MAP NO.: 115 O /15

ASSESSMENT REPORT X
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 092974
MINING DISTRICT: Dawson
TYPE OF WORK: Geophysical Surveys: Magnetic, I.P. and Resitivity

REPORT FILED UNDER: Klondike Reef Mines Ltd. / Arbor Resources Inc. / Appian Resources Ltd.

DATE PERFORMED: Sept 5 - November 4, 1990
DATE FILED: May 31, 1990
LOCATION: LAT.: 63°52'N
LONG.: 138°57'W
AREA: Hunter Creek Area
VALUE $: 30,093.00

CLAIM NAME & NO.: JAE 1 -14, YA 89006 -YA 89019, JAE 15 -19, YA 89318 - YA 89322, JAE 20 -27, YA 89719 - YA 89726, DAWSON 141 - 180, YA 79423 - YA 79426, MIKE 2, YA 17462, MIKE 4, 17463

WORK DONE BY: David G. Mark, Geophysicist
WORK DONE FOR: Klondike Reef Mines Ltd. / Arbor Resources Inc. / Appian Resources Ltd.

DATE TO GOOD STANDING:

REMARKS:# 115 O -
Induced polarization, resitivity and magnetic surveys were carried out over 2 different properties held by the syndicate. The surveys extended the strike length of both the Sheba and Mitchell showings and indicated numerous other vein systems. Severeal broad resitivity lows suggest possible epithermal alteration associated with these and other epithermal gold/silver veins.

Trevor Updating Bibliography. When Complete can be put in folder.

Already Geoscanned

GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION, RESISTIVITY,

AND MAGNETIC SURVEYS

OVER PORTIONS OF THE

JAE AND DAWSON CLAIMS

HUNKER CREEK, DAWSON CITY AREA

DAWSON M.D., YUKON TERRITORY

PROPERTY - JAE	: Center is 31.5 km S 50°E of Dawson City : 63°52' North Latitude, 138°57' West Longitude : N.T.S. 115 0/15
- DAWSON	: Center is 18.0 km S 25°E of Dawson City : 63°59' N latitude, 139°04'W longitude : N.T.S. 115 0/14
CLAIMS WORKED	: See Table II
SURVEY PERIOD	: September 5 - November 4, 1990
WRITTEN FOR	: KLONDIKE REEF MINES LTD. : ARBOR RESOURCES INC. : APPIAN RESOURCES LTD. : 1000 - 1177 West Hastings Street : Vancouver, B.C. V6E 2K3
WRITTEN BY	: David G. Mark, Geophysicist : GEOTRONICS SURVEYS LTD. : #530 - 800 West Pender Street : Vancouver, B.C., V6C 2V6
DATE	: April, 1991

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

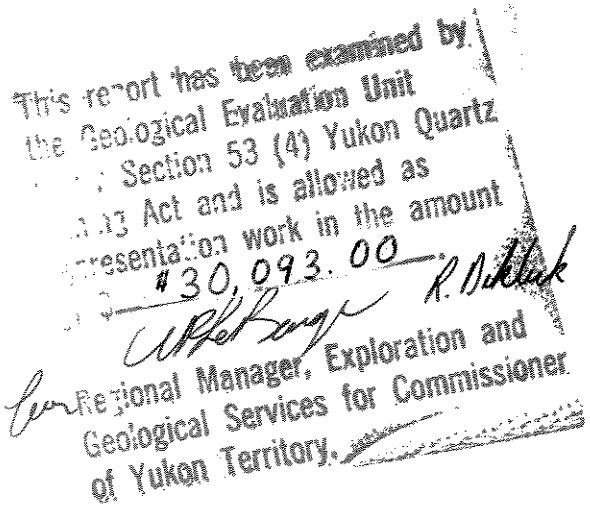

This report has been examined by
the Geological Evaluation Unit
Section 53 (4) Yukon Quartz
Act and is allowed as
representation work in the amount
$30,093.00
R. Niblock
Regional Manager, Exploration and
Geological Services for Commissioner
of Yukon Territory.

TABLE OF CONTENTS

SUMMARY i

CONCLUSIONS ii

RECOMMENDATIONS iii

INTRODUCTION AND GENERAL REMARKS 1

PROPERTY AND OWNERSHIP 3

LOCATION AND ACCESS 4

PHYSIOGRAPHY 5

PREVIOUS WORK 6

GEOLOGY 7

1) Regional 7
2) JAE Property 8
3) Dawson/Mike Property 9

CLAIMS WORKED 10

INDUCED POLARIZATION AND RESISTIVITY SURVEYS 10

1) Instrumentation 10
2) Theory 11
3) Survey Procedure 13
4) Compilation of Data 14

MAGNETIC SURVEY 15

1) Instrumentation 15
2) Theory 16
3) Survey Procedure 16
4) Compilation of Data 16

TABLE OF CONTENTS (con't)

DISCUSSION OF RESULTS	17
SELECTED BIBLIOGRAPHY	22
GEOPHYSICIST'S CERTIFICATE	25
AFFIDAVIT OF EXPENSES	26

LIST OF TABLES

TABLE I - PROPERTY CLAIMS	3
TABLE II - CLAIMS WORKED	10
TABLE III - IP AND RESISTIVITY SURVEY LINES	14
TABLE IV - MAGNETIC SURVEY LINES	16

LIST OF ILLUSTRATIONS

AT END OF REPORT

		Scale	Map #
Location Map		1: 9,175,000	1
Claim Map	- JAE	1: 50,000	J-2
	- Dawson	1: 50,000	FS-2
Survey Plan		1: 5,000	J-3
Survey Plan		1: 5,000	FS-3
JAE Grid			
1) Survey Data Plans			
Apparent Chargeability, n=2		1: 5,000	J-4
Apparent Chargeability, n=4		1: 5,000	J-5
Apparent Chargeability, n=6		1: 5,000	J-6
Apparent Resistivity, n=2		1: 5,000	J-7
Apparent Resistivity, n=4		1: 5,000	J-8
Apparent Resistivity, n=6		1: 5,000	J-9
Magnetic Survey		1: 5,000	J-10
2) Pseudosections			
Line 4 + 00S		1: 2,500	J-11
Line 2 + 00S		1: 2,500	J-12
Line 0 + 00		1: 2,500	J-13
Line 5 + 00N		1: 2,500	J-14
Line 6 + 50N		1: 2,500	J-15

LIST OF ILLUSTRATIONS (con't)

	Scale	Map #
Frank Short's Pit Grid (Dawson Claims)		
1) Survey Data Plans		
Apparent Chargeability, n=2	1: 5,000	FS-4
Apparent Resistivity, n=2	1: 5,000	FS-5
2) Pseudosections		
Line 0 + 00	1: 2,500	FS-6
Line 1 + 15S	1: 2,500	FS-7

SUMMARY

IP, resistivity, and magnetic surveys were carried out over a portion of the JAE claims and IP and resistivity surveys over a portion of the Dawson claims. Klondike Reef Mines Ltd. is optioning 50% of both properties. Both properties occur within the Klondike mining camp; (1) the JAE claims on King Solomon's Dome 31.5 km southeast of Dawson City, and (2) the Dawson claims on Last Chance Creek 18.0 km southeast of Dawson City.

On the JAE claims, the purpose of the work was to determine the geophysical response of the Mitchell and Sheba veins, whether there was any strike extension to the veins, and whether other vein-type mineralization occurs on the property. Across Frank Short's Pit, the purpose was to determine the geophysical response, especially resistivity, across the epithermal alteration zone.

The JAE claims are underlain mostly by Klondike schists. Numerous quartz veins occur on the property usually parallel to the schistosity striking in a northerly direction. The two main veins, with widths up to 1.8 m, are the Mitchell and the Sheba, both dipping about 45° easterly. The sulphides are pyrite, galena, pyrrhotite, chalcopyrite, arsenopyrite, freibergite and gold. A 1988 three-ton bulk sample to Trail contained 34% lead, 2% copper 196.25 oz/ton silver, and 0.03 oz/ton gold.

The Dawson claims are also mostly underlain by Klondike Schists. The bedrock within Frank Short's pit, which occurs a few hundred meters southwest of the Nasina carbonaceous rocks, was highly clay altered indicating an epithermal system. The placer operations had mined into the bedrock suggesting it to be gold-mineralized.

The IP and resistivity surveys were carried out using a Huntec receiver operating n the time-domain mode. The array used was dipole-dipole read at seven or eight separations with a dipole length and reading interval of 30 m. Three lines were carried out across and to the north of the Sheba showing, two lines across and to the north of the Mitchell showing, and two lines across and to the southeast of Frank Short's Pit.

The magnetic survey was carried out only on the JAE claims, which included the three Sheba lines and the Mitchell line across the showing. Readings were taken every 30 m with a Scintrex MP-2 proton precession magnetometer.

CONCLUSIONS

Jae Grid

(1) The IP, resistivity, and magnetic surveys responded very well to the Sheba showing indicating it to have a minimum strike length of 400 m, being open both to the north and to the south.

(2) The same surveys indicate a parallel vein occurring 60 to 90 m to the west of the Sheba showing.

(3) The IP survey also indicates a third zone of sulphide mineralization occurring on the west side of the Sheba lines (4+00S, 2+00S and 0+00) that becomes stronger along strike to the north. A fourth but smaller system occurs on the east side of the Sheba lines.

(4) The Mitchell showing is also reflected by the IP, resistivity and magnetic surveys. Since only two lines were done across and to the north of the showing, it's minimum strike length is 150 m being open to the north and to the south.

(5) The IP survey, on the two km long line 5+00N, revealed at least ten lineal-shaped anomalies that could be caused by Mitchell-and Sheba-type mineralization. Like the Mitchell and Sheba veins, all the anomalies, except for perhaps two, dip easterly.

(6) Epithermal alteration associated with epithermal gold/silver veins may occur on the property as is suggested by a broad resistivity low on line 5+00N.

Frank Short's Pit

(1) The pit area is underlain by a two closely-spaced resistivity lows that are caused by two zones of epithermal alteration dipping northeasterly.

(2) The alteration zones are likely associated with epithermal gold/silver mineralization. This is supported by the fact that the placer operation mined three to five m of bedrock.

(3) IP anomalies to the northeast are probably reflecting graphitic quartzite and graphitic schist of the Nasina series.

RECOMMENDATIONS

JAE Grid

A number of promising targets occur on the JAE grid that should be diamond drilled. These are:

Target	Collar Location	Dip	Depth
1. IP Anomaly A	L0+00, 1+20E	-60°W	150 m
Hole will test depth of Sheba vein as well as adjacent IP anomaly B.			
2. IP Anomaly A	L2+00S, 1+80E	-60°W	150 m
Hole will test what appears to be a northern extension of Sheba vein.			
3. IP Anomaly F	L5+00N, 0+30W	-60°W	75 m
Hole will test depth extension of Mitchell vein.			
4. IP Anomaly L	L5+00N, 6+00E	-60°W	100 m
Hole will test possible epithermal vein. This zone has potential for a very large mineralized zone.			

Target	Collar Location	Dip	Depth

5. IP Anomaly K L5+00N, 2+80E -60°W 75 m
   Hole will test strong consistent IP anomaly indicative of vein with good sulphide content.

6. IP Anomaly K L5+00N, 11+20E -60°W 80 M
   Hole will test an indicated mineralized vein that is wide relative to the other targets.

Depending upon the above results, further geological mapping, soil geochemistry sampling as well as IP, resistivity, and magnetic surveying should then be carried out.

Frank Short's Pit Grid

The interpretation is that there are two parallel epithermal systems dipping northeasterly and therefore two drill holes are recommended in order to test these systems.

1. SW/epithermal system L0+00, 0+75W -45°SW 80 m
   Collar location may have to be moved because of pit wall.

2. NE/epithermal system L0+00, 0+30E -60°SW 70 m

Careful geological mapping of the pit should be undertaken before drilling starts in order to optimize the location and dip of each of the drill holes.

Further resistivity/IP surveying should also be carried out along strike. A test line should be done with 15-m dipoles. This may prove to delineate the epithermal system(s) more accurately.

GEOPHYSICAL REPORT

ON

INDUCED POLARIZATION, RESISTIVITY AND

MAGNETIC SURVEYS

OVER PORTIONS OF THE

JAE AND DAWSON CLAIMS

HUNKER CREEK, DAWSON CITY AREA

DAWSON M.D., YUKON TERRITORY

INTRODUCTION AND GENERAL REMARKS

This report discusses the instrumentation, theory, field procedure and results of induced polarization (IP), resistivity, and magnetic surveys carried out over portions of the JAE claims and the Dawson claims. The center of the JAE property is located 31.5 km S 50°E of Dawson City and occurs on the upper reaches of Hunker Creek, within the west central part of the Yukon. The center of the Dawson Claims occurs 18.0 km S 25°E of Dawson City to the southwest of Hunker Creek.

The field work was completed from September 5 to November 4, 1990 under the supervision of David G. Mark, geophysicist, and under the field supervision of Alain Charest, geophysical technician, who also formed part of the field crew. A second geophysical technician as well as two helpers completed the crew of four.

The Mitchell and Sheba showings on the JAE claims consist of various sulphides with associated gold and silver values. Therefore the purpose of the IP (chargeability) survey was to determine the extent of these zones as well as to determine the possibility of whether these zones were connected. A second purpose was to locate additional zones. It was unknown what the correlating resistivity response would be. It could be moderately high due to the quartz veining, or possibly moderately low due to associated structure. The IP and resistivity response is expected to contrast with that over graphitic zones which are reflected by very strong IP highs correlating with strong resistivity lows.

A secondary purpose of the resistivity survey was to assist in the mapping of the bedrock geology. It was expected that faults and shear zones would show up as lineal-shaped resistivity lows; intrusive dykes as lineal-shaped resistivity highs (though some dykes in the area seemed to be reflected as resistivity lows); alteration zones as resistivity lows; and siliceous zones as resistivity highs.

The purpose of the magnetic survey was to locate intrusive dykes, especially the diabase dykes which respond as reverse polarity magnetic lows.

On the Dawson claims, the two lines done over Frank Short's Pit were carried out to determine the geophysical response, mainly resistivity, over the pit area. The pit had just been dug down to bedrock for placer mining the previous year. It therefore was examined during the 1990 season by Art Troup and other geologists since it could be seen the bedrock was heavily altered over a wide area. The type of alteration appeared to be epithermal. This conclusion was especially interesting since it could be seen the placer miners had mined three to five meters of bedrock and since much of the gold they obtained was fairly fine (typical of epithermal gold). The writer has had considerable experience in carrying out resistivity surveys over epithermal gold deposits. The normal response is a resistivity low which reflects the associated alteration. The epithermal vein should occur close to the footwall of this alteration.

The Geotronics crew was located onto the properties by Scott Tomlinson, geologist, and project manager.

Much of the following information up to and including the section on geology is taken from or directly quoted from Ralph A. Gonzalez's report of August, 1990 on the JAE claims. The writer has condensed the property description (physiography, geology, etc.) and thus a more thorough description is given in his report. For the Frank Short Pit grid, the geological description was provided verbally by Art Troup, geological engineer and exploration manager.

PROPERTY AND OWNERSHIP

The JAE property consists of 27 located contiguous mineral claims and the Dawson property, 42 contiguous claims. They are shown on maps #J-2 and #FS-2, respectively, and as described below in Table I:

TABLE I - PROPERTY CLAIMS

CLAIM NAME	GRANT NO.	ANNIVERSAY DATE
(1) JAE		
JAE 1 - 14	YA 89006 - YA 89019	April 1
JAE 15 - 19	YA 89318 - YA 89322	August 3
JAE 20 - 27	YA 89719 - YA 89726	June 8

All claims are held by Mr. John Erickson and Mr. Herman Liedtke (A.E. Resources Inc.) of Dawson City and have been optioned to Arbor Resources. 50% of this option is optioned to Klondike Reef Mines.

(2) Dawson

DAWSON 141 - 180	YA 79423 - 462	October 21
MIKE 2, 4	YB 17462 - 463	July 29

These claims have been optioned to Klondike Reef Mines and Appian Resources from William T. Dawson on behalf of the Dawson Syndicate (1983).

LOCATION AND ACCESS

The center of the JAE property is located 31.5 km (19.6 miles) S50°E (130°E) of the town of Dawson City which is the principal supply center of the northwestern Yukon. The property is located on King Solomon Dome to the immediate north of its peak (see map #J-2). The upper reaches of the Hunker and Dominion creeks as well as perhaps Gold Bottom Creek drain the property.

The geographical coordinates are 63°52'N latitude and 138°57'W longitude.

The center of the Dawson (Last Chance Creek) property is located 18.0 km S25°E of Dawson City to the immediate southwest of Hunker Creek and largely to the southeast of Last Chance Creek (see map #FS-2).

The geographical coordinates are 63°59'N latitude and 139°04'W longitude.

Dawson City can be reached by a paved road from Whitehorse, a distance of 535 km (333 miles), or by air from Whitehorse by scheduled flights of Air North (DC-3 or DC-4) and Alcan Air (smaller aircraft).

For the JAE claims, a local, all-weather road extends from Dawson City along Highway #2 and then up Hunker Creek for a total driving distance of 38 kilometres (24 miles). This road dissects the property into north and south halves and skirts the southwestern edge of the claims. Local trails, suitable for four wheel drive vehicles, provide additional access to the property and surrounding areas.

For the Dawson claims, one travels about 5 km along the Hunker Creek road from Highway #2 (this intersection is about 16 km from Dawson City). At this point a southwesterly-running road gives access to the Frank Short placer operations which occur along the northeastern part of the property.

PHYSIOGRAPHY

The property occurs within the Klondike region which is part of the Yukon Plateau, an upland surface that has been dissected and eroded by numerous small streams. The valleys are flat and wide in their lower reaches, but gradually narrow toward their head waters into steep-sided gulches ending in broad, amphitheatre-shaped bowls.

The Klondike region was not glaciated and, as a result, the deeply weathered, pre-glacial, gently rolling upland surface has been preserved. The thick covering of decomposed schist, usually intermingled with slide rock, mantles the side hills nearly everywhere. On the ridges the covering is less; the schists, often worn into fantastic shapes, occasionally project above surface or crop out along the sides of the steeper hills.

Topographically, the JAE Claims are located at the upper portion of the Klondike region and are immediately east of King Solomon Dome. Elevations on the property range between 800 m (2600 feet) at the head waters of Hunker and Dominion Creeks and 1328 m (4048 feet) on King Solomon Dome.

