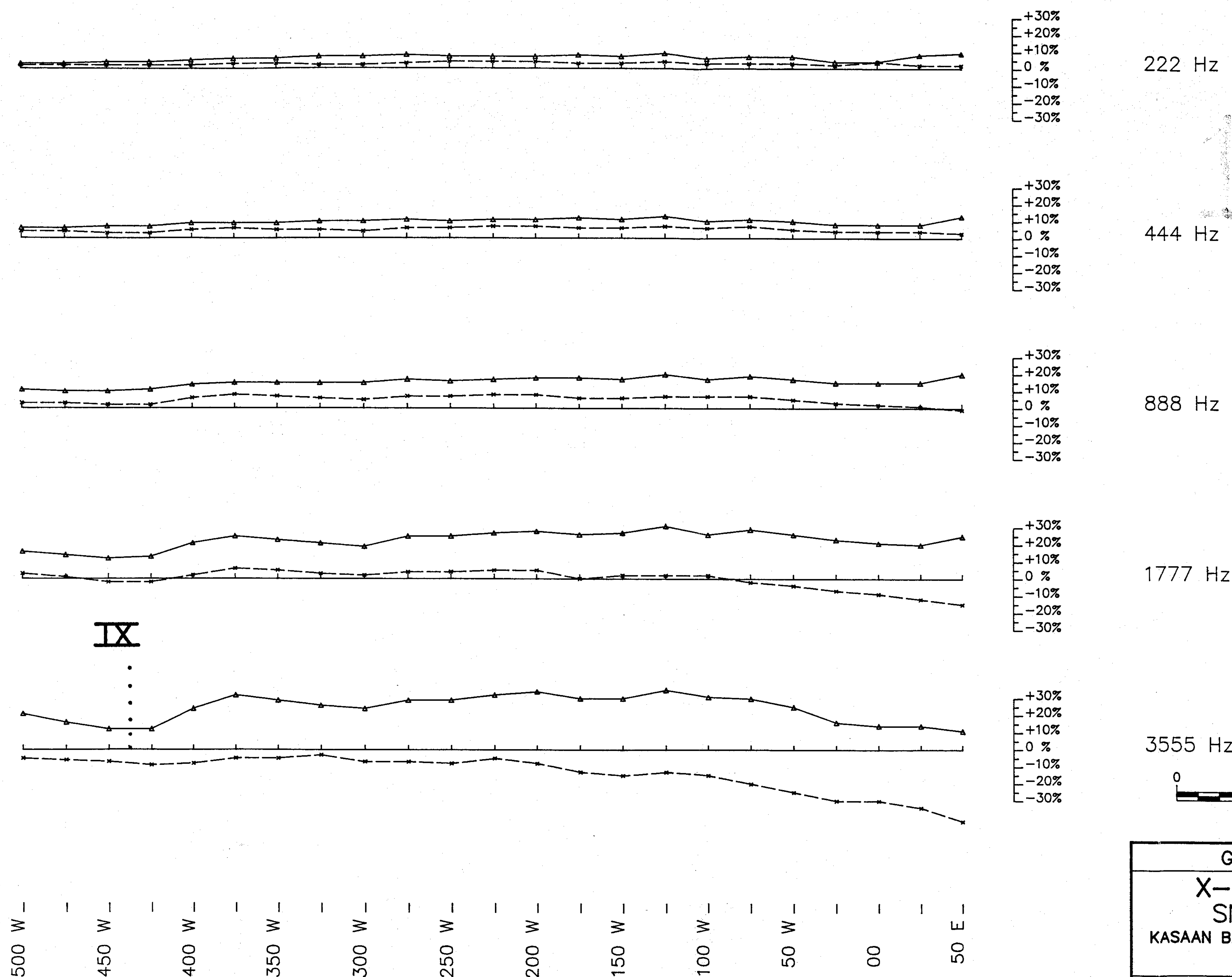
GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 9+00N

Drawn by:	Date:	Job No.	Scale:	Map No.
Geo-Comp	Apr.'87	87-03	Vert. 1cm=25% Horiz. 1:2,500	48

Geo-Comp Drawing File: sb/9n



16,766

Part 3 of 4

LEGEND

EM Conductor

definite ————

probable — — — —

possible . . . .

% OUT-OF-PHASE —×—×—×—

% IN-PHASE —△—△—△—

INSTRUMENTATION: Apex Parametrics MAX MIN II

COIL SPACING: 100 metres

0 50 100 150 200

metres

GEOTRONICS SURVEYS LTD.

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA

OMINECA M.D., B.C.

HORIZONTAL LOOP EM
Profiles – Line 10+00N

Drawn by:	Date:	Job No.	Scale:	Map No.
Geo-Comp	Apr.'87	87-03	Vert. 1cm=25% Horiz. 1:2,500	49

Geo-Comp Drawing File: sb/10n