86-374-14979

GEOLOGICAL and GEOPHYSICAL ASSESSMENT REPORT ON THE CASTLE MOUNTAIN PROPERTY OF CAPROCK ENERGY LTD.

07/87

(Lots 6005, 6007, 6008, 6009)

Owner/Operator: CAPROCK ENERGY LTD.

OMINECA MINING DIVISION
BRITISH COLUMBIA

LATITUDE 57° ~~North~~ 16.7'
LONGITUDE 127° 07.4' West
NTS 94E/6E

Anthony Floyd
November 1, 1985

SUMMARY

The Castle Mountain property, held under option by Caprock Energy Ltd., consists of four crown granted mineral claims, Castle Mtn. #1-4, and Castle Mtn. 1 and 2, (20 units and 1 fraction).

The claims, located in the Toodoggone River area of British Columbia, abut the formerly producing Baker gold-silver mine. Mineralization on the property, first found in 1931, consists principally of base metal mineralization hosted in a skarn developed at the contact of upper Paleozoic limestones with an Omineca intrusion. At the Baker Mine "bonanza" grade gold-silver mineralization was hosted in Takla volcanics; rocks that are known to underlie the Castle Mountain property.

A program of geological mapping and an induced polarization survey was carried out in 1985. Several targets were defined by this work in an area thought to be underlain by Takla volcanics.

TABLE of CONTENTS

LIST of FIGURES

Appendix A - Geophysical Report on an Induced Polarization Survey on the Castle Mountain Claim Group, Toodoggone, Omineca Mining Division, Lat. 57°17'N Long. 127°07'W
NTS 94B/6E Author: Glen E. White, B.Sc., P.Eng.

INTRODUCTION

This report is prepared at the request of the Directors of Caprock Energy Ltd. The property, consisting of four Crown granted mineral claims and two staked claims located as per the Modified Grid system, is owned by Oswood G. MacDonald. Caprock Energy Ltd. presently hold the property under an option agreement dated June 26th, 1985.

The report is based on a property examination, the author's general knowledge of the Toodoggone area, an induced polarization survey carried out in 1985 and on numerous published and unpublished reports and maps.

LOCATION and ACCESS

The property consists of 4 Crown granted minerals claims and two staked mineral claims located as per the Modified Grid System. The claims are identified as follows:

Claim Name	Record Number	Units	Date of Record
Castle Mtn. #1	Lot 6007	1	
Castle Mtn. #2	Lot 6005	1	
Castle Mtn. #3	Lot 6009	1	
Castle Mtn. #4	Lot 6008	1	
Castle Mtn. 1	4084	20	July 27, 1981
Castle Mtn. 2	4085	1 Fr.	July 27, 1981

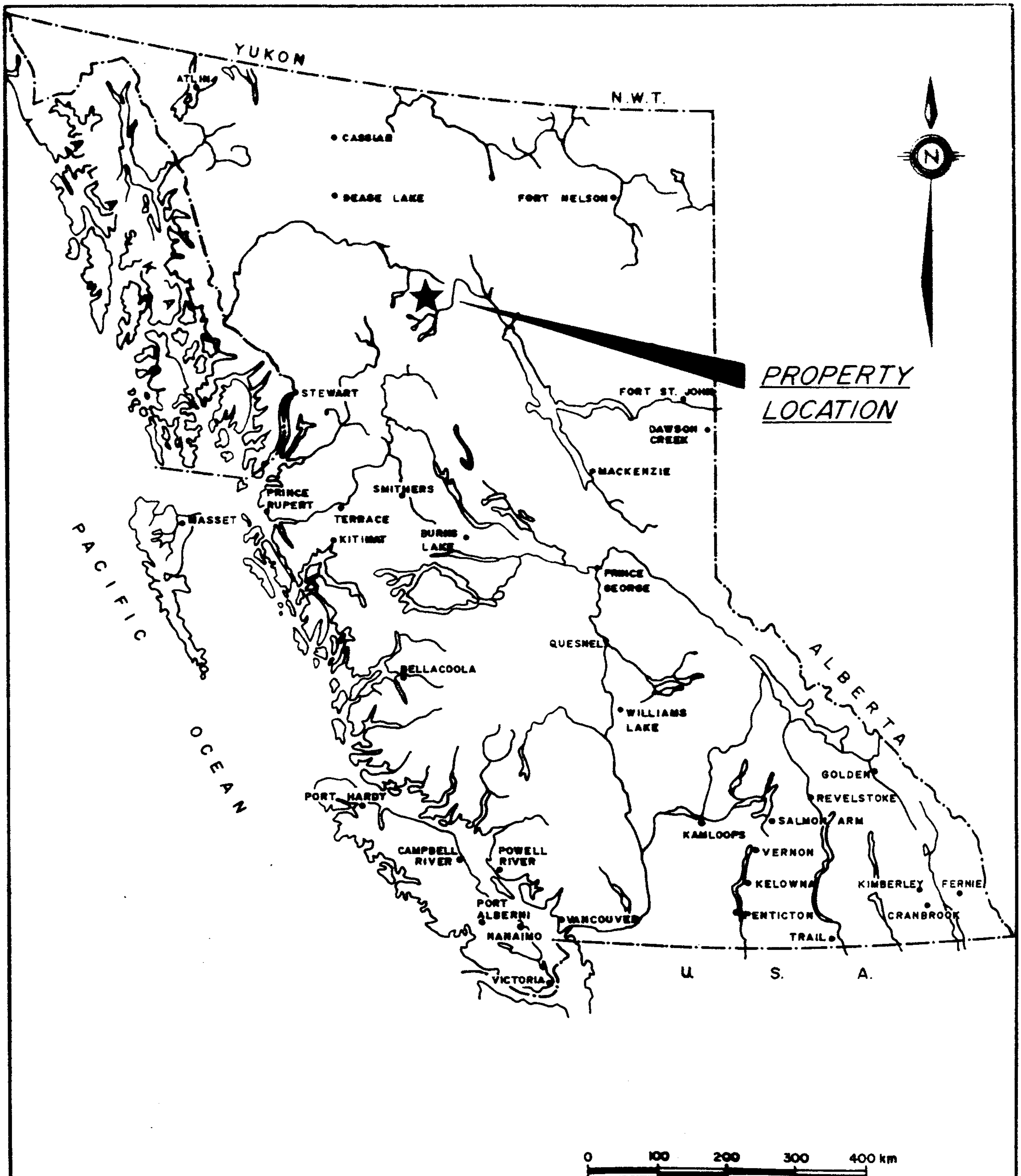


FIGURE 1

LOCATION MAP

CAPROCK ENERGY LTD.

CASTLE MOUNTAIN PROPERTY

OREQUEST

The property is located in the Omineca Mining Division on NTS Sheet 94 E/6E at 127°07'W by 57°17'N, approximately 20 miles northwest of Thutade Lake (see Figures 1 and 2).

Access is best achieved by fixed wing aircraft from Smithers to a gravel strip beside the Sturdee River, and thence by truck or helicopter to the property.

PHYSIOGRAPHY

The Toodoggone River region is an upland area featuring rounded to craggy mountains and ridges dissected by broad alluvium-filled valleys.

The Castle Mtn. claims cover a rugged area south-west of the Baker Mine. Fault blocks of late Paleozoic limestone dominate the scenery whilst the more subdued terrain is underlain by Takla Group volcanic rocks or a quartz monzonite of the Omineca intrusion.

Stunted spruce, fir and balsam cover the lower talus slopes principally on Castle Mtn. #2 and #4. Bedrock exposure is almost 100% above the tree line. The area is snow free between late June and early October.

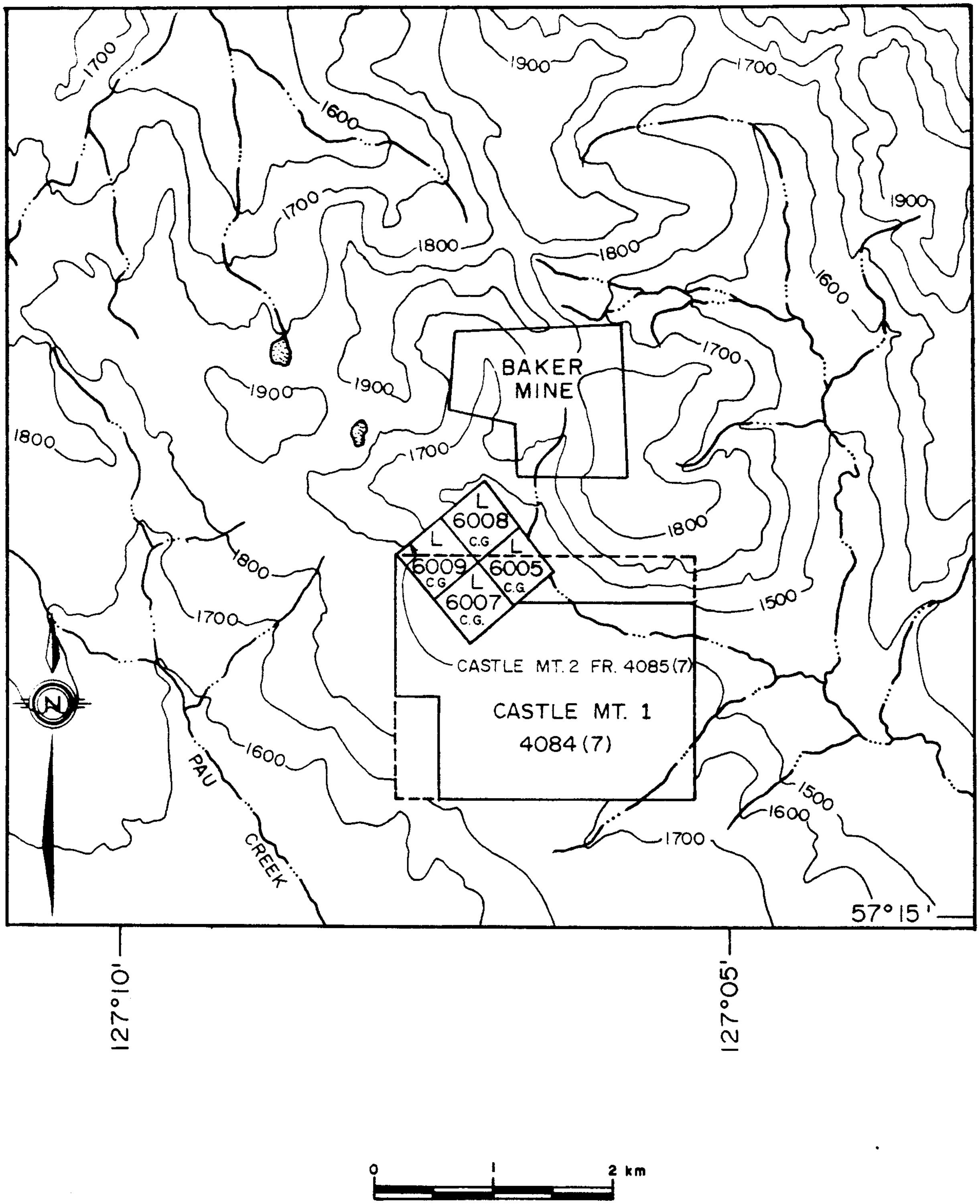


FIGURE 2

CLAIMS LOCATION MAP

CAPROCK ENERGY LTD.

CASTLE MOUNTAIN PROPERTY

OREQUEST

HISTORY

The Toodoggone area was investigated for placer gold in the 1920's and 1930's. A public company, Two Brothers Valley Gold Mines Ltd., undertook considerable test work, including drilling, in 1934. Most of this work was directed to extensive gravel deposits principally near the junction of McClair Creek and the Toodoggone River.

Gold-silver mineralization was discovered on the Chappelle (Baker Mine) property by Kennco Explorations (Western) Ltd. in 1969. DuPont of Canada Exploration Ltd. acquired the property in 1974 and began production at a milling rate of 90 tonnes per day in 1980.

Numerous other gold-silver discoveries were made in the area in the 1970's and 1980's, including the Lawyers deposit which was discovered by Kennco in 1973 and optioned by SEREM Ltd. in 1979. Work on this property to date has included considerable trenching, drilling and underground development and a feasibility study is currently underway.

The Toodoggone area has been the scene of intense exploration activity during the past four years with numerous companies exploring over 3,000 mineral claim units. Exploration and development expenditures to date are estimated to be in the order of $33 million.

Mineralization was first found on the Castle Mountain property in 1931 and the four Castle Mountain claims were staked. The original owner was the Consolidated Mining and Smelting Company of Canada Ltd. Prospecting and hand trenching was done in 1932-1933, and the claims were surveyed for Crown granting in 1934.

The claims were subsequently acquired by Mr. Oswood G. MacDonald, and a magnetometer and electromagnetic survey was carried out in March of 1973. This work is described in Assessment Report No. 4199. In 1981, a program of soil sampling, magnetometer and V.L.F.-E.M. surveying was carried out which is described in Assessment Report No. 10,525. All work to date has been concentrated on the four crown granted mineral claims.

REGIONAL GEOLOGY SETTING and MINERAL DEPOSITS

The Toodoggone River area is situated near the eastern margin of the Intermontaine tectonic belt. Oldest rocks in the area are late Paleozoic limestones in the vicinity of Baker mine where they are in fault contact with late Triassic Takla Group volcanic rocks.

A distinctive lithologic volcanic unit of early Jurassic age, called the Toodoggone volcanics, is a subaerial pyroclastic assemblage of predominantly andesitic composition. These unconformably overlie, or are in fault contact with older rocks, principally Takla Group volcanic rocks and undivided Hazelton Group feldspar porphyry flows and fragmental rocks.

Toodoggone volcanic rocks are contained in a 100 by 25 kilometer northwest-trending belt extending from Thutade Lake in the south to Stikine River in the north.

Several major stratigraphic subdivisions of Toodoggone volcanics have been identified. These and older layered rocks of the Takla and Hazelton Groups are cut by Omineca granitic rocks of Early Jurassic age, which commonly occur along the eastern margin of the Toodoggone volcanic belt, and by subvolcanic intrusions related to Toodoggone volcanics.

Clastic sedimentary rocks of the Cretaceous-Tertiary Sustut Group overlie older layered rocks near the Stikine River and form the southwestern exposed margin of the Toodoggone volcanic belt.

Regional fault systems trend northwesterly and northerly throughout the Toodoggone area.

Several styles of economic mineralization have been identified of which the most important are epithermal precious and base metal deposits hosted principally by lower and middle units of Toodoggone volcanics and related to Toodoggone volcanic processes. Gold-silver mineralization occurs principally in fissure veins, quartz stockworks, breccia zones and areas of silicification in which ore minerals are fine-grained argentite, electrum, native gold and silver and lesser chalcopyrite, galena and sphalerite. Alteration mineral assemblages are typical of epithermal deposits with internal silicification, clay minerals and locally alunite, grading outward to sericite and clay minerals, chlorite, epidote and pyrite.

Examples include Baker Mine, a fissure vein system developed in Takla volcanic rocks, but spatially related to dikes believed to be associated with

Toodoggone volcanic rocks. Pre-mining indicated reserves were 90,000 tonnes grading 30 grams/tonne gold and 600 grams/tonne silver. Recovered grades during the three year mine life were about half the indicated grades due to initial mill recovery problems and greater than expected dilution during mining.