As for the Dawson and Mike claims, this property occurs to the immediate south of Preido Hill and to the south of the confluence of the northeasterly-flowing Last Chance Creek with the northwesterly-flowing Hunker Creek. Last Chance Creek and its tributaries drain the property along its northwestern edge. The elevations of the property vary from 425 m (1400 feet) at its northwestern and northeastern corners to over 700 m (2300 feet) within the southeastern part of the property to give a range of 275 m (900 feet).

The climate consists of long winters with temperatures that are often intensely cold while the summers are short, but with warm days and cool nights. The precipitation is about 30cm (12 in) per year. Vegetation is mixed boreal forest and tundra. Immature and stunted stands of aspen, balsam, poplar, and birch are present in the valley bottoms and are beginning to reclaim the older mining areas. Softwood timber consisting mainly of white and black spruce are limited to slopes and ridge tops.

PREVIOUS WORK

Prospectors in the early 1900's, searching the headwaters of Hunker Creek for the lode source of the rich placer deposits of the lower valley were the first to discover the auriferous quartz veins in the area of the JAE Claims. A report by D.D. Cairnes (1912) documented quartz veins being trenched at 100 foot intervals along 2,000 feet of strike length and noted a shaft sunk on one of the veins that went to a depth of 84 feet. These workings are on the Mitchell Vein where Cairnes collected a sample from the dump which reportedly graded 0.25 oz/T Au.

In 1969, a 3.7 tonne bulk sample was mined from the Mitchell Vein which graded 1.4 g/t Au, 4680 g/t Ag, 0.4% Cu, 26.3% Pb, and 0.7% Zn.

In 1987, JAE Resources staked the property covering the two principal known showings, the Mitchell and Sheba Veins. After staking, the original trenches were deepened and sampled.

In 1988, three reverse circulation drill holes tested the vein to a vertical depth of 16 metres (50 feet). The holes were collared to test the downward occurrence of high grade surface exposures of the vein. Results of the drilling indicated minor amounts of gold, up to 25 ounces of silver, and over 3 per cent lead. Metal content and metal ratios suggest the vein is a mesothermal system which could yield high grade silver and base metals.

In 1988, a three ton bulk sample of vein material was processed at the Cominco smelter in Trail. The net value per short dry ton was equal to $1,366.42 and contained 34% Pb, 2% Cu, 196.25 oz/ton Ag, and 0.03 oz/ton Au. Lead, copper, and silver were the only paying commodities.

As for the Dawson and Mike Claims, no previous ground work is known to be done. However, the placer operations currently underway at the northeastern end of the property have revealed widespread heavy clay alteration suggestive of epithermal gold mineralization. As mentioned in the "Introduction", it is quite apparent that the placer operations had mined three to five metres of bedrock. Therefore exploration interest has greatly increased on this property.

GEOLOGY

(1) Regional

The following description of the geology is based on mapping carried out by McConnell (1906 and 1908); Bostock (1942); Metcalfe (1981); Debicki (1985); Troup, Grunenburg, and Gonzalez (Assessment Reports 1984 to 1988).

Bedrock is exposed in some of the old placer workings, in road cuts, along the gulches and on some ridge tops, but the total exposed bedrock is much less than one per cent. The area has not been glaciated but solifluction has masked the bedrock and severely limited airphoto interpretation of the geology.

The oldest rocks in the area belong to the Nasina Series which includes graphitic schists, graphitic quartzites, and siliceous marble with minor chlorite and muscovite schist. These rocks have been metamorphosed to upper greenschist to middle amphibolite facies. The Nasina does not crop out on or near the JAE property but is found near the mouth of Hunker Creek and along the northeastern edge of the Dawson/Mike property.

The Klondike Series occurs throughout the Klondike area. It is composed of quartzite, quartz-chlorite, quartz-sericite schist, and graphitic schist. Because of its schistose nature, the Klondike Series is often referred to as the Klondike Schists. These rocks are believed to be the metamorphic equivalents of a series of arenaceous and tuffaceous clastic sediments. Like the Nasina Series, metamorphism ranges from upper greenschist to amphibolite facies. The Klondike Series is thought to be of Late Paleozoic age.

To the west, the Klondike Schists are in contact with a blocky-weathering feldspar-quartz-biotite rock which appears to be less highly metamorphosed than the Klondike Schist. Thin section studies show this rock to have been a medium-to coarse-grained granodiorite to quartz diorite.

The Moosehide mafic to ultramafic assemblage structurally overlies the Klondike Series. These rocks are strongly metamorphosed but unfoliated and are thought to have been emplaced tectonicly. They are not known to occur on the JAE Claims.

Gently folded andesitic volcanics, and clastic sediments outcrop north of the property on Hunker Creek near the mouth of Last Chance Creek. These rocks are generally considered to be of Early Tertiary age although some recent work in the Indian River area suggest a possible mid-Cretaceous age. Early Tertiary (Paleocene to Eocene) intrusives ranging in composition from rhyolite to andesite occur throughout the area as dykes and small stocks. Diabase dyke of probable Early to middle Tertiary age intrude the older rocks. These dykes and dykes of quartz-feldspar porphyry composition are now believed to be genetically related to the source of the placer gold found throughout the Klondike.

The Klondike Series is bounded on the north and northeast by the Tintina fault zone which strikes northwest and is known to have a right lateral movement of up to 750 kilometres. The Klondike Series has been subjected to folding with the axial planes striking in a general northwesterly direction by varying from east-west to north-south and dipping to the southwest. Locally the folding is isoclinal.

There is abundant evidence of extensive faulting within the Klondike Series. The data is fragmentary and for the mort part based on geophysical evidence.

(2) JAE Property

The JAE property is completely underlain by the Klondike Series. Quartz veins within the Series, in the vicinity of the property, typically parallel the schistosity, striking in a northerly direction. The quartz is fractured, milky white, rusty weathering and in places, crystalline. Vein width is variable but ranges up to 1.8 metres. Crosscutting faults offset the lengthy veins which are traceable along strike for hundreds of metres. The aggregate amount of vein quartz on the property is considerable.

A number of quartz veins occur on the property. However, there are four principal veins the Mitchell and Sheba Veins being the most prominent. The Mitchell and Sheba Veins have been actively explored since the early 1900's.

The Mitchell Vein, the most northerly structure of the two, was explored in the early days by a 25 metre (84 feet) shaft and 15 metre (50 feet) long drift. The surface exposure of the vein has also been trenched along at least 600 metres (2,000 feet) of strike length. Pyrite is the predominant sulphide mineral, occurring as euhedral crystals in blebs within the quartz and disseminated in the wall rock adjacent to the vein. In places along its strike length, the quartz is barren of all sulphides. Where pyrite crystals occur in the quartz vein, they are fractured and have inclusions of galena, pyrrhotite, chalcopyrite, arsenopyrite and gold. Gold not only forms inclusion in pyrite but also occurs within limonite filled fractures. Pyrite from the adjacent wall rock contains inclusions of galena, pyrrhotite, chalcopyrite, arsenopyrite, and probably gold.

The Sheba Vein is located 850 metres south of the Mitchell Vein. This Vein, which is generally wider than the Mitchell Vein, consists mainly of white, brittle quartz and massive galena. Euhedral pyrite crystals up to one centimetre across occur within the vein and its adjacent wall rock. Fractures in quartz are filled with galena indicating a silica rich mineralization phase before precipitation of the sulphides.

Galena shows fissures and cavities which are filled by cerussite and finely disseminated covellite (Debicki, 1984 and 1985; and McGowan, 1989). Freibergite (argentiferous tetrahedrite) and euhedral pyrite often occur as inclusions within galena. Minor amounts of euhedral arsenopyrite, anhedral chalcopyrite, sphalerite, and pyrargyrite (dark ruby silver) also forms inclusions in galena. Fractures within the euhedral pyrite are healed by galena, freibergite, sphalerite, quartz and cerussite. Pyrite contains inclusions of chalcopyrite, pyrrhotite and gold. Gold inclusions only occur within pyrite.

(3) Dawson/Mike Property

Few outcrops occur on this property, but it appears to be almost totally underlain by muscovite-quartz-feldspar quartz schist (some with quartz phenocrysts) of the Klondike Series. Along the northeastern edge of the property is a northwesterly-striking band of carbonaceous schist and/or quartzite of the Nasina series. The contact between these two rock types is a northwesterly-trending thrust fault.

Where the placer mining took place (Frank Short's pit) widespread argillic clay alteration was encountered in the bedrock, probably Klondike Series schist. Through the center of the pit occurs a 10-meter wide highly altered diabase (?) dyke striking in a northwesterly direction. The dyke is a few hundred meters southwest of the Nasina Series carbonaceous rocks where occur outcroppings of serpentinite.

CLAIMS WORKED

The following table gives the names of the claims on which geophysics was carried out on.

TABLE II - CLAIMS WORKED

CLAIM NAME	GRANT NO.	ANNIVERSARY DATE
(1) JAE Grid		
JAE 1 - 6	YA 89006 - '011	April 1
JAE 17 - 19	YA 89320 - '322	August 3
(2) Frank Short's Pit Grid		
DAWSON 141, 142	YA 79423, '24	October 21
DAWSON 149, 150	YA 79431, '32	October 21

INDUCED POLARIZATION AND RESISTIVITY SURVEYS

(1) Instrumentation

The transmitter used for the induced polarization and resistivity surveys was a Mark IV, 7.5 kw model, manufactured by Huntec ('70) Limited of Scarborough, Ontario. It

is powered by a Mark IV 7.5 kw engine driven alternator. For difficult areas, the transmitter used was a Model IPT-1, manufactured by Phoenix Geophysics Ltd. of Markham, Ontario. It was powered by a 2.5 kw motor generator, Model MG-2, also manufactured by Phoenix.

The receiver used was a model Mark IV, manufactured by Huntec ('70) Limited. This has software controlled functions, programmable through the front panel. It features automatic calibration, gain setting, SP cancellation, fault diagnosis, and filter tuning. The Mark IV system is capable of time domain, frequency domain, and complex resistivity measurements.

(2) Theory

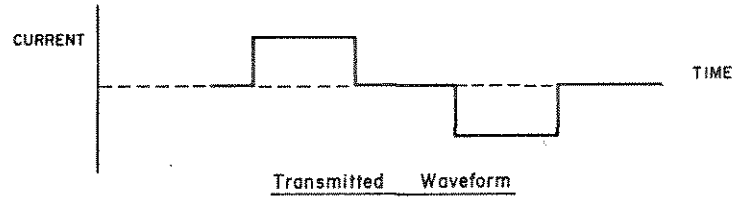
When a voltage is applied to the ground, electrical current flows, mainly in the electrolyte-filled capillaries within the rock. If the capillaries also contain certain mineral particles that transport current by electrons (most sulphides, some oxides and graphite), then the ionic charges build up at 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 chargeable bodies.

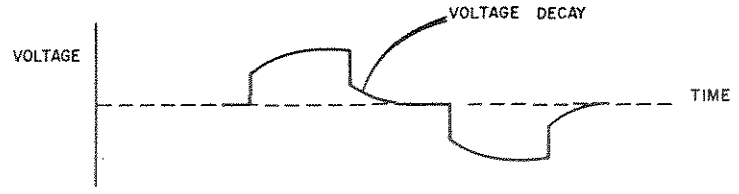
Most IP surveys are carried out by taking measurements in the "time-domain" or the "frequency-domain".

Time-domain measurements involve sampling the waveform at intervals after the current is switched off, to derive a dimensionless parameter, the chargeability, "M", which is a measure of the strength of the induced polarization effect. Measurements in the frequency-domain are based upon the fact that the resistance produced

at the electrolyte-charged particle interface decreases with the increasing frequency. The difference between the apparent resistivity readings at high and low frequency is expressed as the percentage frequency effect, "PFE".



Transmitted Waveform



Recorded Voltage

The quantity apparent resistivity, ρ_a, computed from electrical survey results in 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:

$$\frac{R_o}{R_w} = 0^{-2}$$

Where: R_o is formation resistivity, R_w is pore water resistivity, O is porosity.

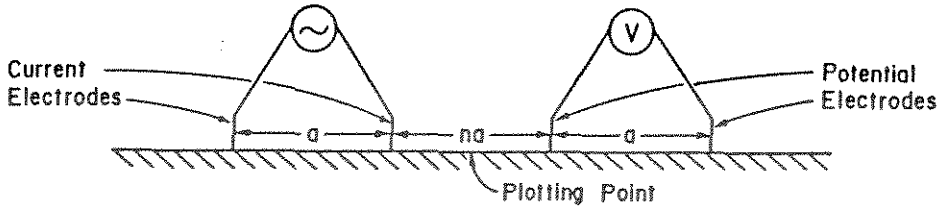
(3) Survey Procedure

All lines were cut out and the stations marked thereon by a separate contractor hired by Arbor Resources.

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 array chosen was the dipole-dipole shown as follows:

DIPOLE-DIPOLE ARRAY



The dipole length and reading interval was chosen to be 30 metres for all survey lines. The lines were read to seven separations other than lines 0+00 and 2+00S of the JAE grid which were read to eight. Seven separations give a theoretical depth penetration of 125 m, and 8 separations, 140 m.

The dipole-dipole array was chosen because of its symmetry resulting in a greater reliability in interpretation. Furthermore, narrow, vein-like targets can be missed by non-symmetrical arrays such as the pole-dipole array.

Stainless steel stakes were used for current electrodes and metallic copper in a copper sulphate solution, in non-polarizing, unglazed, porcelain pots were used for the potential electrodes. When the weather became colder in the fall, stainless steel stakes were also used for the potential electrodes.

For the JAE grid, readings were taken along 5 east-west lines as shown on the survey plan (map #J-3) to give a total survey length of 5.79 km. On Frank Short's Pit grid, two northeast-southwest lines were done as shown on the survey plan, map #FS-3.

The following table shows the lines done, the number of separations for each line, and the length of each line.

TABLE III
IP AND RESISTIVITY SURVEY LINES

LINE NO.	STATIONS	# OF SEPARATIONS	LENGTH
(1) JAE Grid			
Line 4+00S	480E to 510W	7	0.99
Line 2+00S	540E to 390W	8	0.93
Line 0+00	480E to 480W	8	0.96
Line 5+00N	1470E to 480W	7	1.95
Line 6+50N	470E to 280W	7	0.75
			5.58 km
(2) Frank Short's Pit Grid			
Line 0+00	420E to 480W	7	0.90
Line 1+15S	210E to 270W	7	0.48
			1.38

(4) COMPILATION OF DATA

All the data were reduced by a computer software program developed by Geosoft Inc. of Toronto, Ontario. Parts of this program have been modified by Geotronics for its own applications. The computerized data reduction included the resistivity calculations, pseudosection plotting, survey plan plotting and contouring.

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 resistivity.

All the data has been plotted in pseudosection form below the actual topographic profile at a scale of 1: 2,500. The map numbers are shown in the Table of Contents. Each value is plotted at a point formed from the intersection of a line drawn from the mid-point of each of the two dipoles. The result of this method of plotting is the farther the dipoles are separated, the deeper is the reading. The resistivity pseudosection is plotted on the upper part of the map for each of the lines, and the chargeability pseudosection is plotted on the lower part.

For the JAE grid, six survey plans were drawn at a scale of 1: 5,000. These consisted of apparent chargeability at three different separations (n=2, 4, and 6) and apparent resistivity at the same separations. For the Frank Short's Pit grid, only two survey plans were drawn which consisted of the n=2 level (or separation) for the apparent chargeability and for the apparent resistivity, respectively. These plan maps were produced by taking the measured values from their exact subsurface locations, and vertically projecting them to the ground surface. The purpose was to determine anomalous trends and thus mineralogical and geological trends, especially quartz veins which may contain mineralization. All pseudosections and plans were contoured at an interval of 3 milliseconds for the chargeability results, and at an interval of logarithmic to the base 10 for the resistivity results.

MAGNETIC SURVEY

(1) Instrumentation

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 $\pm$ 1 gamma, over a range of 20,000 - 100,000 gammas. The operating temperature range is -35^{0} to +50^{0} C, and its gradient tolerance is up to 5,000 gammas per meter.

(2) Theory

Only two commonly occurring minerals are strongly magnetic, magnetite and pyrrhotite. Magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Therefore, if magnetite or pyrrhotite occurs with economic mineralization, magnetic surveys are used to locate this type of mineralization. Magnetic surveys are 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.

(3) Survey Procedure

The readings were taken only along four lines and on the JAE grid as shown in Table IV. The readings of the earth's total magnetic field were taken at the 30 m stations along the IP/resistivity 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. A total of 3.84 km were surveyed.

(4) Compilation of Data

The data was plotted in profile form by the Geosoft software computer program above the IP and resistivity pseudosections. In addition a 1:5,000 plan map was produced.

TABLE IV

MAGNETIC SURVEY

LINE NO.	STATIONS	LENGTH (km)
4+00S	480E to 510W	0.99
2+00S	510E to 510W	1.02
0+00	480E to 450W	0.93
5+00N	480E to 420W	0.90
		3.84

DISCUSSION OF RESULTS

(1) JAE Grid

The Sheba vein occurs on line 4+00S at about 90E. Upon looking on the pseudosection for this line it can be seen the showing has a definite geophysical signature consisting of an IP chargeable high (11.9 msec), a resistivity low, and a magnetic low. This has been labelled A. The IP high is caused by the sulphides. However, the cause of the resistivity low is less clear. It may be due to a fault/shear zone (most likely), associated fracturing, and/or alteration. The cause of the magnetic low is likely the same as that of the resistivity low, that is, faulting, shearing, fracturing, and/or alteration. An alternate cause of the magnetic low may be a diabase dyke, the magnetic signature of which is known to have a reverse polarity in the area. However, no dyking of any kind has been noted on the property (though this is far from conclusive because of the extensive overburden).

Just east of 0+00 on line 4+00S occurs a second IP anomaly labelled B. This one, somewhat stronger, indicates a second or parallel vein system to the Sheba. A second magnetic low as well as a minor resistivity low also occurs, though to the immediate west of the IP anomaly.

Of strong exploration interest is the fact that all three geophysical methods indicate that the Sheba vein, as well as the IP anomaly west of the Sheba vein, extends to the north occurring on line 2+00S and 0+00. This indicates a minimum strike length of 400 m (1,312 feet) to the north. According to Troup, the vein also extends 300 m to the south from the showing on line 0+00. This would indicate a total minimum strike length of 700 m. The strike direction appears to be northerly, as indicated by the n=2 survey plans for both the IP chargeable and resistivity data. The magnetic data also indicates the same strike direction, though it is not as apparent on the survey plan.

On line 2+00S, the Sheba vein, as indicated by the IP anomaly at 120E appears not to surface, but occur a few tens of meters below the surface. Otherwise, the cause of the lack of anomalous IP results at the surface may be due to (1) sulphides having been oxidized, or (2) a low level of groundwater to act as an electrolyte.

