REPORT

on an

INDUCED POLARIZATION SURVEY

conducted on the

STURGEON LAKE PROPERTY

of

SANTANA PETROLEUM LIMITED

Toronto, Ontario

November, 1985

Garth B. Burton

Geophysical Consultant.

TABLE OF CONTENTS

SUMMARY

Twelve lines of Induced Polarization (I. P.) have been surveyed on the Sturgeon Lake Property of Santana Petroleum Ltd. The work was carried out with a Huntec M-4 Time Domain I. P. System using a dipole-dipole configuration with an electrode spacing of 200 feet. Five "N" separations were read, effectively exploring to a depth of between 400 and 500 feet. The precut picket lines were 400 feet apart which enabled coverage over a strike length of better than 4400 feet from line 44W to line 00. The I. P. survey was carried out to define, and determine the extent of, a sulphide showing located on the property several years ago which had an exposed strike length of about 200 feet.

The I. P. has been successful in delineating an anomaly associated with the known mineralization and having variable chargeability and resistivity responses over a strike length of 4000 feet. The I. P. conductor, which appears to represent sulphide mineralization, since it coincides with the showing, extends from line 36W to line 00 and is open to the east. Other, weaker I. P. responses have been detected that indicate fault or shear zones possibly containing minor sulphides.

It is recommended that the I. P. anomaly associated with the sulphide mineralization be tested by a program of diamond drilling. It is also advised that I. P. surveying be carried out to explore the eastern extension of the main I. P. and other parts of the property.

INTRODUCTION

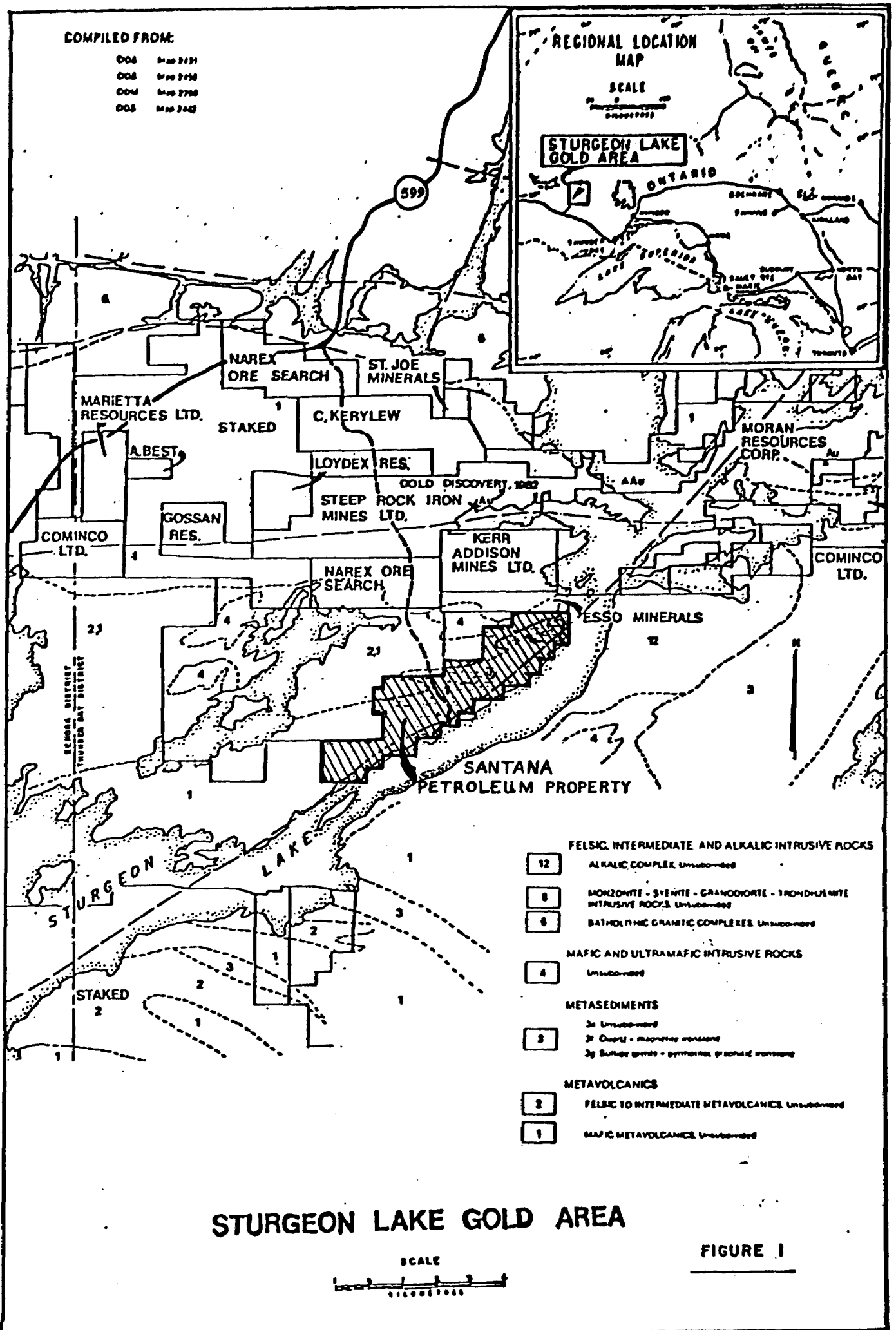
During September of 1985, an Induced Polarization (I. P.) survey was conducted on the Sturgeon Lake Property of Santana Petroleum Ltd. The 116 claim block is located in the Sturgeon Lake Area of Northwestern Ontario approximately 125 miles (200 Km) northwest of Thunder Bay, Ontario. (Figure 1). The claims are situated in the Patricia Mining District and can be found on the Ontario Ministry of Natural Resources claim map of the Six Mile Lake Area (M. 2877), (Figure 2).

The property lies along the western shore of Sturgeon Narrows about 10 miles (16 Km) north of Mattabi Mine in the Sturgeon Lake Area. Savant Lake on the C N R line is approximately 20 miles to the north

The gold occurrence of Steep Rock Iron Mines Ltd., discovered in 1982, is situated about 3 miles (5 Km) north of the central portion of the claim group. Also, claims belonging to Kerr Addison Mines Ltd. where expressions of gold have been indicated, lie just north of the Santana ground.

The property is underlain by a sequence of mafic metavolcanic rocks (to the south) in contact with felsic to intermediate metavolcanic members (to the north). The volcanic units strike generally in a direction about 20° north of east. Gabbroic bodies of various sizes, usually small, intrude the volcanic rocks in a number of places througout the claim group. A small pyrite showing occurs in west central portion of the property approximately $1\frac{1}{2}$ miles east of the centre of Six Mile Lake. The mineralization, which showed some minor indications of gold is exposed for approximately 200 feet along the base line between lines 20 + 00W and 24 + 00W on a grid that was established in 1982. In the area of the showing, there is a zone of hematization running parallel to the base line for a length of some 5000 feet. Silicification and epidotization are widely scattered in this area of the property. There is the occassional indication of tourmaline, and sericite associated with shearing was also been noted. Two short diamond drill holes were put down on the showing in 1973.

In 1984, an airborne VLF EM and magnetic survey was flown over the property.



STURGEON LAKE GOLD AREA

FIGURE 1

SCALE

after B.M. HOGG & ASSOCIATES LTD

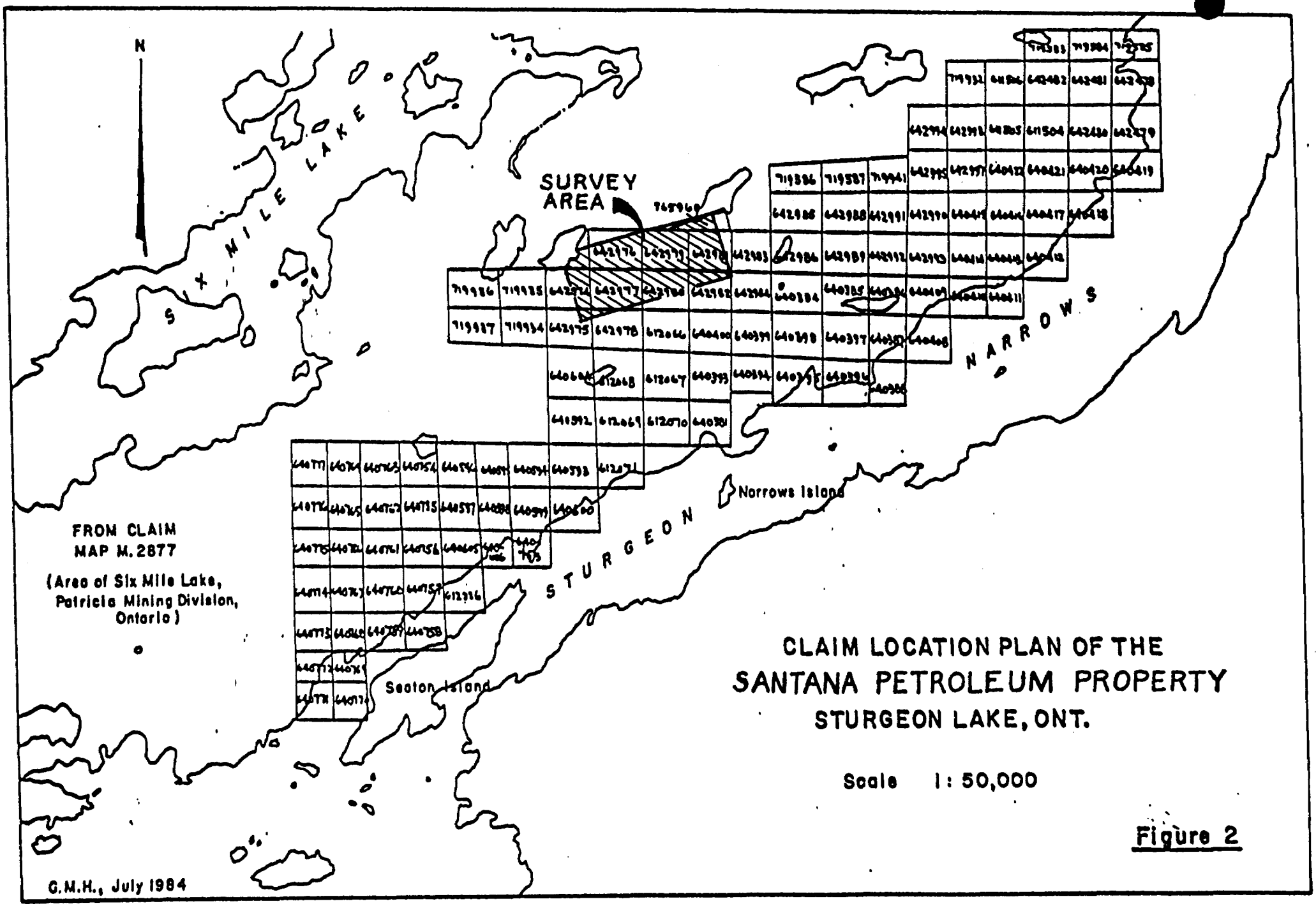

N
SIX MILE LAKE
SURVEY AREA
NARROWS
STURGEON
Narrows Island
Seaton Island
FROM CLAIM MAP M.2877
(Area of Six Mile Lake, Patricia Mining Division, Ontario)
CLAIM LOCATION PLAN OF THE
SANTANA PETROLEUM PROPERTY
STURGEON LAKE, ONT.
Scale 1:50,000
G.M.H., July 1984

Figure 2

The magnetics have outlined mainly the gabbroic bodies with some indication of the mafic volcanic unit. The VLF EM results showed a moderately conducting anomaly striking across the central portion of the property parallel to the geology and not far from the pyrite showing. This conductor has been drilled previously by Mattagami Mines and found to be caused by Graphite. There was also a weak VLF EM response over the pyrite numeralization which continue for several lines on either side. Ground VLF EM investigations had not been successful in responding to the pyrite mineralization.

With the encouragement given by the airborne VLF EM results, an I. P. survey was launched to investigate the showing to establish its extent and to define it's character. The ultimate objective was to outline drill targets that would prove favourable for gold mineralization.

The property is easily accessible from Highway 599 which runs from Ignace located on Trans Canada Highway #17, through Savant Lake and on to Pickle Lake. At distance post 100 Km. ½ a kilometre south of the Sturgeon River, there is a well gravelled lumber road which goes into Six Mile Lake and eventually to Sturgeon Narrows on Sturgeon Lake. The survey area can be reached by motor vehicle by travelling approximately 10 miles south of Highway 599 along the Six Mile Lake road.

WORK DONE

Twelve lines of I. P. surveying were conducted in the vicinity of the pyrite showing (located at 20 +00 W on the Baseline). The 1982 picket lines were re-established and used for the survey. Lines 400 ft apart, from 00 to 44W were covered for an average length of 2200 feet, the baseline being central to the cross lines. Three of the most westerly lines were stopped short because of a lake. A total of 4 3/4 miles (8Km) were surveyed. The cross lines were oriented approximately N25^{o}W perpendicular to the general geological strike.

Portions of 8 claims in the west central part of the property were covered with the I. P. survey. The following claims were those involved:

P-642974	partly
P-642976	partly
P-642977	all
P-642978	partly
P-642979	all
P-642980	partly
P-642981	partly
P-642982	partly

The I. P. surveying was carried out between September 28th and October 7th, 1985 by Harry Claridge of Claridge Larose Geophysics Ltd., R. R. 2, Bracebridge, Ontario. The work was supervised by Garth B. Burton, Geophysical Consultant from Toronto, the writer of this report. Mr. Burton did not visit the property.

INSTRUMENTATION AND SURVEY PROCEDURE

The equipment used for the I. P. survey was a Huntec M-4 I. P. receiver and a Phoenix IPT-I transmitter. Huntec Ltd. and Phoenix Geophysics Ltd. are instrument manufacturers based in Toronto. Both the M-4 receiver and the IPT-I transmitter are capable of operating in the frequency spectrum as well as the time domain. The I. P. measurements for this survey were taken in the time domain.

The M-4 receiver is programmable and the timing sequence, delay and integral times can be adjusted according to any desired setting. Likewise, to a limited degree, the time sequence of the transmission pulse can be regulated on the IPT-I transmitter. The transmission pulse selected for this survey was two seconds. The transmitter would emit a square wave form into the ground for 2 seconds then remain off for 2 seconds, a complete cycle taking 8 seconds. The M-4 receiver is activate through ground contacts supplied by the potential electrodes and is sychronized to the transmitter's pulse cycle through a triggering device that is activated by thermal controlled quartz crystals. The sychronization between the transmitter and receiver therefore is very precise.

For measuring the decay curve of the residual potential left in the ground after excitation by the on portion of the transmitting cycle, a delay time of 240 milliseconds and a integrating interval time of 120 milliseconds were used. Six slices of the decay curve were integrated over the full cycle to provide a measure of the deteriation of the chargeability. The sum of these integrated sections were used as the final indication of the chargeability measurement. The resistivity values are determined by calculations using Ohm's Law from potential measurements taken while the transmitter is on and the current reading for the same time.

A dipole-dipole configuration was employed to carry out this survey. The electrode spacing was 200 feet and 5 "n" separations were read.

The resistivity and chargeability values have been plotted in pseudosection and are presented in drawings numbered 1 to 12 which are attached to the end of this report.

DISCUSSION OF RESULTS

A discrete I. P. anomaly has been defined by the survey occurring coincident with the pyrite mineralization found in the showing between 20W and 24W on the baseline. The I. P. conductor extends for about 4000 feet from line 36W where it terminates to line 00 where it apparently continues eastward. The anomaly follows the baseline quite regularly and appears to coincide closely with the hematite indications mapped by the geology. Also, it seems to parallel the main geological strike.

This I. P. anomaly shows variable responses along its strike length which can be attributed to the strength of the associated source as well as the fluctuation in the depth to the causative body. The I. P. is best described on lines 28W, 24W, 20W, where it correlates with the exposed sulphide mineralization, 16W, 4W, and 00. Moderate to strong chargeability responses associated with low resistivity values are found on these lines. Except for line 00, where the depth to source has been calculated at 100 feet, all the responses on the above mentioned lines indicate depths close to surface (within 50 feet). The I. P. anomalies get weaker on lines 8W, 12W and 36W where depths of 200 feet, 200 to 300 feet, and 300 to 350 feet respectively are suggested. The conductor is poorly defined on line 32W but appears to continue to line 36W but no further west.

Several other weaker anomalies have been indicated by the I. P. survey. Responses suggestive of shearing or faulting have been identified in a number of locations in the survey area. These tend to strike in an east-west direction across the normal trend of the geological stratigraphy. The following anomalies suggest some minor sulphide mineralization may be present in the

shear zones:

1500S on line 44W
500S on Line 40W
650S on Line 36W
950S on Line 28W
and, 1100S on Line 8W

There is also a fault indication occurring at about 800 north on line 00 which appears in association with sericitic alteration mapped close by.

CONCLUSIONS AND RECOMMENDATIONS

The I. P. work has been successful in defining an anomalous zone associated with the exposed pyrite mineralization on the baseline between lines 20W and 24W. The survey has delineated this zone for a strike length of approximately 4000 feet running parallel to the geologic trend. The east end of this zone remains open. The survey has also defined weaker anomalous areas that likely represent shears or faults.

A grogram of diamond drilling is recommended to test the main I. P. anomaly on the Santana property. At least five holes should be drilled along the strike of the conductor at places where the I. P. seems to be the best. These appear to be on lines 00, 4W, 16W, 20W and 24W. The holes should be located to the south of the conductor and drilled to the north.

Several holes should also investigate the weaker anomalies on lines 8W, 28W, 36W, 40W or 44W; the best being at 650S on line 36W.

It is also recommended that additional I. P. surveying be conducted to delineate the eastern limits of the main I. P. conductor and to explore other parts of the property as well as carry out detailed investigations.

Respectfully submitted,

G. Burton

Garth B. Burton
Geophysical Consultant

APPENDIX I

I.P. SURVEY PSEUDOSECTIONS

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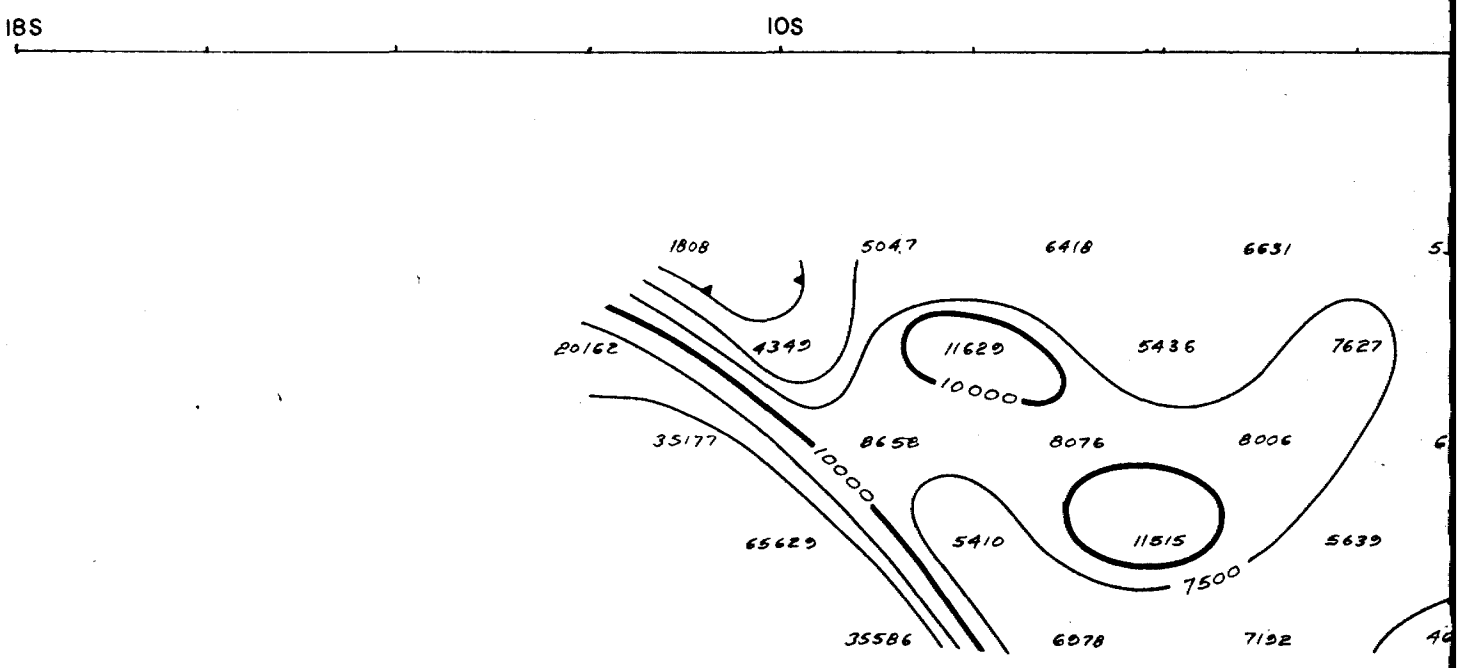
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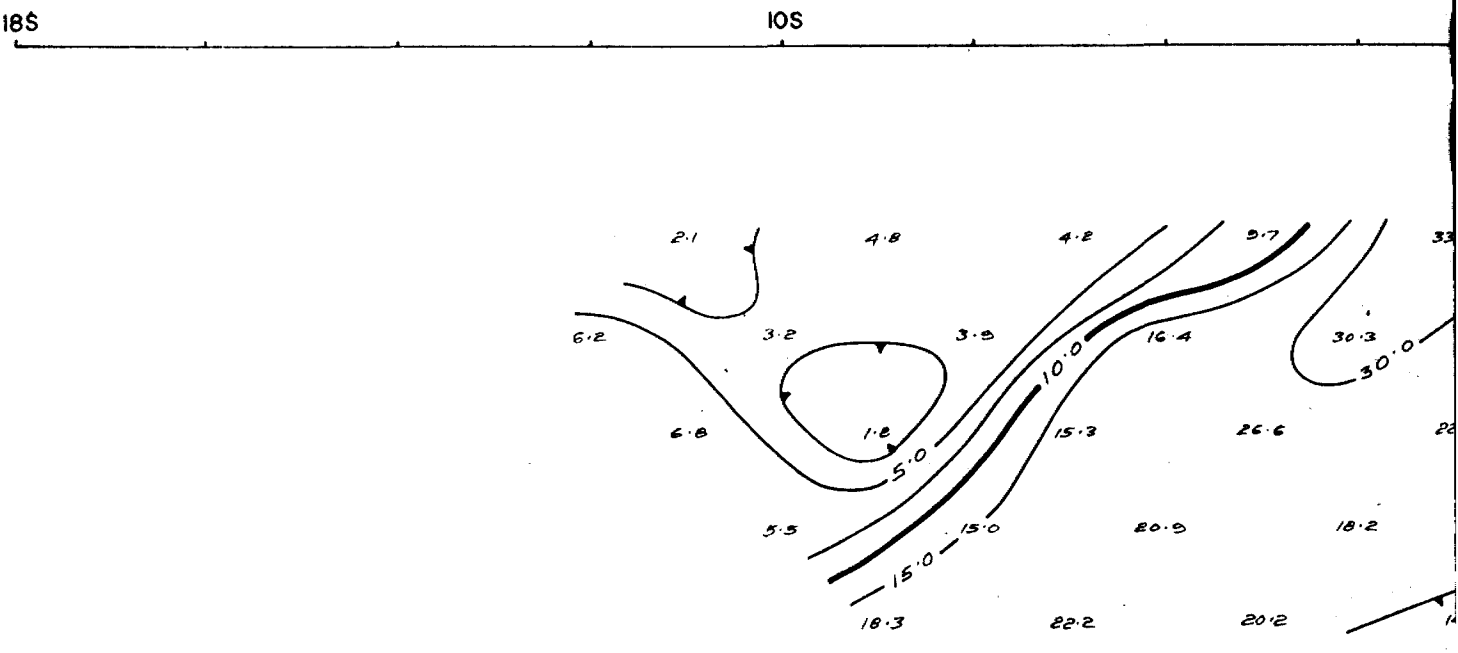
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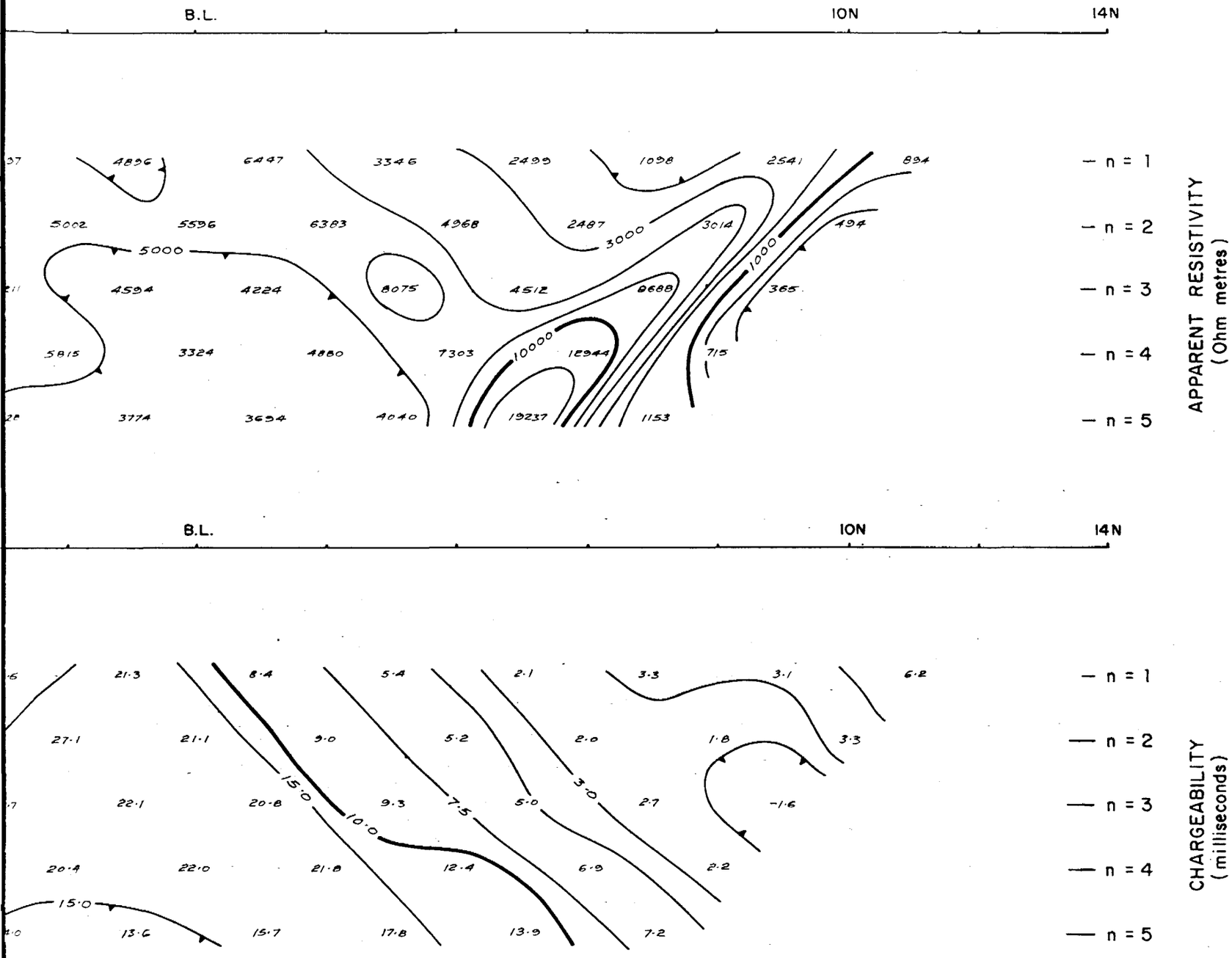

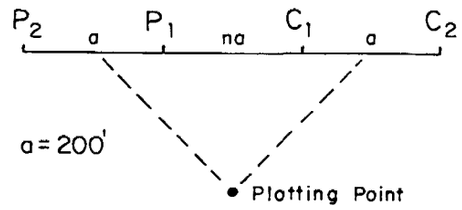

Electrode Array :
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Delay time : 240 ms
Interval time : 120 ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey

LINE 00+00

Scale 1" = 200ft

OCTOBER 1985

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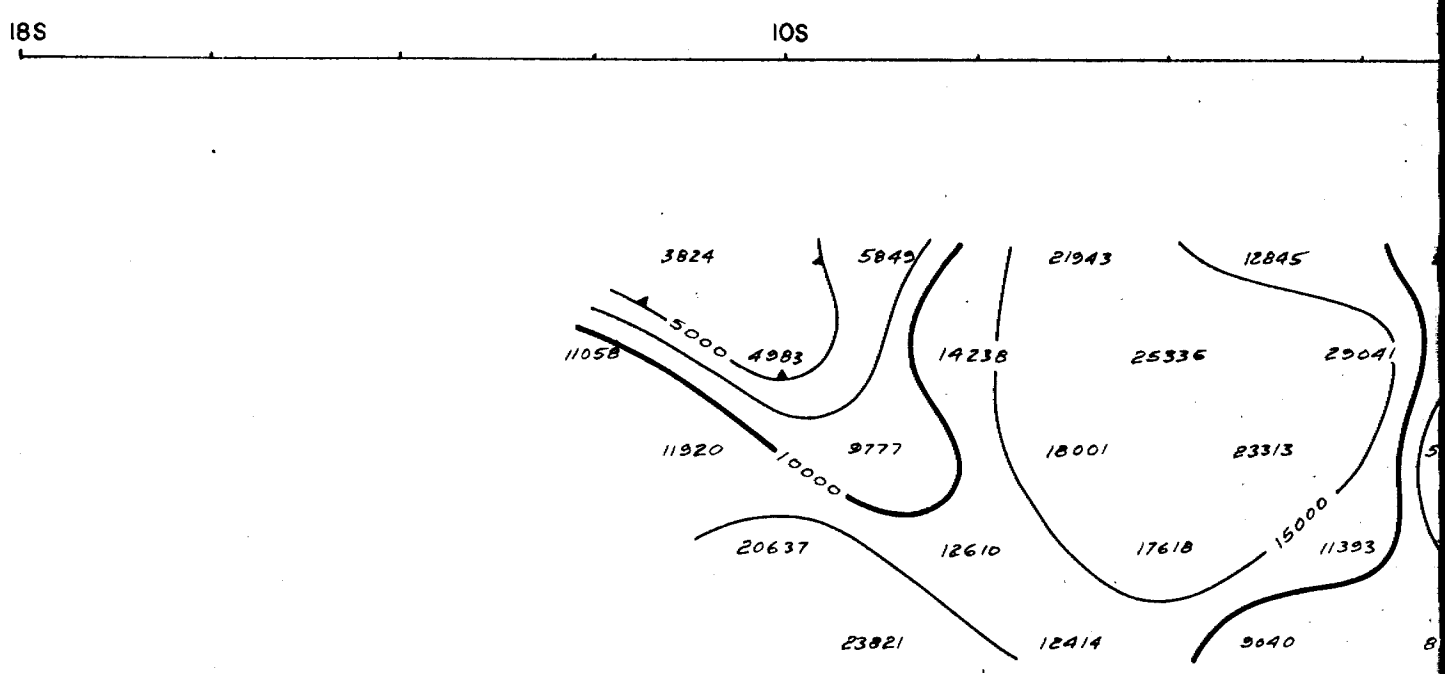
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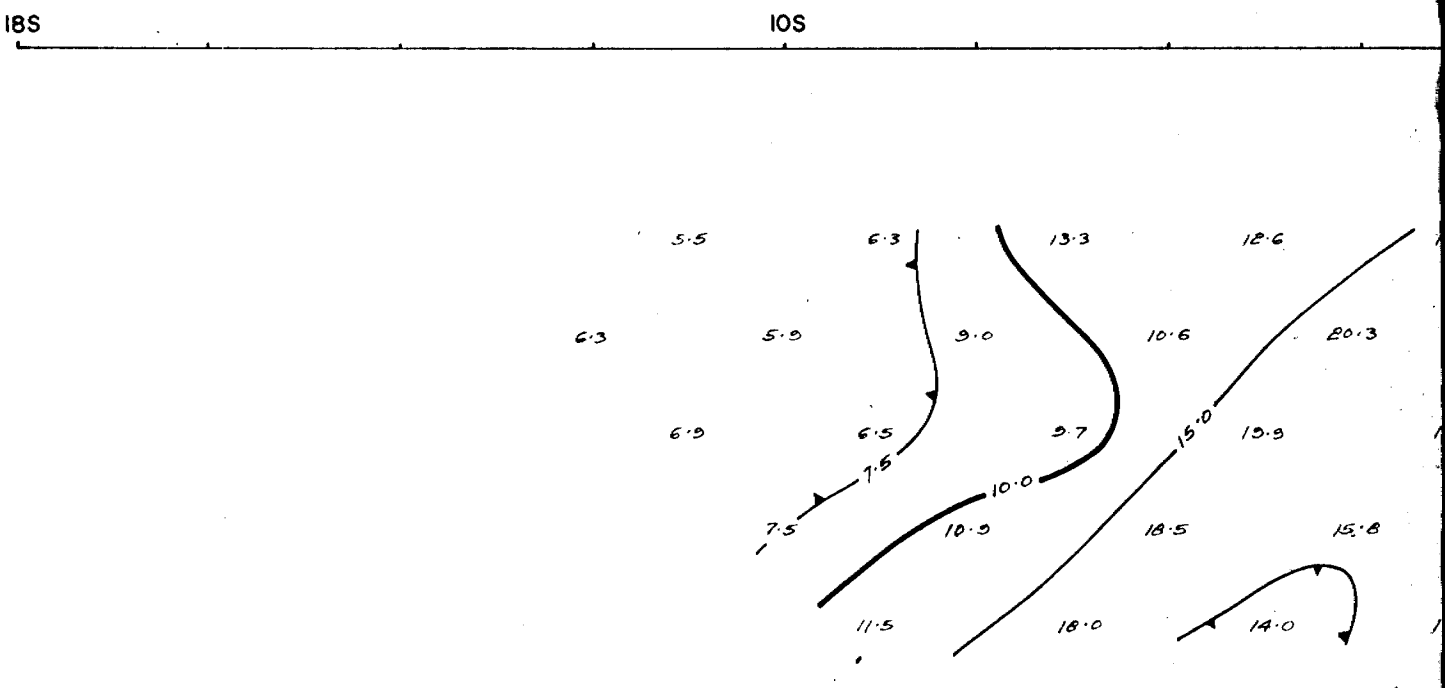
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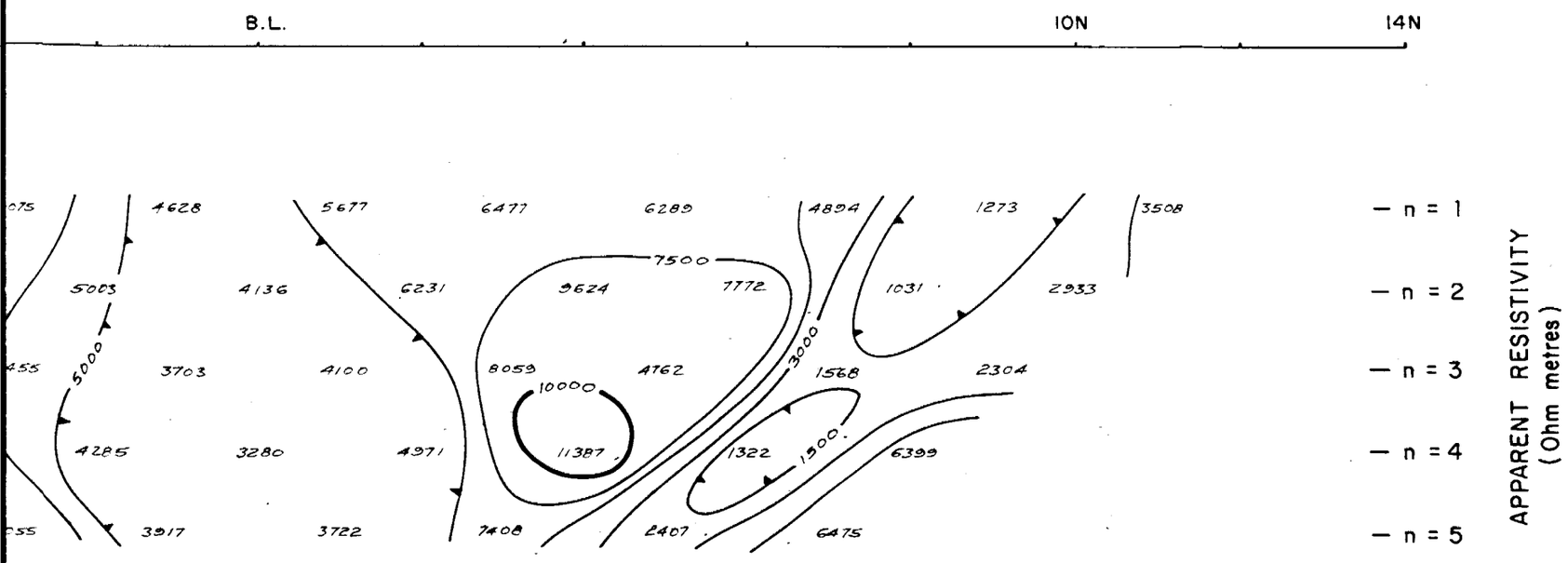

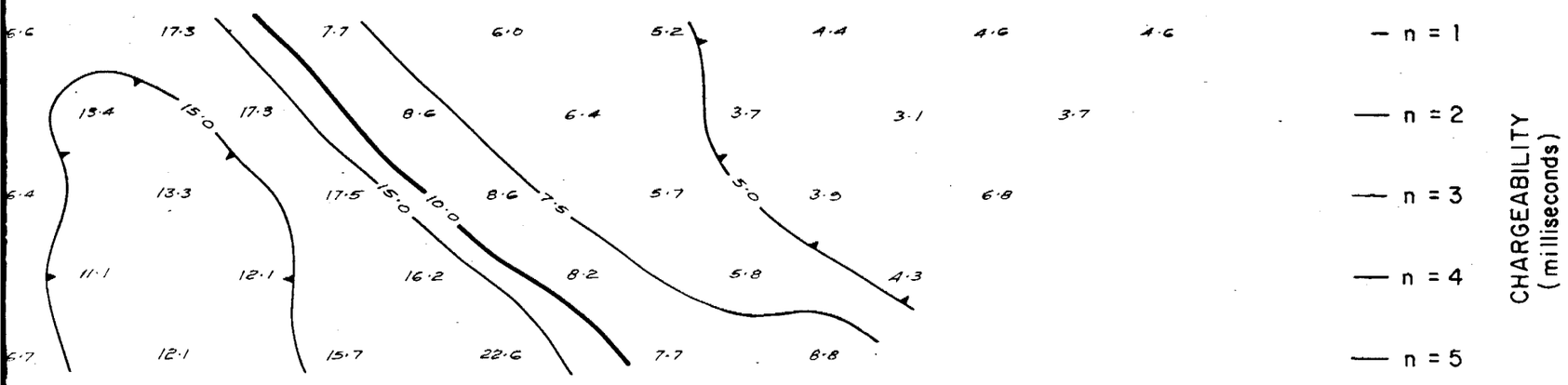

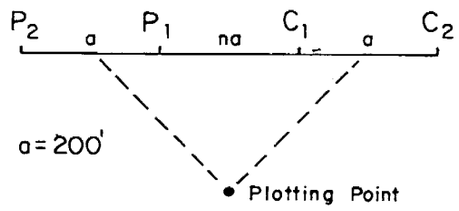

Electrode Array :
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Delay time : 240 ms
Interval time : 120 ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

J. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey
LINE 4+00W

Scale 1" = 200ft

OCTOBER 1985

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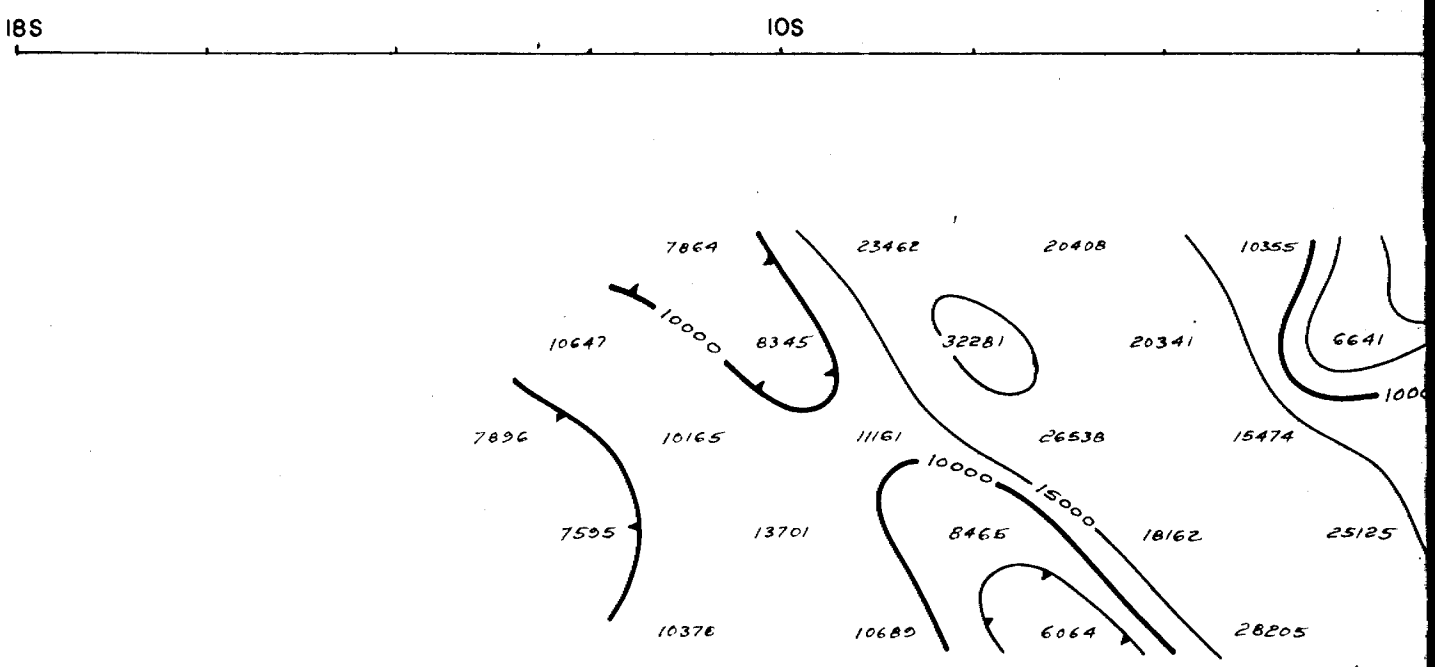
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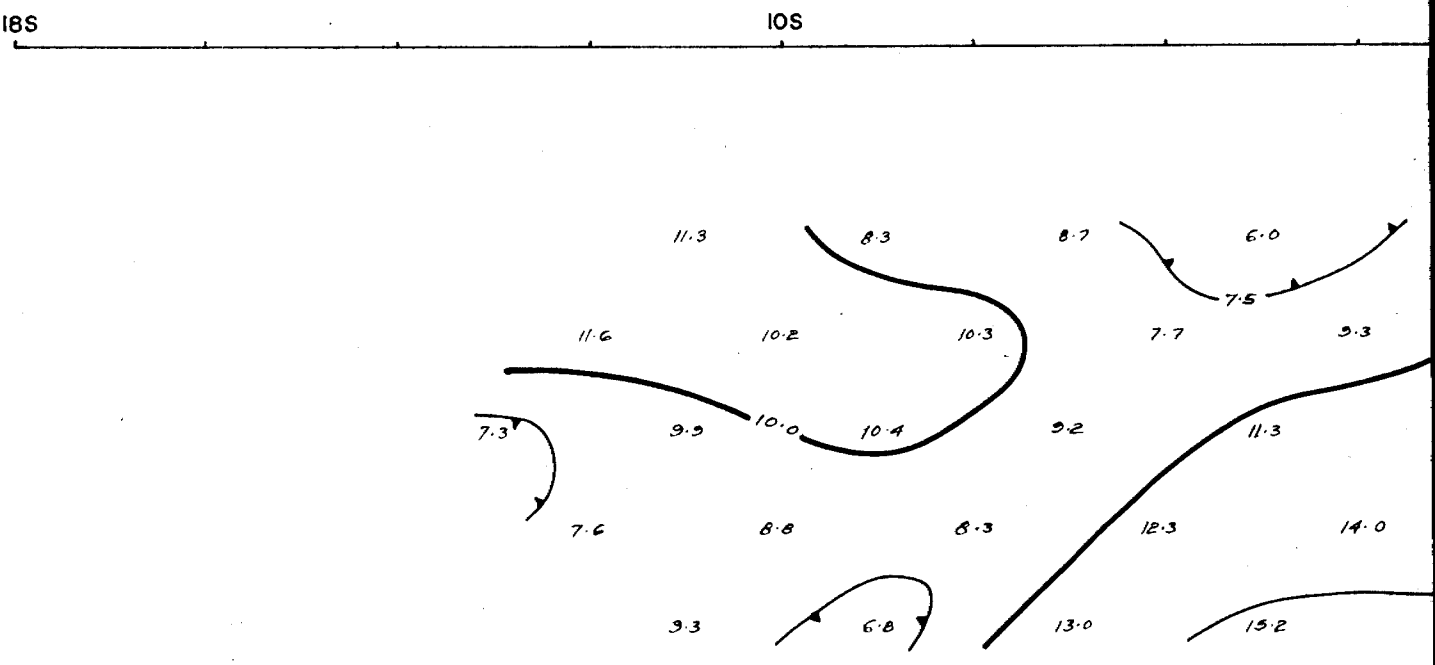
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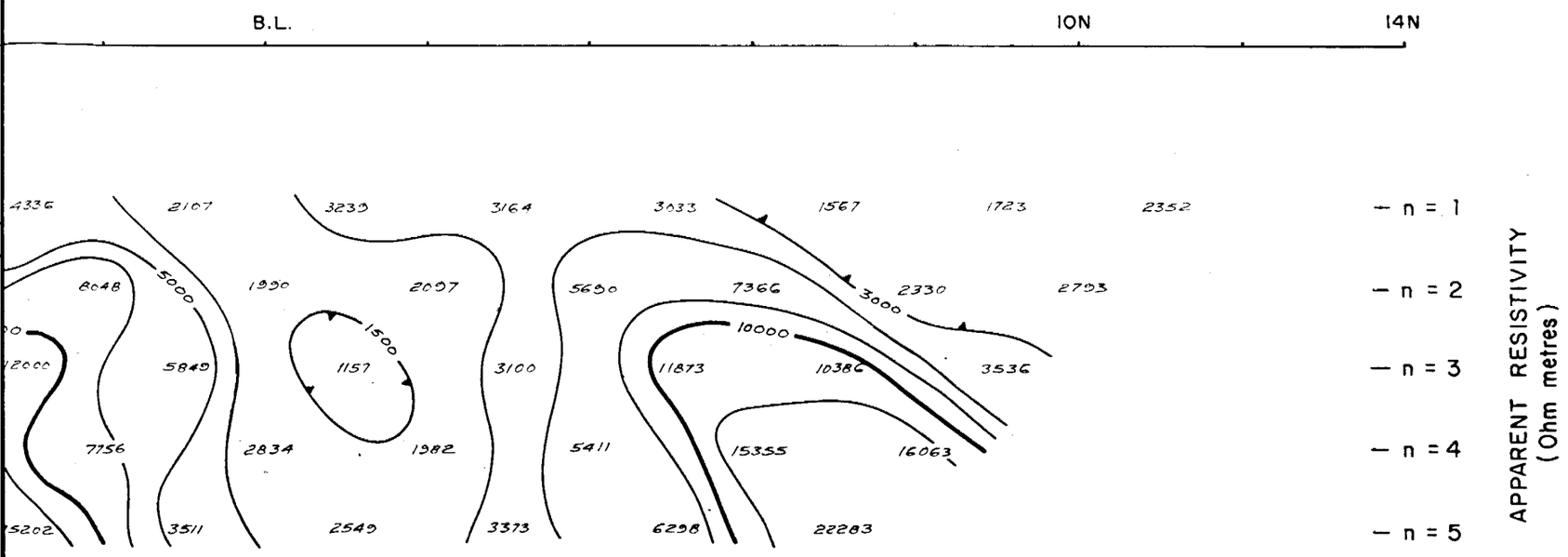

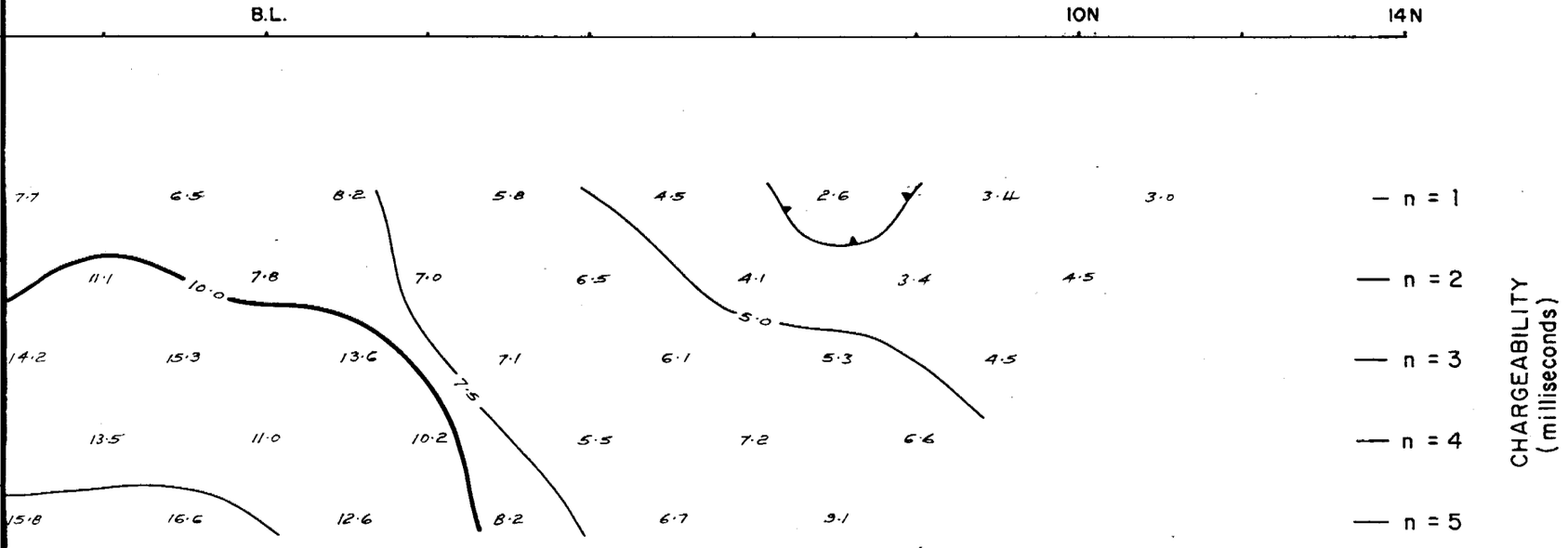

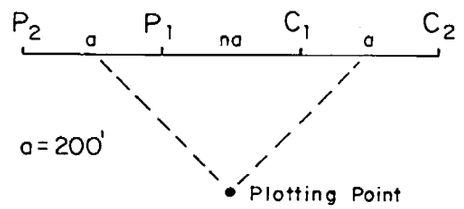

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Delay time : 240 ms
Interval time : 120 ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY
Time Domain IP Survey
LINE 8+00W

Scale 1" = 200ft

OCTOBER 1985

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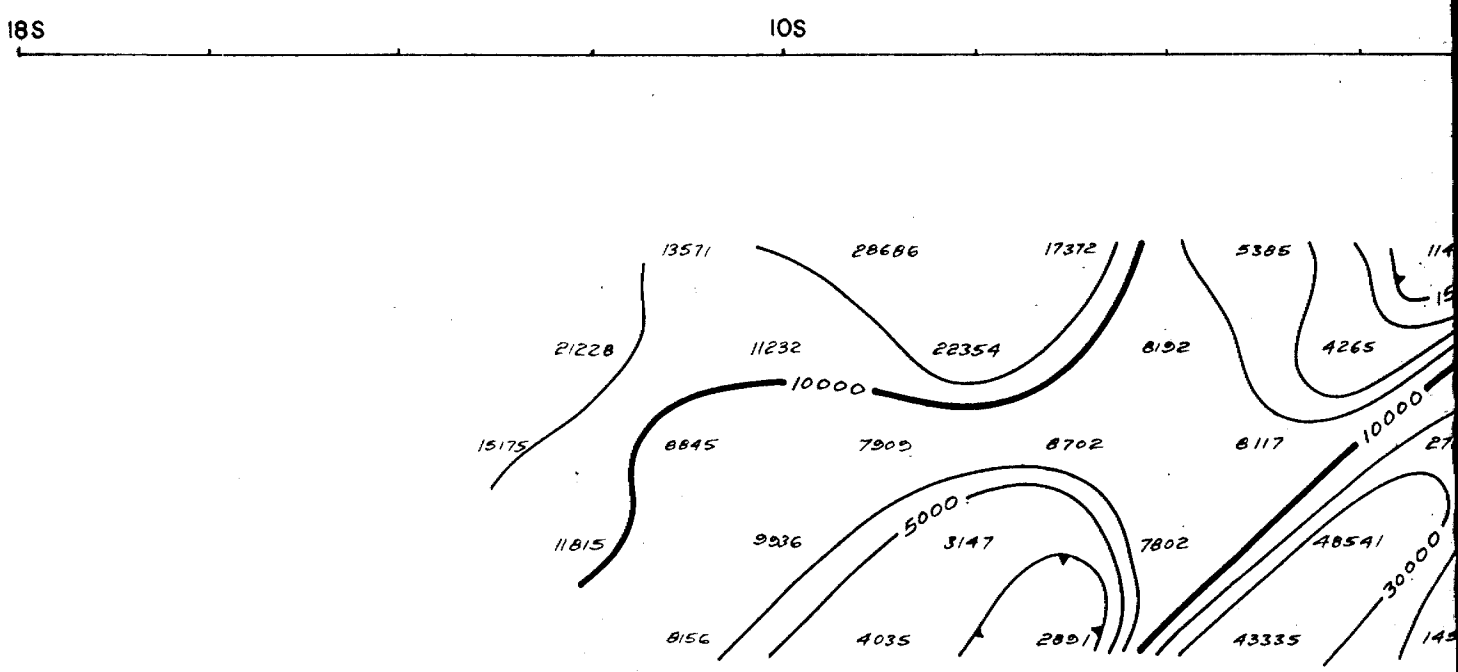
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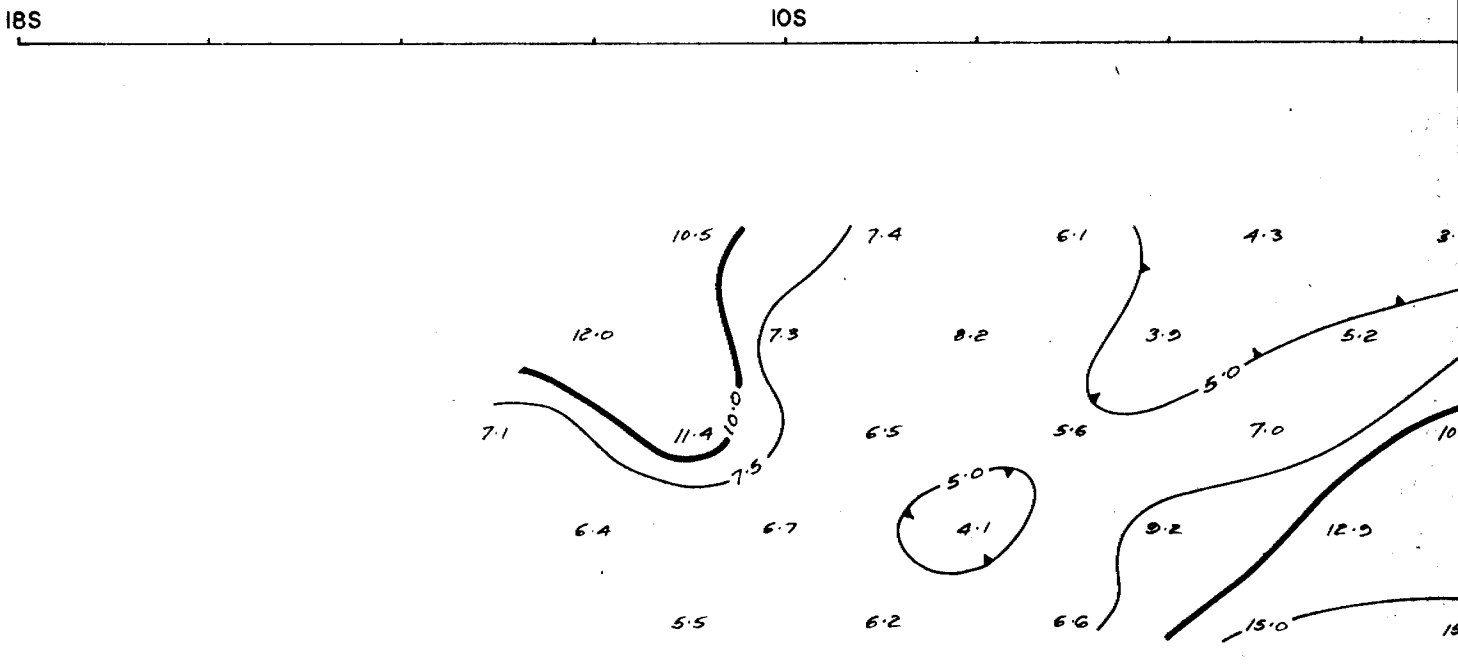
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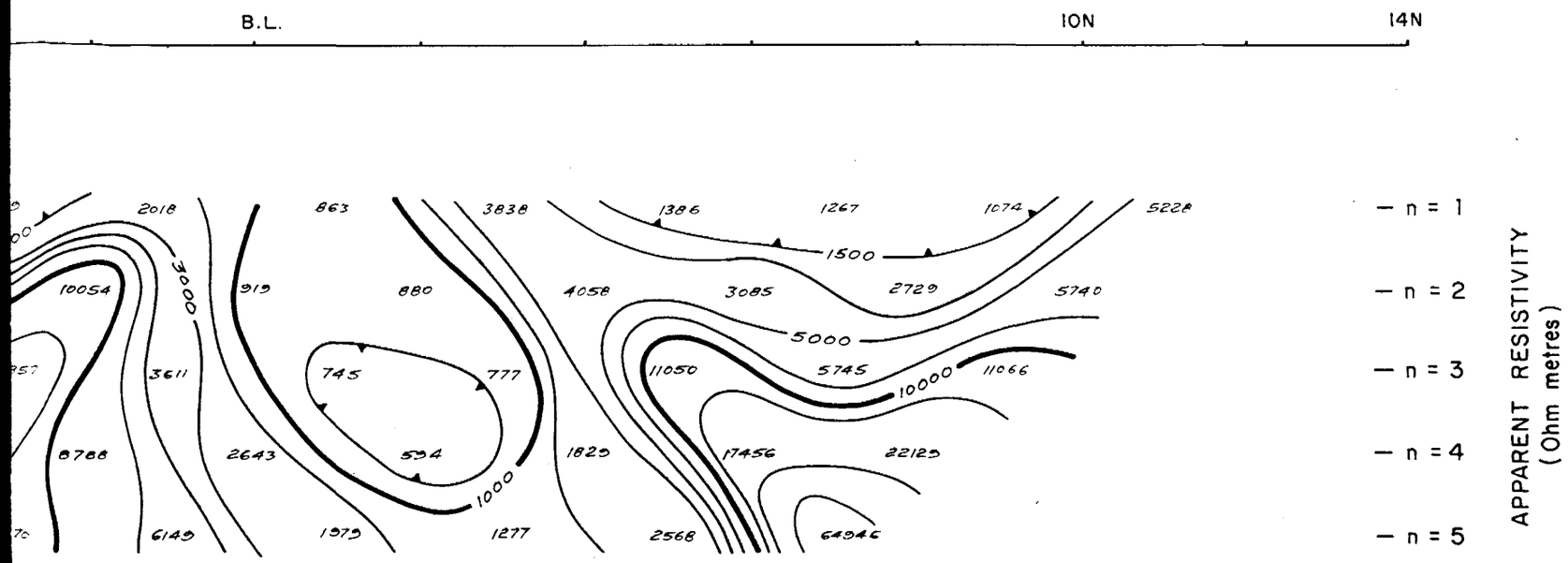

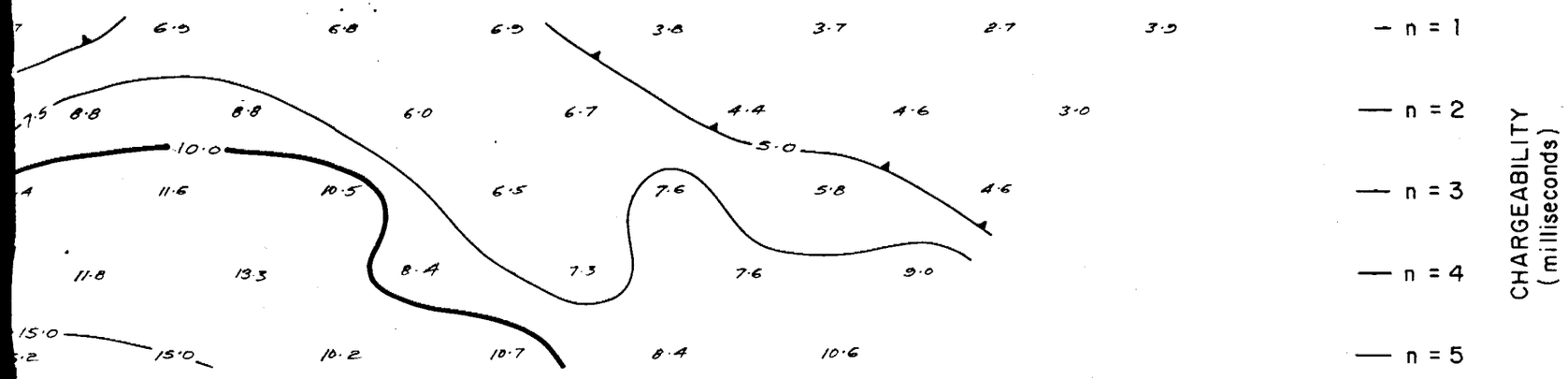

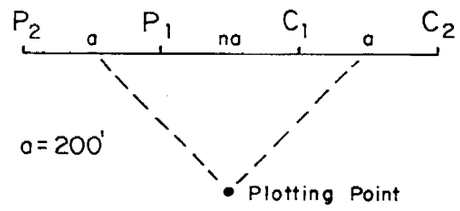

Electrode Array :
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Delay time : 240 ms
Interval time : 120ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey

LINE 12+00W

Scale 1" = 200ft

OCTOBER 1985

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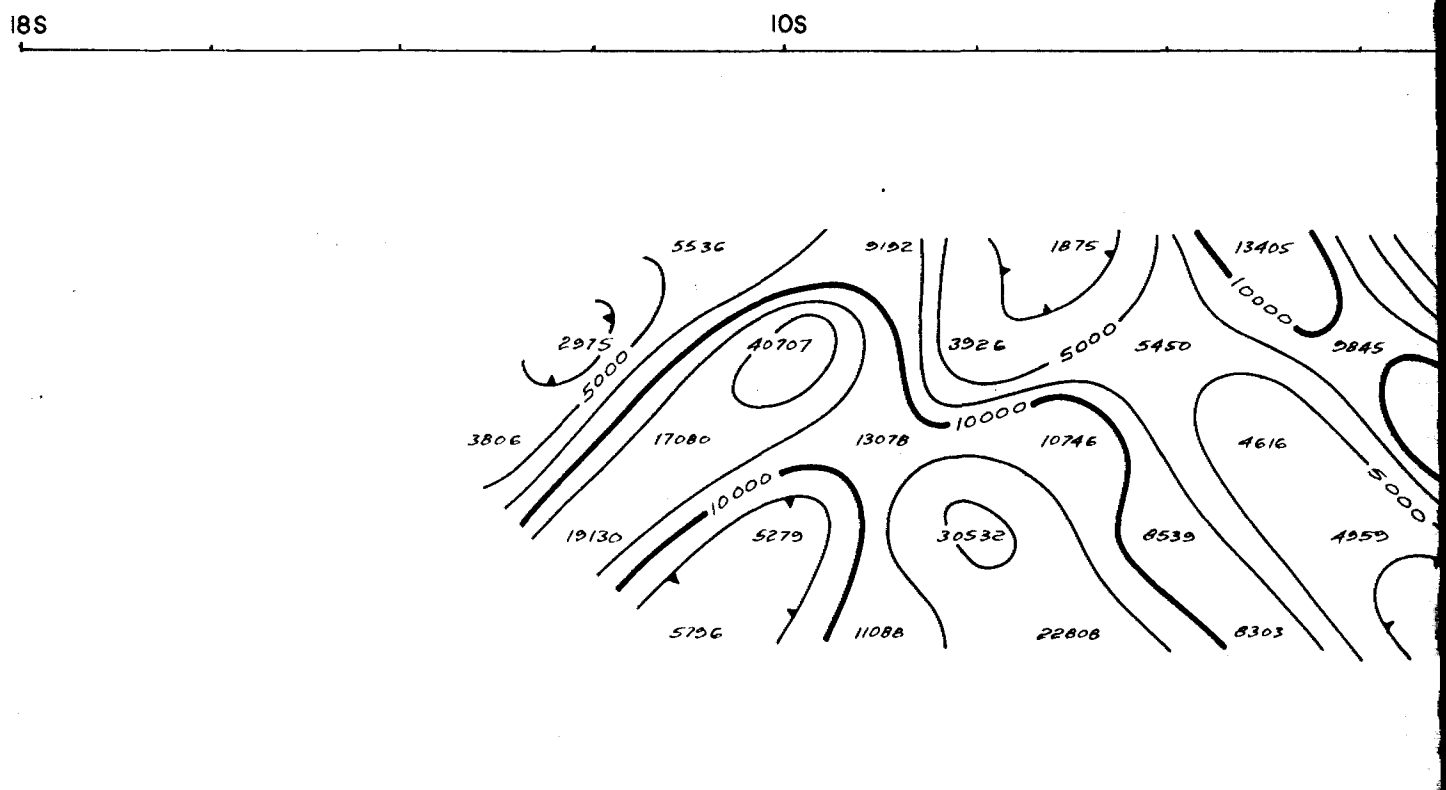
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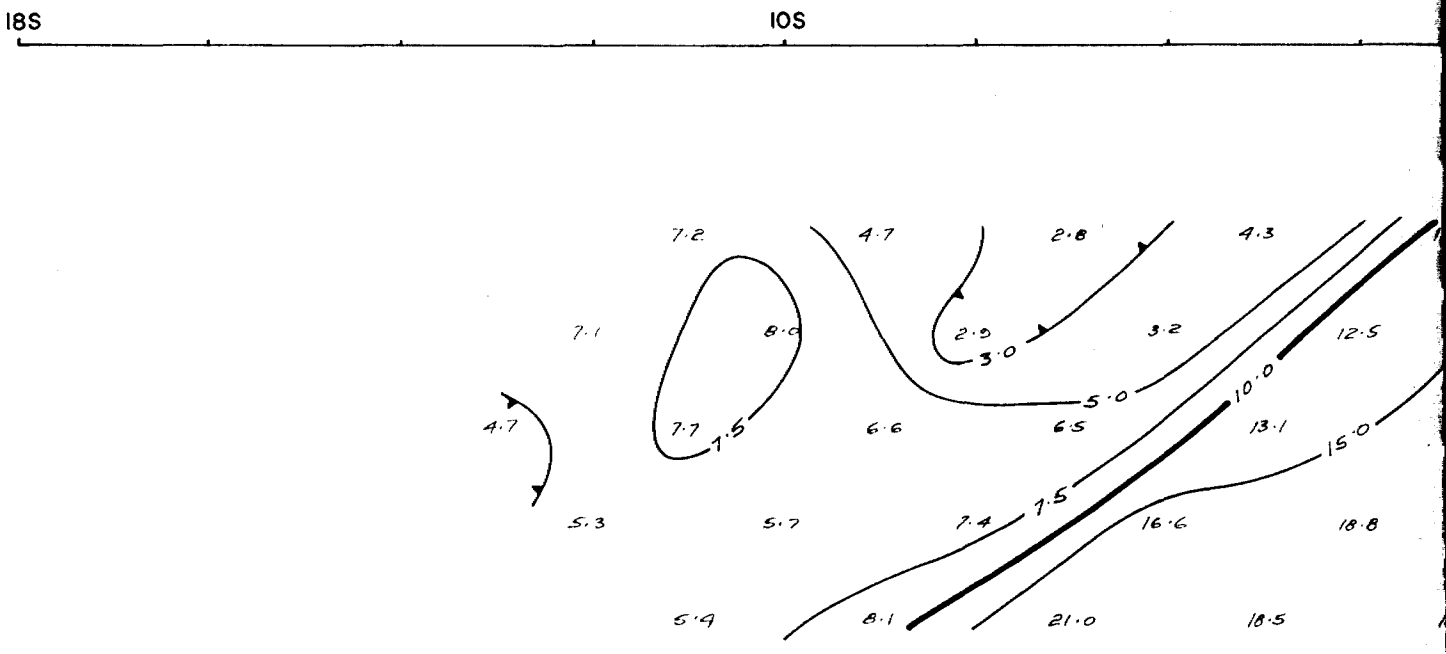
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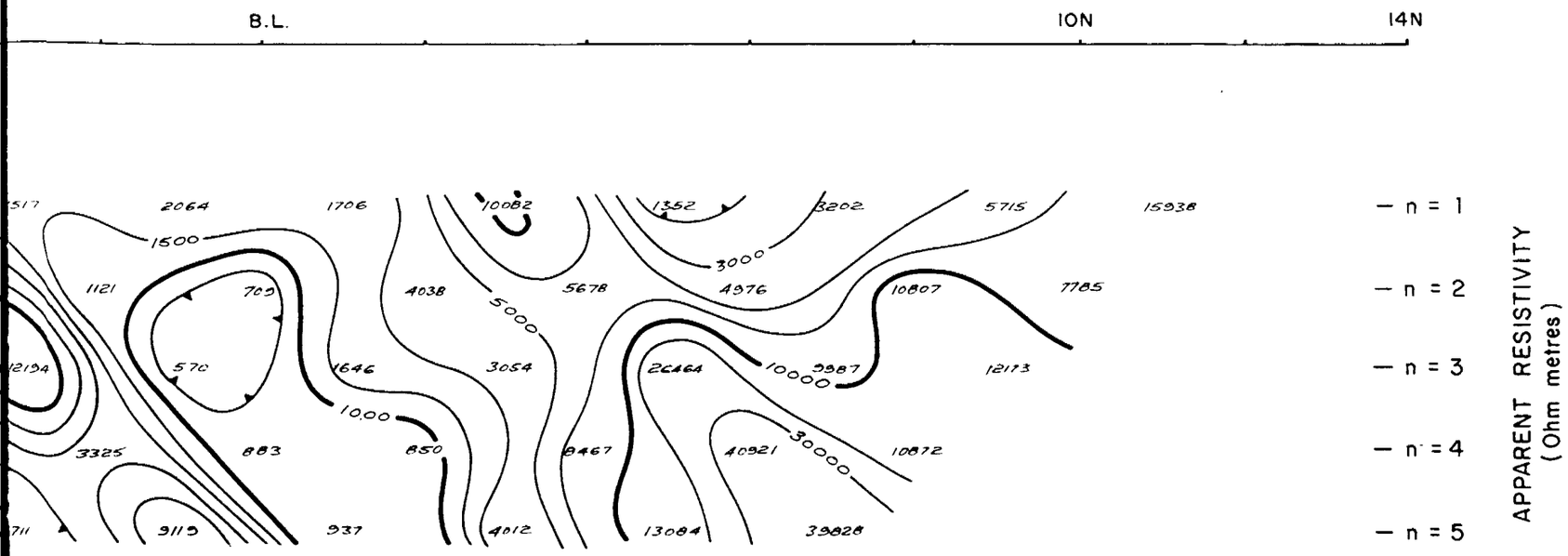

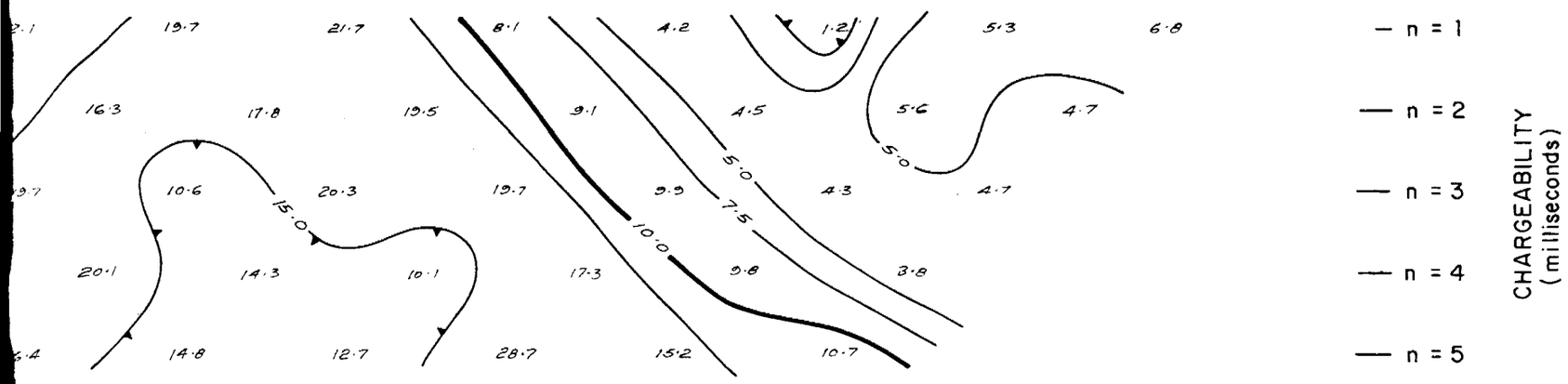

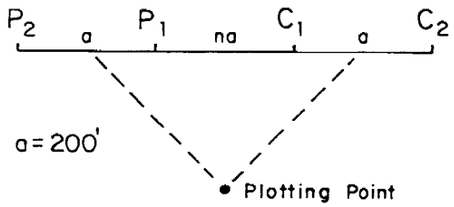

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Chargeability contour interval - 2·5 millisecs.

