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REPORT ON
THE 1990 EXPLORATION PROGRAM
CATHARINE TOWNSHIP PROPERTY
CATHARINE AND PACAUD TOWNSHIPS
LARDER LAKE MINING DIVISION
ONTARIO
FOR
ATAPA MINERALS LIMITED

F.J. SHARPLEY

DECEMBER 1990

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SUMMARY

The Catharine Township Property consists of 45 non-patented mining claims in four blocks located 15 miles southeast of Kirkland Lake, Ontario in Catharine and Pacaud Townships.

The greenstone belt southeast of Kirkland Lake is part of the Lower SuperGroup II (Jensen 1985) which forms part of the Abitibi Subprovince of the Archean Superior Province of the Precambrian Shield. This group is composed of Pacaud Tuffs, Wawbewawa Group, Catharine Group and the Skead Group. These rocks include felsic and mafic tuffs, iron and magnesium basalts, komatiites and felsic pyroclastics. The Skead Group is equivalent in age to the Kidd Creek Rhyolites (2708 my). The Pacaud Fault separates the Pacaud Complex from the Wawbewawa Group. The Catharine Fault occurs at the top of the Catharine Group near the Skead Group.

Exploration by Teck Corporation on the Catharine Township Property between 1984 and 1988 included line cutting, VLF-EM, magnetometer, geological surveys and 5137 feet of diamond drilling in 17 holes. Exploration by Atapa Minerals Limited in 1990 included line cutting, induced polarization surveys, power stripping, sampling and geological mapping.

The gold occurrences in Pacaud and Catharine Townships are mainly associated with the Pacaud and the Catharine Faults. These gold

occurrences are of two types: 1) narrow high grade auriferous quartz veins and 2) zone type gold occurrences associated with hydrothermal alteration such as silicification, sericitization, hematization, pyritization, quartz veining and quartz-feldspar porphyry dikes.

Teck Corporation in 1988 encountered shallow dipping auriferous quartz veins related to the Pacaud Fault in diamond drill hole No. 3 on Block I. This hole returned an assay of 0.20 oz/ton Au over 2.5 feet or 0.041 oz/ton Au over 18 feet on section 24+00E at 1+80E. Atapa Minerals Limited in 1990 uncovered a shallow dipping high grade auriferous quartz vein related to the Pacaud Fault on Block I while stripping an induced polarization anomaly on section 24+00E at 4+00E. Samples of the Terri Vein range up to 2.044 oz/ton Au over 2 feet(TW-0.5'). This vein may be related to the vein encountered in hole No. 3.

Gold Fields Canada Mining Ltd. in 1989 uncovered the Daley zone type gold occurrence along the Catharine Fault adjacent to Block III over a strike length of 7000 feet and a width of 500 feet. The Daley gold occurrence is associated with silicification, sericitization, pyritization, hematization, shearing, quartz veining and quartz-feldspar porphyry dikes. Surface grab samples returned values of 0.424 and 1.407 oz/ton Au. Soil geochemistry outlined the zone over a strike length of 7000 feet and a width of 1200 feet. Three deep diamond drill holes 600 feet apart in

1990 did not return economic gold values but indicated an alteration zone 500 feet wide with low gold values.

An exploration program consisting of line cutting, soil geochemistry, power stripping, induced polarization profiling, geological mapping, sampling and possibly diamond drilling is recommended to explore Block I along the Pacaud Fault, Block III and IV along the Catharine Fault and Block III surface and diamond drill hole gold occurrences at a cost of $90,000.

1.0 INTRODUCTION

Atapa Minerals Limited, Toronto Ontario commissioned F.J. Sharpley in June 1990 to write a report on the 1990 exploration program and to review the work on the Catharine Township property.

This report is written using various provincial government documents and maps, government assessment files, Teck Corporation reports and maps and miscellaneous technical reports and maps supplied by Atapa Minerals Limited.

A visit was made to Groups IA, III and IV in Catharine and Pacaud Townships, Larder Lake Mining Division, Ontario from June 22nd to June 27, 1990.

2.0 PROPERTY

2.1 Claims

The Catharine Township property consists of 45 non-patented claims in four blocks registered in the name of Frank Palmay. The four blocks are as follows:

Block IA	4 claims	Catharine Township, Ontario
Block I	4 claims	Pacaud Township, Ontario
Block II	24 claims	Catharine Township, Ontario
Block III	8 claims	Catharine Township, Ontario
Block IV	5 claims	Catharine Township, Ontario

The claims appear on Ontario Government claim map G-3615 of Catharine Township and claim map G-3697 of Pacaud Township in the Larder Lake Mining Division of Ontario. The claims are shown on Figure 1, Property Map of the Catharine Township Property.

The claims total 1800 acres or 728.46 hectares. A list of the claims appear in Appendix II.

Atapa Minerals Limited has entered into an option agreement with Teck Corporation under which Atapa may earn a 50% interest in Teck's Catharine Township property by incurring exploration expenditures to a total of $500,000 before June 30,1993.

2.2 Location and Access

The Catharine Township Property is comprised of four separate claim blocks located 15 miles southeast of Kirkland Lake, Ontario in the Townships of Catharine and Pacaud.

Block I, IA, II and IV are located west of the Misema River and are accessible from highway 564 via Boston Creek. Block III is east of the Misema River and is accessible from highway 624 via Englehart (Figure 2).

2.3 Topography

The topography on the the Catharine Township property is gently rolling with outcrop knolls forming ridges less than 15 m (50 ft). The Misema River valley with relief of 200 feet cuts northerly through the area. The outcrop areas are abundant in the western part of Catharine Township. The abundant outcrop areas are composed mainly of mafic to ultramafic volcanics while felsic volcanic outcrops are less abundant.

Vegetation is generally second growth spruce, balsam, poplar and birch with alder and maple undergrowth. Outcrop on Block I, II and IV is estimated at 10% while Block III is estimated at 5%.

The climate is typical of northern Ontario with snow cover and cold weather from mid November until May.

3.0 EXPLORATION HISTORY

3.1 Regional History

The first claims were staked for gold in the area in 1906 and 1907 during the Larder Lake gold rush and again in 1913 during the Kirkland Lake gold rush.

A small amount of gold has been produced from 294,638 tons resulting in gold bullion of 73,836 oz. Au. This production occurred from two mines, Barry-Hollinger and Cathroy-Larder, and two prospect shafts, Miller-Independence Prospect and Gold Hill Mine between 1918 and 1944. (Table No. 1)

Three high grade copper deposits, the Amity, the Patterson and the Tretheway-Ossian are located in the Pacaud Group iron formations. The Amity and Patterson both shipped limited amounts of high grade copper-silver ore to Noranda periodically from 1926 to 1955. A shaft was sunk on the Tretheway-Ossian occurrence on a high grade vein but no production was recorded.

The area was first mapped geologically in 1922 by Burrows and Hopkins for the O.D.M. (Map No. 30d, scale 1"= 3/4 mile)

The area was mapped geologically by L.V. Bell of the O.D.M. in 1930 on a scale of 1"=800'. (Map No. 30d)

The area was mapped again in 1963 by James A. Grant of the O.D.M. on Map 2043; Catharine and Marter Townships; at a scale of 1"= 1/2 mile.

All the gold deposits for the area were compiled by J.B. Gorden, H.L. Lovell, Jan de Grijs and R.F. Davie in 1979. (O.G.S. Mineral Deposits Circular 18)

The airborne magnetic map 7075 G by the G.S.C.-O.D.M. covers the area on a scale of 1:250,000.

The airborne electromagnetic and total intensity magnetic survey of the Kirkland Lake area, Catharine Township was carried out by the Ontario Geological Survey in 1979, scale 1:20,000.

3.2 Property History

The majority of the Catharine Township claim Blocks I, II, III and IV were staked by Teck Corporation in late 1983 and early 1984.

The 1984 exploration program by Teck Corporation on Blocks I, II, III and IV included line cutting at 400 foot line spacing and stations at 100 feet. These claim groups were covered with geological, magnetic, VLF-EM surveys and some limited rock

geochemistry.

The 1988 exploration program by Teck Corporation included line cutting, surveying, geological, magnetic and VLF-EM surveys on Blocks I, Ia, II, III and IV. A total of seventeen diamond drill holes for 5,137 feet tested sixteen VLF-EM anomalies on Blocks I, IA, II, III and IV.

The Hilltop shaft is situated in N 1/2, Lot 10, Concession V, just across the boundary of Block IV on the Fairhurst property. (Compilation Map - Block IV - S-90-6-02). In 1926-28 a three compartment shaft was sunk by Hilltop Gold Mines Limited to a depth of 688 feet with levels at 140 and 265 feet. A series of narrow lenticular quartz veins strike N60W for over 3000 feet across the property. The mineralization consists of pyrite, chalcopyrite, and minor sphalerite. Assays of diamond drill core samples ranged from trace to 0.44 oz/ton Au; a 6 inch intersection from one hole assayed 13.39 oz/ton Au. In 1960 Turzone Explorations Limited carried out a geological survey, trenching and 14 diamond drill holes totalling 1435 feet. (OGS-MRC 18)

3.3 Recent Regional Activity

During the period from May 1989 to February 1990 Callahan Mining Corporation and Shenandoah Resources Limited drilled 40 diamond drill holes on the Miller-Independence No.1 quartz vein in Catharine and Pacaud Townships. The property was optioned from Shenandoah and Nortek Exploration Ltd. Most of the holes were vertical and on a rough 200 foot grid plan to determine the thickness and grade of the 20 degree dipping gold quartz vein. Grades of 0.25 oz.Au per ton over widths of 5 feet were common within an area 600' x 600' and to a depth of 175 feet. The quartz vein is probably related to the Catharine Fault.

Gold Fields Canada Mining Ltd. has carried out extensive exploration on the Daley showing on Lot 6 & 7 Concession IV within Catharine Township. An extensive alteration zone over a strike length of 2000 feet and width of 100 feet has been encountered in a northwestern direction. A gold in soil geochemical anomaly has outlined the zone over a strike length of 7000 feet and a width of 1200 feet. Grab samples of 0.424, 0.821 and 1.407 oz. Au per ton were encountered within the zone. Three diamond drill holes six hundred feet apart tested the zone at depth. The drilling indicated an alteration zone of silicification, sericitization, 1-2% disseminated pyrite with some quartz veining over a width of 500 feet. (Ontario Assessment Files 1990)

Gold Fields Canada Mining Ltd. optioned their two properties in Catharine and Mater Townships to Akiko-Lori Gold Resources Ltd. (NM May 21,1990)

The article states the one property comprises 5,000 acres. The claims host 13 surface gold showings located along a fault structure which has an interpretated strike length of up to two miles and is characterized by shearing, hydrothermal alteration and gold mineralization, says Akiko (NM May 21,1990). Channel samples from several showings on the property yielded results such as 0.53 oz. gold per ton over 3 ft., 0.49 oz over 2 ft. and 0.21 oz over 2 ft.(NM May 21,1990)

Situated 1.75 miles to the northwest, the second property comprises two patented claims and is thought to lie along the extension to the interpretated fault structure. Grab samples on that property have yielded up to 7.5 oz. (NM May 21,1990)

4.0 GEOLOGY

4.1 REGIONAL GEOLOGY

The Catharine Township Property is situated in the Boston-Skead area southeast of Kirkland Lake which forms part of the Abitibi Subprovince of the Superior Province of the Precambrian Shield.

The greenstone belt southeast of Kirkland Lake is part of the Lower SuperGroup II (Jensen 1985). This group is composed of the Pacaud Tuffs, Wawbewawa Group, Catharine Group and the Skead Group. The Skead Group is equivalent in age to the Kidd Creek Rhyolite (2708 my) (OGS Map 2484 - Lithostratigraphic Map of the Abitibi Subprovince)(Figure 3).

Ridler called the volcanics Skead Group and subdivided the group into Skead pyroclastics, Catharine basalts and Pacaud tuffs. Jackson has subdivided the Catharine Group into Wawbewawa Formation (magnesian basalt) and Depression Complex/Boston Creek Komatiite; Catharine Formation (iron-rich and magnesium-rich basalt); Basalt Formation A'(magnesian basalt); Misema Komatiite; and Basalt Formation A (magnesian basalt) (Jackson 1989) (Figure 3).

Lawton (ODM Map No. 1957-4) and Teck Corporation mapping place a komatiite between the Pacaud and the Wawbewawa.

The Pacaud Structural Complex (Jackson 1989) surrounds the Round Lake Batholith. Principal lithologies within the complex include compositionally banded mafic to intermediate rocks, foliated to massive flows, moderately to strongly foliated pillow basalts, felsic to siliceous banded rocks and a persistent lens of sulphide facies iron formation within 200 feet of the batholith (Jackson 1989).

The Catharine Group consists mainly of mafic to ultramafic volcanic flows.

The Wawbewawa Formation is the mafic volcanic sequence between the Pacaud Structural Complex, the Boston Creek Komatiite and the Depression Complex.

The Boston Creek Komatiite, the Depression Complex and the Misema Komatiite are ultramafic flows that exhibit pyroxene-spinifex texture.

The Skead Group consists predominately of intermediate to felsic metavolcaniclastic rocks (Jensen 1985). The main rock types are bedded tuffs, heterolithic to monolithic fragmental rocks, massive feldspar, quartz-bearing units, and minor greywacke and conglomerate.

The most prominent faults and shear zones within the region are

as follows:

1) faults radial to the Round Lake Batholith.

2) northwest trending Pacaud and Catharine Faults.

3) northeast trending fault that displace the Boston Creek Komatiites.

4) east-west faults that displace the Pacaud Komatiite.

The volcanic formations in general strike in a northwest direction and dip toward the northeast.

4.2 Property Geology

Block I & IA

The geological sequence on this claim group is Pacaud Tuffs, Pacaud Komatiiite, Pacaud Fault, Wawbewawa Formation, Boston Creek Komatiite and the Catharine Formation.

Block II

The geological sequence on this claim group is Wawbewawa Formation, Depression Complex Komatiite, Basalt Formation A, Misema Komatiite, Basalt Formation A' and Catharine Formation.

Block III

The geological sequence on this claim block is Catharine Formation (iron-rich basalt), Catharine Fault, Catharine Formation (magnesium-rich basalt) and Skead Group.

Block IV

The geological sequence on this claim block is Catharine Formation (iron-rich basalt), Catharine Fault, Catharine Formation (magnesium-rich basalt) and Skead Group.

5.0 MINERALIZATION

5.1 Regional Mineralization

Base metal mineralization in the form of copper, zinc and lead is primarily restricted to the Pacaud sulphide facies iron formation associated with cherty felsic tuff around the Round Lake Batholith. Examples of this type are the Amity, Patterson and the Tretheway-Ossian in Pacaud Township. All these properties had shafts with limited high grade production in the form of chalcopyrite and bornite.

Gold mineralization in the area is generally restricted to the northwest-trending corridor near the Catharine Fault (Jackson 1989). Examples of this type are the Miller-Independence, Kennedy-Boston, Hilltop, Gold Hill and the Daley. The fault is characterized by intense fracturing, shearing, quartz and locally quartz-tourmaline and tourmaline veins, carbonate green mica alteration and gold mineralization (Jackson 1989).

Other types of geological environment with potential for gold mineralization are the Pacaud Fault, the base of the Misema and the Depression Complex Komatiites especially in the area of thickening of the Catharine Formations (Figure 3). An example associated with the Pacaud Fault is the Barry-Hollinger.

5.2 Property Mineralization

Gold mineralization on the Catharine Township Property is primarily associated with the following geological environment:

1) quartz veins, hydrothermal alteration such as silicification, sericitization and hematization, pyritization and quartz-feldspar porphyries associated with the Catharine Fault.
(eg. Block III and IV)(Note: this type of mineralization is not found on Block III & IV but has that potential; but is found immediately on strike to the southeast of Block III along the Catharine Fault)

2) quartz veins and pyritization associated with the Pacaud Fault. (eg. Block I)

3) quartz veins and pyritization associated with the warp zone; thickening and truncation of Basalt Formation A and A'. (eg. Block II)

Block I

Shallow dipping quartz veins related to the Pacaud Fault in diamond drill hole No. 1533-3 returned an assay of 6978 ppb Au (0.20 oz/ton Au)(6.97 g/ton) over a width of 2.5 feet on section 24+00N at 1+80E. (Section 24+00N - Map No. S-90-6-03)

Shallow dipping quartz veins related to the Pacaud Fault in Trench No. 1 returned a peak assay of 2.044 oz/ton (70 g/ton) over a width of 2 feet on section 24+00N at 4+00E. (Section 24+00N - Map No. S-90-6-03)

Block II

On this claim block in the Warp Zone a large number of quartz stringer zones associated with minor amounts of pyrite and chalcopyrite are indicated by surface sampling and diamond drill holes. Also in this zone a large number of VLF-EM anomalies within this flexure probably represent quartz and carbonate zones. A list of the anomalous gold values are as follows:

1) 580 ppb Au on line 32+00N at 4+50E.

2) 455 ppb Au over 2.5 feet or 223 ppb Au over 15.6 feet associated with 10% quartz veining and 1% pyrite, chalcopyrite in diamond drill hole No. 8.

3) 410 ppb Au on the baseline at 21+50N.

4) 100, 295, 310 ppb Au on line 16N at 10+00S associated with quartz veins, pyrite, chalcopyrite and galena.

5) 100 ppb Au associated with 5-8% pyrite and quartz veins on line 13+00S at 9+00E

6) 400 ppb Au associated with quartz veins on line 0 at 10+00E.

Block III

Diamond drill hole No. 16 returned an assay of 375 ppb Au over 2.3 feet associated with quartz-carbonate veining related to the Catharine Fault. The Catharine Fault striking in a northwest direction has a strike length of 2700 feet on the claim block which is immediately on strike with the Daley showing. (Gold Fields outlined a hydrothermal alteration zone related to shearing along the Catharine Fault for 7000 feet over a width of 500 feet with gold values such as 0.50 oz./ton Au over 3 feet, 0.49 oz/ton over 2 feet, and 0.21 oz/to over 2 feet. (NM 5/21/90) (Ontario Assessment Files).

Block IV

The Hilltop showing ocurrs on this claim block over a strike length of 800 feet. The quartz vein is 6 inchs wide with values up to 13.39 oz/ton Au reported (OGS-MDC-18). The gold zone was explored via a shaft to a depth of 688 feet in 1926-28. This gold zone is probably related to the Catharine Fault. Grab samples taken by Atapa of the Hilltop vein returned values of 0.005, 0.269, 2.320, 0.188 and 0.012 oz/ton Au.

6.0 CURRENT WORK CARRIED OUT

6.1 Induced Polarization Survey

Exsics Exploration Ltd. carried out 6.0 miles of induced polarization survey during May of 1990. This total includes 3.83 miles on Block I and 2.16 miles on Block IV. The survey utilized the time domain system using mainly the dipole-dipole array and a 100 foot spread. The parameters and the results of this survey are covered in a separate report by Steve Anderson of Exsics Exploration Ltd (Anderson 1990).

A total of 6.5 line miles of picket line was cut by Fred Kiernicki of Kirkland Lake, Ontario to fill-in between the lines cut by Teck Exploration Limited at 400 foot intervals. Of the total 3.25 line miles was cut on Block I at 100 foot intervals with stations at 100 feet and 3.25 line miles on Block IV at 200 foot intervals with stations at 100 feet.

6.2 Power Stripping

A total of seven areas covering induced polarization (chargeability) anomalies were stripped of overburden by Extender Minerals of Canada Ltd. during May 1990 using a JD400 dozer and a 1 1/2 yard backhoe (RH9LC). The seven areas were all on Block IV except one area on Block I. The stripped areas covered a total length of 1390 feet and an area of 64,850 square feet. The depth of overburden stripped is in the order of 1-2 feet. A summary of the stripping is as follows:

TABLE NO. 3a SUMMARY OF STRIPPING

BLOCK NO.	CO-ORDINATES FROM	TO	TRENCH AREA SQ.FT.	LGTH FT.	REMARKS
I	24+00N- 4+00E		20800	260	Wawbewawa Fm
IV	6+00N-12+10E	6+00N-13+60E	4500	150	Skead Group
IV	8+00N-13+50E	8+00N-14+95E	4350	145	Skead Group
IV	8+00N- 7+45E	8+00N-10+25E	12600	280	Catharine Fm
IV	10+00N- 7+25E	10+00N- 9+40E	10750	215	Catharine Fm
IV	12+00N- 6+95E	12+00N- 8+60E	6600	165	Catharine Fm
IV	12+00N- 9+70E	12+00N-11+45E	5250	175	Skead Group

6.3 Trench Geology and Sampling

During May and June 1990 the seven trenchs were mapped geologically by Terry Patrick with the exception of the Block I Trench No. 1 which was mapped by the writer. The scale of mapping is 1"=40 feet. (Figures 4-11 and Tables 3 to 10)

A total of 72 chip samples were taken in the seven trenchs by Leo Kosawan with the exception of Trench No. 2 - Block IV-10+00N-7+25E which was sampled by the writer and Trench No. 1-Block IV - 12+00N-6+95E which was sampled by Cam Cheriton. The samples were taken during May and June 1990.

All the samples were assayed by Accurassay Laboratories Limited at Kirkland Lake, Ontario using the fire assay atomic absorption method.

7.0 RESULTS

7.1 Induced Polarization Survey

The induced polarization chargeability anomalies are indicated by Exsics Exploration Limited in a report (Anderson 1990) and summarized as follows:

TABLE NO. 11 SUMMARY OF I.P. CHARGEABILITY ANOMALIES(dipole-dip.)

BLOCK	LINE	FROM	TO	PEAK	a=n ft	mil/s	RES	REMARKS
I	21+00N	3+50W	4+50W	4+00W	100	12	high/low	
		2+50W	3+50W	3+00W		16	high/low	
		8+50E	9+50E	9+00E		10	high	
		10+00E	11+00E	10+50E		15	high	
I	23+00N	3+00E	5+00E	4+00E		16	low/high	
		8+00E	10+00E	9+00E		27	high/mod	
I	24+00N	4+50E	5+50E	4+50E	50	* 10	high	g.v.;1-2%py
				5+00E	50	38	high	
		9+00E	10+00E	9+50E	50	41	high	
I	25+00N	3+00E	5+00E	4+00E	100	32	high/low	
		8+00E	10+00E	9+50E		23	high/low	
I	26+00N	8+00E	10+00E	9+00E		22	high	
I	27+00N	5+50E	7+00E	6+50E		7	mod	
IV	12+00N			5+00E			low/mod	sh.z.;1-2%py
				7+50E		*	mod/high	sh.z.
		10+00E	11+50E	10+50E		* 20	high	sh.z.;2%py;
IV	10+00N	7+00E	9+50E	8+00E		* 40	high	sh.z.;2%py;s
IV	8+00N	7+00E	9+00E	8+50E		* 25	high	flow-bx
IV	7+00N	6+00E	7+50E	6+50E		15	high/low	
		0+00	2+00E	1+50E		15	mod	
IV	6+00N	3+00E	5+50E	4+50E		45	low/high	
		12+00E	14+00E	13+00E		* 15	high	sh.z.
IV	5+00N	0+00	2+00E	1+50E		50	high	

* Note: Anomaly stripped

7.2 Trench Geology and Sampling

Block I

The induced polarization (chargeability) anomaly on line 24+00N at 4+50E was stripped of 2 feet of overburden in Trench No. 1. This uncovered a series of at least three shallow dipping quartz veins. (Figure 5) (Section 24+00E - Map S-90-6-04). Sample No. 3 on the Terri Vein returned an assay of 2.044 oz/ton Au over 2 feet.(T.W. 6 inchs). This vein may correlate with the vein in diamond drill hole No. 3 that assayed 6978 ppb Au (0.20 oz/ton Au) over 2.5 feet. Additional samples of the Terri Vein returned values of 343 and 214 ppb Au. This vein varies in width up to 1 foot. Samples of the Leo Vein returned anomalous values of 140, 102, 145 and 113 ppb Au. This vein varies in width up to 2 feet. The Cam Vein varies in width up to 3 feet. (Table No. 4 - Figure 5). This area stripped is all within Wawbewawa Formation magnesian basalt.

Block IV

Trench No. 1 on line 12+00N from 6+95E to 8+60E returned a value of 268 ppb Au over 3 feet in a sheared and brecciated zone with 1% disseminated pyrite in sample No. 9. Sample No. 10 returned a value of 198 ppb Au over a foot. (Table No. 9 - Figure 10). This trench is all within Catharine Formation basalt.

Trench No. 3 on line 8+00N from 7+45E to 10+25E returned an assay

of 158/183 ppb Au over 1 foot in a flow breccia in sample No. 3. Sample No. 17 returned a value of 145 ppb Au over 6 inchs in a quartz vein. This trench is all within Catharine Formation magnesian basalt.

8.0 CONCLUSIONS AND RECOMMENDATIONS

In Pacaud and Catharine Townships the majority of the gold occurrences are related to the Catharine and the Pacaud Faults. These gold showings are mainly quartz vein type with the exception of the Daley showing uncovered by Gold Fields in 1989. This is a hydrothermally altered zone type gold occurrence over a strike length of 7000 feet and a width of 500 feet related to the Catharine Fault. The Daley gold occurrence is associated with silicification, sericitization, pyritization, hematization, shearing, quartz veining and quartz-feldspar porphyry dikes. Surface grab samples returned values of 0.424 and 1.407 oz/ton Au. Soil geochemistry outlined the zone over a width of 1200 feet and a strike length of 7000 feet. Three deep diamond drill holes 600 feet apart in 1990 did not return economic gold values but indicated an alteration zone 500 feet wide with low gold values.

Block III is immediately to the northwest of the Daley gold showing in Catharine Township. Follow-up exploration on this group of claims should include soil geochemistry, IP profiling and power stripping along the Catharine Fault over a strike length of 2700 feet.

Block IV is along the strike of the Catharine Fault in Catharine Township. The Hilltop gold deposit is a narrow high grade quartz vein type of gold showing related to the fault in this area.

Exploration along the Catharine Fault on this claim block over a strike length of 1800 feet should include soil geochemistry, IP profiling and power stripping.

Block I is along the Pacaud Fault in Pacaud Township. Shallow dipping auriferous quartz veins related to the Pacaud Fault were intersected in diamond drill hole No. 13 and uncovered by stripping in trench No.1. Exploration along the Pacaud Fault over a strike length of 3400 feet is recommended to include soil geochemistry, IP profiling and power stripping.

On Block II a number of anomalous gold samples from surface and diamond drill holes warrant follow-up with soil geochemistry, IP profiling and power stripping.

Respectfully submitted,

F.J. Sharpley

Burlington Ontario

December 31,1991

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Thorsen, K.R. (1988) Progress Report and Proposed Drilling on Catharine Claims for Vandorex Energy Corporation, Report No. 1079NB, 4p.

CERTIFICATE OF QUALIFICATION

I, Frederick James Sharpley of the City of Burlington, Province of Ontario, do hereby certify:

1) That I am a consulting geologist and reside at 2372 Sinclair Circle, Burlington, Ontario, L7P 3C3.

2) That I graduated from the University of Saskatchewan, Saskatoon, Saskatchewan, holding a degree of Bachelor of Arts, Geology (1959).

3) That I am a Fellow of the Geological Association of Canada.

4) That I have practised my profession as a mineral exploration geologist for a period of 31 years.

5) This report is based on a visit to the Catharine Township Property from June 22 to 27,1990 and a review of the data.

6) That I have no financial interest in either the Catharine Township Property or Atapa Minerals Limited nor do I expect to receive any interest.