The Lawyers deposit has gold-silver mineralization in banded chalcedony-quartz stockwork veins and breccia zones developed in Toodoggone volcanic rocks. Three potential ore zones have been defined to date and recently announced reserves are 1 million tonnes grading 7.27 grams/tonne gold and 254 grams/tonne silver. Numerous other epithermal gold-silver deposits in the area are hosted by lower and middle units of the Toodoggone volcanic sequence. These include the Sha, Saunders, Graves, Moosehorn, Mets, Metsantan, Al, JD and Golden Lion prospects.

PROPERTY GEOLOGY and MINERALIZATION

The geology of the Castle Mountain crown granted claims is described by N.C. Carter, 1972. This work revealed that Lower Paleozoic limestone and volcanic rocks of the Takla group are intruded by a granitic body related to the Omineca Intrusion. This has lead to the development of the skarn type of mineralization recognized in the 1930's by Cominco and explored by trenching. Sphalerite, galena, chalcopyrite and magnetite are traceable over a strike length of 1,000-1,400 feet in a zone up to 10' thick. The silver content is erratic and ranges up to 50 ozs/ton, however, the average would appear to be closer to 2-3 ozs. Gold values are generally very low. Several northerly and northwesterly trending fault zones are indicated.

The only significant gold mineralization was reported by Cominco in 1931. A small lens of mineralization on Castle Mtn. 3 assayed 0.27 ozs Au/ton, 55.56 ozs Ag/ton and 76.6% Pb.

The area mapped by Carter as Takla volcanics is often obscured by a large partly overgrown rock glacier and it is in this area, very close to the Baker Mine, that efforts were made in 1985 to locate new mineralization.

GEOCHEMISTRY

Soil geochemistry carried out in 1981 across a 50 metre grid with samples collected every 25 metres was stated by Vincent (1981) to be erratic. Boulders of mineralization from the skarn zones are common across the property thus distorting the geochemistry and leading to transported anomalies. However, there was a general correlation of anomalous values in lead, zinc, copper and silver with the limestone/granite contact. Gold was very spotty with values as high as 340 ppb. The presence of talus and overburden in the vicinity of the Takla volcanics, the likely host for significant precious metal mineralization, suggested that soil geochemistry was unlikely to be an effective tool in future exploration of the claims.

1985 EXPLORATION PROGRAM

Previous geophysical and geochemical surveys had been inconclusive in locating mineralization of the "Baker Mine" type. Mineralization at Baker was located in a fissure vein system developed in Takla volcanic rocks, but spatially related to dikes believed to be associated with Toodoggone volcanic rocks. Pyrite and chalcopyrite were abundant close to a siliceous core. This was thought to be expressed geophysically as a narrow structure with high chargeability and high resistivity.

It was therefore thought appropriate to carry out an induced polarization survey over the portion of the property thought to be underlain by the Takla volcanics.

In addition, efforts were made to locate the source of the high gold values detected by Cominco in 1931. A geological map was also prepared.

A detailed description of the induced polarization survey can be found in Appendix A. However, an analysis of the data by L. LeBel, P.Eng. reveals the following:

"The survey detected two anomalous zones.

The first anomaly crosses lines 3+50N to 6+00N at about 2+00W to 3+00W and has apparent chargeabilities which achieve a maximum of 30 msec, but average a modest 5 to 10 msec. The absence of some data points in the chargeability pseudo sections indicate signals may have been noisy. As a consequence some of the chargeabilities recorded at separation 3 and 4, including the spot highs evident, may be unreliable. On lines 3+50N to 5+00N, the anomaly is caused by a narrow, less than 50 metre wide, subvertical dipping body centered at: 3+50N, 2+25N; 4+00N, 2+00W - 2+25W; 4+50N, 2+50N - 2+75N and 5+00N, 2+75W - 3+00W. The depth of the body of these lines varies from shallow (on line 4+00N), 25 to 50 metres on the other lines. On lines

5+50N and 6+00N the cause of the anomaly appears to change character to a wide, shallow body whose northwestern edge is not delimited by the survey.

The second anomaly occurs on lines 7+50N - 8+50N in the northeast corner of the survery coverage. The extent of this zone is not defined except to the southwest. Apparent chargeabilities in the zone range up to a maximum of 24 msec. The zone appears to be caused by a wide flat lying to gently dipping body. On line 7+50N the body occurs at a depth of 25 to 50 metres. On line 8+00N the body is shallow at its southeast end and gradually increases in depth beyond the depth of detection of the survey toward the northwest. A similar situation occurs on line 8+50N in that the cause of the anomaly is shallow between 0+25E and 0+50W, but deeper (25-50 metres) under station 2+00W.

Neither of the two anomalies has a distinct resistivity signature.

An explanation for the causes of the anomalies is not available at this time. The results of a limited test survey over the Baker Mine done in conjunction with the survey are inconclusive, so that, the desired induced polarization and/or resistivity signature of the gold mineralization in the area is unknown.

The first anomaly appears to occur within limestones. As a consequence it may reflect a Pb/Zn/Cu vein, a number of which occur in the area.

Bedrock in the vicinity of the second anomaly is obscured by overburden.

However, volcanic rocks are inferred to be present and the anomaly may reflect pyrite in an alteration zone. Several spot, gold soil geochemical anomalies in the area improve the economic attractiveness of this feature.

Diamond drilling would probably be the most effective way to evaluate the anomaly".

CONCLUSIONS and RECOMMENDATIONS

Exploration work in the past on the claims had identified skarn type mineralization associated with the intrusion of a granitic body into Upper Paleozoic limestone. This mineralization was high in base metal content, but low in precious metals. Nearby at the Baker Mine, vein systems hosted by Takla volcanics have contained "bonanza" grade mineralization i.e. 30 grams Au/ton and 600 grams Ag/ton.

The 1985 exploration program was designed to locate mineralization of the "Baker Mine" type and consisted of re-establishment of a grid, prospecting in areas identified in previous surveys to be high in precious metals and an I.P. survey over an area thought to be underlain by Takla volcanics.

No new precious metal mineralization was located, but several good chargeability anomalies were identified by the I.P. survey which should be tested by a limited diamond drilling program.

ITEMIZED COST STATEMENT

Mobilization and Demobilization	$3,000
Expediting and Radio Rental	900
1 Geologist - 1 day x $275/day	275
1 Geophysical Technician - 9 days x $200/day	1,800
1 Geophysicist - 1 day x $400/day	400
Supervision - 2.25 days x $400/day	900
Report Preparation and Drafting	260
TOTAL	$7,535

CERTIFICATE of QUALIFICATIONS

I, Anthony Floyd, of 3400 West 2nd Avenue, Vancouver, British Columbia hereby certify that:

1. I am a 1971 graduate of Nottingham University, England, with a BSc. Honours degree in geology.
2. I am a 1972 graduate of Leicester University, England, with a M.Sc degree in Mineral Exploration and Mining Geology.
3. I have practised my profession for the past twelve years in Canada, United States and Europe. For the past twelve years I have been a resident in British Columbia.
4. I am a Fellow of the Geological Association of Canada.
5. The information contained in this report is based on my personal examination of the property and on various government publications and company reports listed in the Bibliography.
6. I have not received, nor do I expect to receive, any interest direct or indirect in the properties or securities of Caprock Energy Ltd.
7. Caprock Energy Ltd. is hereby authorized to use this report in, or in conjunction with any Prospectus or Statement of Material Facts.

Anthony Floyd
Consulting Geologist

GEOLOGICAL ASSOCIATION OF CANADA
ANTHONY FLOYD
FELLOW

DATED at Vancouver, British Columbia, this 1st day of November, 1985.

BIBLIOGRAPHY

CARTER, N.C.
1972: Toodoggone River Area and Chappelle. Geology, Exploration and Mining in British Columbia 1971, p. 63-70.

CROWHURST, J.J.
1973: Report on the Castle Mountain Property, Company Report, Unpublished.

FLOYD, A.
1985: Report on the Castle Mountain Property of Caprock Energy Ltd., Omineca Mining Division, B.C., Company Report, Unpublished.

VINCENT, J.S.
1981: A Summary Report on the Castle Mountain Property, Omineca Mining Division, Company Report, Unpublished (Assessment Report 10,525)

WHITE, G.E. and PARENT, D.
1973: Geophysical Report and Magnetometer, Electromagnetometer Surveys, Castle Mountain Mineral Claims (Assessment Report 4199).

APPENDIX A

CAPROCK ENERGY LTD.

GEOPHYSICAL REPORT

ON AN

INDUCED POLARIZATION SURVEY

ON THE

CASTLE MOUNTAIN CLAIM GROUP, TOODOGGONE

OMINECA MINING DIVISION

LAT.57°17'N LONG.127°07'W NTS94B/6E

AUTHOR: GLEN E.WHITE B.SC.,P.ENG

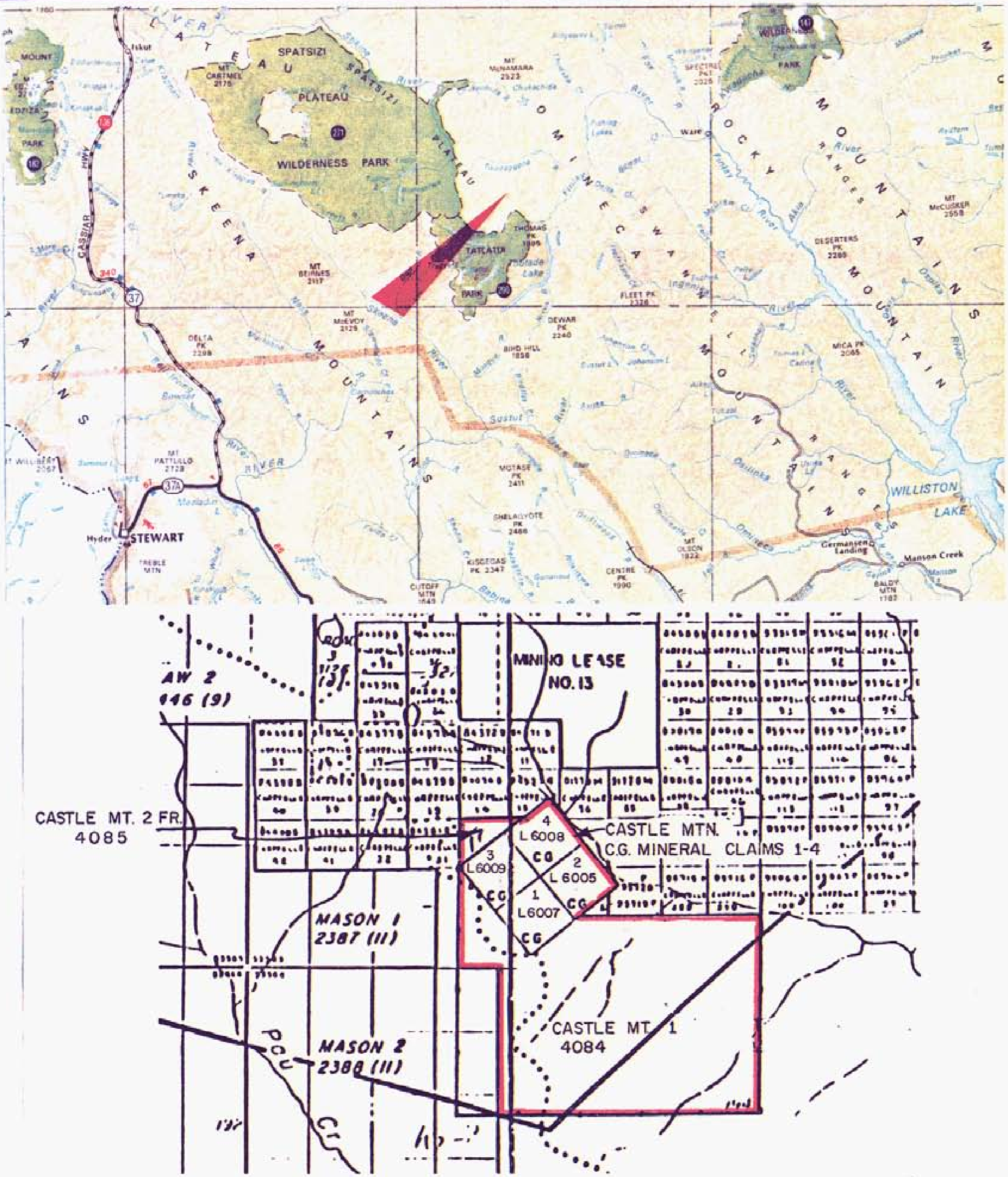
CONSULTING GEOPHYSICIST

DATE OF WORK: AUGUST 22-31, 1985

DATE OF REPORT: SEPTEMBER 16, 1985

TABLE OF CONTENTS **PAGE**

ILLUSTRATIONS



CAPROCK ENERGY LTD.

CASTLE MOUNTAIN CLAIMS

LOCATION AND CLAIMS MAP

WHITE GEOPHYSICAL INC.

FIGURE 1

INTRODUCTION

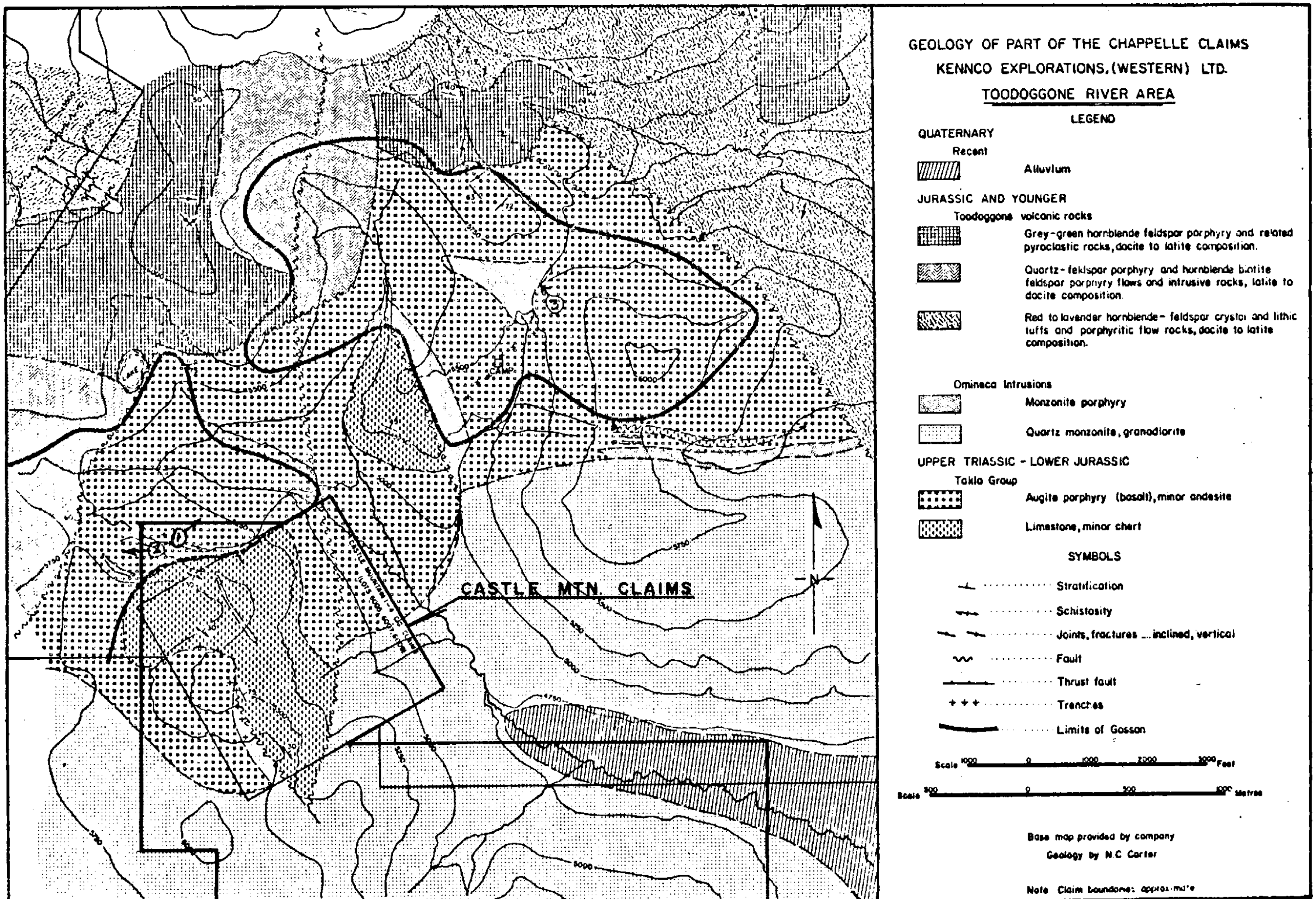
During the month of August 1985, from the 22nd to the 31st, an induced polarization survey was conducted over a portion of the CASTLE MOUNTAIN CLAIM GROUP in the Toodoggone area of British Columbia.