G. Burton

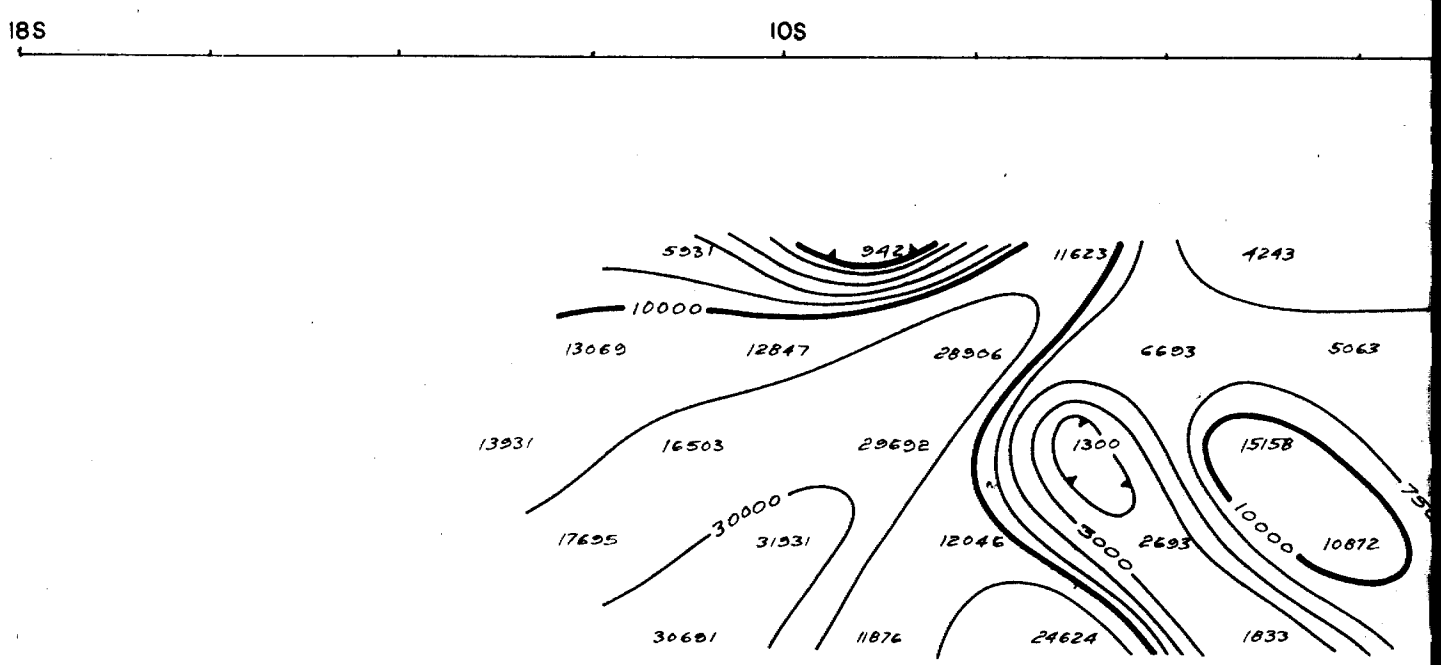
Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey
LINE 16+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 5


18S
10S
5931
942
11623
4243
10000
13069
12847
28906
6693
5063
13931
16503
29692
1300
15158
30000
17695
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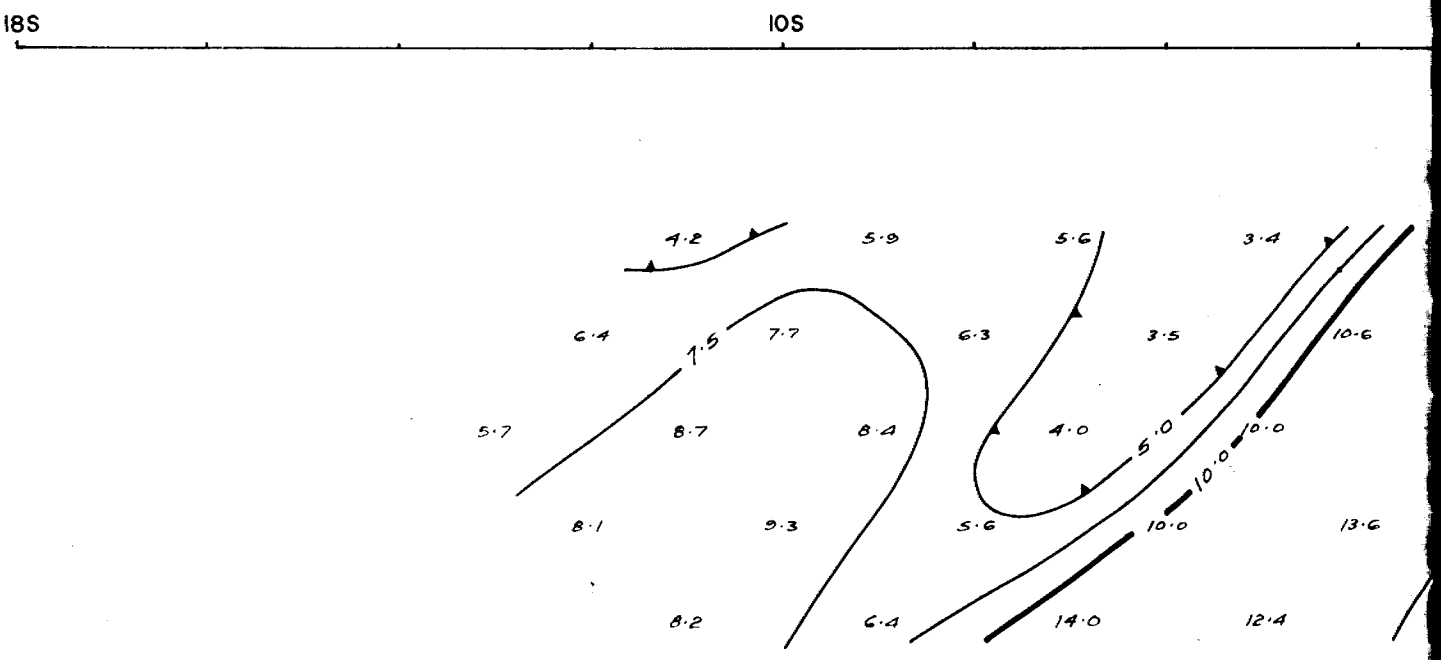
12046
3000
2693
10000
10872
30681
11876
24624
1833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5·9
5·6
3·4
6·4
7·7
6·3
3·5
10·6
5·7
8·7
8·4
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8·2
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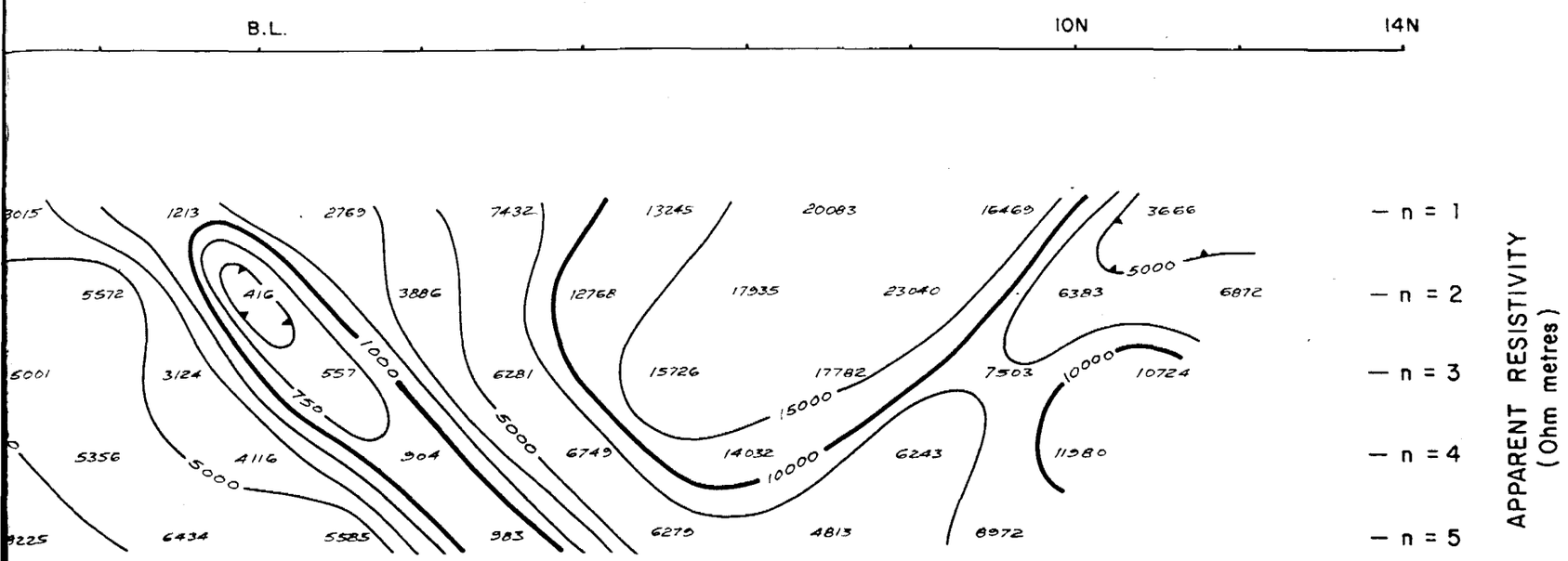
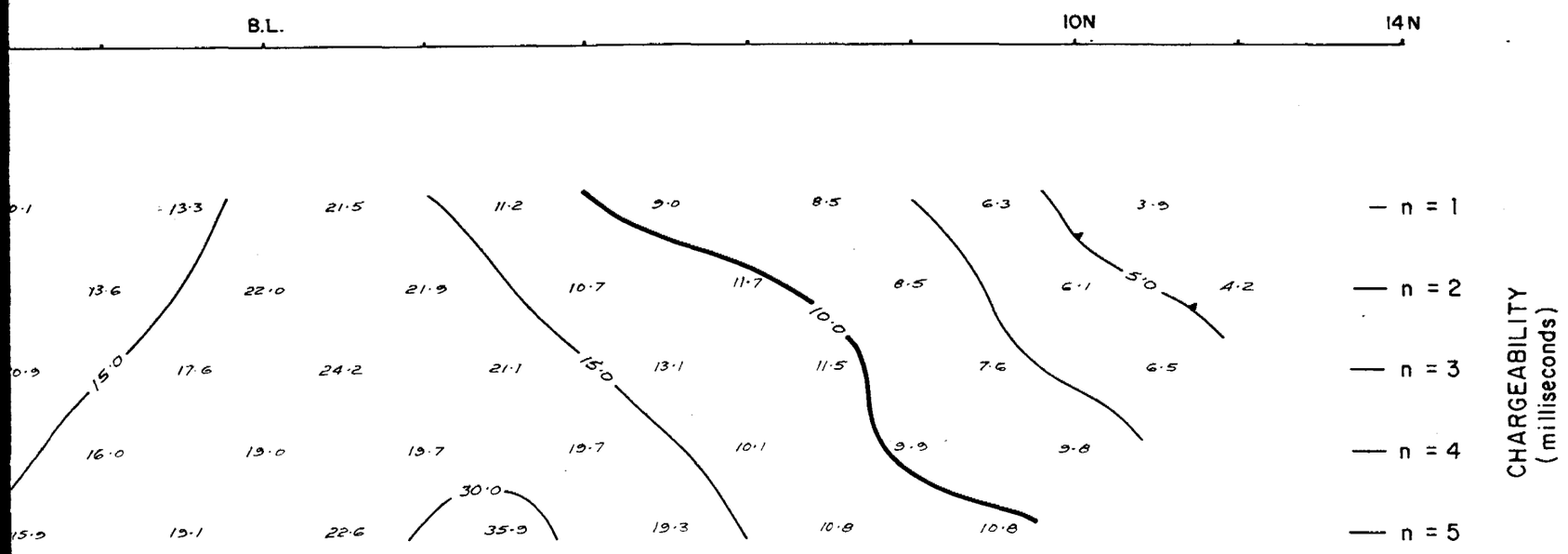
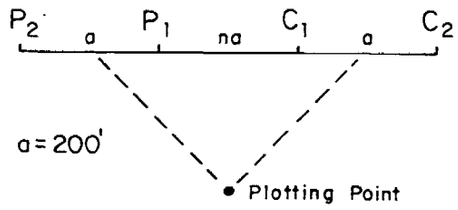
14·0
12·4







Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval – 2·5 millisecs.

J. Burton

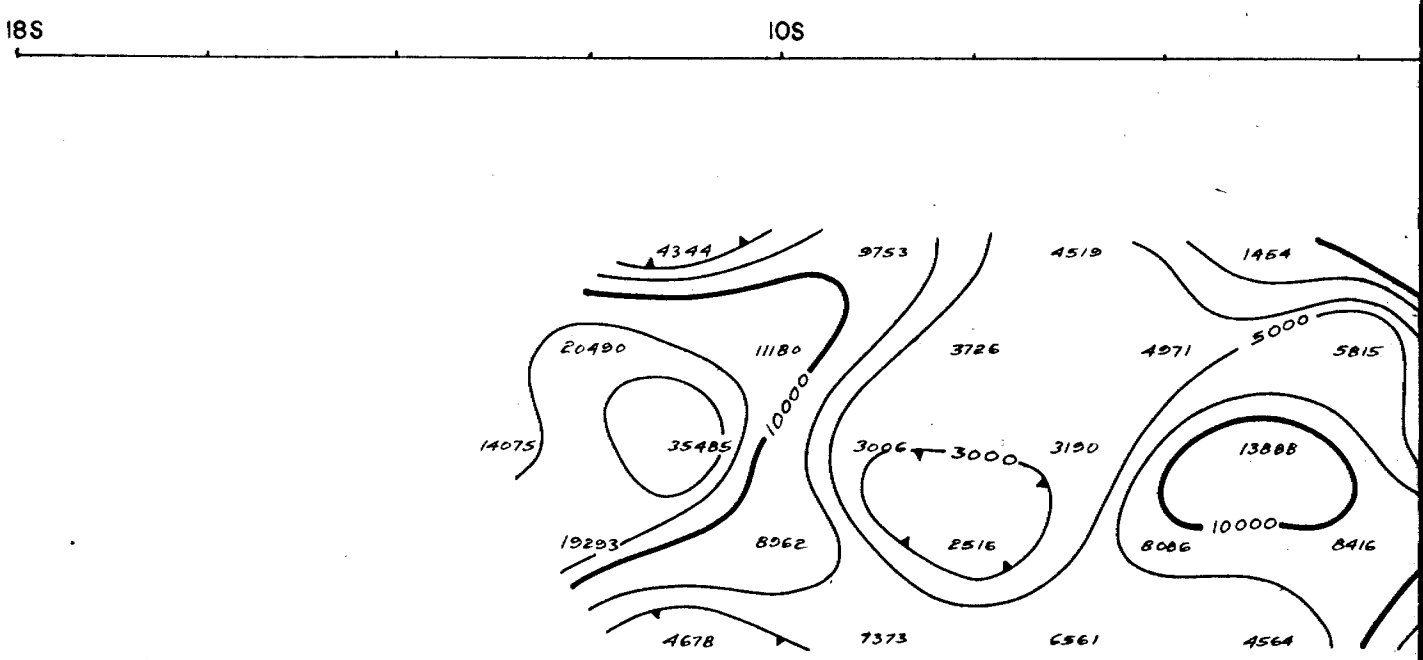
Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey
LINE 20+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 6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9753
4519
1454
20490
11180
3726
4971
5000
5815
14075
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10000
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13888
19293
8062
2516
10000
8086
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4678
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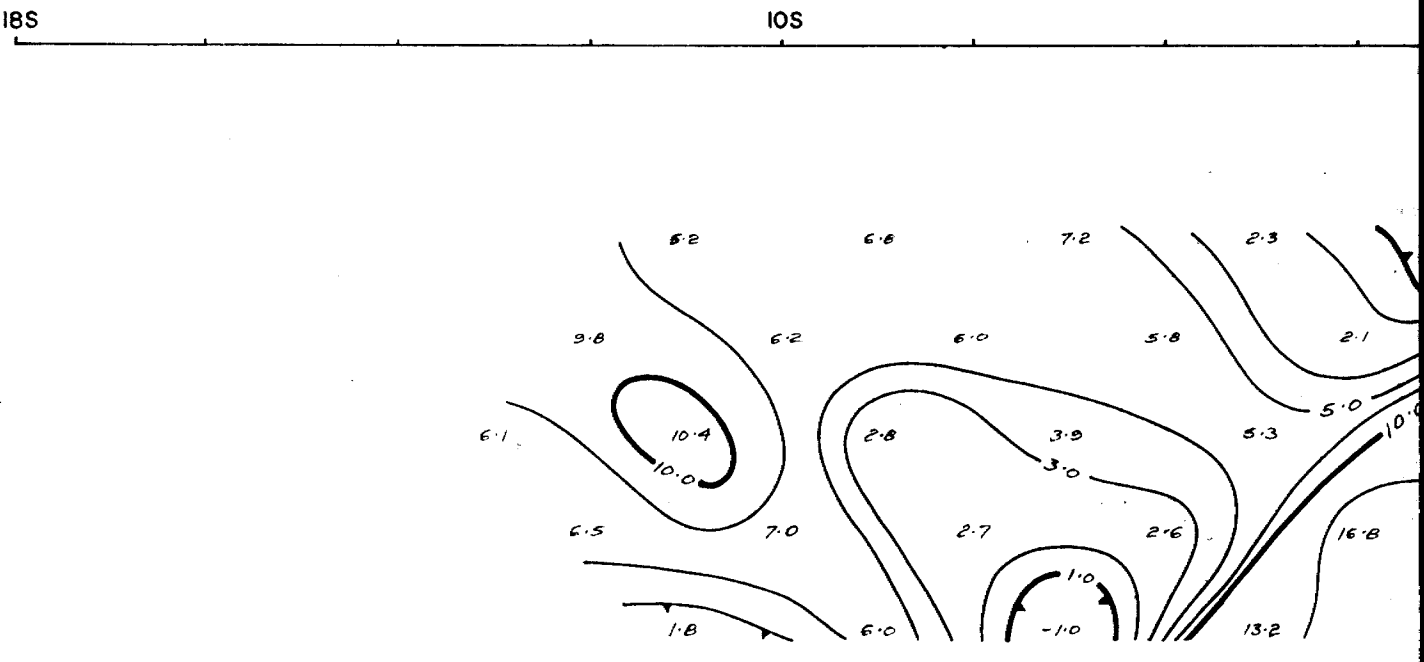
6561
4564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2·3
9·8
6·2
6·0
5·8
2·1
5·0
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3·9
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16·8
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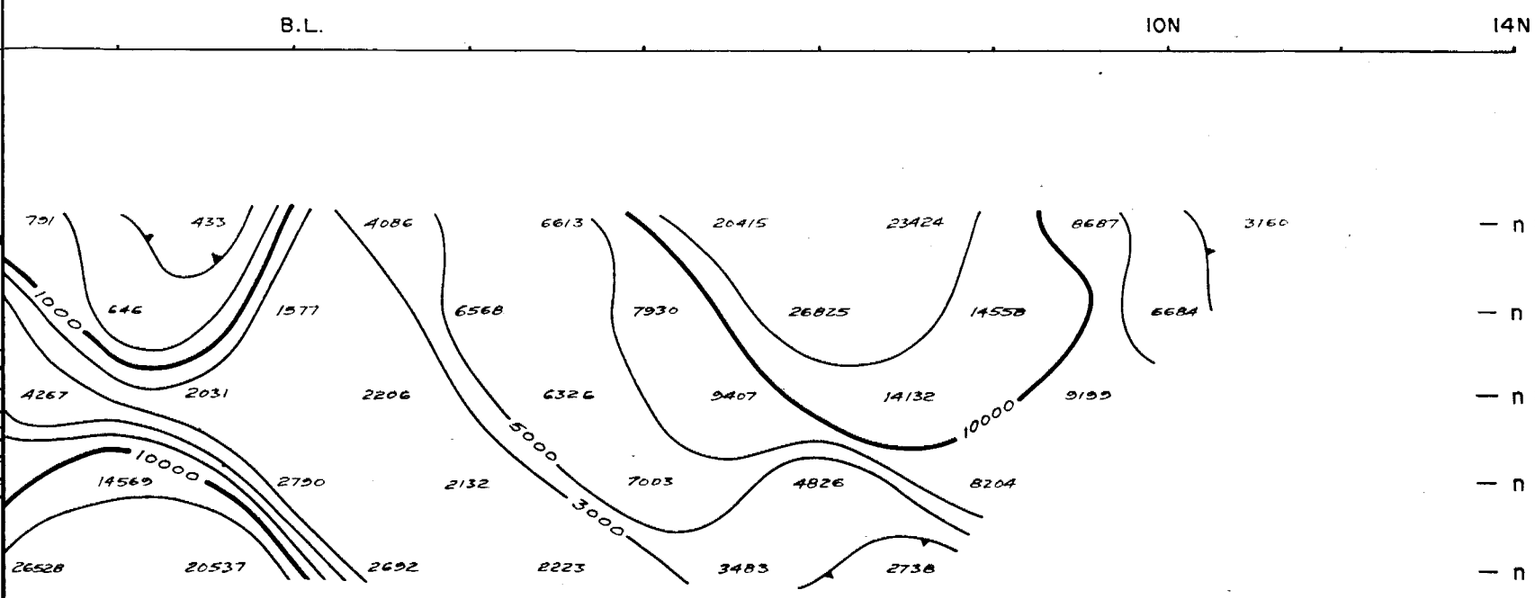
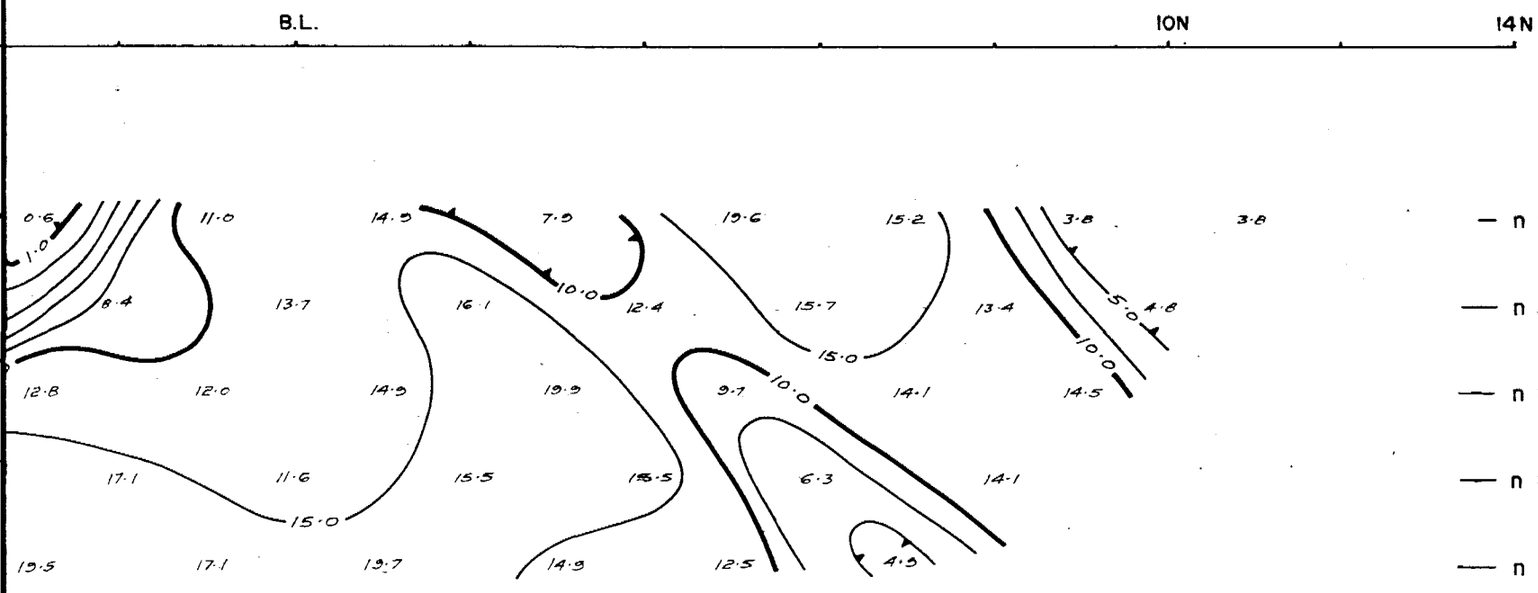
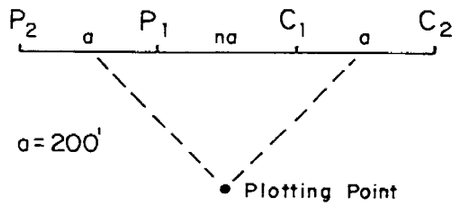
1·8
6·0
-1·0
13·2







Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval – 2·5 millisecs.

G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

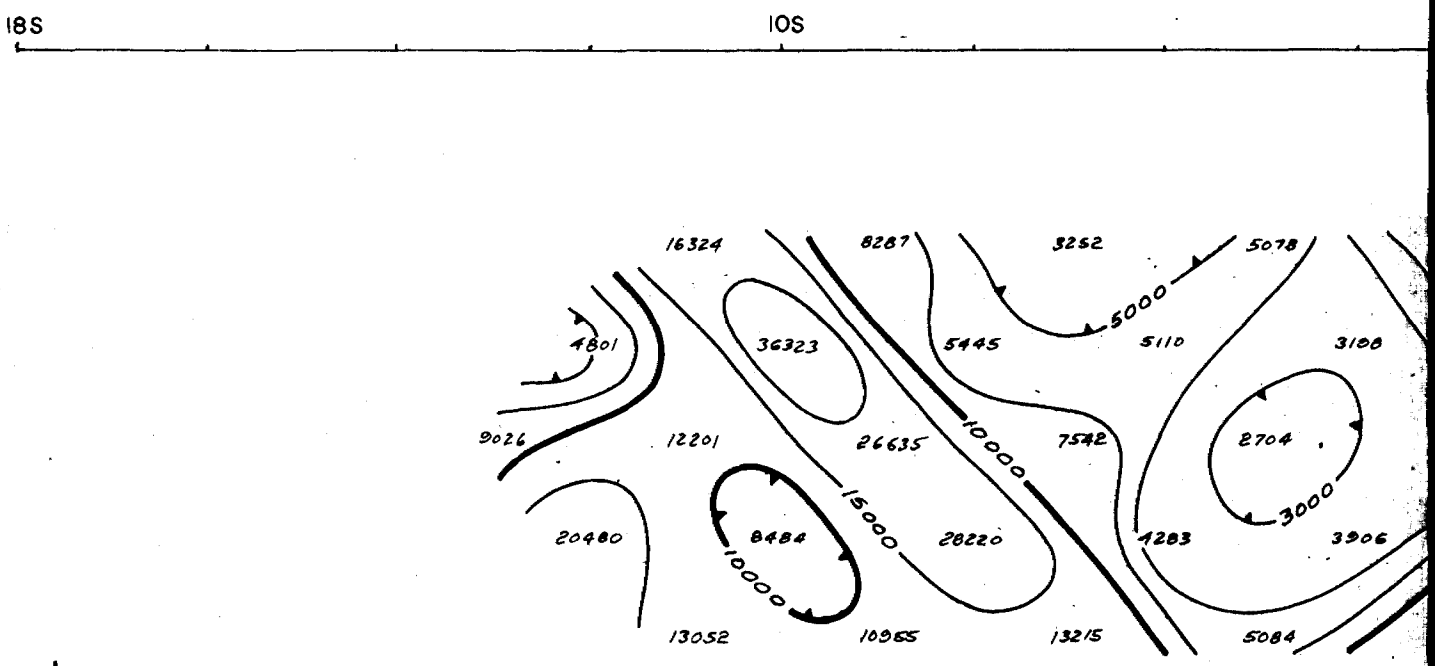
Time Domain IP Survey

LINE 24+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 7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8287
3252
5078
5000
4801
36323
5445
5110
3108
9026
12201
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3906
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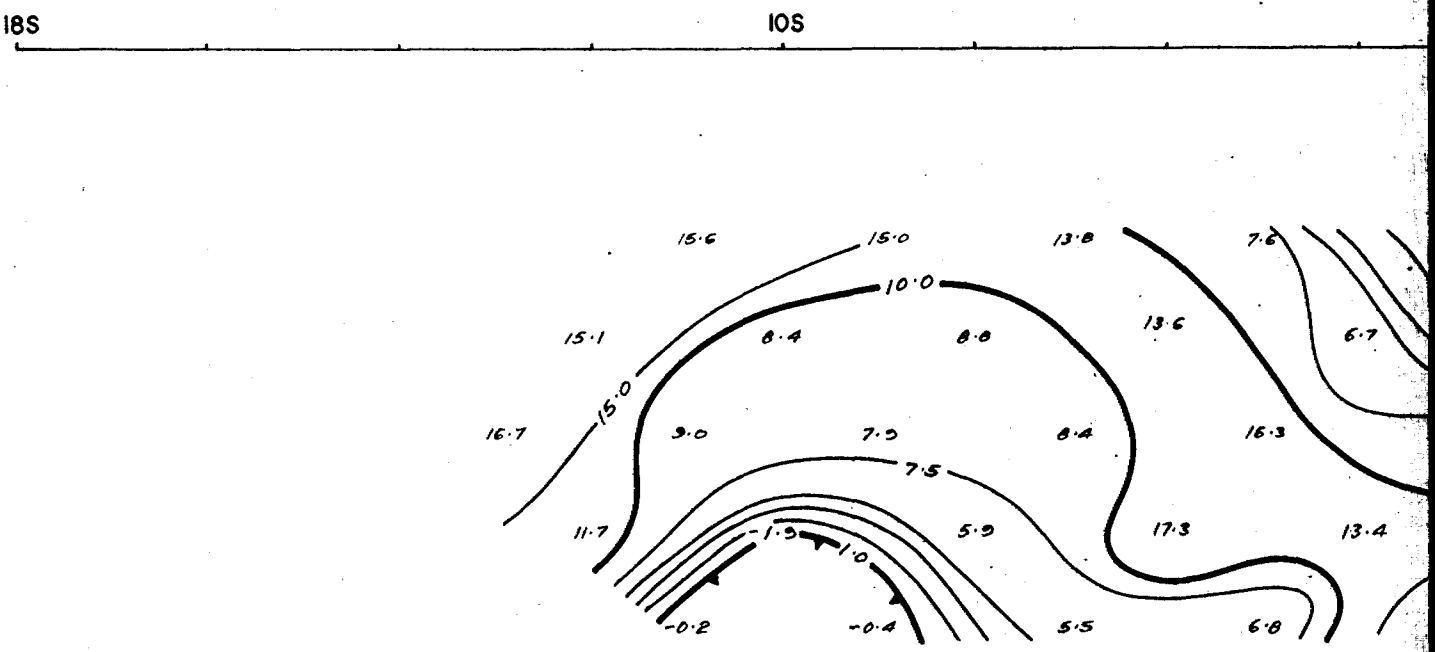
13052
10965
13215
5084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13·6
6·7
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7·9
8·4
16·3
7·5
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5·9
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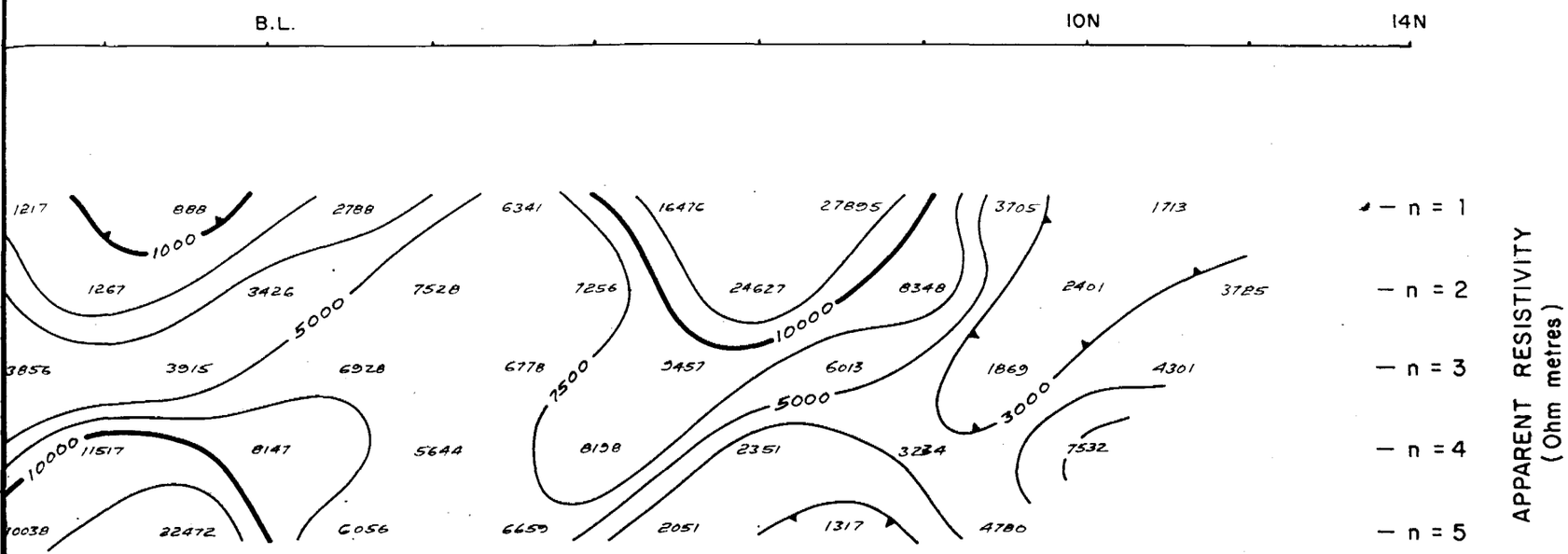
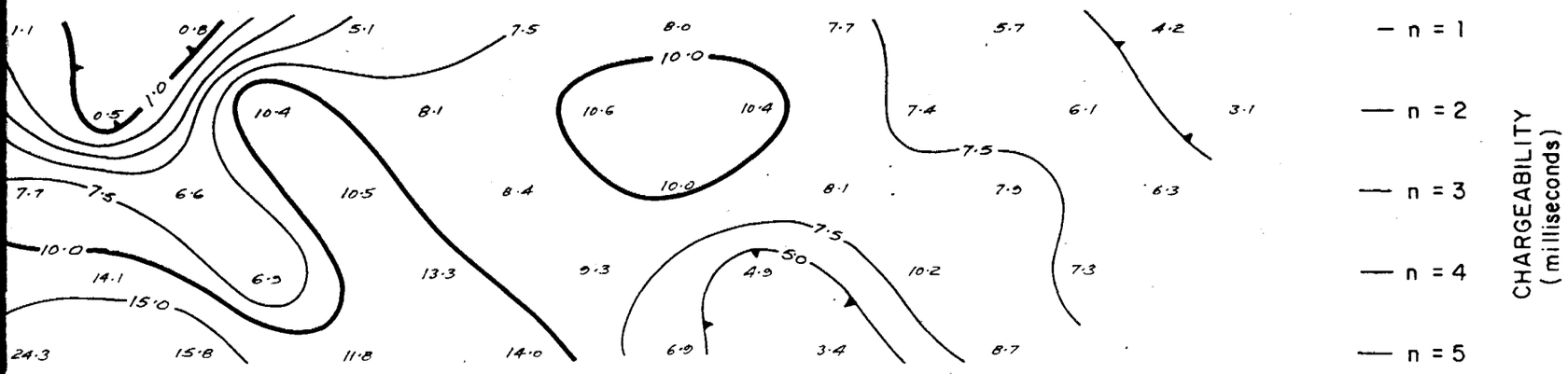
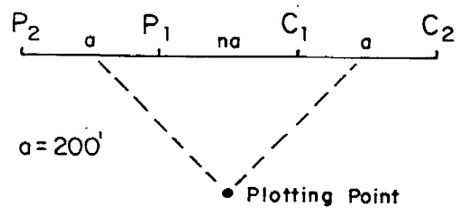
5·5
6·8







Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval – 2·5 millisecs.

G. Burton

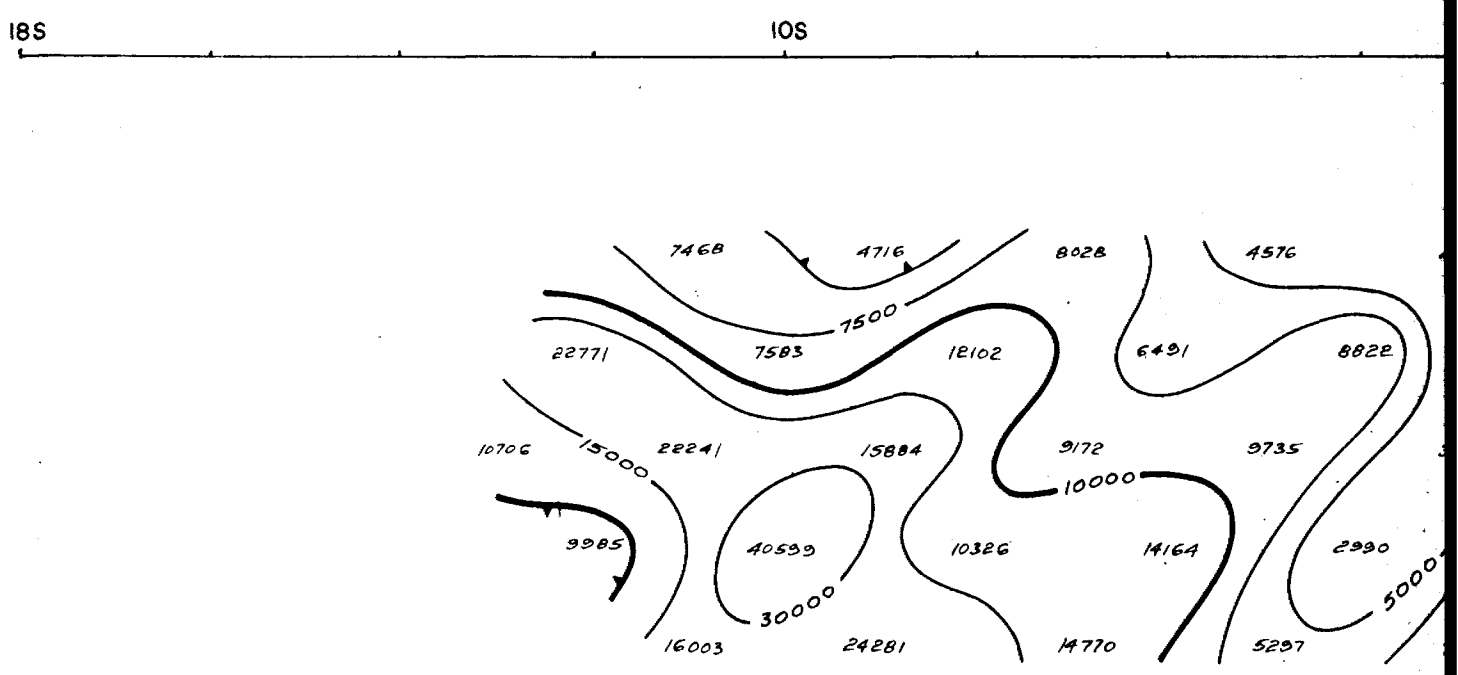
Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey
LINE 28+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 8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5000
30000
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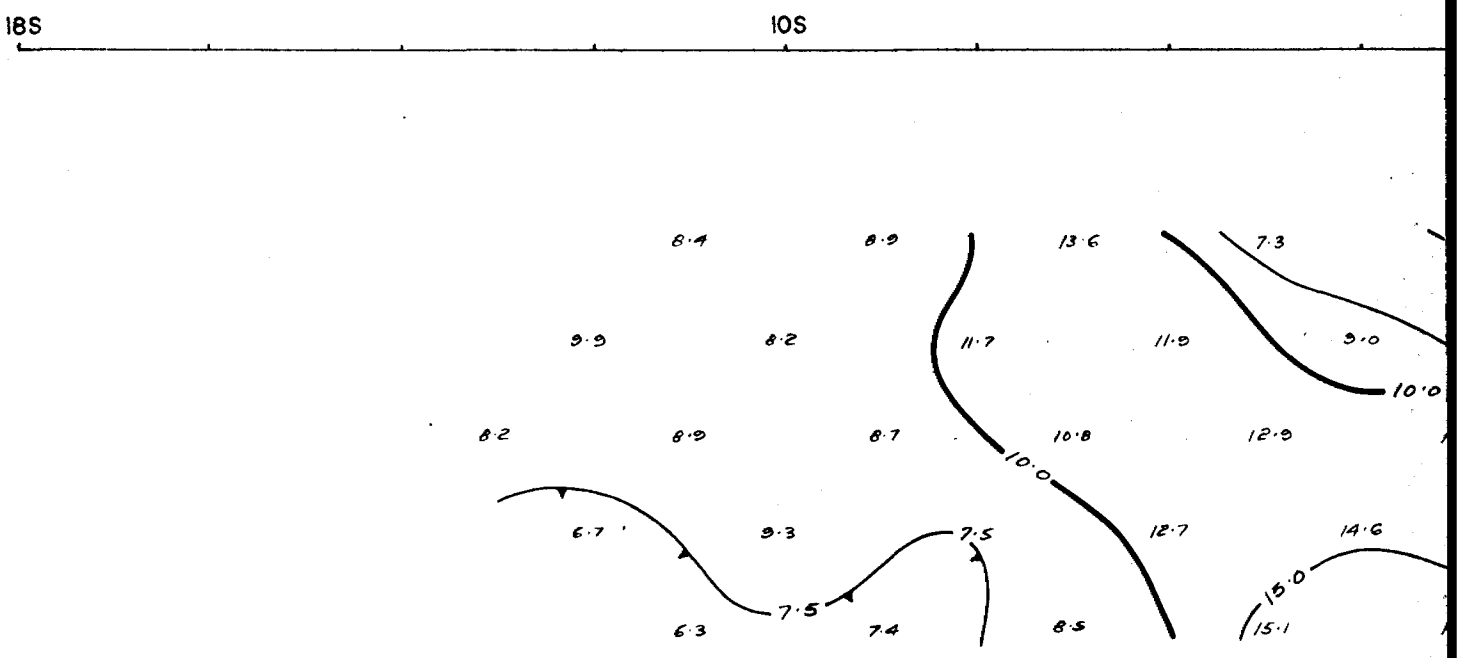
14770
5297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9·9
8·2
11·7
11·9
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10·0
8·2
8·9
8·7
10·8
12·9
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7·5
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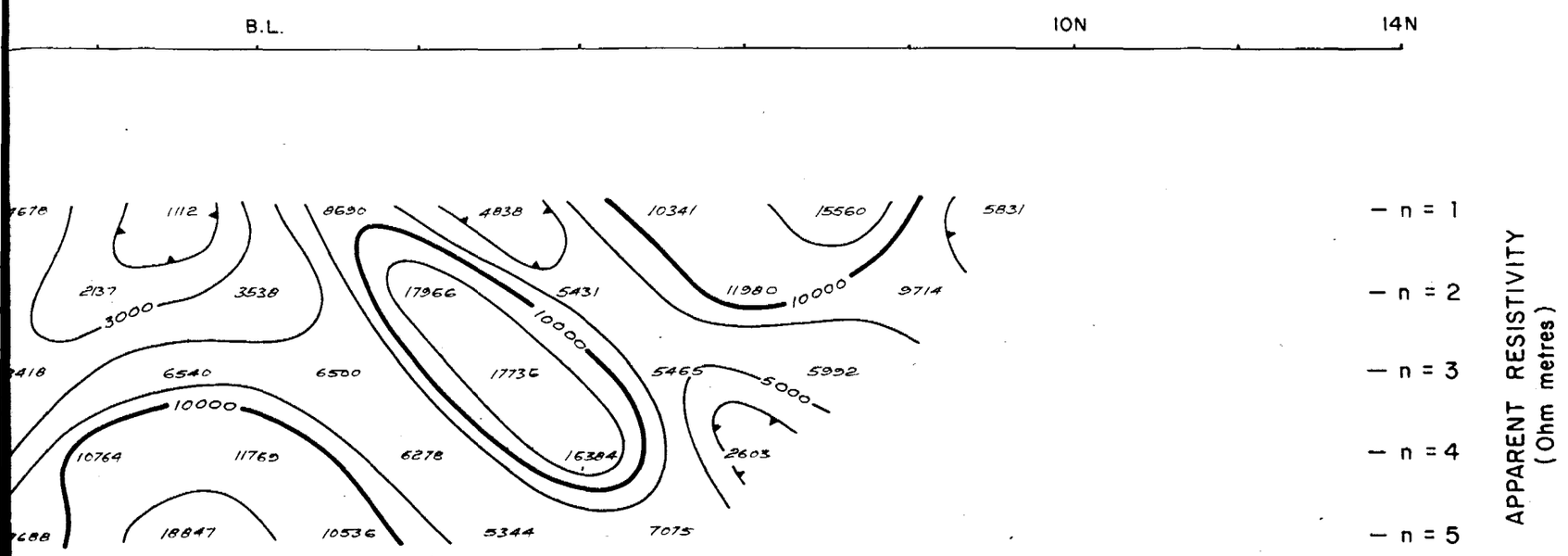
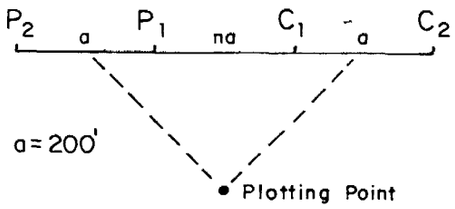
7·4
8·5
15·1