Burlington Ontario.
December 31,1990

F.J. Sharpley

APPENDIX I:

LIST OF FIGURES

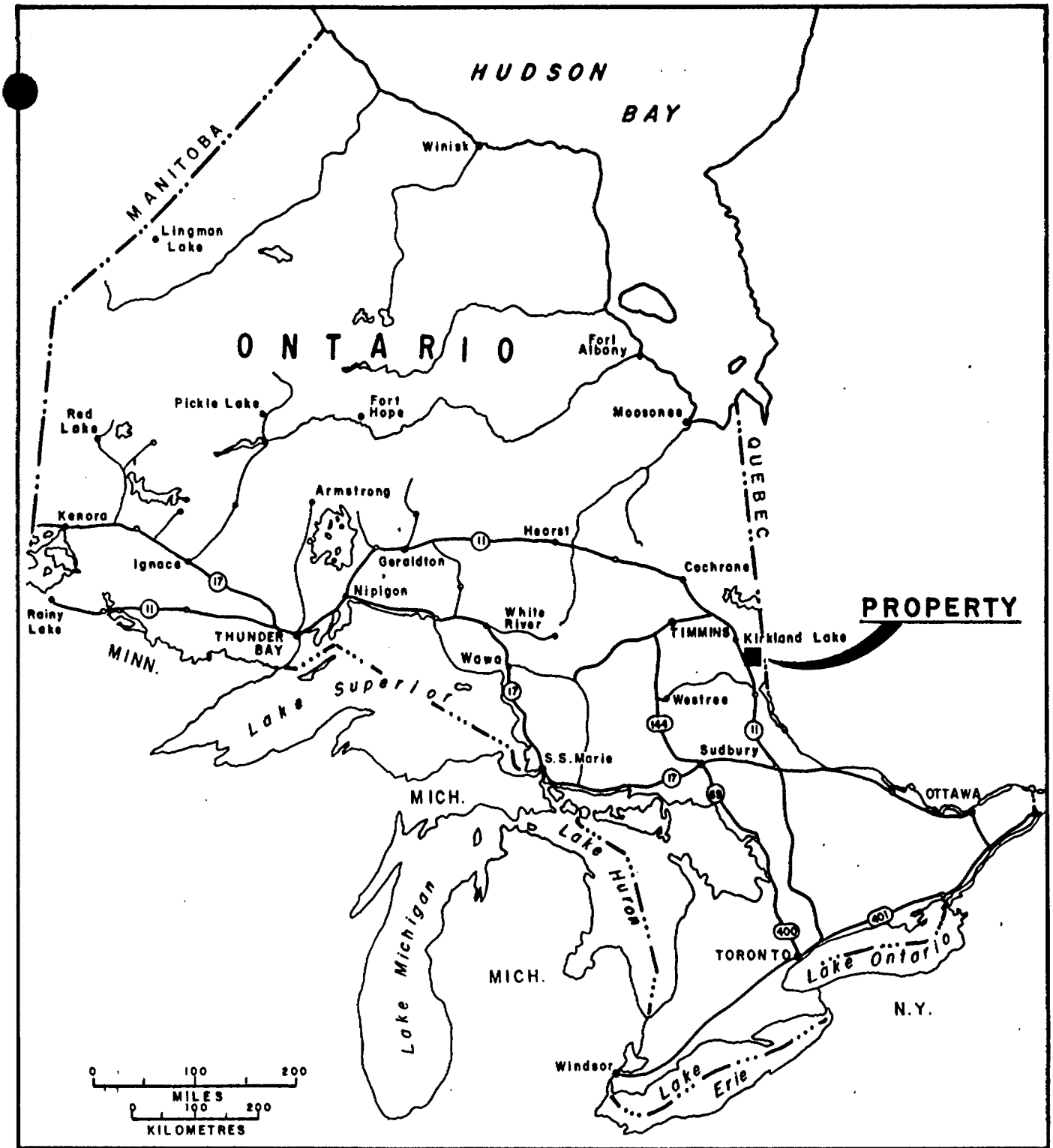


Figure 1

ATAPA MINERALS LIMITED

CATHARINE TWP. PROPERTY

LOCATION MAP

Nov., 1990 BY: F.J. Sharpley

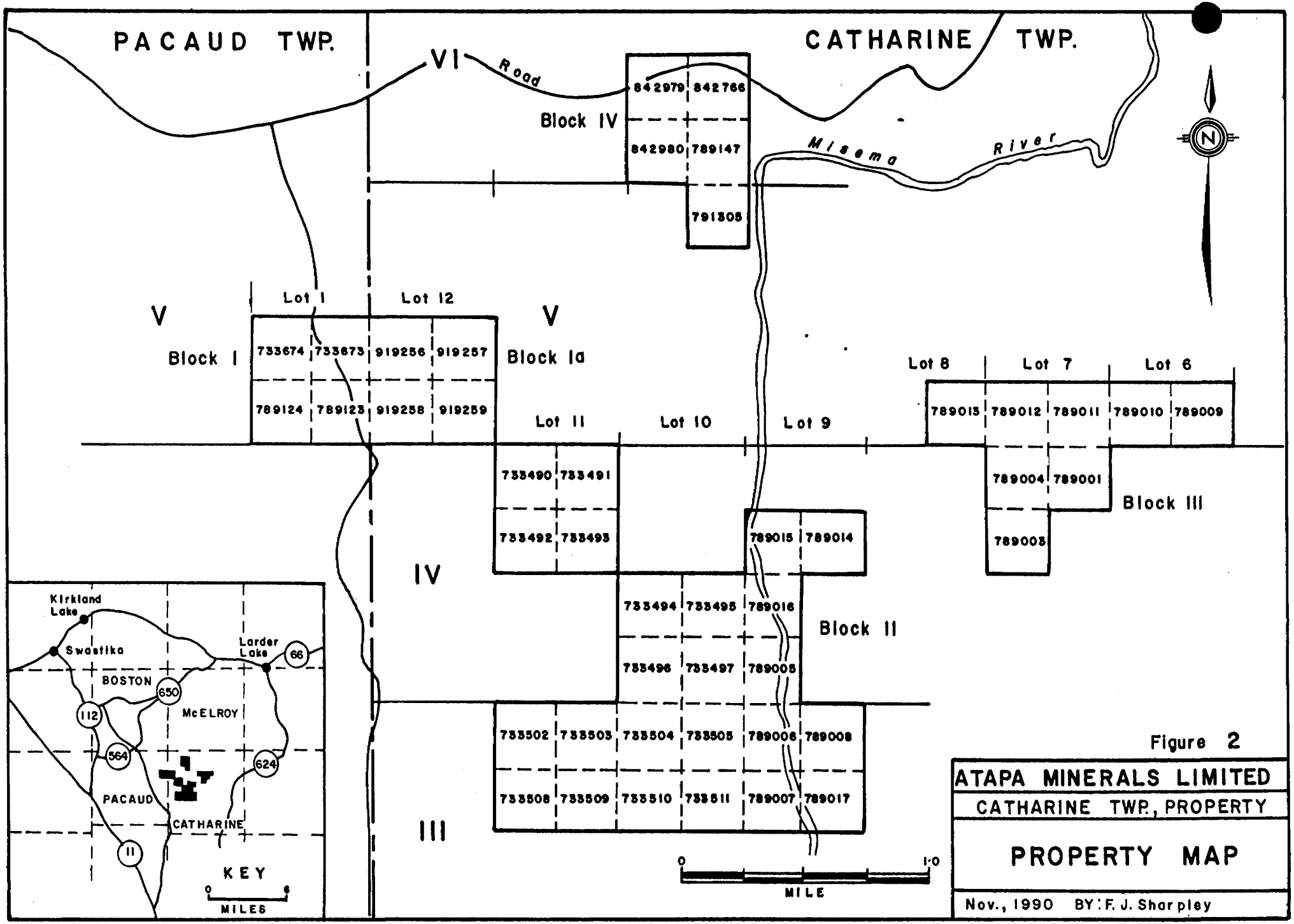


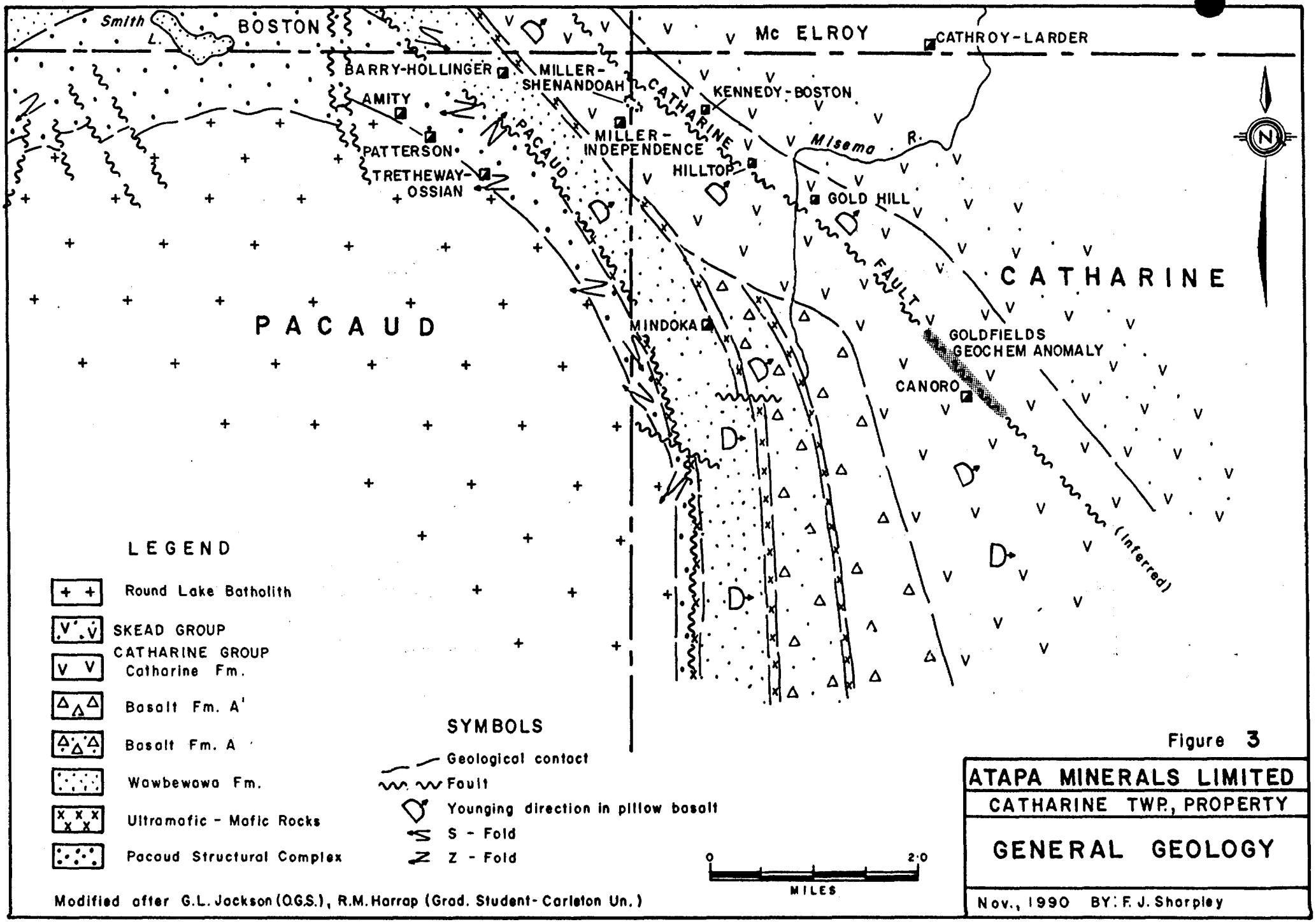
Figure 2

ATAPA MINERALS LIMITED

CATHARINE TWP., PROPERTY

PROPERTY MAP

Nov., 1990 BY: F. J. Sharpley



Modified after G.L. Jackson (O.G.S.), R.M. Harrap (Grad. Student - Carleton Un.)

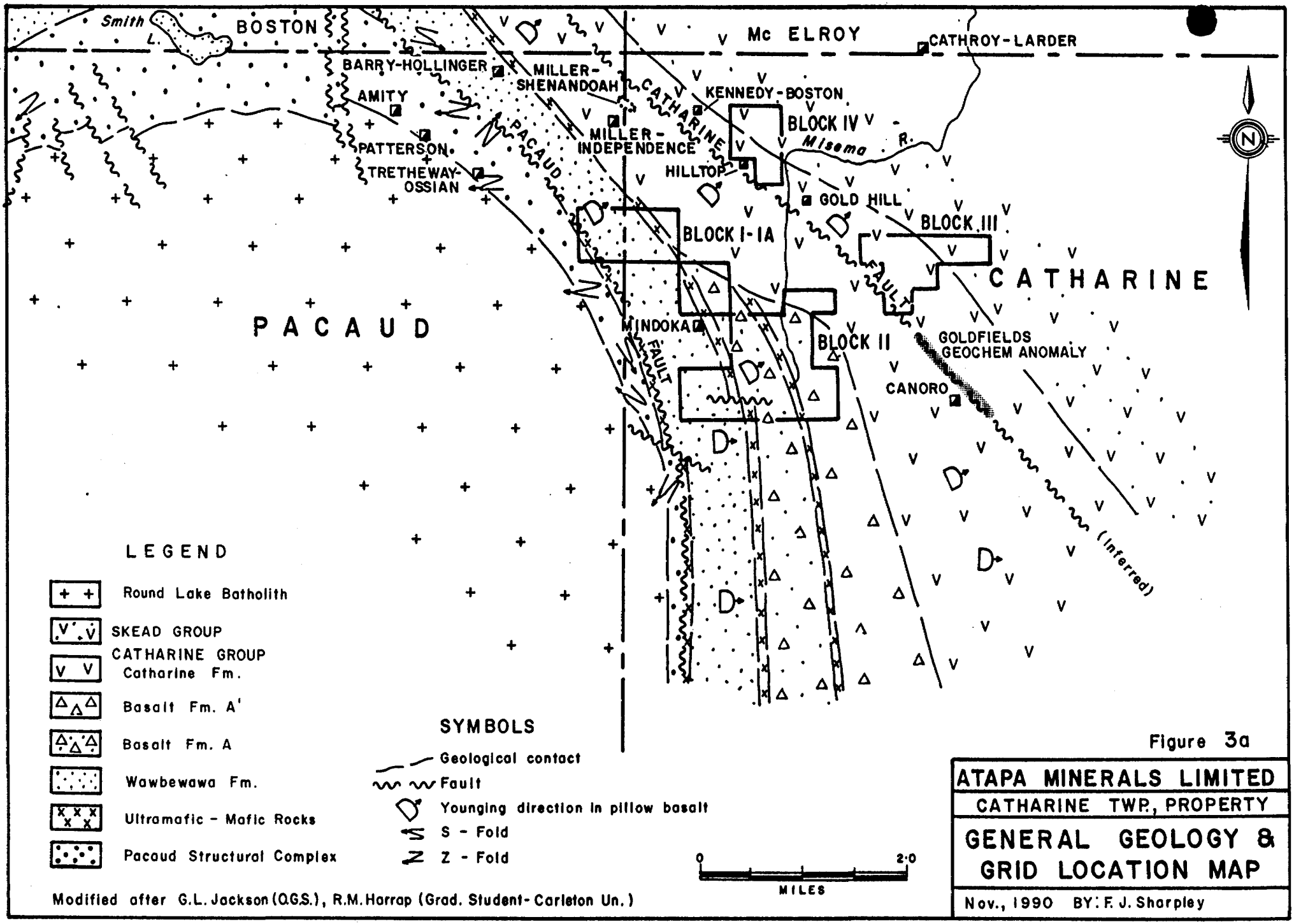
Figure 3

ATAPA MINERALS LIMITED

CATHARINE TWP. PROPERTY

GENERAL GEOLOGY

Nov., 1990 BY: F. J. Sharpley


Smith L.
BOSTON
Mc ELROY
CATHROY-LARDER
BARRY-HOLLINGER
MILLER-SHENANDOAH
CATHARINE
KENNEDY-BOSTON
AMITY
BLOCK IV
Misema R.
PATTERSON
MILLER-INDEPENDENCE
PACAUD
TRETHEWAY-OSSIAN
HILLTOP
GOLD HILL
BLOCK I-IA
BLOCK III
CATHARINE
PACAUD
MINDOKA
FAULT
BLOCK II
GOLDFIELDS GEOCHEM ANOMALY
CANORO
(inferred)
N
LEGEND
Round Lake Batholith
SKEAD GROUP
CATHARINE GROUP
Catharine Fm.
Basalt Fm. A'
Basalt Fm. A
Wawbewawa Fm.
Ultramafic - Mafic Rocks
Pacaud Structural Complex
SYMBOLS
Geological contact
Fault
Younging direction in pillow basalt
S - Fold
Z - Fold
0
2·0
MILES
Modified after G.L. Jackson (O.G.S.), R.M. Harrap (Grad. Student - Carleton Un.)
Figure 3a
ATAPA MINERALS LIMITED
CATHARINE TWP. PROPERTY
GENERAL GEOLOGY & GRID LOCATION MAP
Nov., 1990 BY: F. J. Sharpley

APPENDIX II:

LIST OF CLAIMS

Table No. 2 CLAIM SUMMARY-CATHARINE-12/31/90

PROJ	CLAIM	OWNER	CON	TWP	REC'D	ASS-D	D-RQD	APPR.
BLOCK I	L-733673	TECK	AU	PACAUD	10/31/84	10/31/91		218
	L-733674	TECK	AU	PACAUD	10/31/84	10/31/91		220
	L-789123	TECK	AU	PACAUD	10/31/84	10/31/91		218
	L-789124	TECK	AU	PACAUD	10/31/84	10/31/91		216
	L-919256	TECK	AU	CATHARINE	10/15/86	10/15/91	59	141
	L-919257	TECK	AU	CATHARINE	10/15/86	10/15/91	40	160
	L-919258	TECK	AU	CATHARINE	10/15/86	10/15/91	56	144
	L-919259	TECK	AU	CATHARINE	10/15/86	10/15/91	58	142
BLOCK II	L-733490	TECK	AU	CATHARINE	12/06/83	12/06/91		204
	L-733491	TECK	AU	CATHARINE	12/06/83	12/06/91		201
	L-733492	TECK	AU	CATHARINE	12/06/83	12/06/91		200
	L-733493	TECK	AU	CATHARINE	12/06/83	12/06/91		205
	L-733494	TECK	AU	CATHARINE	12/06/83	12/06/91		205
	L-733495	TECK	AU	CATHARINE	12/06/83	12/06/91		201
	L-733496	TECK	AU	CATHARINE	12/06/83	12/06/91		202
	L-733497	TECK	AU	CATHARINE	12/06/83	12/06/91		202
	L-733502	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733503	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733504	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733505	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733508	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733509	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733510	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-733511	TECK	AU	CATHARINE	12/28/83	12/28/91		200
	L-789005	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789006	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789007	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789008	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789014	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789015	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789016	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789017	TECK	AU	CATHARINE	1/12/84	1/11/91		200
BLOCK III	L-789001	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789003	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789004	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789009	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789010	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789011	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789012	TECK	AU	CATHARINE	1/12/84	1/11/91		200
	L-789013	TECK	AU	CATHARINE	1/12/84	1/11/91		200
BLOCK IV	L-789147	TECK	AU	CATHARINE	1/05/86	1/05/91	60	140
	L-791305	TECK	AU	CATHARINE	1/05/86	1/05/91	60	140
	L-842766	TECK	AU	CATHARINE	8/14/86	8/14/91	60	140
	L-842979	TECK	AU	CATHARINE	8/15/86	8/15/91	53	147
	L-842980	TECK	AU	CATHARINE	1/05/86	1/05/91	60	140

Table No. 2 CLAIM SUMMARY-CATHARINE-12/31/90

PROJ	CLAIM	OWNER	COM	TWP	REC'D	ASS-D	D-RQD	APPR.
	TOTAL:						506	8,586
	COUNT: 45							

APPENDIX III:

LIST OF TABLES

TABLE NO. 1
Gold Prospects in Pacaud and Catharine Townships

PROPERTY NAME	PRODUCT YEARS	TONS	GOLD OZ	GRADE AU	WIDTH FT	REMARKS
Barry-Hollinger shaft-2250'	1925-36 1936-44	267,741	69,891	0.26	2-8	No. 7 vein Q.V. in Mafic Sch. assoc/ Pacaud F.z.
Miller-Independ shaft-515'	1918	31	58.5	1.89	4	Q.V. #1 Q.V. 600x1'
Allied shaft-321'	1918-19					Py,cp;low Au surface 400'-1924 60'zone Q.str.
Gold Hill shaft-1200' 1100'x1.7' 0.75 OPT Au	1927-28	4616	660	0.14	1.7	Py,cp,gal,MoS2 surface DDH's 1100';0.75 OPT Au over 1.7 ft
Hilltop (Turzone) 3000'x 0.5'	1926-28			0.47 13.39	0.5 0.5	shaft to 688' high grade samples reported 1960-14 DDH's
Cathroy-Larder shaft	1941-44	22,250	3227	0.15		1972 650,000 0.204 OPT Au Au bearing S in sh. zone
Kennedy-Boston shaft-150'	1920's					Q.V. in sh.z. cp 70'sh.z./q.v.
Canoro-Ostrom shaft-525'	1956			0.17 2.60 7.85		No.12 Q.V. Py,cp,hem 30 veins
Roger-Barnett	1941					N25E 500'x 10' Q.V.;py;cb

Reference: (Thorsen 1985) Re: OGS MDC 18

TABLE NO. 3 SUMMARY TRENCH GEOLOGY AND GEOCHEMISTRY

BLOCK #	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
I	24+00N-4+00E	Wawbewawa Fm	1-2			q.v. 0.6'-2.0' Terry Vein magnesian Basalt
IV	6+00N-12+00E	Skead Grp.				felsic tuff-aggl.
IV	8+00N-13+50E	Skead Grp.				felsic tuff-aggl.
IV	8+00N-7+45E	Catharine Fm.	1			magnesian Basalt sh.z/q.v.
IV	10+00N-7+25E	Catharine Fm.	1			magnesian Basalt sh.z.;sil-chl-cb
IV	12+00N-6+95E	Catharine Fm.	1			magnesian Basalt
IV	12+00N-9+70E	Skead Grp.				felsic tuff-aggl.

TABLE NO. 4 (See Figure 5)

TRENCH No. 1 - GEOLOGY & SAMPLES - BLOCK I - 24N-4E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	TERRI VEIN	Wawbewawa Fm				132-40NE
1						
192061	23+65N-3+80E	basalt	1-2	343	.7	banded q.v.
2						
192062	23+75N-3+80E	basalt	1-2	214	.8	q.v.
3						
192063	23+85N-3+80E	basalt	1-2	607	.6	q.v.
194737				70248		2.044 oz/ton Au
4						
192064	23+95N-3+80E	basalt	1-2	70	.7	q.v.
5						
192065	24+45N-3+75E	basalt	1-2	52	.6	q.v.
6						
192066	24+60N-3+65E	basalt	1-2	49	.8	q.v.
7						
192067	24+65N-3+60E	basalt	1-2	23	.6	q.v.
	LEO VEIN					0-30E
8						
192068	24+20N-4+00E	basalt	1-2	99	1.0	q.v.
9						
192069	24+05E-3+95E	basalt	1-2	76	.6	q.v.
10						
192070	24+05E-4+05E	basalt	1-2	140	1.0	q.v.
11						
192071	24+00N-4+15E	basalt	1-2	53	1.0	q.v.
12						
192072	23+90N-4+20E	basalt	1-2	102	1.0	q.v.
13						
192073	23+80N-4+25E	basalt	1-2	145	.6	q.v.
14						
192074	23+75N-4+30E	basalt	1-2	113	1.6	q.v.
15						
192075	23+75N-4+40E	basalt	1-2	85	1.8	q.v.
16						
192076	23+70N-4+50E	basalt	1-2	99	2.0	q.v.
17						
192077	23+50N-4+40E	basalt	1-2	12	1.0	q.v.
18						
192078	23+45N-4+30E	basalt	1-2	29	.6	q.v.

TABLE NO. 5 (See Figure 5)

TRENCH No. 1 - GEOLOGY & SAMPLES - BLOCK I - 24N-4E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	CAM VEIN	Wawbewawa Fm.				125-25S
19 192079	24+30N-4+45E	basalt	1-2	37	1.0	q.v.
20 192080	24+35N-4+35E	basalt	1-2	7	1.0	q.v.
21 192081	24+55N-4+00E	basalt	1-2	6	3.0	q.v.
22 192082	24+50N-4+00E	basalt	1-2	13	2.0	q.v.
23 194739	24+60N-4+00E	basalt		32	2.0	banded q.v.
24 194740	24+35N-4+00E	basalt		33	2.0	q.v.

TABLE NO. 5 (See Figure 6)

TRENCH No. 4 - GEOLOGY & SAMPLES - BLOCK IV - 6N-12E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	6+00N-12+10N to 6+00N-13+60E	Skead Grp. felsic tuff-aggl.				

TABLE NO. 6 (See Figure 7)

TRENCH No. 5 - GEOLOGY & SAMPLES - BLOCK IV - 8N-13+50E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	8+00N-13+50E to 8+00N-14+95E	Skead Grp. felsic tuff-aggl.				

TABLE NO. 7 (See Figure 8)

TRENCH No. 3 - GEOLOGY & SAMPLES - BLOCK IV - 8+00N-7+45E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	8+00N-7+45E to 8+00N-10+25E	Catharine Fm.				
1						
194701	7+95N-10+10E	basalt	<1	17	2	sh.z;cb;chl;sil
2		tuff				
194702	7+90N-10+05E	basalt	<1	< 5	2	sh.z.;cb;chl;sil
3		tuff				
194703	8+20N-8+62E	basalt/	<1	158	1	flow bx.; q.v.
4		c.g.tuf		183		
194704	8+10N-8+62E	basalt/	<1	52	1	flow bx.; q.v.
5		tuff				
194705	8+10N-8+63E	basalt/	<1	8	1	flow bx.; q.v.
6		tuff				
194706	7+90N-8+65E	basalt/	<1	6	1	flow bx.; q.v.
7		tuff				
194707	7+90N-8+30E	basalt		< 5	grab	chl.
8						
194708	8+00N-8+12E	basalt		6	grab	chl.
9						
194709	7+93N-7+92E	basalt		12	.5	q.v.
10						
194710	7+88N-7+95E	basalt		10	1.0	q.v.
11						
194711	7+83N-7+96E	basalt		27	.2	q.v.
12						
194712	7+76N-7+97E	basalt		10	.4	q.v.
13				6		
194713	7+87N-8+00E	basalt		45	.2	q.v.
14						
194714	8+10N-7+97E	basalt		< 5	.2	q.v.
15						
194715	8+05N-7+87E	basalt		59	.5	q.v.
16						
194716	8+10N-7+85E	basalt		99	.5	q.v.
17						
194717	8+15N-7+88E	basalt		145	.5	q.v.
18						
194718	8+07N-7+80E	basalt		19	.3	q.v.
19						
194719	8+13N-7+80E	basalt		10	.7	q.v.
20				9		
194720	8+20N-7+80E	basalt		48	1.0	q.v.

TABLE NO. 7 (See Figure 8)

TRENCH No. 3 - GEOLOGY & SAMPLES - BLOCK IV - 8N-7+45E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	8+00N-7+45E to 8+00N-10+25E	Catharine Grp				
21 194721	8+10N-7+77E	basalt	1	86	1.0	sh.z.

TABLE NO. 8 (See Figure 9)

TRENCH No 2 - GEOLOGY & SAMPLES-BLOCK IV - 10N-7+25E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	10+00n-7+25E to 10+00N-9+40E	Catharine Fm.				
1 192083	10+00N-9+25E	basalt	1	15	3	sh.z.;cb
2 192084	9+95N-9+20E	basalt	1	15	3	sh.z.;cb
3 192085	9+25N-9+15E	basalt	1	5	3	sh.z.;cb
4 192086	10+05N-9+10E	basalt		11	3	tuff-bas.contact
5 192087	10+05N-8+75E	basalt		< 5	3	2 1/2'ch.tuff
6 192088	9+90N-8+75E	basalt		30	3	2 1/2'ch.tuff
7 192089	10+00N-9+10E	basalt	1	5	3	sh.z.;sil-chl-cb
8 192090	10+05N-8+75E	basalt	1	8	3	sh.z.;sil-chl-cb
9 192091	10+00N-7+80E	basalt	1	11	3	sh.z.;sil-chl-cb
10 192092	10+00N-7+75E	basalt	1	13	3	sh.z.;sil-chl-cb
11 192093	9+95N-7+70E	basalt	1	5	3	sh.z.;sil-chl-cb
12 192094	9+93N-7+65E	basalt	1	< 5	3	sh.z.;sil-chl-cb
13 192095	9+92N-7+63E	basalt	1	< 5	3	sh.z.;sil-chl-cb
14 192096	9+90N-7+60E	basalt	1	12	3	sh.z.;sil-chl-cb
15 192097	10+10N-7+40E	basalt	1	10	3	sh.z.;sil-chl-cb
16 192098	10+08N-7+38E	basalt	1	59	3	sh.z.;sil-chl-cb
17 192099	10+05N-7+35E	basalt	1	38	5	sh.z.;sil-chl-cb

TABLE NO. 9 (See Figure 10)

TRENCH No. 1 - GEOLOGY & SAMPLES - BLOCK IV - 12N-6+95E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	12+00N-6+95E to 12+00N-8+60E	Catharine Fm.				
1 194722	11+85N-7+95E	basalt/tuff	1	20	2.5	sh.& bx.z.;cb-chl
2 194723	11+88N-7+90E	basalt/tuff	1	15	2.1	sh.& bx.z.;cb-chl
3 194724	11+85N-7+85E	basalt/tuff	1	> 5	2.9	sh.& bx.z.;cb-chl
4 194725	11+85N-7+80E	basalt/tuff	1	15	1.9	sh.& bx.z.;cb-chl
5 194726	11+80N-7+75E	basalt/tuff	1	19	1.9	sh.& bx.z.;cb-chl
6 194727	11+95N-7+25E	basalt/tuff	QV/1	5	1.0	sh.& bx.z.;cb-chl
7 194728	11+85N-7+20E	basalt/tuff	1	7	2.4	sh.& bx.z.;cb-chl
8 194729	11+70N-7+15E	basalt/tuff	QV/1	52 51	3.4	cb-chl; sh.z.
9 194730	11+75N-6+90E	basalt/tuff	1	268	2.4	flow bx.
10 194731	11+80N-7+40E	basalt	QV	198	0.3	sh.z.;cb-chl;3"q.v
11 194732	12+00N-6+95E	basalt	1	47	1.0	sh.z.;cb-chl;1"q.v
192100				29		

TABLE NO. 10 (See Figure 11)

TRENCH No. 6 - GEOLOGY & SAMPLES-BLOCK IV - 12N-9+70E

SPL.NO.	CO-ORDINATES	GEOLOGY	SULPH %	PPB AU	WIDTH FT-TW	REMARKS
	12+00N-9+70E to 12+00N-11+45E	Skead Grp				felsic tuff-aggl.
1 4-6-1	12+05N-10+40E	felsic tuff			1.0	rusty cb sh.bx.; 0.01 oz/t Au

APPENDIX IV:

LIST OF MAPS

LEGEND & SYMBOLS

5 — Round Lake Batholith Granite

4 — SKEAD GROUP
Felsic Pyroclastics

CATHARINE GROUP

3 — Catharine Fm.
a Iron-Rich Basalt
b Magnesium-Rich Basalt

2c — Basalt Fm. A'
Magnesium-Rich Basalt

2b — Basalt Fm. A
Magnesium-Rich Basalt

2a — Wawabewawa Fm.
Magnesium-Rich Basalt

2' — Ultramafic - Mafic Rocks
Komatiite
2A Misema Komatiite
2B Depression Complex'/
Boston Creek Komatiite
2C Pacaud Komatiite

1 — Pacaud Structural Complex
Mafic to Felsic Tuffs
Iron Fm. - sulphide facies

Geological Contact

Fault

xxxxxxx Beaver Dam

Schistosity

Bedding

Trench or Pit

No.1 Stripped Area - Trench and No.