The survey was conducted by White Geophysical Inc. on behalf of Caprock Energy Ltd. The purpose of the program was to examine an area of interest located by previous geochemical-geophysical surveys.

PROPERTY

The CASTLE MOUNTAIN CLAIM GROUP consists of 4 Crown granted claims, one 20 unit claim and a fraction listed as follows:

Claim Name	Record No.	Units	Date of Record
Castle Mtn. #1	Lot 6077	1	
Castle Mtn. #2	Lot 6005	1	
Castle Mtn. #3	Lot 6009	1	
Castle Mtn. #4	Lot 6008	1	
Castle Mt. 1	4084	20	July 27, 1981
Castle Mt. 2	4085	1 Fr.	July 27, 1981



GEOLOGY MAP

PLATE 1

LOCATION AND ACCESS

The property is situated in the Omineca Mining Division between Chappelle Creek and the Toodoggone River some 32 km north of Thutade Lake. A road from the Sturdee Airstrip by the Sturdee River leads to the Baker Mine site on the east side of the claim grants.

The area is shown on NTS sheet 94E/6E at latitude 57°17'N and longitude 127°07'W.

GENERAL GEOLOGY

The geology of the area is described by Dr. N.C. Carter, P.Eng., in the 1971 GEM pp. 63, 64 and 65. Plate 1 illustrates the geology of the property which consists of Upper Triassic Talka Group rocks of basaltic flows, pyroclastic rocks, limestone and chert which have been cut by Omineca intrusives.

A sketch of the geology as prepared by C M & S in 1931 is shown on Figures 2 and 3.

PREVIOUS WORK

The claims were staked in the 1930's by Cominco. The main interest in the claims was for precious metals in association with lead and zinc mineralization.

A program of geochemical-geophysical surveying was conducted during July 1981 which located a number of strong anomalies which are discussed by John S. Vincent in a report dated July 3, 1981 for Dynamic Oil Ltd.

INDUCED POLARIZATION SURVEY

The survey was conducted utilizing a Huntec LoPo Mark III induced polarization system deployed in a dipole-dipole array with a=50 m, n=1-4. Some 5.2 km of work was completed. An 8 second cycle time was used with a delay of 60 ms. The overvoltage discharge was read, intregrated and is presented as chargeability in milliseconds. The physical parameters which govern the flow of the primary field are shown as apparent resistivity in ohm-metres.

DISCUSSION OF RESULTS

Figure 2 illustrated the chargeability data for a=50 m, n=3. The apparent resistivity data is shown on Figure 3.

Figure 4 illustrates an excellent chargeability source on line 350N at 250W at a depth of some 75 m. It shows good agreement with a VLF-EM conductor located in the 1981 work and is open to the south. This chargeability source appears to be buried thus a geochemical response would not be anticipated. The anomaly appears to be associated with an apparent resistivity high which would suggest that the chargeable material is on the western flank of a granite dike. This relationship is quite apparent on Figures 5-7. The shallow chargeability values on line 550N at 325W and 225W are coincident with anomalous lead, zinc and copper geochemical values.

Figure 10 shows a contrast from high to low apparent resistivity from west to east respectively which would suggest a geological contact or alteration zone. A major fault is shown on Plate 1 as trending through this area. The low values increase on the northern lines 700N to 850N with a strong increase in chargeability. Line 850N shows a prime diamond drill target at 100W. A deeper zone is shown under 250W. The Baker Test line covers an alteration zone bearing gold mineralization and shows similar chargeability - apparent resistivity values though the line is incomplete due to steep topography.

CONCLUSIONS

The induced polarization survey was conducted over the talus covered eastern slope of a local mountain along which favourable geochemical-geophysical responses had been obtained from a previous survey. This slope adjoins the Baker Mine property to the east. The survey located several good chargeability anomalies which should be tested by diamond drilling.

RECOMMENDATIONS

The chargeability zones appear to be dipping into the mountain to the west. Thus the following diamond drill holes should be drilled vertically or steeply to the east.

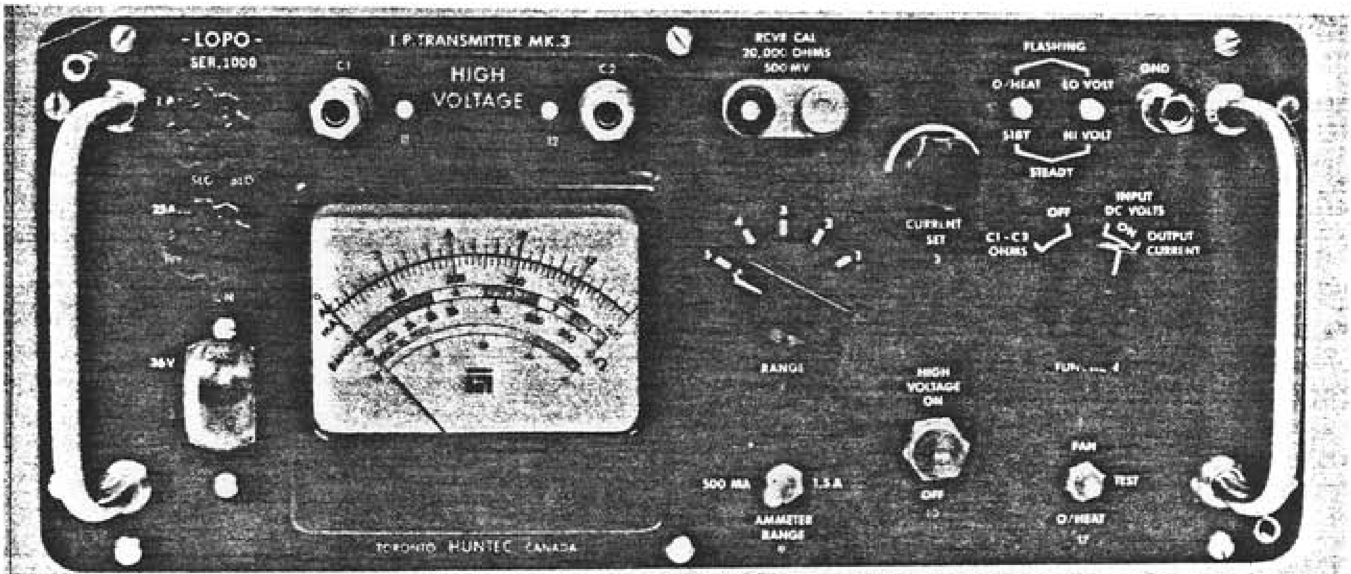
Hole 1 drilled on line 350N at 250W to intersect a target at a depth of 100 m below station 225W.

Hole 2 drilled on line 450N at 325W to intersect a target at a depth of 100 m below station 300W.

Hole 3 drilled on line 850N at 125W to intersect a target at a depth of 50 m below station 100W.

Respectfully submitted,

Glen E. White, B.Sc., P.Eng.
Consulting Geophysicist



M-3 "LOPO" Induced Polarization Transmitter

FEATURES

One man portable: operates from rechargeable battery pack.
Automatic regulation of output current, eliminates errors due to changing polarization potential, battery voltage and load resistance.
Adjustable timing cycle to suit all geologic conditions.
Precision control of timing by crystal clock.
Precision calibrated signal output for receiver testing.
Operates into a short circuit without damage at 1.5 amps maximum.
Maximum of 1800 volts output for high resistivity areas.
Delivers full power in both arctic and tropical regions.

DESCRIPTION

The Huntec M-3 LOPO Transmitter is a time domain, battery operated transmitter weighing 45 pounds with battery pack. It delivers over 160 watts of DC power into loads from 100 ohms to 6000 ohms. It operates at reduced power into all loads from a short circuit to an open circuit.

It may be used with any time domain receiver, and special timing options are available if the standard 16 combinations are insufficient.

Output current is automatically controlled to within 1% of a current set point chosen by the operator, and is affected neither by battery voltage, nor by load variations.

The battery pack is detachable and rechargeable. Typically, when used with the companion M-3 Receiver, a full day's operation may be obtained between charges.

The high sensitivity and noise immunity of the Huntec M-3 Receiver makes the Huntec M-3 system, comprising the LOPO and Receiver together, a highly portable, rapid field system, comparable in performance to other systems of several times the weight and power.

OUTPUT CHARACTERISTICS

LOAD RANGE SELECTION	RESISTANCE, Ohms	CURRENT, Amperes	
	0	0.100	1.50
	50	.100	1.20
	100	.090	1.02
1	100	.090	1.02
	160	.080	0.95
	220	.075	.75
2	220	.075	.75
	370	.055	.60
	520	.050	.50
3	520	.050	.50
	835	.040	.40
	1150	.035	.33
4	1150	.035	.33
	1925	.025	.24
	2700	.020	.22
5	2700	.020	.22
	4450	.015	.16
	6200	.014	.14
5	10,000	.010	.100
	20,000	.008	.055
	40,000	.005	.030
	80,000	.003	.017

SPECIFICATIONS

Maximum Current — 1.5A D.C.

Maximum Voltage — 1,800V D.C.

Load Range — Zero to infinity in five ranges.

Maximum D.C. Load Power — In excess of 160 watts at 75% efficiency into following load resistances.
Range 1 = 100 to 230 ohms
Range 2 = 230 to 520 ohms
Range 3 = 520 to 1200 ohms
Range 4 = 1200 to 2700 ohms
Range 5 = 2700 to 6100 ohms

Load Current — Continuously adjustable, Max. Current/Min. Current = 10/1
When the transmitter is operated at half its available output current, it will hold this current constant to within 1% while the load resistance changes by ± 100%, or when the input voltage changes by ± 20% of its original value.

Turn On Time — Less than 10^{-3} seconds.

Turn Off Time — Less than 10^{-3} seconds.

Cycle Time — 2, 4, 8, or 16 seconds.
Cycle time is defined as 2 x (current on time + current off time).

Duty Ratio — 1:1, 1.28:1, 1.67:1, 2.2:1
Duty ratio is defined as: (current on time)/(current off time).

Timing Accuracy — ± 0.01%
Additional timing programmes including square wave output are available as options.

Voltages — 24 to 36 volts D.C.

Maximum Current — 12 amperes

Batteries — Six GC-680-1 lead-acid Gel/Cel, 8 amp-hour. The input power source can be batteries or any unregulated D.C. source between 30-40 volts supplying 10 to 15 amperes.

Switches and Controls
- Load resistance selector switch.
- Current adjustment continuous control.
- Ammeter range switch 0.5 amp and 1.5 amps full scale.
- Transmitter ON/OFF and meter function switch.
- Battery ON/OFF master switch (magnetically tripped circuit breaker).
- High voltage ON/OFF (Standby/Operate) switch.
- Test switch: for cooling fan and overheat indicator and protective circuits.
- Fuses: one 25A Slo-Blo for main power, one 2A Slo-Blo for control circuits.

Connections
- Output terminals to current stakes.
- Receiver calibration signal output: V_p = 500 millivolts, V_s/V_p = 20%, Source resistance = 20,000 ohms.
- Panel grounding terminal.

Indicators
- Standby/Overheat light: Steady green when set is on Standby (High Voltage off). Flashing green when maximum temperature being approached.
- Low-volt/Hi-volt: Steady amber when input voltage greater than 40 volts. Flashing amber when input voltage drops below 30 volts. Normally off.

Ambient Temperatures — −30°F to +120°F (−35°C to +50°C). Forced air cooling by automatically actuated internal fan.

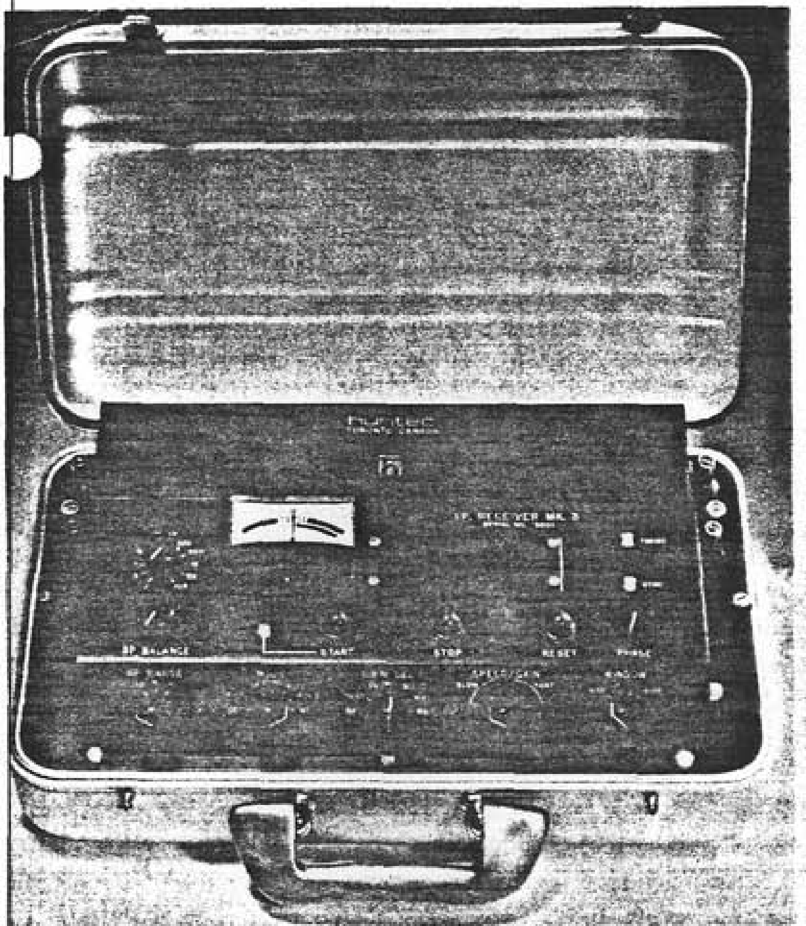
Altitude — −30,000 to +20,000 feet (−9,150 to +6,100 m). Note: If the upper limit is exceeded, high voltage breakdown during operation may occur.