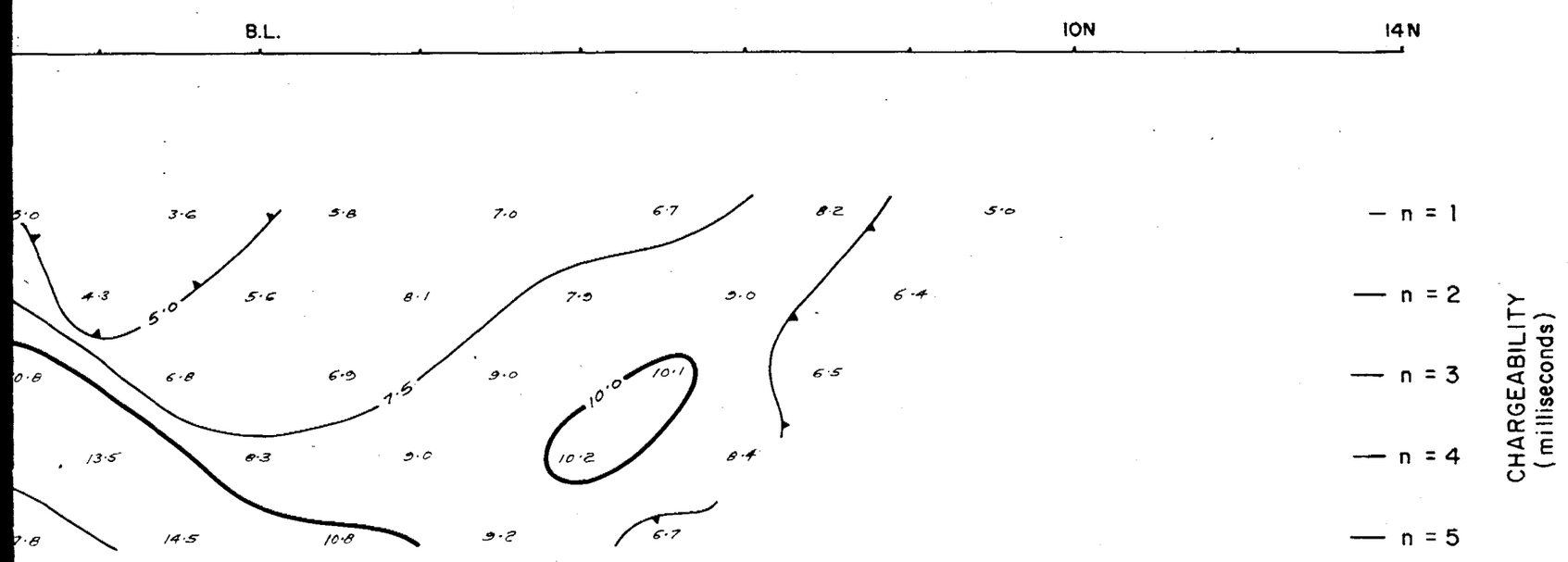




Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.



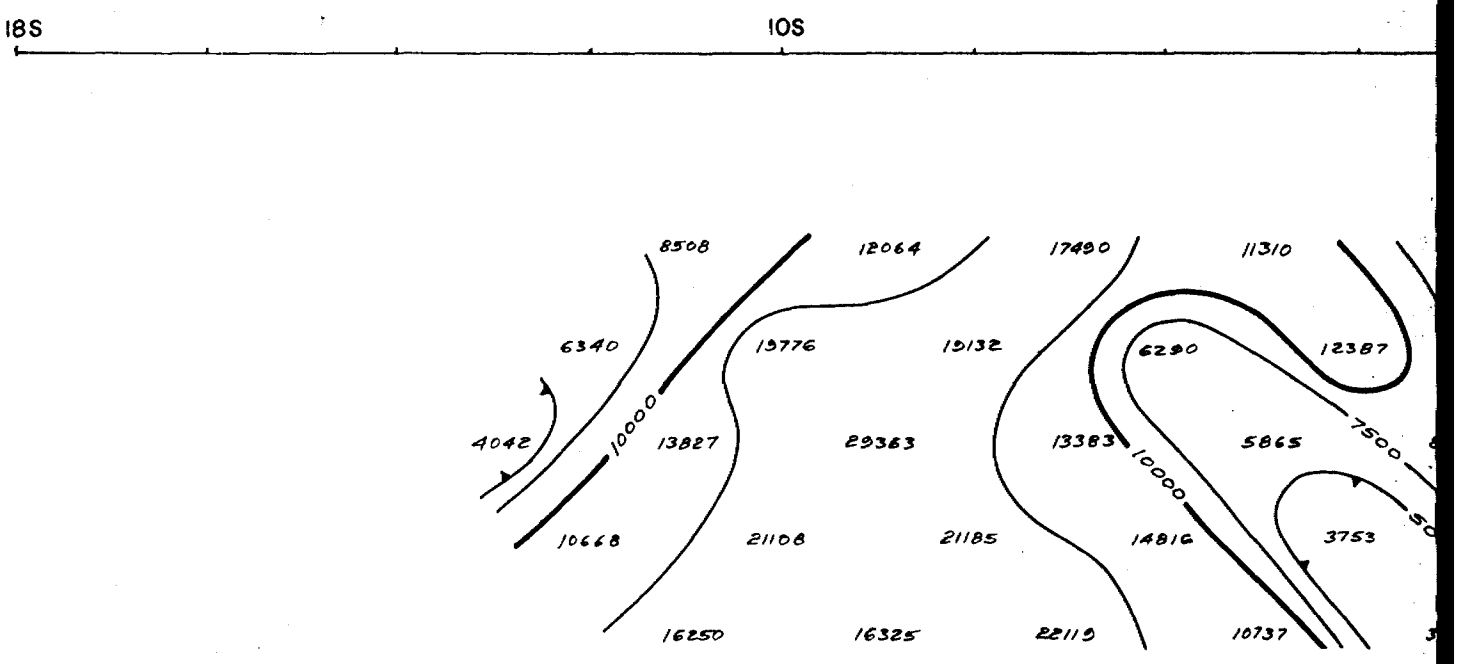
G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY
Time Domain IP Survey
LINE 32+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 9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15776
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6290
12387
4042
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14816
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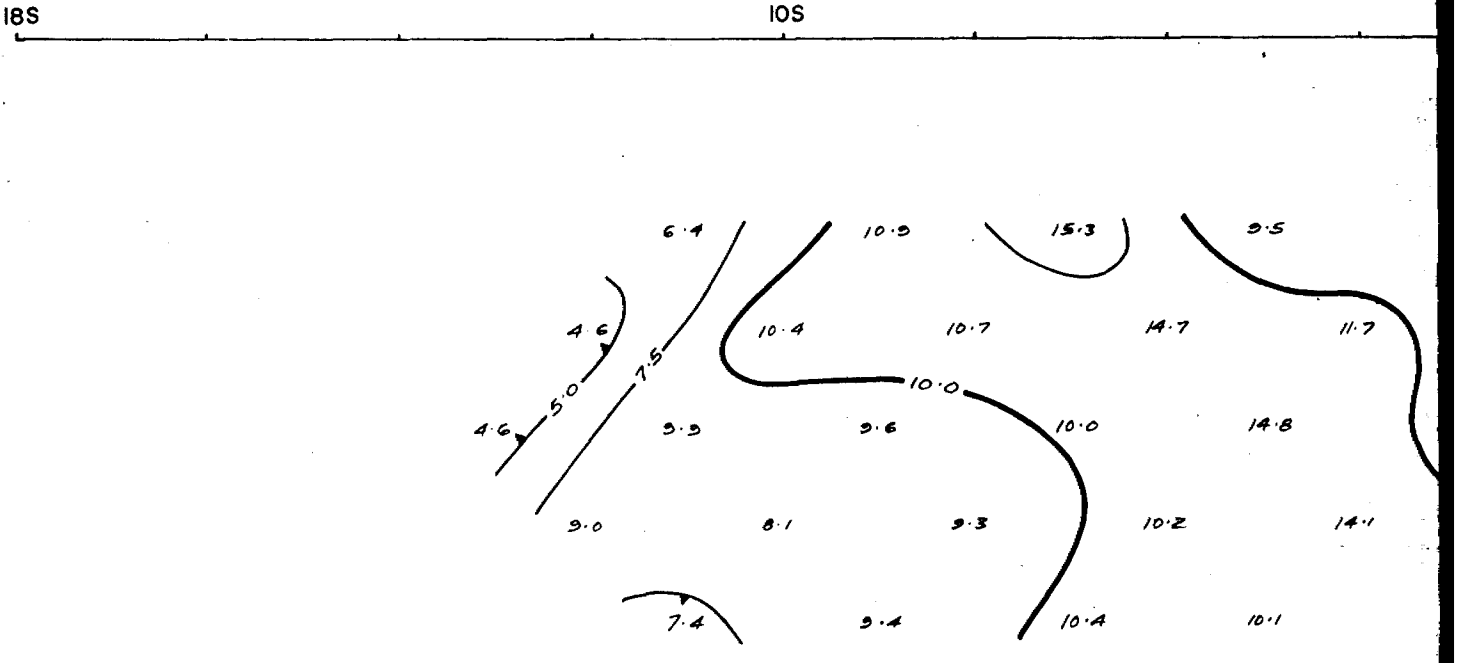
18S
10S
6·4
10·9
15·3
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4·6
10·4
10·7
14·7
11·7
5·0
7·5
10·0
4·6
9·9
9·6
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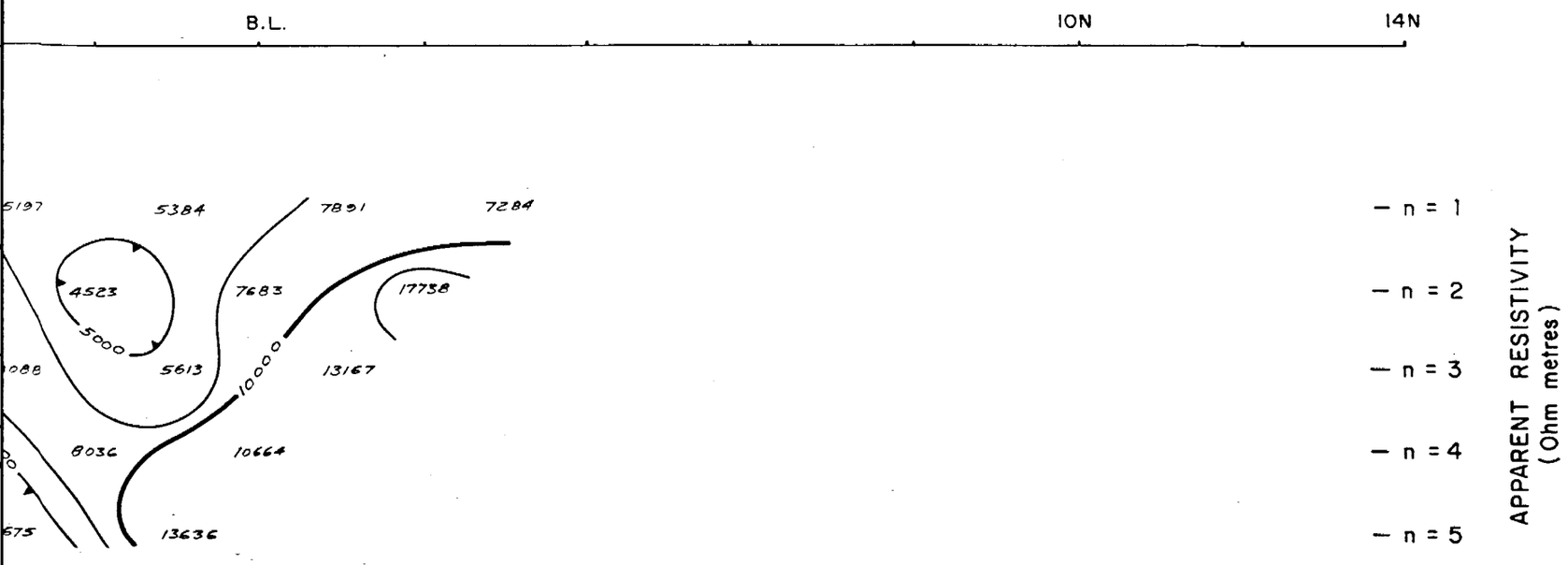
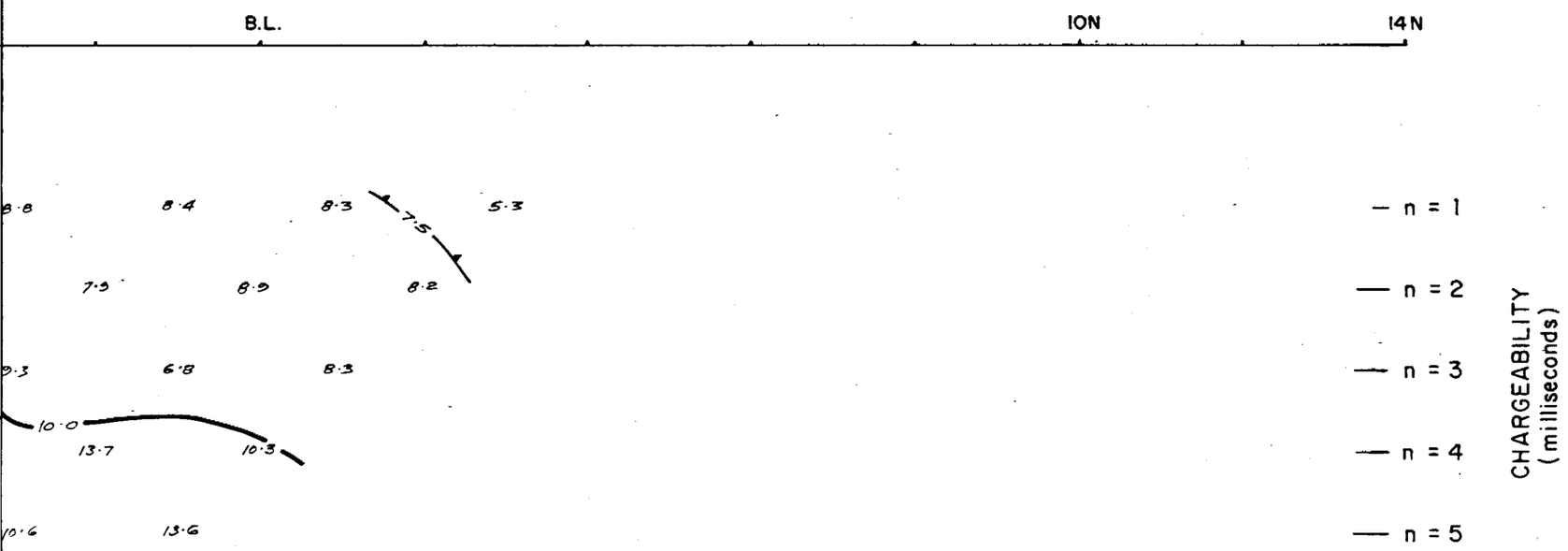
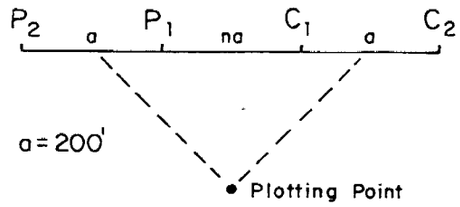
10·2
14·1
7·4
9·4
10·4
10·1







Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120 ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

G. Burton

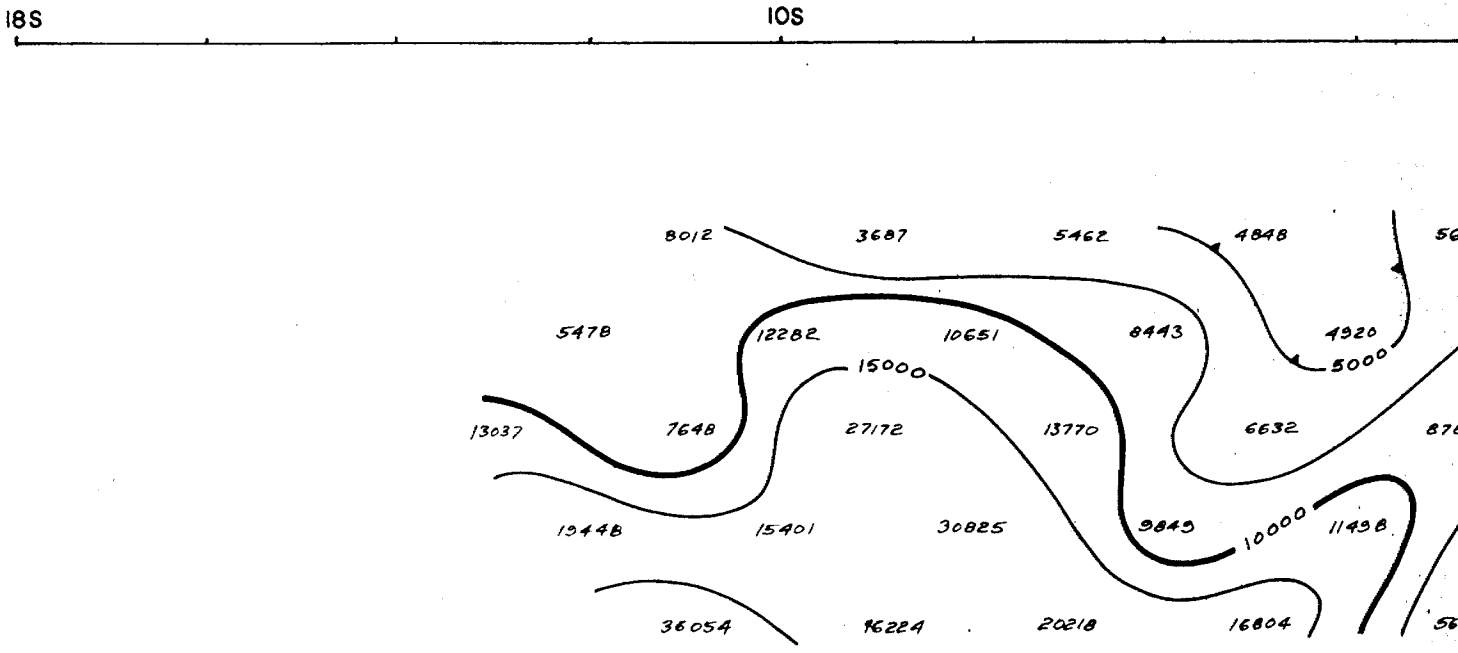
Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey
LINE 36+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 10


18S
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5478
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4920
5000
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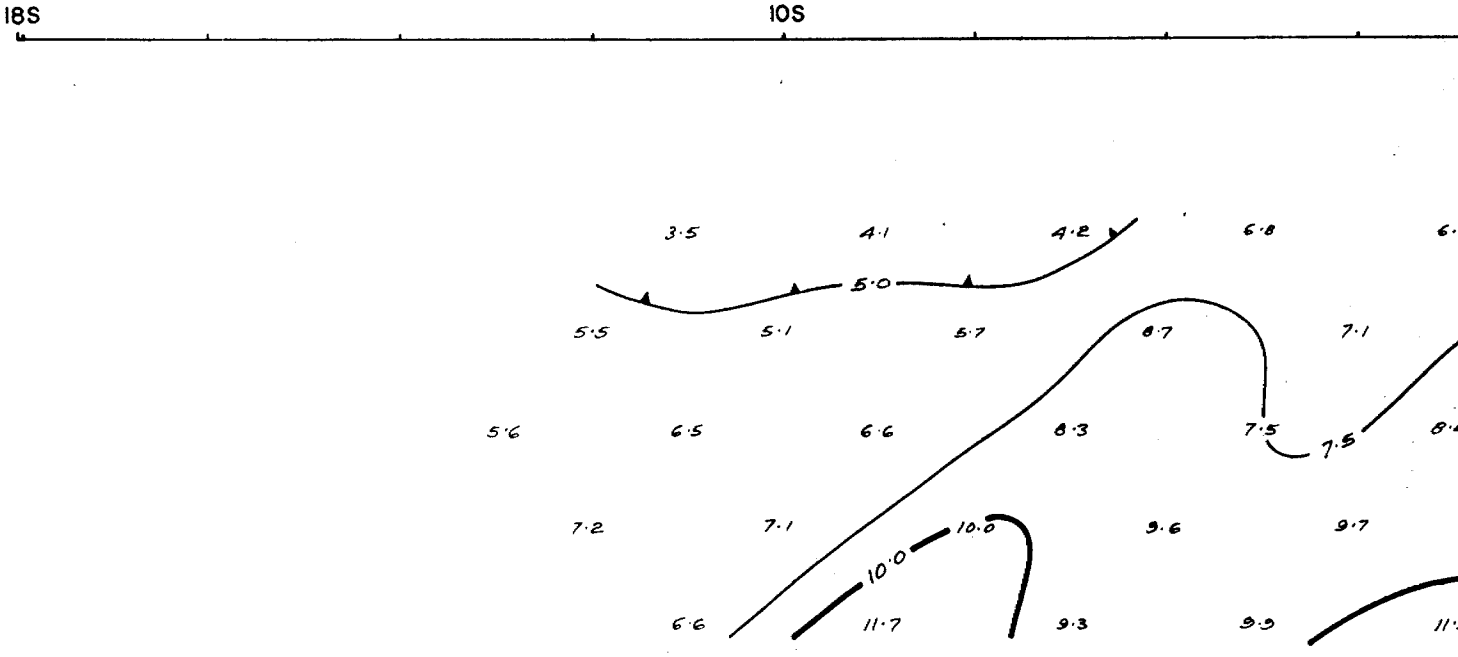
16804


18S
10S
3·5
4·1
4·2
6·8
5·0
5·5
5·1
5·7
8·7
7·1
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6·5
6·6
8·3
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9·7
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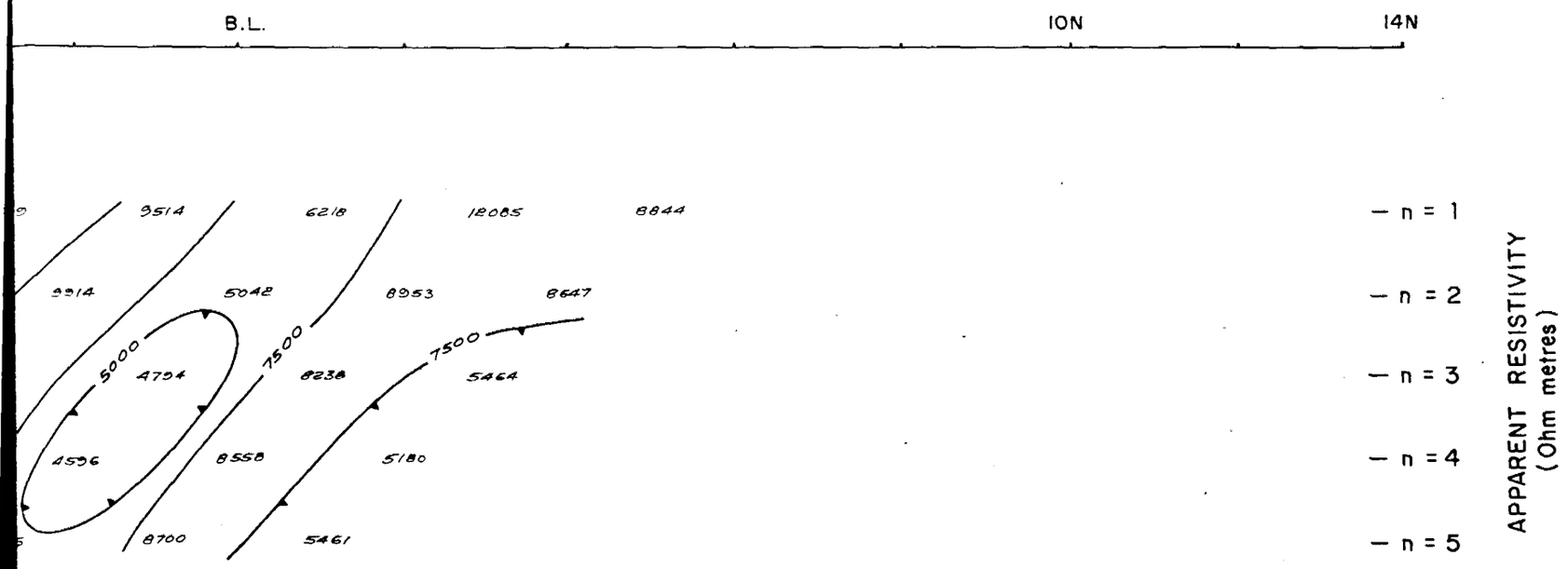
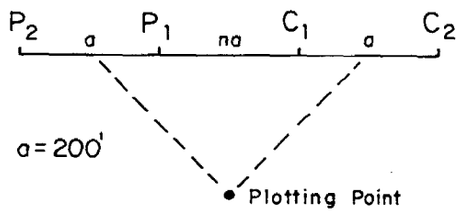
11·7
9·3
9·9

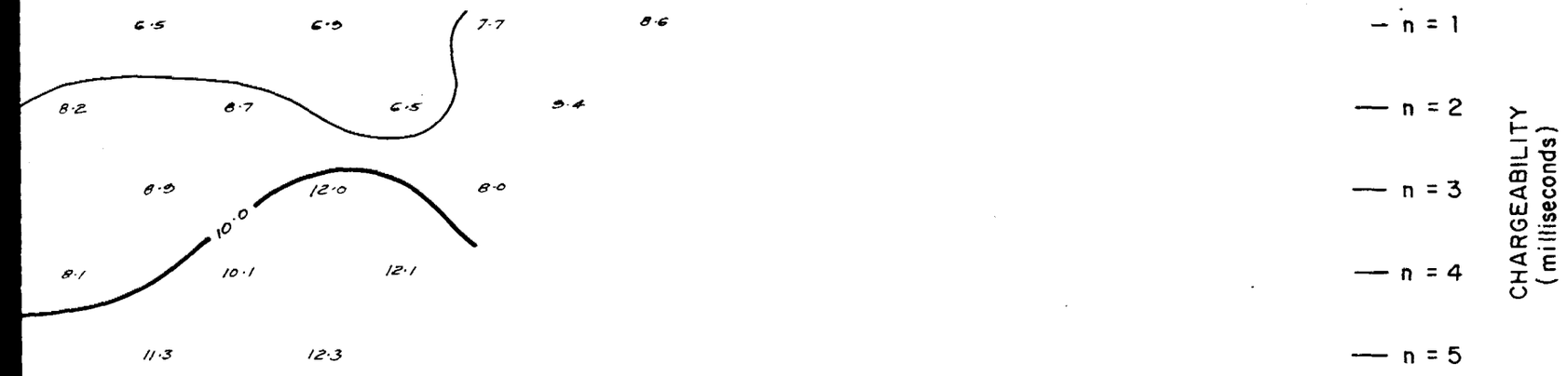




Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.



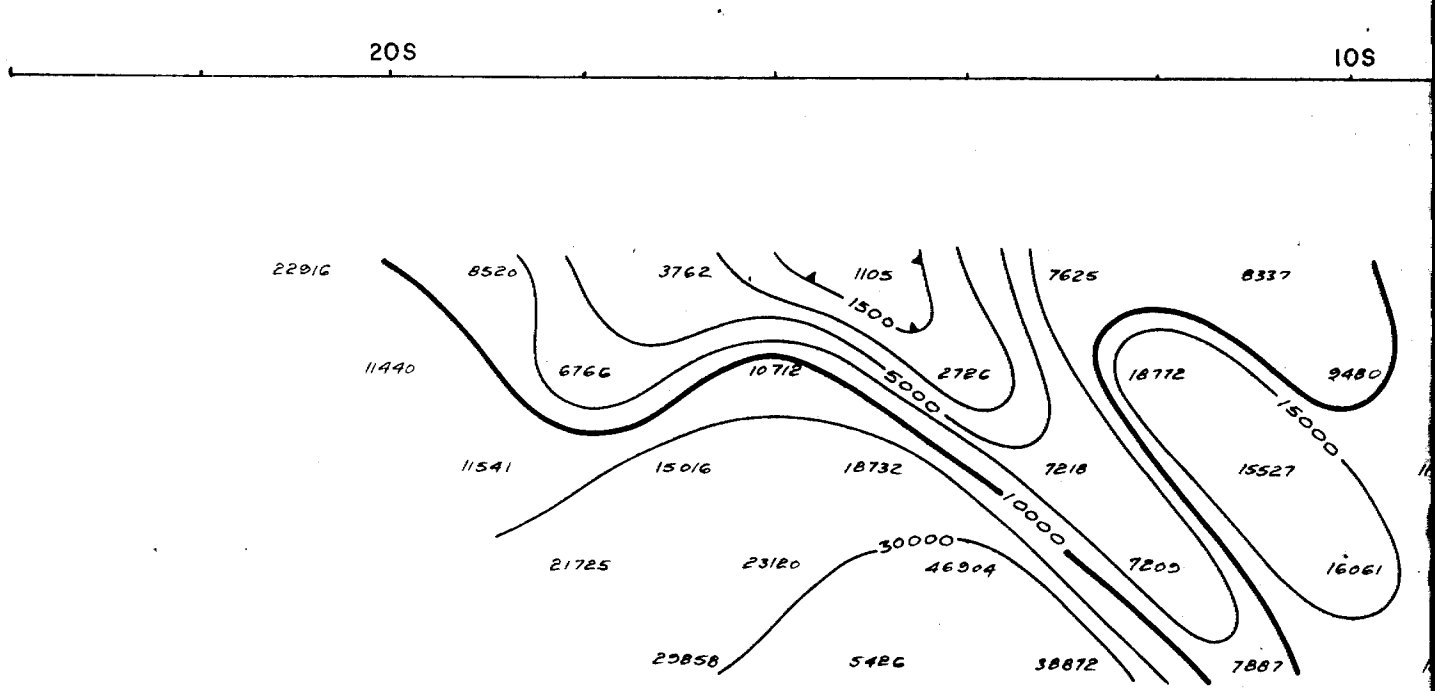
J. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY
Time Domain IP Survey
LINE 40+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 11


20S
10S
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8520
3762
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11440
6766
10712
5000
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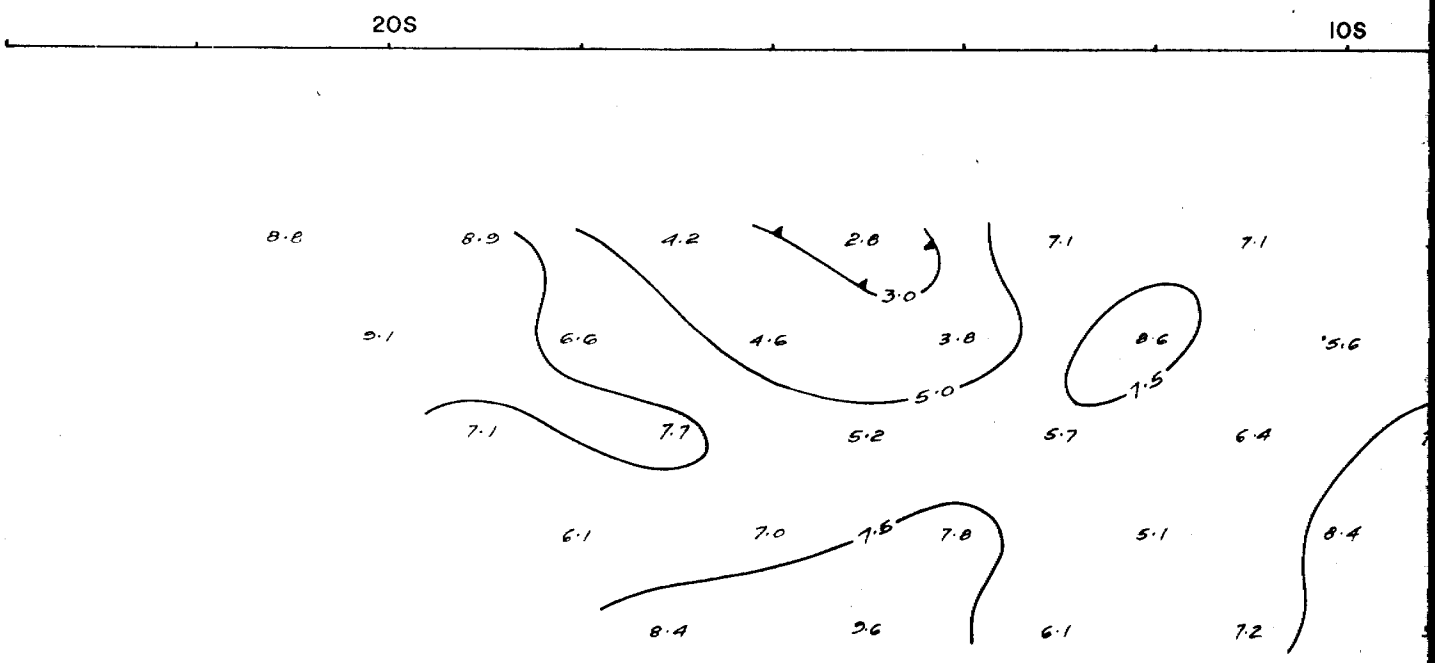
38872
7887


20S
10S
8.8
8.9
4.2
2.8
3.0
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8.6
5.6
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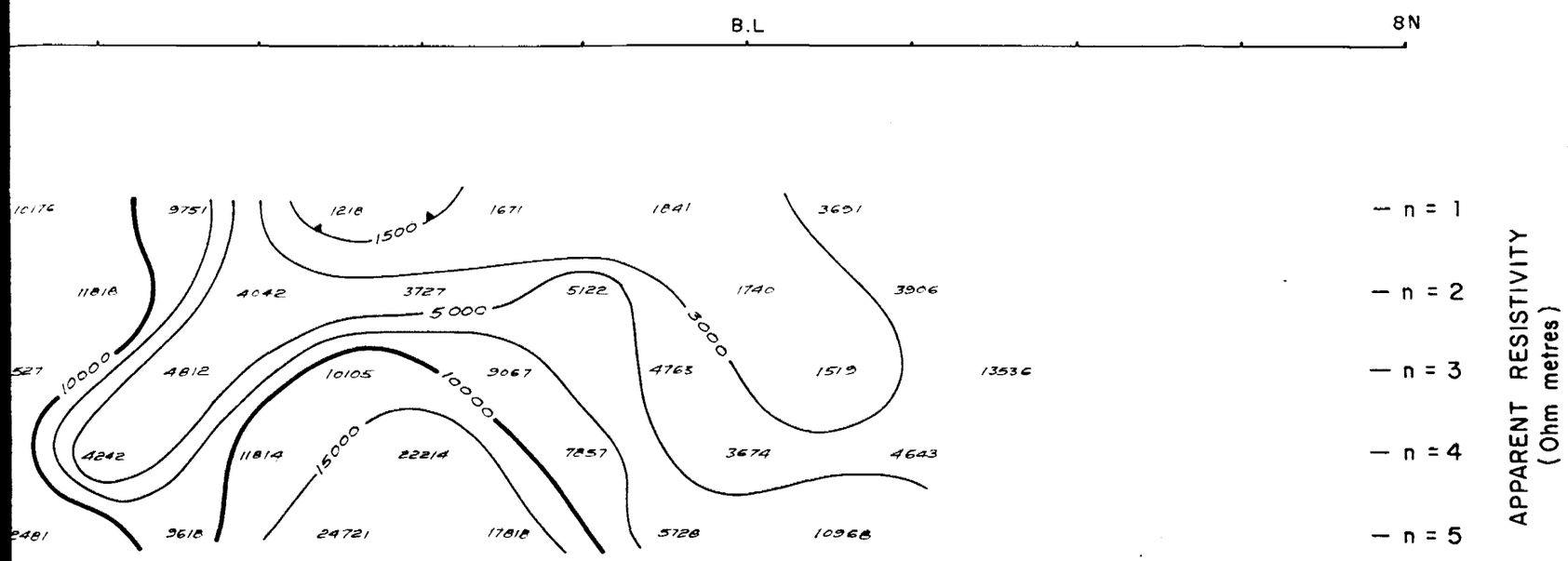
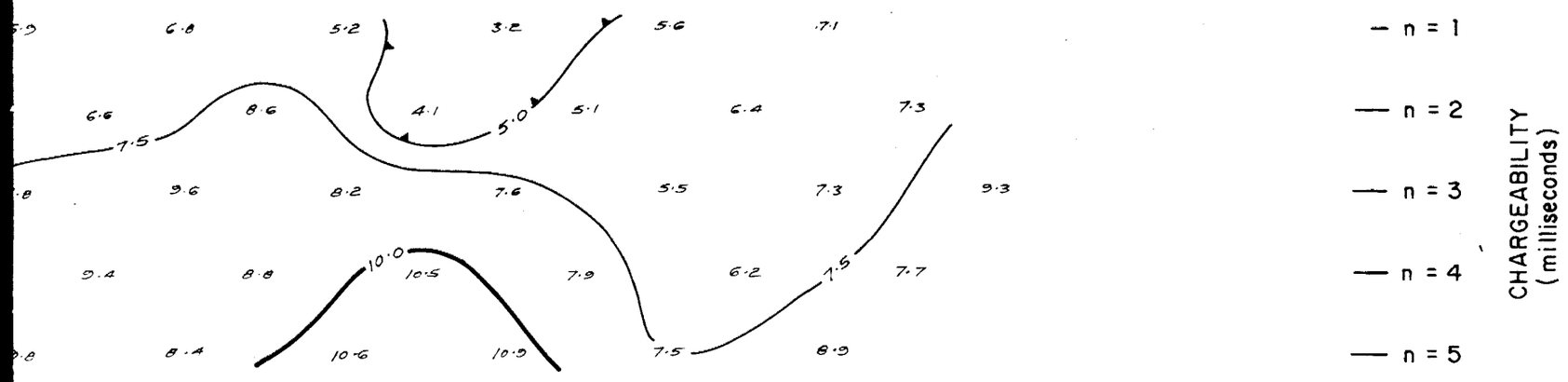
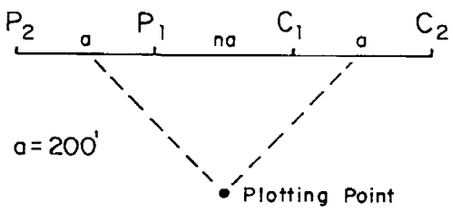
6.1
7.2







Electrode Array :
DIPOLE - DIPOLE
Delay time : 240 ms
Interval time : 120 ms

Resistivity contours in logarithmic intervals of 100, 150, 300, 500, 750 & 1000 ohm-metres.