Sample Location (rock)

140 Au ppb

1. 6.
2. Sample Location and No. in Trench

1 D.D.Hole and No.
0·38/6"
Au oz. / ton / length

14 Teck D.D.Holes have prefix 1533 (omitted)
395/2·2'
Au ppb / length

Crone Radem V.L.F. E.M. Conductor Axis

I.P. Anomaly - Dipole - Dipole N= 1 to 3, a = 100'
Strong
Medium
Weak

Magnetic High ≥1000 gammas

ABBREVIATIONS

cp	chalcopyrite
h	chloritic
hem	hematite
l	carbonatized
l	flow banding
m	flow breccia
mag	magnetite
n	lapilla
o	agglomerate
p	lamprophyre
po	pyrrhotite
py	pyrite
qcv	quartz carbonate vein
qv	quartz vein
Q	felsic
r.	rubble
sh	sheared
sil	siliceous
S.Z.	shear zone
t	tuffaceous
w.	water

Figure 4

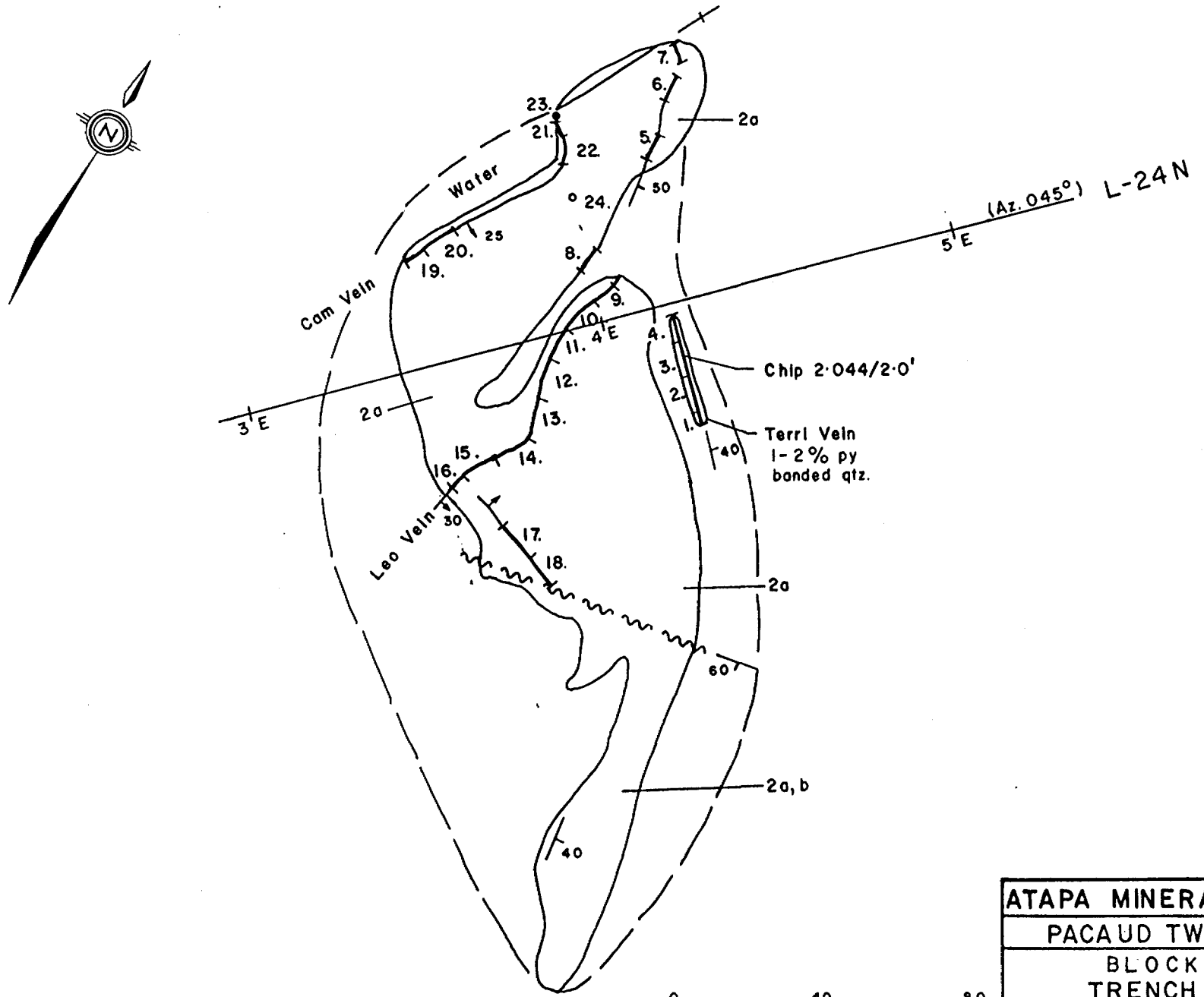


Figure 5

ATAPA MINERALS LIMITED
PACAUD TWP., PROPERTY
BLOCK I TRENCH No. 1 24+00N - 4+00E
Dec., 1990 BY: F. J. Sharpley

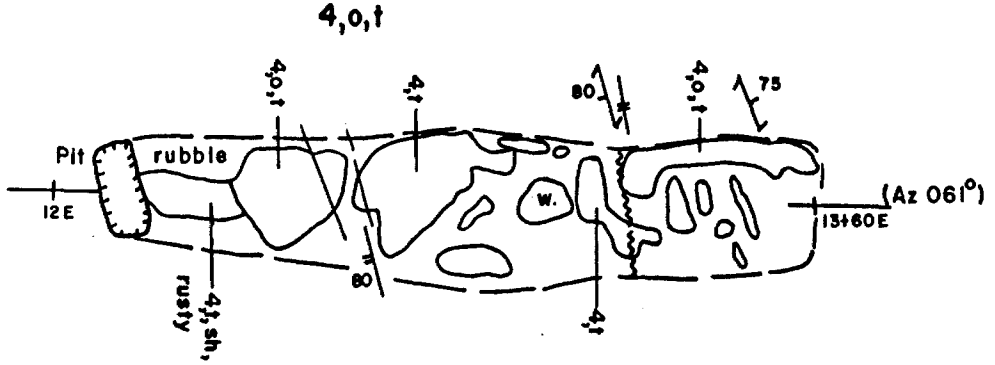
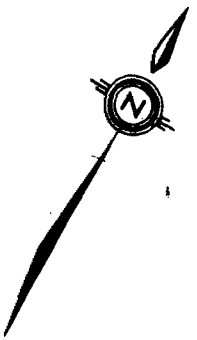


Figure 6

ATAPA MINERALS LIMITED
CATHARINE TWP. PROPERTY
BLOCK IV TRENCH No. 4 6+00N - 12+00E
Dec., 1990 BY: T.O.H. Patrick

0 40 80
FEET



4,0,t

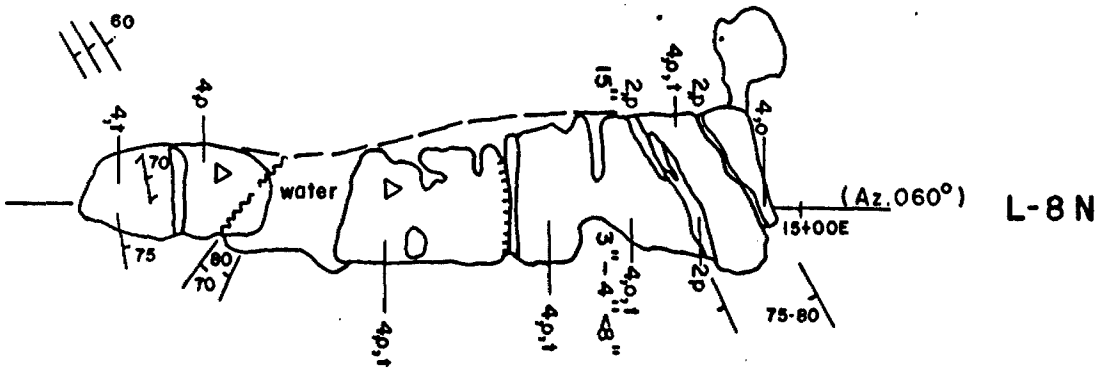


Figure 7

ATAPA MINERALS LIMITED
CATHARINE TWP, PROPERTY
BLOCK IV TRENCH No. 5 8+00N - 13+50E
Dec., 1990 BY: T.O.H. Patrick

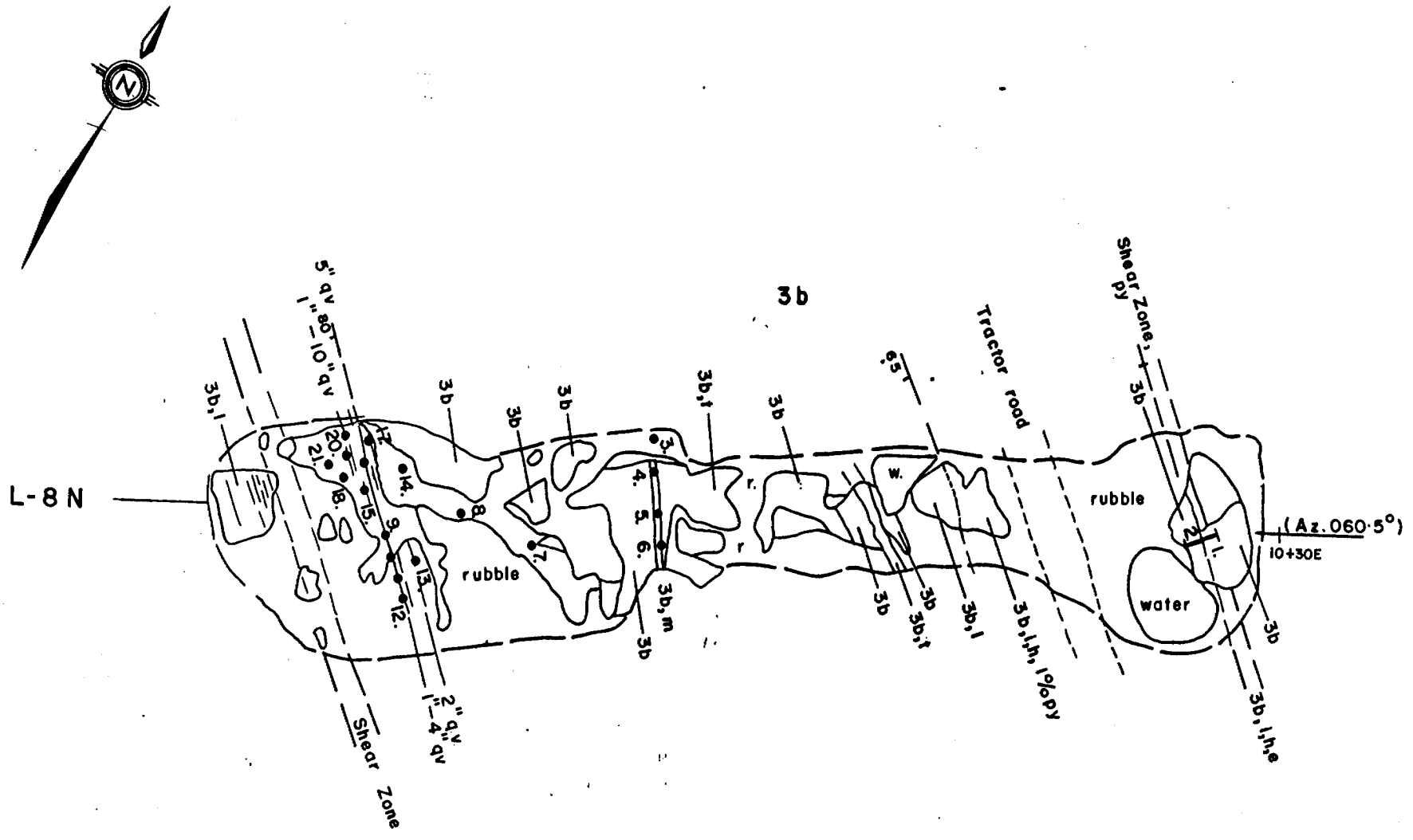


Figure 8

ATAPA MINERALS LIMITED
CATHARINE TWP., PROPERTY
BLOCK IV TRENCH No. 3 8+00N — 7+45E
Dec., 1990 BY: T.O.H. Patrick

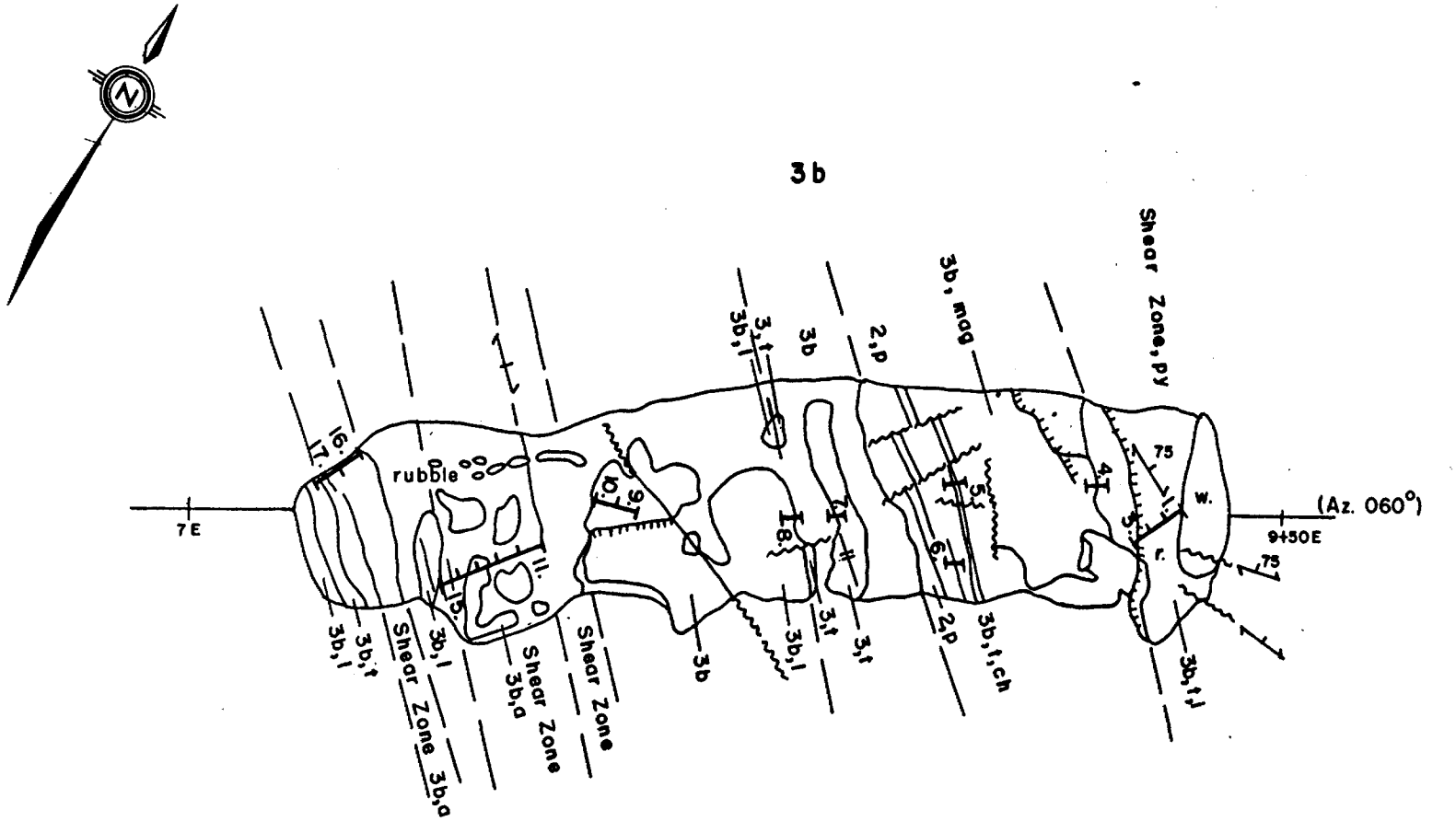


Figure 9

ATAPA MINERALS LIMITED
CATHARINE TWP. PROPERTY
BLOCK IV TRENCH No. 2 10+00N - 7+25E
Dec., 1990 BY: T.O.H. Patrick

0 40 80
FEET

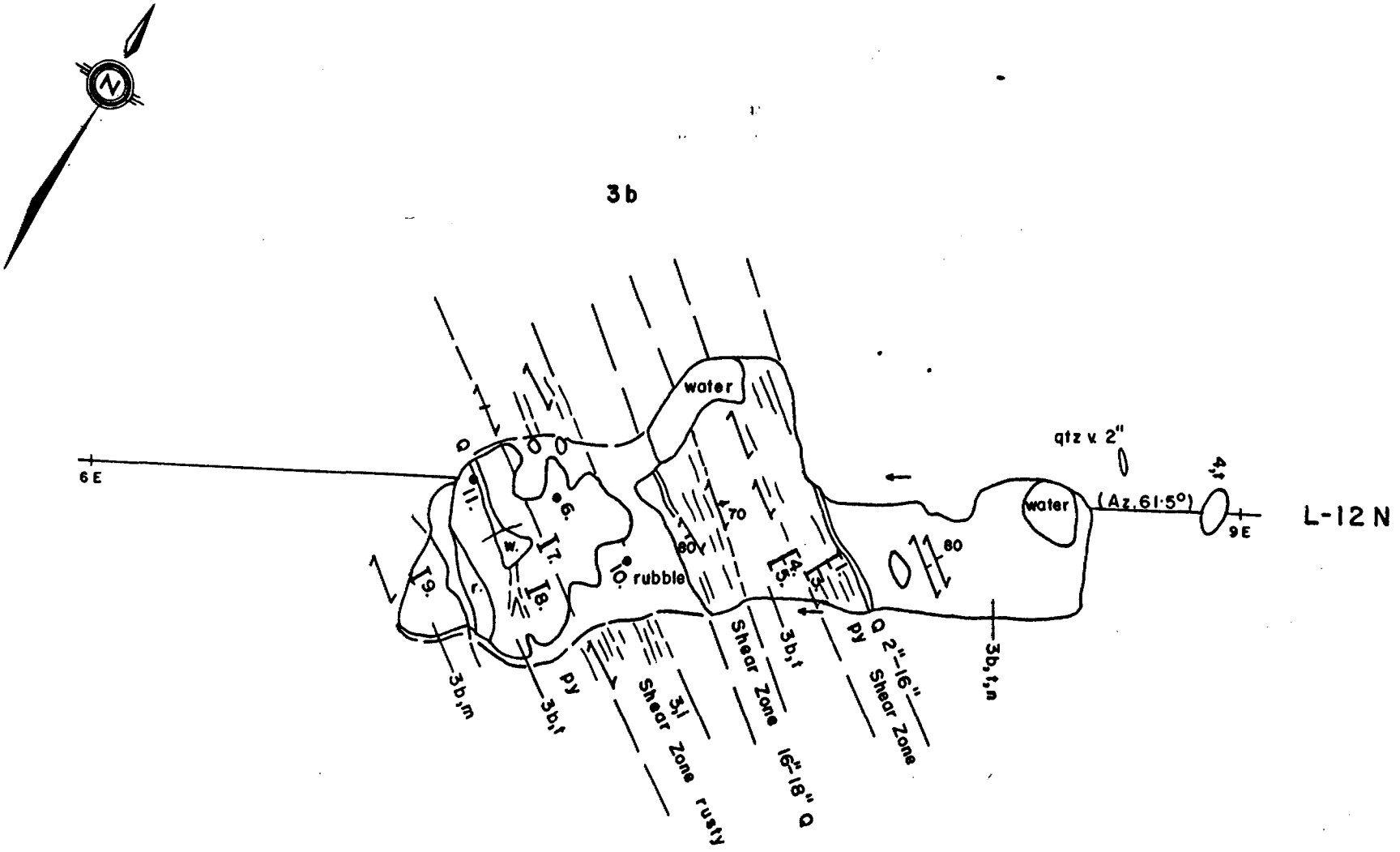
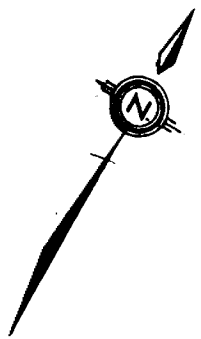
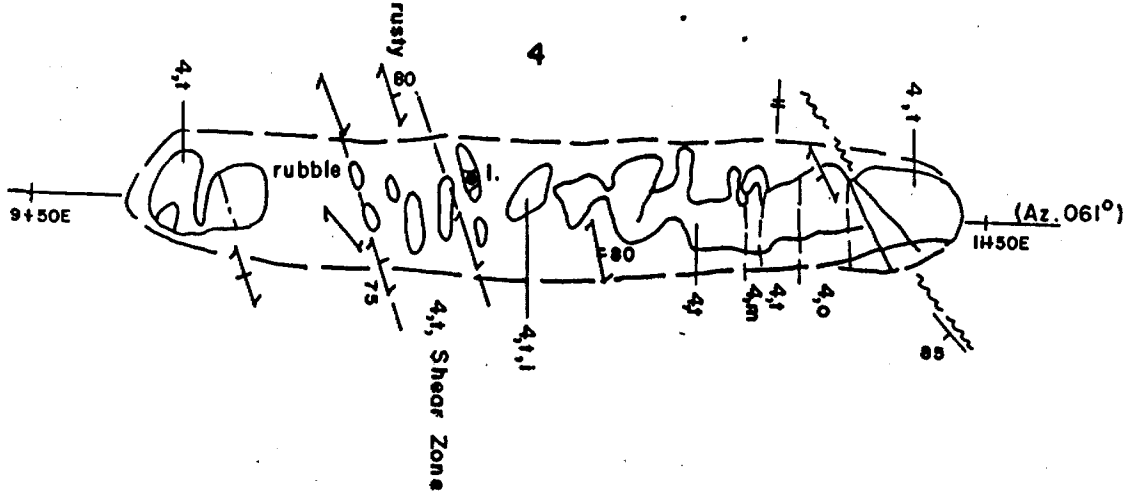


Figure 10

ATAPA MINERALS LIMITED
CATHARINE TWP. PROPERTY
BLOCK IV TRENCH No. 1 12+00N - 6+95E
Dec., 1990 BY: T.O.H. Patrick



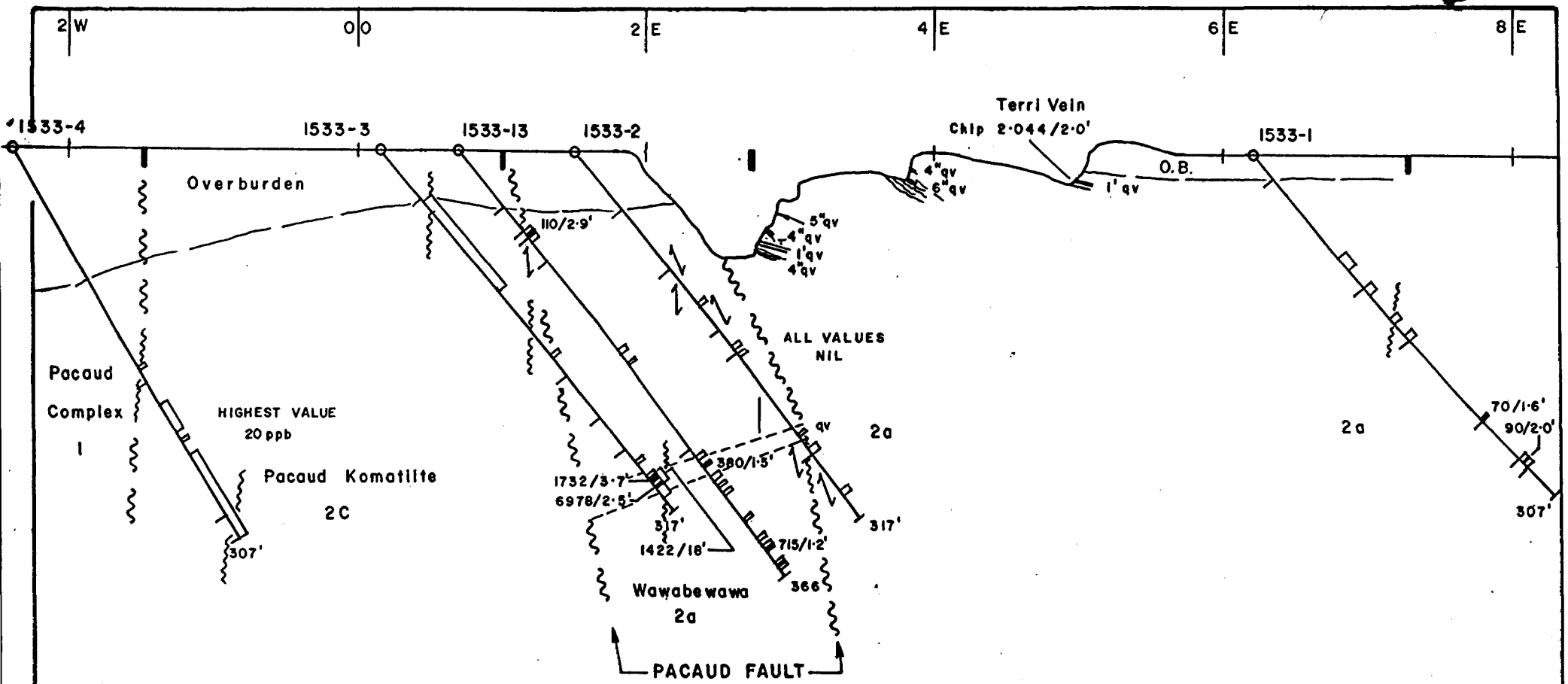


L-12 N

Figure 11

ATAPA MINERALS LIMITED
CATHARINE TWP. PROPERTY
BLOCK IV TRENCH No. 6 12+00N - 9+70E
Dec., 1990 BY: T.O.H. Patrick

0 40 80
FEET



LEGEND

1533-3 Hole Number

Assayed Section

6978/2.5' Au ppb/Length (ft.)

Fault

Bedding

Foliation

V.L.F. - E.M. Conductor

Modified after Teck Expl. Ltd. Section, Sept, 1988

0 100 200

FEET

Map No. S-90-6-04

ATAPA MINERALS LIMITED

PACAUD TWP., PROPERTY

BLOCK I

D.D.H.'S. -1,2,3,4,13

LINE 24+00N

Dec., 1990 BY: F. J. Sharpley

APPENDIX: V

PROJECT EXPENDITURES

ATAPA MINERALS LIMITED
SUMMARY OF EXPENDITURES
CATHARINE TOWNSHIP PROJECT
FOR THE PERIOD ENDING 30 JUNE 1990

LINE CUTTING:	$ 3,050.00
GEOPHYSICAL SURVEYS:	14,450.00
STRIPPING:	31,473.50
GEOLOGY AND SUPERVISION:	3,000.00
ASSAYING:	1,007.05
TRAVEL AND TRANSPORTATION:	3,250.75
LIVING EXPENSES:	4,619.31
FIELD EXPENSES - SUPPLIES:	384.92
GOVERNMENT MAPS, AIRPHOTOS AND PUBLICATIONS:	307.70
MISCELLANEOUS:	274.03
TOTAL:	$ 61,817.26

T.O.H. Patrick
Atapa Minerals Limited

APPENDIX: VI

BUDGET 1991

PHASE II EXPLORATION - ESTIMATE OF EXPENDITURES

A.	Line Cutting: 6 mi x $ 350/mi	$ 2,100
B.	Soil Geochem: 1114 x $12/spl (all inclusive $ 9+3)	13,368
C.	I.P. Survey: 6 mi x $2500/mi	15,000
D.	Power Stripping: 30 days	30,000
E.	Assays: 100 x $10	1,000
F.	Transportation: 3333 km x $0.30	1,000
G.	Room & Board: 30 days x 2 x $50/day	3,000
H.	Geology: 40 days x 2 x$100	8,000
	TOTAL:	$ 73,468

PHASE III -

I	Diamond Drilling: 826 feet @ 20/ft (all inclusive)	$ 16,532

GRAND TOTAL PHASE II & III $ 90,000

020

GEOPHYSICAL REPORT
ON THE
CATHARINE AND PACAUD TOWNSHIP PROPERTIES
FOR
ATAPA MINERALS LIMITED

Prepared By:
Steve Anderson
Exsics Exploration Ltd.
May 1990

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LIST OF FIGURES

APPENDICES

INTRODUCTION

Exsics Exploration Limited was contracted by Atapa Minerals Limited, to conduct an Induced Polarization Survey on the Pacaud Township Block I and the Catharine Township Block IV, properties. Both these blocks are located in the District of Temiskaming, Larder Lake Mining Division.