Humidity — The set may be operated in saturated air and in rain without damage or risk of malfunction.

Blowing Snow — Cooling fan will not normally operate during winter. It is recommended that air vents be sealed off with cardboard to prevent blowing snow from entering set.

Instrument Package — 14.5 x 6 x 8.5 inches overall (37 x 15.2 x 22.5 cm)
18.5 pounds (8.4 Kg)

Battery Package — 14.5 x 8.5 x 5.75 inches overall (37 x 22.5 x 14.7 cm)
27 pounds (12.3 Kg)



MK III Induced Polarization Receiver

FEATURES

- Adjustable timing cycle (optional).
- Automatic self potential buck out.
- Automatic signal acquisition for triggering.
- Direct digital read out of V_p and four M factors. (one M factor standard; 3 optional)
- No need to count number of cycles.
- Both V_p and M factors measured and stored in memory registers simultaneously.
- Mistriggering will not affect readings.
- Patented phase lock triggering loop enables operation in high noise areas with V_p levels down to 30 micro volts *with 0.1 micro volt resolution.*
- Rapid and accurate operation possible with low power transmitters.
- *Over 10 megohms input impedance.*

DESCRIPTION

The Huntec MK III pulse type Induced Polarization (I.P.) Receiver achieves the maximum *theoretical limit in time domain measurement* technology.

The timing cycle is adjustable over a wide range of values by means of optional sub-panel controls and plug in program cards. These controls can be fitted after manufacture, if not acquired with original unit.

Once the receiver timing has been been set up to match the transmitter timing, signal acquisition is automatic, being accomplished by a patented phase locked loop. In effect, the triggering circuit is only responsive to the signal at the electrodes for a short interval preceeding and following the expected arrival time of the signal. This is referred to as the **window.** Should the expected signal not be received in this narrow time interval, that particular sample is ignored by the measuring circuit.

True integration of the V_P and V_s signals are accomplished by five sample and hold integrating registers. Each register stores the sum: $\Sigma_1^N \int V dt$. N is the number of cycles. There is *no need to count cycles, since the reference for* the digital voltmeter (DVM) is the content of the V_P memory register. When switched to M, the DVM displays the ratio:

$$\sum_1^N \frac{\int V_s\,dt}{\int V_P\,dt}$$

The registers have a capacity of ten volts, and operation will automatically stop when the contents of any register reach this level. The DVM displays three digits, plus sign. The operator may stop the accumulation at any point should he be satisfied that sufficient accuracy has been obtained (last digit of DVM not changing). He may start integration again by pushing the start button. If extra high resolution is desired, a two position (speed/gain) control switch is provided.

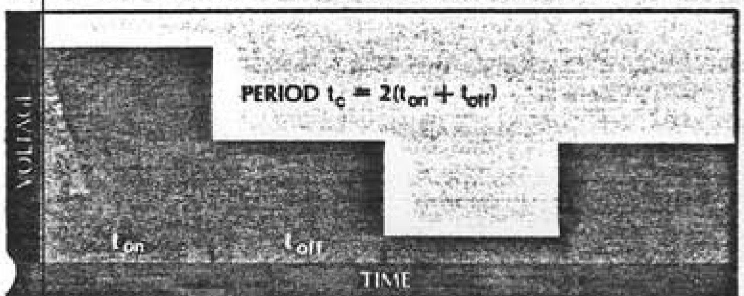
The absolute value of V_P may be easily obtained by multiplying the DVM V_P display by the scale factor of the input attenuator.

The three additional M factor registers are optional at time of purchase, or may be fitted at a later date.

Continuing research in I. P. interpretation theory, reveals that the shape of the I. P. decay curve may be diagnostic of the type of mineralization. The availability of these additional M factor readings over conventional instruments, enables the shape of the curve to be determined. No additional time is required other than writing down the DVM readings, since all measurements are made simultaneously.

Inductive effects may be determined by varying the delay time after turn off (optional).

TIMING



PLUG-IN CARD	PERIOD t_c, seconds *Continuous Range of Adjustment (Sub panel control)*
1	1.8 to 2.7
2	2.6 to 4.0
3	3.8 to 5.6
4	5.2 to 8.0
5	7.5 to 12.5
6	11.0 to 17.0

Standard instrument: any one specified range. Additional cards optional.

ON/OFF RATIO

DECODING BOARD	SUB PANEL SWITCH POSITION 1	2	3	4	5	6	7	8
1	2.94	2.88	2.82	2.76	2.71	2.65	2.60	2.55
2	2.50	2.45	2.41	2.36	2.32	2.28	2.24	2.20
3	2.17	2.14	2.09	2.06	2.02	1.99	1.95	1.91
4	1.88	1.85	1.82	1.79	1.76	1.73	1.70	1.67
5	1.64	1.61	1.58	1.56	1.53	1.51	1.48	1.46
6	1.44	1.41	1.39	1.36	1.34	1.32	1.30	1.28
7	1.26	1.23	1.21	1.19	1.17	1.16	1.14	1.13
8	1.11	1.09	1.08	1.06	1.04	1.03	1.01	1.00

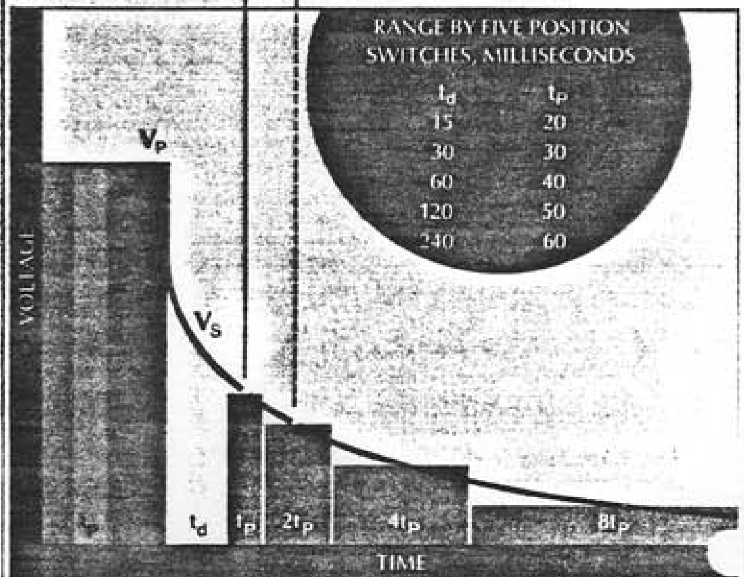
The standard instrument is supplied with any one of the 64 possible t_{on}/t_{off} ratios. Additional decoding boards may be supplied at any time as extras. The sub-panel 8 position switch may be installed at time of purchase, or be fitted in our factory at a later date.

INDUCED POLARIZATION DECAY CURVE

Points in the centre of each time interval provide an approximation to the shape of the I.P. decay curve:

$$M_1 = \sum_{1}^{N} \frac{\int_{t_d}^{(t_d + t_p)} V_S\,dt}{V_p t_p}$$

$$M_2 = \sum_{1}^{N} \frac{\int_{(t_d + t_p)}^{(t_d + 3t_p)} V_S\,dt}{V_p t_p}$$



Two sub panel five position switches determine t_d and t_P as shown in the table.

The standard set is supplied without these switches, but with any one of the above 25 combinations specified by the purchaser.

Either one or both switches may be installed at time of purchase as optional features, or be fitted at a later date in our factory if desired.

SPECIFICATIONS

Sensitivity	$V_p = 10^{-7}$ to 10^{-6} volts for low noise 1% resolution $V_p = 10^{-6}$ to 10 volts for 0.1% resolution Total range 30×10^{-6} to 10 volts in 11 ranges
Self Potential	Maximum ± 1 volt
M factors	0.1% plus sign with speed/gain control at position 1.0 0.01% plus sign with speed/gain control set at 0.1
Batteries	Self contained battery pack rechargeable Ni cads, nominal 12 volts four ampere-hour. Optional separate belt battery pack rechargeable Ni cads. Battery pack weight 4½ lbs.
Power Consumption	0.7 ampere at 12 volts
Dimensions	16" x 9" x 5¾"
Weight	Without battery pack 12.5 lbs. (used with optional belt pack)
Optional Accessories	Dual battery charger 110/220 volts, 50 to 400 Hz input

STATEMENT OF QUALIFICATIONS

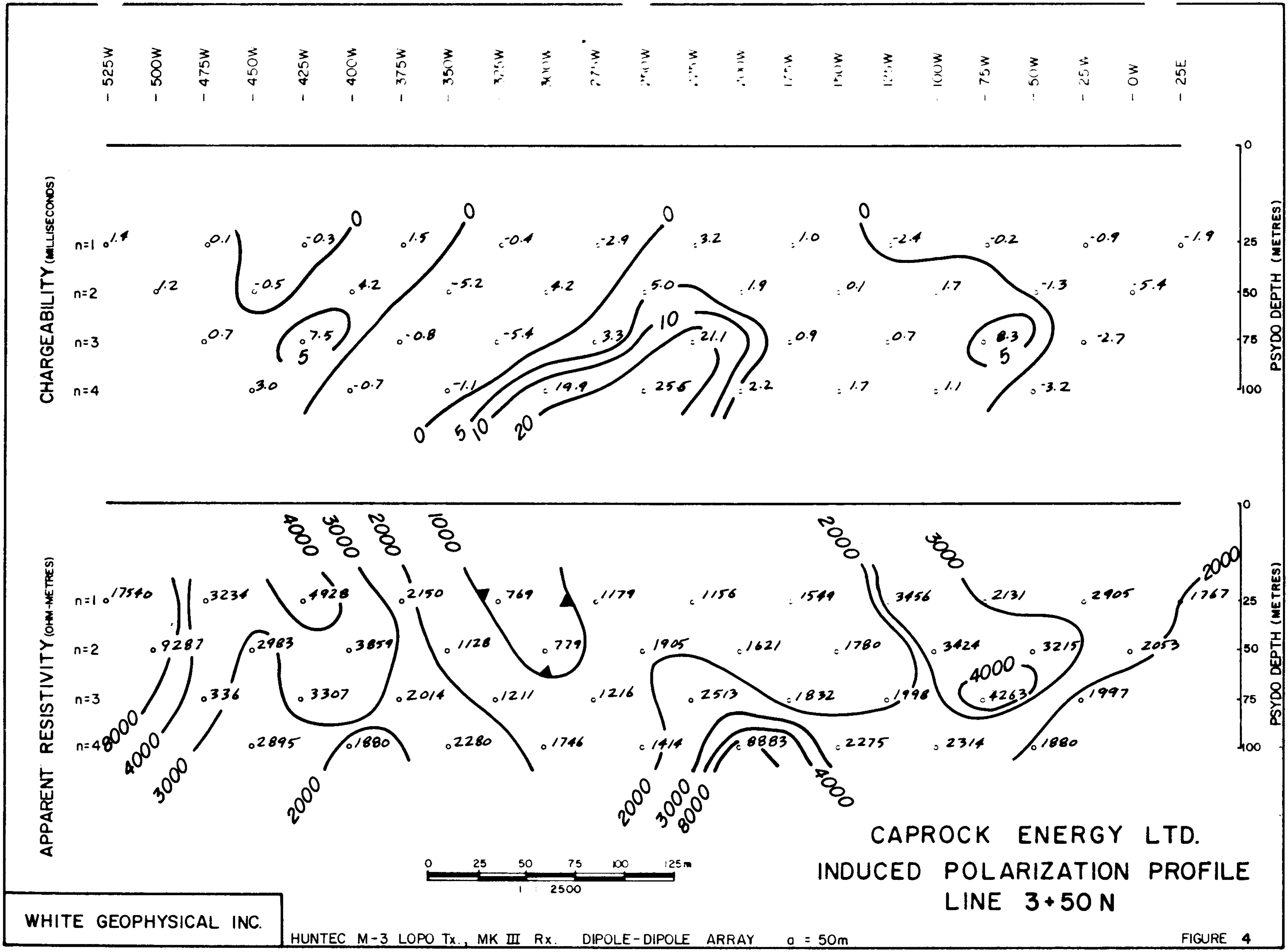
NAME:	White, Glen E., P.Eng.
PROFESSION:	Geophysicist
EDUCATION:	B.Sc. Geophysicist - Geology University of British Columbia
PROFESSIONAL ASSOCIATIONS:	Registered Professional Engineer, Province of British Columbia. Associate Member of Society of Exploration Geophysicists. Past President of B.C. Society of Mining Geophysicists.
EXPERIENCE:	- Pre-Graduate experience in Geology - Geochemistry - Geophysics with Anaconda American Brass. - Two years Mining Geophysicist with Sulmac Exploration Ltd. and Airborne Geophysics with Spartan Air Services Ltd. - One year Mining Geophysicist and Technical Sales Manager in the Pacific north-west for W.P. McGill and Associates. - Two years Mining Geophysicist and supervisor airborne and ground geophysical divisions with Geo-X Surveys Ltd. -Two years Chief Geophysicist Tri-Con Exploration Surveys Ltd. -Fourteen years Consulting Geophysicist. -Active experience in all Geologic provinces of Canada.