Chargeability contour interval - 2·5 millisecs.

G. Burton

Santana Petroleum Ltd.
STURGEON LAKE PROPERTY

Time Domain IP Survey

LINE 44+00W

Scale 1" = 200ft

OCTOBER 1985

DWG. NO. 12

I.P. Survey - Sturgeon Lake Property

Santana Pet

Twelve lines of Induced Polarization (I.P.) have been surveyed on the Sturgeon Lake Property of Santana Petroleum Ltd. The work was carried out with a Hunt ec M-4 Time Domain I.P. System using a dipole-dipole configuration with an electrode spacing of 200 feet. Five "N" separations were read, effectively exploring to a depth of between 400 and 500 feet. The precut picket lines were 400 feet apart which enabled coverage over a strike length of better than 4400 feet from line 44W to line 00. The I.P. survey was carried out to define, and determine the extent of, a sulphide showing located on the property several years ago which had an exposed strike length of about 200 feet.

The I.P. has been successful in delineating an anomaly associated with the known mineralization and having variable chargeability and resistivity responses over a strike length of 4000 feet. The I.P. conductor, which appears to represent sulphide mineralization, since it coincides with the showing, extends from line 36W to line 00 and is open to the east. Other, weaker I.P. responses have been detected that indicate fault or shear zones possibly containing minor sulphides.

The I.P. is best described on lines 28W, 24W, 20W where it correlates with the exposed sulphide mineralization, 16W, 4W, and 00. Moderate to strong chargeability responses associated with low resistivity values

....Page Two.

are found on these lines. Except for line 00, where the depth to source has been calculated at 100 feet, all the responses on the above mentioned lines indicate depths close to surface (within 50 feet). The I.P. anomalies get weaker on lines 8W, 12W and 36W where depths of 200 feet, 200 to 300 feet, and 300 to 350 feet respectively are suggested. The conductor is poorly defined on line 32W but appears to continue to line 36W but no further west.

I.P. responses indicative of shearing have been identified in a number of locations in the survey area. These tend to strike in an east-west direction. The following anomalies suggest some minor sulphide mineralization may be present in the shear zones:

1500S on line 44W

500S on Line 40W

650S on line 36W

950S on line 28W

and, 1100S on line 8W

Six diamond drill holes totalling 2500 feet are recommended to test the I.P. anomalies on the Santana property. Five are located along the strike of the main I.P. conductor while one has been spotted on the best response over a shear zone. The following proposed locations are suggested:

DDH #1 - 2+00S - L20W; Dip -50° grid north; length 400 feet

#2 - 3+30S - L4W; Dip -50° grid north; length 350 feet

#3 - 3+20S - L16W; Dip -50° grid north; length 500 feet

...Page Three.

DDH #4 - 3+50S - L00 ; Dip -50° grid north; length 350 feet

#5 - 2+50S - L24W; Dip -50° grid north; length 450 feet

#6 - 8+40S - L36W; Dip -50° grid north; length 450 feet

It is also recommended that additional I.P. surveying be conducted to delineate the eastern limits of the main I.P. conductor and to explore other parts of the property as well as carry out detailed investigations. Estimated costs for this program is as follows:

2500 feet of diamond drilling	$100,000
I.P. Surveying	25,000
Total	$125,000

Respectfully submitted,

G. Burton

Garth B. Burton
Geophysical Consultant

Sturgeon Lake
Feb. '84

C. C. Showing

Location: One hundred and fifty feet east of L 24 W, B.L.0+00
Bearing: 320°
Measured Length: 40 feet
Overburden: 0 - 2 feet regolithic cap

0 - 10' Pyritic Rhyolite (?)(Breccia, stringer zone)
Host is very fine grained aphanitic, non crystalline and highly siliceous, yet weathers preferentially before pyrite (?)(why?).
Rock is massive in structure and blue-grey in colour.
Pyrite mineralization (30-40%) occurs as wormy, dendritic stringers, blebs and fine dissemination. Two phases of pyrite mineralization are noticeable. One is very find $\leq$ 0.5mm with a dull silver-grey metallic lustre (as veinlets, stringers) and a coarse pyrite (L/mm) spatially associated around the edge of the finer pyrite.
Quartz mineralization: At least 2 periods of silica introduction is noticeable in the form of quartz veins. Quartz is milky white, massive (noncrystalline) and subhedral where void fitting occurred. No visible mineralization is seen to be associated with the quartz.
Major fracture filling 304°/50° E - vein 6 - 8" wide
285°/vert. - vein 0.5 - 1" wide

10 - 12.5' Highly oxidized, regolithic zone, rusty-red brown in colour. May represent an original paleo surface of the massive sulfide body but this would have to be confirmed by drilling at depth.

12.5 Contact with sericitic, talcy tuffs very abrupt.

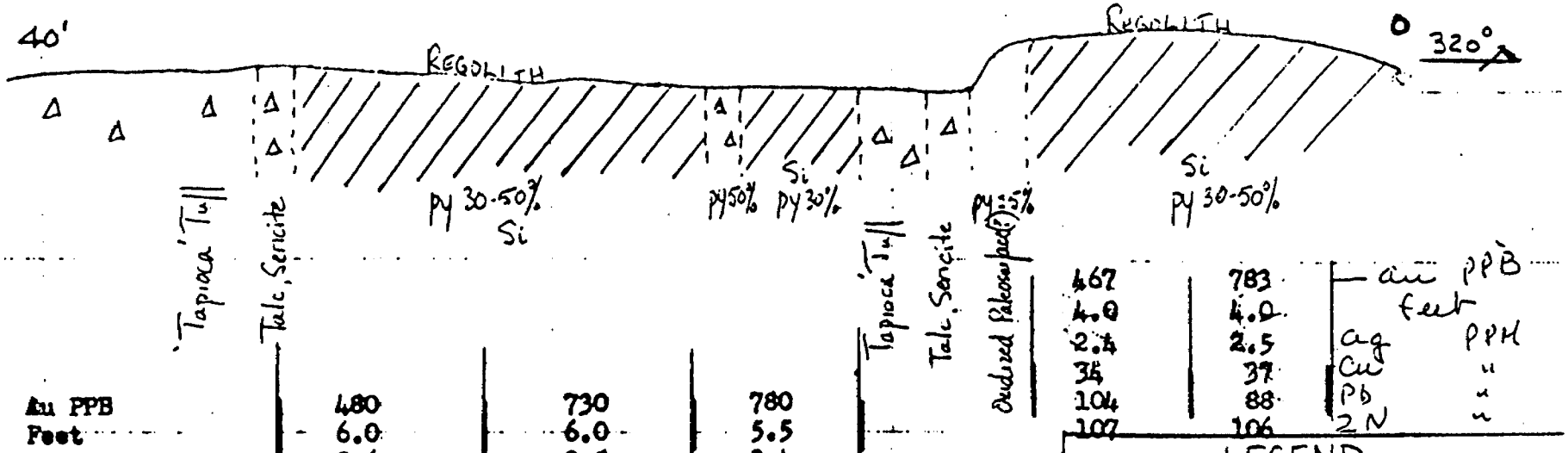
12.5 - 16' Felsic Pyroclastics
This section is characterized by strongly foliated, friable, finely bedded tuffs.
Talcy Sericitic Tuffs: very finely laminated, noncrystalline tuff. Shaley structure due to fineness. Talc and sericite along fracture planes creating a strong fissility.
Unit is light blue-grey-green with purple-red hematite along fissures.
Towards the top of the unit (south) there is a noticeable increase in coarseness of grain size to 'tapioca' tuff. Green-grey in colour with purple-red (hematite) along fracture planes. Clasts are well rounded quartz grains, white to translucent, floating in a dirty grey-yellow matrix. Quartz clasts average $\leq$1 mm in a non-crystalline groundmass.

16 - 32.5' Pyritic Rhyolite (?) as previously.

WEST WALL
WEST SHOWING - C C Zone

WEST WALL

Au PPB	30	10	720	860	800	210	585	20	150	175	730	
Feet	5.0	5.0	3.0	4.0	4.0	1.0	3.7	3.5	2.0	5.0	5.0	
Cu PPM			74	47	72	18	42	49	28	60	51	
Zn PPM			150	168	155	102	511	57	109	142	233	



EAST WALL

Au PPB	480	730	780
Feet	6.0	6.0	5.5
Ag PPM	2.6	2.8	3.4
Cu PPM	32	42	48
Pb PPM	112	243	123
Zn PPM	109	146	94

Horizontal Scale 1" = 5'

5ft 0 2.5 5ft

Vertical Relief not to Scale

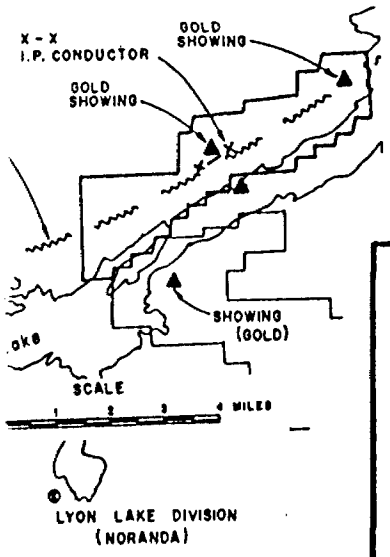
LEGEND

- Siliceous, Pyritic Rock
- Felsic Pyroclastics (Tuffs)
- Geological Boundary
- Py - Pyrite
- Si - Silicification

LONGITUDINAL PROFILE - TRENCH MAP

WEST WALL - (EAST WALL assays also shown)

WEST SHOWING - C C ZONE



L 32 W

L 20 W

L 0

MAFIC VOLCANICS

MASSIVE SULPHIDES (PYRITE) 25 Ft. WIDE 200 Ft LONG

BASE LINE

SHEARED FELSIC PYROCLASTICS (FAULT ZONE)

MAFIC VOLCANICS

Pa 642977

Pa 642980

Pa 6429[illegible]

Ref.:
Patricia Mining Div
Claim Map M.2877
6 Mile Lake Area

SHOWING

INDUCED POLARIZATION CONDUCTOR
X - X - X - X
and Drill Holes 85-1 - 10

SANTANA PETROLEUM CORP

STURGEON NARROWS PROPE
STURGEON LAKE, ONTAI

0 400 800 1200
FEET

030

Report on → 1985 DRILLING

STURGEON NARROWS PROPERTY

6 MILE LAKE AREA

CLAIM MAP M.2877

STURGEON LAKE, ONTARIO

During the fall of 1985, 4,989 feet of drilling were completed in 10 holes on 4 claims numbered as follows: Pa.642977, 642979, 642980, 642981 of a 116 claim group owned jointly by:

Northex Management	25%
Santa Maria Resources	25%
Starburst Energy	25%
Swansea Gold Mines Inc.	25%

The work was performed by International Santana Resources via an option. The consultant for the drilling was L. J. Cunningham, B.Sc., P.Eng. and the project geologist was Mark Masson. The contractor was St. Lambert Drilling. The core is presently stored at Sturgeon River Lodge, Mileage 100 on Highway 599. The lodge owner is Robert Dunham, General Delivery, Savant Lake, Ontario.

The drilling was designed to test a 4,000 foot long I.P. conductor associated with a 25 foot wide massive sulphide zone containing anomalous gold values.

The I.P. survey was completed by Garth Burton, geophysical consultant. A summary of I.P. survey is attached. The drill holes were located to conform with the recommendation of the geophysical consultant.

The I.P. survey was centred on a massive sulphide showing which had been stripped and trenched. The I.P. anomaly extends for approximately 2,000 feet both east and west of the showing. A description of the C C showing is included. (C C means Cunningham-Chorzepa, the finders).

Logs, sections and a plan of drill holes are included.

The holes, drilled along a strike length of 3,600 feet, identified the I.P. conductor to be a pyritic-sericitic-graphitic horizon, (considered to be a chemical sediment), hosted by felsic pyroclastics consisting of steeply dipping lapilli tuff to agglomerate. The tuff varies from massive to weakly banded to strongly foliated and varies from light green, green to buff to yellow. Hardness varies from soft to medium. The agglomerate is heterolithic with

L.J. Cunningham, B.Sc., P. Eng., 1 McPhee Ave., Kirkland Lake, Ontario P2N 1M1

abundant clasts to 3 cm. varying from white to grey quartz, quartz feldspar porphyry, dull grey to black dacitic fragments; pyrite bearing clasts are also present. The agglomerate is most prominent to the north of the pyritic-sericitic zone - that is the footwall - tops are south facing.

Narrow discontinuous massive felsic conformable units occur within the sections. They are considered to be thin felsic flows varying from equigranular to porphyritic.

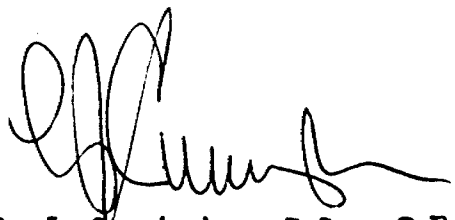
Holes 85-9 and 10, the most southerly holes, reveal that the flows are becoming more massive and mafic to the south (the hanging wall).

Pyrite mineralization, which can be 30-40% of the rocks, occurs predominantly as very fine, wormy, dendritic stringers and disseminations. A bright, coarse pyrite occurs to a limited extent (1-3%) and is commonly found around the edges of the fine pyrite. It is considered to be later than the fine pyrite. Within the mineralized sections narrow, 1/4" - 6", milky-white quartz-carbonate veins occur in random pattern. They are apparently devoid of gold values.

While the drilling did not encounter economic mineralization, the strong development of massive pyrite, in descrete pods, with highly anomalous gold mineralization in a persistent structure within a major hydrothermal alteration halo extending for several miles, strongly suggest that further investigation is warranted.

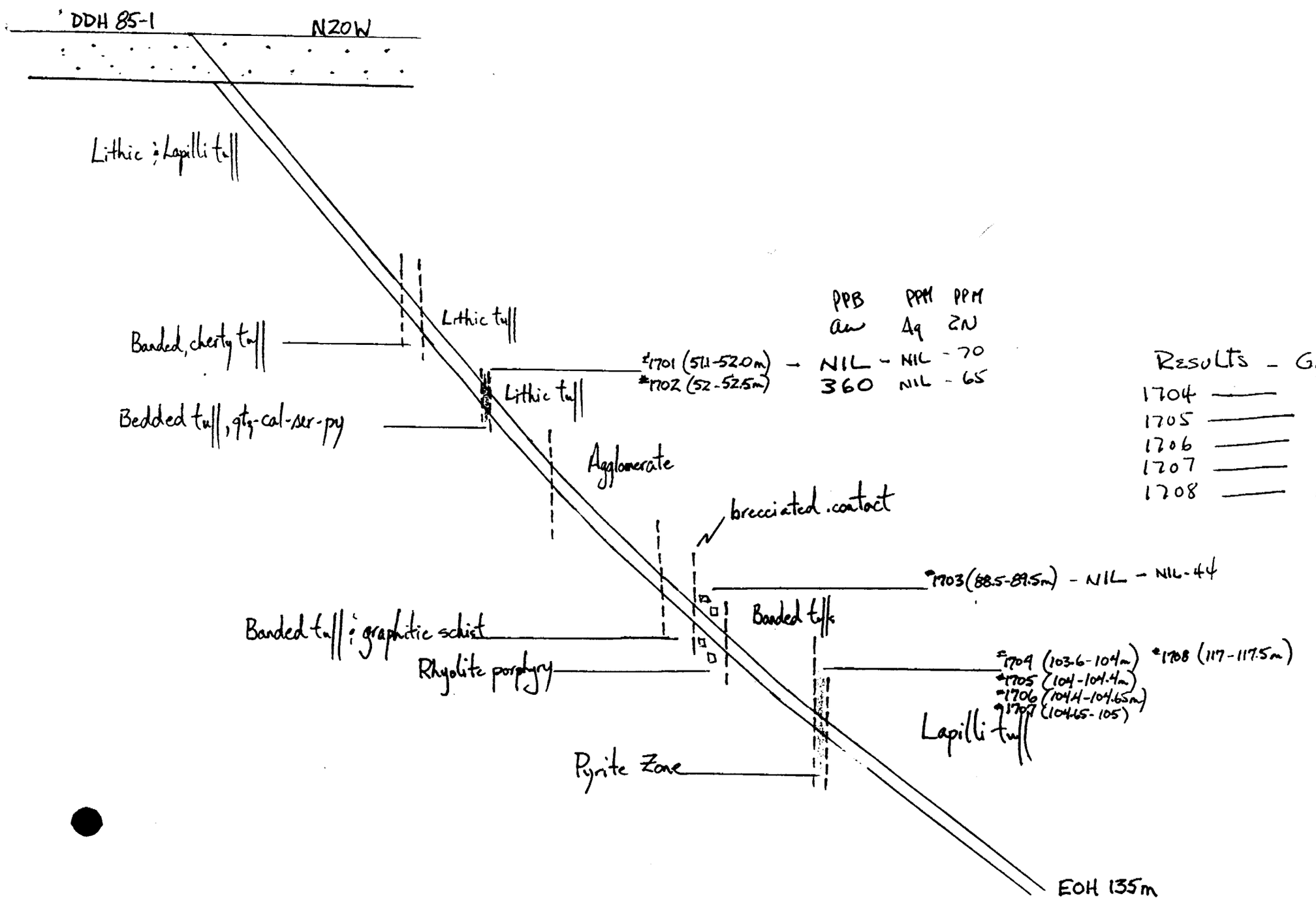
A program of soil sampling and whole rock analyses is recommended to hopefully define targets for further investigation.

Signed,



L. J. Cunningham, B.Sc., P.Eng.,
Mining Engineer

Dated at
Kirkland Lake, Ontario
26 March, 1986


DDH 85-1
N20W
Lithic ; Lapilli tuff
Banded, cherty tuff
Lithic tuff
Lithic tuff
Bedded tuff, qtz-cal-ser-py
Agglomerate
brecciated contact
Banded tuff ; graphitic schist
Rhyolite porphyry
Banded tuff
Lapilli tuff
Pyrite Zone
EOH 135m
PPB Au PPM Ag PPM Zn
*1701 (511-520m) - NIL - NIL - 70
*1702 (52-52.5m) 360 NIL - 65
*1703 (88.5-89.5m) - NIL - NIL - 44
*1704 (103.6-104m)
*1705 (104-104.4m)
*1706 (104.4-104.65m)
*1707 (104.65-105)
*1708 (117-117.5m)
Results - Gold PPB - Ag - PPM Zn
1704 — NIL NIL - 44
1705 — NIL 0.4 60
1706 — NIL 0.4 85
1707 — 30 0.6 91
1708 — NIL NIL 47
Scale
1cm = 5m
1:500
Sturgeon Narrows Gp.
Diamond Drill Hole 85-1
L20+00 W
2+00 S
Depth 135m
Nov. 15-17/85

DIAMOND DRILL RECORD

LOGGED BY M.W. MASSON

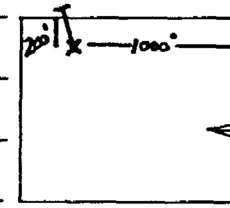
PROPERTY Sturgeon Narrows Group

D.D.H. No. 85-1 PAGE 1

LATITUDE L20+00 W BEARING OF HOLE N20°W STARTED Nov. 15/85

CLAIM No. 642980

DEPARTURE 2+00 S DIP OF HOLE -50° COMPLETED Nov. 17/85



DIRECTION AND DISTANCE FROM NE. CLAIM POST

ELEVATION DIP TESTS -50° at collar, -38° EOH. DEPTH 135 m, 445 ft.

METRES ~~FOOTAGE~~ FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	TO	SAMPLE LENGTH	ASSAY				
0	7	Overburden									
7	135	Felsic Metavolcanics Hole consists of felsic pyroclastics (?) ranging from bedded tuffs (in part cherty) to crystal tuffs to coarse lithic tuffs and agglomerates and related rhyodacitic flows; deposited in subaerial to a subaqueous environment.									
7	8.5	Lithic Tuff Buff-green massive to weakly foliated tuff. Very fine grained matrix with medium grained clasts up to 7mm, average 3-4mm and consist of subrounded to ellipsoidal quartz, broken sub-euhedral feldspar and light green (chloritized) fragments, possibly of intermediate composition.									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

D.D.H. No. (85-2) 85-1 PAGE 2

CLAIM No. _____

N

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
8.5	17	8.5m. Contact between lithic tuff and lapilli tuff is sharp at 45° t.c.a. (to core axis) and is marked by 2cm of quartz and aphanitic groundmass material - quartzofeldspathic Lapilli Tuff. - Agglomeratic Coarse grained dark grey clasts in a light grey fine grained tuffaceous matrix. Bimodal sizing of clasts. Framework clasts reach up to 3cm but avg. 1-2cm, are dark grey, very fine grained to aphanitic and are angular to ellipsoidal in shape. In general these framework clasts are cryptodacitic in composition while others show a distinct porphyritic character ie. 'Qtz-eye' porphyry fragments. 5-10% In places, the fine grained clasts are partially replaced with pyrite. The pyrite is v.f.g. and is confined within the bounding of the clasts border and generally does not penetrate the surrounding groundmass. Pyrite is generally mottled with a disturbed appearance ie. in situ brecciation. frag in pyrite					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		Matrix consists of fine fragments generally averaging 2-3mm and is dominated by rounded to sub-angular quartz, light grey to white in colour (may also be in part feldspathic) 50% Groundmass is very fine grained (v.f.g.) quartz-feldspar. 40-45%					
12	20.5	Lithic-Lapilli Tuff light grey green, medium grained tuff with minor lapilli sized frags about 1% of whole. Clast foliation at 45° t.c.a. This unit appears to be somewhat distinct in that it has abundant yellow-green sericitic-chlorite-quartz stringers or shears also at 45° t.c.a. therefore giving it a different appearance than the previous lapilli tuff. Clasts avg. 2-3mm in size and consist of qtz-70% buff-white feldspar (in part kaolinized) 10-15% and lithics Matrix is dominantly <2mm subrounded quartz not stretched as are framework clasts.					
		NOTE: The terms framework, matrix and groundmass are used here with a sigle reference, that is framework > matrix > groundmass.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES.

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		Groundmass is v.f.g. to aphanitic light grey-green quartz-feldspar.					
20.5	21	Dark grey to light grey very faintly banded fine Tuff. Banding at 145° T.C.A. consists of qtz, feld 75% and 25% lithic frags - dacitic (?) fragments are ≤ 1mm in size with buff-white feldspar and dark grey-green lithics. Feld. and qtz frags are rounded to sub-hedral, while lithics are ellipsoidal and angular.					
21	34.2	Massive, yellow-green siliceous unit may be tuffaceous or possible flow. Very homogeneous with v.f.g. ≤ 1mm qtz-feld frags? surrounded by wispy, yellow-green aphanitic mineral assemblage.					
34.2	37	Lithic Tuff. Dark blue-grey, fine grained tuff in sharp contact with overlying unit. Lower contact is gradational with banded-laminated tuffs.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		Unit is fine to medium grained, massive with good foliation at 45° t.c.a and has a distinctly pitted surface in core. Light grey-white qtz-fsp clasts up to 5mm (avg 2-3mm) in a v.f.g. light grey groundmass.					
37	40.6	Banded Tuff - may be in part chert. Well developed schistic banding promoted by white, grey, dark grey colouration. Unit is aphanitic with a sub-conchoidal fracture. Sericite in prevalent along parting planes parallel to banding at 45° t.c.a. Unit is highly siliceous (SiO_2 95%(+)). Bedding ranges from 1-2mm thick to 23cm. This unit may represent subaqueous deposition of very fine siliceous (qtz-fs) particulate matter possibly intercalated with chemical chert.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 6

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

N

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	Au PPB	Ag PPM	ZN PPM		
40.6	51.1	Buff-white Tuff Contact with overlying bedded unit is sharp. This unit is very light in colour and is composed of fine grained clasts up to 5mm (avg. 2-3mm). Qtz-fsp (in part kaolinized) 85-90%. Lithics 2-5%. matrix 10-15%. Clasts are generally ellipsoidal and stretched with long axis at 45° t.c.a. Lithic frags are chloritized except for one which show pyrite replacement as noted earlier (<<< 0.5%) Unit grades into slightly coarser grained tuffs and lapilli tuffs and also darkens.									
~~51.1~~	~~52.5~~										
51.1	52.5	Lithic Tuff - Bedded Tuff and Qtz-Calcite-Sericite-Pyrite zone. Light grey tuffs with sub-euhedral pyrite blebs associated with dark grey fragments up to 5mm ie. pyrite appears to be replacing these fragments. Unit is very sericitic + tends to break along foliation planes and does not split. Grades gradationally into a v.f.g. bedded tuff.	M01	51.1	52.0	~~50cm~~ 90cm	NIL	NIL	70		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 7

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn
		52.0-52.5. Qtz - calcite - sericite - pyrite Bl/- green to white colouration, very irregular qtz - calcite - sericite alteration with finely disseminated, sub-euhedral pyrite 1-2%, and also occurs in small stringers	1762	52.0	52.5	50cm	360	NIL	65
52.5	57.5	Same unit as previous - Lithic tuff intercalated with finely bedded tuffs. This tuff is characterized by lime-green coloured (aquamarine) alteration around dark grey frags up to 5mm. agn sub-euhedral pyrite is present in sections containing these altered frags.							
57.5	63	Banded tuff. Finely banded dark grey, light grey to dark green. Very fine grained to aphanitic with chlorite - sericite parting plates along bedding at 50-65° t.c.a. Unit is very siliceous with minor qtz - calcite alts in form of small stringers and pods							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 8

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
63	80	Lapilli Tuff - Agglomerate Massive, medium to very coarse grained tuffs. Light grey to grey-green with dark-grey dacitic clasts. Fragment clasts sized up to 3-4cm and avg. 1-2cm. consist of f.g. dacite, quartz (white to grey) and altered pumice fragments. Fragments in 2-3% but in places reaches 25%. Clasts are angular to subrounded to ellipsoidal with preferred orientation at 60° t.c.a.					
80	85.0	Intercalated Graphitic schists and finely bedded tuffs Upper contact is sharp with lapilli tuff, lower contact is gradational. Contact at 65° t.c.a. Unit is dark grey to light grey with black graphitic sections up to 1cm but are as small as 1mm. This graphitic section is discontinuous over the 5 metres and is interbedded with fine to coarse tuffs (agglomerate) mentioned previously. May be in part sericitic.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 9

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au	ASSAY ~~Ag~~ Ag	ASSAY ~~Pb~~ Zn	ASSAY ~~Zn~~	
		The unit is very distinctly banded due to the graphitic horizons which are noticeably disrupted in places. The intercalated tuffaceous horizons are coarse to aphanitic and may be in part clasty SiO_2 ?.						Ag	Zn		
							PPB	PPM			
85	89.5	Rhyolite Porphyry (?) - Qtz porph. Silver-grey coloured, highly siliceous porphyritic unit. Unit is massive with abundant dendritic, irregular small quartz veinlets throughout. Groundmass is dark-grey + is aphanitic. Phenocrysts are sub-euhedral (lath to cubic) and intense in luster (hard) with no preferred orientation. They are light green in colour and although they have the crystal habit of fsp. ▯, ▭ they do not appear to be feldspars ie display no twinning or cleavage ie. closer to quartz. Upper contact (85m) is marked by brecciation over 10cm while lower contact is sharp at 50° T.C.A. Some minor py <1% Sample taken as representative.	1703	88.5	89.5	1m	NIL	NIL	44		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 10

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

N ← DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY Ag PPM	ASSAY Zn %
89.5	103.6	Banded Tuffs. Light to dark grey-green well banded tuffs very fine grained to aphanitic, very siliceous + coherent. Bands vary from 1-2mm to 1-2cm and are very slightly chloritic. Quartz intercalated with lithic-lapilli tuff. (98.5-99m) May be in part chert - hyalocrystalline (non crystalline) and very light grey - buff in colour.							
103.6	105.	Pyrite Zone Unit starts as a grey-buff very fine grained sericitic tuff with very fine pyrite associated with some of the lithic clasts and grades into semi massive pyrite (50%) and then grades into lithic-lapilli tuffs.		103.6					
		103.6-104 (40cm) - Pyritic Sericite Schist (lapilli tuff) Unit is dirty buff-brown with some clasts evident. Very sericitic - tends to break into buttons. Pyrite reaches up to 5-7%. Where pyrite occurs the unit is notably	1704	103.6	104	40cm	NIL	NIL	44

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 11

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY Ag PPM	ASSAY Zn
		more siliceous and coherent. In places, qtz clasts up to 5-6mm are evident. Pyrite occurs as small rounded buttons, stears and cubes up to 3mm. Also occurs as very fine dissemination throughout the groundmass. Host rock is a qtz-fsp lithic tuff with minor calcite (effervesces), to a sericite schist.							
		104-104.4 Semi Massive wormy, dendritic pyrite in a qtz-sericite lithic tuff	1705	104	104.4	40cm	NIL	0.4	60
		Pyrite is two-phased - coarse silvery stears + buttons up to 5-6mm and very finely dessiminated pyrite. Pyrite reaches up to 50%. Groundmass is dark grey, v.f.g. quartz. Minor sericite is noted in some areas as distinct parting planes.							
		104.4 - 104.65 - 2.5cm wide, milk-white qtz-calcite vein at 10-15° t.c.a. crosscutting semi-massive pyrite zone No mineralization in qtz.	1706	104.4	104.65	25cm	NIL	0.4	85

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-1 PAGE 12

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

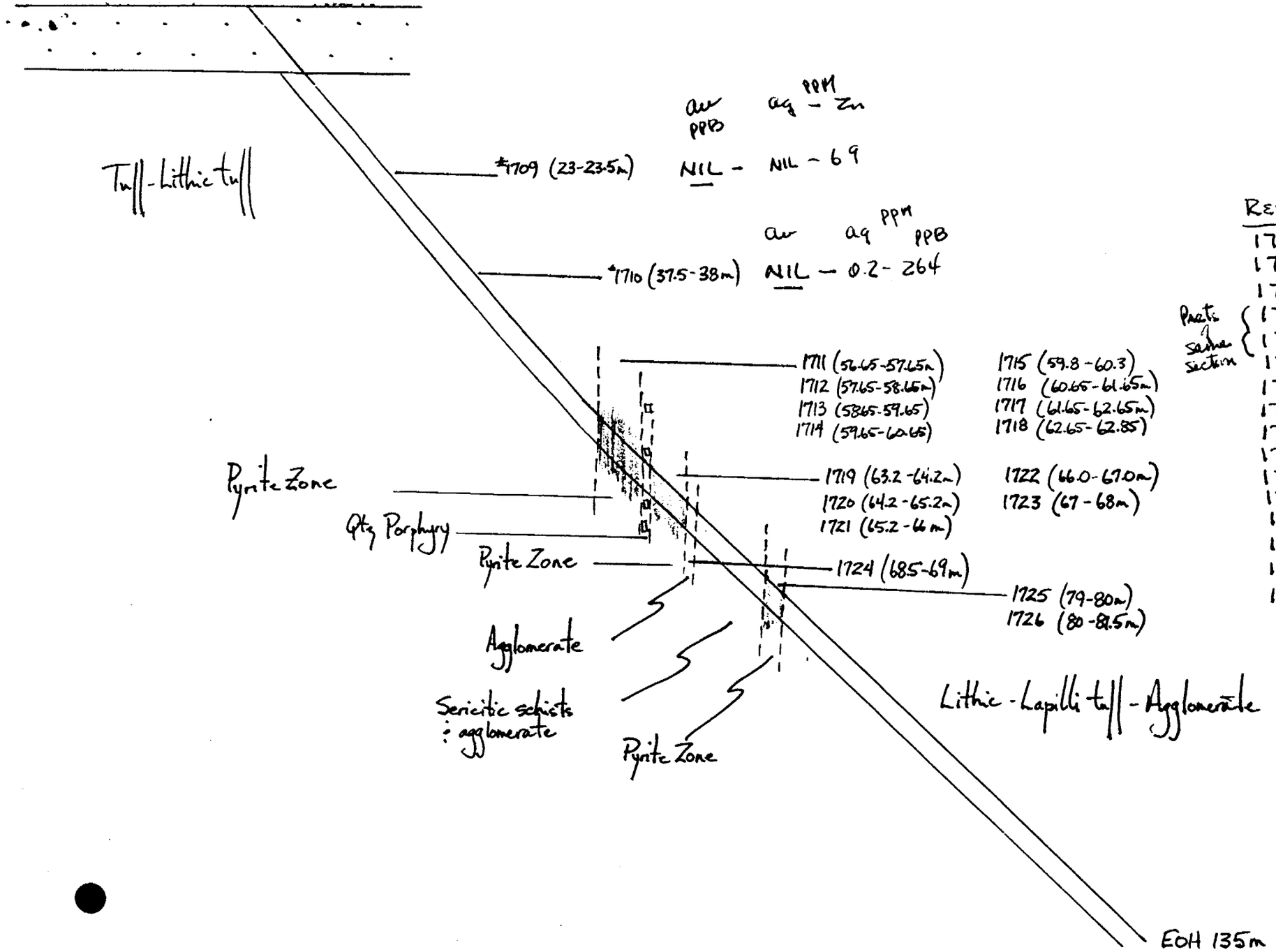
ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Ag	ASSAY % Zn
		104.65-105 Semi-massive pyrite in qtz-feldspathic tuff grading to minor pyrite in qtz-sericite schist. Pyrite ends abruptly at 105m. Unit becomes a very fine sericitic schist (tuff) and grades into a coarse lapilli Tuff at 106.5m.	1707	104.65	105	35cm	30	0.4	
105	135	Lapilli Tuff Grey-buff coloured tuff with fragment clasts up to 3-4cm avg 1-2cm. Clasts are elongated, ellipsoidal and composed of qtz and rhyodacite frags generally light to dark grey in color 15-20%. Matrix is angular to sub-rounded quartz and lithic frags up to 5-6mm white to grey in colors. Groundmass is grey-buff coloured qtz-fsp-sericite. Frags elongated at 70° t.c.a.							
		Sample with minor diss. pyrite	1708	117.0	117.5	50cm	NIL	NIL	47
		135m. E.O.H.							



	Au PPB	Ag PPM	Zn
*1709 (23-23.5m)	NIL	NIL	69
*1710 (37.5-38m)	NIL	0.2	264
1711 (56.65-57.65m)			
1712 (57.65-58.65m)			
1713 (5865-59.65)			
1714 (59.65-60.65)			
1715 (59.8-60.3)			
1716 (60.65-61.65m)			
1717 (61.65-62.65m)			
1718 (62.65-62.85)			
1719 (63.2-64.2m)			
1720 (64.2-65.2m)			
1721 (65.2-66m)			
1722 (66.0-67.0m)			
1723 (67-68m)			
1724 (685-69m)			
1725 (79-80m)			
1726 (80-81.5m)			

Results - Gold PPB - Ag PPM - Zn

	Gold PPB	Ag PPM	Zn
1711	420	0.7	72
1712	560	0.8	93
1713	600	0.7	90
Pyritic sericite section 1714	830	1.0	97
Pyritic sericite section 1715	50	NIL	33
1716	400	0.6	72
1717	570	1.0	55
1718	50	0.2	44
1719	430	0.9	101
1720	720	1.1	107
1721	1040	1.4	100
1722	610	0.7	92
1723	340	0.5	90
1724	20	NIL	51
1725	150	1.2	381
1726	210	1.0	110

Scale
1cm = 5m
1:500

Sturgeon Narrows Gp.
Diamond Drill Hole 85-2

L24+00W
2+00S

Depth 135m
Nov. 17-18/85

DIAMOND DRILL RECORD

LOGGED BY M.W. Masson — Santana Petroleum Corp., L.J. Cunningham & Assoc.

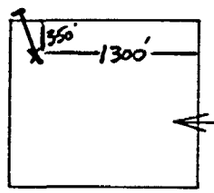
PROPERTY Sturgeon Narrows

D.D.H. No. 85-2 PAGE 1

LATITUDE L24+00W BEARING OF HOLE N20°W STARTED Nov. 17/85

DEPARTURE 2+00S DIP OF HOLE -50° COMPLETED Nov. 18/85

ELEVATION _____ DIP TESTS -50 at collar, -45° EOH DEPTH 135m, 445ft.