The purpose of this survey was to test areas of known geological interest for any responses which may indicate areas of mineralized quartz veins. Zones such as this have been tested previously in this area and have been found to contain significant amounts of gold.

PERSONNEL

The people directly involved with this program were employed by Exsics Exploration Limited, and are as follows:

John Penttinen.....Timmins, Ontario

Dave Clement.....Timmins, Ontario

Ed Brunet.....Timmins, Ontario

Paul Edwards.....Timmins, Ontario

All work was supervised by J.C. Grant.

CLAIMS

The two claim blocks in which this survey was conducted were the Pacaud Township, Block I, and the Catharine Township, Block IV properties. (Figure 3)

The claim status for these blocks has not been ascertained by the author.

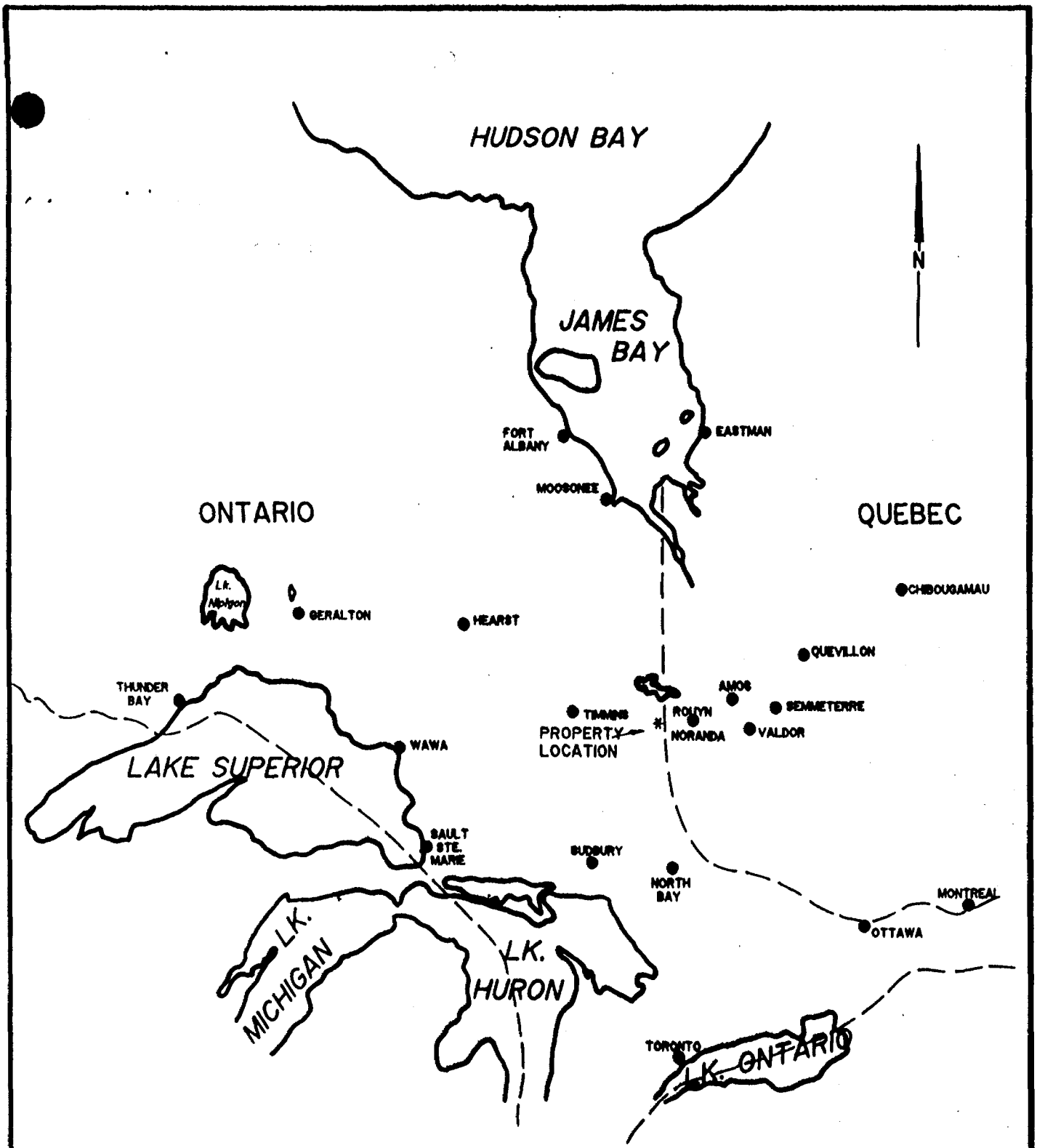
LOCATION AND ACCESS

The Pacaud Township, Block I and Catharine Township Block IV properties, are both located about 20 km southeast from the town of Kirkland Lake, within the District of Temiskaming, Larder Lake Mining Division.

The Pacaud Township Block I, property is located in the eastern section of Pacaud Township, with the eastern boundary of the property situated on the Pacaud Township, Catharine Township boundary. (Figure 3)

The Catharine Township Block IV property is located in the central section of Catharine Township, near the Misema River. (Figure 3)

Access to the properties during the survey period was gained by going west from the town of Kirkland Lake on Hwy 66 to Hwy 112. At approximately the 20 km mark south on Hwy 112, is the junction



EXSICS EXPLORATION LTD.
P.O. Box 1088, P4N-7X1
Suite 13, Hollinger Bldg. Timmins Ont.
Telephone: 705-267-4151

CLIENT: ATAPA MINERALS LTD.

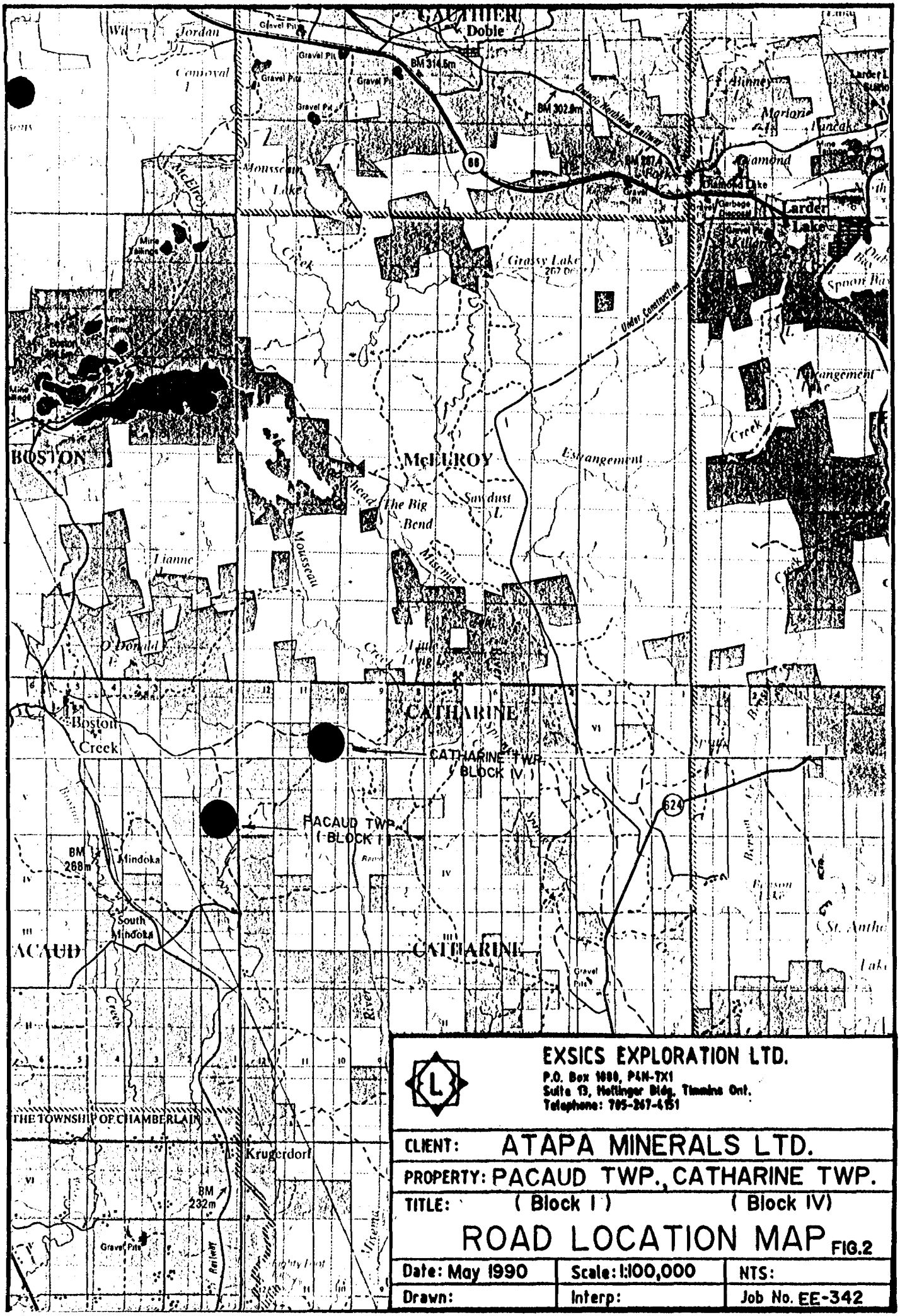
PROPERTY: PACAUD TWP, CATHARINE TWP.

TITLE: (Block I) (Block IV)

LOCATION MAP

Fig. 1

Date: May 1990	Scale: 1"=125miles	NTS:
Drawn:	Interp:	Job No. EE-342



EXSICS EXPLORATION LTD.
P.O. Box 1088, P4N-7X1
Suite 13, Heflinger Bldg. Timmins Ont.
Telephone: 705-267-4151

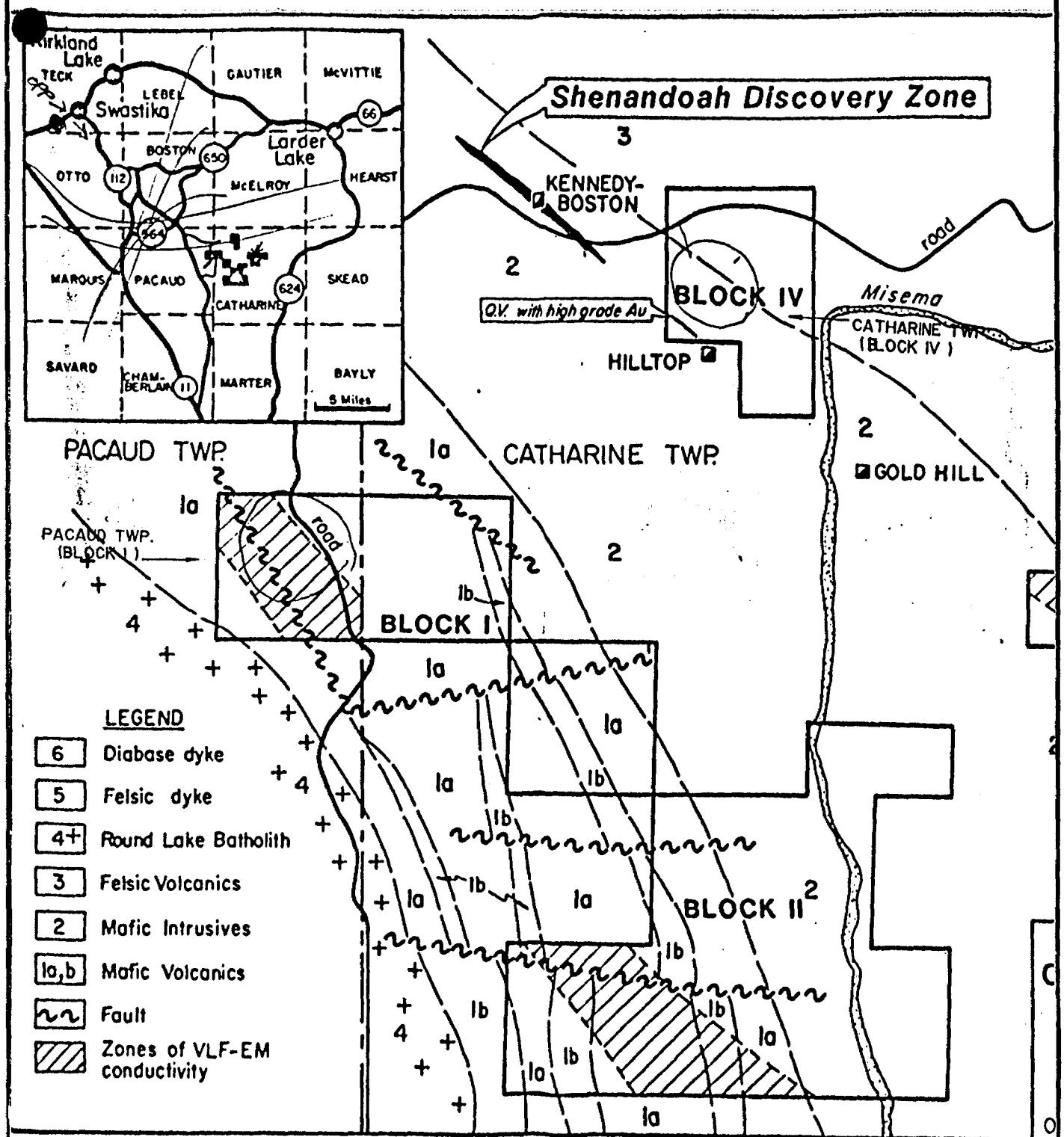
CLIENT: ATAPA MINERALS LTD.

PROPERTY: PACAUD TWP., CATHARINE TWP.

TITLE: (Block I) (Block IV)

ROAD LOCATION MAP FIG.2

Date: May 1990	Scale: 1:100,000	NTS:
Drawn:	Interp:	Job No. EE-342



EXSICS EXPLORATION LTD.
P.O. Box 1880, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: ATAPA MINERALS LTD.

PROPERTY: PACAUD TWP, CATHARINE TWP.

TITLE: (Block I) (Block IV)

CLAIM BLOCK

FIG. 3

Date: May, 1990	Scale:	NTS:
Drawn:	Interp:	Job No.EE-342

of Hwy 564, which heads west to Boston Creek. All highways mentioned as far as Boston Creek are maintained year round.

From Boston Creek an ATV or 4 wheel drive must be used to access the properties, since roads from this point are not maintained. By following a summer road which heads east from Boston Creek, you will come to a fork in the road at approximately the 7 km mark. Continuing east on this road for 2 km will provide access to the northern portion of the Catharine Township Block IV property. Access to the Pacaud Township Block I is gained by going south from the fork in the road for 1.5 km which will provide access to the central portion of this block.

GEOPHYSICAL PROGRAM

This program consisted of an Induced Polarization Survey which was conducted on a number of test lines over areas of known geological interest.

The purpose of this program was to detect possible areas of disseminated sulphides which may be related to gold occurrences in the quartz veins. It is felt that some of these zones may not have responded to conventional electromagnetic methods.

Because of the extreme changes in topography over some of the areas, a number of different survey configurations were tested in order to determine which method would best respond under the given conditions.

Initially, a pole-dipole array with N=1-3 was used. However, because of the unusually high resistance of the rocks in this area, it was found that the ground was being over saturated with current in some locations.

Because of this, it was necessary to use a dipole-dipole array with N=1-3. An "a" spacing of both 100 and 50 feet were tested. However, it was found difficult in a number of areas of outcrop to obtain proper contact with the ground. As a result, an "a" spacing of 100 feet was used in order to obtain more complete coverage.

The following is a brief description of the IP method and the parameters used.

The IP method involves applying a current across two electrodes in a pulse manner i.e. 2 seconds on, 2 seconds off. A second "dipole" or electrode pair, measures the residual potential or voltage between them after the voltage is shut off or during the 2 second off cycle. The potential is recorded at different times after the shut off. It for example there is sulphide mineralization within the measured dipoles, they will be polarized or charges set up in the sulphide particles. The polarization gives the zone a capacitor effect, thereby blocking the current delay giving a higher chargeability reading.

A typical signature for many gold showings would be a chargeability high, resistivity high and magnetic low. This

would be characteristic of a mineralized, highly altered carbonatized and/or silicified zone. However, this is by no means the only geological setting for gold, therefore every IP profile should be looked at individually and correlated with all other geophysical-geological data.

Dipole-Dipole:

In this array two electrodes (C1-C2) and two potential electrodes, (P1-P2) are moved down the line in unison. In this case the "a" spacing or the distance between each dipole, was fixed at either 50 or 100 feet, depending. For an N=1 reading, the closest current electrodes were 50 or 100 feet apart. The current (C1-C2) dipole remains in the same place while the potential dipole moves ahead one "a" spacing to read N=2. The C1-C2 now moves ahead one "a" spacing and the array is again ready for an N=1 reading. Because the overburden in this area was thought to be relatively shallow, only N=1-3 was read.

Pole-Dipole:

In this array, one current electrode (C1) was placed at infinity for the entire survey, while a second current electrode, (C2) and two potential electrodes (P1-P2) are moved down the line in unison. In this case the "a" spacing or distance between each dipole was set at 100 feet. For an N=1 reading, the closest current and potential electrodes were 100 feet apart. The C2 dipole remains in the same place, while the potential dipole

(P1-P2) moves ahead one "a" to read N=2. The C2 now moves ahead one "a" spacing, and the array is again ready for an N=1 reading. Because of the relatively shallow overburden, only N=1-3 was read.

The IP Survey was carried out using the following parameters:

Method	:	Time Domain
Electrode Array	:	Dipole-Dipole and Pole-Dipole
"a" spacing	:	50 and 100 feet.
Number of Dipoles Read:		N=1,2,3
Pulse Duration	:	2 seconds on, 2 seconds off
Delay Time	:	500 ms
Integration Time	:	420 ms
Receiver	:	EDA IP-2
Transmitter	:	Scintrex IPC-7 and IPC-9
Data Presentation	:	Individual Line Pseudo-Sections (In report)

SURVEY RESULTS

The IP Survey conducted on the Pacaud Township Block I and the Catharine Township Block IV properties was successful in outlining a number of areas of interest.

The results for each of the properties will be discussed individually below.

Pacaud Township Block I:

The Pacaud Township Block I property was found to have a number of topographical features located within the block which made the IP survey difficult to carry out. The main problem encountered was contact problems along areas of outcrop. As a result the survey parameters were changed a number of times in order to determine which type of survey would provide the best results.

L2100N:

A chargeability high is located on this line from 300W - 400W. This zones response tends to occur along the contacts between a fairly conductive zone and a zone of background resistance. This feature may be the result of two narrow closely parallel zones. Due to contact problems in this area, proper coverage of this zone was not possible.

A second zone is located at 950E. This feature shows up as a chargeability high, situated along the contact between a zone of background resistance and a very resistive zone. This resistive zone continues off the property to the east, and is most likely the result of a change in rock type. A second chargeability high occurs within this resistivity high at 1050E.

L2300N:

This line has a chargeability high located at 450E. This feature seems to occur along the contact between a narrow resistivity low and background resistivities.

A second zone is located at 950E. This shows up as chargeability high occurring along the contact between a resistivity high and background resistance.

L2400E:

A chargeability high, which again seems to be related to a narrow resistivity high is located at 450E. A second zone with these same characteristics is located at 950E, and a third weak zone at 550E. These strong resistivity highs may be related to alteration or silicification.

L2500E:

A zone of high chargeabilities occurs at 400E and appears to be associated with a high low contact. A second zone similar to this occurs at 950E and may continue off the property to the west.

L2600E:

This line shows one response which is a chargeability high occurring over a resistivity high. This feature occurs at 900E and appears to extend off the property to the east.

L2700N:

A zone of weak chargeability is situated on this line at 650E. It appears to be related to a moderate resistivity high.

Catharine Township Block IV:

As with the previous property discussed, this property also has areas of outcropping which made surveying difficult. However, as with the other block, some areas of interest were outlined and will be discussed below.

L1200N:

This line shows a chargeability high at 500E and a second at 750E. Both these zones seem to be related to a strong resistivity low extending through this area, with the responses occurring along it's flanks.

A chargeability high also occurs at 1050E and may extend off the block to the east. This feature appears to occur over roughly background resistivities.

L800N:

This line has a chargeability high located at 850E. This feature appears to occur along the western contact of a very strong resistivity high.

L700N:

A zone occurring at 650E appears to have the same characteristics as the previously mentioned zone. As well, a zone occurs at 150E which seems to be related to a very weak resistivity high occurring within a broad low.

L600N:

This line shows a chargeability high at 450N. This zone occurs along the western contact of a very narrow resistivity low and a high to the west. A second chargeability high is located at 1350E. This zone occurs over a strong resistivity high, and likely continues off the property to the east.

L500N:

A chargeability high is situated at 150E on this line. It occurs along the eastern flank of a narrow, very resistive zone.

L100E:

This line shows a zone occurring at 300N and likely extending to the south. It is situated over roughly background resistivities.

L102E:

This line shows a zone with the same characteristics as above occurring at 250N.

CONCLUSIONS AND RECOMMENDATIONS

The IP Survey conducted on the property was successful in outlining a number of areas of interest. However, as mentioned, a number of areas of outcrop were encountered and because of frozen ground in places, proper contact over these areas was not always properly achieved. Because of this, some of the zones outlined are questionable, and should be investigated further, as well correlated with any previous geophysical or geological data before any conclusions are made.

At this point, there appears to be two legitimate zones extending across the properties. The first of these is a zone occurring on the Pacaud Township Block I property. A zone of chargeability high that seems to be related to a fairly resistive unit, extending approximately east-west across the block at around 900E.

Results from immediate stripping on L24N, 650-700E, to test an IP target, exposed quartz float material above several quartz veins varying in width from 4" to 2'. This zone appears to be a fractured quartz structure. With these results, it would be highly recommended that all resistivity high's be investigated. The lack of chargeability with some high resistivity zones may be the absence of sulphides.

On the Catherine Township Block IV property, a zone with the same characteristics as Block I extends roughly east-west across the property at approximately 800E. Both of these zones are very resistive in areas, and may be an indication of areas of silicification or alteration.

As well as the two previously mentioned zones, a number of one line anomalies were outlined. Some of these zones are also related to narrow, resistive units, which may again be the results of silicification or alteration. Many of these responses at this point, would appear to be questionable because of difficulties encountered while trying to survey these areas. However, none of them should be dismissed without further investigation.

The IP program conducted did respond well over some of the areas outlined, despite the difficulties encountered and should be continued during the summer months.

With the survey being conducted in the early parts of May, some of the difficulties encountered were frozen ground and sandy areas. Because of this proper contact was not always achieved. This is also a hard time of year to survey outcrops because stainless steel electrodes are used making contact difficult.

It would be advised to continue with the IP survey possibly when the area is wetter, ie the break-up season or early fall. Also the use of porous pots filled with copper sulphate can be used which will result in good contact in swamp, sand and outcrop areas. Using mud under the pots on outcrop creates excellent contact. At this time any questionable IP zones could be re-read with good contact for quality data.

The IP recommended for the summer would be the same with a parameter change on the number of "n" being read. N=1-4 would be advised for deeper penetration and better resolution. Possibly even a few test lines over some of the questionable zones with an N=1-6 for even more detail on the zone. This would verify that they are indeed legitimate.

All IP anomalies with a resistivity high should be stripped off to justify the anomalies.

Geological mapping should be conducted on both the properties. In conjunction with the geological survey, it would be advised to do a geochem survey over the property, possibly detailing the IP anomalous areas.

A magnetic survey should also be considered if it has not already been conducted.

Respectfully Submitted,

Steve Anderson

CERTIFICATION

I, Steve Anderson of Timmins, Ontario hereby certify that:

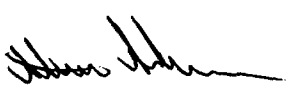
1. I hold a three year Technologist Diploma from the Sir Sandford Fleming College, Lindsay, Ontario, obtained in 1982.

2. I have been practising my profession since 1980 in Ontario, Quebec, Saskatchewan and NWT, for Urangesellschaft Canada Ltd., Asamera Oil Ltd., Rayan Explorations, and most recently Exsics Exploration Ltd.

3. I have based conclusions and recommendations contained in this report on knowledge of the area, my previous experience, and on the results of the field work conducted on the property during May 1989.

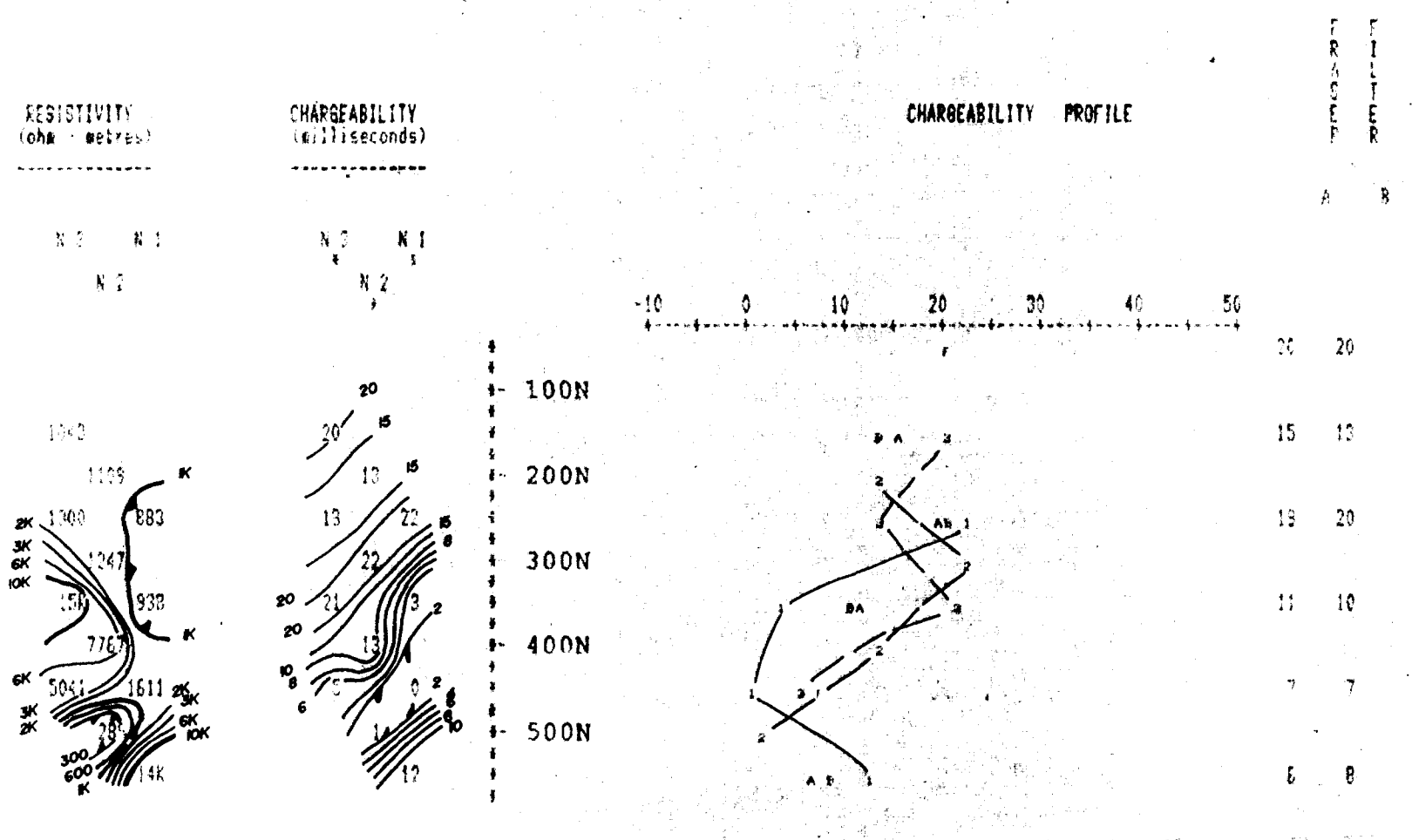
4. I hold no interest, directly or indirectly in this property, nor do I expect to receive any interest in the CATHARINE AND PACAUD TOWNSHIP PROPERTIES for ATAPA MINERALS LIMITED, or any of it's subsidiary companies.

Dated this 20th day of May 1990
at Timmins, Ontario.