At about 90E to 180E on all three lines occurs an IP anomaly at depth, labelled C, that is weakest on line 4+00S, becomes stronger on line 2+00S, and is strongest on line 0+00. On line 0+00, the anomaly appears to be caused by two different sources, one sub-outcropping at 60W and the second at 120W. The apparent dip is westerly.

The resistivity and magnetic data correlates as follows: (1) a resistivity low and magnetic low with the eastern IP anomaly at 120W, and (2) a resistivity high and a magnetic high with the western IP anomaly at 60W. The suggested interpretation is a Sheba-type mineralized vein occurring to the west of an intrusive dyke that is also mineralized. Obviously, this geophysical feature is an exploration target.

To the east of the Sheba vein on all three lines at 180E to 300E occurs two smaller anomalies at depth, labelled D and E, respectively. There is a resistivity low correlation but no magnetic correlation. There is also a silver-gold-lead soil geochemistry anomalous expression that is relatively small in amplitude. This would be expected if the causative source is at depth.

It should be pointed out that the 200-metre distance between the lines makes it difficult to follow an anomaly from one line to the next. Therefore, question marks have been placed after some of the labelling letters.

On the eastern part of the survey area occurs a northerly-striking narrow magnetic high of small amplitude (20 to 30 gammas). It correlates with a resistivity high. The causative source is very likely a dyke. This feature can also be seen on line 5+00N.

The Mitchell vein occurs at about 50W on line 5+00N. The geophysical expression for this showing is an IP high correlating with a resistivity high and with a magnetic high and labelled F. The IP high is caused by the sulphides and the resistivity high may be due to the quartz veining and associated carbonate alteration. However, the magnetic high is probably caused by an associated intrusive dyke which may also be the cause of the resistivity high. But, as noted above, no intrusive dykes were noted near the showings or on the property.

The Mitchell showing, as indicated by the IP and resistivity results appears to extend 150m north to line 6+50N at about 40W (no magnetic readings were taken on this line). This gives a minimum strike length of 150 m being open both to the north and to the south.

It is still inconclusive whether the Mitchell and Sheba veins are one and the same. They strike toward each other but have a slightly different mineralogical make-up as well as a different geophysical signature.

Line 5+00N, largely because of its 2 km length, has revealed at least 10 lineal-shaped anomalies. All apparently dip easterly except for the western two, which appear to dip westerly, but this is open to interpretation. Though line 6+50N is a much shorter line, some of the western anomalies appear to extend onto this line.

Any or all of the anomalies could easily be caused by Mitchell- or Sheba-vein type mineralization. The anomalies sub-outcrop as follows:

Anomaly G, 240W,	correlates with resistivity high
Anomaly H, 120W,	correlates with resistivity high
Anomaly I, 0 to 60E,	unclear resistivity correlation, correlates with strong magnetic low
Anomaly J, 130E,	correlates with resistivity high, minor magnetic low that is adjacent to a magnetic high (probably intrusive dyke)
Anomaly K, 240E,	correlates with minor resistivity low and minor magnetic low that is adjacent to a magnetic high (probably intrusive dyke)
Anomaly L, 540E,	occurs on edge of major resistivity low which is discussed below.
Anomaly M, 930E,	correlates with resistivity high
Anomaly N, 1065E,	unclear resistivity correlation
Anomaly O, 1160E,	appears to correlate with localized resistivity low
Anomaly P, 1260E to 1290E,	correlates with edge of resistivity high

Occurring between the first two IP anomalies at 240W and 120W, respectively, is a very strong (that is, for this area) magnetic high that is about 250 gammas above background. The causative source is probably a highly altered serpentinite. This rock-type is not known to occur on the property but Ruth Debicki has mapped an occurence 1900 m north-northeasterly of the Mitchell showing.

Of very strong exploration interest is a resistivity low occurring from about 510E to 790E (on the surface) on the west bank of the Hunker Creek tributary. There is a strong possibility that this low is caused by epithermal alteration associated with an epithermal gold/silver vein (or, more likely, veins) especially considering the strong evidence of epithermal gold/silver mineralization to the northwest, such as in Frank Short's Pit. The dip of the possible alteration (and therefore veins) is difficult to say at this point since additional resistivity mapping needs to be done, but it appears to be westerly.

The correlating IP highs may be due to pyritization as an alteration product of the epithermal system.

Also of interest are soil geochemistry anomalous results that occur to the south of the resistivity low on lines 0+00 and 4+00S.

(2) Frank Short's Pit Grid

A very strong resistivity low occurs across the pit on line 0+00 that is very likely caused by epithermal alteration associated with a gold/silver epithermal vein. The reasons are:

(1) The geological evidence in the pit area is strongly suggestive of epithermal alteration.

(2) It is similar in style and shape to other resistivity lows encountered by the writer across epithermal alteration halos throughout western North America.

(3) It is evident that the placer miners mined into the bedrock. It seems obvious therefore the bedrock contained gold mineralization.

(4) It was reported verbally to the writer by Art Troup that much of the gold was fine-grained which is typical of epithermal systems.

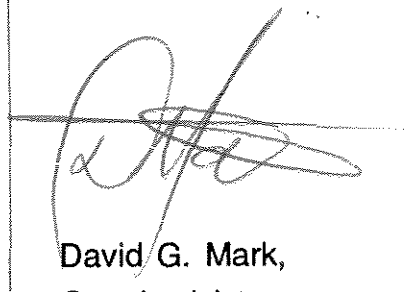
There appears to be two epithermal systems, each dipping northeasterly. The footwall of one sub-outcrops at about 0+00 or just west of 0+00, and the footwall of the other sub-outcrops at 120W to 150W. The resistivity high between the two lows is caused by the highly altered diabase (?) dyke within the pit area.

The two resistivity lows can also be seen on line 1+15S suggesting therefore a minimum strike length of 115m. But on this line the system appears to have much less depth therefore suggesting the system plunges to the northwest.

A resistivity low at 210W on both lines could be a third, but weaker epithermal system. Along strike it could well become much stronger.

An IP high occurs at 120E on both lines, and a second one at 240E on line 0+00. The southwestern IP anomaly correlates with a resistivity high, and the northeastern one with a resistivity low. It is likely the causative source of the IP anomalies is graphitic (carbonaceous) rocks of the Nasina Series. Possibly the southwestern anomaly is caused by graphitic quartzite, and the northeastern one by graphitic schist.

Respectfully submitted,
GEOTRONICS SURVEYS LTD. April 27, 1991



David G. Mark,
Geophysicist

SELECTED BIBLIOGRAPHY

Bostock, H.S., 1957; Yukon Territory-Selected Field Reports of the Geological Survey of Canada, 1893 to 1937: Geol. Surv. of Can., Mem. 284.

Boyle, R.W., 1979; The Geochemistry of Gold and its Deposits: Geol. Surv. of Can., Bulletin 280, p. 350-357.

Cairnes, D.D., 1912; Quartz Mining in the Klondike District: Geol. Surv. of Can., Sum. Rpt. for 1911, pp. 4, 17-40: Also Geol. Surv. of Can., Mem. 284, p. 343-351

DeCarle, R.J., 1984; Airborne Electromagnetic Survey, Mark Management Limited, Dawson Area, Yukon Territory: File No. 26023, Commissioned Report.

Desborough, George A., 1970; Silver Depletion Indicated by Microanalysis of Gold from Placer Occurrences, Western United States: Econ. Geol., v. 65, no. 3, p. 304-311.

Debicki, R.L., 1984; Bedrock Geology and Mineralization of the Klondike Area (West), 115 0/ 14, 15 and 116 B/2, 3 (1:50,000 scale map with marginal notes): Exploration and Geological Services Division, Mineral Resource Directorate, Whitehorse, Yukon.

_____**Open File** - Bedrock Geology and Mineralization of the Klondike Area (East), 115 0/9, 10, 11, 14, 15 and 16 B/2, and 3: Exploration and Geological Sciences Division, Yukon; Indian and Northern Affairs Canada, Open File 1:50,000 Map.

Dufresne, M.B. and Morison, S.R., 1985; Stratigraphy and Alteration of the White Channel Gravel at Dago Hill, a Progress Report, Klondike Area, Yukon: in Yukon Exploration and Geology, 1983; Exploration and Geological Services Division, D.I.A.N.D., Yukon, p. 55-59.

Dufresne, M.B., Nesbitt, B.E., Longstaffe, F.J., and Morison, S.R., 1986; A Plio-Pleistocene, Epithermal Origin for Au Mineralization in the White Channel Gravel Sediment of the Klondike Region, Yukon: Abstract in Yukon Exploration and Geology, 1985; Exploration and Geological Services Division, D.I.A.N.D., Yukon, p. 55-59.

Dufresne, M.B., 1986; Origin of Gold in the White Channel Sediments of the Klondike Region, Yukon Territory. Master of Science Thesis, University of Alberta, 166 pp.

Friedrick, G. and Hoymann, K.H., 1988; Lithogeochemistry, Ore Mineralization and Alteration of Bedrock and Auriferous Quartz Veins, Mitchell Vein and Sheba Vein, Klondike Area, Yukon Territory, Canada; Preliminary Report, Technical University of Aachen, West Germany.

Gleeson, C.F., 1970; Heavy Mineral Studies in the Klondike Area, Yukon Territory: Geological Survey of Canada, Bulletin 173, 63 pp.

Gonzalez, R.A., 1984; Regional Geochemical and Geophysical Report on the Syndicate, Dawson, Williams, '83', '98', Wild, and Wild Card Claims: Dawson Mining District, Yukon Territory, Eng., Rpt., 30 pp.

Gonzalez, R.A., 1990; Geological Report on the JAE Mineral Claims, Lat. 63°52'N, Long 138°57'W, NTS 115 0/14 D, prepared for Klondike Reef Mines Ltd.

Gonzalez, R.A., 1987; Progress Report on the Geology, Soil Geochemistry, and Diamond Drilling on Lode-Mineral Claims in the Klondike Gold Fields, Dawson Mining District: Yukon Territory, Eng., Rpt., 19 pp.

Gonzalez, R.A. and Grunenberg, P.B., 1984; Representation Report for Diamond Drilling on the Syndicate 41-83, and the '98', 12, 17, 22 and 28 Mineral Claims: Dawson Mining District, Yukon Territory, 23 pp.

Gonzalez, R.A. and Grunenberg, P.B., 1984; Representation Report for Diamond Drilling on the Syndicate 1-40, Filler 1-8, '98', 1 Plus, Wild 1, and Wild Card Claims: Dawson Miling District, Yukon Territory, 23 pp.

Grunenberg, P.B., 1988; Geochemical Geophysical, Trench and Rotary Drill Report for Work Performed by Mark Management Ltd. on the Hawk Property, 19 pp.

Grunenberg, P.B. and Troup, A.G., 1985; Geological, Geochemical and Geophysical Report on the Dawson Property, 42 pp.

Grunenberg, P. and Troup, A.G., 1986; Geological, Geochemical and Geophysical Report for Work Performed by Mark Management Ltd.: Unpub. Rept., 42 pp.

Grunenberg, P.B., 1989; Geological, Geochemical, Geophysical and Trenching Report on the Dawson Property, Dawson Mining District, Yukon, NTS 115 0/14 for Arbor Resources.

MacLean, T.A., 1914; Lode Mining in Yukon; An Investigation of Quartz Deposits in the Klondike Division: Can. Dept. of Mines, Mines Br. Pub. 222, Ottawa.

McConnell, R.G., 1905; Report on the Klondike Gold Fields: Geol. Surv. of Canada, Annu. Rept., pt. B, v.14, p.1-71.

McGowan, R.J., 1989; Report on the JAE Property, Dawson City, Yukon: unpubl. Intern. Rpt., 18 pp.

Metcalfe, P., 1981; Petrogenesis of the Klondike Formation, Yukon Territory, a Thesis Presented to the University of Manitoba in Partial Fulfilment of the Requirements for the Degree of Master of Science in Department of Earth Sciences, University of Manitoba.

Milner, M.W., 1977; Geomorphology of the Klondike Placer Gold Fields, Yukon Territory. Indian and Northern Affairs Canada (Whitehorse), Final Report, 157 pp.

Mortensen, J.K., 1986; Bedrock Geology and U-Pb Geochronology of the Klondike District, West-Central Yukon Territory. Geological Survey of Canada.

Roche, W.J., 1916; The Yukon Territory; Its History and Resources: an Issue by the Ministry of the Interior, Ottawa.

Tomlinson, Scott, 1991; Verbal Discussions, Project Geologist for Arbor Resources Inc.

Troup, A., 1991; Verbal Discussions, Exploration Manager for Arbor Resources Inc.

Tuck, R., 1968; Origin of the Bedrock Values of Placer Deposits: Econ. Geol., v. 63, no.2, p. 191-193.

Van Angeren, P.D., 1986; Compilation Report on the Lone Star Property, Dawson Mining District, Y.T.: Unpub. Rept. for Dawson Eldorado Mines Ltd.

Walcott, P.E. and Associates Ltd., 1987; A Report on Magnetic and Electromagnetic Surveys, RON 17-22. (Unpublished Report for Arbor Resources Inc.)

Walcott, P.E. and Associates Ltd., 1987; A Report on Magnetic and Induced Polarization Surveys, RON, SYNDICATE, RJ, DN, ND, DE claims and LOTS. (Unpublished report for Arbor Resources Inc. and Kangeld Resources Ltd.)

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.

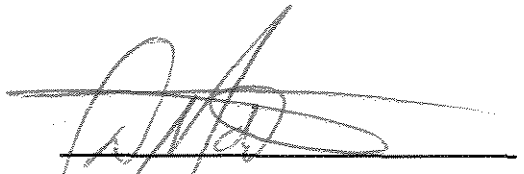
I further certify:

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 23 years and have been active in the mining industry for the past 26 years.

3. This report is compiled from data obtained from IP, resistivity and magnetic surveys carried out over portions of the JAE claims and the Dawson claims by a crew of Geotronics Surveys Ltd., under the supervision of myself and under the field supervision of Alain Charest, geophysical technician, from September 5 to November 4, 1990.

4. I hold no interest in Klondike Reef Mines Ltd., Arbor Resources Inc., Appian Resources Ltd. nor in the properties discussed in this report, nor will I receive any interest as a result of writing this report.



April 27, 1991

David G. Mark,
Geophysicist

AFFIDAVIT OF EXPENSES - JAE

IP, resistivity and magnetic surveys were carried out over a portion of the JAE claims from September 5 to October 12, 1990, located on King Solomon's Dome in the Dawson City area, Dawson Mining Division, Yukon Territory to the value of the following:

FIELD

Mob-demob		
Airfare, Vancouver to Dawson City, rtn. 6 men at $1,195/man		$ 7,188
Freight, air and land		2,908
Room and board		1,170
Wages, at cost		2,916
	Sub-Total	14,182
JAE Grid's Pro Rata share at 13%		$ 1,844
4-man crew, 10 days at $1,100/day		$ 11,000
3-man crew, 0.5 days at $950/day		475
Truck rental and gas, Suburban 4X4, 10.5 days at $100/day		1,050
Room and board, 44 man-days at $65/man-day		2,860
Linecutting, all-in cost, 5.8 km at $400/km		2,320
	Sub-Total	$17,655

OFFICE

Senior geophysicist, 30 hours @ $45/hour		$ 1,350
Geological consultation (Art Troup & Scott Tomlinson)		1,000
Geophysical technician with computer, 74 hours @ $30/hour		2,220
Computer-aided drafting & plotting 13 hours at $30/hour		390
Report generation and printing (share)		400
	Sub-Total	$ 5,360
	Grand Total	**$24,859**

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark, Geophysicist
Manager

AFFIDAVIT OF EXPENSES - DAWSON MIKE CLAIMS

IP and resistivity surveys were carried out over a portion of the Dawson claims on November 2nd and 4th, 1990 located on Last Chance Creek in the Dawson City area, Dawson Mining Division, Yukon Territory to the value of the following:

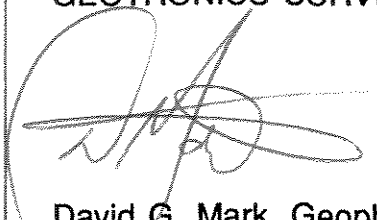
FIELD

Mob-demob		
Airfare, Vancouver to Dawson City, rtn. 6 men at $1,195/man		$ 7,188
Freight, air and land		2,908
Room and board		1,170
Wages, at cost		2,916
	Sub-Total	14,182
Dawson claims' Pro Rata share at 2%		$ 284
4-man crew, 1-6 days at $1,100/day		$ 1,760
Truck rental and gas, Suburban 4X4, 2 days at $100/day		200
Room and board, 8 man-days at $65/man-day		520
Linecutting, all-in cost, 1.6 km at $400/km		640
	Sub-Total	$ 3,120

OFFICE

Senior geophysicist, 10 hours @ $45/hour		$ 450
Geological consultation (Art Troup & Scott Tomlinson)		500
Geophysical technician with computer, 18 hours @ $30/hour		540
Computer-aided drafting & plotting 8 hours at $30/hour		240
Report generation and printing (share)		100
	Sub-Total	$ 1,830
	Grand Total	**$ 5,234**

Respectfully submitted,
GEOTRONICS SURVEYS LTD.



David G. Mark, Geophysicist
Manager

Eight men were involved in the field work as follows:

David Mark, senior geophysicist, Vancouver, B.C.

Alain Charest, geophysical technician/crew chief, Vancouver, B.C.

Marc Habel, geophysical technician/crew chief, Vancouver, B.C.

Maurice Lavoie, geophysical technician, Vancouver, B.C.

Al Harrison, geophysical technician, Vancouver, B.C.

Derwin Miller, helper, Dawson City, Yukon

Dan Robertson, helper, Vancouver, B.C.

An attempt was made to hire locally but, other than one person, no one else was available.

All room and board, and supplies were purchased locally.

KLONDIKE REEF MINES LTD.