CLAIM No. 642980

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES FOOTAGE FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	TO	SAMPLE LENGTH	ASSAY Au PPB	PPM Ag	Zn
0	9	Overburden							
9	56.65	Tuff-Lithic T-//							
		Light grey-green massive to foliated to weakly banded tuffs. Very fine grained to medium grained. Lithic tuffs contain up to 5% black, angular lithic frags up to 1cm in a buff-grey green qtz-fsp matrix and groundmass. Sericite in pervasive along foliation planes at 45-50° t.c.a.							
		23-23.5 Buff-grey, v.f.g. T-// with 1-2% pyrite frags. - Characteristic bright green altn (?) specks throughout garnierite green ? Pyrite occurs as disseminated euhedral masses.	1709	23	23.5	50cm	NIL	NIL	69
		37.5-38 Brecciated T-// and graphitic schist. Black graphitic schist with minor pyrite (<1%) in bedded form up to 2mm wide. and is brecciated by qtz-calcite veinlets.	1710	37.5	38	50cm	NIL	0.2	264

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-2 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn PPM
56.65	62.85	Pyrite Zone.							
		Wormy - dendritic, disseminated to semi massive pyrite.							
		in qtz ± calcite - sericite tuff. Contact with overlying tuffs is							
		sharp. Pyrite avgs 5-10% and is coarse wormy anhedral							
		pyrite surrounded by very fine, subhedral pyrite, in an aphanitic	1711	56.65	57.65	1m	420	0.7	72
		blue-grey siliceous ground mass.	1712	57.65	58.65	1m.	560	0.8	93
			1713	58.65	59.65	1m	600	0.7	90
		* Sample 1714 has 2 milky-white qtz-calcite-dolomite veins	1714	59.65	60.65	1m (50cm)	830	NOTE- VALUES ARE NOT	
		one 30cm, the other 12cm - These are sampled separately (1715)	1715	59.9	60.30	50cm.	50	NIL WITH THE Q-C. VEINS	
		Veins are barren and in places are drusy, pyritic vein							
		wall rock frags are included in vein material.							
			1716	60.65	61.65	1m.	400	0.6	72
		In places where sulphide content decreases the host rock is	1717	61.65	62.65	1m.	570	1.0	55
		seen to be a coarse lapilli tuff.	1718	62.65	62.85	20cm	50	0.2	44
		Sample 1718 - dirty brown lapilli tuff with 1-2% pyrite occuring							
		within fragments							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-2 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPB	ASSAY Zn PPB		
62.85	63.2	Porphyry (?) Light grey-brown (muddy) aphanitic groundmass with rounded to sub-hedral (squares + laths) quartz. Phenos are 10% and are up to 3-4mm and are both randomly oriented and also display a preferred orientation. Groundmass is also moderately soft but does not react to HCl. No sulphide mineralization									
63.2	68	Pyrite Zone	1719	63.2	64.2	1m	430	0.9	101		
		Heavy pyrite as previous, contact is sharp at 45° t.c.a.	1720	64.2	65.2	1m	720	1.1	107		
		Pyrite blebbles up to 20%-25%	1721	65.2	66.0	80cm	1040	1.4	100		
			1722	66.0	67	1m	610	0.7	92		
		Sample 1722 is a 1 metre section of pyrite with milk-white qtz-flsp(?)-dolomite veins.	1723	67	68	1m	340	0.5	90		
		Sample 1723 is the bottom of the pyrite zone where ore goes from semi-massive pyrite (25%) to minor 1-2% py. as disrupted masses in basalt full.									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-2 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

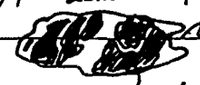
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn PPM
		A notable increase in sericite corresponds with the drop in sulphide content.							
68	69	Footwall Agglomerate. Heterolithic agglomerate with clasts up to 3cm, avg 1-1.5cm (50%) Clasts white to grey quartz-fsp porph and dark grey rhyo-dacitic frags in a buff qtz-fsp groundmass. An interesting feature is the presence of pyrite bearing fragments up to 3cm (avg < 0.5cm). The pyrite is very similar looking to that in the pyrite zone but is limited to the dark-grey (rhyo-dacite?) frags.	1724	68.5	69	50cm	20	NIL	51
		1—2cm—1  a clast pyrite.							
69	79	Dirty-grey brown soft talc. Very muddy in appearance with abundant sericite along foliation planes. Grades from very fine grained to porphyritic to coarse grained agglomerate.							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-2 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

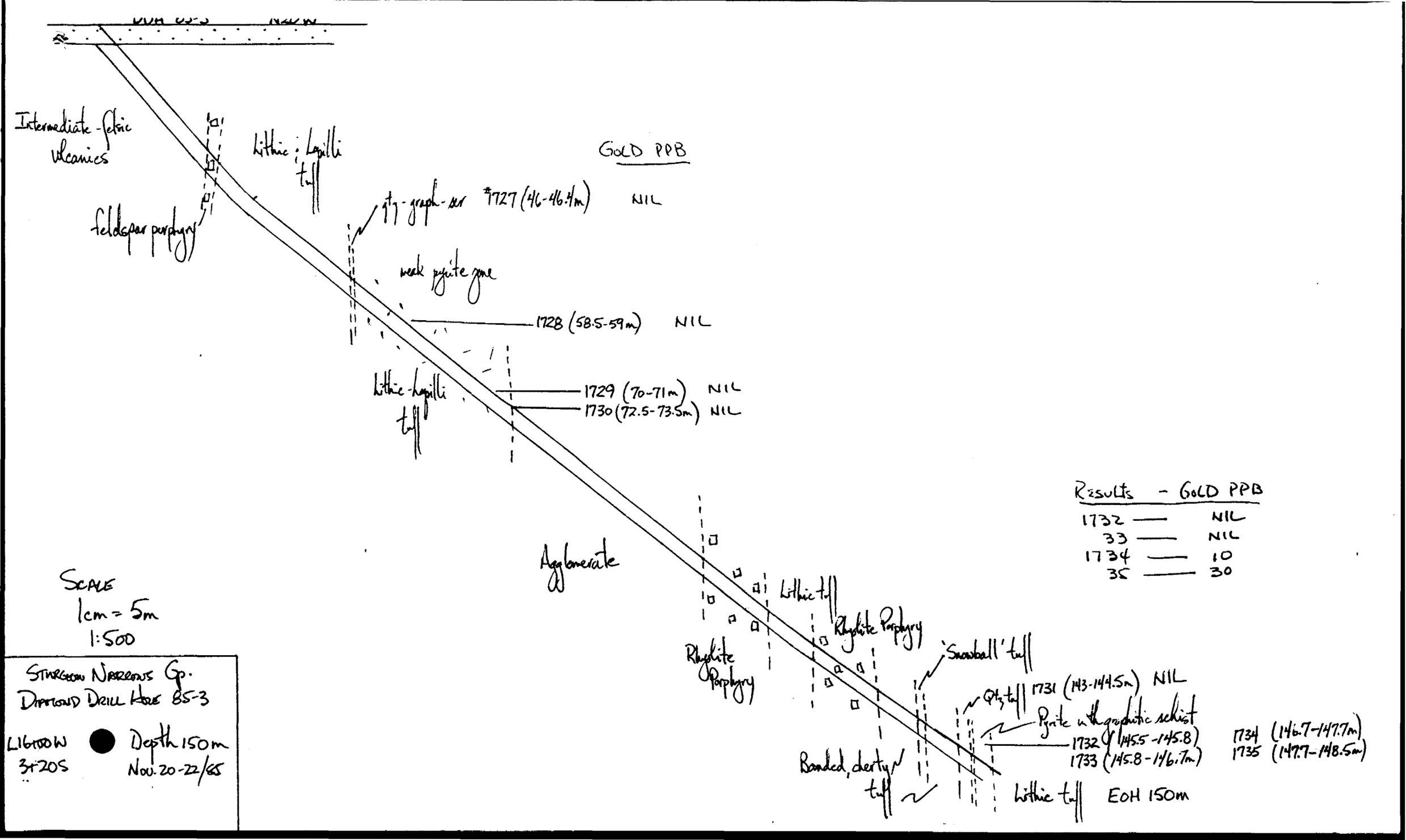
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Hg PPM	ASSAY Zn
79	81.5	Pyrite Zone							
		Weak, dendritic pyrite as previous. Beginning of zone is marked by the introduction of pyritic clasts in this dirty-brown, sericitic tuff (carbonatized?)	1725	79	80	1m	150	1.2	380
		Weak, semi-massive pyrite 10-25% in a blue-grey aphanitic siliceous matrix. End of zone is abrupt with sericite ↑ pyrite ↓, grades into fine grained soft, 'muddy' tuff.	1726	80	81.5	1.5m	210	1.0	110
81.5	135.	Lithic - Lapilli Tuff - Agglomerate. Buff white to grey green very fine grained (aphanitic) tuff to coarse agglomeratic fragmental. Fragments are qtz, qtz-fsp lithics (rhyo-dacite) and pumice. Groundmass is dominantly qtz-fsp-sericite. In places agglomeratic fragments reach 3-5cm and are generally angular to ellipsoidal.							
		135 EOH.							


Intermediate-felsic volcanics
feldspar porphyry
lithic : lapilli tuff
GOLD PPB
qtz-graph-ser
#1727 (46-46.4m) NIL
weak pyrite zone
1728 (58.5-59m) NIL
lithic-lapilli tuff
1729 (70-71m) NIL
1730 (72.5-73.5m) NIL
Agglomerate
Rhyolite Porphyry
Rhyolite Porphyry
Lithic tuff
'Snowball' tuff
Qtz tuff
1731 (143-144.5m) NIL
Pyrite in graphitic schist
1732 (145.5-145.8)
1733 (145.8-146.7m)
Banded, cherty tuff
Lithic tuff
EOH 150m
1734 (146.7-147.7m)
1735 (147.7-148.5m)
Results - GOLD PPB
1732 — NIL
33 — NIL
1734 — 10
35 — 30
SCALE
1cm = 5m
1:500
STURGEON NARROWS GP.
DIAMOND DRILL HOLE 85-3
L16+00W
3+20S
Depth 150m
NOV. 20-22/85

DIAMOND DRILL RECORD

LOGGED BY M.W. Masson — Santana Petroleum Corp., L.J. Cunningham & Assoc.

PROPERTY Sturgeon Narrows

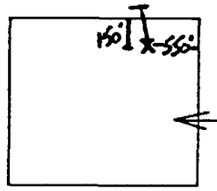
LATITUDE L16+00W — BEARING OF HOLE N20W — STARTED Nov. 20/85

DEPARTURE 3+20 S — DIP OF HOLE -50° — COMPLETED Nov. 22/85

ELEVATION ____ — DIP TESTS -50 at collar, 36° EOH — DEPTH 150m

D.D.H. No. 85-3 — PAGE 1

CLAIM No. 642980



METRES FOOTAGE FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	TO	SAMPLE LENGTH	ASSAY
0	3	Overburden					
3	21.3	Brecciated Intermediate - Felsic Meta volcanics Dark green (black) to light green and grey volcanics from andesitic to dacitic in composition. Units are massive, aphanitic to very fine grained and are interbrecciated with one another. Euhedral pyrite cubes up to 1cm are randomly scattered throughout the sections <2%. Contacts are sharp to brecciated (flow breccia) & gradational over 10-25cm.					
21.3	23.5	Feldspar Porphyry Massive, porphyritic, buff/cream coloured fsp porphyry. Phenocrysts are clear to white round to sub-hedral plag in an aphanitic, siliceous qtz-fsp groundmass. Upper contact marked by broken core, lower contact sharp at 50° T.C.A. No mineralization associated with int. Sericite pervasive along breakage planes.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn
23.5	46	Lithic - Lapilli Tuff Dirty, chloritic grey green tuff with some sections of very fractured up, bloody core. Grades into light grey lithic tuff with flags reaching 2.5cm and avg. 1cm clasts are 1) Fragmental light buff grey qtz-fsp and rhyodacite and some very minor dark grey lithics! Matrix is finely 2-3mm qtz-fsp while groundmass is qtz-fsp-sericite. Again some minor pyritic fragments (replacement?) is noted in some of the dark grey fragments or clasts - <1% Foliated at 45° T.C.A.							
46	46.4	40cm section of qtz - graphite sericite and up to 2-3% pyrite as disrupted fragments. A noticeable increase of these pyritic fragments up to 0.5% is present just before & after this section	1727	46	46.4	40cm	NIL	0.4	155
46.4	73.5	Lithic - Lapilli tuff as previous.							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn
		PYRITE ZONE (WEAK)							
46.4	73.5	Unit becomes very dirty + wispy by 55m., very sericitic, and light buff to dirty green-brown. Pyrite fragments are almost ubiquitous throughout reaching 1% as clots. Representative sample taken 58.5m – 59m of tuff - lapilli tuff (sericitic) with pyrite & frags ≤ 1%	1728	58.5	59.0	50cm	NIL	0.7	15
		The pyritic sections are noticeably buff-brown in colour + are quite sericitic while non pyritic sections are darker grey-green. This zone 46.4-73.5 may represent the Pyrite Zone of previous holes but here it is very sheared + altered and pyrite is much less.							
		62-64 Light blue green dty-lithic tuff.							
		64-73.5 Well foliated to massive dirty chloritic-sericitic tuffs with little to no pyrite. In some sections pyrite shows a dendritic natural but only over 10-15cm and only ~2%. Sample taken as representative of this sheared zone.	1729	70	71	1m	NIL	NIL	59

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au DPB	ASSAY Ag PPM	ASSAY Zn		
73.5	103	AGGLOMERATE (Footwall Assoc. ?) Coarse grained heterolithic agglm., very gritty appearance (conglomerate) Fragmental clasts up to +/- 5cm avg 2cm are dominantly dark grey-green fg grained rhyodacite, angular to ellipsoidal in part porphyritic (30-40%) matrix in ≤ 0.5cm and is predominantly qtz + rhyodacite (25%). Groundmass is v.f.g to aphanitic qtzo feldspathic material (35-45%). Sample 1730 → pyrite zone lower contact grading to agglomerate. I place 20-25cm long the pyrite is typical of the previous holes ie. varying 5-10% but is disseminated over the entire length. ie. never reaches the semi-massive stage. Sample is also in part graphitic.									
			1730	72.5	73.5	1m.	NIL	NIL	95		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
103	114	Rhyolite Porphyry (?) - Grey Tuff Massive porphyritic light grey + lt green phenocrysts (intense chlorite), hard probably quartz. Generally euhedral laths up to 1cm, avg 3-4mm and with some degree of preferential alignment. Phenos are 10-12%. Groundmass is aphanitic, light grey + very hard. May be in part tuffaceous. - phenos become stretched + elongated (tear drops)					
114	121	Dark green lithic tuff interscalated with light grey rhyolitic tuff as previous. Clasts are up to 1cm and are generally quite angular - qtz, dark grey rhyo-dacite, minor pumice frag. Clasts are up to 35-40%. Although this unit is more intermediate in appearance (colour) it is still quite siliceous.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 6

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
121	131.5	Rhyolite porphyry - Qtz Tuff as previous.					
131.5	137.8	Banded Tuff. - Chert Light blue - grey - white finely laminated tuffs to chert. Very fine grained to aphanitic siliceous with banding from 1-2mm to 1-2 cm. Some show a very distinctive tuffaceous nature while other portions are so fine as to be cherty.					
137.8	139	Snowball Tuff Light grey - green tuff with 35-40% white qtz - fsp clasts (snowballs). Very distinctive spotty appearance with clasts very crowded together - in contact with each other. Generally round to ellipsoidal and with preferred orientation at 50-60° t.c.a.					
139	143	Banded Tuff - as previous.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 7

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

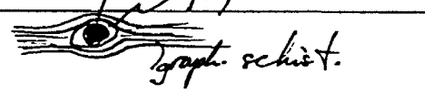
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Cu	ASSAY PPM Zn
143	145	Qtz full with minor blebby and euhedral pyrite. Abundant qtz veinlets (± calcite) cross-cutting the unit at all angles t.c.a. In part graphitic	1731	143	144.5	1.5m.	NIL	NIL	43
145	145.5	Lithic Tuff							
145.5	148.5	Pyrite Zone with Graphitic Schist. Wavy - mottled pyrite in tuff - brecciated fragmental pyrite intercalated with pyritic schists and graphitic schist and pyritic - graphitic schists.							
		145.5 - 145.8 - 30 cm of wavy pyrite & pyrite clots & dollars (concentric zoning) in a qtz - lithic tuff	1732	145.5	145.8	30cm	NIL	NIL	45
		145.8 - 146.7 Sericitic tuff with graphitic bands. Graphite bands contain rounded to ellipsoidal pyrite spatially associated with qtz frags. — Augen textured. - Splits into bands:	1733	145.8	146.7	90cm	NIL	NIL	65



DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-3 PAGE 8

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

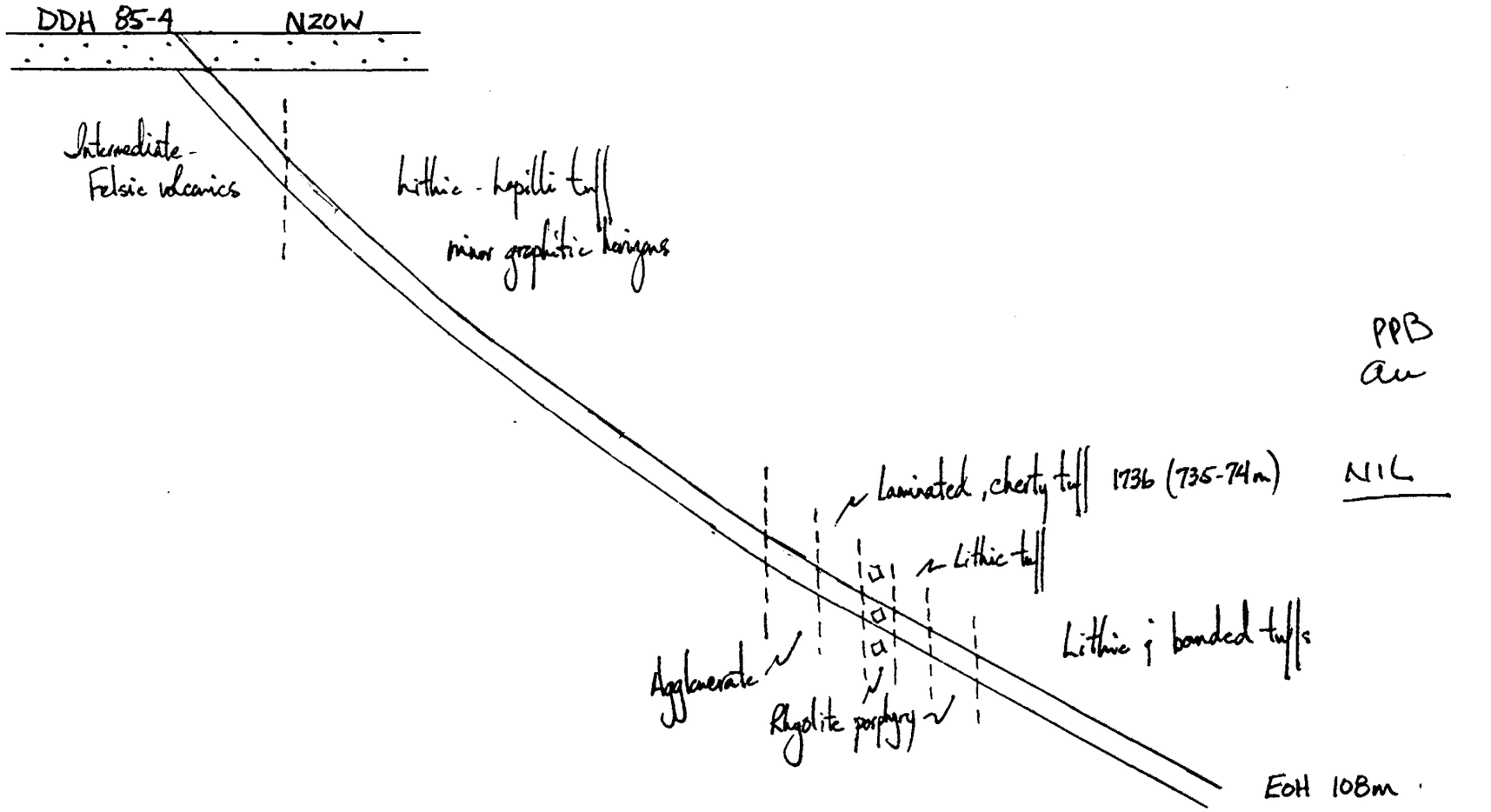
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY Ag	ASSAY PPM Zn
		146.7 – 148.5 Pyrite (wispy, bunches up to 5-10%) with	1734	146.7	147.7	1m	10	0.2	60
		finer intercalated graphitic horizons.	1735	147.7	148.5	80cm	30	0.2	41
148.5	150	Lithic Tuff.							
		Light grey, sericitic tuff to lithic tuff							
		150m EOH.							



	PPB	PPM	
	Au	Ag	Zn
1736 (735-74m)	NIL	0.3	57

SCALE
1cm = 5m
1:500

STURGEON NARROWS Gp.
DIAMOND DRILL HOLE 85-4

L4+00W
3+30S

Depth 108m
Nov. 22-24/85

DIAMOND DRILL RECORD

LOGGED BY M.W. Masson — SANTANA PETROLEUMS CORP., L.J. Cunningham & Assoc.

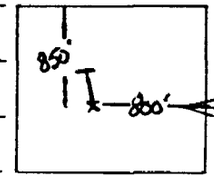
PROPERTY Sturgeon Narrows

D.D.H. No. 85-4 PAGE 1

LATITUDE L4400N — BEARING OF HOLE N20W — STARTED Nov. 20/85

DEPARTURE 3+30S — DIP OF HOLE -50° — COMPLETED Nov. 24/85

ELEVATION — DIP TESTS -50° @ collar -30° EOH — DEPTH 108m



CLAIM No. 642981

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
0	4	Overburden					
4	14	Intermediate - Felsic volcanic. Dark green, massive to foliated intermediate flows and tuffs. Chloritic but with distinctive volcaniclastic origin grades into buff-white felsic pyroclastics.					
14	65	Felsic Pyroclastics - Lithic Tuff Buff-white lithic fragments up to 1cm, avg 5mm. Very distinct pleadich appearance. Qtz clasts approx 75-80% of the fragments present. By 30m becomes intercalated with very fine grained tuffs. At 42m very minor sections of graphitic foreign latest. Reach widths of 5-10cm but are generally 2-3mm wide. 53-57m - Fine grained tuffs with intercalated graphitic foreign up to 30cm. Show very minor amt pyrite smears along foliation planes in graphite					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-4 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

N

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn		
65	70	Lapilli Tuff - Agglomerate.									
		Light grey tuff with angular clasts up to 4cm (1-4cm) consisting of blue-grey lithics (hydrated) qtz and dark grey lithics - 15%. Matrix is the same but fines grained up to 1cm. in a siliceous qtz-feldspathic groundmass.									
70	74.	Intermediate - Felsic tuff - Laminated Tuff (Chert) Dark green to black tuffs + lapilli tuffs with very minor graphite. In places well banded and moderately siliceous with chlorite on parting planes.	1736	73.5	74.0	50cm	NIL	0.3	57		
		Lapilli is aphanitic banded tuff, very siliceous with very minor pyrite. ↳ cherty									
74	77	Rhyolite Porphyry (?) Qtz Tuff									
		As per previous holes.									
		Light blue-grey with green (vitreous) phenocrysts, sub-anhedral up to 1cm, avg 3-5mm. Phenos are 5-15% Groundmass									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-4 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		is aphanitic + very siliceous.					
77	80	Intermediate - Felsic Tuffs. Dark green fine grained lithic tuffs in part intercalated with felsic lithic tuffs with very minor pyrite fragments ca 1%.					
80	84.3	Rhyolite Porphyry (?) as previous 74-77m. Very aphanitic + homogeneous. Lower contact is gradational & 10-15cm grades into a series of grey green lithic and banded tuffs.					
84.3	108	Intercalated Lithic + Banded Tuffs. Grey-green to blue-green fine to medium grained lithic tuffs & very fine grained banded tuffs - Banding at 065° t.c.a. Bands range from 1-2mm to 3-4cm wide + are controlled by clast size distⁿ ie. size segregation to give a banded appearance.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-4 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

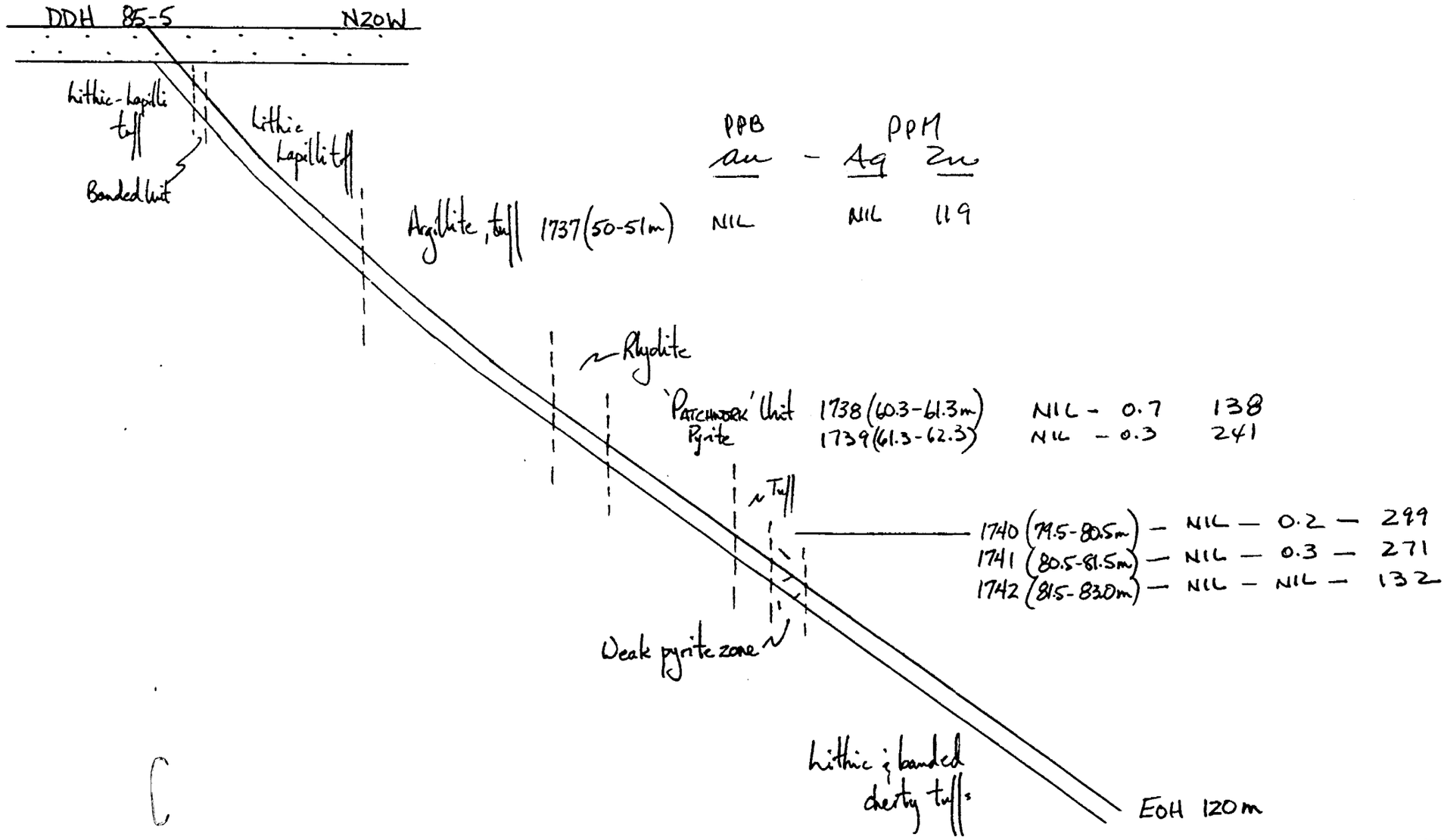
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		100.5 - 101 SNOWBALL UNIT					
		Small 1-2mm white spots (snowballs) of plag (35-40%)					
		in a grey-green aphanitic matrix.					
		Unit becomes increasingly fine grained down the hole.					
		No pyrite or pyrite-graphite zone encountered.					
		108 EOH.					



		PPB	PPM	
		Au	Ag	Zn
Argillite, tuff	1737 (50-51m)	NIL	NIL	119
'Patchwork' Unit	1738 (60.3-61.3m)	NIL	0.7	138
Pyrite	1739 (61.3-62.3)	NIL	0.3	241
	1740 (79.5-80.5m)	NIL	0.2	299
	1741 (80.5-81.5m)	NIL	0.3	271
	1742 (81.5-83.0m)	NIL	NIL	132

Scale
1cm = 5m
1:500

STURGEON NARROWS Gp.
DIAMOND DRILL HOLE 85-5

L0+00
3+50S

Depth 120m
Nov. 24-26/85

M. Mason

DIAMOND DRILL RECORD

LOGGED BY M.W. MASSON — SANTANA PETROLEUM CORP., L.J. CUNNINGHAM & ASSOC.

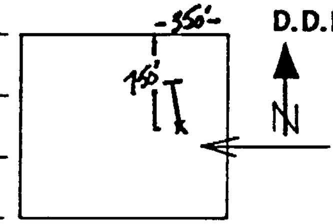
PROPERTY: STURGEON NARROWS

D.D.H. No. 85-5 — PAGE 1

LATITUDE: 20+00 — BEARING OF HOLE: N20W — STARTED: Nov. 24/85

DEPARTURE: 3+50 S — DIP OF HOLE: -50° — COMPLETED: Nov. 26/85

ELEVATION: — DIP TESTS: -50 at collar -36° EOH — DEPTH: 120m



CLAIM No. 642981

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES ~~FOOTAGE~~ FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY				
0	4.5	Overburden.									
4.5	7	Lithic-Lapilli Tuff Buff to blue-grey, fine to medium grained tuffs predominantly qtz-feld-sericite but with up to 2-3% black graphitic fragments to give distinct spotted appearance									
7	8.5	Banded (Laminated) Unit. (Sediment?) Dark grey to black very finely laminated unit with lamellae up to 1mm thickness. Banding is evident by segregation of dark and light (qtz-fsp) minerals. Unit is moderately hard and ~~[illegible]~~ is in part graphitic. Banding at 45-50° t.c.a. & contacts are abrupt & very marked lithology change.									
8.5	29.5	Lithic-Lapilli Tuff									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-5 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		Light grey lithic-lapilli tuff. Very dirty appearance ie not clean & well sorted as previous tuffs. Dominatly composed of qtz frags lithic (rhyodacite) frags but with noticeable amts of black graphitic frags and wisps. Also noticeable buff-brown (light grey) v.f.g. chalky blocks present. Very angular bed seaching up to 4-5cm in length.					
		Clasts range from ≤ 1-2mm v.f.g. qtz-fsp groundmass, ≤ 1-2cm matrix of qtz-lithic (rhyodacite) + black graphitic mat- and ≤ 5cm chert fragments. Ranging from rounded and ellipsoidal to very angular.					
		This unit may represent shumpage or debris flow material intercalated with lapilli tuff - Very distinct breccia appearance - 'cataclastic'.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-5 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Ag	ASSAY Zn		
29.5	~~52~~ (53.6)	Dark grey - Black Unit - Sediment? - Tuff? very fine grained to aphanitic unit. Very finely laminated with a argillaceous or shaley appearance. In part graphitic. Some sections are tuffaceous with white qtz frags. up to 1cm (avg. 3-5mm) in a black, aphanitic groundmass. These 'tuffaceous' sections are intercalated with the fine grained portions which may also be tuffaceous. No significant sulphide mineralization associated with this unit. - Argillaceous.									
		- Unit is intercalated with thin felsic tuffs (dark grey - med. grained)									
		— Sampled black argillaceous unit taken as representative.	1737	50	51	1m	NIL	NIL	119		
		Lower contact is gradational from 52 - 53.6 m.									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-5 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Ag	ASSAY Zn
53.6	60.3	Rhyolite (Rhyodacite) Massive v.f.g. to aphanitic unit. light grey and very siliceous. Upper contact is interlayered with black, argillaceous unit. Lower contact is with a coarse breccia with fragments of this rhyolite unit. - Flow breccia? Rhyolite is porphyritic in places - very patchy phenocryst development 1-2mm euhedral qtz phenos. up to 3-4% in places. Some minor pyrite stringers are present. << 0.5%							
60.3	75	Breccia - Lapilli Tuff - Agglomerate (Patchwork Unit)	1738	60.3	61.3	1m	NIL	0.7	138
		Rhyolitic fragments (subangular lengths up to 20-30cm) as specimens within a dark grey lithic - lapilli tuff - agglom. May be brecciated flow bottom with fragments within a coarse lapilli tuff. Very distinctive 'patchwork' appearance							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-5 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn
		Wormy pyrite clots or frags are randomly distributed in the area and in places reach 1-2% over 5-10cm. but generally pyrite is about nil.							
			1739	61.3	62.3	1m	NIL	03	241
75	79	Tuff							
		light-grey v.f.g. massive tuff. very homogeneous with minor pyritic laminae.							
79.	83	Qtz tuff with minor wormy pyrite. WEAK PYRITE ZONE	1740	79.5	80.5	1m	NIL	0.2	299
		blue-grey Qtz-Fsp-sericite tuff with up to 1-2%	1741	80.5	81.5	1m	NIL	0.3	277
		wormy pyrite clots in some areas. - very similar to	1742	81.5	83.0	1.5m	NIL	NIL	132
		previous Pyrite Zones but very low pyrite concentrations.							
83	120	Lithic al Banded Tuff. (Chert) + Rhyodacitic Flows.							
		Blue-grey - brown massive to well banded tuffs. Very							
		siliceous + may be in part cherty. Banding in 1-2mm thick							
		and up to 3-5mm. grades into massive, v.f.g.							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-5 PAGE 6

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

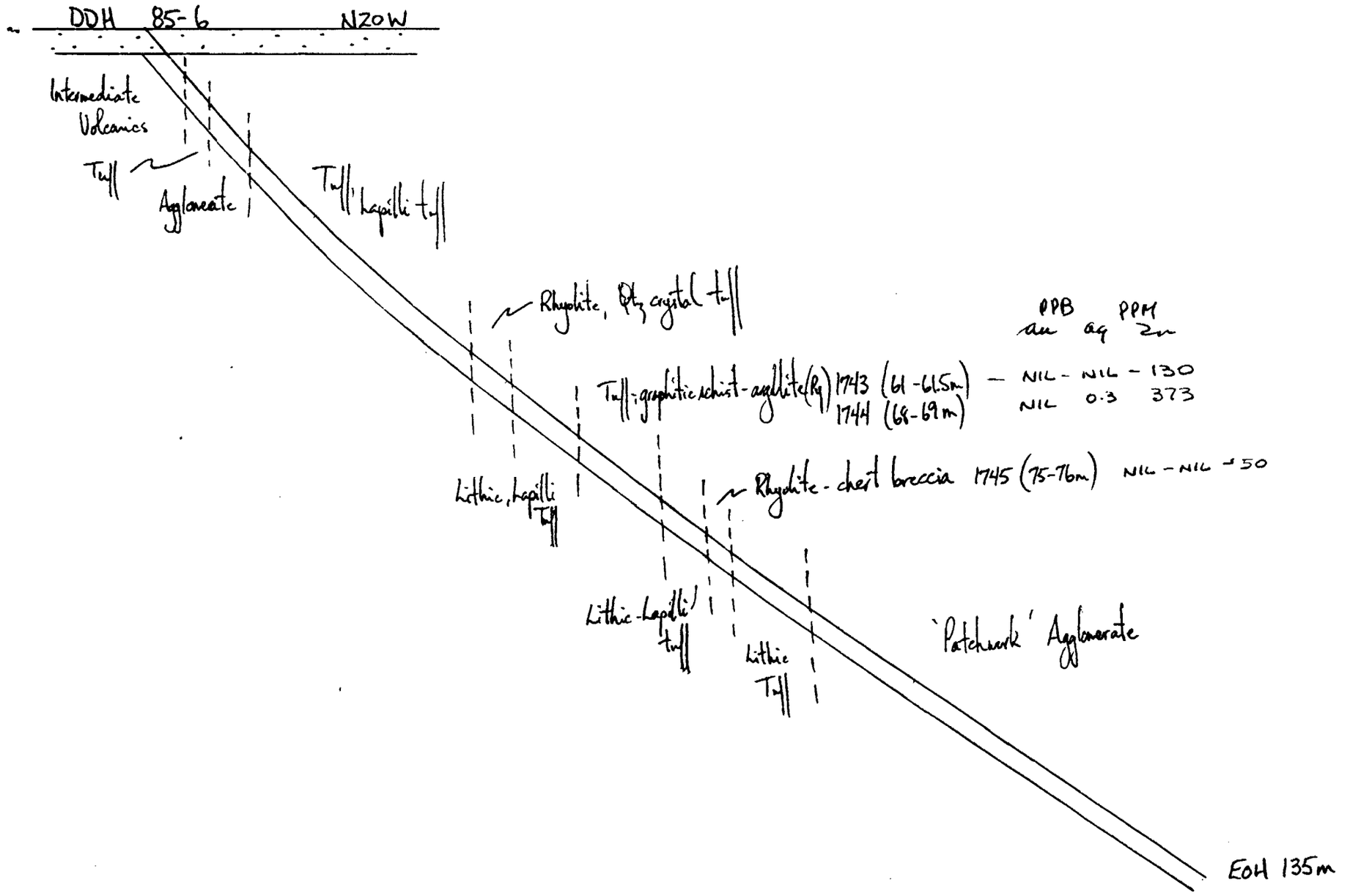
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		qtz-crystal tuff/ lithic tuffs and possibly felsic flows → Light grey to blue-grey, massive aphantic rhyodacite w/ 1% qtz-calcite ± dolomite veinlets - some areas being noticeably brecciated. In part vesicular to porphyritic					
		120m EOH.					



	PPB au	PPM aq	PPM Zn
1743 (61-61.5m)	—	NIL	NIL	130
1744 (68-69m)		NIL	0.3	373
1745 (75-76m)		NIL	NIL	50

SCALE
1cm = 5m
1:500

STURGEON NARROWS GP.
DIAMOND DRILL HOLE 85-6

L8+00W
3+40S

DEPTH 135m
NOV. 26-28/85

M. Mason

DIAMOND DRILL RECORD

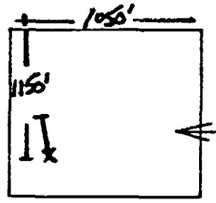
LOGGED BY M.D. Masson — SANTANA PETROLEUM CORP., L.J. Cunningham & Assoc.

PROPERTY Sturgeon Narrows

LATITUDE L8+00W — BEARING OF HOLE N20W — STARTED Nov. 26/85

DEPARTURE 3+40S — DIP OF HOLE -50° — COMPLETED Nov. 28/85

ELEVATION ____ — DIP TESTS -50° at collar, -34° EOH — DEPTH 135m



D.D.H. No. 85-6 — PAGE 1

CLAIM No. 642981

DIRECTION AND DISTANCE FROM NE. CLAIM POST

Metres.