S. D. Anderson

SCALE = 1 inch to 200 feet



Property : CATHARINE TWP. BLOCK IV
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP 2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

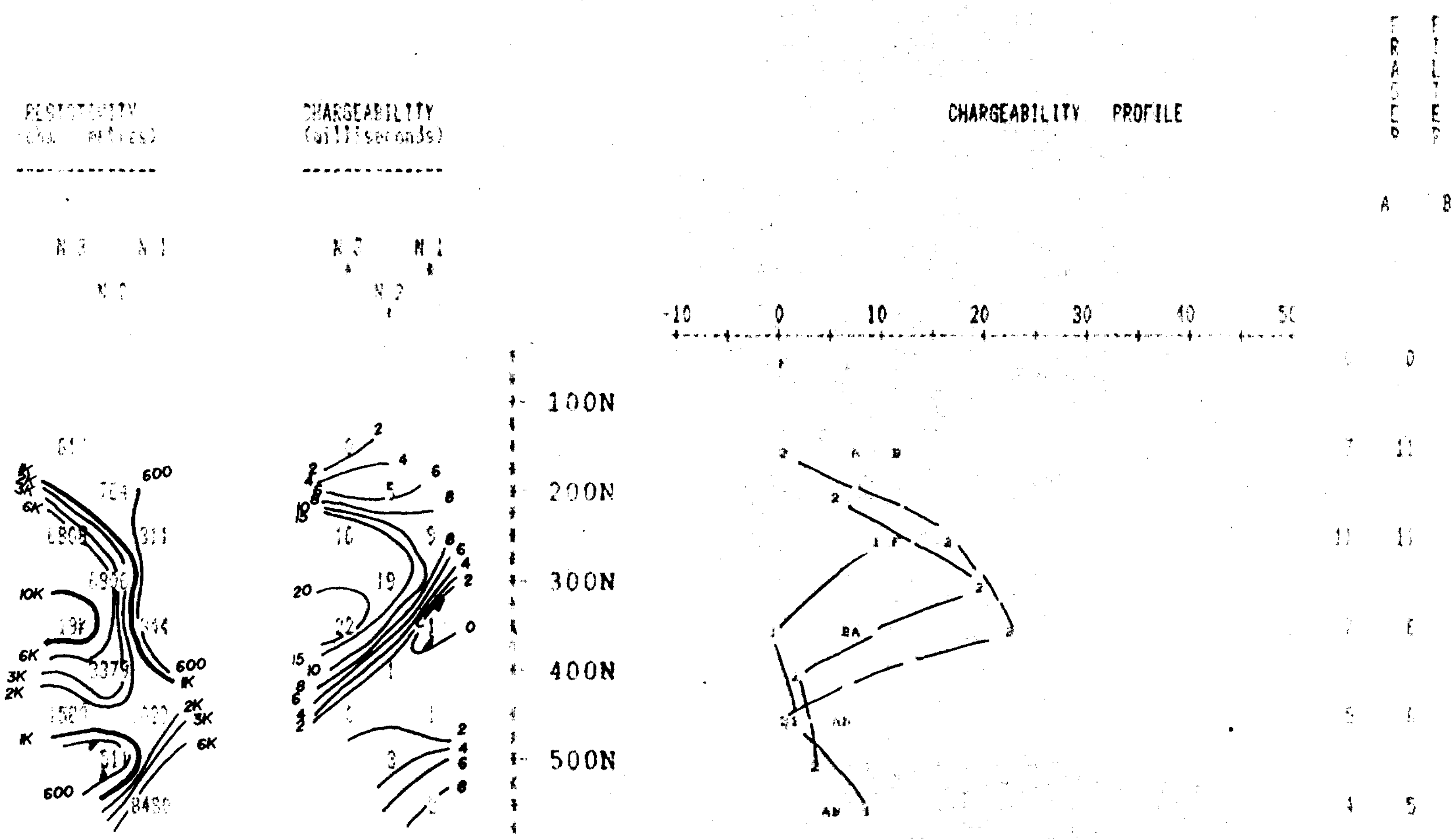
EXSICS EXPLORATION LTD.

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 100 E

SCALE : 1 inch to 200 feet



Property : CATHARINE TWP. BLOCK IV
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

****

EXSICS EXPLORATION LTD.

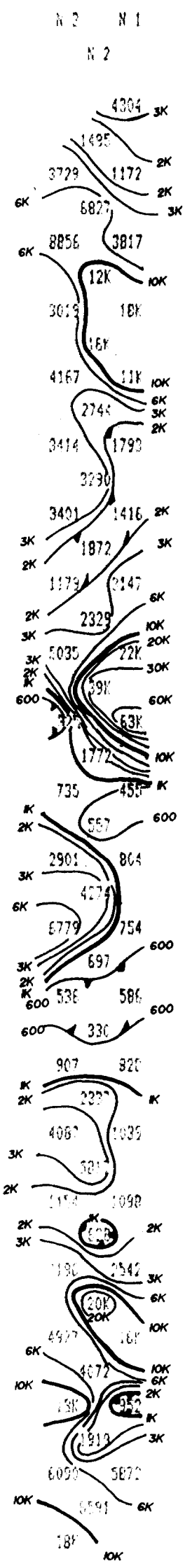
****

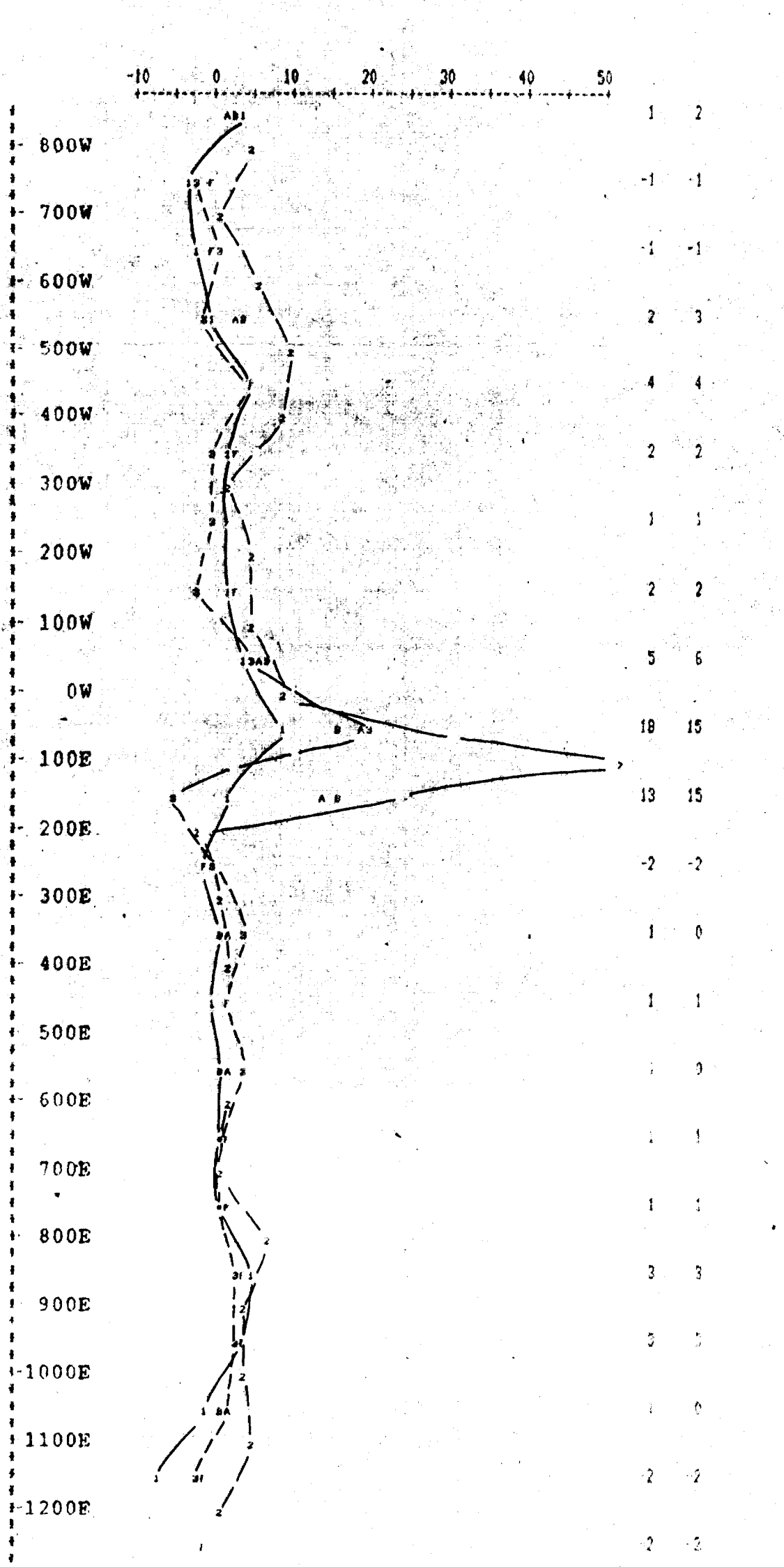
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 102 E

SCALE : 1 inch to 200 feet





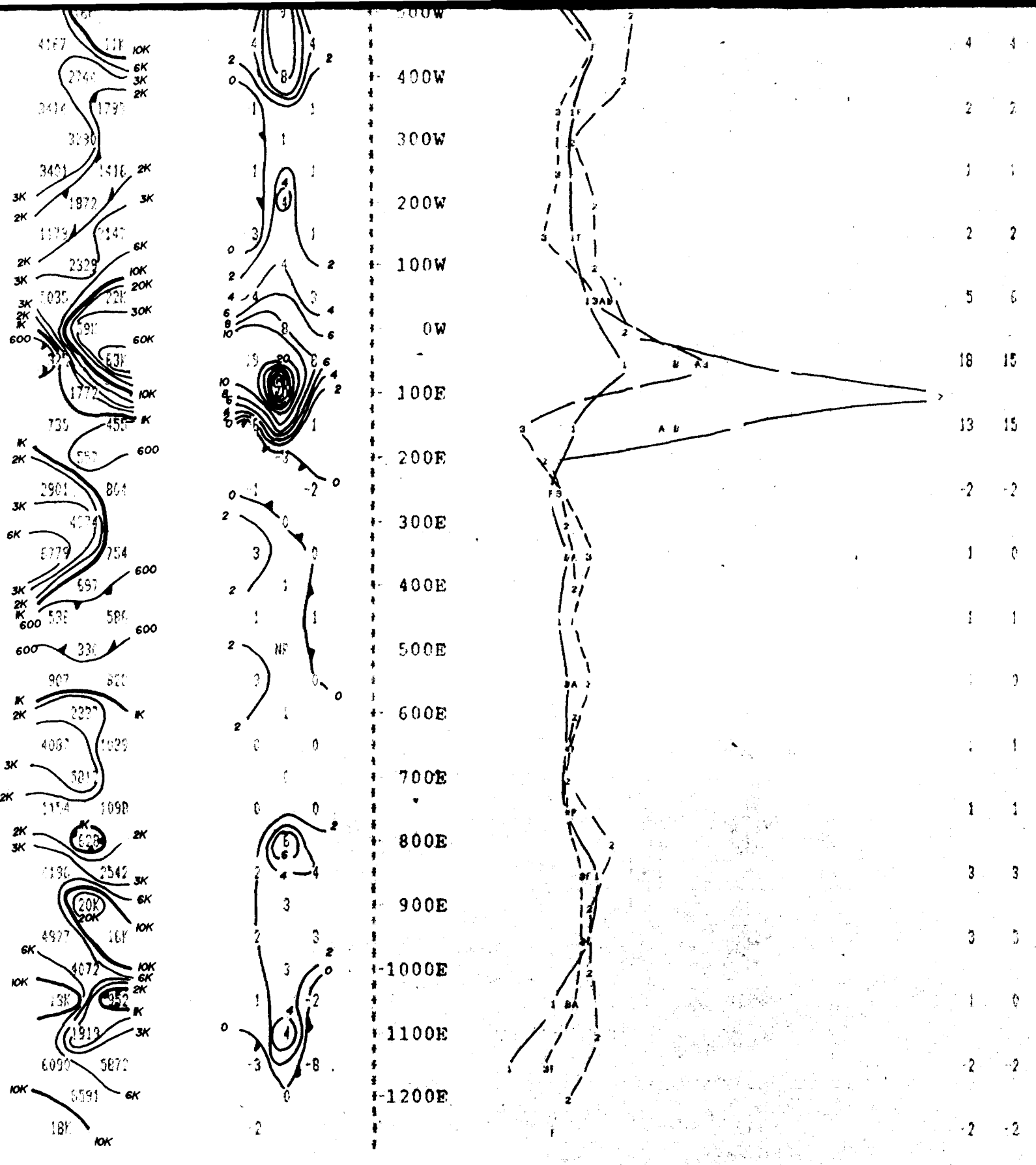
FRASER A	FILTER B
1	2
-1	-1
-1	-1
2	3
4	4
2	2
1	1
2	2
5	6
18	15
13	15
-2	-2
1	0
1	1
1	1
3	3
3	3
1	0
-2	-2
-2	-3

Property : CATHARINE TWP. BLOCK IV

Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JP



Property : CATHARINE TWP. BLOCK IV
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

SA

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EXSICS EXPLORATION LTD.

****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 500' N

SCALE : 1 inch to 200 feet

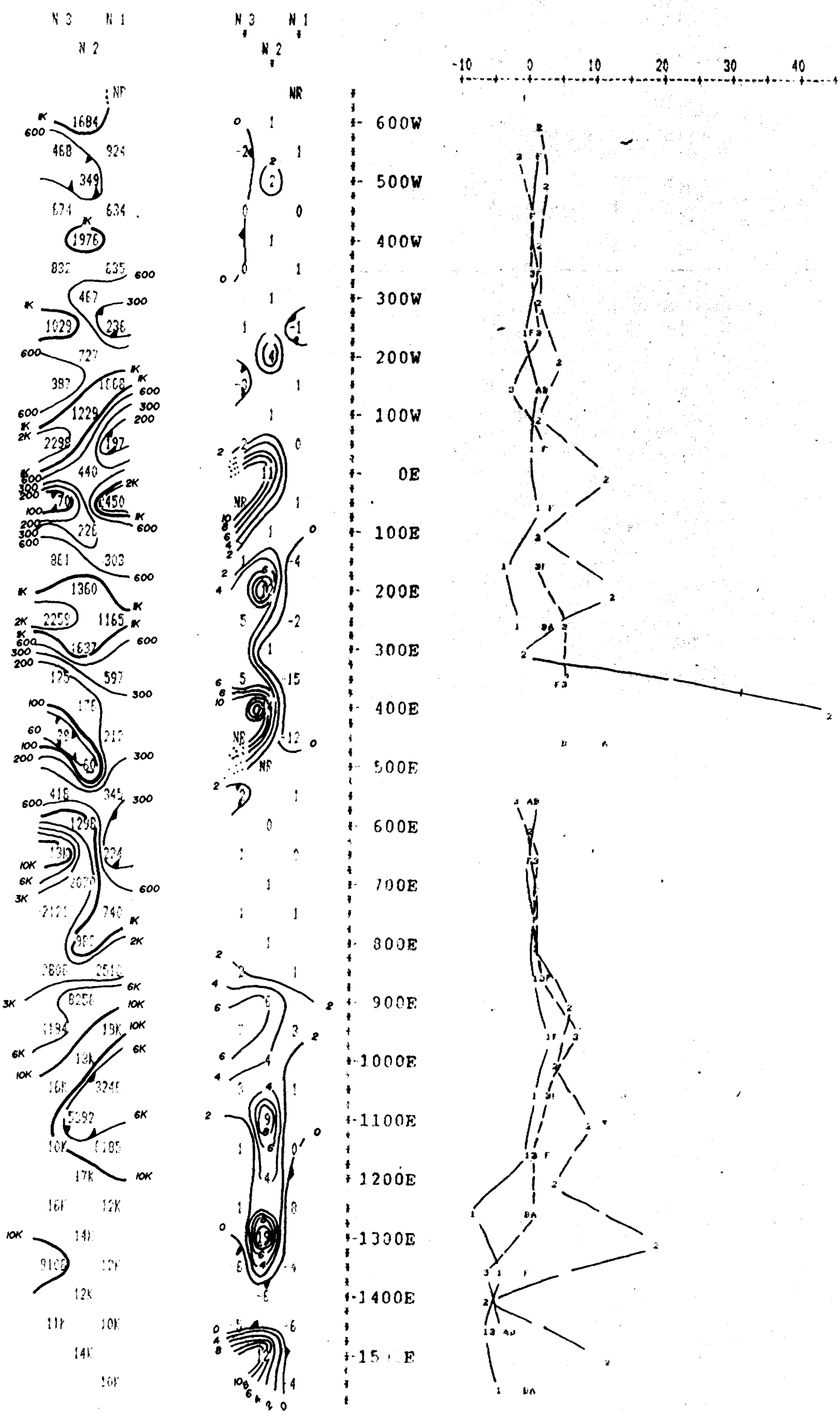
RESISTIVITY
(ohm - metres)

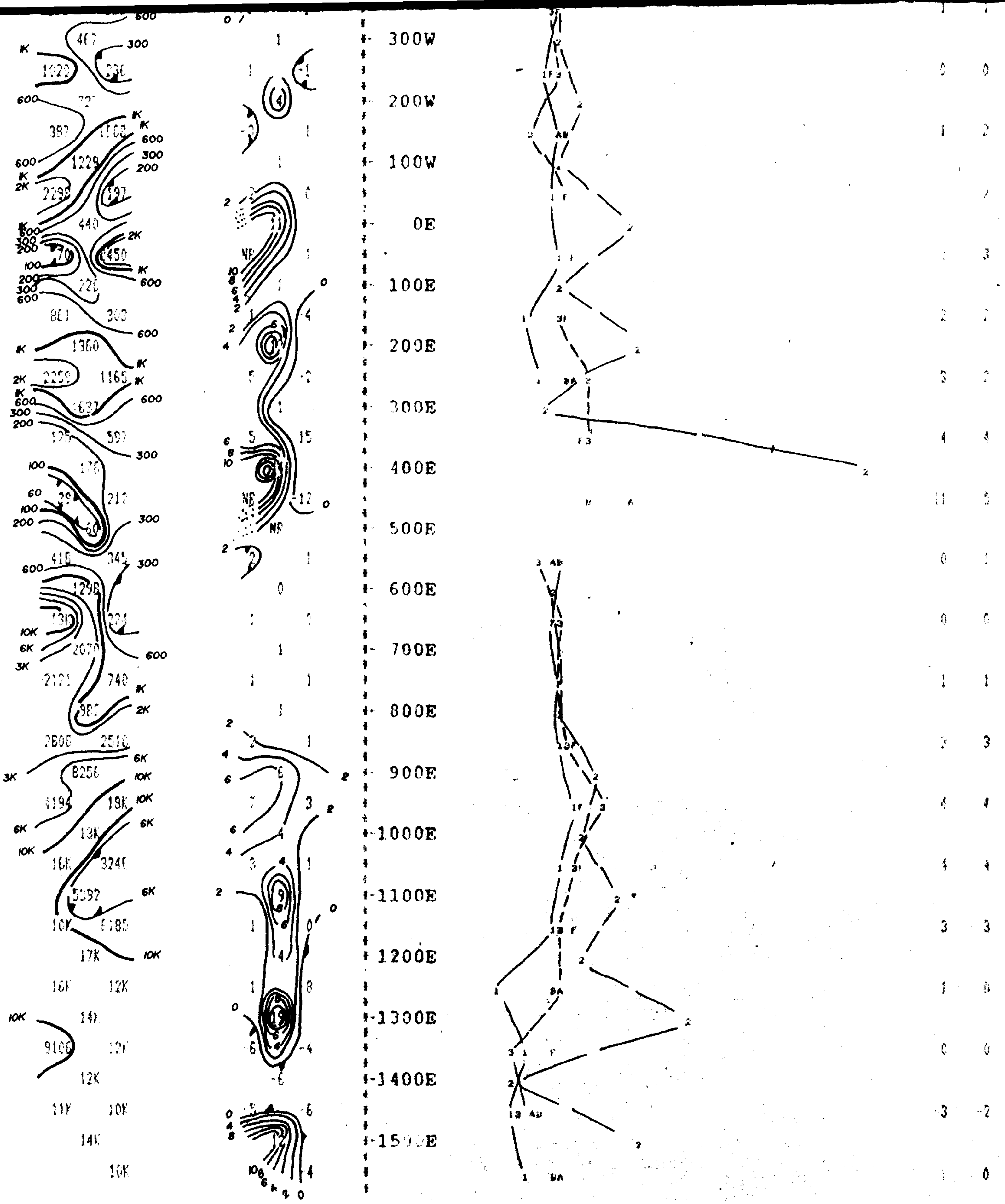
CHARGEABILITY
(milliseconds)

CHARGEABILITY PROFILE

FRASER FILTER

A	D
-1	-1
1	1
0	0
1	1
0	0
1	2
	2
2	3
2	2
3	2
4	4
11	5
0	1
0	1
1	1
2	3
4	4
1	1
3	3
1	0
0	0
3	2
	0





Property : CATHARINE TWP. BLOCK IV
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc 9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

54

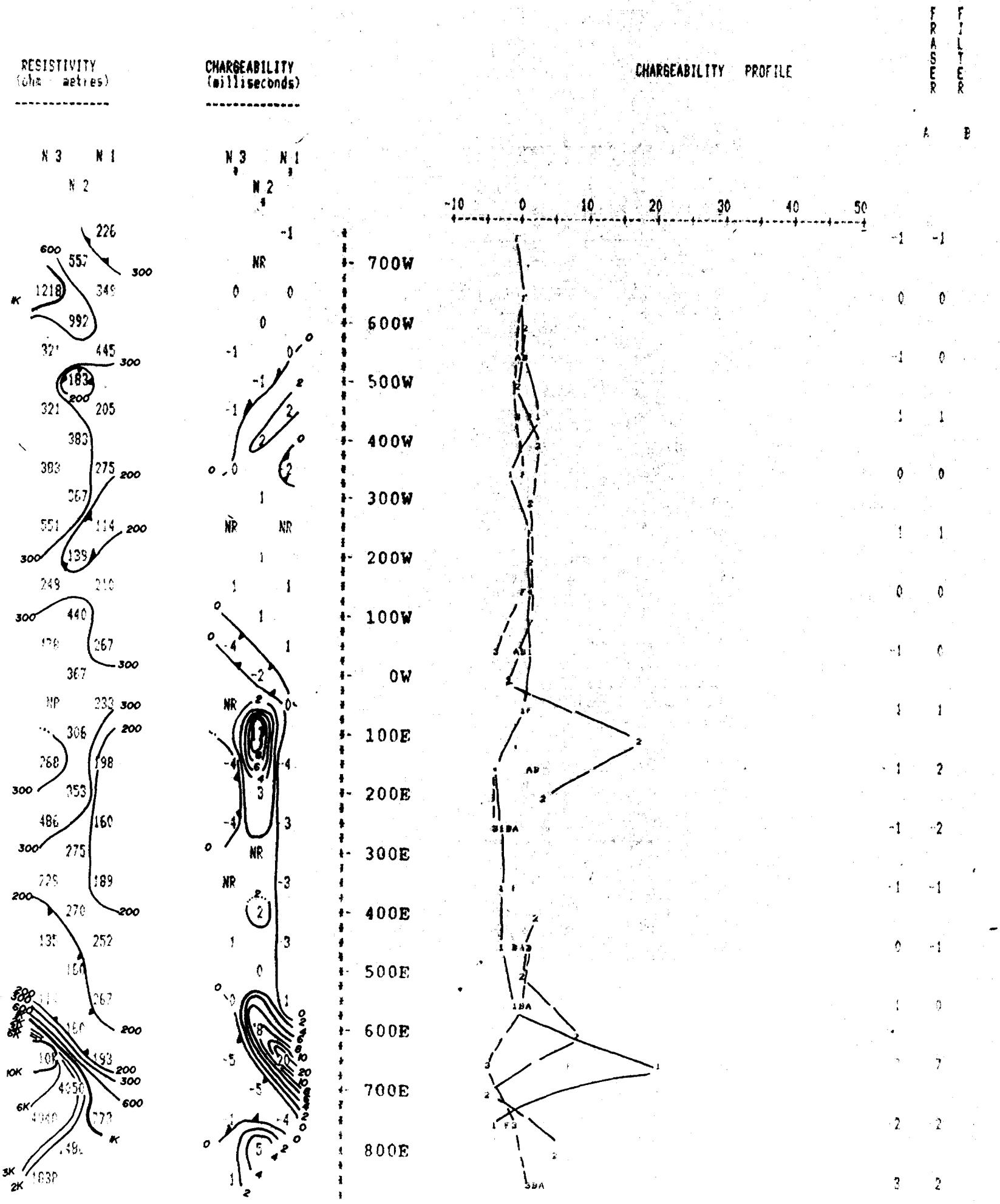
EXSICS EXPLORATION LTD.

IP Pseudosections for N = 1 to 3

"a" Spacing = 100 ft

LINE 600 N

SCALE : 1 inch to 200 feet



Property : CATHARINE TWP. BLOCK IV

Client : ATAPA MINERALS LIMITED

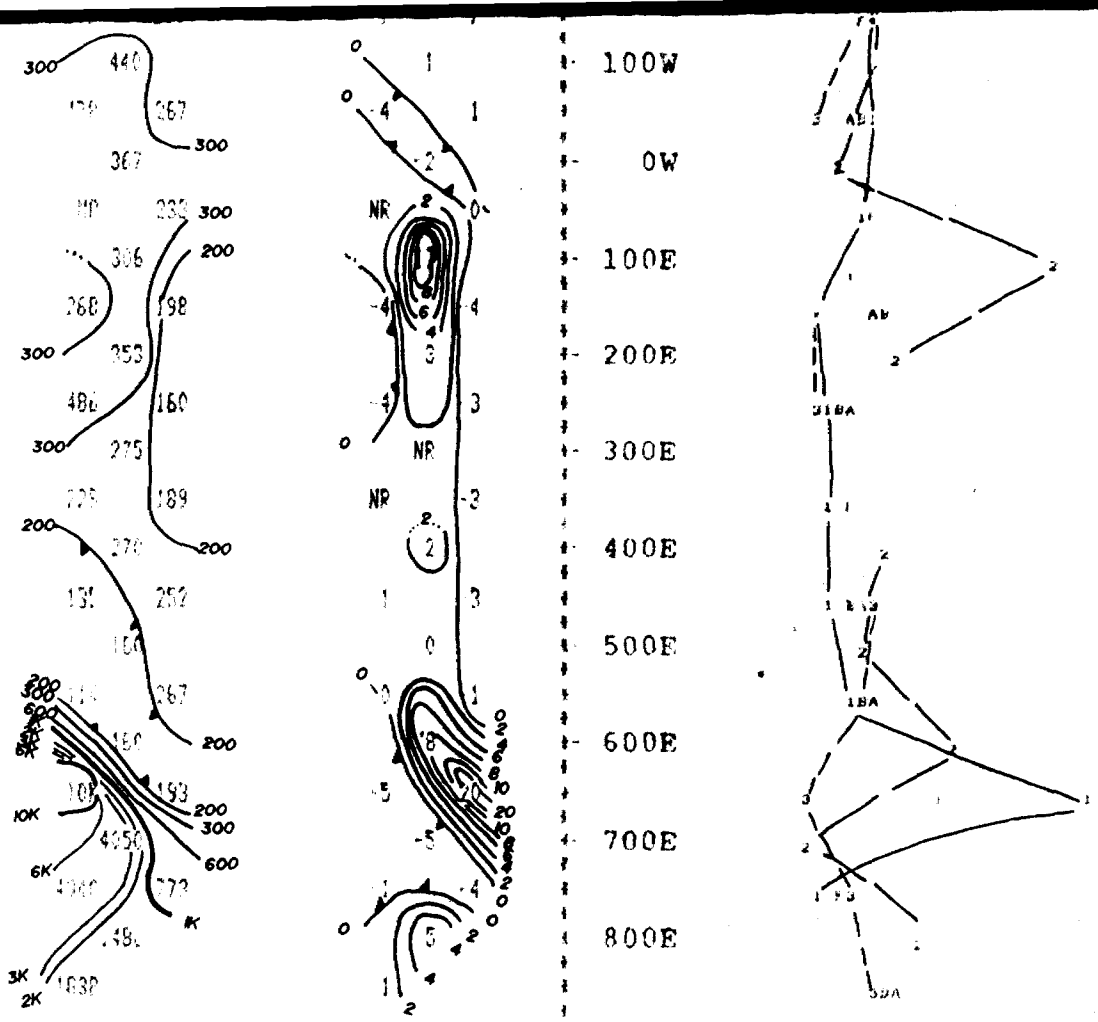
Date of Survey : May 1990

Operator : JF

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP-2



Property : CATHARINE TWP. BLOCK IV

Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JP

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP-2

Transmitter : scintrex ipc-9

Pulse Time : 2 Sec on 2 Sec off

Chargeability Window Plotted : #3

Delay Time : 500 ms

Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 700 N

SCALE : 1 inch to 200 feet

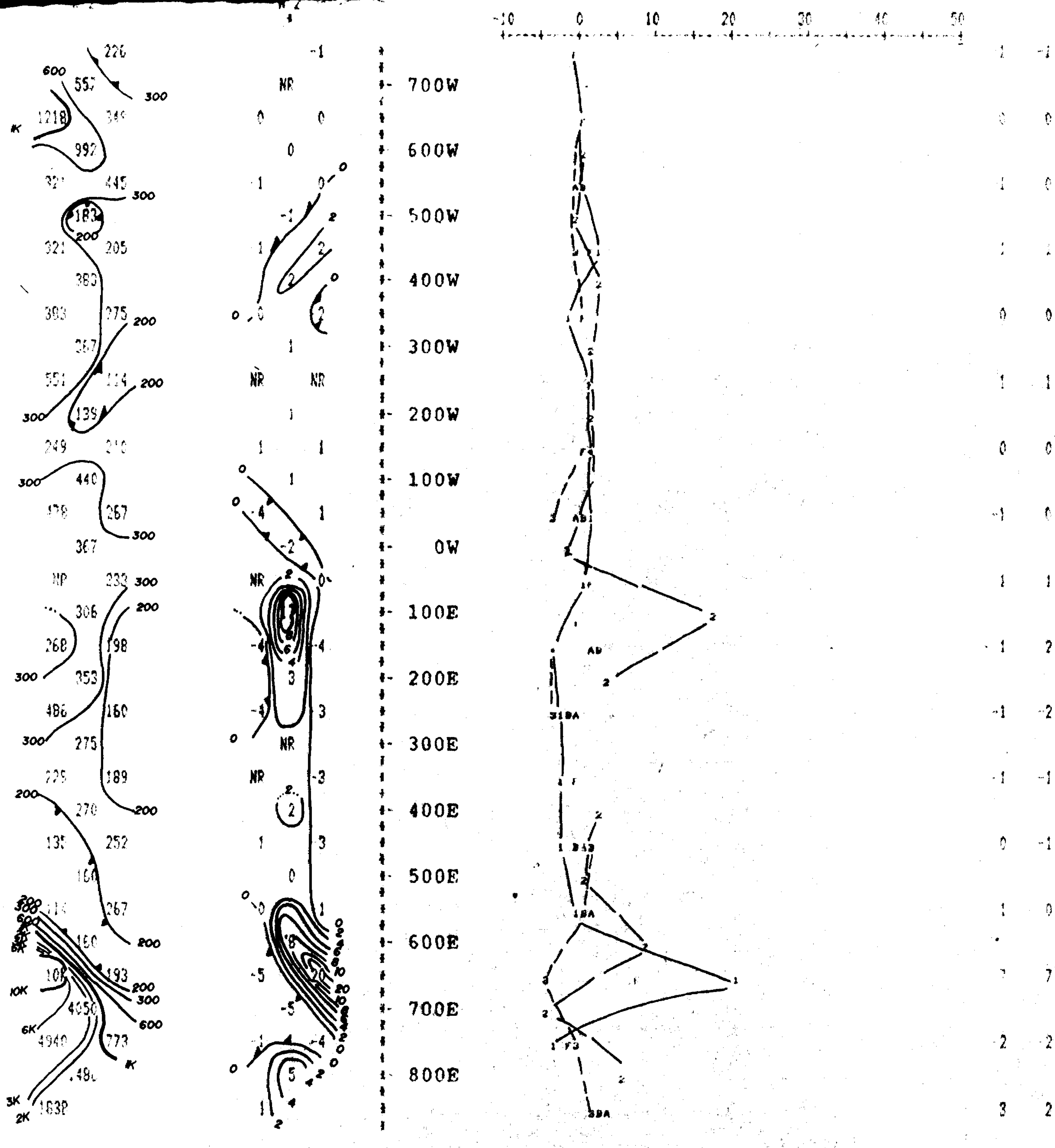
RESISTIVITY (ohm - metres)

CHARGEABILITY (milliseconds)

CHARGEABILITY PROFILE

FRASER FILTER

	A	B
600W	0	0
500W	1	1
400W	-1	-1
300W	-2	-1
200W	-3	-2
100W	0	0
0E	2	2
100E	1	1
200E	-1	-1
300E	-1	-1
400E	0	0
500E	0	0
600E	2	3
700E	8	7
800E	10	9
900E	5	5
1000E	3	3
1100E	2	3
1200E	3	4
1300E	4	4
1400E		
1500E	3	4



Property : CATHARINE TWP. BLOCK IV
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

84

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EXSICS EXPLORATION LTD.