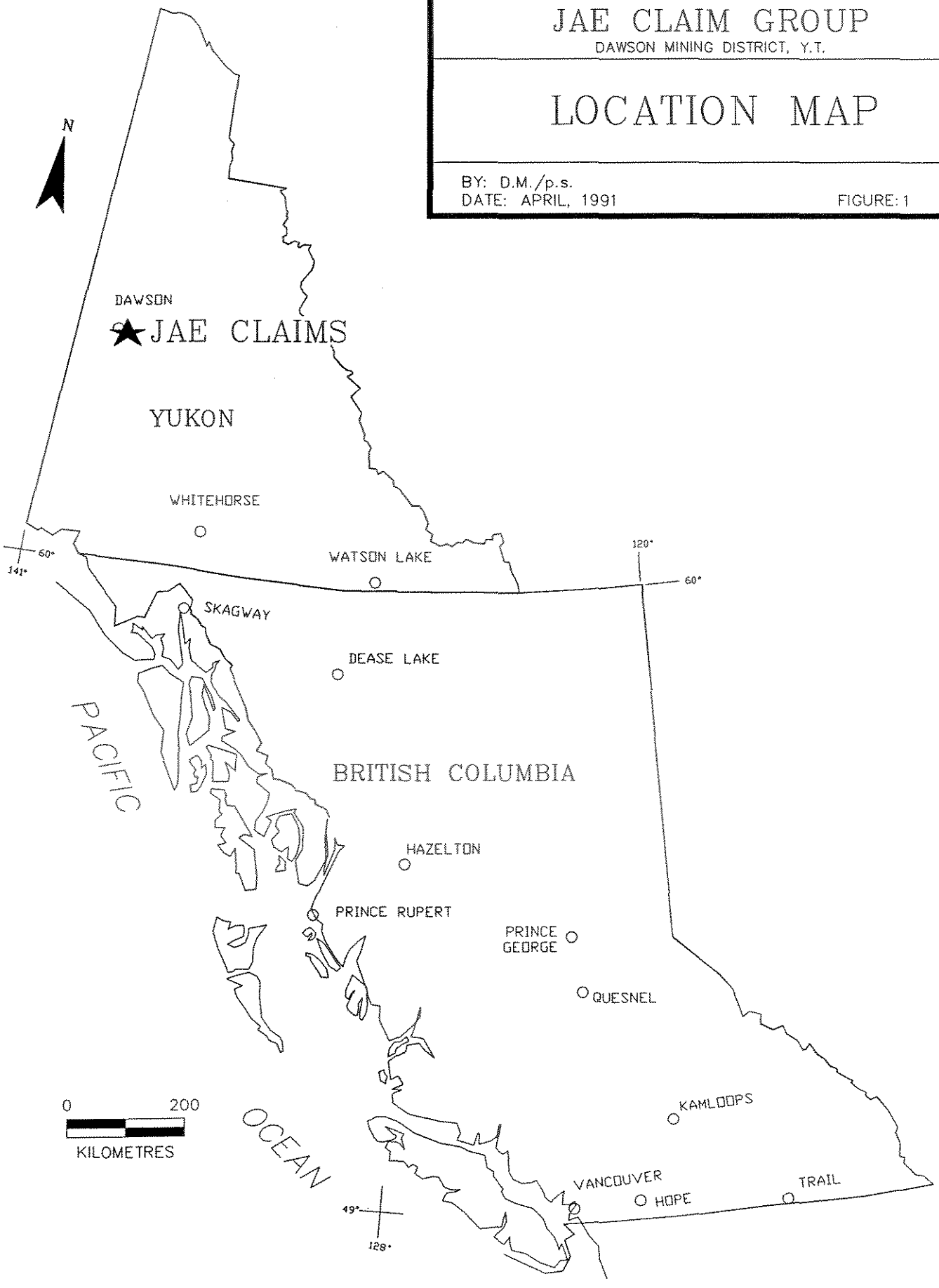
JAE CLAIM GROUP

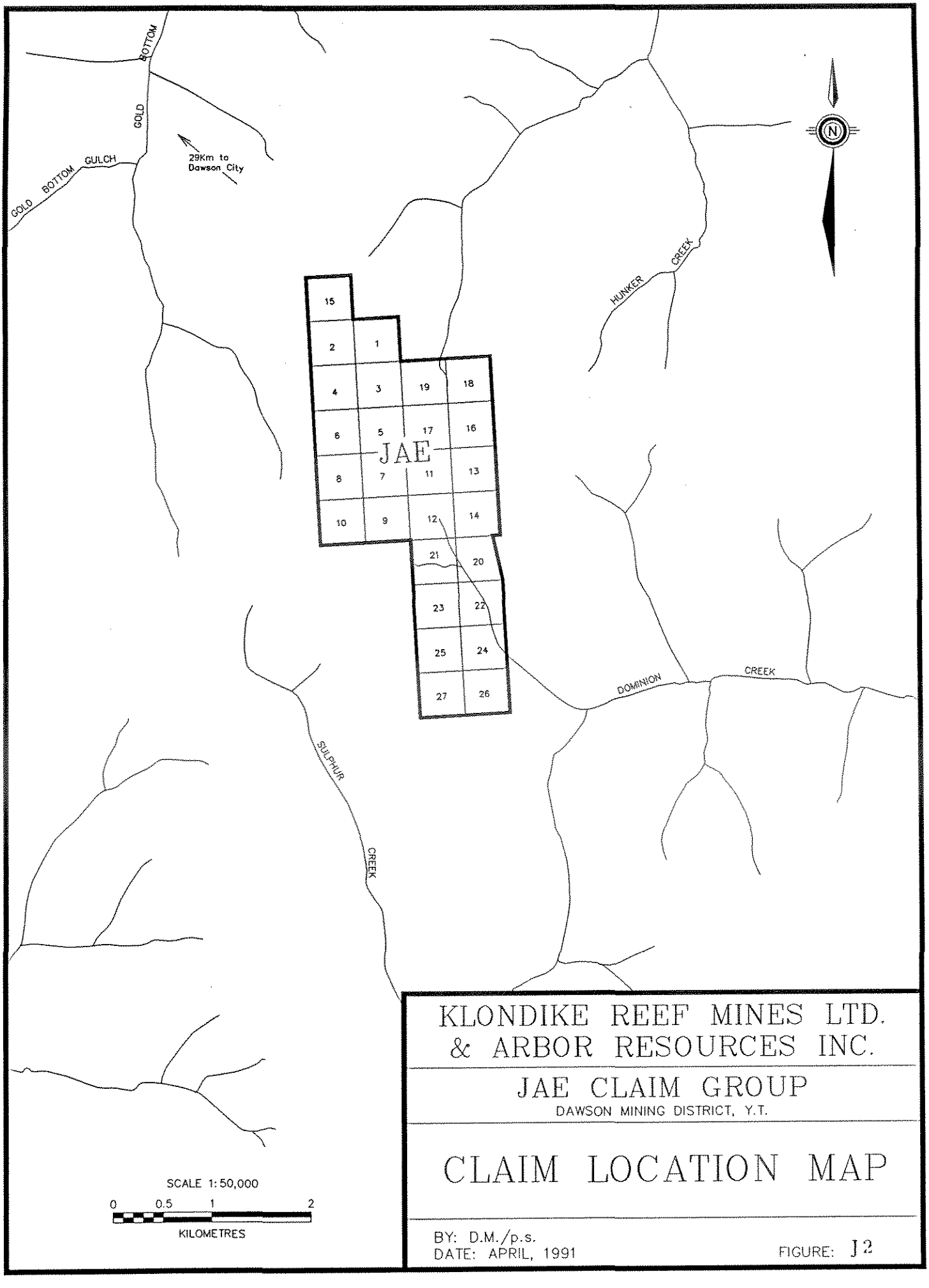
DAWSON MINING DISTRICT, Y.T.

LOCATION MAP

BY: D.M./p.s.
DATE: APRIL, 1991

FIGURE: 1





KLONDIKE REEF MINES LTD. & ARBOR RESOURCES INC.

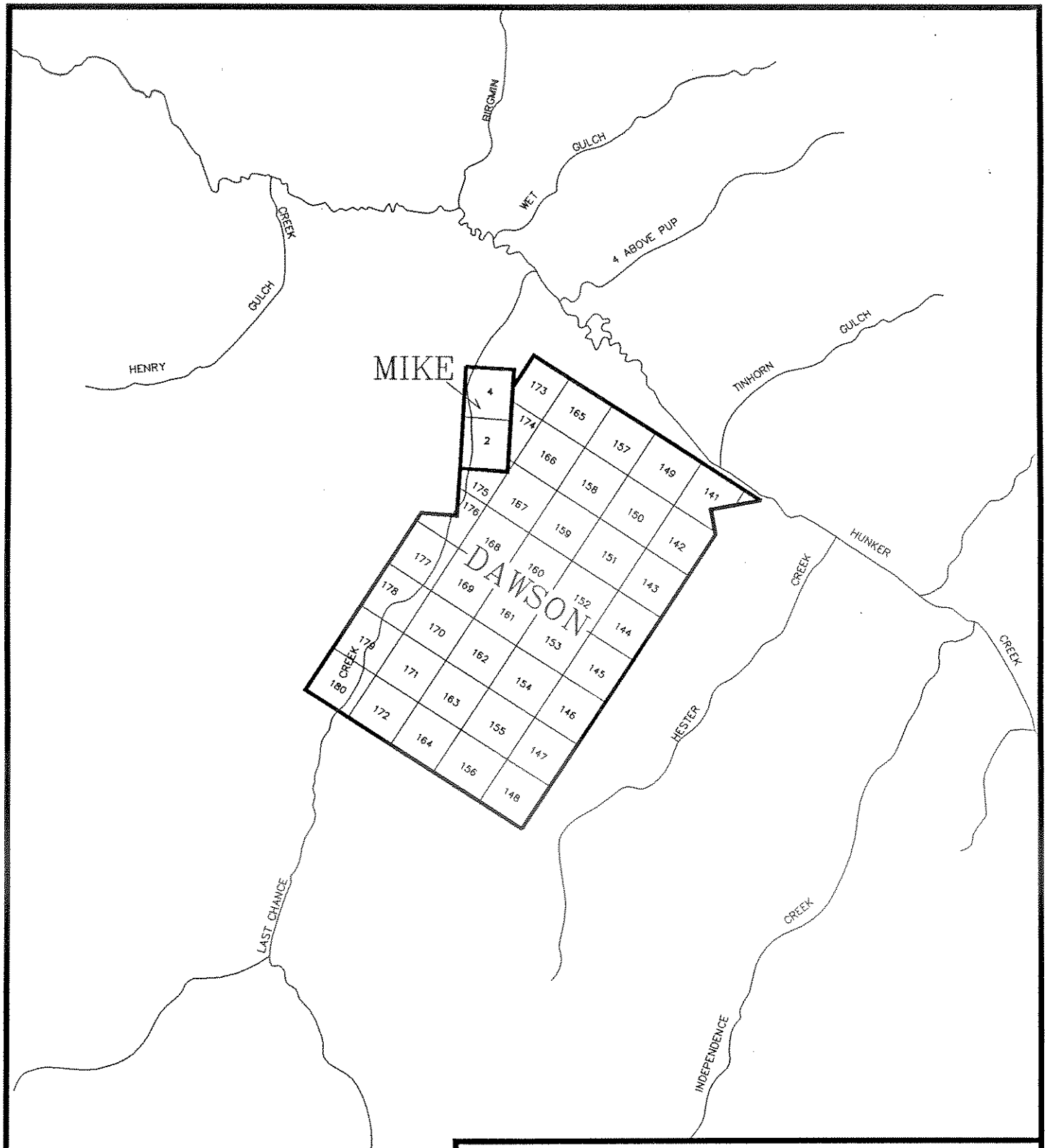
JAE CLAIM GROUP

DAWSON MINING DISTRICT, Y.T.

CLAIM LOCATION MAP

BY: D.M./p.s.
DATE: APRIL, 1991

FIGURE: J2



KLONDIKE REEF MINES LTD. & APPIAN RESOURCES LTD.

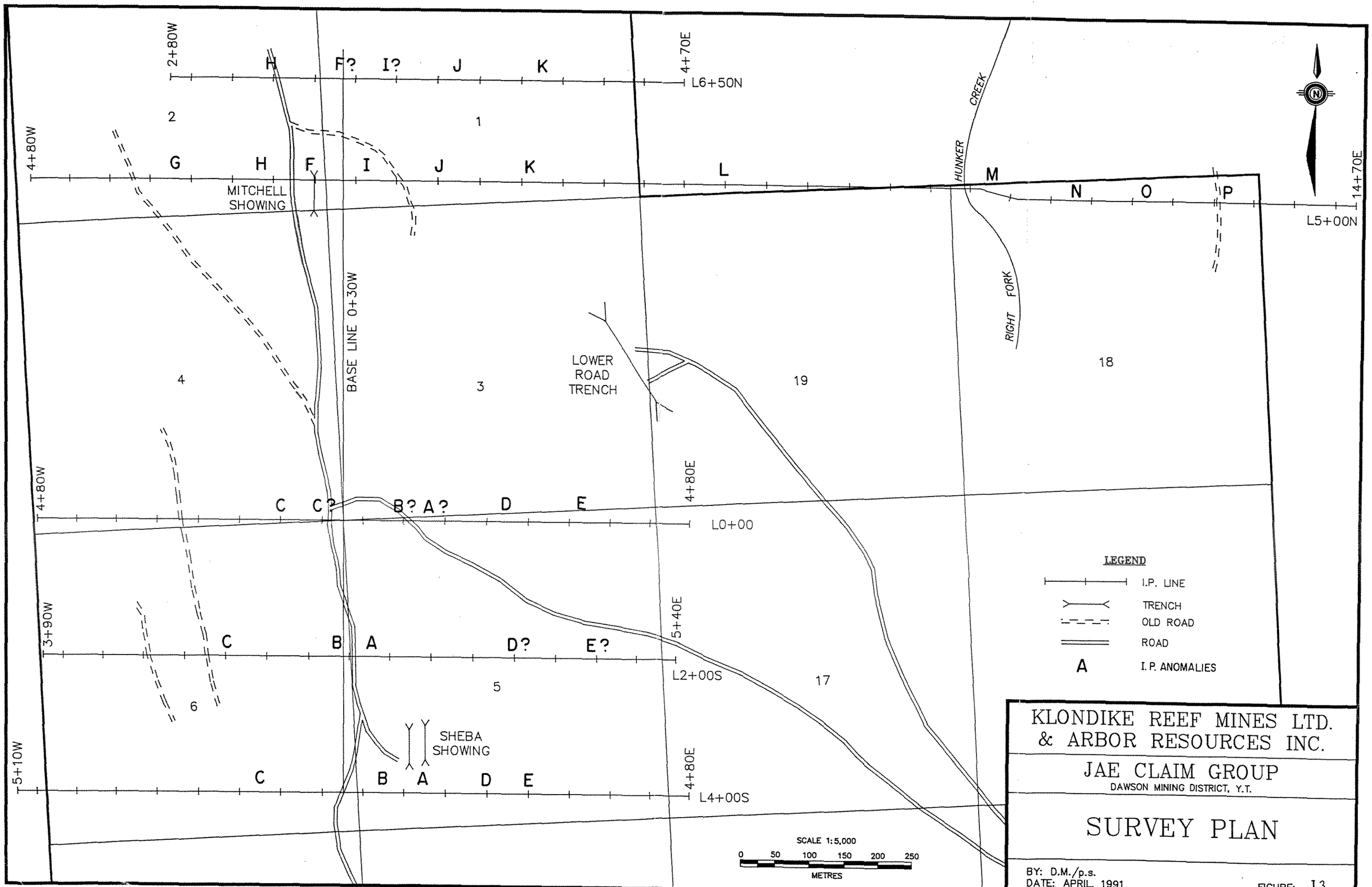
DAWSON & MIKE CLAIMS

DAWSON MINING DISTRICT, Y.T.

CLAIM MAP

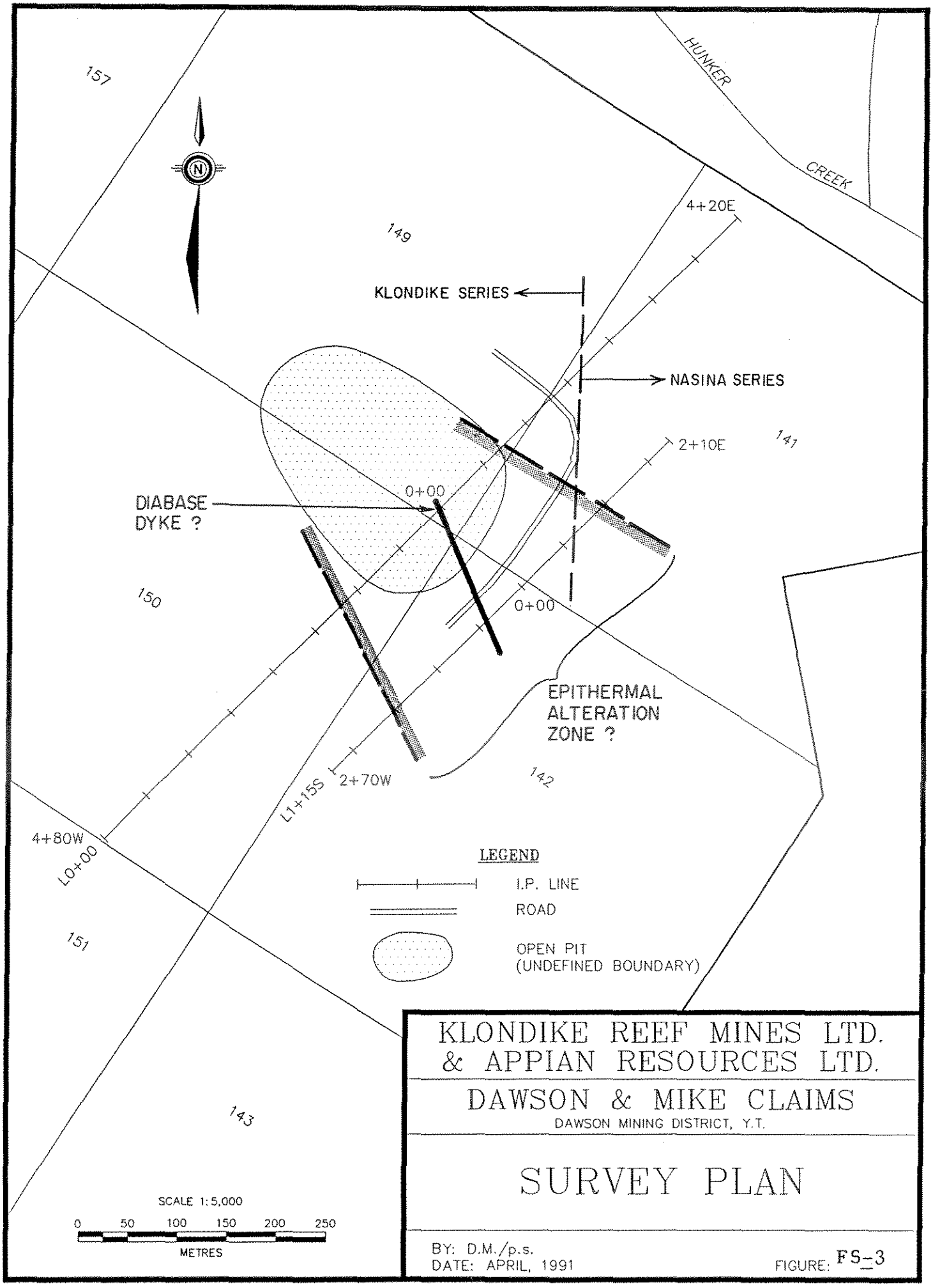
BY: D.M./p.s.
DATE: APRIL, 1991

FIGURE: FS-2


2+80W
4+70E
L6+50N
4+80W
MITCHELL SHOWING
BASE LINE 0+30W
HUNKER CREEK
RIGHT FORK
14+70E
L5+00N
LOWER ROAD TRENCH
4+80E
L0+00
3+90W
5+40E
L2+00S
SHEBA SHOWING
5+10W
4+80E
L4+00S
SCALE 1:5,000
0 50 100 150 200 250
METRES
LEGEND
I.P. LINE
TRENCH
OLD ROAD
ROAD
A I.P. ANOMALIES
KLONDIKE REEF MINES LTD.
& ARBOR RESOURCES INC.
JAE CLAIM GROUP
DAWSON MINING DISTRICT, Y.T.
SURVEY PLAN
BY: D.M./p.s.
DATE: APRIL, 1991
FIGURE: J3

092974

268



KLONDIKE REEF MINES LTD. & APPIAN RESOURCES LTD.