~~FOOTAGE~~ FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
0	3	Overburden					
3	6	Intermediate volcanics Massive v.f.g. light green volcanic – andesite Abundant qtz–calcite stringers in places to give brecciated appearance. Very minor diss. pyrite.					
6	10	Tuff – Lithic Tuff Light green to grey-green fine to medium grained tuff and a qtz-calcite-sericite schist which has pale-yellow wispy sericitic bands around grey to white qtz-calcite. Gives an overall dirty, almost gneissic banding.					
10	16	Agglomerate Heterolithic (intermediate–felsic) agglomerate. Coarse angular to ellipsoidal & subrounded fragments consisting of: 1) Intermediate volcanics – 15% – grey-green, v.f.g. soft (chloritic) 1–3cm to moderately siliceous.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-6 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		Qtz - 10% as fragments >5mm and up to 50% matrix clasts ≤ 5mm. Groundmass is dominantly qtz-fsp with some chlorite-sericite. Some minor pyritic clasts are also evident. Very dark green colour. One section 40 cm long at 15m is more felsic (qtz rich) and looks very much like a conglomerate with 1-2cm frags.					
16	45.6	Tuff - Lithic Tuff - Lapilli Tuff. Light green to buff to light grey fine to medium grained tuffs and lithic tuffs with fragmental elongated at 45-50° t.c.a. In places intercalated with coarse lapilli tuffs and agglomerates - small sections less than 1m.					
45.6	52.5	Rhyolite. Qtz-Crystal Tuff (may be in part cherty). Very fine grained to aphanitic, light grey to buff-yellow massive, very siliceous. Some portions dark distinctly porphyritic					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-6 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

N

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au PPB	ASSAY Ag PPM	ASSAY Zn		
		with sub-euhedral qtz phenos up to 3mm + up to 10-15% over 5-90 cm sections. Some sections are noticeably stressed - elongated fractured qtz clasts while other sections are very cherty in appearance with conchoidal fracture.									
52.5	59	Lithic - Lapilli Tuff Light green to buff white fine to medium grained tuffs, moderately qtzo-feldspathic with some mafic lithic sections.									
59	69.3	Tuff - Graphitic Schist (Argillite) Dark grey to black lithic tuffs interealated with black graphitic schists - pyrite clots are present in some locations but are ≤ 0.5%. Also occurs as small wispy beds within graphitic schists ≤ 1-2mm wide, and very randomly disperised so that local pyrite concentrations never reach a significant quantity.	1743	61.0	61.5	50cm	NIL	NIL	130		
			1744	68	69	1m	NIL	0.3	373		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-6 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

N

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au	ASSAY Ag	ASSAY Zn		
69.3	75	Lithic - Lapilli Tuff. Buff to grey-green fine to coarse grained lithic - lapilli tuff.					PPB	P&M			
75	76	Rhyolite - Chert Breccia Light grey, blue-grey aphanitic siliceous chert in part bleached. Breciation appears to be in situ & may represent flow breccia from a felsic flow. Sample taken as representative - no sulfide min'lg	1745	75	76	1m	NIL	NIL	50		
76	87.4	Lithic Tuff. Grey-green v.f.g. to fine grained lithic tuffs.									
87.4	135	'Patchwork' Agglomerate Coarse to very coarse heterolithic agglomerate with buff-brown frags (rhyodacite), green frags (dacite-andesite) qtz frags and some very fine pyrite breccia fragments									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-(

PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

CLAIM No. _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

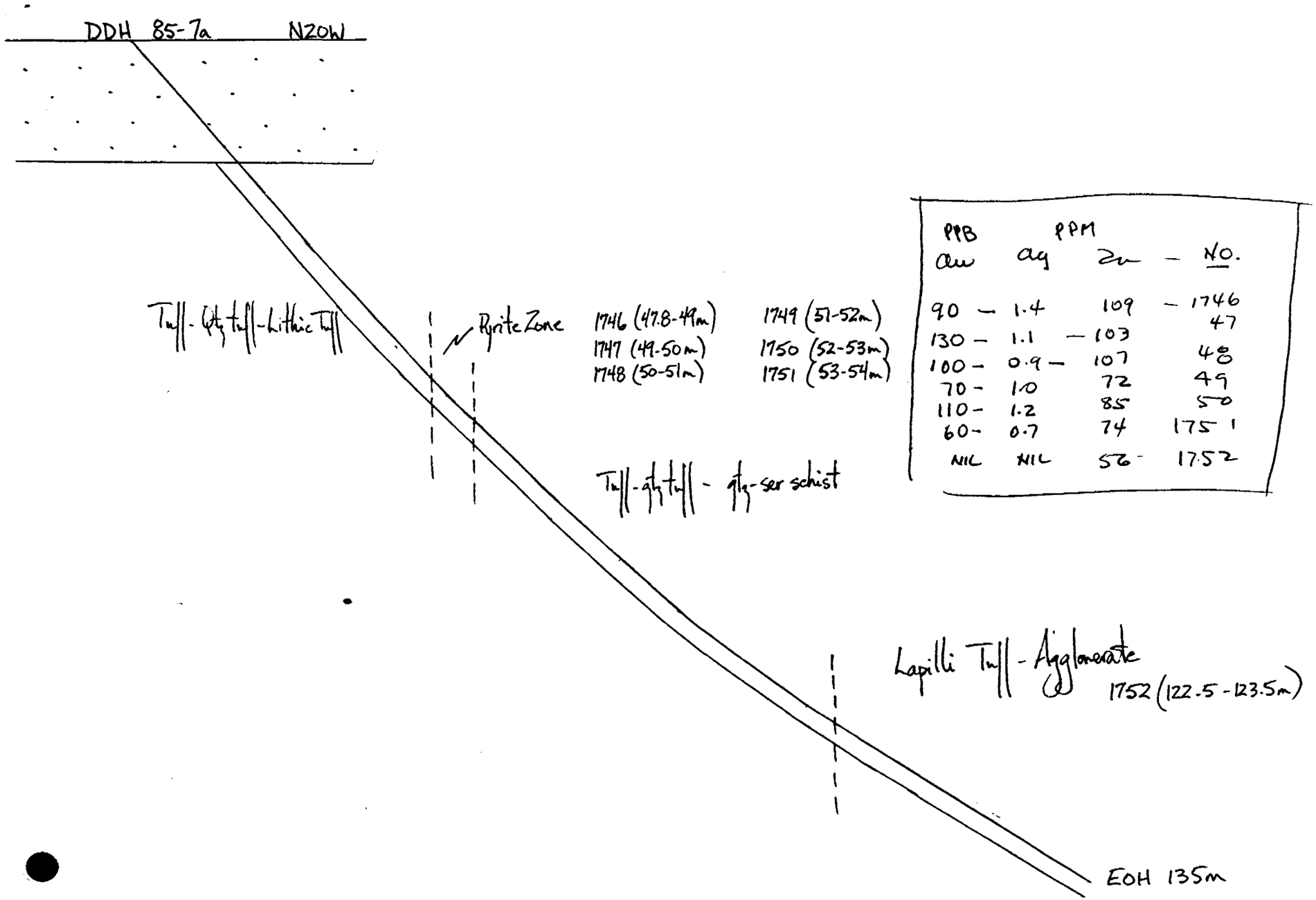
DIRECTION AN

STANCE FROM

ELEVATION _____ DIP TESTS _____ DEPTH _____

NE. CLAIM PC

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	SAY
		Same frags are ≥ 5cm. Very distinctive patchwork appearance with frags being 50-60% of the rock. Grades into a darker green less clast rich agglomerate. Very homogenous in it's extent + appearance.					
		135m EOH					



PPB Au	PPM Ag	Zn	No.
90	1.4	109	1746
			47
130	1.1	103	
100	0.9	107	48
70	1.0	72	49
110	1.2	85	50
60	0.7	74	1751
NIL	NIL	56	1752

Scale
1cm = 5m
1:500

Sturgeon Narrows Gp.
Diamond Drill Hole 85-7a

L27+00W Depth 135m
2+50S Nov. 28-Dec 1/8

M. Mason

DIAMOND DRILL RECORD

LOGGED BY M. W. MASSON — SANTANA PETROLEUM CORP., L.J. CUNNINGHAM & ASSOC.

PROPERTY STURGEON NARROWS

D.D.H. No. 85-7a PAGE 1

LATITUDE L27+00W BEARING OF HOLE N20W STARTED Nov. 28/85

DEPARTURE 2+50S DIP OF HOLE -50° COMPLETED Dec. 1/85

ELEVATION _____ DIP TESTS 50° collar 34° EOH DEPTH 135m

Metres

-150 / 45°

N

CLAIM No. 642977

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Cu	ASSAY Ag	ASSAY Zn
							PPB	PPM	
0	17	Overburden							
17	47.8	Felsic Pyroclastics Tuff - Qtz Tuff - Lithic Tuff light gray-green v.f.g. to fine grained tuffs / felsic-qtz-fsp-sericite. Dominantly qtz-fsp lithic tuffs + the rare qtz-crystal tuffs.							
47.8	54	Pyrite Zone Wispy-dendritic semi-massive pyrite zone. Contact is sharp with dirty brown (carbonatized?) Lapilli Tuff - very sericitic unit is very dense with up to 25-30% pyrite in sections. Host rock is very siliceous, blue-grey and aphanitic. Pyrite occurs as small veinlets, blebs + specs and as dendritic wormy patterns; generally an-subhedral but with very minor euhedral cubes up to 1mm.	17/6	47.8	49m	1.2m	90	1.4	109

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-7a PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au (ppb)	ASSAY Ag (ppm)	ASSAY Zn		
		Pyrite displays at least 2 forms associated with the dendritic pattern. Large euhedral masses bordered by fine subhedral pyrite. Pyrite amgs 5-10%. Associated with this zone are very distinctive milk-white veins composed of qtz - calcite ± dolomite ± fsp.? - sub-euhedral albite(?) with good cleavage (pres. white/ivorite). Generally these veins have no sulfides associated within them, but in some areas it brecciates the surrounding sulfides zone. Sample 1749 has one of the veins within it 50cm. Sample 1751 has a qtz-dol-fsp vein ~50cm. - Grades into a dirty brown qtz-sericite schist	1747	49	50	1m	130 140	1.1	103		
			1748	50	51	1m	100	0.9	107		
			1749	51	52	1m	70	1.0	72		
			1750	52	53	1m	110	0.9	~~107~~ 85		
			1751	53	54	1m	60	0.7	74		
54	103.5	Tuff - qtz tuff - qtz-sericite schist - Lapilli Tuff. Dirty brown qtz tuff (fine to medium grained) with high sericite content, intercalated with massive grey-brown aphanitic rhyolite (similar host rock to pyr. zone with no pyrite). Grades into lithic and lapilli tuffs.									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-7a PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

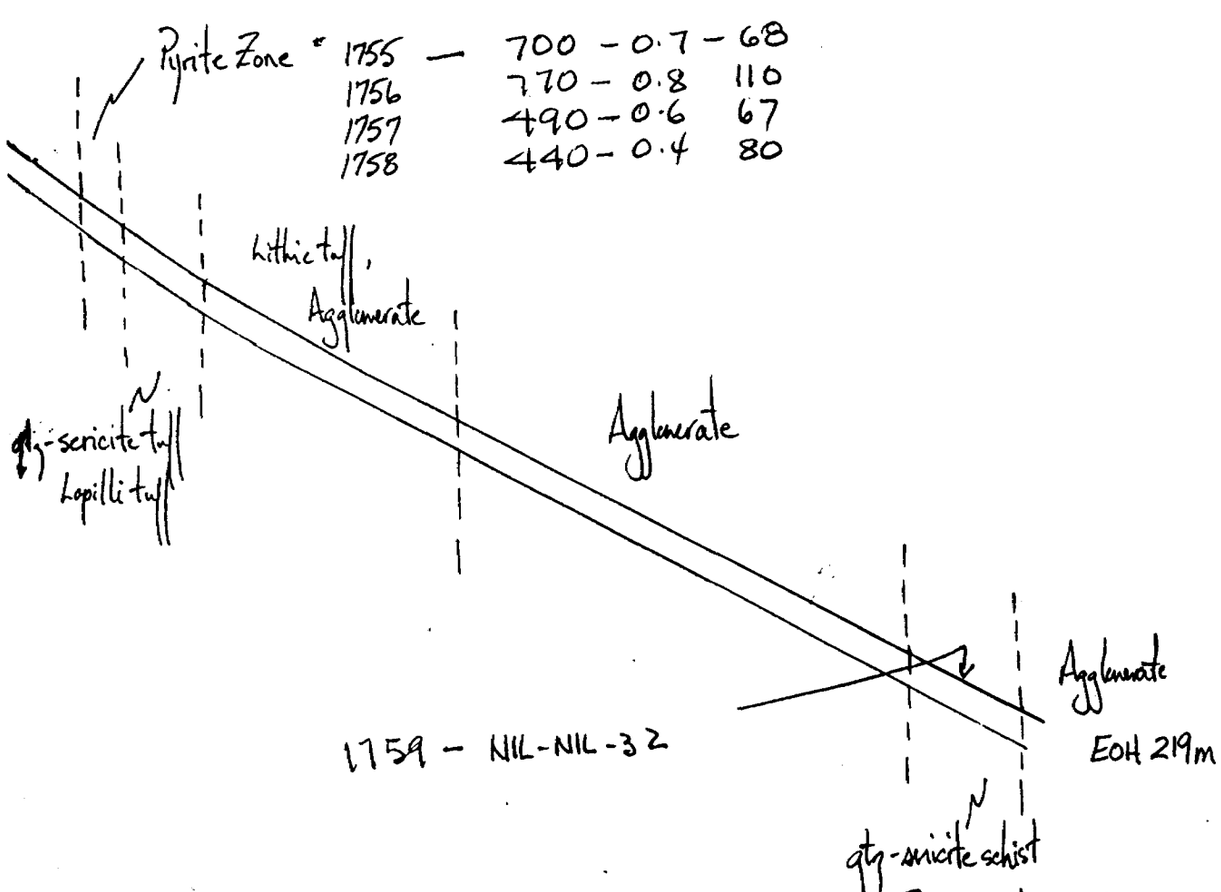
CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au (PPB)	ASSAY Ag (PPM)	ASSAY Zn		
		Some small sections of coarse, heterolithic agglomerate intercalated with qtz-eye tuff, but overall the unit is very homogeneous. Qtz eyes are rounded, translucent and reach up to 5mm to give a distinctive 'porphyritic' appearance.									
63.5	135	Lapilli Tuff - Agglomerate. (Footwall Agglom) Light grey-green medium to coarse grained lapilli tuff and agglomerate. Dark grey rhyodacitic frags up to 1-2cm in a qtz-fsp-chlorite groundmass. Very similar to footwall agglom. in previous hole. Fragments are angular to ellipsoidal and in places brecciated. Pyr at 3-5% and grade to up to 15-20%. Distinctive epidote colorization along parting planes + within matrix to give a green-blue color to the unit.									
		Sample taken as representative (some very minor qtz frags)	1752	122.5	123.5	1m	NIL	NIL	58		
	135	EOH									

PPB
~~PPB~~ PPM
Au Ag Zn
NIL NIL 95

NIL NIL 27



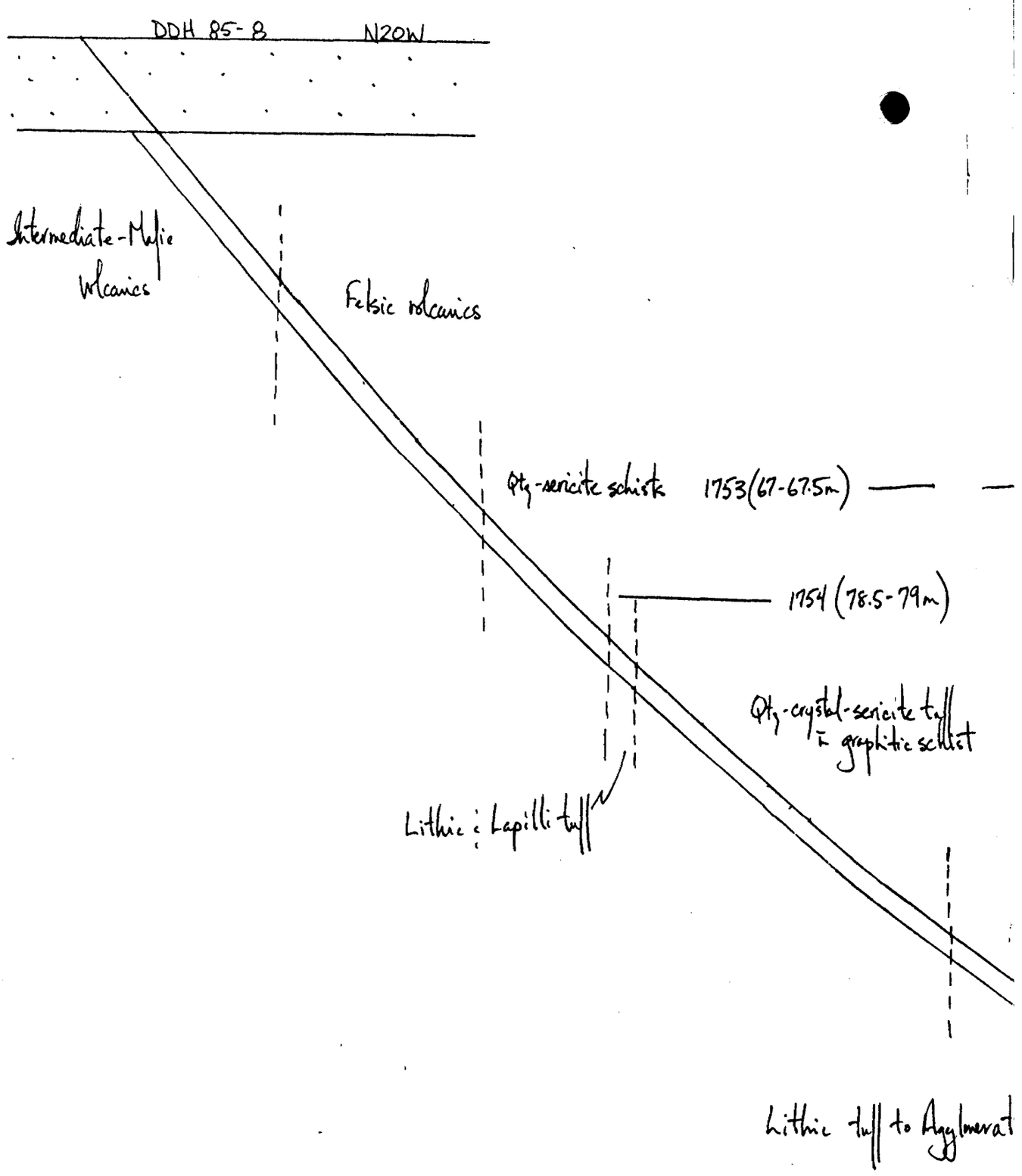
SCALE 1cm = 5m

DIAMOND DRILL HOLE 85-8

L24+00W Depth 219m
4+50S Dec. 2-5/85

1:500

M. Mason


DDH 85-8
N20W
Intermediate-Mafic volcanics
Felsic volcanics
Qtz-sericite schist
1753 (67-67.5m)
1754 (78.5-79m)
Qtz-crystal-sericite tuff ± graphitic schist
Lithic ± Lapilli tuff
Lithic tuff to Agglomerat

DIAMOND DRILL RECORD

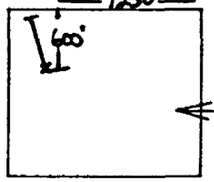
LOGGED BY M.W. Hasson — Santiana Petroleum Corp., L.J. Cunningham & Assoc.

PROPERTY Sturgeon Narrows.

LATITUDE L24+00W — BEARING OF HOLE N20W — STARTED Dec. 2/85

DEPARTURE 4+50S — DIP OF HOLE -50° — COMPLETED Dec. 5/85

ELEVATION ____ — DIP TESTS -26° EOH — DEPTH 219m



D.D.H. No. 85-8 — PAGE 1

CLAIM No. 642980

DIRECTION AND DISTANCE FROM NE. CLAIM POST

~~FOOTAGE~~ METRES FROM	TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
0	11.5	OVERBURDEN					
11.5	30	Intermediate - Mafic Volcanics. Massive, dark green mafic (andesitic) metavolcanics. Some sections are porphyritic - plag-phyric with subhedral plag (white) up to 4-5mm (avg. 1-2mm) and making to 10% (avg. 3-5%). Hardness is v.f.g. to aphanitic & mod. chloritic. 'Snowball Texture'					
30	60	Felsic Metavolcanics. Contact with mafics is gradational over 3-4m. Light grey-green fine grained felsic tuff with dark green chloritic specks throughout. Studies down hole into a cleaner felsic - crystal tuff (qtz-Tuff). Buff-brown, massive (not well foliated) very fine grained, with ≈5% rounded qtz 'eyes' up to 3mm. Very homogeneous in extent, texture etc.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-8 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY Au	ASSAY Ag	ASSAY Zn		
		May be felsic flow — poorly foliated, massive texture, homogeneous nature.					PPB	PPM	PPM		
60	62	Buff - light-green qtz-sericite tuff or porivus, intercalated with darker grey-green (andesite-dacite) flows & lithic tuffs.									
62	77	Qtz-Sericite Tuffs Yellow-green, v.f.g. qtz-sericite t-/s. Well foliated at 50-60° t.c.a. 67-67.5 Light blue-grey lithic tuff with disseminated & blebby pyrite 1-2%	1753	67	67.5	50cm	NIL	NIL	95		
77	80	Lithic - Lapilli Tuff Dark green to light grey lithic to lapilli tuff with minor pyritic frags (<1%). Frags are up to 2cm, avg ± 1cm	1754	78.5	79	50cm	NIL	NIL	27		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-8 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY				
80	120	Qtz crystal - sericite Tuff in minor Graphitic Schist Yellow green, v.f.g to aphanitic groundmass with well developed sericitic foliation and 3-5% qtz eyes up to 3-4mm. In section it grades to coarser grained lithic or lapilli Tuffs. - At 91 m start getting small sections up to 40-50cm of black graphitic schist interculated with Tuffs.									
120	~~125~~ 139	Lithic Tuff - Lapilli Tuff - Agglomerate Light grey to buff, well foliated fine to medium grained Tuff with 2% frags up to 4cm - avg 2-3mm in lithic tuffs									
~~125~~	~~142.5~~	Pyrite Zone									
139	142.5	Blebby, wispy semi-massive pyrite zone. Contacts are sharp marked by buff-brown sericite schist flattened in aphanitic blue-grey + very siliceous (rhyodacitic)	1755 1756 1757	139 ~~140~~ 141	140 ~~141~~ 142	1m 1m 1m	700 770 49	0.7 0.8 0.6	68 110 67		

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-8 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY Ag	ASSAY PPM Zn
		Again the characteristic milky-white qtz-dol-fluorite(?)	1758	~~142~~	142.5	50cm	440	0.4	80
		veinlets or veins crosscut the pyrite zone at low angles to							
		core axis. The vein material is very friable & in							
		places boggy & downy qtz & fluorite(?) is evident.							
		and calcite.							
		Footwall rocks are noticeably bleached in colour & very sericitic							
		with minor pyritic blebs & fragments							
142.5	149	Dark brown-buff qtz-sericite tuff and lapilli tuffs.							
		with some very minor pyritic fragments.							
149	170	Lithic Tuff - Qtz tuff - Agglomerate.							
		Light buff-grey, well bleached fine to medium grained tuffs							
		Dark brown purple colouration in the minor pyrite sporadically							
		distributed throughout.							
		- Very inconsistent, non-homogenous nature in rapid change from Lithic tuff							
		to qtz-tuff to agglomerate							

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-8 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

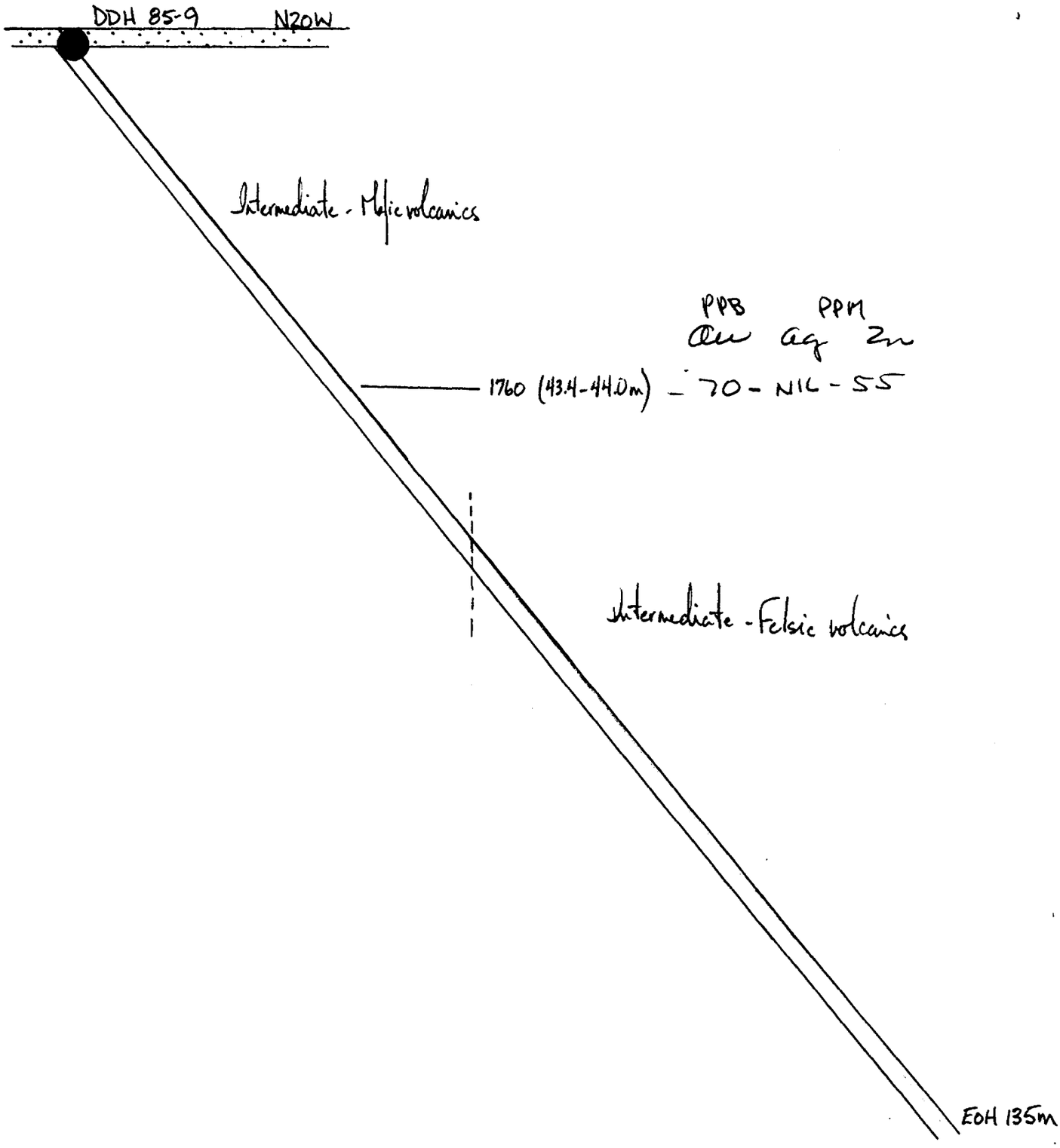
DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Ag	ASSAY % Zn		
170	207	Agglomerate (Footwall) Heterolithic, coarse grained (fragsup to 4-5cm) buff-grey qtz-fsp-sericite matrix with qtz, qtz-fsp, rhyodacite/lor pumice clasts which make up the framework constituent 30% of the unit. Good, strong sericitic parting planes at +70° T.C.A.									
207	216	Qtz-Sericite Tuff (Schist) Light buff/grey, fine grained to v.f.g. qtz crystal tuff with abundant sericite.									
		213-213.5 Qtz-sericite mud - broken up core not returned as mud - shear zone.	1759	213	213.5	50cm	NIL	NIL	32		
216	219	Agglomerate - as previous.									
	219	EOH.									



Scale 1cm = 5m
1:500

DIAMOND DRILL HOLE 85-9
STURGEON NARROWS GP.

L36+00 W
8+40S

Depth 135m
Dec. 5-7/85

DIAMOND DRILL RECORD

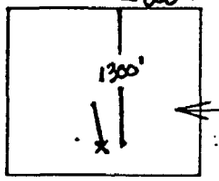
LOGGED BY M.W. Masson — SANTANA PETROLEUMS CORP., L.J. CUNNINGHAM & ASSOC.

PROPERTY Sturgeon Narrows

LATITUDE L36+00W — BEARING OF HOLE N20°W — STARTED Dec. 5/85

DEPARTURE 8+40S — DIP OF HOLE -50° — COMPLETED Dec. 7/85

ELEVATION ____ — DIP TESTS -50° EOH — DEPTH 135m



D.D.H. No. 85-9 — PAGE 1

CLAIM No. 642977

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY ppb Au	ASSAY ppm Ag	ASSAY % Zn
0	2	OVERBURDEN							
2	63	Intermediate - Mafic Volcanics. Massive, fine grained, grey green to dark green Moderately siliceous (andesitic). Minor white qtz-calcite rivlets are originous. Very homogeneous. Some very minor disseminated sulphides (py-po) associated with the these flows. Despite the fact it is very siliceous + may represent a gradation down hole to intermediate to felsic flows ie. dacite - rhyodacite. or silicification (secondary).							
		43.4 - 44.0 Siliceous aphanitic section (rhyodacitic) with a chlorite gouge (fault) with minor pyrite-po (1%) and very minor chalcopyrite <1%	1760	43.4	44.0	60cm	70	NIL	55

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-9 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

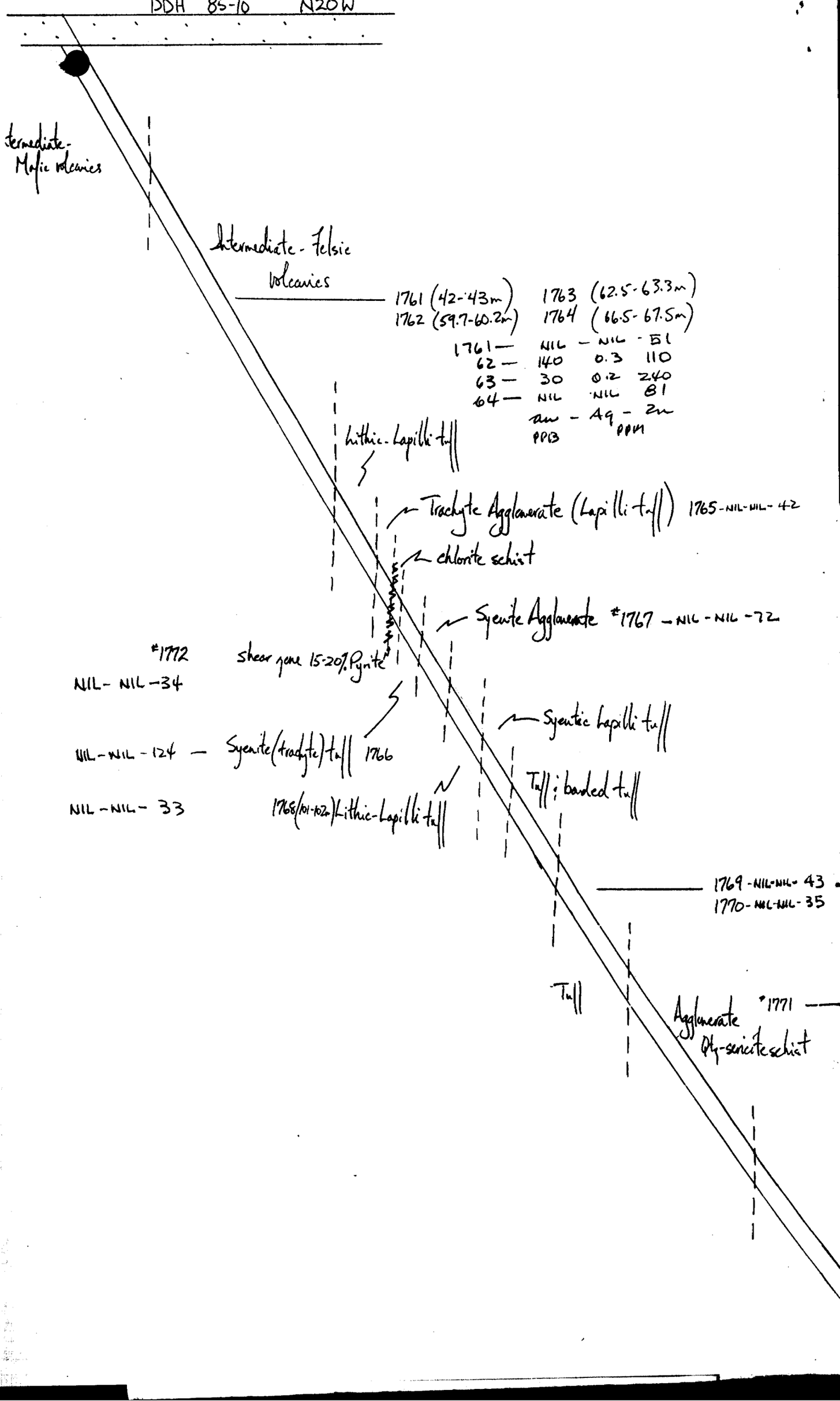
ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

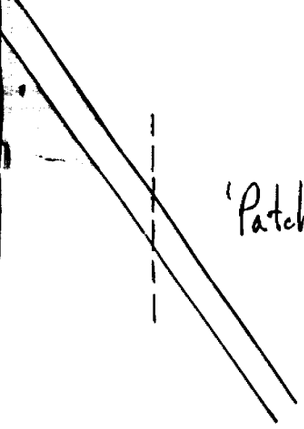
DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
63	135	Intermediate - to Felsic Flows Massive v.f.g. to aphanitic light grey andesite - dacite to rhyodacitic flows. Notably rare siliceous Hx pseudomorphs with sub-conchoidal fracture. Minor disseminated py - po in aborigines. Contact is gradational over 5-10 m. Abundant white qtz - calcite veinlets (barren) crosscut + brecciate the unit at all angles t.c.a. Black, chloritic wisps are prominent throughout with random orientations. - very homogeneous, non-descript.					
	135	EOH					


DDH 85-10 N20W
termediate-
Mafic volcanics
Intermediate - Felsic
volcanics
1761 (42-43m)
1762 (59.7-60.2m)
1763 (62.5-63.3m)
1764 (66.5-67.5m)
1761— NIL - NIL - 51
62— 140 0.3 110
63— 30 0.2 240
64— NIL NIL 81
Au - Ag - Zn
PPB PPM
Lithic-Lapilli tuff
Trachyte Agglomerate (Lapilli tuff) 1765-NIL-NIL-42
chlorite schist
Syenite Agglomerate *1767 - NIL - NIL - 72
*1772
NIL - NIL - 34
shear zone 15-20% Pyrite
Syenitic lapilli tuff
NIL - NIL - 124 — Syenite (trachyte) tuff 1766
Tuff; banded tuff
NIL - NIL - 33
1768 (101-102m) Lithic-Lapilli tuff
1769 - NIL - NIL - 43
1770 - NIL - NIL - 35
Tuff
*1771
Agglomerate
Qtz-sericite schist

NML – NML - 145

Qtz crystal tuff



'Patchwork' Agglomerate.

EOH 227m

SCALE
1cm = 5m
1:500

DIAMOND DRILL HOLE 85-10
STURGEON NARROWS Gp.

L 32+00 W
5+25 S

Depth 227m
Dec. 7-15/85

M.W. Mason

DIAMOND DRILL RECORD

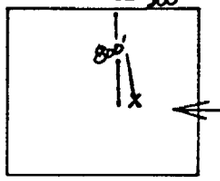
LOGGED BY M.W. Masson — SANTANA PETROLEUM — L.J. Cunningham & Assoc.

PROPERTY Sturgeon Narrows

LATITUDE L3240oW — BEARING OF HOLE N20W — STARTED Dec. 7/85

DEPARTURE 5+25 S — DIP OF HOLE -60° — COMPLETED Dec. 15/85

ELEVATION ____ — DIP TESTS -54° EOH — DEPTH 227m



D.D.H. No. 85-10 — PAGE 1

CLAIM No. 642977

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY PPB Au	ASSAY PPM Ag	ASSAY PPM Zn		
0	4	OVERBURDEN									
4	22.7	Intermediate - Mafic Volcanics. Massive, fine grained light to dark green (siliceous to chloritic) intermed. to mafic metavolcanics.									
22.7	68.8	Intermediate - Felsic Volcanic. Massive, very fine grained to aphanitic blue-grey to green dacite to rhyodacitic flows. Very siliceous with sub-conchoidal fracture. Contact appears to be gradational from mafic to felsic but colour change is abrupt.									
		42-45.4 Light green, aphanitic dacite with minor ~~blebby~~ blebby & euhedral pyrite - (1%) up to 1cm.	1761	42	43	1m	NIL	NIL	51		
		Unit in part intercalated with intermediate (andesitic) flows									

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-10 PAGE 2

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		59.7 - 60.2 - 50 cm section of sheared volcanics with secondary qtz-calcite infilling + finely disseminated pyrite (3-5%)	1762	59.7	60.2	50cm	
		62.5 - 63.3 - 80cm. Dark grey to black cgl/tic to v.f.g. flow with sub-euhedral pyrite + minor qtz-calcite veins	1763	62.5	63.3	80cm	
		66.5 - 67.5 - light green to white chlorite-sericite schist with qtz-calcite veinlets + very minor py. <2%	1764	66.5	67.5	1m	
68.8	79.5	Felsic Pyroclastics. Dark green to light green to buff + pinkish felsic pyroclastics. Lithic + lapilli tuffs with frags up to 12cm. At 76.5m introduction of pink (salmon pink) K-spar to a dirty, well foliated qtz-sericite-chlorite schist. Pinkish material in irregular bands up to 1cm wide + also occurs as rounded to ellipsoidal frags.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-10 PAGE 3

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

N

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		— This may represent a alkalic intrusive (syenite) which has been subsequently redeposited in this qtz-sericite-chlorite-ksp schist (clastic ?).					
		Trachyte (extrusive)					
79.5	83	Salmon Pink syenitic lapilli tuff or agglomerate Pink to pink + black (gneissic?) K-spar-chlorite-sericite-qtz schists. Kspar ranges from small frag < 1cm to masses dominating the rock - 75%. Some frags may in fact be lapilli. - minor blebs chalcopyrite < 1% - Very distinctive gneissic colouration.	1765	481	82.0	1m	
		→ Shear Zone: 1-2 ft. of bleached sericitized qtz-ser frags with 15-20% Py.	1772	83	83.3	30cm	
83	85	Chlorite schist - dark green massive v.f.g. to aphanitic (I.V.) chloritic to moderately sericitic Upper contact is sharp at 45° T.C.A. the lower contact is gradational with a gradual increase in potassic (K-spar) mineralization so that colour goes from					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-10 PAGE 4

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
		green to green + pink to pink.					
		85-89.8m Syenite Tuff (Kspar tuff) - kspar-sericite-qtz schist - Syenite Breccia (Aggl.) Tuff.	1766	88.5	89.5	1m	
		Unit ranges from pink-green (syenitic lithic tuff) to medium/syenite (Kspar-sericite schist) to syenite breccia with pink brecciated syenite clasts up to 5cm in a qtz-sericite matrix & groundmass!					
		-Sample taken of syenite Breccia (aggl.) (Jasper?)					
		89.8-96.5 Syenite Agglomerate - salmon pink brecciated syenite frags (round to elliptical) up to 3-5cm in a dark green chloritic groundmass with minor subhedral pyrite.	1767	89.8	91m	1.2m	
		Trachyte					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. B5-10 PAGE 5

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
96.5	105.5	Felsic Lithic + Lapilli Tuff.					
		Buff to grey green qtz-fsp-sericite lithic + lapilli tuff. Contact is sharp with overlying syenite agglom.					
		Rounded qtz frags avg. 3-5mm + weak zonards to 50%					
		in a qtz-fsp-sericite groundmass. Some lithic frags					
		such to 2cm + avg. 3-5%.					
		Minor sub-euhedral pyrite noted in some sections.	1768	101	102	1m	
		(Trachyte)					
105.5	112.5	Lapilli (Lapparoid?) Lapilli Tuff.					
		Black-red mottled grained lapilli frags up to					
		1cm (avg 3-5mm) in a dark green chloritic matrix					
		very similar to previous agglom. but finer grained. Grades into					
		a pink syenite porphyry with rounded qtz phenos up to 2.5mm					
		and avg 2-3%.					
112.5	123	Tuff to Banded Tuff + Massive, aphanitic light grey to buff tuff and					
		foliated sericite-qtz tuffs - v.f.g. to aphanitic.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-10 PAGE 6

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

METRES

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
123	139.5	Aphanitic light grey siliceous unit - moderately well foliated very siliceous Tuff with ≤1% euhedral pyrite and also pyrite occurring as pyroxenically folded beds up to 3mm wide	1769	123	124	1m	
			1770	127.5	128.5	1m	
		Samples taken are representative.					
139.5	167	Agglomerate. - Qtz-sericite tuffs. Buff-green coarse grained heterolithic agglomerate. Frags are angular to sub-rounded and vary from <1cm to >5cm and are 25-30% of total. Framework clast (≥1cm) consist of qtz, lithics (rhyodacite), qtz porphyry. Matrix (≤1cm) dominantly qtz with minor fsp. Groundmass is a qtz-fsp-sericite mix. In part intercalated with qtz tuffs	1771	156.5	158.0	1.5m	
		- Sample taken has 2% diss pyrite in groundmass.					