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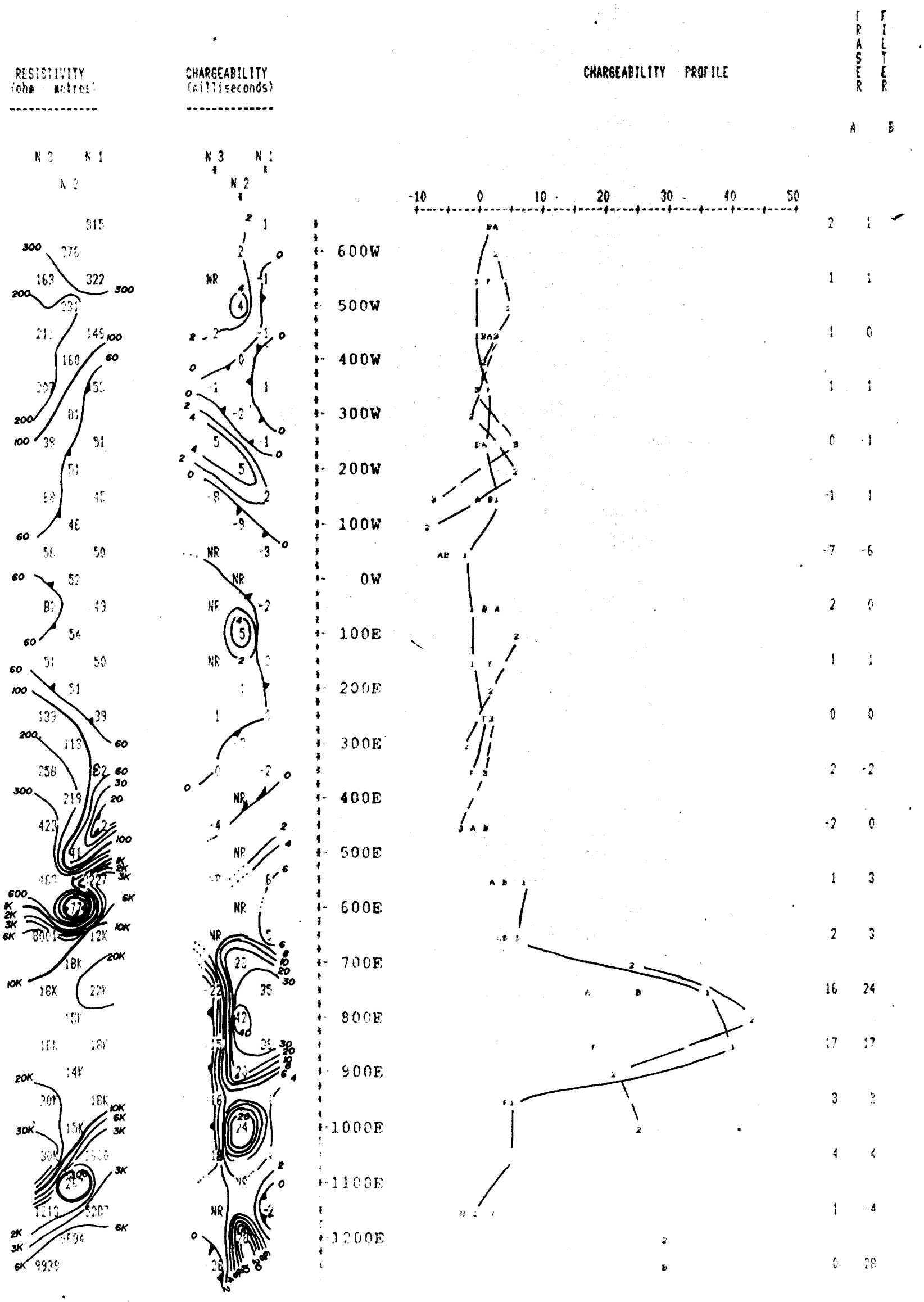
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 700 N

SCALE : 1 inch to 200 feet



Property : CATHARINE TWP. BLOCK IV

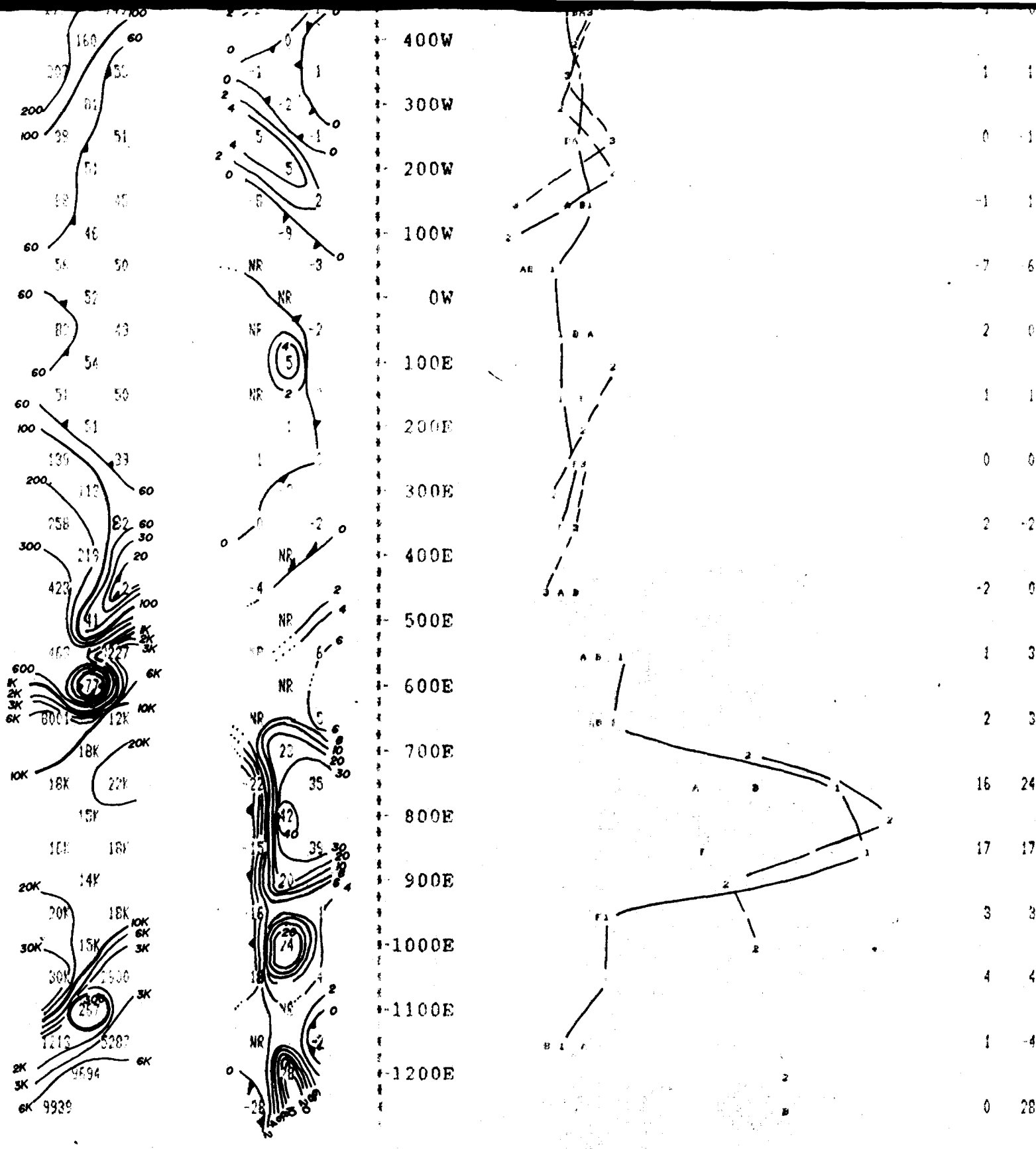
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JF

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN



Property : CATHARINE TWP. BLOCK IV

Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JP

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP-2

Transmitter : scintrex ipc-9

Pulse Time : 2 Sec on 2 Sec off

Chargeability Window Plotted : #3

Delay Time : 500 ms

Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

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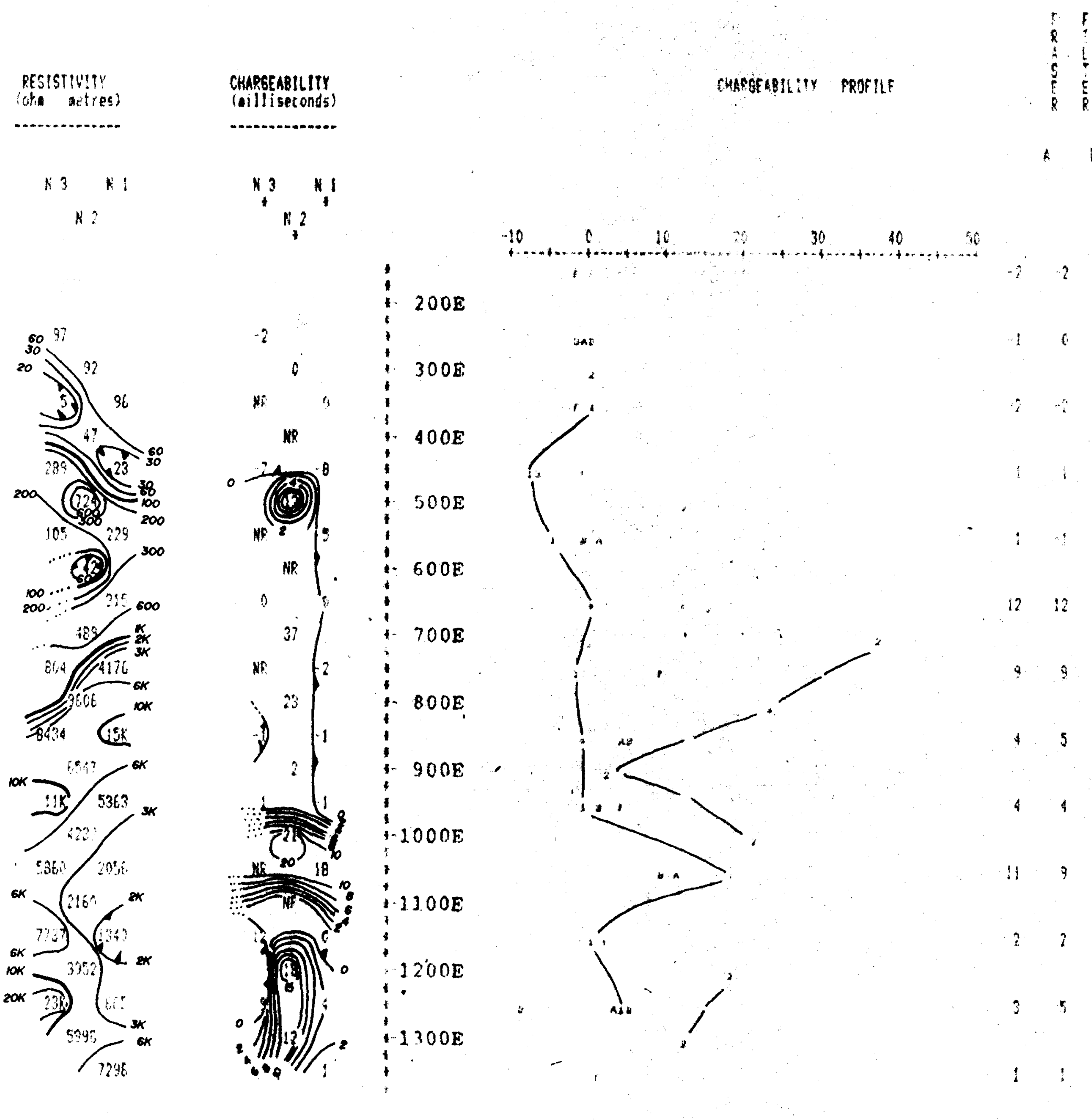
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 1000 N

SCALE : 1 inch to 200 feet



Property : CATHARINE TWP. BLOCK IV

Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JP

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP-2

Transmitter : scintrex ipc-9

Pulse Time : 2 Sec on 2 Sec off

Chargeability Window Plotted : #3

Delay Time : 500 ms

Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 1200 N

SCALE : 1 inch to 100 feet

RESISTIVITY (ohm - metres)

CHARGEABILITY (milliseconds)

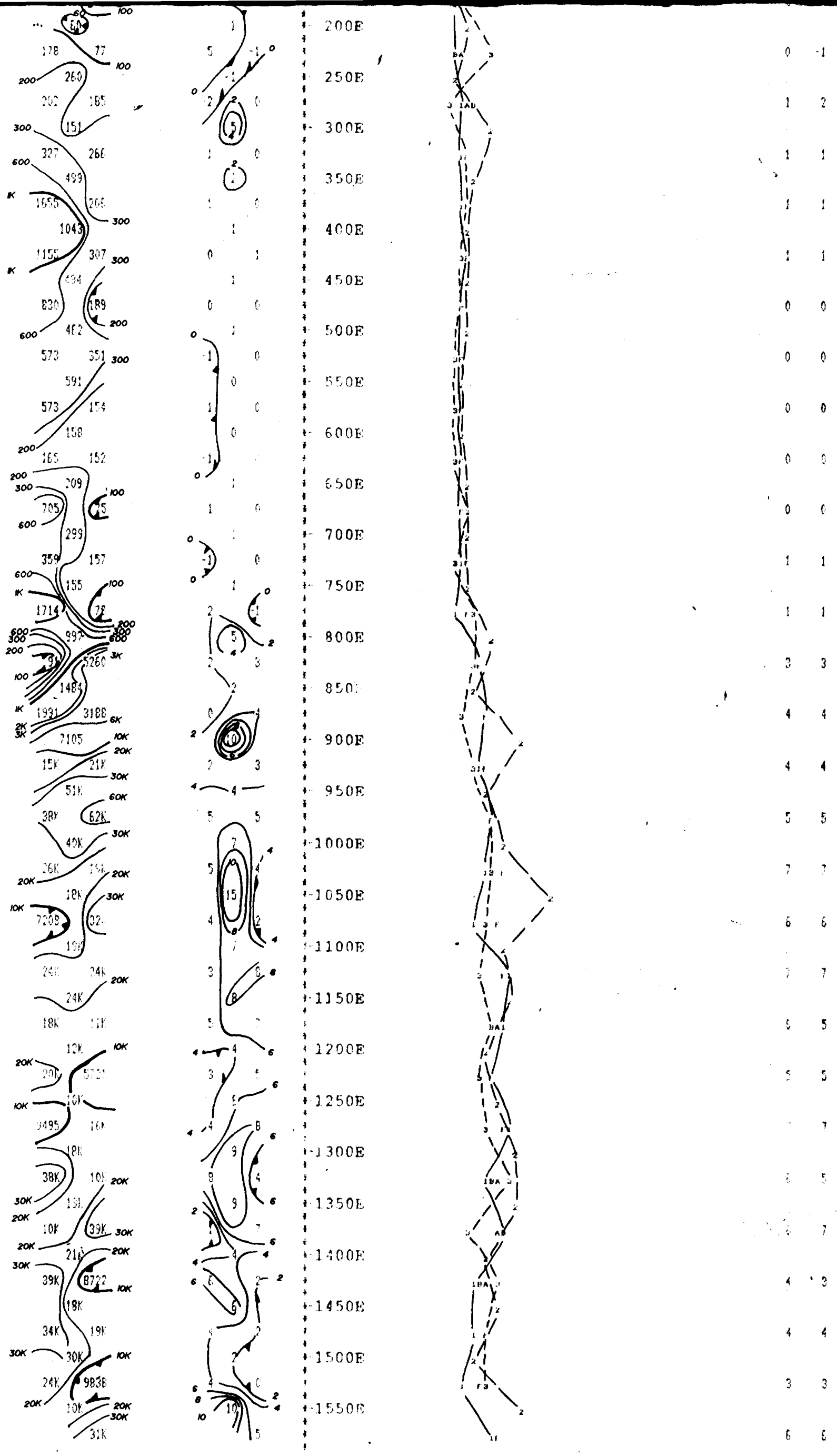
CHARGEABILITY PROFILE

-10 0 10 20 30 40 50

FRASER FILTER

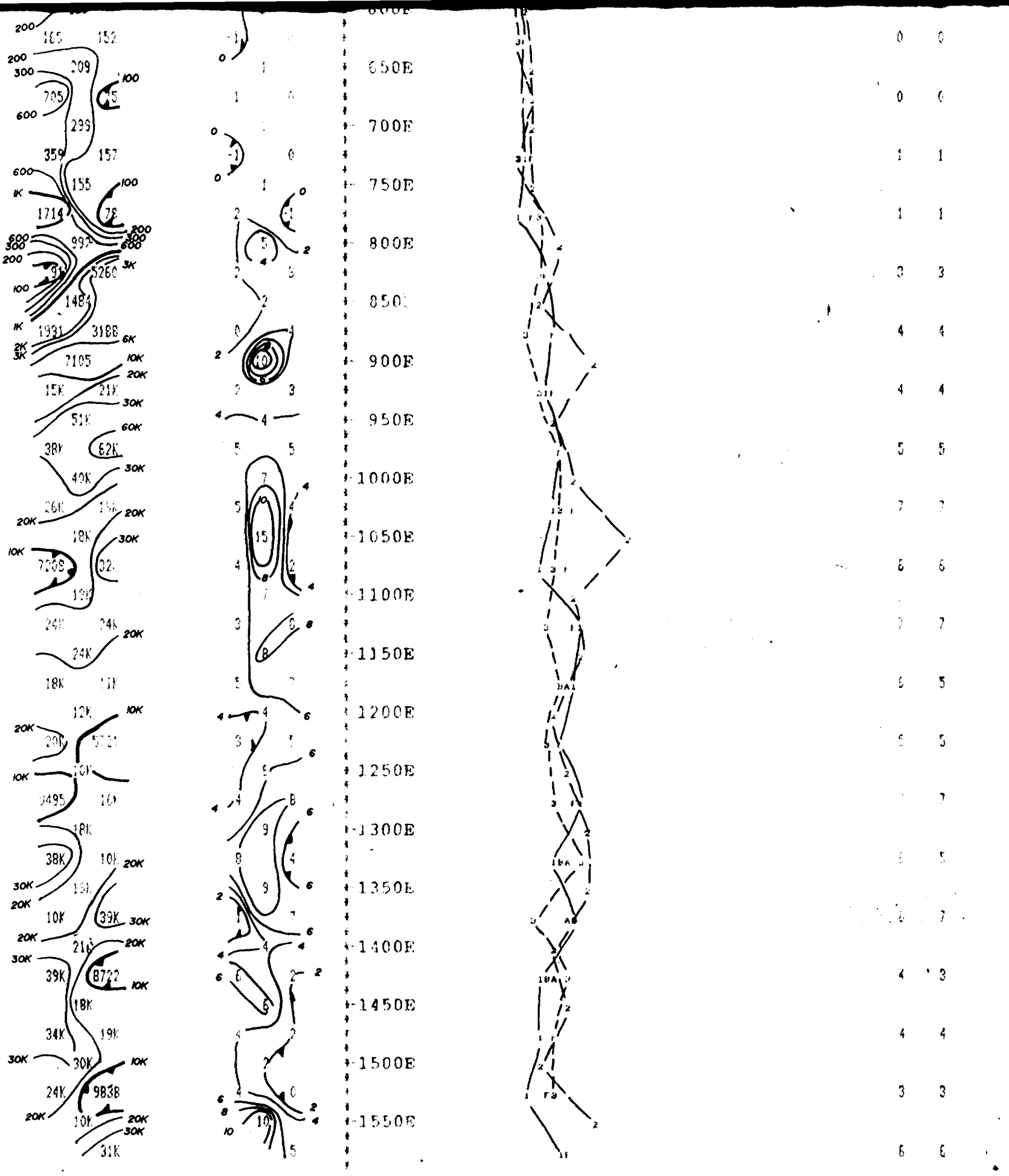
A B

3	3
1	1
1	1
1	1
1	1
1	1
1	2
3	3
3	2
2	3
1	1
3	3
5	5
4	4
1	1
0	0
1	1
0	0
3	3
1	1
0	0
0	0
0	-1
1	2



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

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IP Pseudosections for N = 1 to 3

'a' Spacing = 50 ft

LINE 2100 N

SCALE : 1 inch to 200 feet

RESISTIVITY (ohm metres)

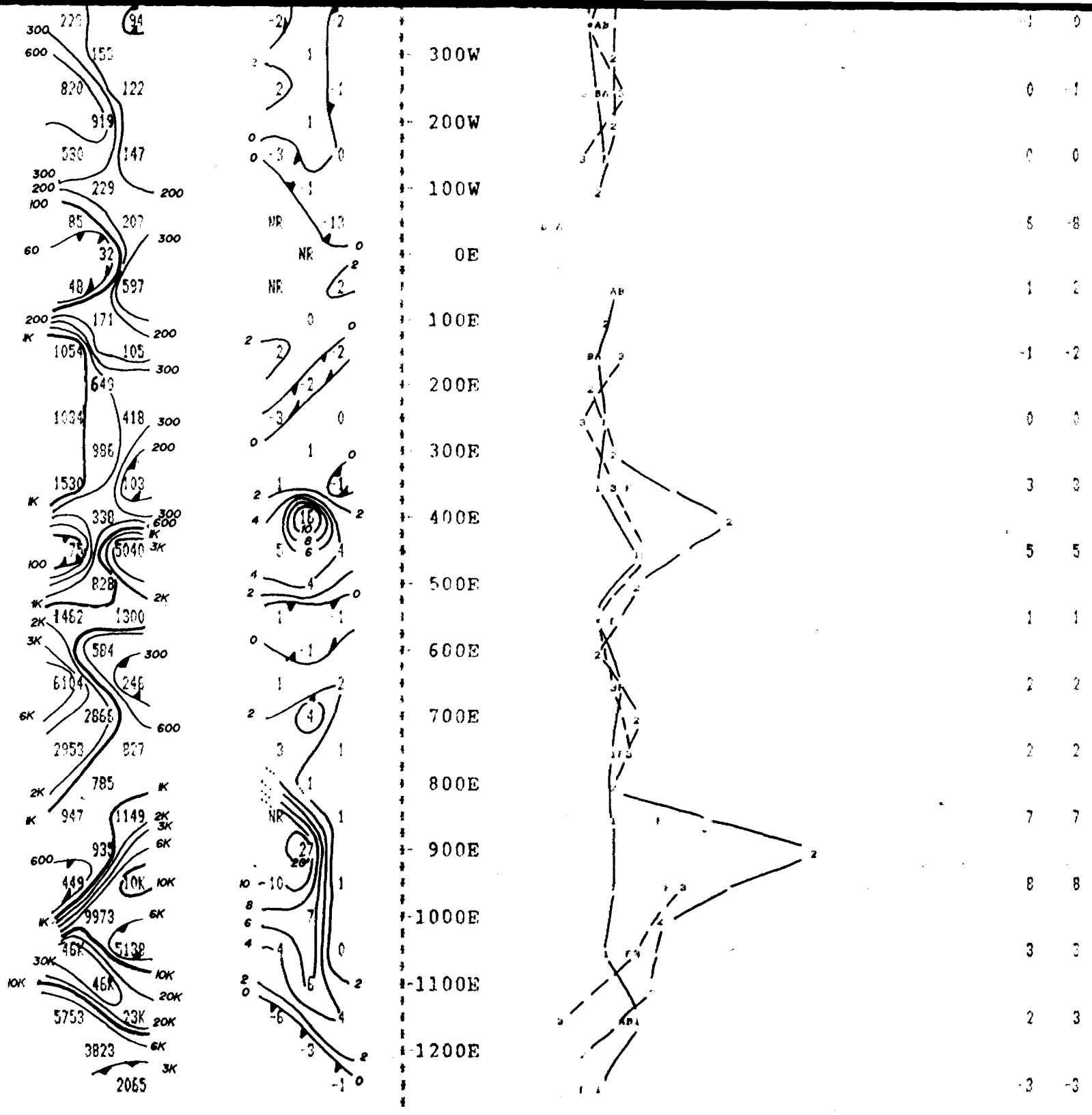
CHARGEABILITY (milliseconds)

CHARGEABILITY PROFILE

FRASER FILTER

	A	B
	5	5
	4	3
	4	4
	2	2
	1	1
	0	0
	-1	0
	0	-1
	0	0
	-6	-8
	1	2
	-1	-2
	0	0
	3	3
	5	5
	1	1
	2	2
	2	2
	7	7
	8	8
	3	3
	2	3
	-3	-3