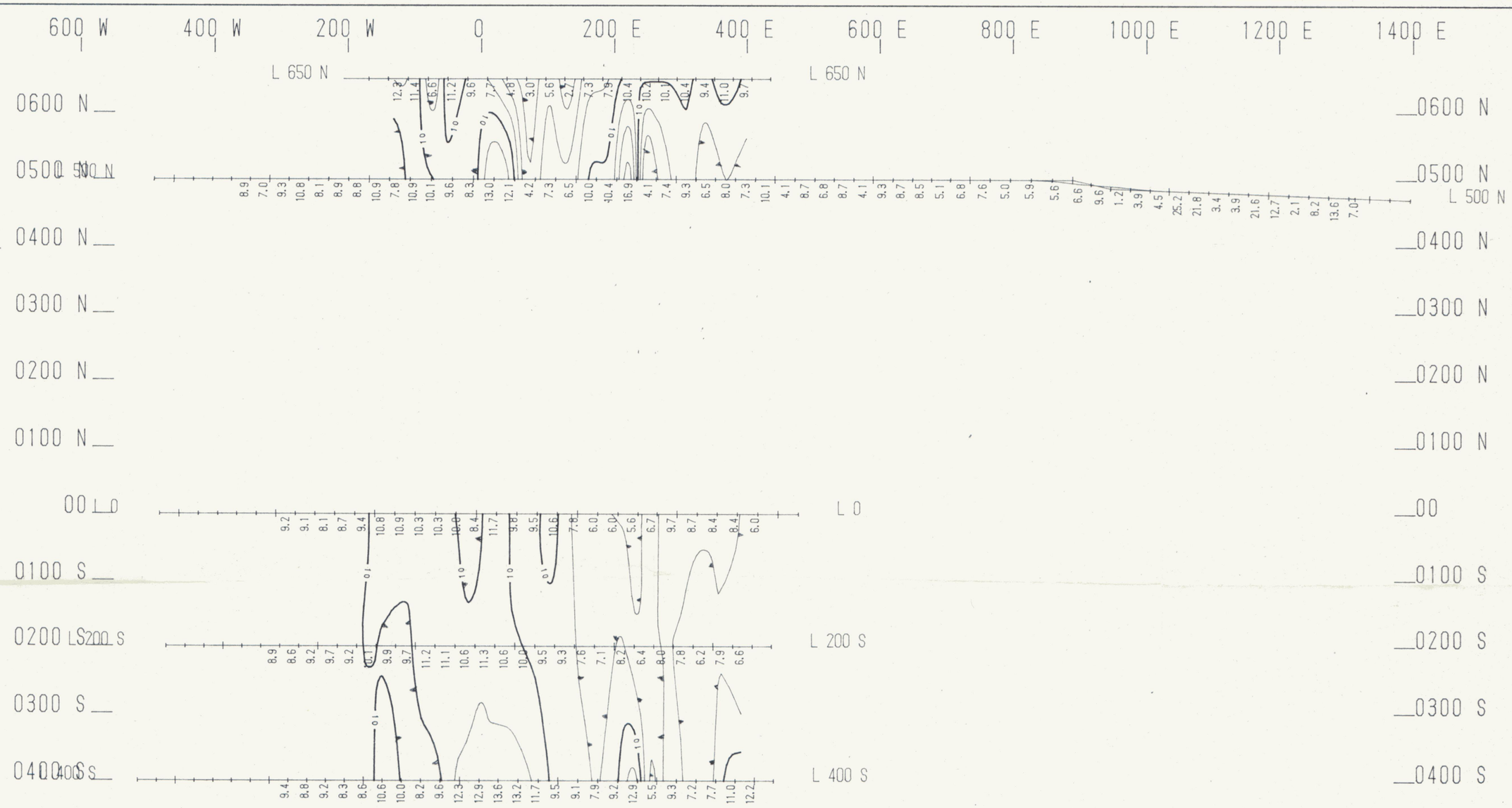
DAWSON & MIKE CLAIMS

DAWSON MINING DISTRICT, Y.T.

SURVEY PLAN

BY: D.M./p.s.
DATE: APRIL, 1991

FIGURE: FS-3



Scale 1:5000

50 0 50 100 150 200 250

(metres)

SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

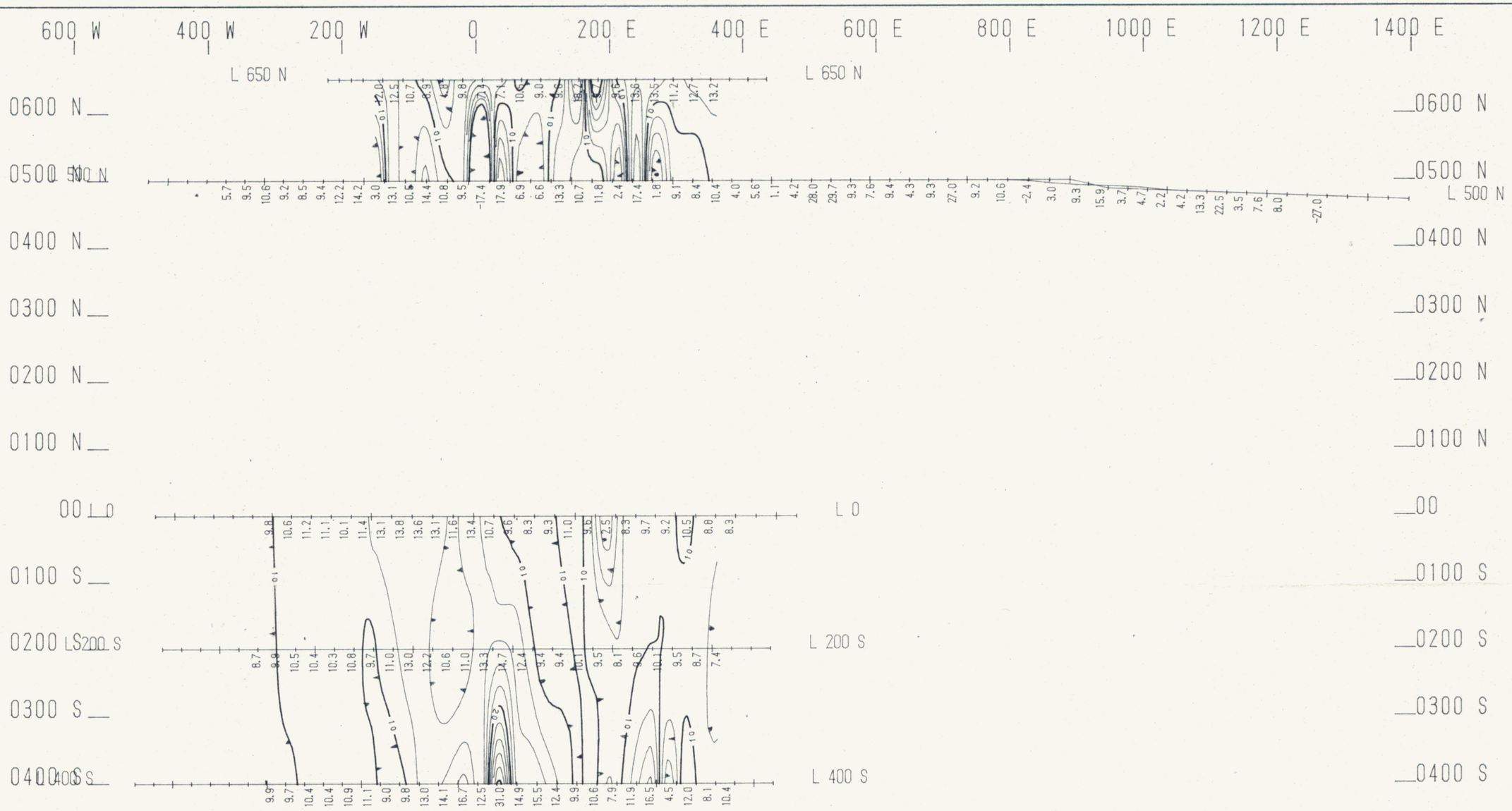
Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

Apparent CHARGEABILITY Survey
Data and Contours
For Level n=2

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-O-14	1:5000	May/91	J-4



Scale 1:5000

50 0 50 100 150 200 250

(metres)

SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

Apparent CHARGEABILITY Survey
Data and Contours
For Level n=4

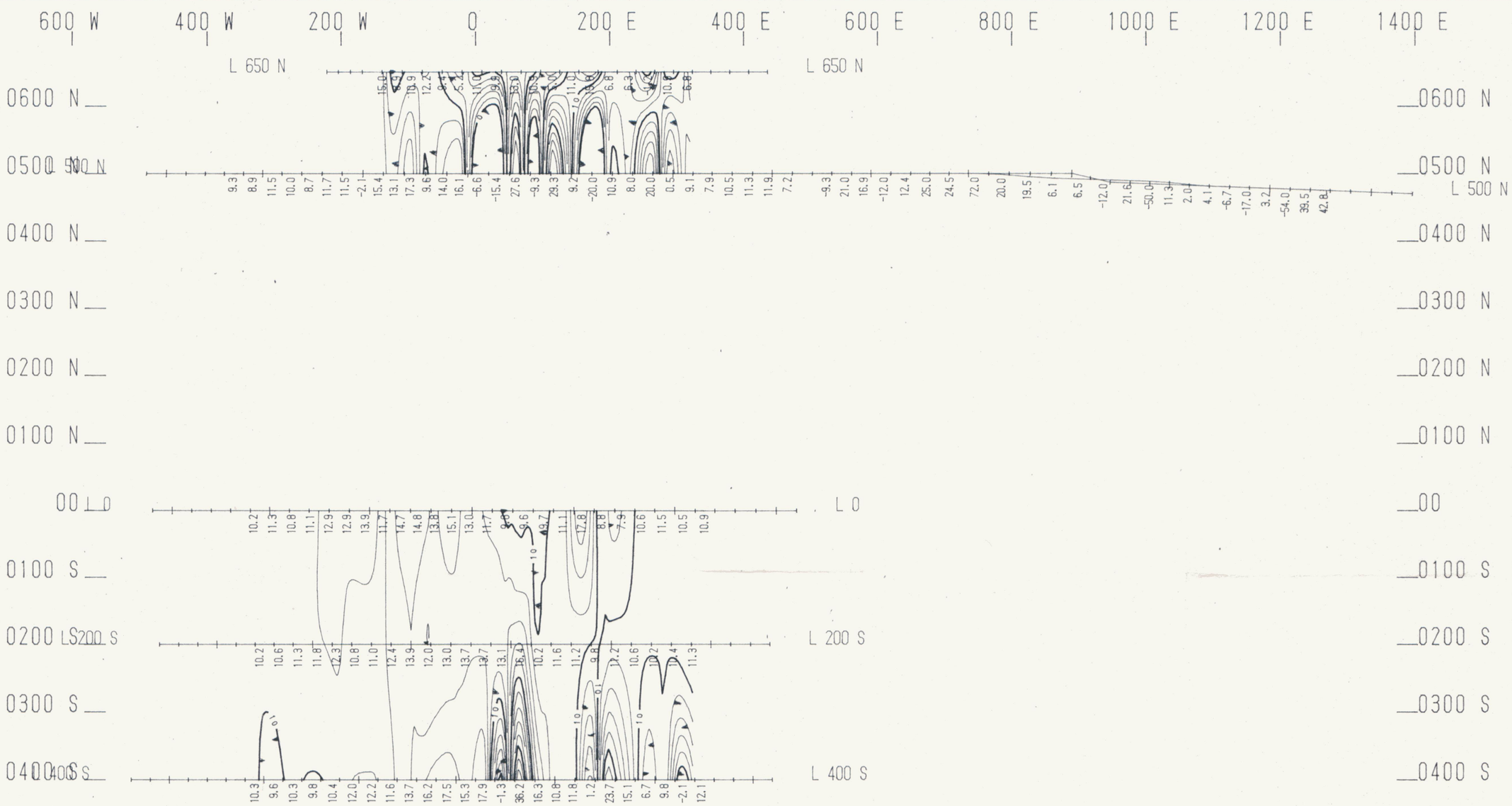
Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-O-14	1:5000	May/91	J-5

MAP # 115O/15

Doc # 092974

155

270



Scale 1:5000

50 0 50 100 150 200 250

(metres)

SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

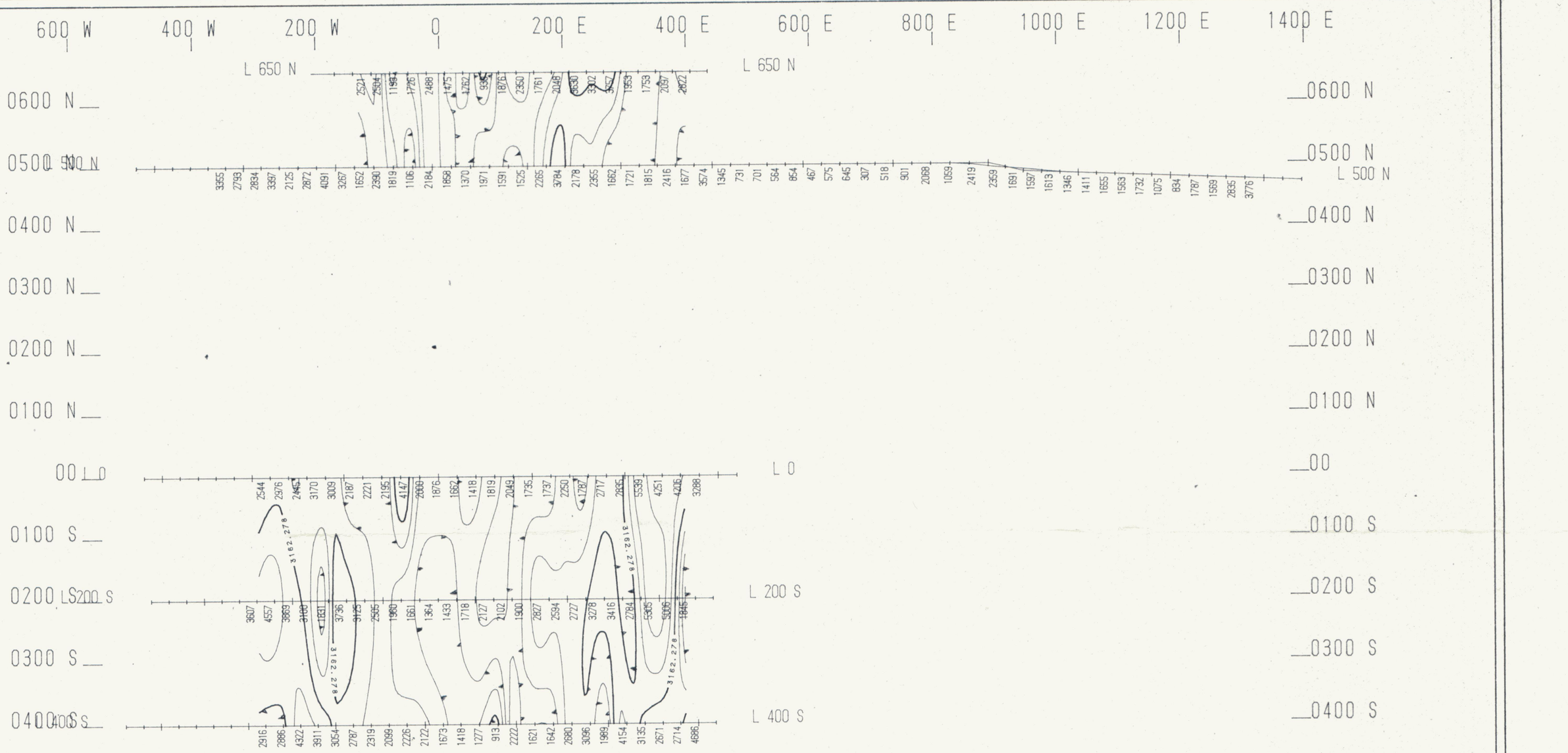
Apparent CHARGEABILITY Survey
Data and Contours
For Level n=6

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-O-14	1:5000	May/91	J-6

MAP # 115 O/15

Doc # 092974 (156)

27



Scale 1:5000

50 0 50 100 150 200 250

(metres)

SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

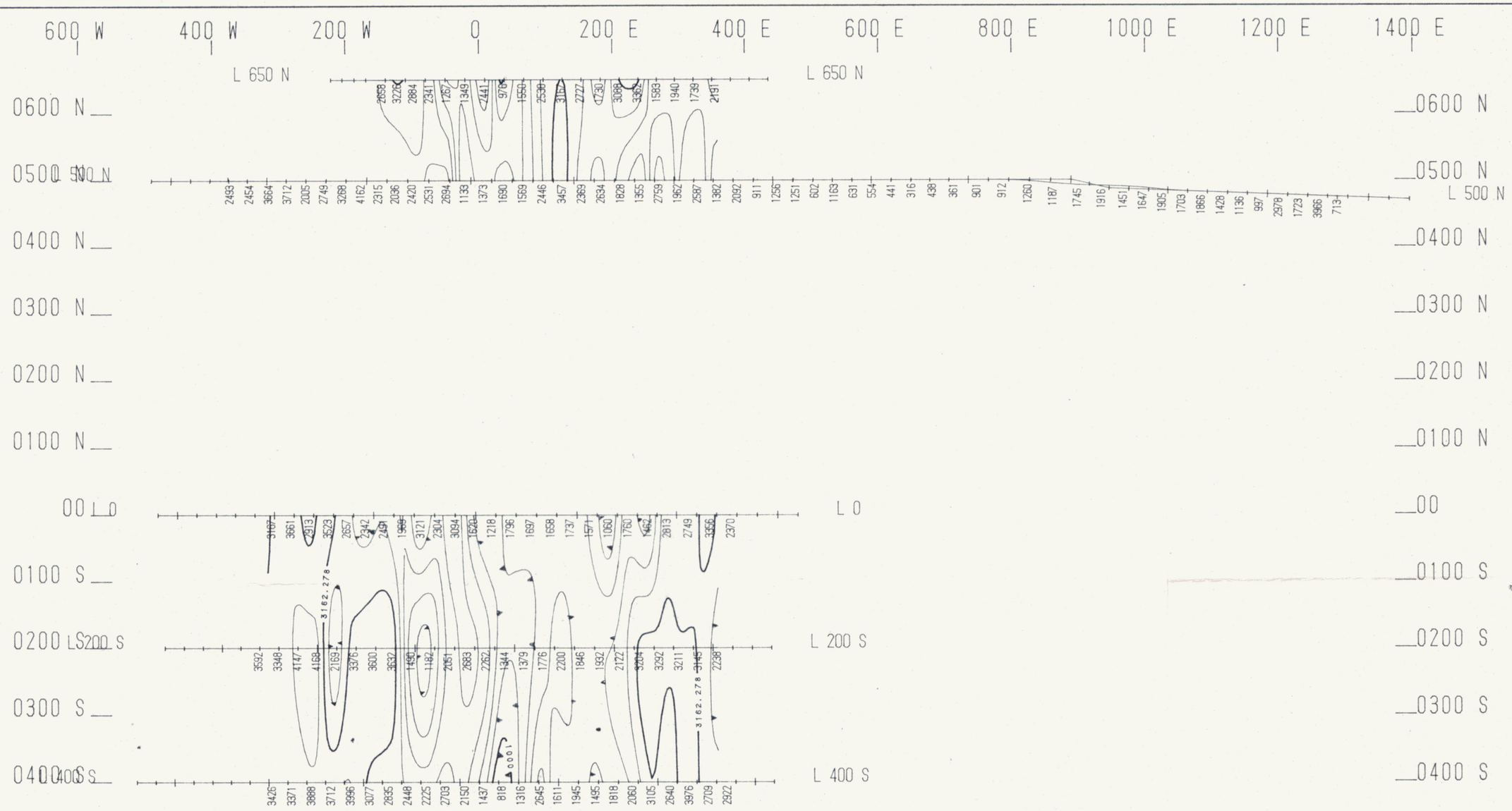
Apparent RESISTIVITY Survey
Data and Contours
For Level n=2

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-0-14	1:5000	May/91	J-7

272

MAP#115015

Doc# 092974
(157)



Scale 1:5000

50 0 50 100 150 200 250

(metres)

SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

Apparent RESISTIVITY Survey
Data and Contours
For Level n=4

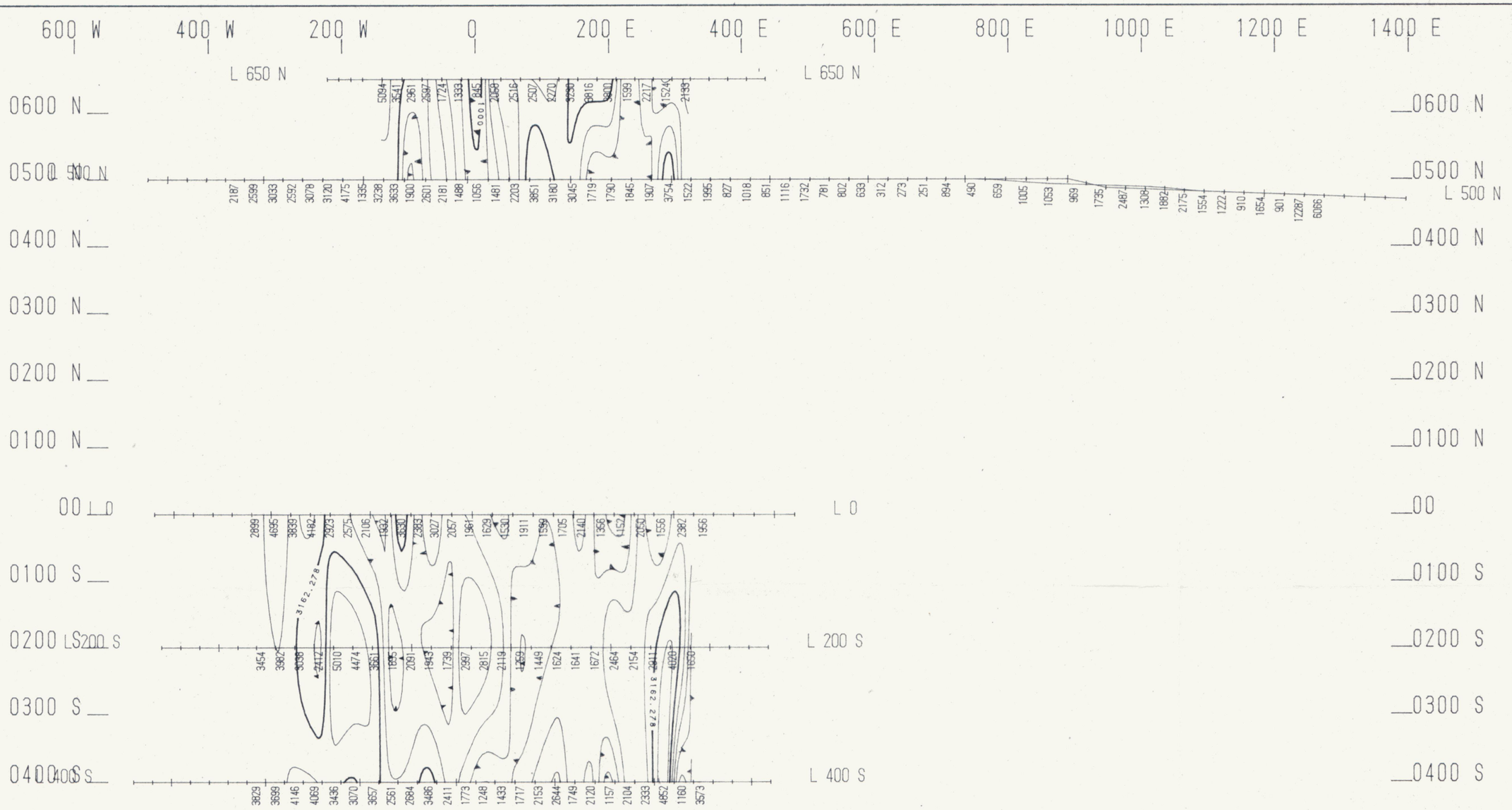
Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-0-14	1:5000	May/91	J-8

273

MAP# 115 O/15

Doc # 09297.4

(158)



SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Scale 1:5000

50 0 50 100 150 200 250
(metres)

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES LTD
JAE GRID
DAWSON CITY AREA

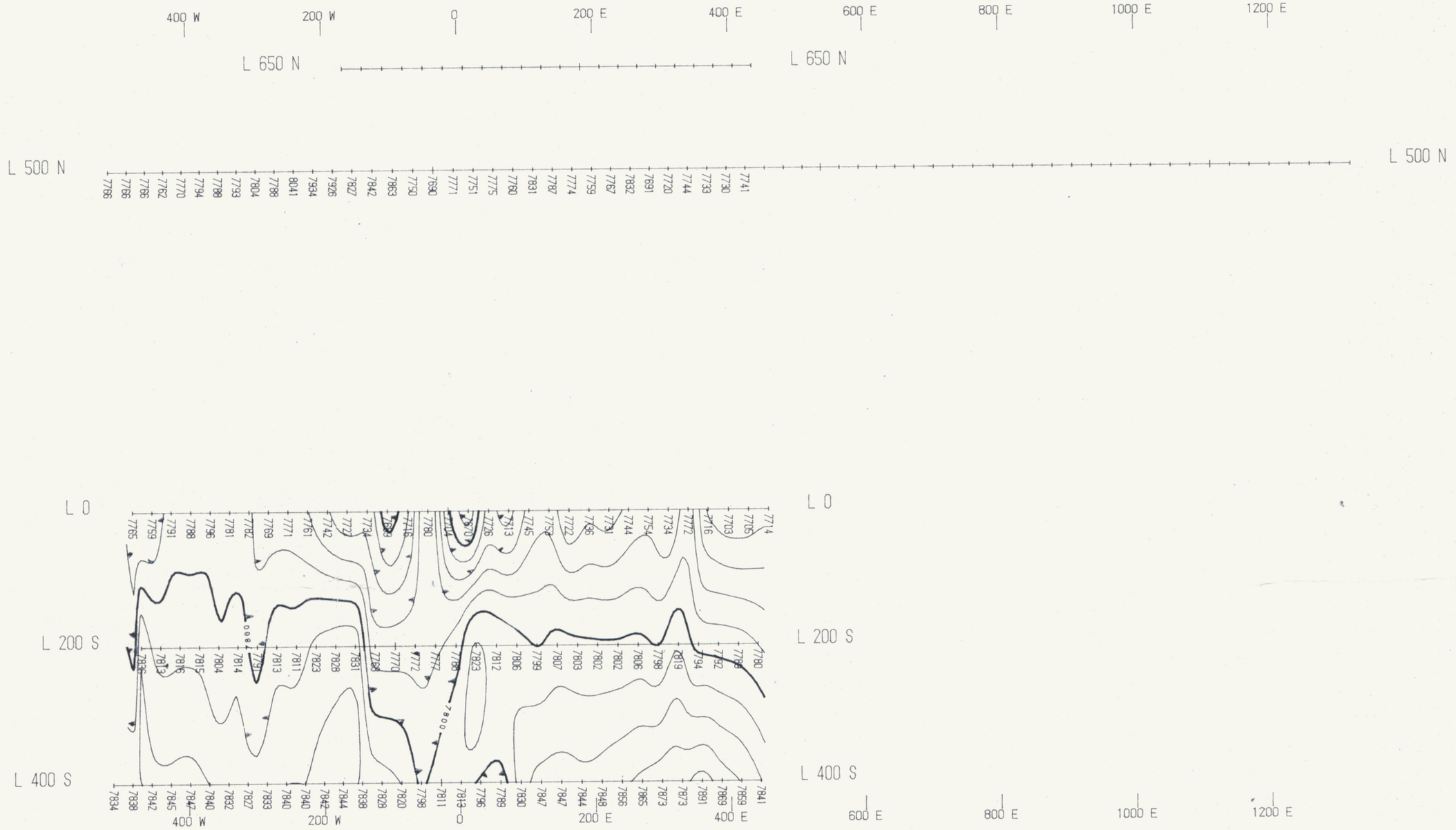
Apparent RESISTIVITY Survey
Data and Contours
For Level n=6

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-0-14	1:5000	May/91	J-9

274

MAP#115O/15

Doc# 092974
(159)



SURVEY PARAMETERS

Contour Interval: 20 Gammas

Trend Enhancement: None
Field Instrument: Scintrex Instruments
Model IGS-2 Proton
Precession Magnetometer

Note: A base value of 56000 gammas has been removed from the data points.

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Scale 1:5000

50 0 50 100 150 200 250
(metres)

GEOTRONICS SURVEYS LTD.

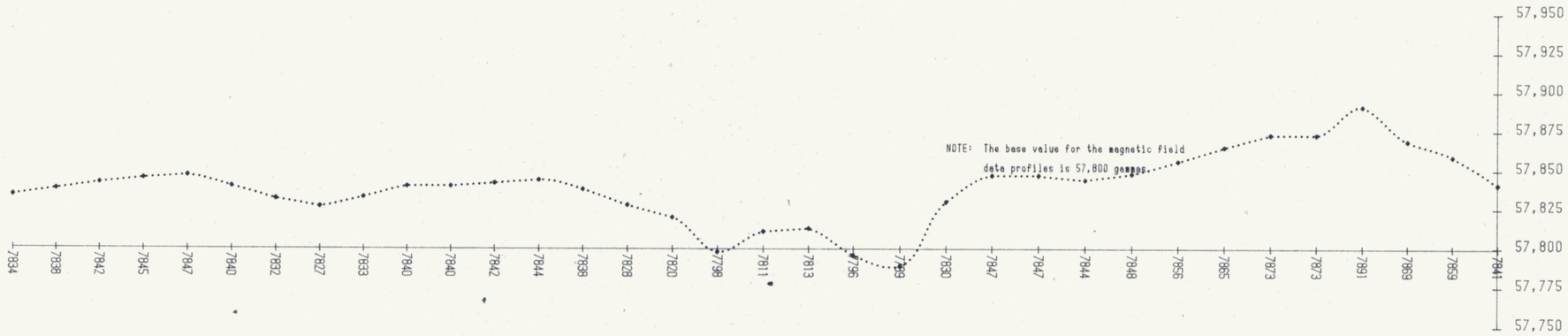
ARBOR RESOURCES LTD

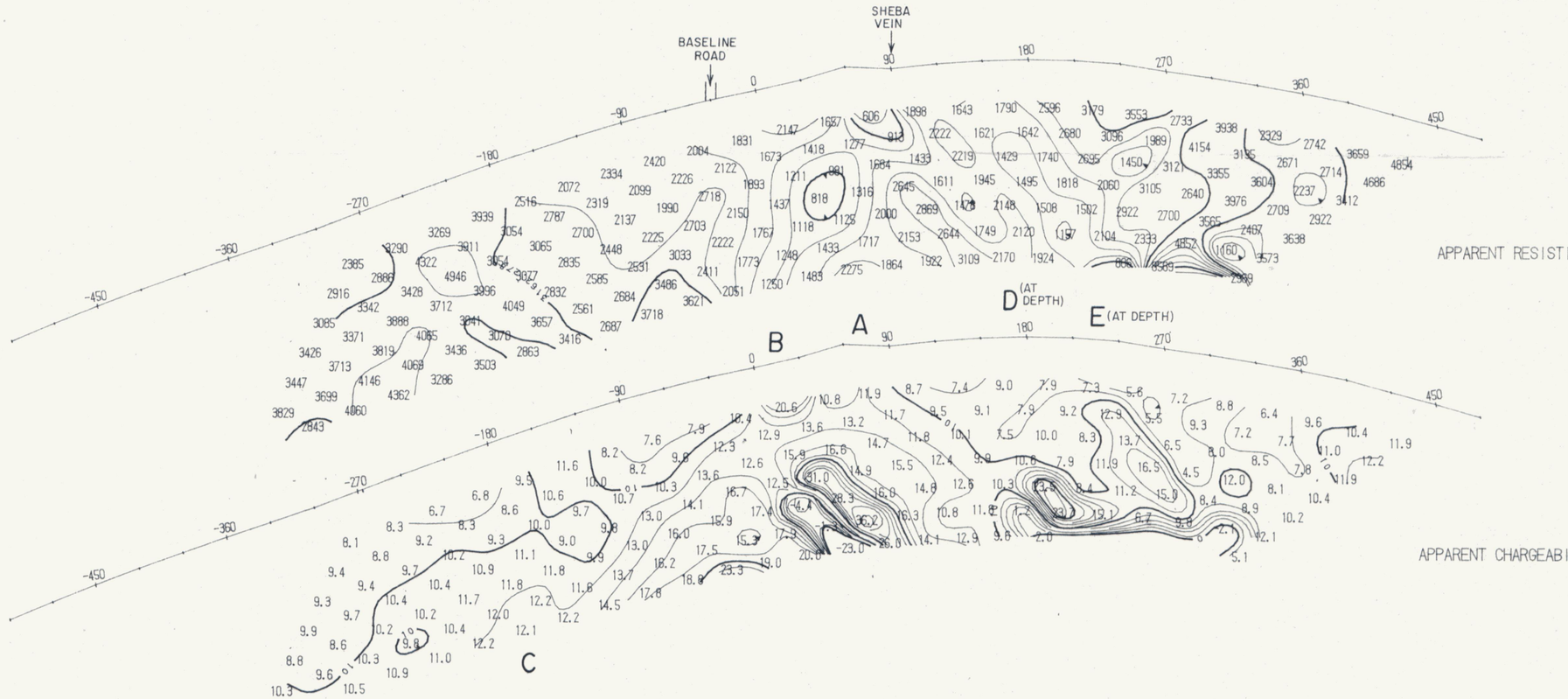
JAE GRID
DAWSON CITY AREA
Yukon Territory

Magnetic Field Survey
Data and Contours

Drawn by	N.T.S.	Scale	Date	Map #
P.C.		1:.s.	Apr/91	J-10

Survey Direction: West





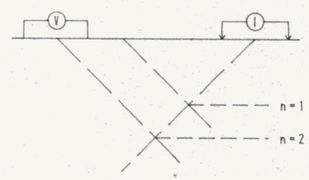
Scale 1:2500

25 0 25 50 75 100 125

(metres)

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 2 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 8
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

PROFILE LEGEND

Magnetic profile scale:
1 cm = 25 gammas

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES INC.
KLONDIKE REEF MINES LTD

JAE GRID

DAWSON CITY, YUKON

APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 4+00S

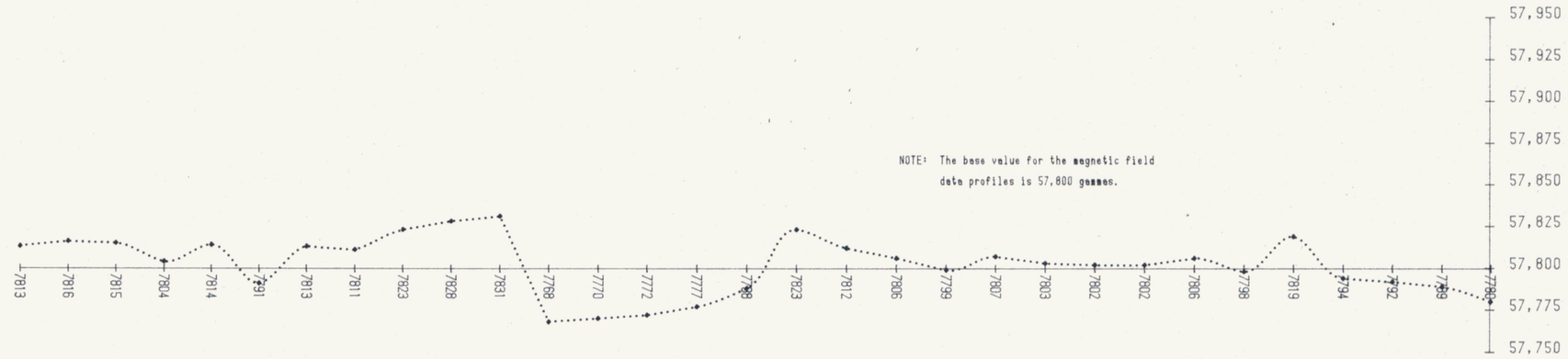
Drawn by:	Job No.	NTS	Scale	Date	Map No.
PC	90-07	115-0-15	1:2500	Apr/91	J-11