COST BREAKDOWN

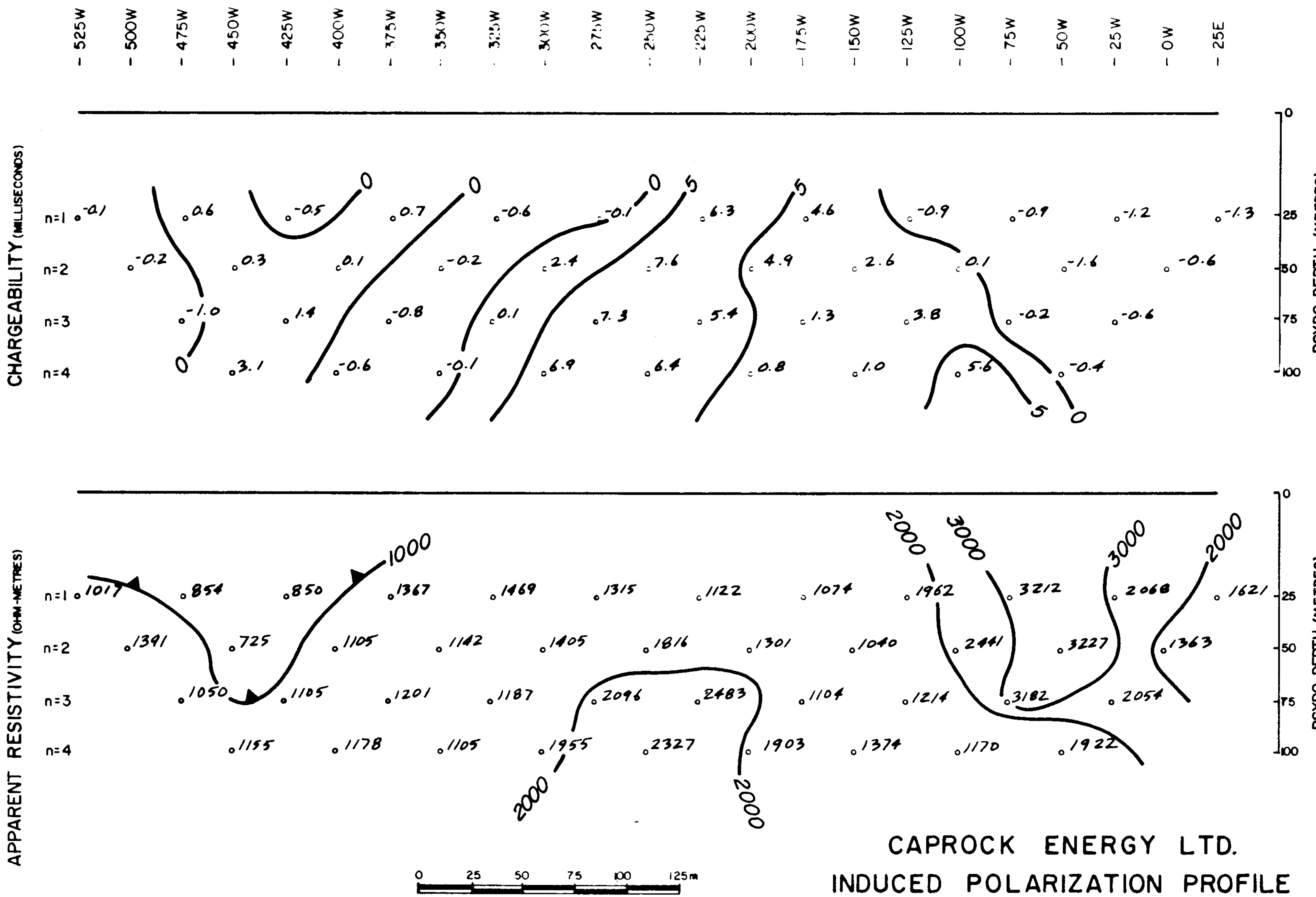
PROVIDED BY WHITE GEOPHYSICAL INC.

Personnel	Date	Wages(per diem)	
M. Seywerd	Aug. 23-30/85	$325	$ 2,600.00
B. Acheson	Aug. 23-30/85	225	1,800.00
B. Goldbeck	Aug. 23-30/85	150	1,200.00

Instrument Lease	1,600.00
Accommodations	1,400.00
Airfares, Airfreight, Mobilization	2,900.00
Interpretation, Reports, Drafting and Printing	900.00
TOTAL	$12,400.00



525W 500W 475W 450W 425W 400W 375W 350W 325W 300W 275W 250W 225W 200W 175W 150W 125W 100W 75W 50W 25W 0W 25E
CHARGEABILITY (MILLISECONDS)
APPARENT RESISTIVITY (OHM-METRES)
n=1
n=2
n=3
n=4
PSYDO DEPTH (METRES)
0
25
50
75
100
0 25 50 75 100 125m
1 : 2500
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 3+50 N
WHITE GEOPHYSICAL INC.
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m
FIGURE 4

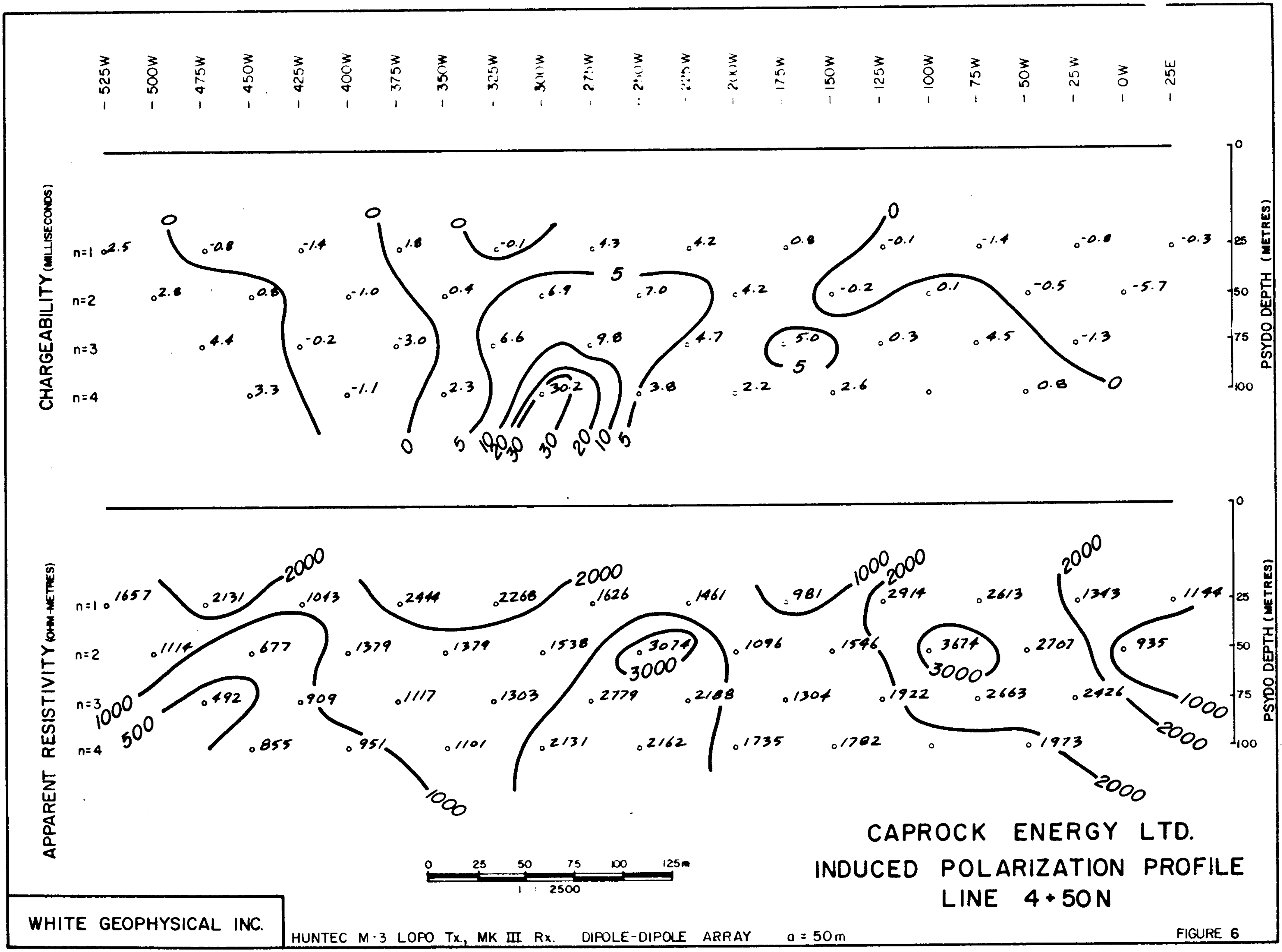


CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 4+00N

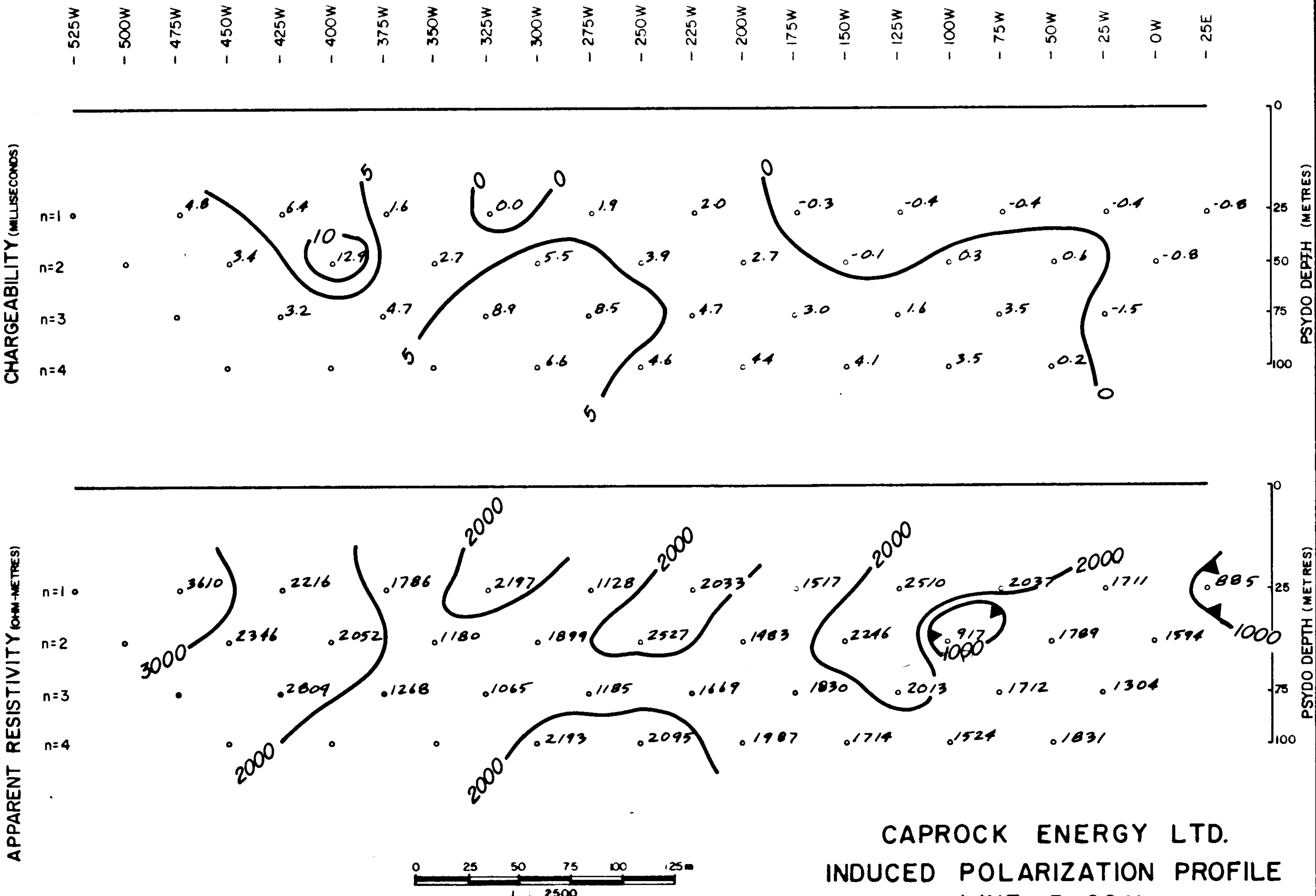
WHITE GEOPHYSICAL INC.

HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m

FIGURE 5



525W 500W 475W 450W 425W 400W 375W 350W 325W 300W 275W 250W 225W 200W 175W 150W 125W 100W 75W 50W 25W 0W 25E
CHARGEABILITY (MILLISECONDS)
n=1 2.5 -0.8 -1.4 1.8 -0.1 4.3 4.2 0.8 -0.1 -1.4 -0.8 -0.3
n=2 2.8 0.8 -1.0 0.4 6.9 7.0 4.2 -0.2 0.1 -0.5 -5.7
n=3 4.4 -0.2 -3.0 6.6 9.8 4.7 5.0 0.3 4.5 -1.3
n=4 3.3 -1.1 2.3 30.2 3.8 2.2 2.6 0.8
PSYDO DEPTH (METRES)
0 25 50 75 100
APPARENT RESISTIVITY (OHM-METRES)
n=1 1657 2131 1043 2444 2268 1626 1461 981 2914 2613 1343 1144
n=2 1114 677 1379 1379 1538 3074 1096 1546 3674 2707 935
n=3 492 909 1117 1303 2779 2188 1304 1922 2663 2426
n=4 855 951 1101 2131 2162 1735 1782 1973
0 25 50 75 100 125m
1 : 2500
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 4+50N
WHITE GEOPHYSICAL INC.
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m
FIGURE 6

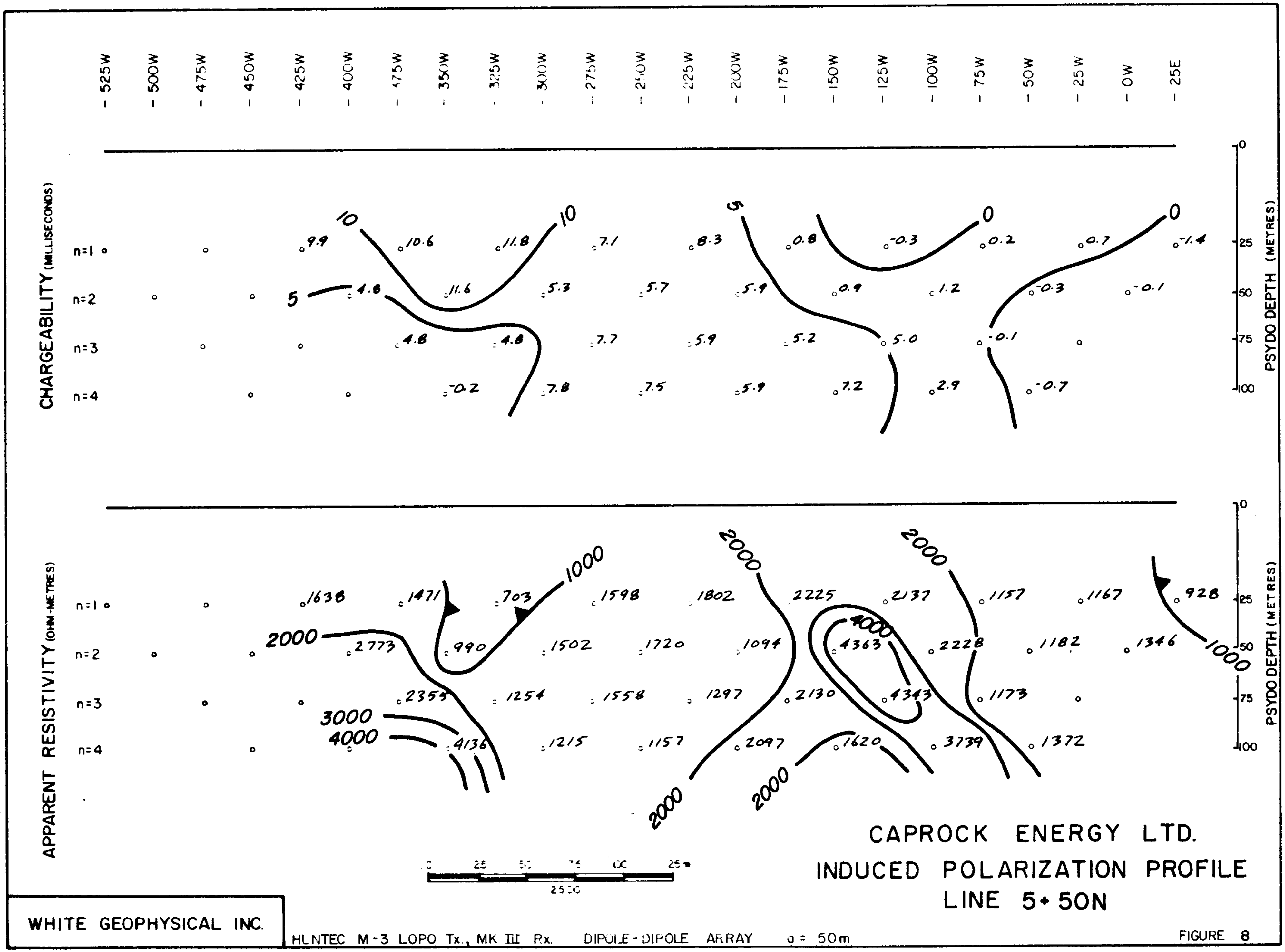


WHITE GEOPHYSICAL INC.