900W
800W
700W
600W
500W
400W
300W
200W
100W
0E
100E
200E
300E
400E
500E
600E
700E
800E
900E
1000E
1100E
1200E



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2300 N

SCALE : 1 inch to 100 feet

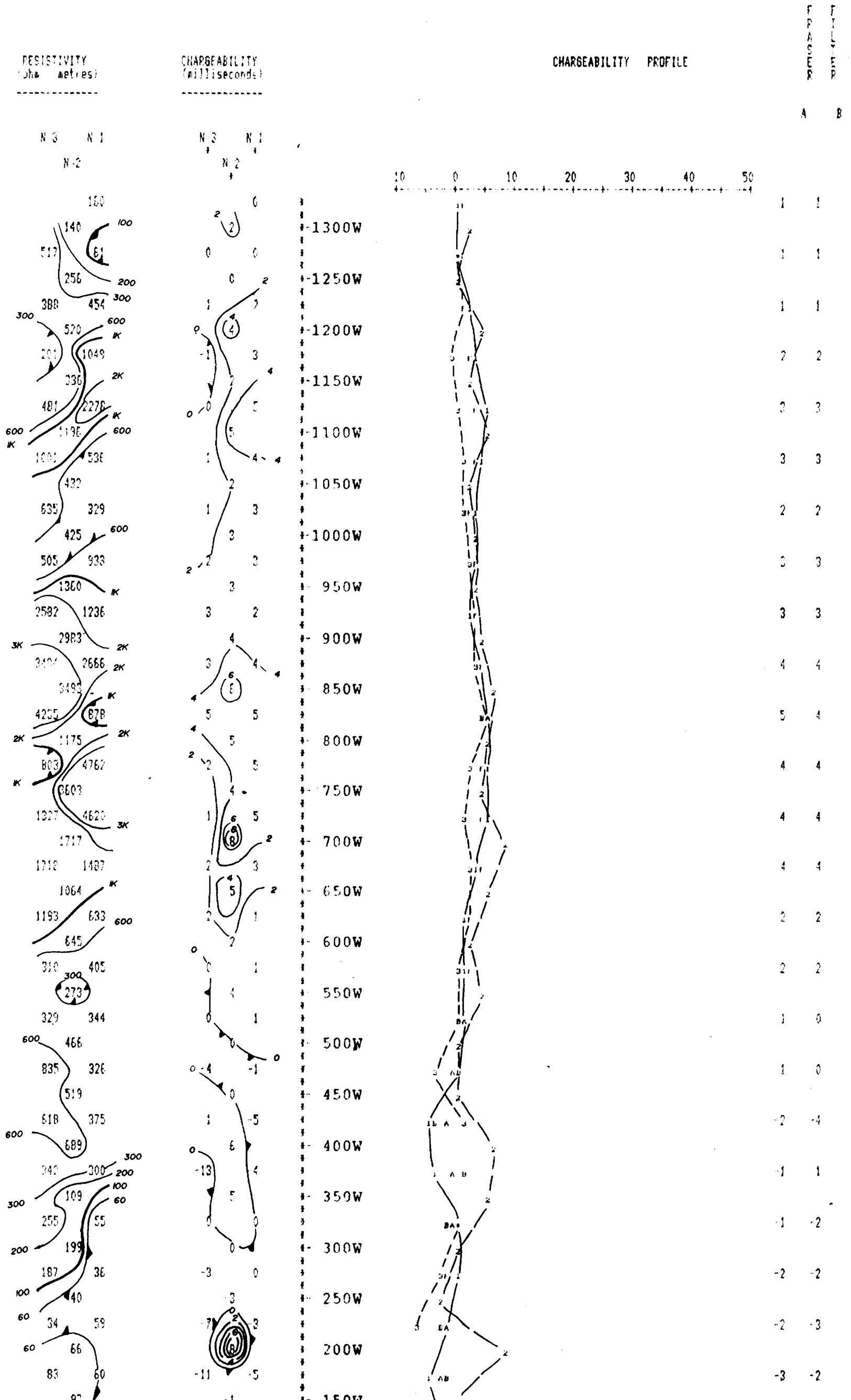
RESISTIVITY (ohm metres)

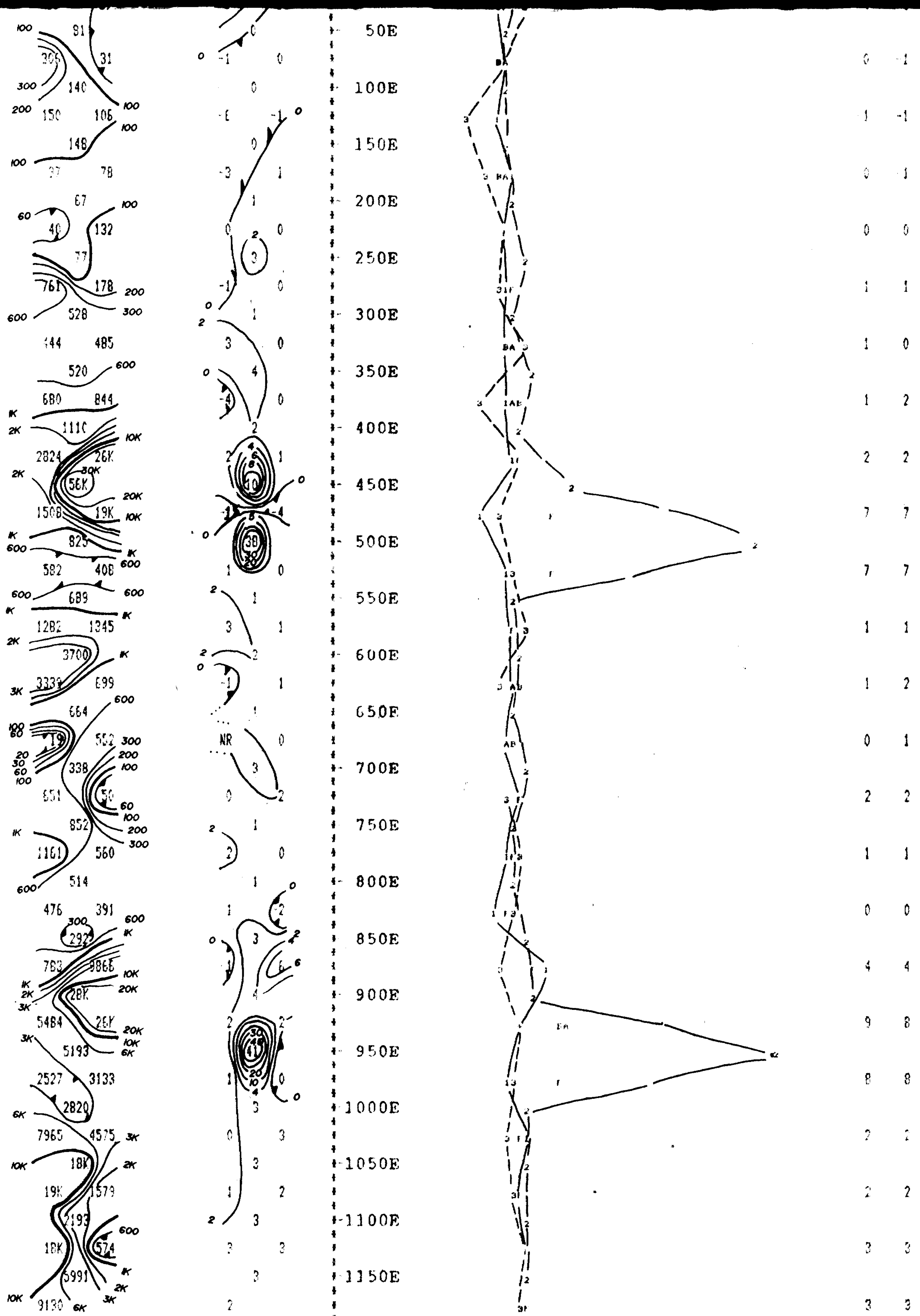
CHARGEABILITY (milliseconds)

CHARGEABILITY PROFILE

FRASER FILTER

A B





Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

84

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EXSICS EXPLORATION LTD.
* *

SCALE : 1 inch to 200 feet

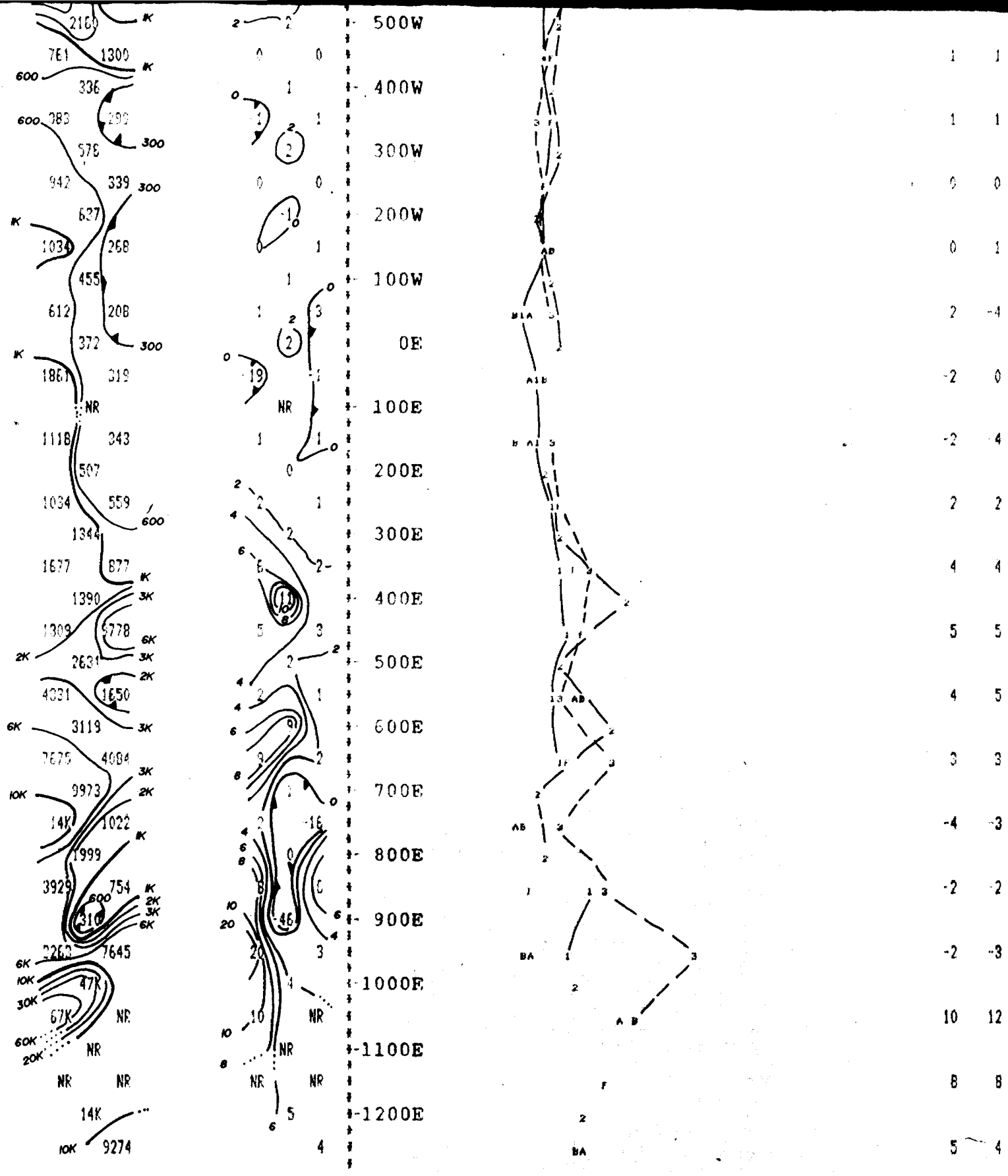
RESISTIVITY (ohm - metres)

CHARGEABILITY (milliseconds)

CHARGEABILITY PROFILE

FRASER FILTER

	A	B
1100W	3	3
1000W	3	3
900W	3	3
800W	3	3
700W	3	3
600W	3	3
500W	2	1
400W	1	1
300W	1	1
200W	0	0
100W	0	1
0E	2	-4
100E	-2	0
200E	-2	-4
300E	2	2
400E	4	4
500E	5	5
600E	4	5
700E	3	3
800E	-4	-3
900E	-2	2
1000E	-2	-3
1100E	10	12
1200E	8	8
	5	4



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : POLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : SCINTREX IPC-7
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

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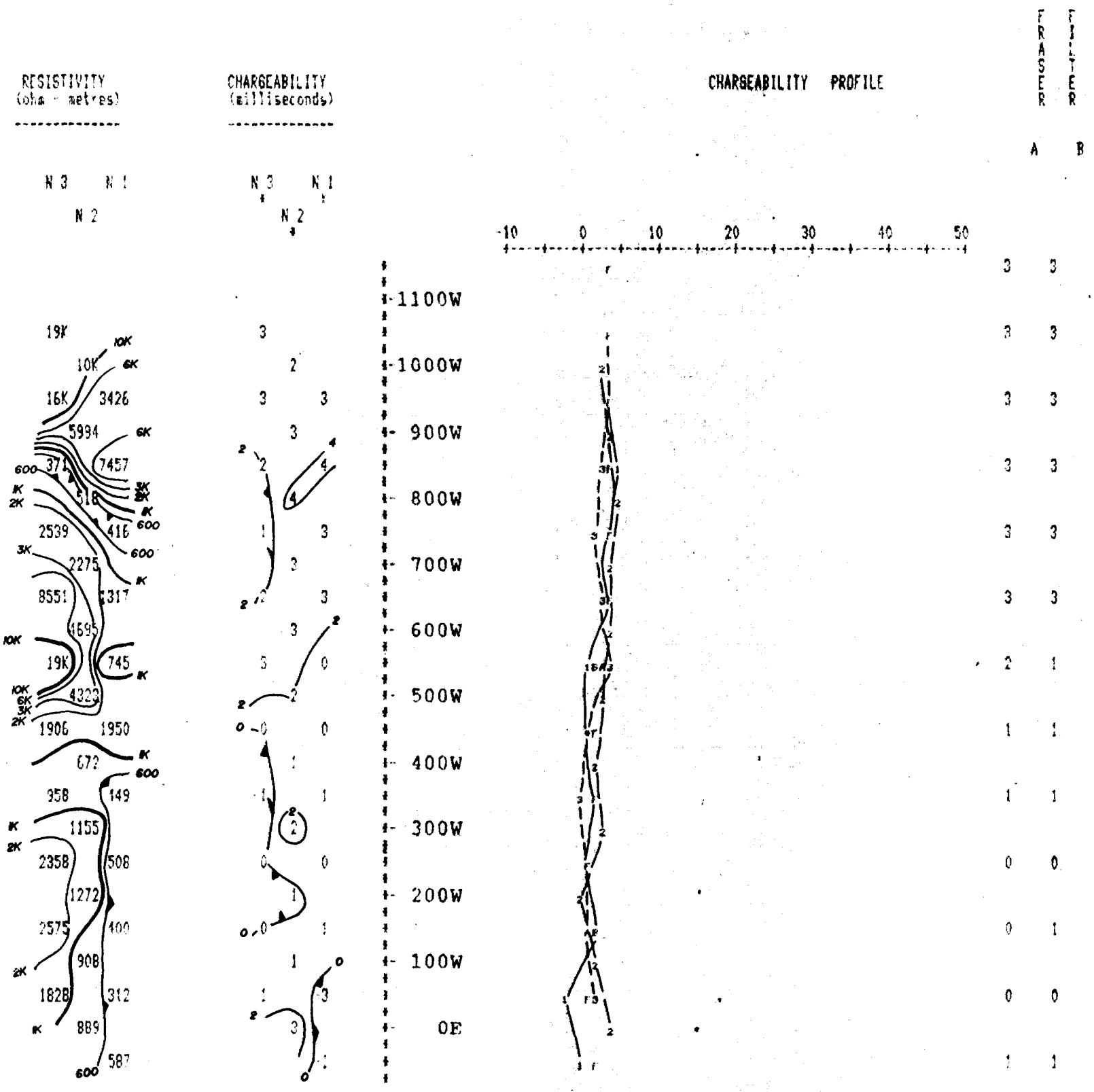
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2400 N

SCALE = 1 inch to 200 feet



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

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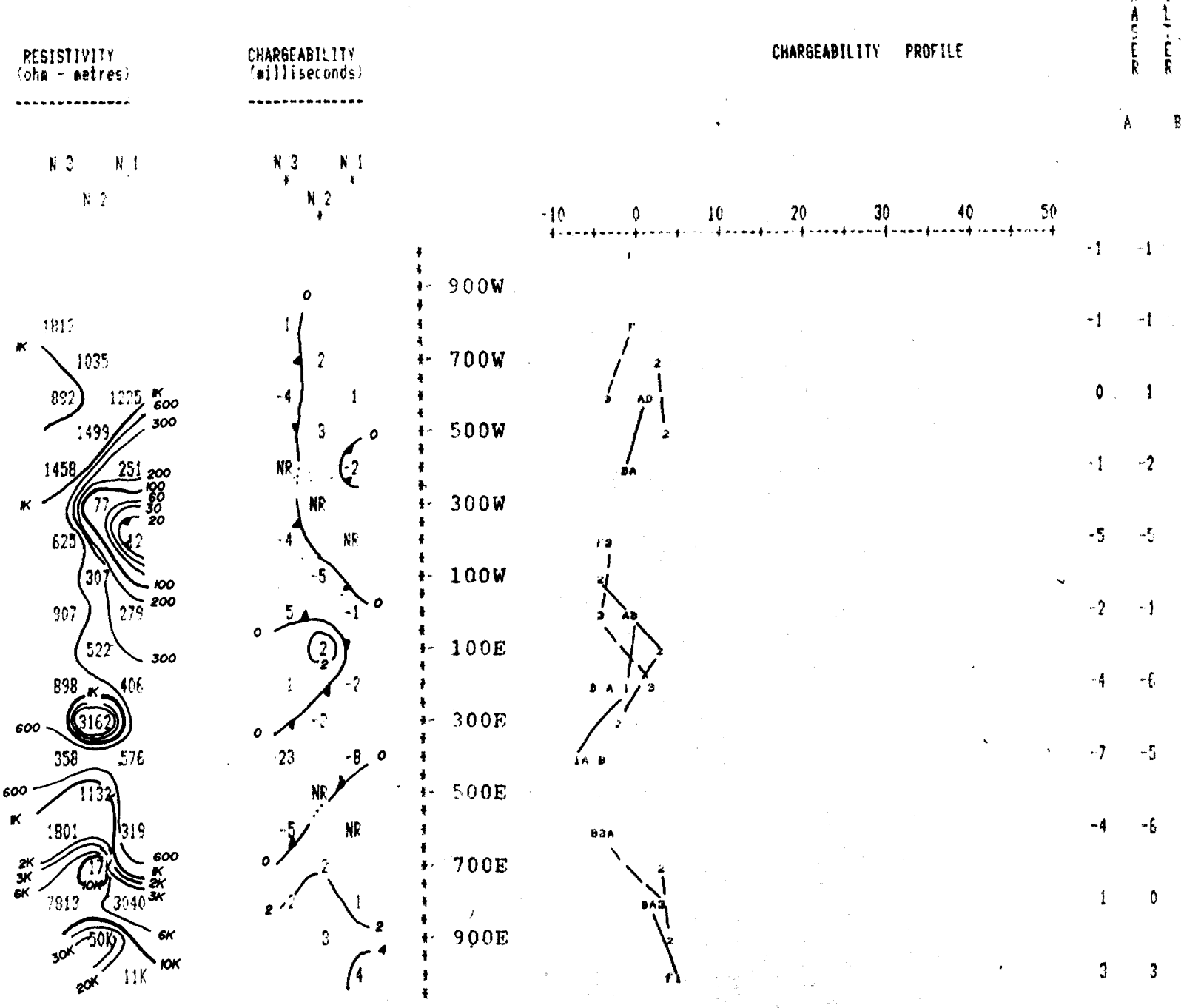
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2400 N

SCALE : 1 inch to 400 feet



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

****

IP Pseudosections for N = 1 to 3

'a' Spacing = 200 ft

LINE 2400 N

SCALE : 1 inch to 200 feet

RESISTIVITY
(ohm - metres)

CHARGEABILITY
(milliseconds)

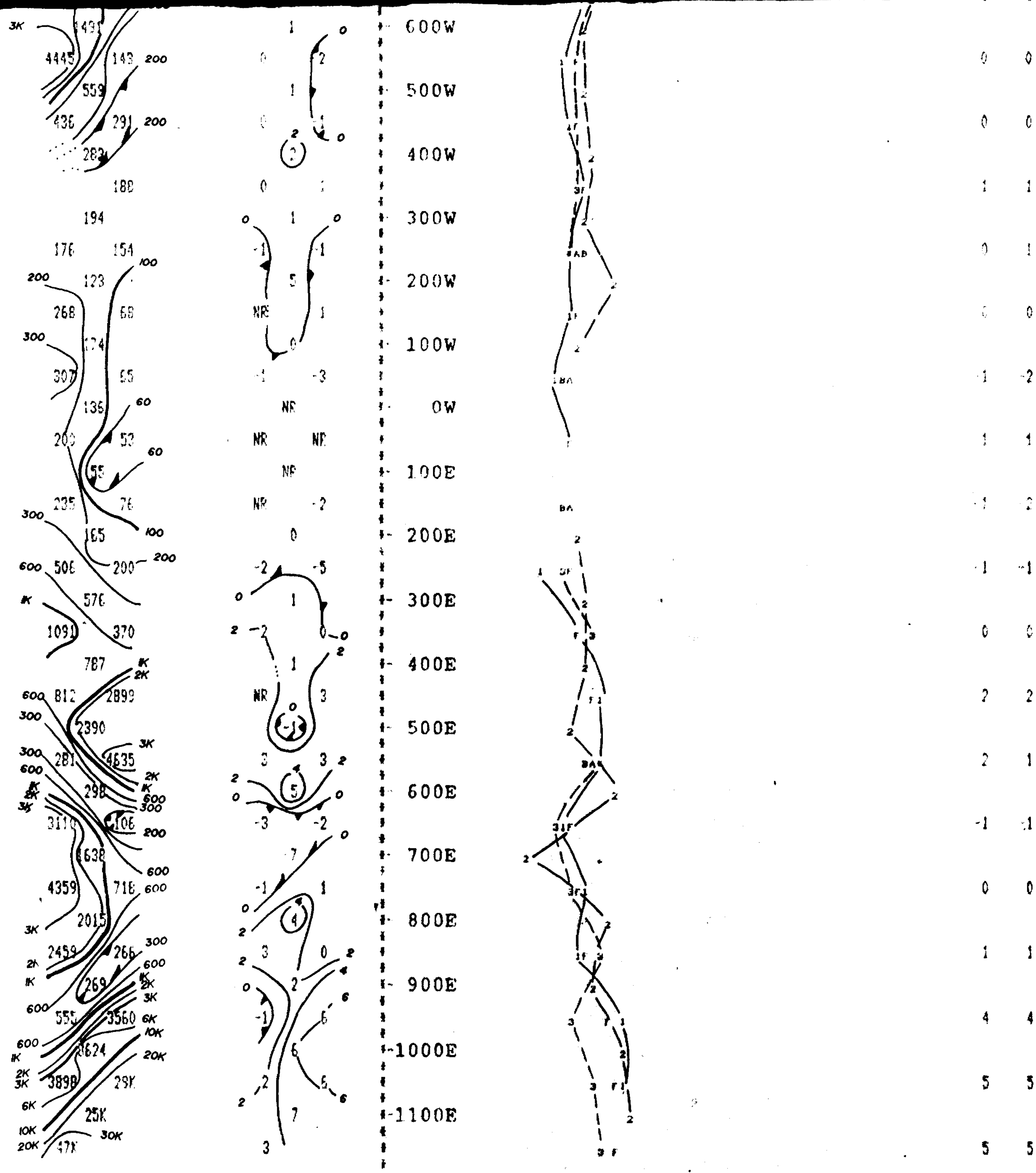
CHARGEABILITY PROFILE

FRASER FILTER

	A	B
800W	3	3
700W	2	2
600W	1	1
500W	0	0
400W	0	0
300W	1	1
200W	0	1
100W	0	0
0W	-1	-2
100E	1	-1
200E	-1	-2
300E	0	0
400E	2	2
500E	2	1
600E	-1	-1
700E	0	0
800E	1	1
900E	0	1
1000E	4	4
1100E	5	5
	5	5

Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2



Property : FACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

SA

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EXSICS EXPLORATION LTD.

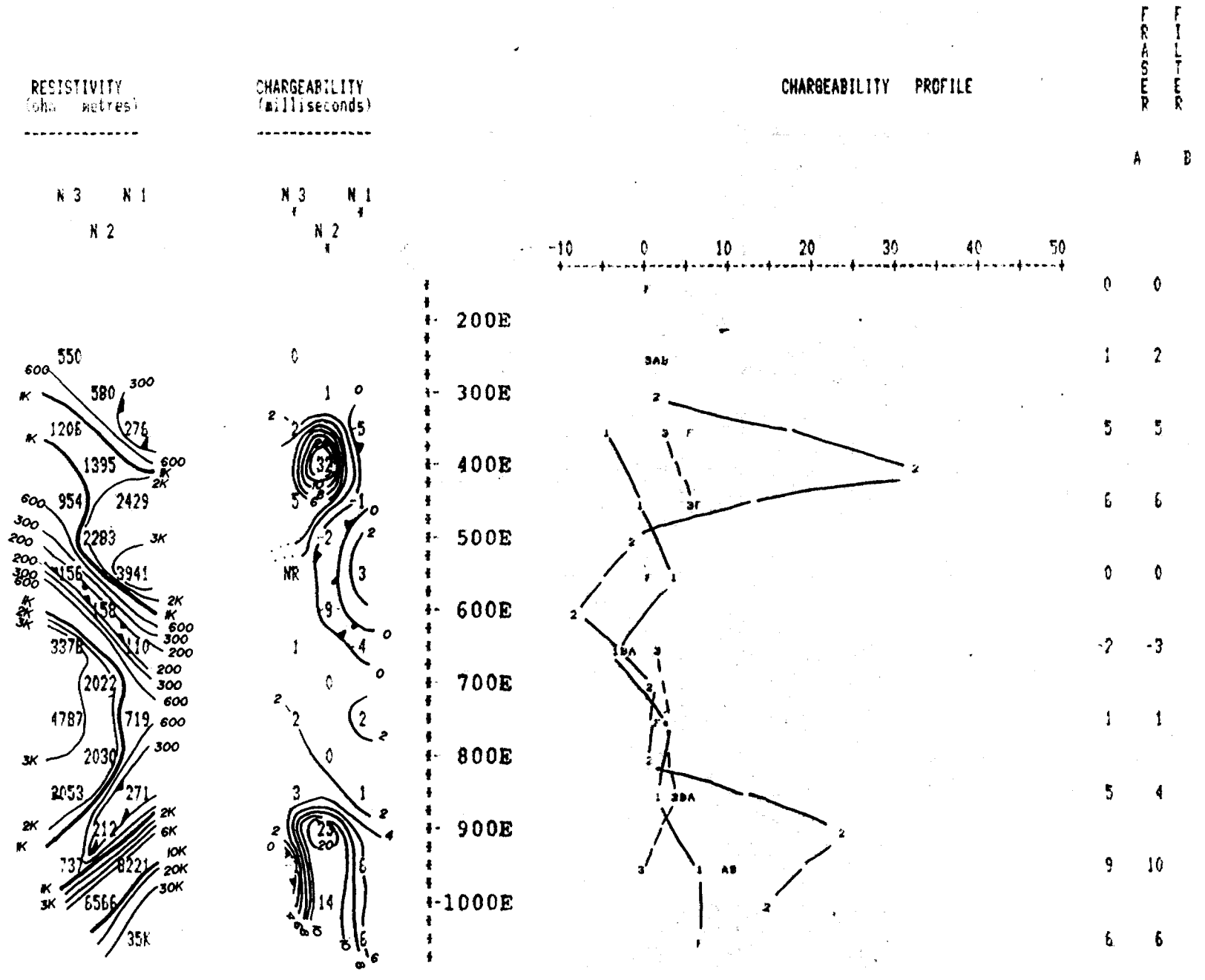
****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2500 N

SCALE : 1 inch to 200 feet



Property : CACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter ; scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

SA

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EXSICS EXPLORATION LTD.

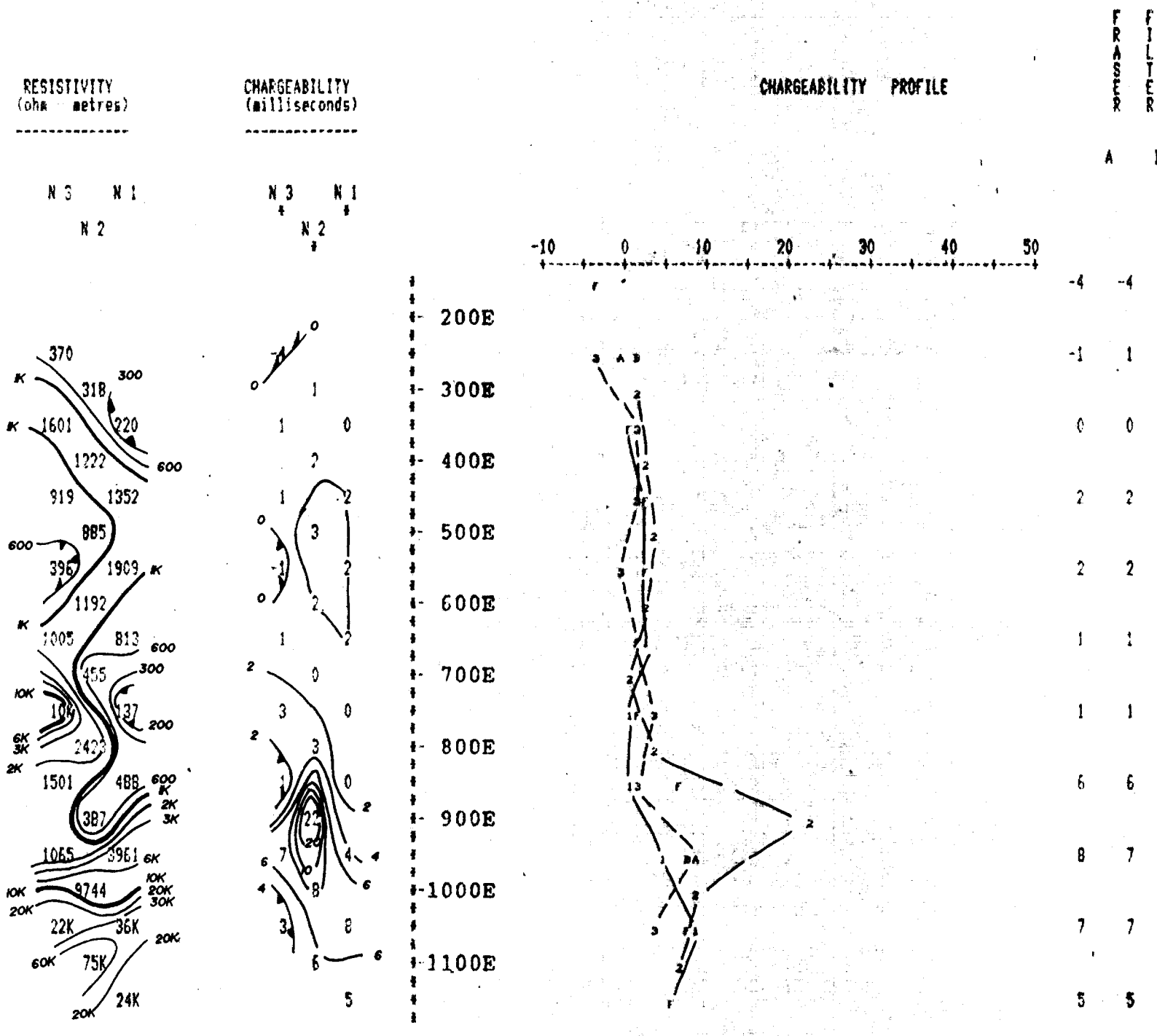
****

IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2500 N

SCALE : 1 inch to 200 feet



Property : PACAUD TWP. BLOCK I
Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990
Operator : JP
Electrode Array : DIPOLE - DIPOLE
Mode : TIME DOMAIN
Receiver : EDA IP-2
Transmitter : scintrex ipc-9
Pulse Time : 2 Sec on 2 Sec off
Chargeability Window Plotted : #3
Delay Time : 500 ms
Integration Time : 420 ms

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EXSICS EXPLORATION LTD.