276

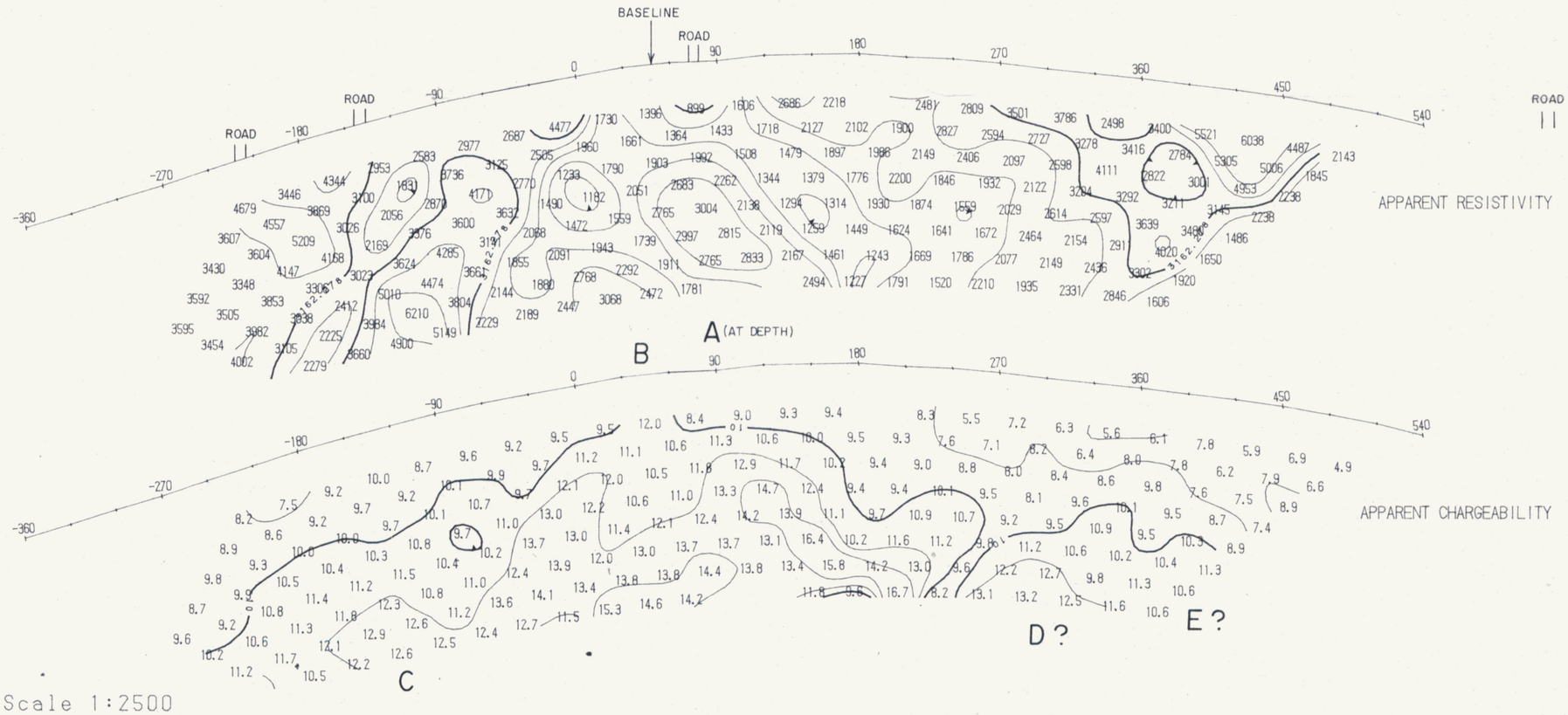
MAP#1150/15

Doc# 092074
(161)

Survey Direction: West



NOTE: The base value for the magnetic field data profiles is 57,800 gammas.

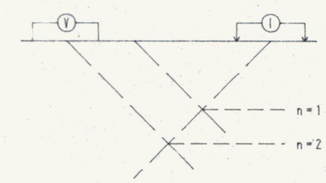


Scale 1:2500

25 0 25 50 75 100 125 (metres)

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 2 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 8
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

PROFILE LEGEND

Magnetic profile scale:
. . . . . 1 cm = 25 gammas

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES INC.
KLONDIKE REEF MINES LTD

JAE GRID
DAWSON CITY, YUKON

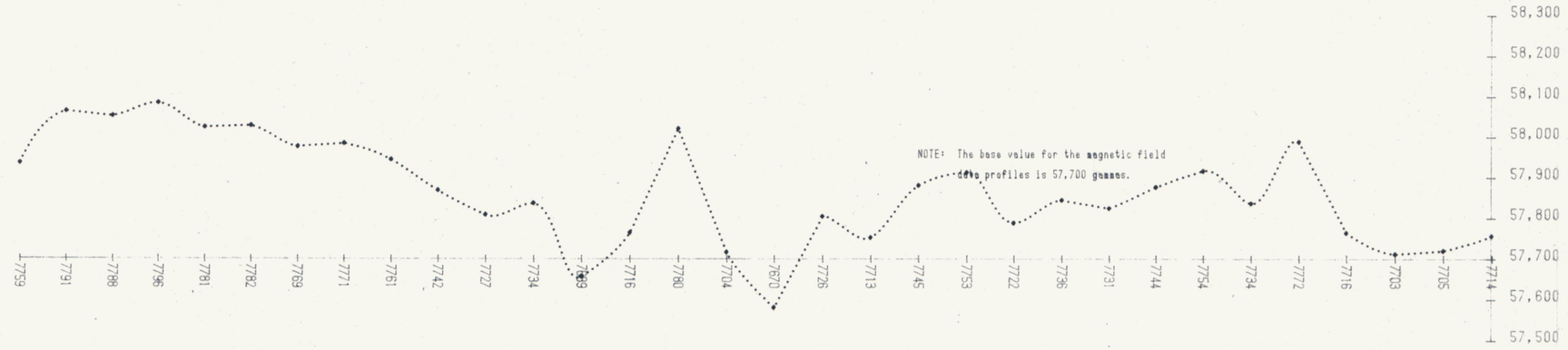
APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 2+00S

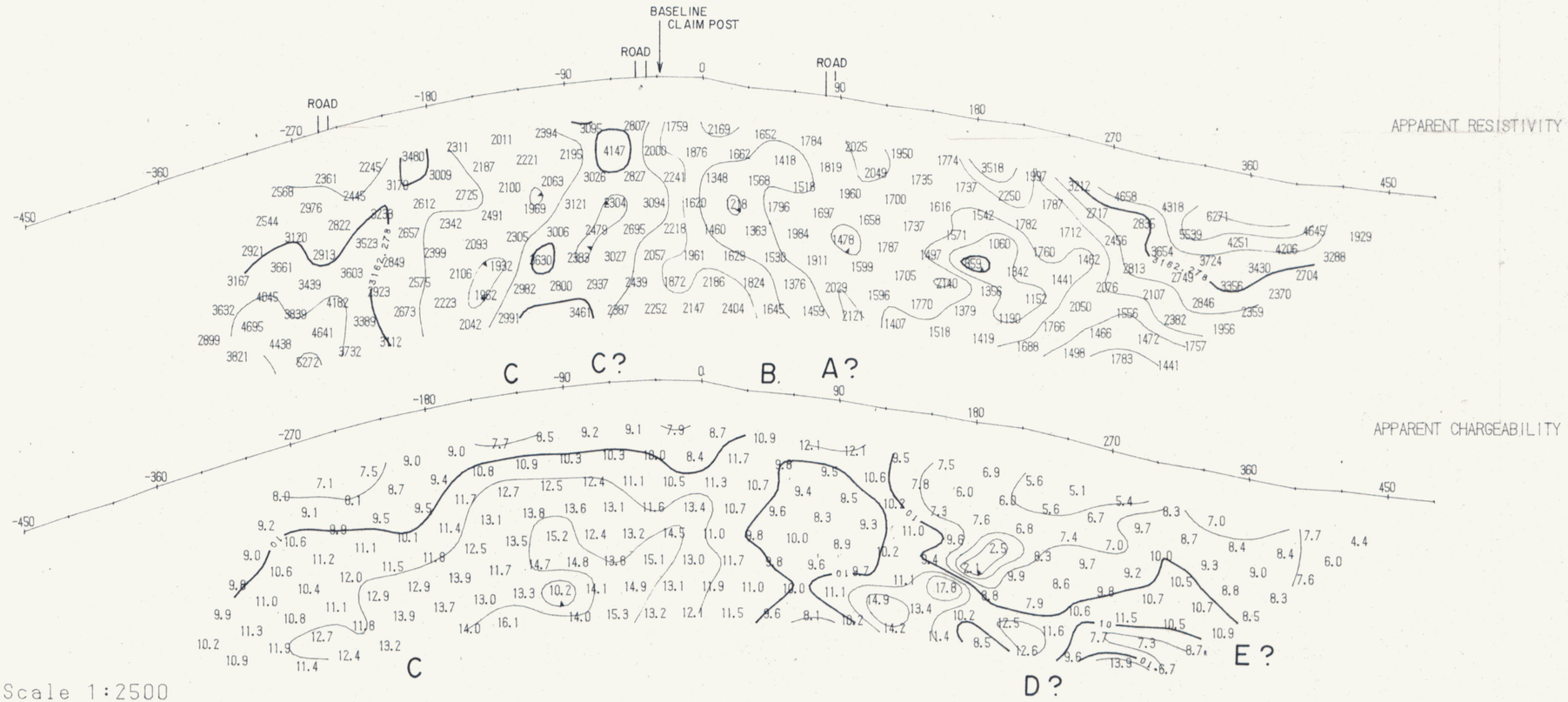
Drawn by:	Job No.	NTS	Scale	Date	Map No.
PC	90-07	115-O-15	1:2500	Apr/91	J-12

277

MAP# 115 O/15 Doc# 092974 (162)

Survey Direction: West



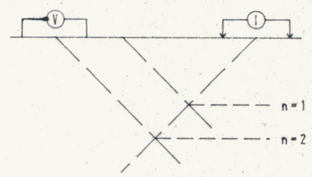


Scale 1:2500

25 0 25 50 75 100 125
(metres)

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 2 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 8
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

PROFILE LEGEND

Magnetic profile scale:
1 cm = 25 gammas

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES INC.
KLONDIKE REEF MINES LTD

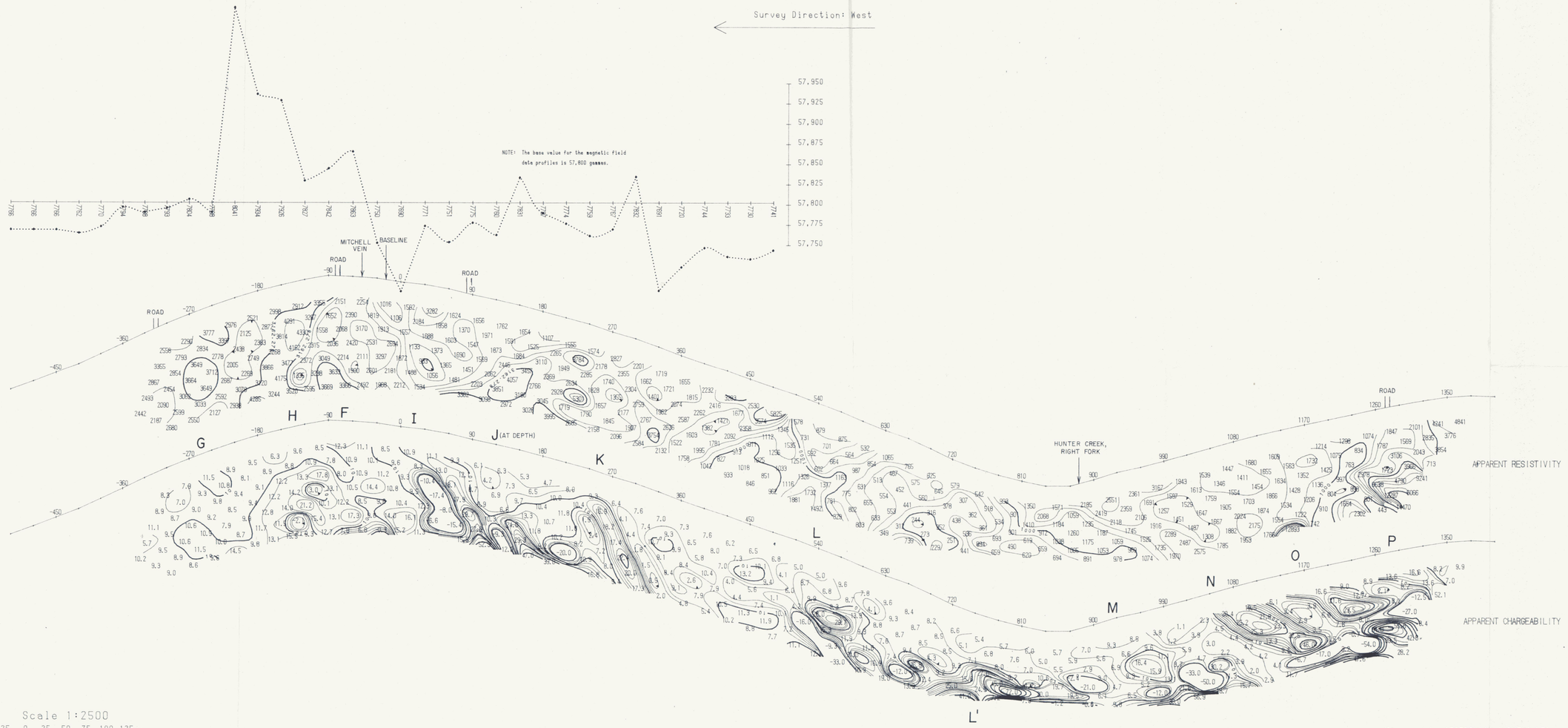
JAE GRID
DAWSON CITY, YUKON

APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 0+00

Drawn by:	Job No.	NTS	Scale	Date	Map No.
AC	90-07	115-O-15	1:2500	Apr/91	J-13

278

MAP# 115 O/15 Doc# 092974 (163)



Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method

LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 2 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 7
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

PROFILE LEGEND

Magnetic profile scale:
1 cm = 25 gammas

DWG 283

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES INC.
KLONDIKE REEF MINES LTD

JAE GRID
DAWSON CITY, YUKON

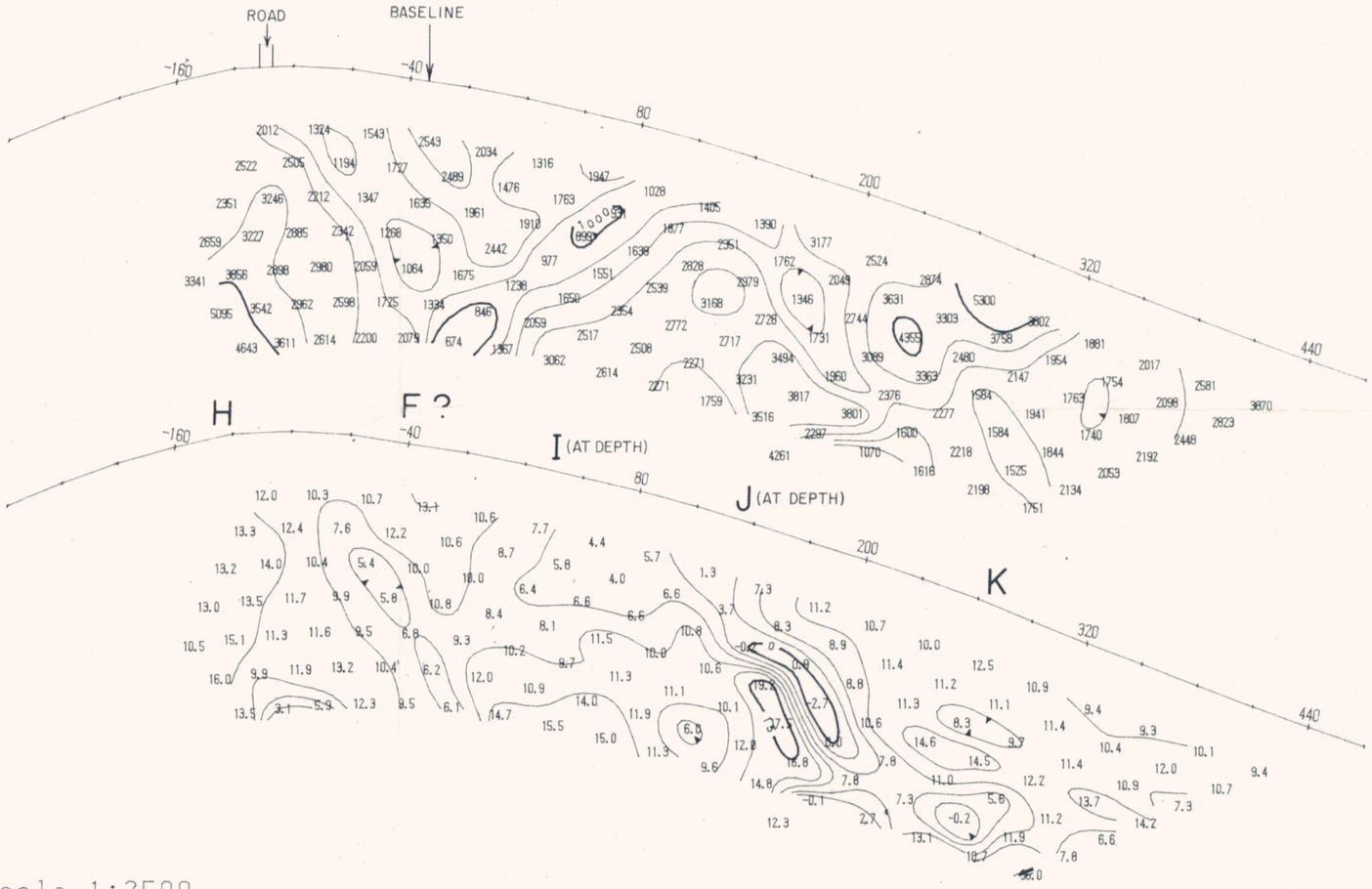
APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 5+00N

Drawn by:	Job No.	NTS	Scale	Date	Map No.
PC	90-07	115-O-15	1:2500	Apr/91	J-14

MAP# 115 O/15

Doc# 092974 (16f)

Survey Direction: East



APPARENT RESISTIVITY

APPARENT CHARGEABILITY

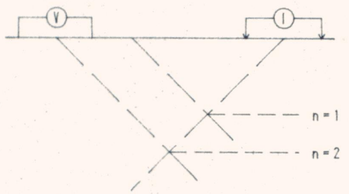
Scale 1:2500

25 0 25 50 75 100 125

(metres)

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 3 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 8
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

GEOTRONICS SURVEYS LTD.