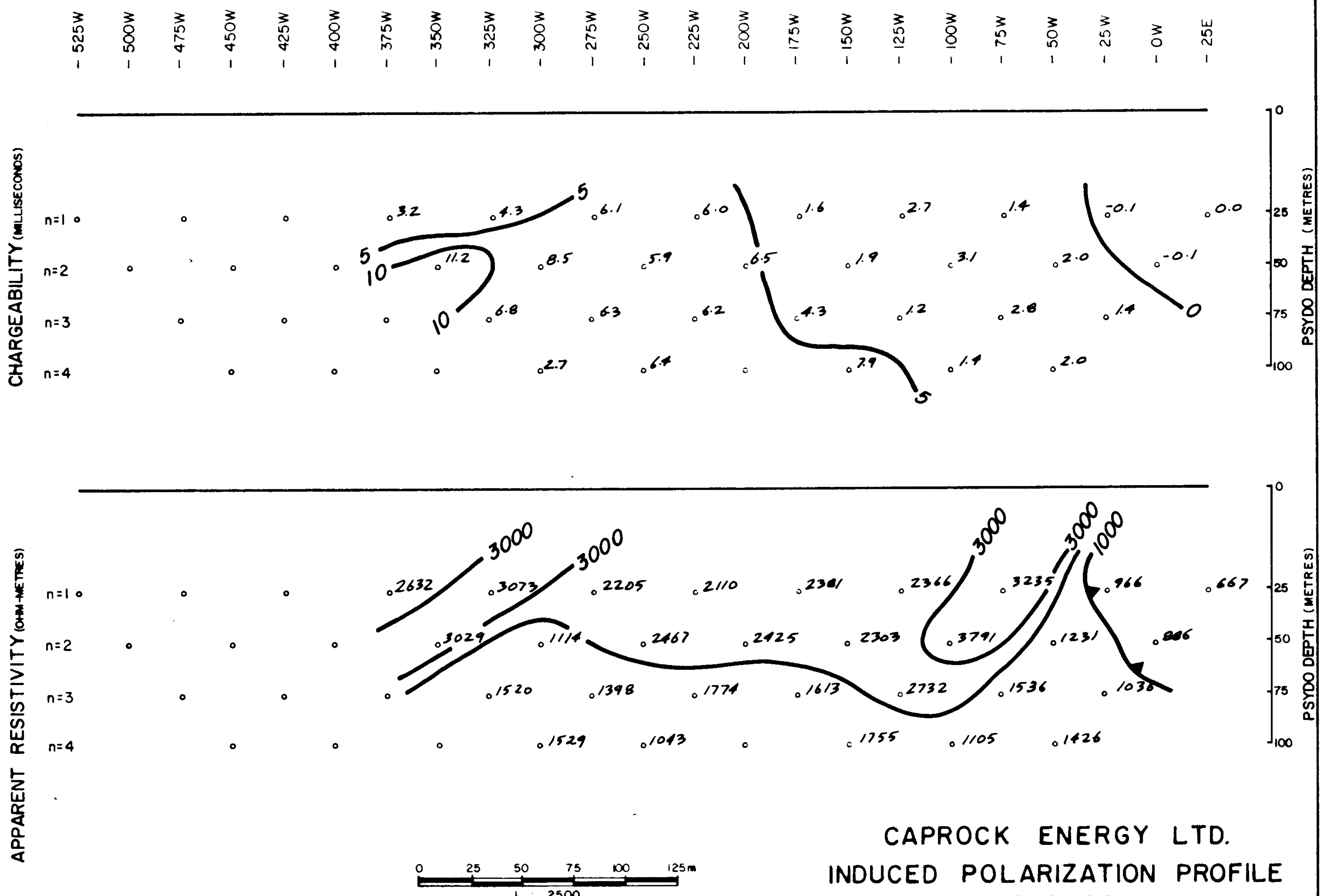
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE - DIPOLE ARRAY a = 50m

CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 5+00N

FIGURE 7



525W 500W 475W 450W 425W 400W 375W 350W 325W 300W 275W 250W 225W 200W 175W 150W 125W 100W 75W 50W 25W 0W 25E
CHARGEABILITY (MILLISECONDS)
n=1
n=2
n=3
n=4
9.9 10.6 11.8 7.1 8.3 0.8 -0.3 0.2 0.7 -1.4
4.8 11.6 5.3 5.7 5.9 0.9 1.2 -0.3 -0.1
4.8 4.8 7.7 5.9 5.2 5.0 -0.1
-0.2 7.8 7.5 5.9 7.2 2.9 -0.7
10
10
5
5
0
0
PSYDO DEPTH (METRES)
0
25
50
75
100
APPARENT RESISTIVITY (OHM-METRES)
1638 1471 703 1598 1802 2225 2137 1157 1167 928
2773 990 1502 1720 1094 4363 2228 1182 1346
2355 1254 1558 1297 2130 4343 1173
4136 1215 1157 2097 1620 3739 1372
1000
2000
3000
4000
4000
2000
2000
2000
2000
1000
0 25 50 75 100 125m
2500
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 5+50N
WHITE GEOPHYSICAL INC.
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m
FIGURE 8



CAPROCK ENERGY LTD.

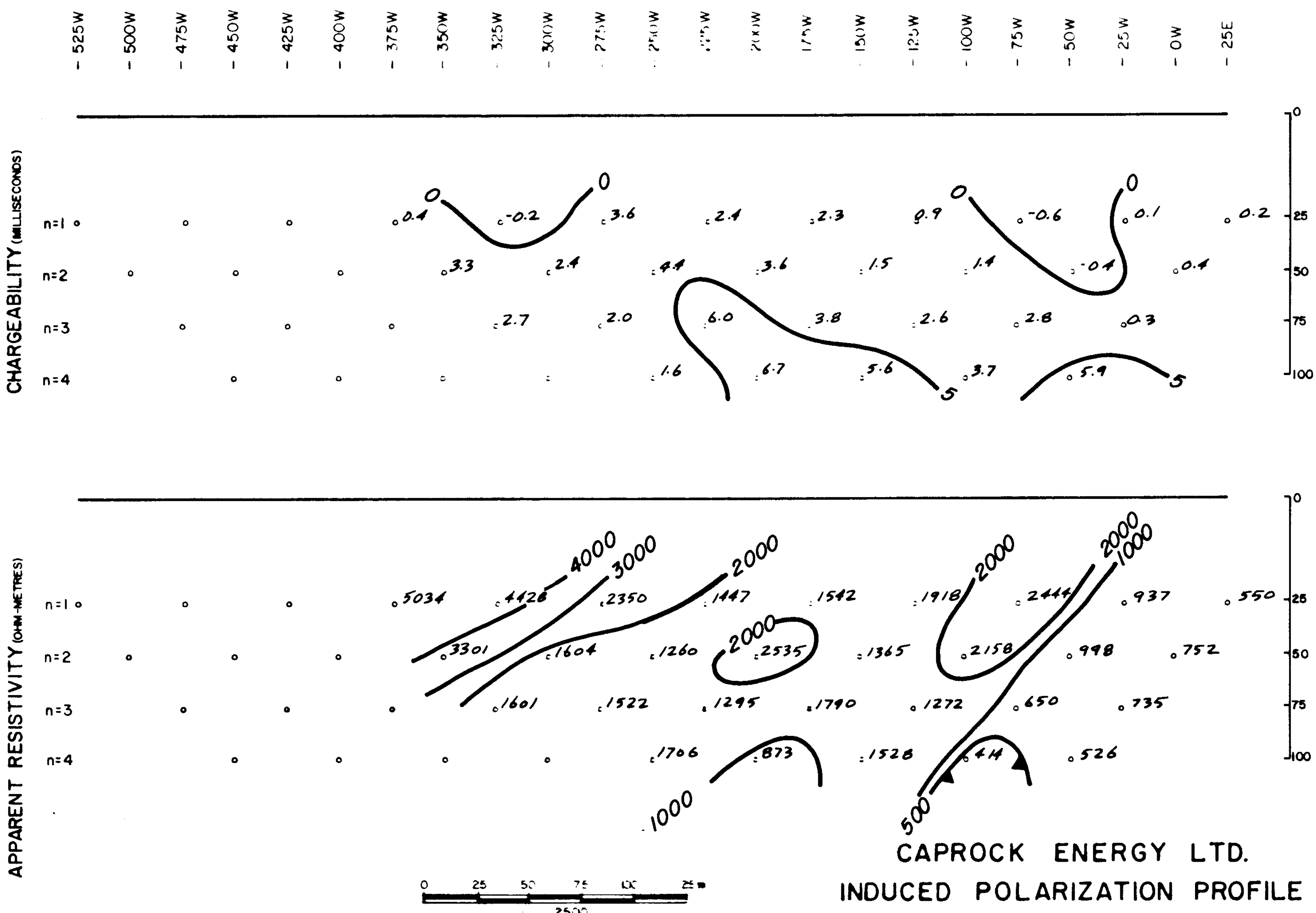
INDUCED POLARIZATION PROFILE

LINE 6+00N

WHITE GEOPHYSICAL INC.

HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE - DIPOLE ARRAY a = 50m

FIGURE 9

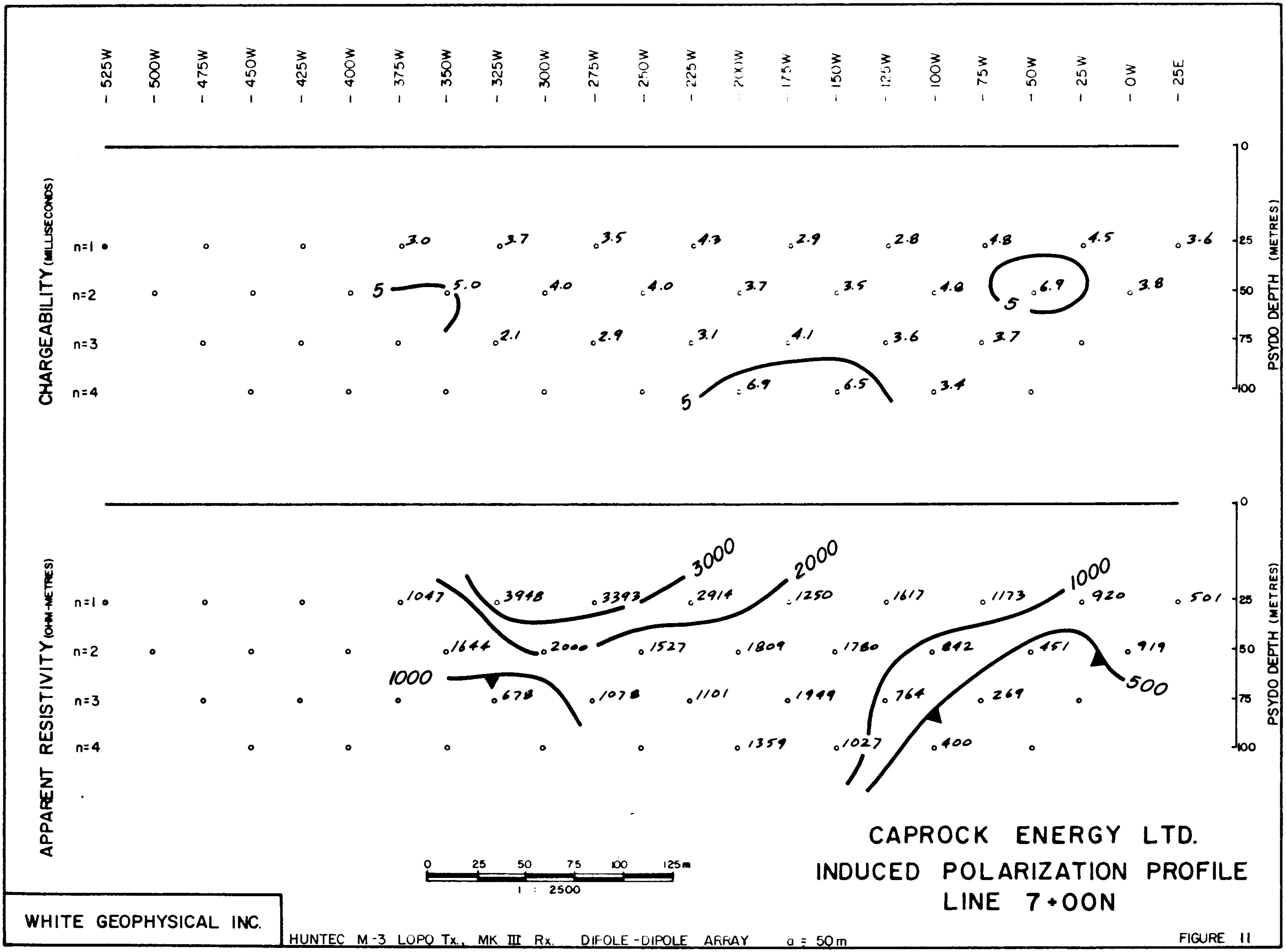


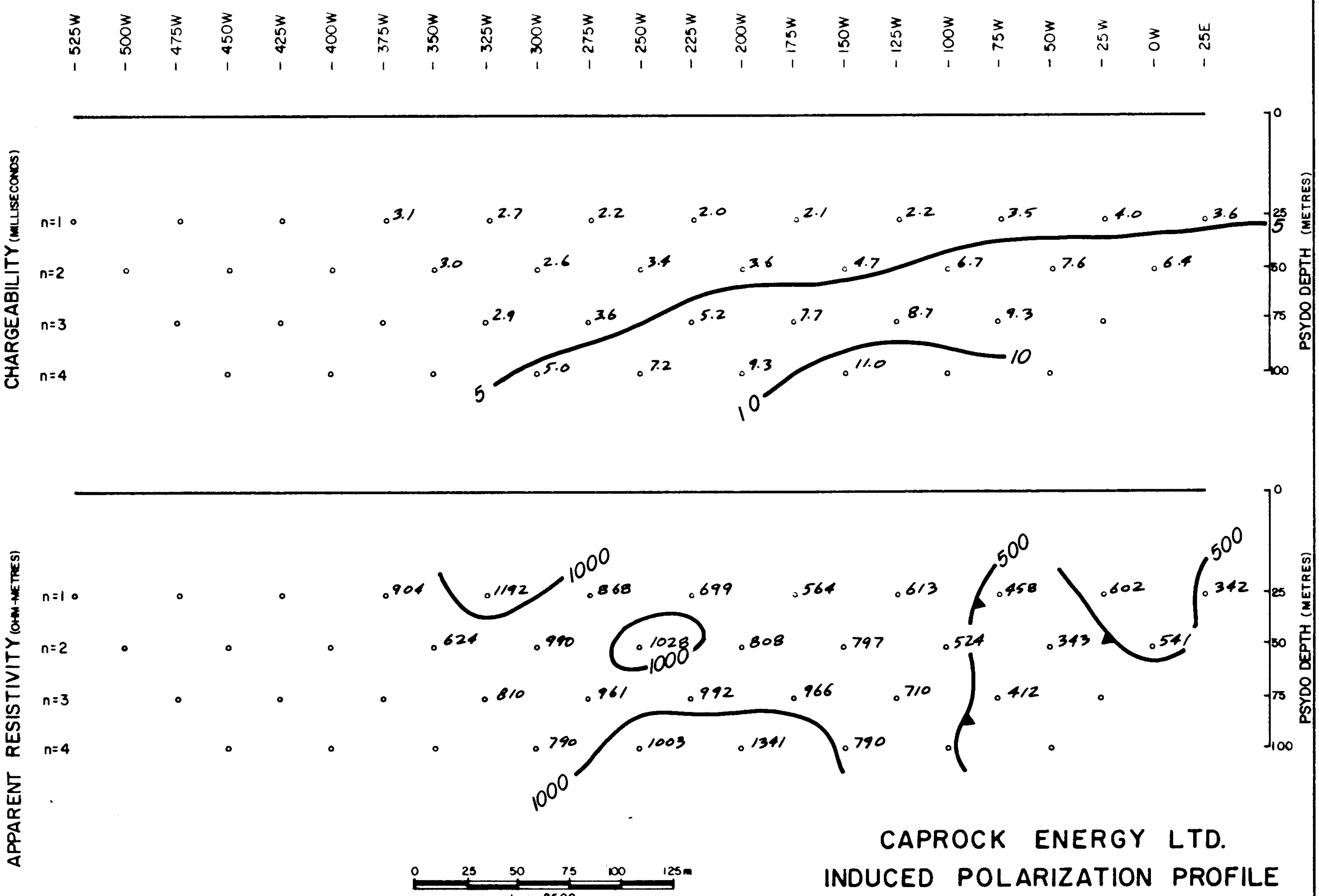
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 6+50 N

WHITE GEOPHYSICAL INC.

HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m

FIGURE 10


525W 500W 475W 450W 425W 400W 375W 350W 325W 300W 275W 250W 225W 200W 175W 150W 125W 100W 75W 50W 25W 0W 25E
CHARGEABILITY (MILLISECONDS)
n=1
n=2
n=3
n=4
3.0 3.7 3.5 4.3 2.9 2.8 4.8 4.5 3.6
5.0 4.0 4.0 3.7 3.5 4.0 6.9 3.8
2.1 2.9 3.1 4.1 3.6 3.7
6.9 6.5 3.4
5
PSYDO DEPTH (METRES)
0
25
50
75
100
APPARENT RESISTIVITY (OHM-METRES)
1047 3948 3393 2914 1250 1617 1173 920 501
1644 2000 1527 1809 1780 842 451 919
678 1078 1101 1949 764 269
1359 1027 400
3000
2000
1000
500
0 25 50 75 100 125m
1 : 2500
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 7+00N
WHITE GEOPHYSICAL INC.
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m
FIGURE 11

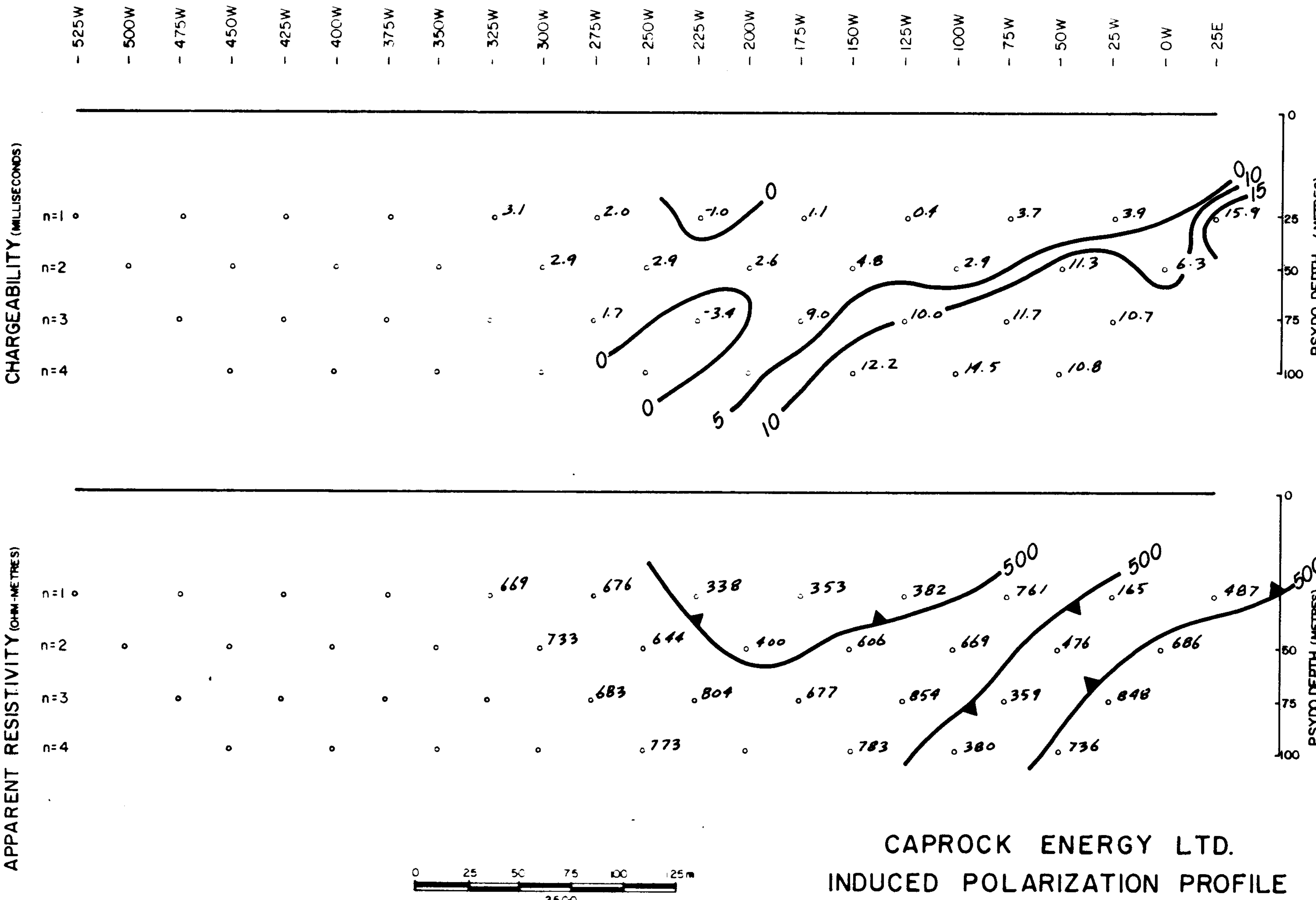


CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 7+50N

WHITE GEOPHYSICAL INC.

HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m

FIGURE 12



CAPROCK ENERGY LTD.

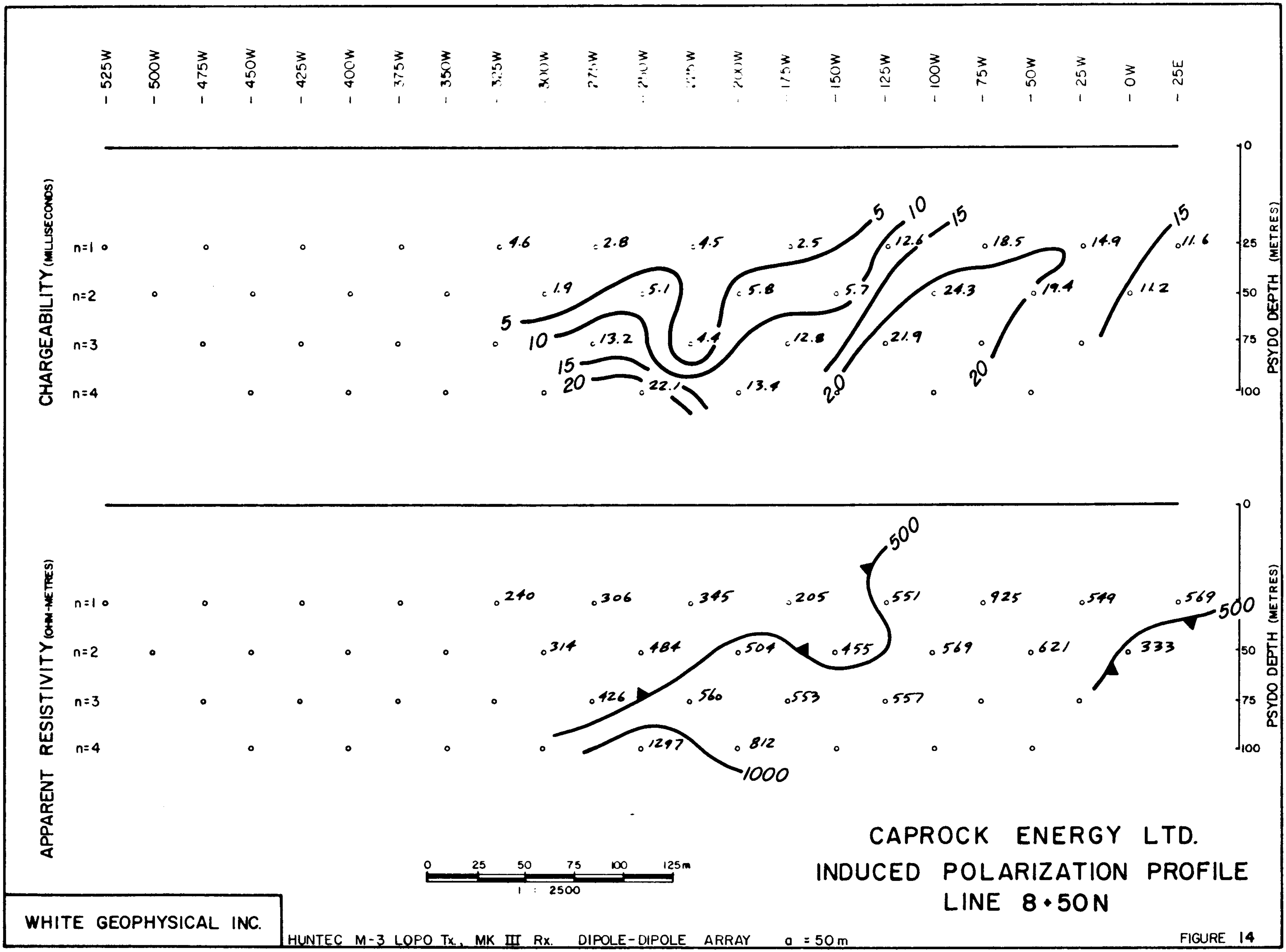
INDUCED POLARIZATION PROFILE

LINE 8+00N

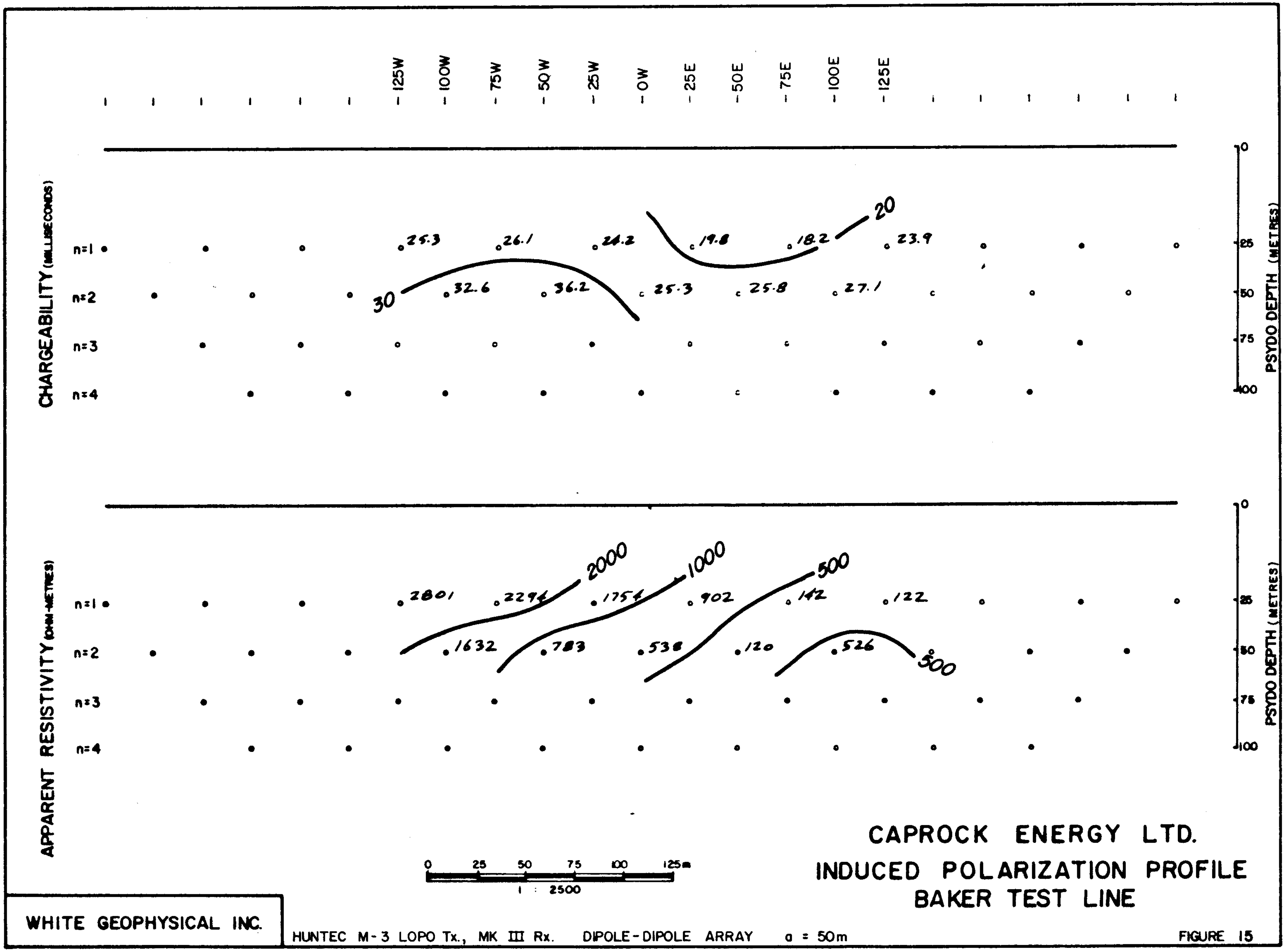
WHITE GEOPHYSICAL INC.

HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50m

FIGURE 13



CHARGEABILITY (MILLISECONDS)
APPARENT RESISTIVITY (OHM-METRES)
PSYDO DEPTH (METRES)
n=1
n=2
n=3
n=4
525W 500W 475W 450W 425W 400W 375W 350W 325W 300W 275W 250W 225W 200W 175W 150W 125W 100W 75W 50W 25W 0W 25E
0 25 50 75 100 125m
1 : 2500
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
LINE 8+50N
WHITE GEOPHYSICAL INC.
HUNTEC M-3 LOPO Tx., MK III Rx. DIPOLE-DIPOLE ARRAY a = 50 m
FIGURE 14



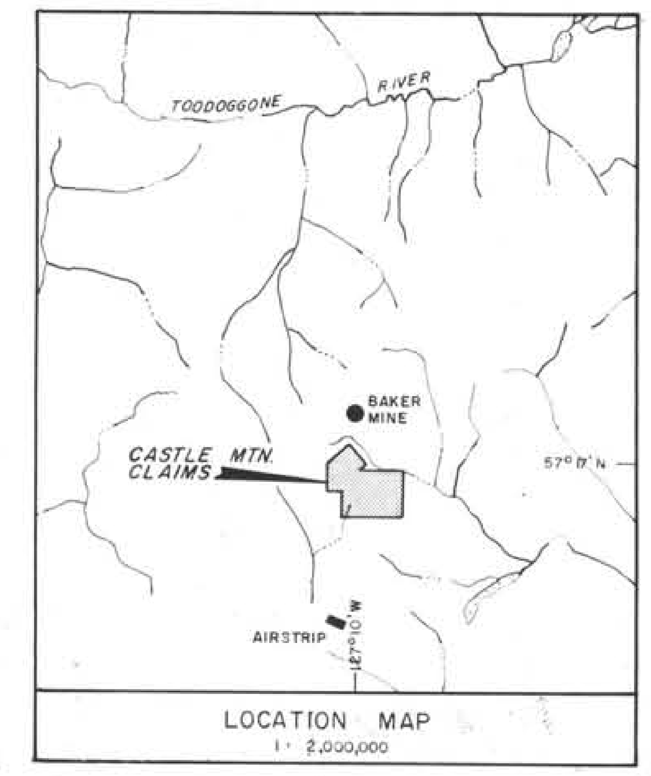
CAPROCK ENERGY LTD.
INDUCED POLARIZATION PROFILE
BAKER TEST LINE

FIGURE 15

LEGEND:

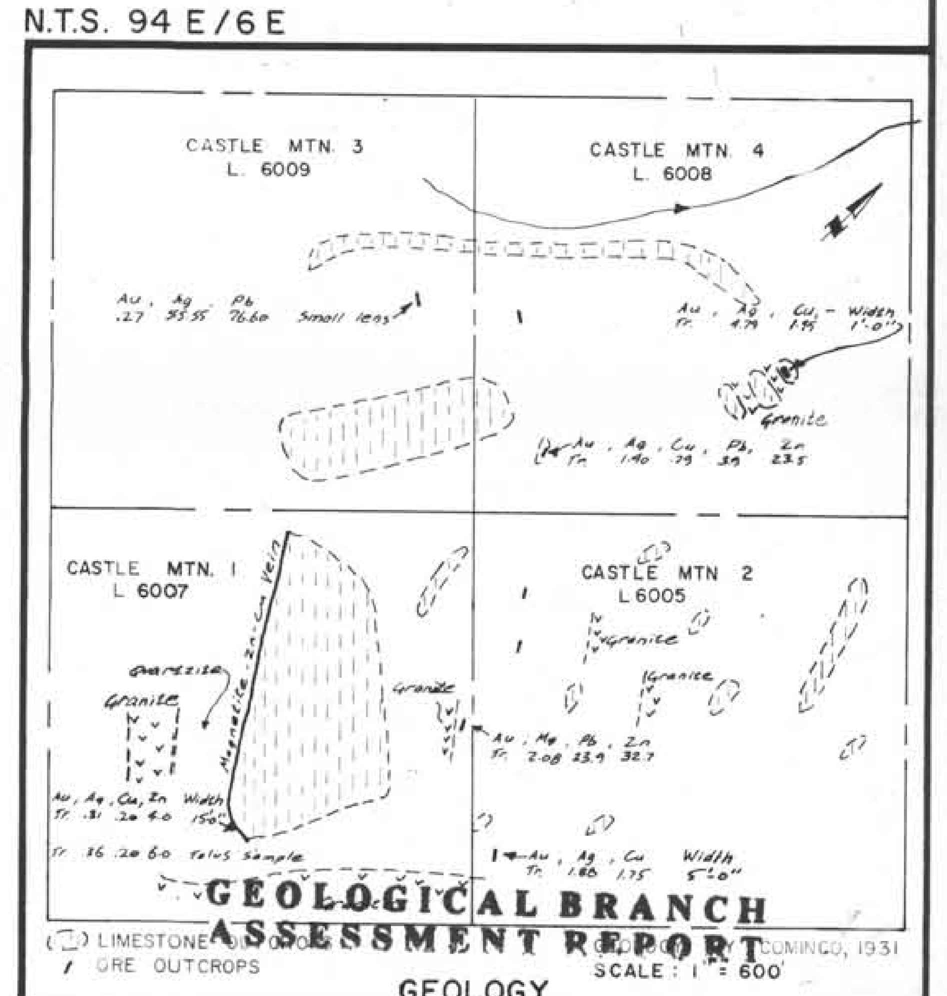
- ELEVATION CONTOURS, 10m INTERVAL
- STREAM
- ROAD

INSTRUMENT: HUNTEC MK III I.P. RECEIVER
HUNTEC M-3 LOPO I.P. TRANSMITTER
DIPOLE - DIPOLE ARRAY



LOCATION MAP
1 : 2,000,000

N.T.S. 94 E/6 E



GEOLOGY
SCALE: 1" = 600'

25m 0 50m 100m 150m 200m
1 : 2500

CAPROCK ENERGY LTD.
CASTLE MOUNTAIN CLAIMS
OMENICA MINING DIVISION - BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY
CHARGEABILITY — a = 50, n = 3

WHITE GEOPHYSICAL INC.

Interpreted By: G.E.W.
Drawn By: N.L.P.
Checked By: G.E.W.
Date: SEPT./85
Fig. No.: 2

To Accompany Geophysical Report on Castle Mtn. Claims
Date: Sept./85
By GLEN E. WHITE - B.Sc. .... GEOPHYSICIST

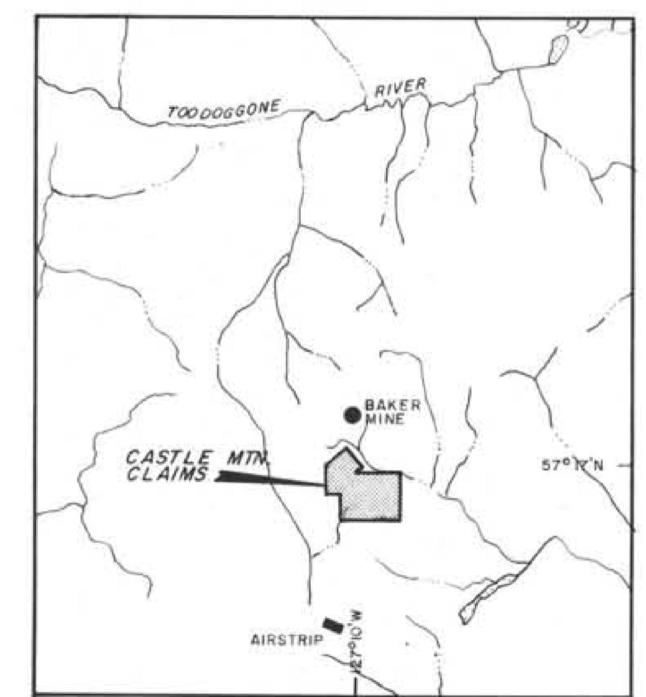
LEGEND:

ELEVATION CONTOURS, 10m INTERVAL

STREAM

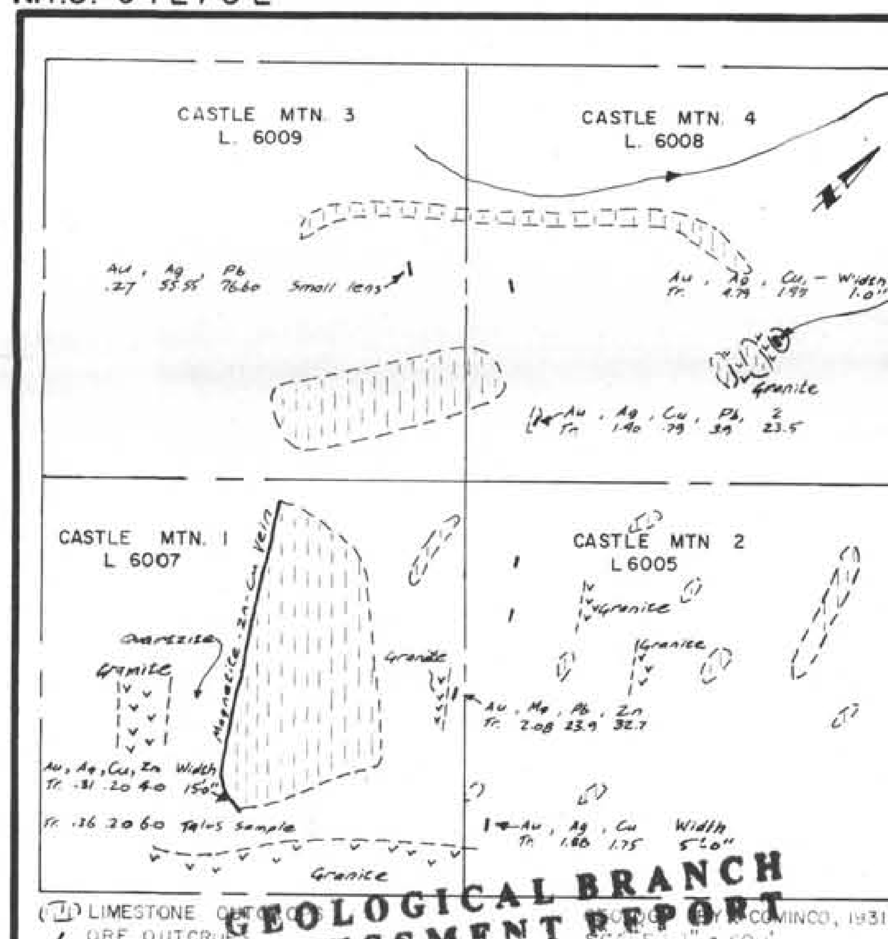
ROAD

INSTRUMENT: HUNTEC MK III I.P. RECEIVER
HUNTEC M-3 LOPO I.P. TRANSMITTER
DIPOLE-DIPOLE ARRAY



LOCATION MAP
1 : 2,000,000

N.T.S. 94E/6E



GEOLOGY

1 : 2,000

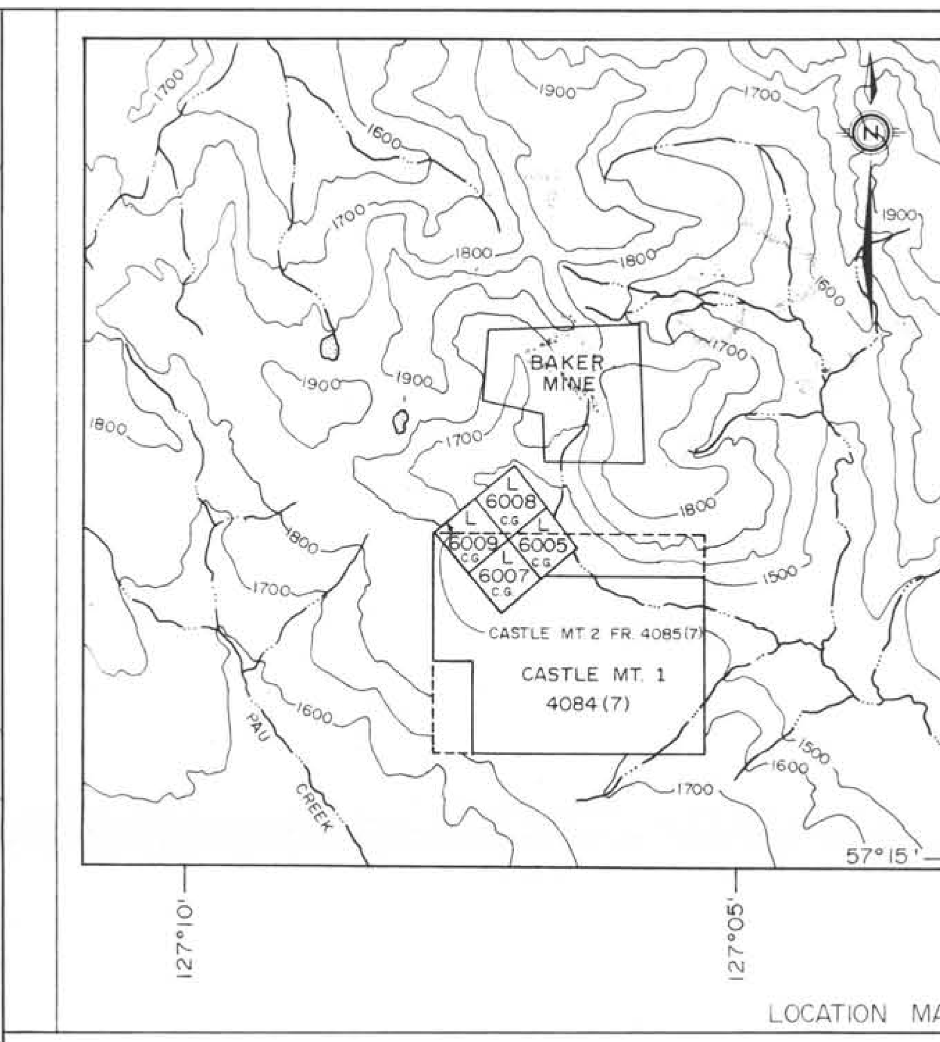
CAPROCK ENERGY LTD.
CASTLE MOUNTAIN CLAIMS
OMENICA MINING DIVISION - BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY
APPARENT RESISTIVITY — a = 50, n = 3

WHITE GEOPHYSICAL INC.

Interpreted By: G.E.W.
Drawn By: N.L.P.
Checked By: G.E.W.
Date: SEPT./88
Fig. No.: 3

To Accompany Geophysical Report on
Castle Mtn. Claims
Date: Sept./85
By GLEN E. WHITE - B.Sc. .... GEOPHYSICIST



LOCATION MAP

LEGEND

4	Augite porphry
3	Granite
2	Takla volcanics
1	Limestone
1a	Siliceous silts, cherts

SYMBOLS

- Rock outcrop
- Trench
- Slope (gentle, moderate, steep)
- Flat level
- Talus
- Fault

0 50 200 metres
Scale 1:2500

FIGURE

GEOLOGY

CAPROCK ENERGY LTD.

CASTLE MOUNTAIN PROPERTY

OMENICA MINING DIVISION, B.C. NTS 94 E6

OREQUEST