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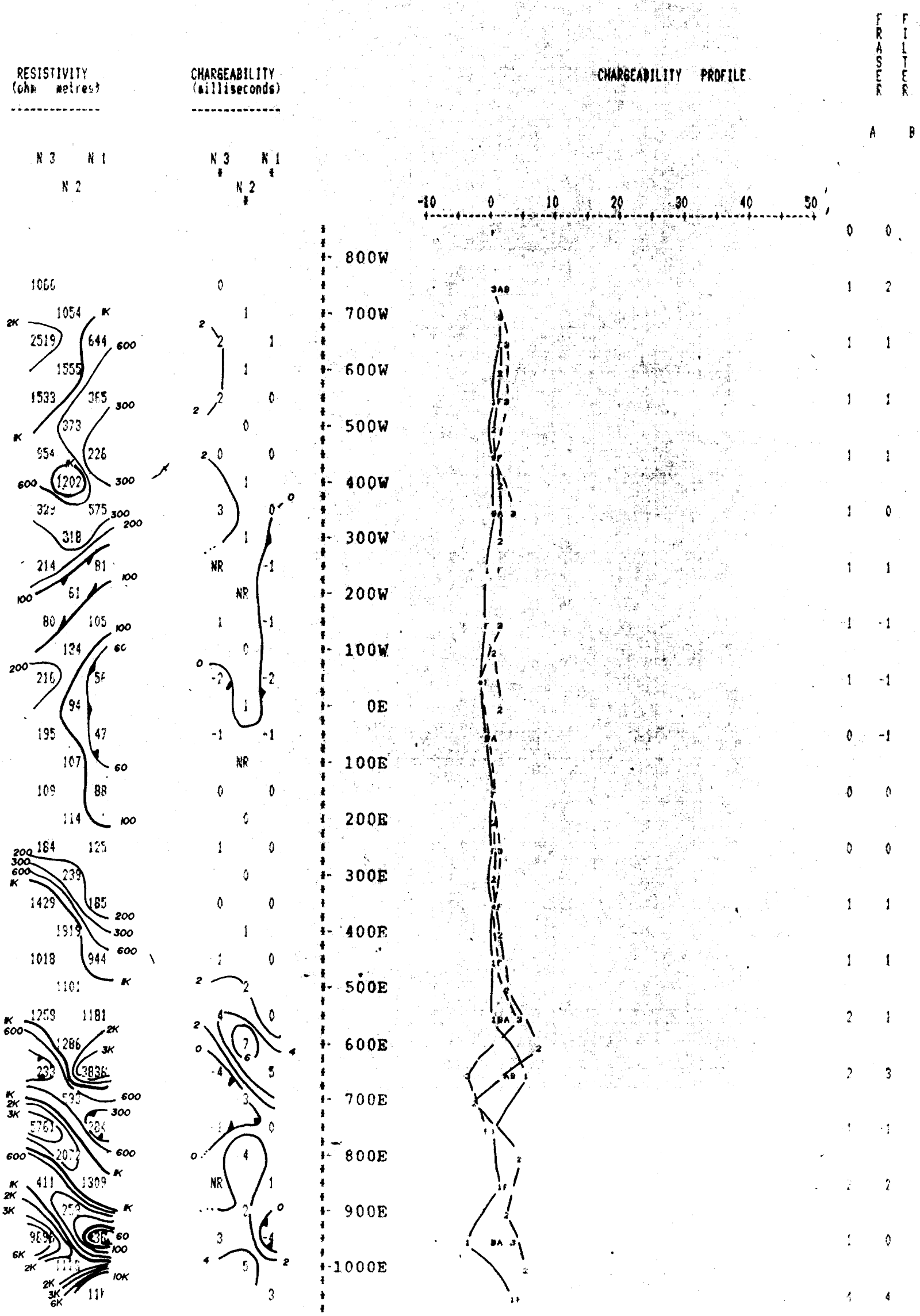
IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2600 N

SCALE : 1 inch to 200 feet



Property : PACAUD TWP. BLOCK I

Client : ATAPA MINERALS LIMITED

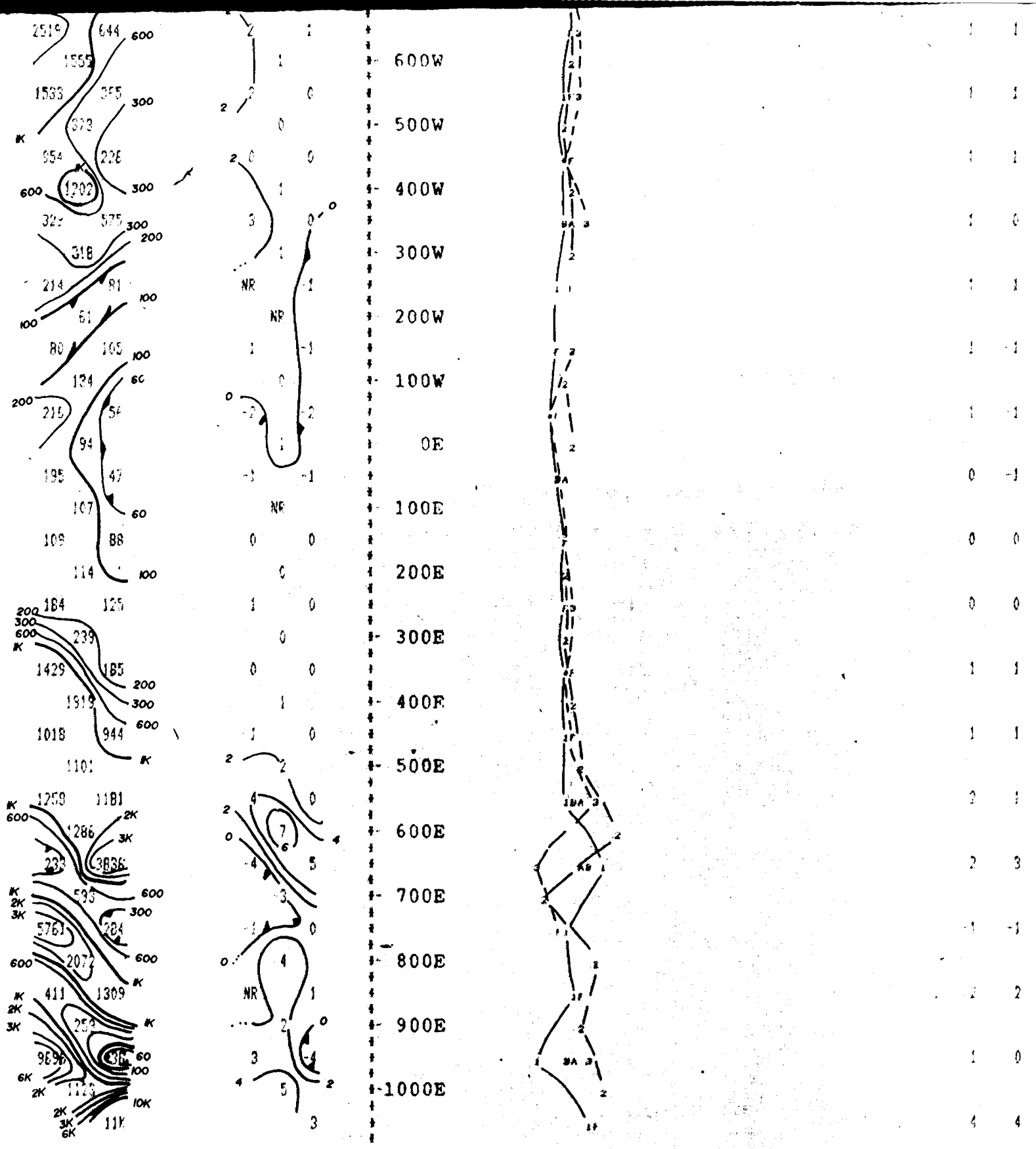
Date of Survey : May 1990

Operator : JP

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP 2



Property : PACAUD TWP. BLOCK I

Client : ATAPA MINERALS LIMITED

Date of Survey : May 1990

Operator : JP

Electrode Array : DIPOLE - DIPOLE

Mode : TIME DOMAIN

Receiver : EDA IP-2

Transmitter : scintrex ipc-9

Pulse Time : 2 Sec on 2 Sec off

Chargeability Window Plotted : #3

Delay Time : 500 ms

Integration Time : 420 ms

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SA EXSICS EXPLORATION LTD.

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IP Pseudosections for N = 1 to 3

'a' Spacing = 100 ft

LINE 2700 N

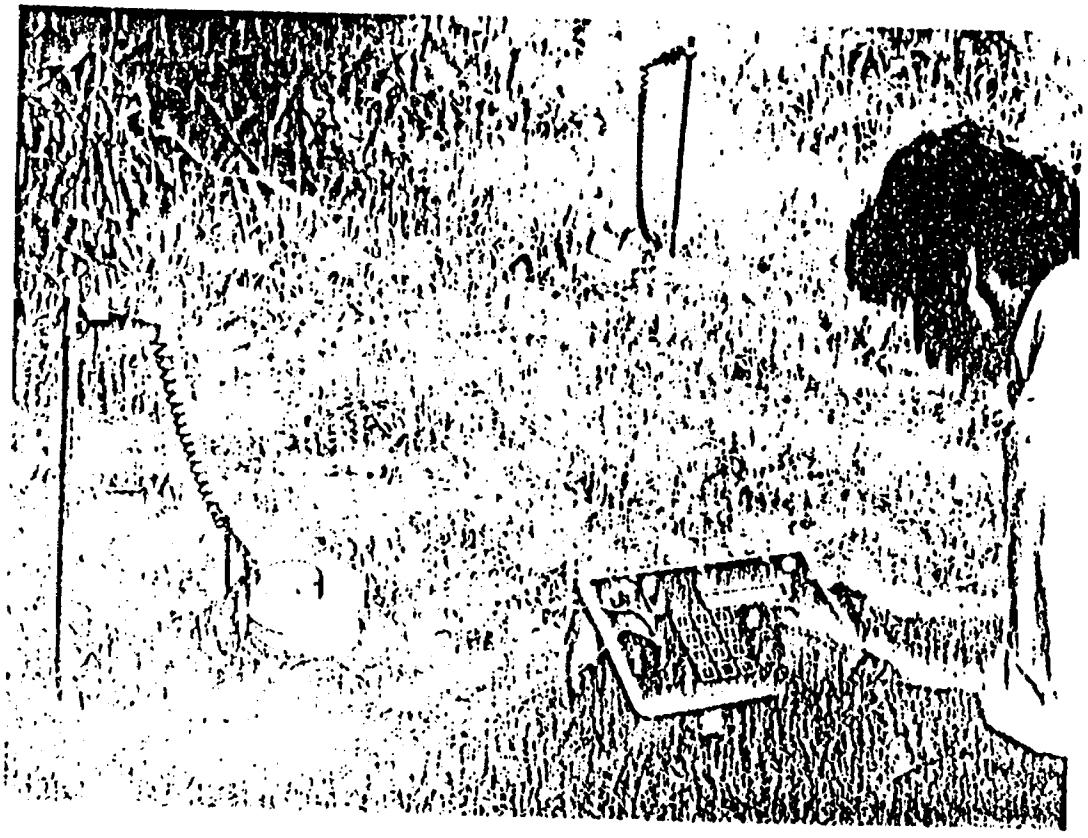
APPENDICES

APPENDIX A

EDA

Product Information

IP-2 TWO DIPOLE TIME DOMAIN IP RECEIVER



MAJOR BENEFITS

* TWO DIPOLES SIMULTANEOUSLY MEASURED
* SOLID STATE MEMORY
* AUTOMATIC PRIMARY VOLTAGE (Vp) RANGING
* AUTOMATICALLY CALCULATES APPARENT RESISTIVITY
* COMPUTER COMPATIBLE

EDA Instruments Inc., Head Office: 4 Thorncliffe Park Drive, Toronto, Canada M4H 1H1
Telephone: (416) 425-7800, Telex: 06 23222 EDA TOR, Cables: INSTRUMENTS TORONTO

In USA, EDA Instruments Inc., 5151 Ward Road, Wheat Ridge, Colorado 80033
Telephone: (303) 422-9112

Specifications

Dipoles	Two simultaneous input dipoles.
Input Voltage (Vp) Range	40 microvolts to 4 volts, with automatic ranging and overvoltage protection.
Vp Resolution	10 microvolts.
Vp Accuracy	0.3% typical; maximum 1% over temperature range.
Chargeability Resolution	1 %.
Chargeability Accuracy	0.3% typical; maximum 1% over temperature range for Vp > 10 mV.
Automatic SP Compensation	± 1 V with linear drift correction up to 1 mV/s.
Input Impedance	1 Megohm.
Sample Rate	10 milliseconds.
Automatic Stacking	3 to 99 cycles.
Synchronization	Minimum primary voltage level of 40 microvolts.
Rejection Filters	50 and 60 Hz power line rejection greater than 100 dB.
Grounding Resistance Check	100 ohm to 128 kilo-ohm.
Compatible Transmitters	Any time domain waveform transmitter with a pulse duration of 1 or 2 seconds and a crystal timing stability of 100 ppm.
Programmable Parameters	Geometric parameters, time parameter, intensity of current, type of array and station number.
Display	Two line, 32-character alphanumeric liquid crystal display protected by an internal heater for low temperature conditions.
Memory Capacity	600 sets of readings.
RS-232C Serial I/O Interface	1200 baud, 8 data bits, 1 stop bit, no parity.
Console Power Supply	Six 1.5V "D" cell disposable batteries with a maximum supply current of 70 mA and auto power save.
Operating Environmental Range	−25°C to +55°C; 0–100% relative humidity; weatherproof.
Storage Temperature Range	−40°C to +60°C.
Weight and Dimensions	5.5 kg, 310x230x210 mm.
Standard System Complement	Instrument console with carrying strap, batteries and operations manual.
Available Options	Stainless steel transmitting electrodes, copper sulphate receiving electrodes, alligator clips, bridge leads, wire spools, interface cables, rechargeable batteries, charger and software programs.

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4 Thorncliffe Park Drive,
Toronto, Ontario
Canada M4H 1H1
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Printed in Canada

APPENIX B

IPC Time Domain Induced Polarization/ Resistivity Transmitters

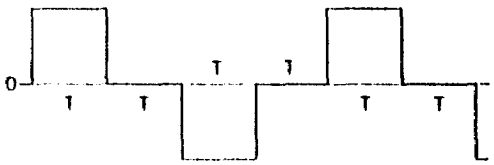
The Scintrex IPC Series of Time Domain Transmitters was designed for operation with the IPR-8, IPR-10 and RDC-8 Receivers. Three models are available, rated at 250W, 2.5kW and 15kW which are designated the IPC-8/250W, IPC-7/2.5kW and IPC-7/15kW respectively. While the IPC-8/250W is powered from internal, rechargeable batteries, the other, more powerful models use motor-generators as power sources.

Since the IPC-8/250W Transmitter is light enough (15.5 kg) to be moved from observation to observation, it can provide a high speed of operation for dipole-dipole and Wenner arrays when a low power source would suffice. It is also ideal for drillhole logging.

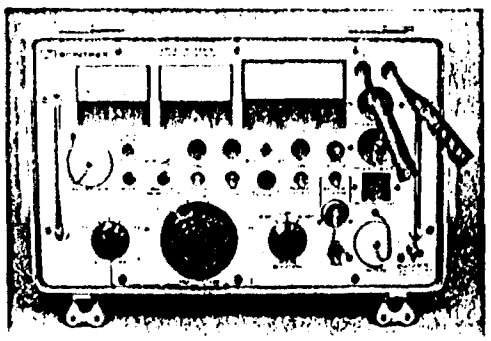
The IPC-7/2.5kW Model is an all purpose, medium power system. It is the standard power transmitter used on most surveys under a wide variety of geophysical, topographical and climatic conditions.

The IPC-7/15kW Unit is ideal for use where high power is required to survey to great depths using large electrode spacings, even in areas of low resistivity or high contact resistance. Normally the motor generator is installed on a single axle trailer to be towed to each transmitting station.

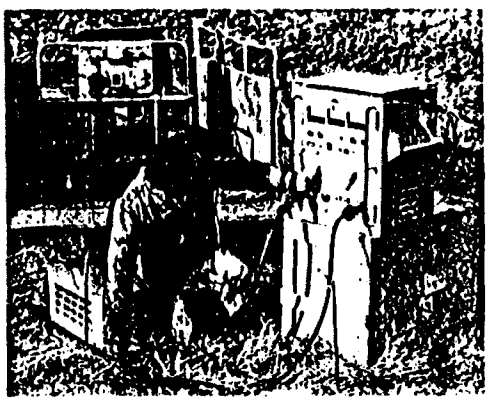
The two higher powered transmitters feature overload and underload protection circuits and other safety features.



Time domain waveform output by IPC Series transmitters. T normally equals 2, 4 or 8 seconds although other timings are available optionally.



IPC-8/250W



Typical IPC-7/15 kW field set-up with motor-generator set, control unit and dummy load.

IPC-7/2.5 kW

2.0 SPECIFICATIONS

Maximum Output Power	200W defined as when current is on and into a resistive load.
Output Voltage	Switch selectable at nominal settings of 15, 150, 210, 300, 425, 600 or 850 V.
Output Current	1.5 A maximum.
Meter Ranges	Switch selectable at 50 mA, 150 mA, 500 mA, 1500 mA full scale with accuracy of ±3% of full scale.
Automatic Cycle Timing	T:T:T:T; on:off:on:off.
Automatic Polarity Change	Each 2T.
Pulse Durations	T is switch selectable at 1, 2, 4, 8, 16 or 32 seconds.
Period Time Stability and Accuracy	Crystal controlled to better than 0.002 percent of the selected pulse duration.
Open Loop Protection	High voltage is automatically turned off if the output power is less than 2 W. This can be overridden manually for testing purposes. This protection is not effective at the 15 V output.
Synchronization Output	Optically isolated, suitable for external synchronization of the IPR-11 multichannel IP Receiver.
Internal Power Sources	Two battery packs are standard, each containing 4 GC 660-1 lead-acid gel-type batteries giving 24 V at 12 Ah. One Penlite battery, Eveready E91 or equivalent.
External Power Sources	24 V DC supply at maximum 10A.

Power for Battery Charger	115 or 230 VAC, 50 to 400 Hz, 100 W.
Dimensions and Weights	Transmitters with two battery packs: 140 x 300 x 460 mm; 16.0 kg Single battery pack: 140 x 300 x 150 mm; 6.2 kg Charger: 140 x 300 x 150 mm; 5.5 kg
Operating Temperature Range	-30°C to +55°C.
Standard Equipment	Console, 2 battery packs, battery charger, carrying harness. Two giant banana plugs, minor spare parts kit.
Optional Equipment	Reels, wire, porous pots, electrodes, major spare parts kit, radio transceivers, back pack.
Shipping Weight	46 kg includes reusable wooden shipping case.

LEGEND & SYMBOLS

5	Round Lake Batholith Granite
4	SKEAD GROUP Felsic Pyroclastics
	CATHARINE GROUP
3	Catharine Fm. a Iron-Rich Basalt b Magnesium-Rich Basalt
2c	Basalt Fm A' Magnesium-Rich Basalt
2b	Basalt Fm. A Magnesium-Rich Basalt
2a	Wawabewawa Fm. Magnesium-Rich Basalt
2	Ultramafic - Mafic Rocks Komatiite 2A Misema Komatiite 2B Depression Complex / Boston Creek Komatiite 2C Pacaud Komatiite
1	Pacaud Structural Complex Mafic to Felsic Tuffs Iron Fm - sulphide facies

Geological Contact
Fault
Beaver Dam
Schistosity
Bedding
Trench or Pit
No.1 Stripped Area - Trench and No.
Sample Location (rock)
140 Au ppb
Sample Location and No. in Trench
D.D. Hole and No.
Au oz / ton / length
Teck D.D. Holes have prefix 1533 (omit
Au ppb / length

Crone Radem V.L.F. E.M. Conductor Axis
I.P. Anomaly - Dipole - Dipole N = 1 to 3, a = 100'
Strong
Medium
Weak
Magnetic High ≥1000 gammas

ABBREVIATIONS

cp	chalcopyrite	qcv	quartz carbonate vein
h	chloritic	qv	quartz vein
hem	hematite	Q	felsic
i	carbonatized	r.	rubble
l	flow banding	sh	sheared
m	flow breccia	sil	siliceous
mag	magnetite	S.Z	shear zone
n	lapilli	t	tuffaceous
o	agglomerate	w.	water
p	lamprophyre		
po	pyrrhotite		
py	pyrite		

32D04SW0259 63.6059 CATHARINE

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CATHARINE TOWNSHIP PROPERTY		
PACAUD and CATHARINE TWP'S. - ONT. BLOCKS I and IA		
COMPILATION MAP		
DEC., 1990	BY: F.J. Sharpley	Map No. S-90-6-01

GEOLOGY LEGEND / SYMBOLS

- 5 — Round Lake Batholith Granite
- 4 — SKEAD GROUP Felsic Pyroclastics
- CATHARINE GROUP
- 3 — Catharine Fm a) Iron-Rich Basalt b) Magnesium-Rich Basalt
- 2c — Basalt Fm. A' Magnesium-Rich Basalt
- 2b — Basalt Fm. A Magnesium-Rich Basalt
- 2a — Wawabewawa Fm. Magnesium-Rich Basalt
- 2 — Ultramafic – Mafic Rocks Komatiite
  - 2A) Misema Komatiite
  - 2B) Depression Complex/Boston Creek Komatiite
  - 2C) Pacaud Komatiite
- 1 — Pacaud Structural Complex Mafic to Felsic Tuffs Iron Fm – sulphide facies
- Geological Contact
- Fault
- Younging Direction in Pillow Basalt
- S Fold
- Z Fold
- 525'■ Shaft, depth
- Trench or pit
- ASTROM Showing, name
- 5/0 ⊕ Sample location, ppb Au (rock)
- D.D.Hole (vertical, inclined) Note: Teck holes have prefix 1533 (omitted)
- ov Overburden
- TD Total depth
- 80-430 ppb Highest values of Au encountered
- 0.031-0.062 Highest values of Au oz/t encountered
- Humus >20 ppb Au
- Crone Radem VLF E.M Conductor Axis
- I.P. Anomaly – Dipole-Dipole N = 1 to 3, a = 100'
- Questor A.E.M Input Survey (1970)
- Questor A.E.M Input Survey (1979)
- 6 channel
- 5
- 4

0 2000 4000 FEET

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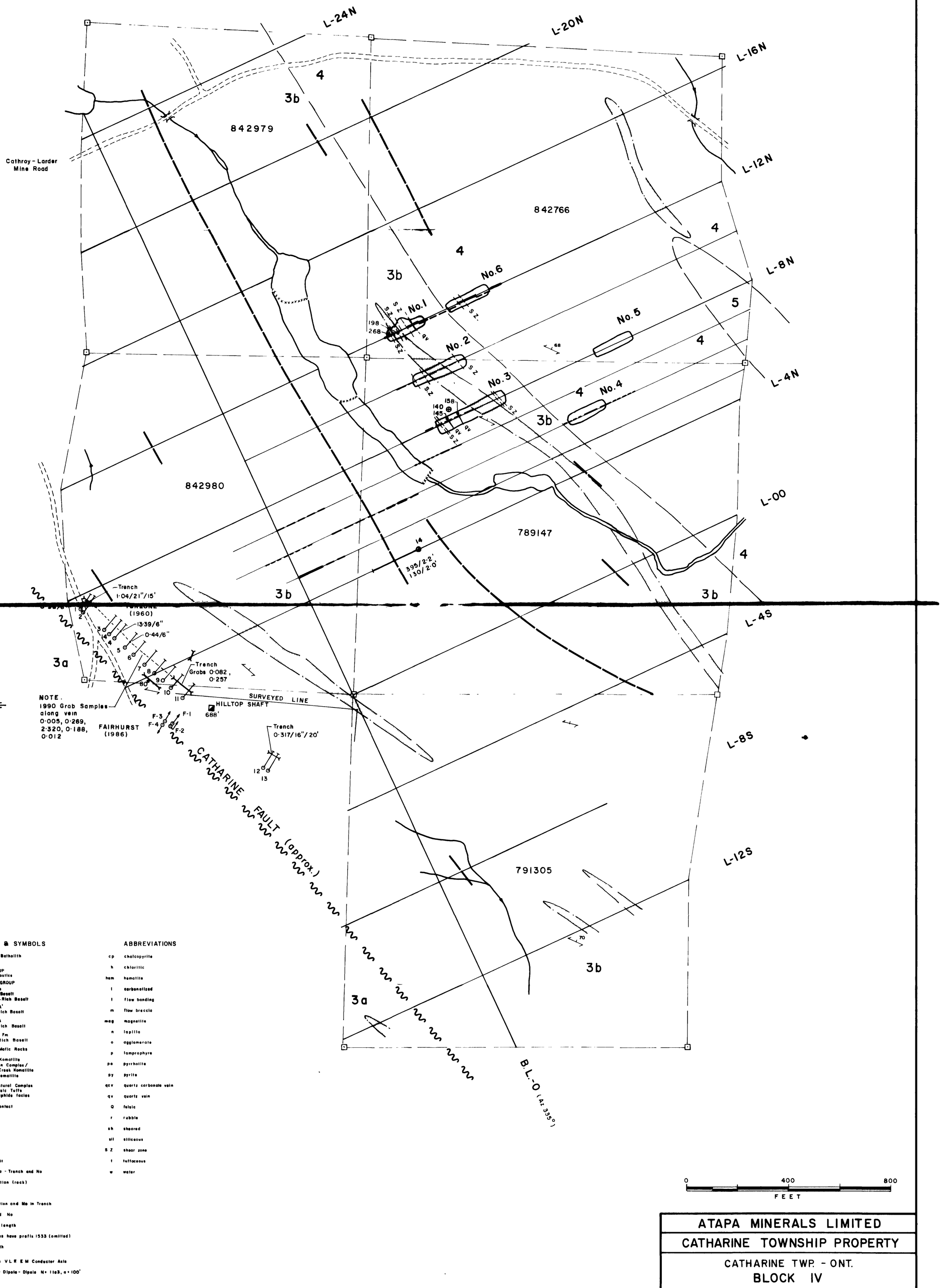
CATHARINE TOWNSHIP PROPERTY

PACAUD AND CATHARINE TWP'S ONTARIO

COMPILATION MAP

Nov., 1990	BY: F.J. Sharpley	Map No. S-90-6-03

NOTE: Geology modified after G.L. Jackson (O.G.S.), R.M. Harrap (Grad. Student - Carleton Un.)



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- Geological Contact
- Fault
- Beaver Dam
- Schistosity
- Bedding
- Trench or Pit
- Stripped Area - Trench and No
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ABBREVIATIONS

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h	chloritic
hem	hematite
l	carbonatized
l	flow banding
m	flow breccia
mag	magnetite
n	lapilli
o	agglomerate
p	lamprophyre
po	pyrrhotite
py	pyrite
qcv	quartz carbonate vein
qv	quartz vein
Q	felsic
r	rubble
sh	sheared
sil	siliceous
S Z	shear zone
t	tuffaceous
w	water

ATAPA MINERALS LIMITED

CATHARINE TOWNSHIP PROPERTY

CATHARINE TWP. - ONT.
BLOCK IV

COMPILATION MAP

DEC., 1990	BY: F.J. Sharpley	Map No. S-90-6-02

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