ARBOR RESOURCES INC.
KLONDIKE REEF MINES LTD

JAE GRID

DAWSON CITY, YUKON

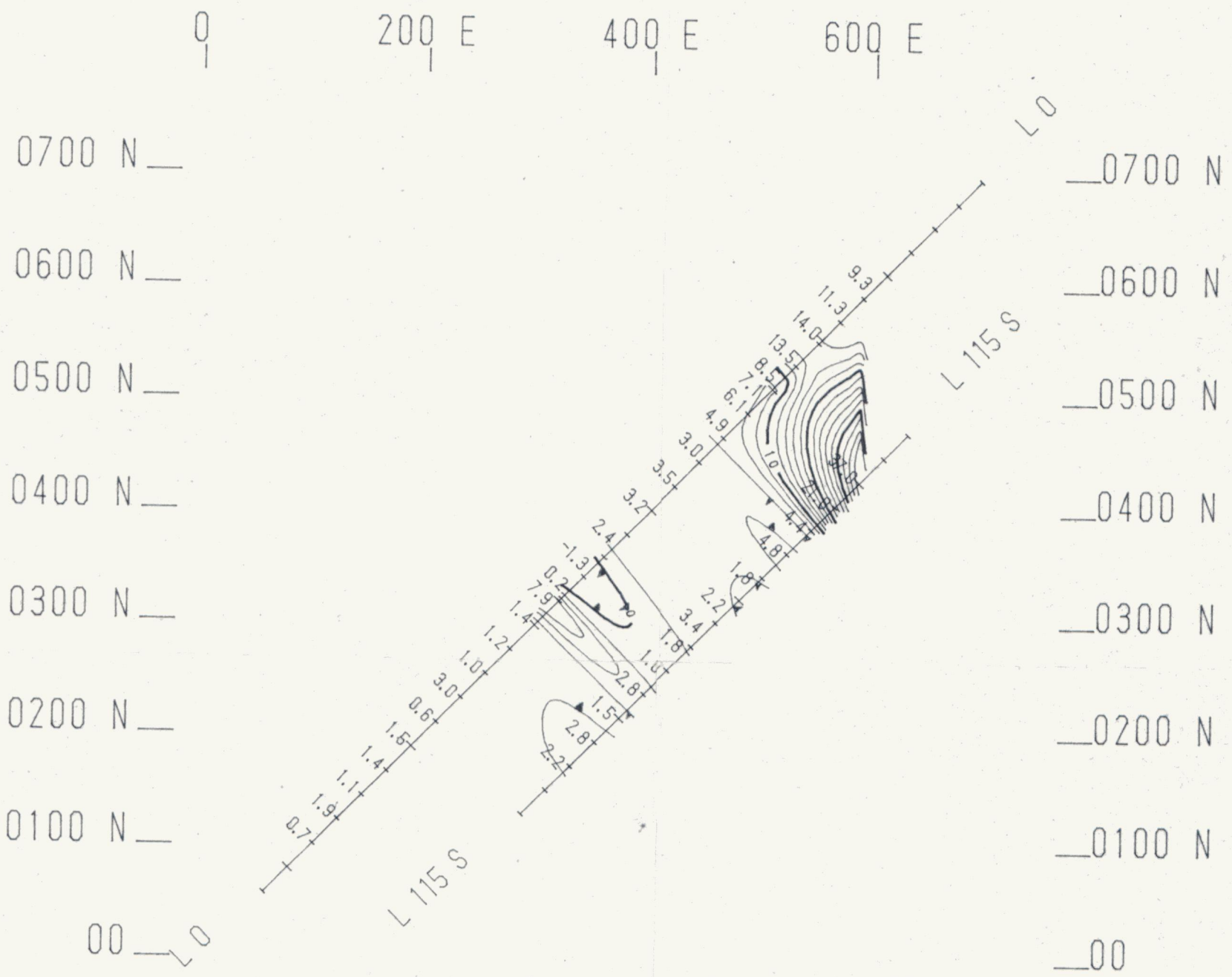
APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 6+50N

Drawn by:	Job No.	NTS	Scale	Date	Map No.
AC	90-07	115-O-15	1:2500	Sept/90	J-15

279

MAP#115 O/15 Doc# 092374

(165)



SURVEY PARAMETERS

Contour Intervals:
Resistivity : Log base 10 ohm-metres
Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Scale 1:5000

50 0 50 100 150 200 250
(metres)

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

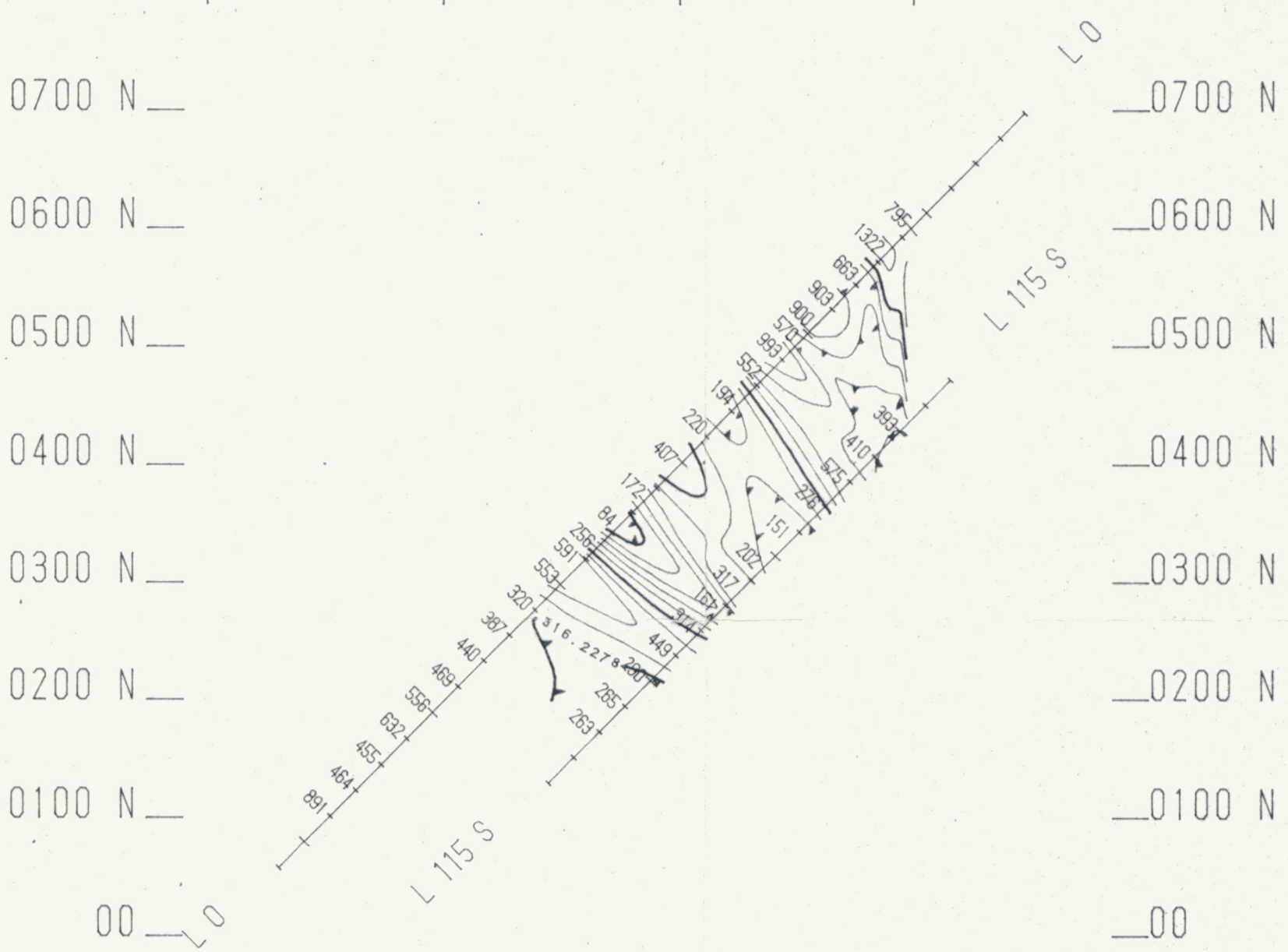
KLONDIKE REEF MINES LTD
APPIAN RESOURCES LTD.
FRANK SHORT'S PIT
DAWSON CITY AREA

Apparent CHARGEABILITY Survey
Data and Contours
For Level n=2

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-O-14	1:5000	May/91	FS-4

280

MAP#115 O/15 Doc# 092974 (166)



SURVEY PARAMETERS

Contour Intervals:
- Resistivity : Log base 10 ohm-metres
- Chargeability : 2 milliseconds

Trend Enhancement: None
Receiver: Huntec Mark IV
Transmitter: Phoenix IPT-1
Generator: Phoenix MG-2
2.5 kWatt, with
5.0 HP Honda engine

Scale 1:5000

50 0 50 100 150 200 250
(metres)

Surveyed by GEOTRONICS SURVEYS LTD..
October 1990

GEOTRONICS SURVEYS LTD.

KLONDIKE REEF MINES LTD
APPIAN RESOURCES LTD.
FRANK SHORT'S PIT
DAWSON CITY AREA

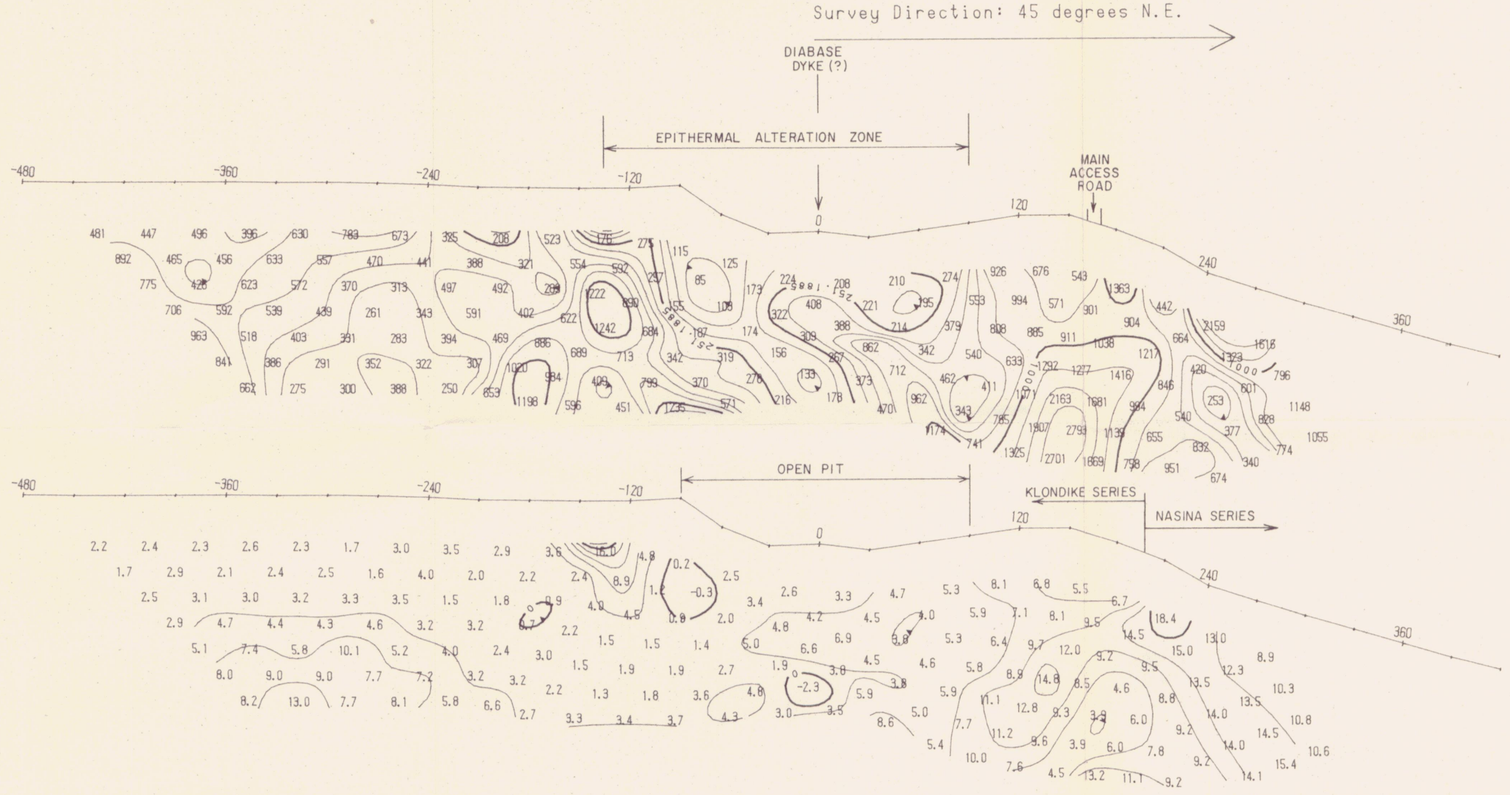
Apparent RESISTIVITY Survey
Data and Contours
For Level n=2

Drawn by	N.T.S.	Scale	Date	Map #
P.C.	115-O-14	1:5000	May/91	FS-5

279A

MAP#115 O/15

Doc# 092974 (167)



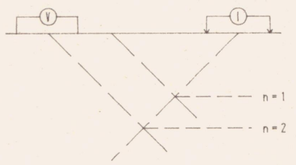
Scale 1:2500

25 0 25 50 75 100 125

(metres)

Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervals:
Resistivity : log base 10 ohm-metres
Chargeability: 3 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole separation:	n=1 to 7
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

GEOTRONICS SURVEYS LTD.

KLONDIKE REEF MINES LTD
APPIAN RESOURCES LTD.

FRANK SHORT'S PIT

DAWSON CITY, YUKON

APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 0+00(Fs777)

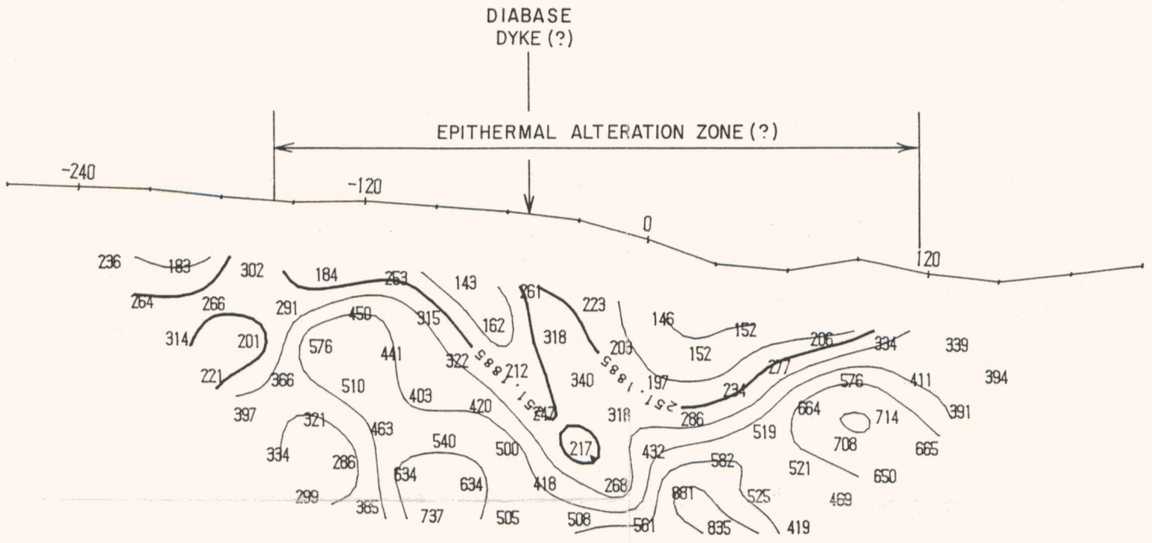
Drawn by:	Job No.	NTS	Scale	Date	Map No.
AC	90-07	115-O-14	1:2500	Sept/90	FS-6

281

MAP#115 O/15

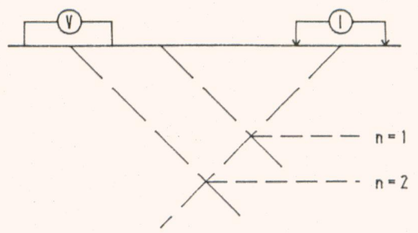
Doc#092874 (168)

Survey Direction: 45 degrees N.E.



Surveyed by GEOTRONICS SURVEYS LTD.
September 1990

Pseudosection Plotting Method



LEGEND

Contour Intervels:
Resistivity : log base 10 ohm-metres
Chargeability: 3 milliseconds

INSTRUMENTATION

Receiver:	Huntec Model MK IV
Transmitter/Generator:	Huntec Model MK IV 7.5 kWatt

SURVEY PARAMETERS

Survey Mode:	Time Domain
Array:	Double-Dipole
Dipole Length:	100 feet(30 metres)
Dipole seperation:	n=1 to 7
Delay Time:	200 milliseconds
Integration Time:	1500 milliseconds
Charge Cycle:	8 second square wave

GEOTRONICS SURVEYS LTD.

KLONDIKE REEF MINES LTD
APPIAN RESOURCES LTD.

FRANK SHORT'S PIT

DAWSON CITY, YUKON

APPARENT RESISTIVITY and CHARGEABILITY
PSEUDOSECTIONS
LINE 1+15S

Drawn by:	Job No.	NTS	Scale	Date	Map No.
AC	90-07	115-O-14	1:2500	Sept/90	FS-7

282

092974

MAP# 115 O/15 Doc# 092974 (169)