DIAMOND DRILL RECORD

LOGGED BY _____

PROPERTY _____

D.D.H. No. 85-10 PAGE 7

LATITUDE _____ BEARING OF HOLE _____ STARTED _____

DEPARTURE _____ DIP OF HOLE _____ COMPLETED _____

ELEVATION _____ DIP TESTS _____ DEPTH _____

CLAIM No. _____

DIRECTION AND DISTANCE FROM NE. CLAIM POST

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE No.	FOOTAGE FROM	FOOTAGE TO	SAMPLE LENGTH	ASSAY
167	209	Qtz Tuff Light green to buff, well foliated at 50° t.c.a. Clear to translucent qtz eyes avg. 2-3mm and are ± 15% in a v.f.g. to aphanitic qtz-fsp-sericite ground mass. - in places where not massive ie. poorly foliated - maybe called a qtz porphyry. Very frequently cut & saccated by small, milk-white qtz and/or fsp. stringers.					
209	227	Patchwork Agglomerate Light grey lithic-lithic agglomerate with distinctive 'patchwork' appearance. Fragments are buff-blue & green, blue-grey & white and consist of qtz, qtz-porphyry, rhyodacite and pumaceous frags. Frags reach up to 5cm with some sections of qtz porphyry up to 20cm long. Overall these frags are 50% of rock with fine grained veining or matrix.					
	227m.	EOH.					

Interim Property Evaluation Report

1986

SANTANA PETROLEUM CORPORATION

STURGEON NARROWS PROPERTY, ONTARIO

The property is located on Sturgeon Lake, some 9 miles from the Mattabi zinc-coppe silver mine, and 4 miles from a recent gold discovery of Steep Rock Iron Mines Limited now under option to Falconbridge Limited.

Gold occurrences are numerous in the Sturgeon Lake Area. It was the site of one of Canada's first gold rushes around 1900. Many rich gold showings were investigated b shafts and one property, the St. Anthony Mine, produced 63,300 ounces of gold prior to closure in 1941. It is presently under option to Falconbridge Limited.

The Narrows property straddles a 4 mile length of a major fault zone which is part of a regional Sturgeon Lake fault system and it is comparable to the Porcupine-Destor and the Larder Lake-Cadillac fault systems. These latter structures are highly favourable for gold and have produced in excess of 130 millions of ounces which is 75% of Canada's total production.

On the Narrows property, the fault zone is marked by strong shearing, intense, widespread hydrothermal alteration and felsic intrusives - all of which are typical of the Porcupine-Destor and Larder Lake-Cadillac fault zones.

A massive sulphide (pyrite) zone was discovered in 1971 within the fault zone - it is 25 feet wide with a minimum length of at least 200 feet. It carries highly anomalous values in gold. Only two 100 foot holes have tested this zone. It has many similarities to the Agnico-Eagle Mine in Joutel, Quebec. (600,000 ounces of gold from 3.7 million tons grading 0.17 oz. per ton gold) including

i) proximity to major copper-zinc deposits
ii) a gold-bearing stratabound massive sulphide deposit
iii) an association with carbonaceous schist and
iv) intensive carbonatization

A second zone, 2 miles east of the first zone, was investigated in 1939 by extensive trenching. This zone, which borders a felsic intrusive, is marked by intense alteration and pyrite mineralization. High gold values were reported in 1939.

Santana proposes a program of geophysics, diamond drilling and soil sampling in 1985 at an estimated cost of $120,000.00.

In late 1985, International Santana Resources drilled 4,919 feet of drilling in 10 holes to test an I.P. conductor centred on the massive sulphide zone.

L.J. Cunningham, B.Sc., P. Eng., 1 McPhee Ave., Kirkland Lake, Ontario P2N 1M1

Santana
Mar.'86

Sufficient assessment work has now been completed to apply 200 days of work on 55 claims numbered as follows:

Pa. 611504 - 06 incl. 642478 - 82 incl.	Good until April, 1993
642974 - 86 incl. 642988 - 997 incl.	Good until June, 1993
765960	Good until August, 1993
612066 - 68 incl. 612070 640381 640393 - 95 incl. 640399 - 400 640421 - 22 640604	Good until January-February 1994
719583 - 87 incl. 719932 719934-5-6-7 719941	Good until February, 1995

and 199 days of work on one claim: Pa. 640420 Good until February 1994

These are the important claims. The remaining claims will lapse at varying dates commencing in 1986.

A legal survey will be required on the 56 claims prior to expiry date in order to bring same to lease status. The cost of the survey is estimated at $50,000.00.

Three major mining companies have expressed an interest in the claim group and it is recommended that the present joint owners approach said companies with a view to optioning the property to earn an interest.

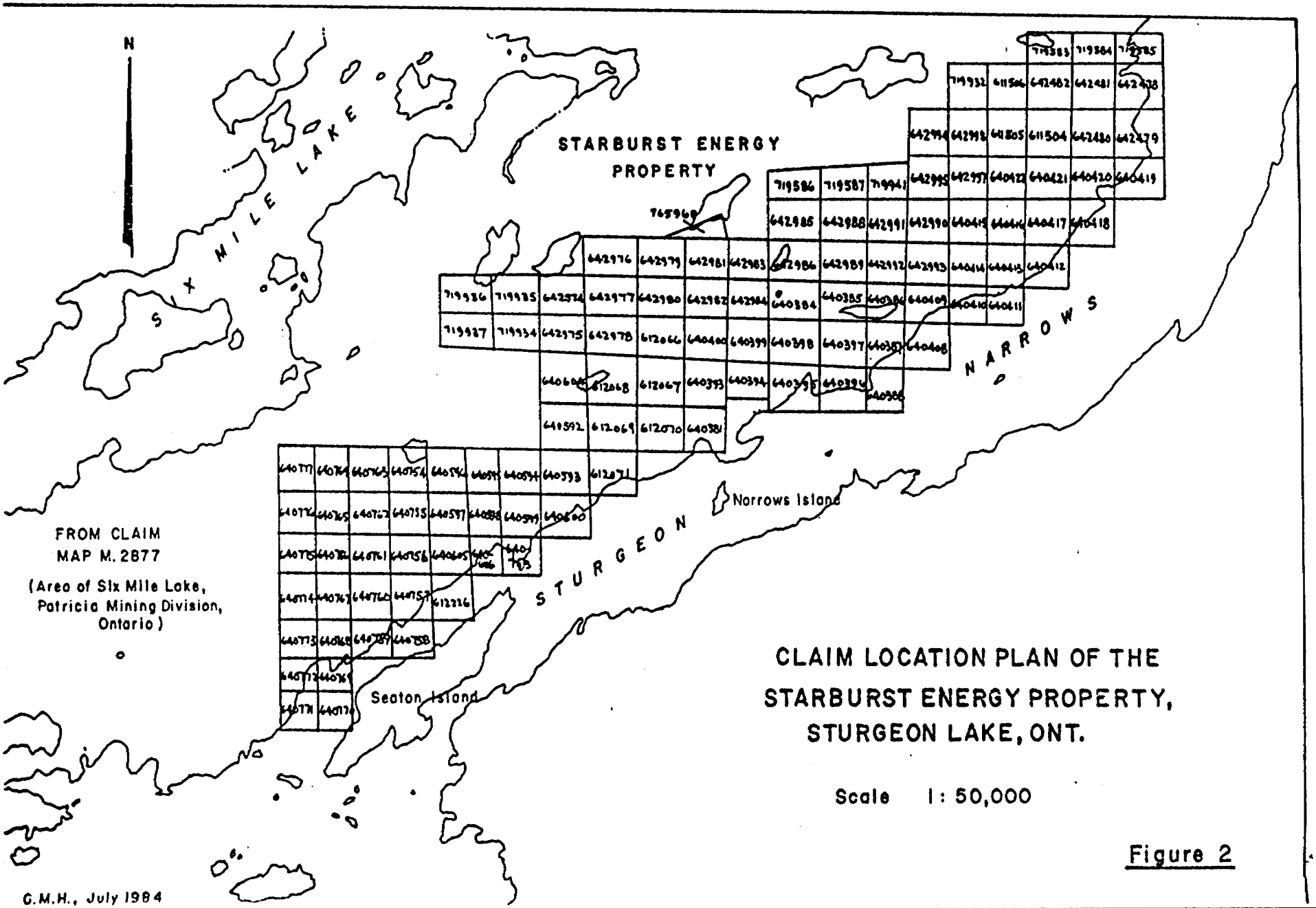
Considering the intense hydrothermal alteration on the property associated with highly favourable geology and mineralization, the writer is confident that an option with a major is highly probable. It will be necessary to visit the property in the summer with the interested parties. This is recommended.

Signed,

L. J. Cunningham, B.Sc., P.Eng.
Mining Engineer

26 March, 1986

L.J. Cunningham, B.Sc., P. Eng., 1 McPhee Ave., Kirkland Lake, Ontario P2N 1M1


N
SIX MILE LAKE
STARBURST ENERGY
PROPERTY
NARROWS
STURGEON
Narrows Island
Seaton Island
FROM CLAIM
MAP M. 2877
(Area of Six Mile Lake,
Patricia Mining Division,
Ontario)
CLAIM LOCATION PLAN OF THE
STARBURST ENERGY PROPERTY,
STURGEON LAKE, ONT.
Scale 1: 50,000
Figure 2
G.M.H., July 1984

REPORT

ON

THE STURGEON NARROWS PROPERTY

OF

CANADEX RESOURCES LIMITED

PLAYFAIR RESOURCES LIMITED

SANTA MARIA RESOURCES LIMITED

SWANSEA GOLD MINES INC.

STURGEON LAKE AREA, ONTARIO

by L. J. Cunningham, B.Sc., P.Eng.
Mining Engineer
dated 11th February, 1984
and
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Mark W. Masson, B.Sc.,

Updated 26th March, 1986

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REPORT
ON
THE STURGEON NARROWS PROPERTY
OF
CANADEX RESOURCES LIMITED
PLAYFAIR RESOURCES LIMITED
SANTA MARIA RESOURCES LIMITED
SWANSEA GOLD MINES INC.

STURGEON LAKE AREA, ONTARIO

LOCATION & DESCRIPTION

Sturgeon Lake is located 210 km. northwest of Thunder Bay. From Ignace on Highway 17, a paved highway, No. 599, runs north to the Village of Savant Lake. A number of access roads between Kilometre 80 (north of Ignace) and Kilometre 130 (Savant Lake) give convenient access to the Sturgeon Lake Area. The Sixmile Lake road, which exits at Kilometre 100, traverses much of the claim group.

The claims are located within the Sixmile Lake Area (Plan No. 2877) within the Patricia Mining Division (Recording Office, Sioux Lookout, Ontario). The property consists of 104 mining claims of which 31 have been mapped and are covered by this report. The numbers are:

31 Mapped Claims

P.642478 - 82 incl.
P.611504 - 06 "
P.642974 - 86 "
P.642988 - 97 "

73 Unmapped Claims

P.612066 - 71 incl.
P.612226
P.640381
P.640384 - 88 incl.
P.640393 - 400 incl.
P.640408 - 422 "
P.640592 - 600 "
P.640604 - 606 "
P.640753 - 777 "

HISTORY

The Sturgeon Lake Area was the scene of one of Canada's earliest gold rushes. Gold was first found in 1898 and in 1900 the St. Anthony Mine (now Aubet) was discovered. By 1911 numerous gold occurrences were recorded. Extensive trenching, a number of shafts and a limited production resulted. The activity was short lived for all but St. Anthony Mines which operated intermittently from 1908 to 1941 to produce 331,000 tons grading 0.19 oz. gold per ton. A discovery in 1935 on Beidelman Bay, 35 km. southwest of the St. Anthony at the southwest end of Sturgeon Lake, led to extensive underground development but no production resulted.

The area was inactive until 1969 when the Mattabi base metal deposit was discovered. By 1972 four additional deposits had been discovered (Sturgeon Lake, Lyon Lake, Creek

All of the area now staked for gold was staked in 1969-75 and tested by mapping, geophysics and some drilling without success for base metal mineralization.

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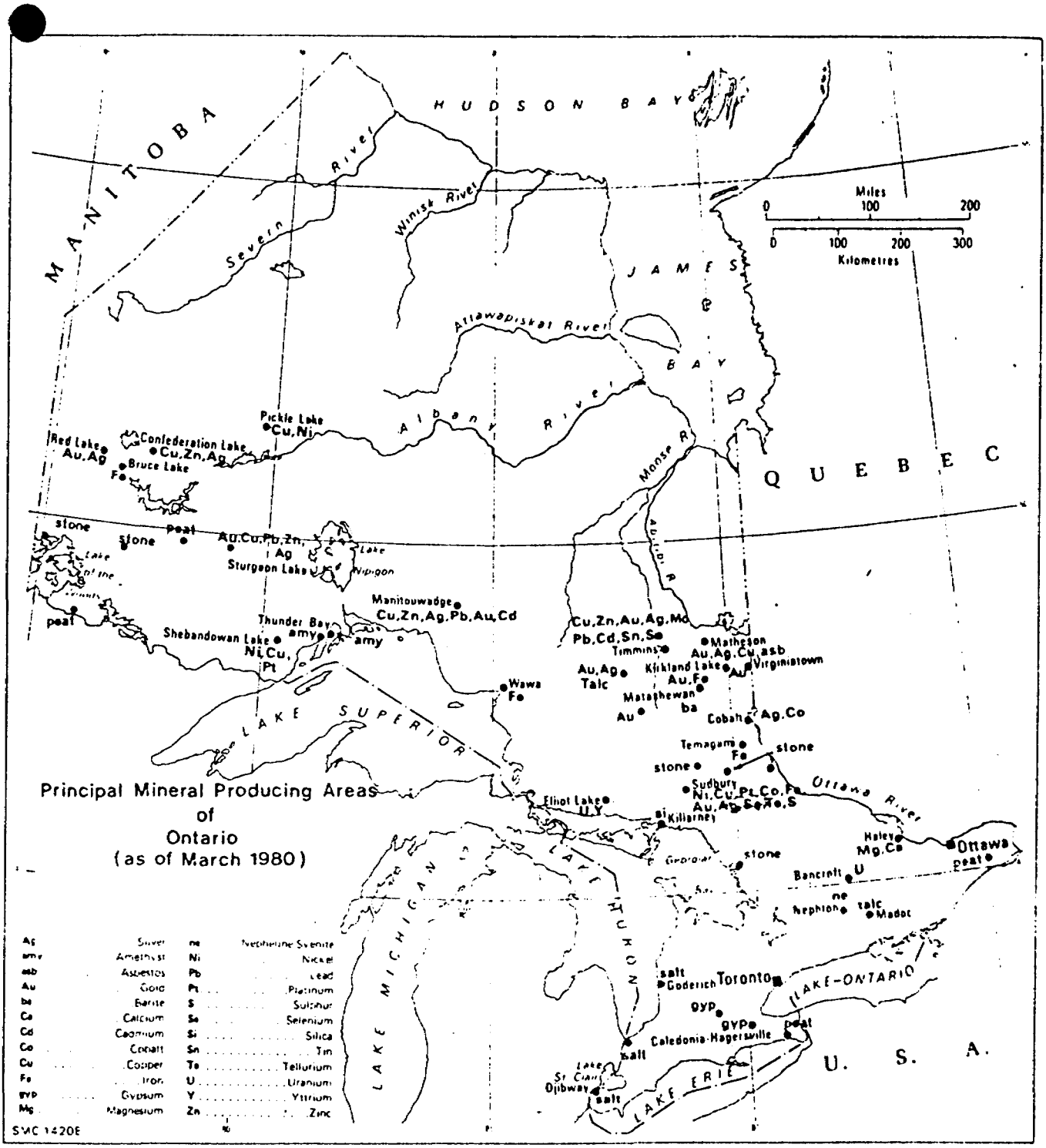
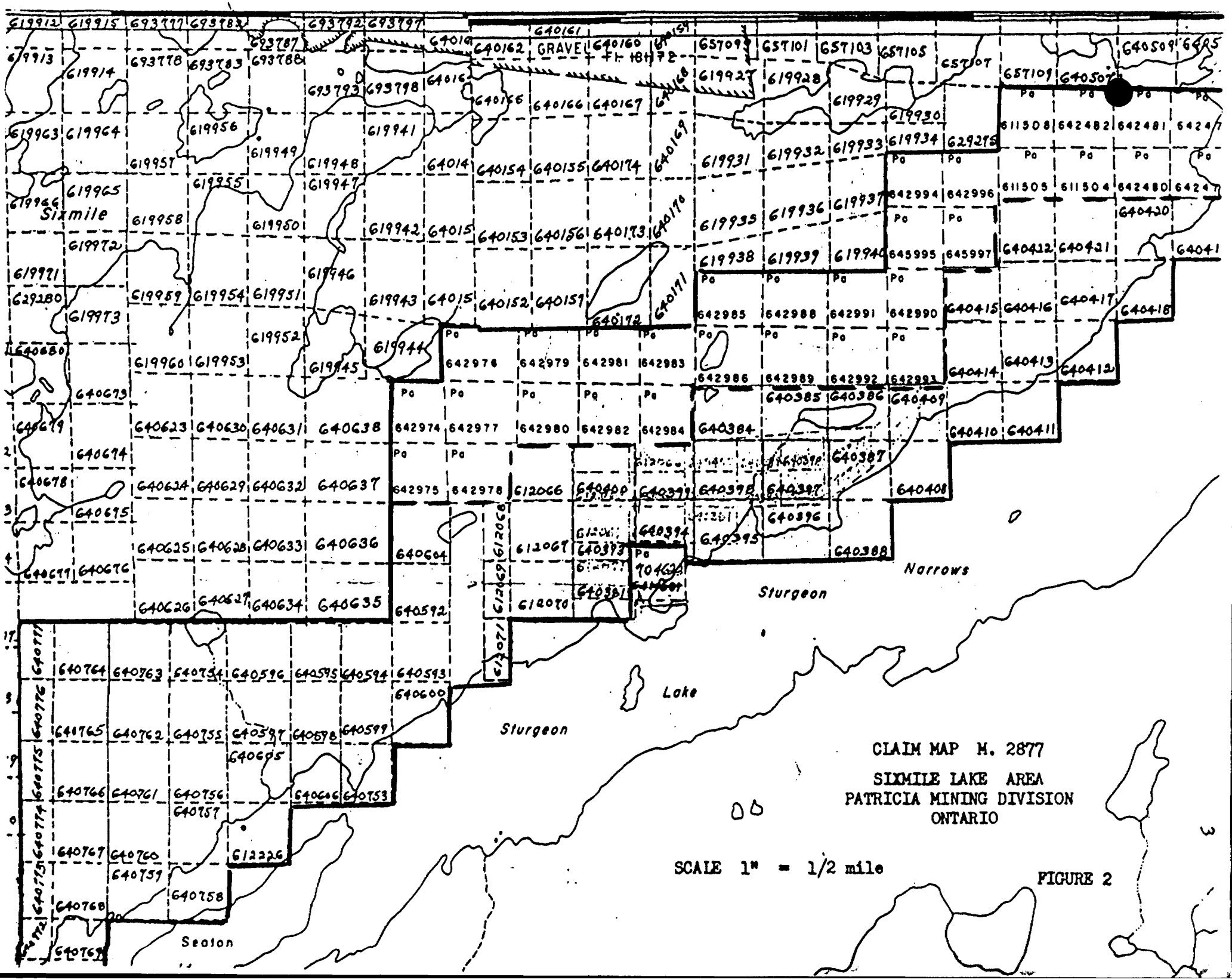


Principal mineral producing areas of Ontario (as of March 1980).

FIGURE 1


Siximile
Sturgeon
Narrows
Lake
Sturgeon
Seaton
GRAVEL
CLAIM MAP M. 2877
SIXMILE LAKE AREA
PATRICIA MINING DIVISION
ONTARIO
SCALE 1" = 1/2 mile
FIGURE 2

Sturgeon Lake
Feb. '84

Undoubtedly the present claim block was prospected in the early days, although no records are known of this probable work.

In 1939, Williams, A.D., recorded trenching on claims which form the north-east end of the present group.

1968-69 W. G. Wahl completed ground geophysical surveys and drilling on Sturgeon Narrows.

1970-71 Mattagami Lake Mines drilled two holes (Mattagami Block 27) to test an airborne conductor. Felsic-carbonaceous rocks were encountered but no base metal mineralization was found. On Mattagami Block 28, ground geophysics was completed.

Conwest Exploration Company completed ground magnetic and electro-magnetic surveys.

Rio Tinto Canadian Explorations Limited completed mapping and geophysical surveys.

Greenpoint Mines completed ground and geophysical surveys and drilling.

Selco Exploration Company drilled the Wahl property at Sturgeon Narrows.

L. J. Cunningham & E. Chorzepa discovered a heavily gossaned area (CC showing) located 1 claim southeast of Maria Lake.

1973 Northex Management completed mapping, geophysics and drilled 2 holes (200 feet) on "CC" showing. Anomalous gold encountered.

1974 Northex Management staked and completed geophysics on 8 claims centred on Mattagami drill hole no. 27.

Falconbridge Nickel Mines tested by drilling and mapping a gold-bearing syenite dike on Sturgeon Narrows.

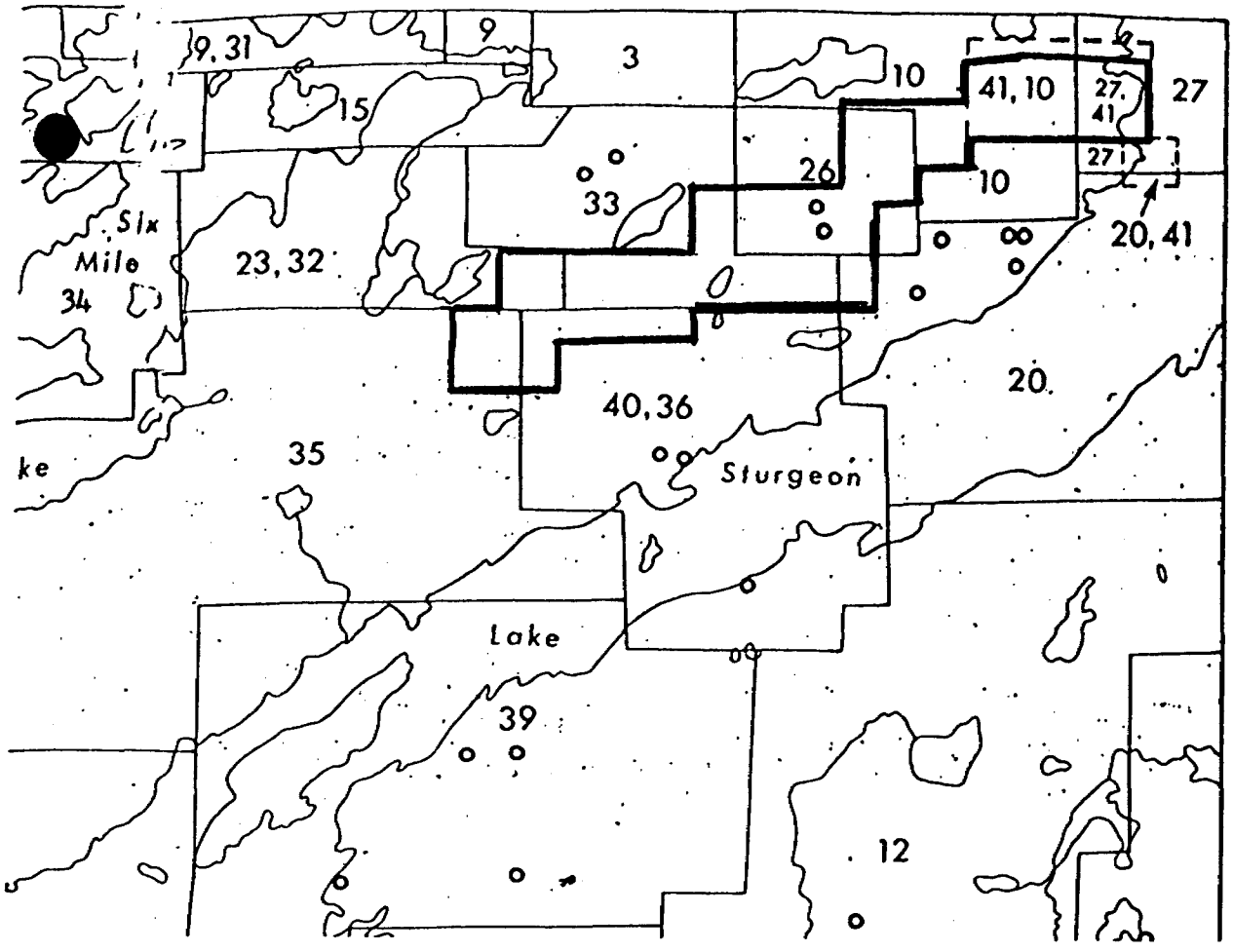
1982 A 31 claim block was staked to cover the Williams-Cunningham/ Chorzepa showings.

1983 Line cutting, mapping, stripping and trenching completed over 31 claims.

Locally:

1982-83 Steep Rock Iron Mines report encouraging gold values in drilling blue quartz veins on King's Bay - 4 miles.

Kerr Addison Mines completed mapping, geophysics, geochemistry, drilling to locate extensive occurrences of auriferous float (quartz veins).



No. 10	Conwest Exploration Co. Ltd.	1970	Geophysics
20	Greenpoint Mines	1970-71	Geophysics, drilling
26	Mattagami Lake Mines	1970	Drilling
27	Mattagami Lake Mines	1970	Geophysics
32	Northex Management (Canadex)	1972	Geophysics, drilling
33	Rio Tinto Canadian Limited	1970	Geophysics, drilling, mapping
34, 35	Rio Tinto Canadian Limited	1970	Geophysics, drilling
36	Selco Explorations	1970	Drilling
40	Wahl	1968-9	Geophysics, drilling
41	Williams, A.D.	1939	Trenching

Part of
SIXMILE LAKE DATA SERIES
O.D.M. Map P.928, 1974
showing
PRESENT PROPERTY OUTLINE
Scale 1" = 1 mile

FIGURE 2 a

Sturgeon Lake
Feb. '84

GENERAL GEOLOGY

The Sturgeon Lake Area is a 75 km. long section within the Savant-Crow Lakes Greenstone Belt. Figures 3 and 4.

"In the Sturgeon Lake Area, the volcanic rocks have been tightly folded inward and form a steep trough with the older rocks located on the outer edges of the belt and facing inward. The axis of the trough is transected by the Sturgeon Narrows Fault Zone which is marked by brecciation, shearing and syenite & porphyry intrusions." (Trowell, 1983)

"Regional metamorphism is greenschist and locally almandine-amphibolite rank (Trowell 1974)."

"The metavolcanics south of Sturgeon Lake are a north-facing steeply dipping sequence of mixed tholeiitic to calc-alkalic volcanics representing several cycles of deposition"(Trowell et al., 1980; Franklin et al., 1977). Individual cycles consist of a mafic metavolcanic base overlain by an upper unit of intermediate to felsic volcaniclastics. The majority of the Sturgeon Lake area massive sulphide deposits occur within or at the top of felsic volcaniclastics that are thought to mark the termination of the first major volcanic cycle. Figure 5

"The volcanics immediately north of Sturgeon Lake form the northern sequence consisting of south-facing Fe-tholeiitic basalts and tholeiitic to calc-alkaline flows and volcaniclastics that show a somewhat cyclic development"(Trowell et al., 1980). Trowell et al. (1980) indicate that these metavolcanics are not lithologically or chemically correlative with the volcanics of the south limb.

The north volcanic assemblage was re-examined (Thurston, 1983 Figure 6) and described as follows:

All bedrock in the area is Early Precambrian (Archean) ... age. The area (Figure 1) includes part of the Wabigoon Subprovince granite-"greenstone" terrane. The supracrustal units seen on the Six Mile Lake Road from north to south are described in the following sections:

1. Coarse-grained pillowed and massive amphibolites of the hornblende hornfels facies are adjacent to the granitic batholith exposed to the north and east.

2. A felsic pyroclastic unit about 1400 m thick extends for 12 km along strike from Highway 599 in the west almost to King Bay of Sturgeon Lake. The unit exhibits, over the full thickness, a generally fining upward aspect, with tuff-breccia gradually fining to predominantly tuff. Individual depositional units, defined by fine tuffaceous tops, exhibit normal size grading over typically 30 to 100 m thicknesses, with the proportion of pumice increasing upward. Grading of clast size and type, the lack of bedding, abundance of pumice, and sequence of primary structures suggests the unit represents subaqueous ash flows (Parsons 1969). The above parameters, especially the well developed grain gradations in tuffaceous units, indicate a northerly top direction for this unit.

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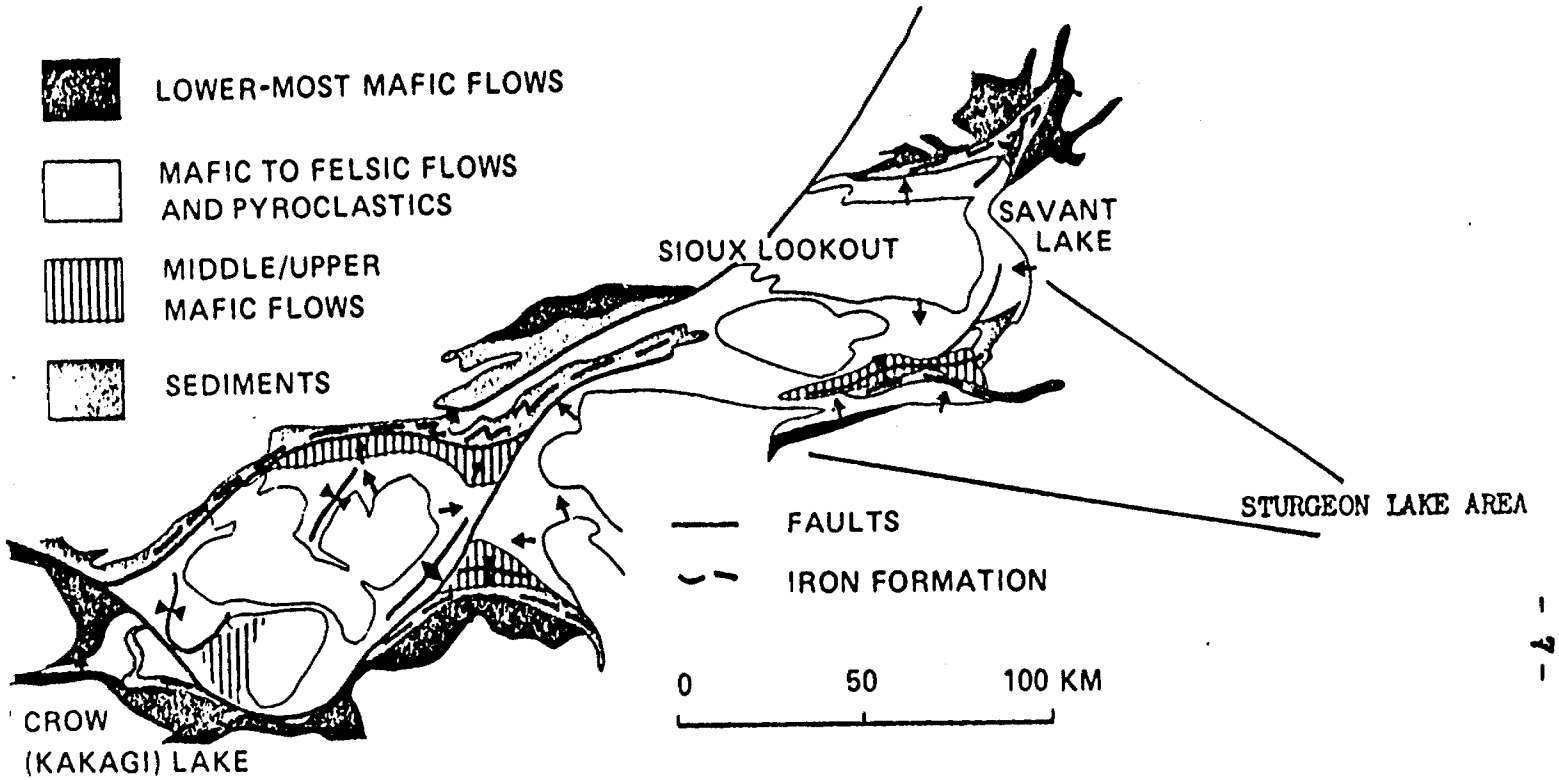


Figure 2—Sketch map showing broad lithostratigraphic relationships and structural complexity of the Savant Lake—Crow Lake area.

Source O.G.S. Paper MP 89
Trowell, N.F. et al 1980

FIGURE 3

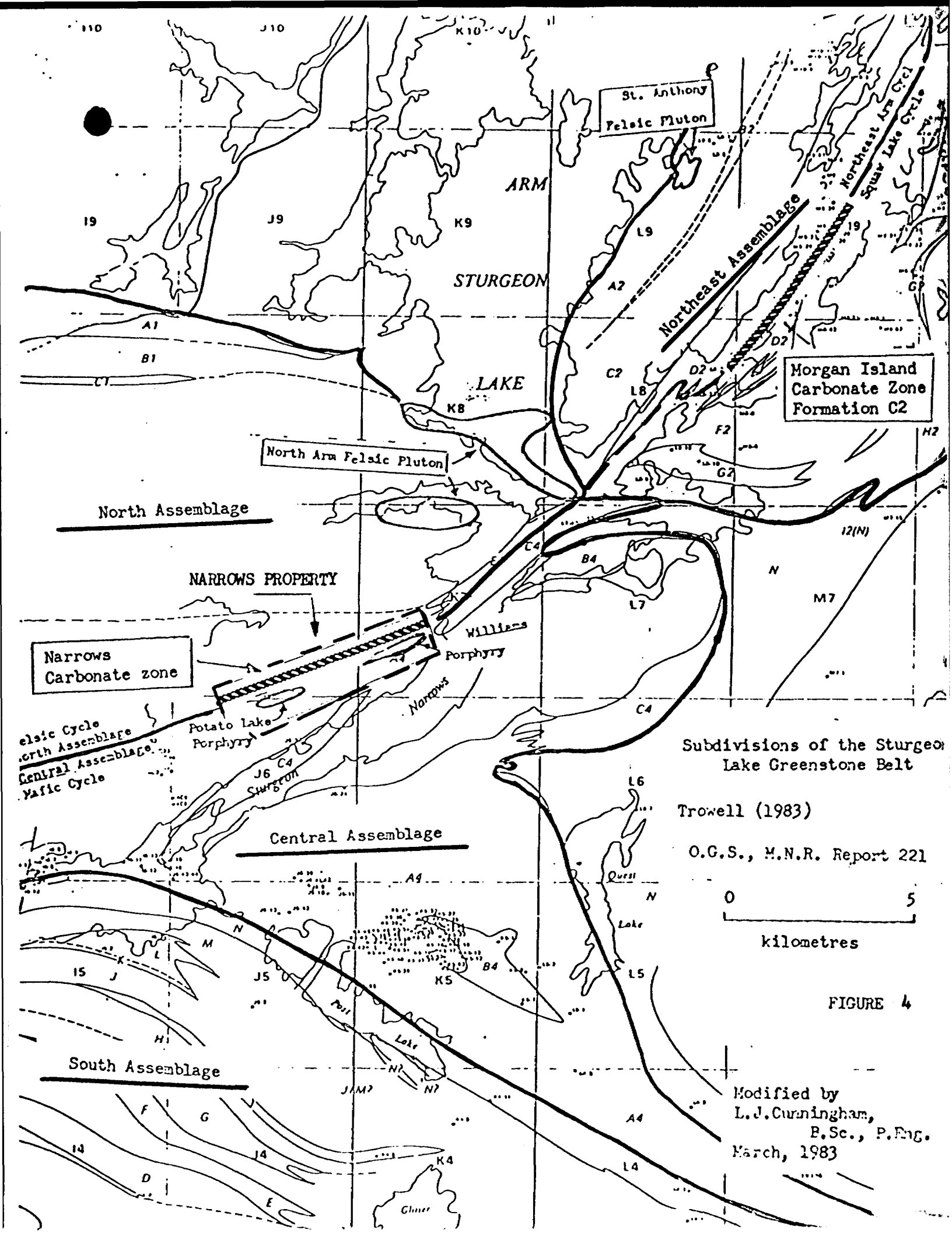
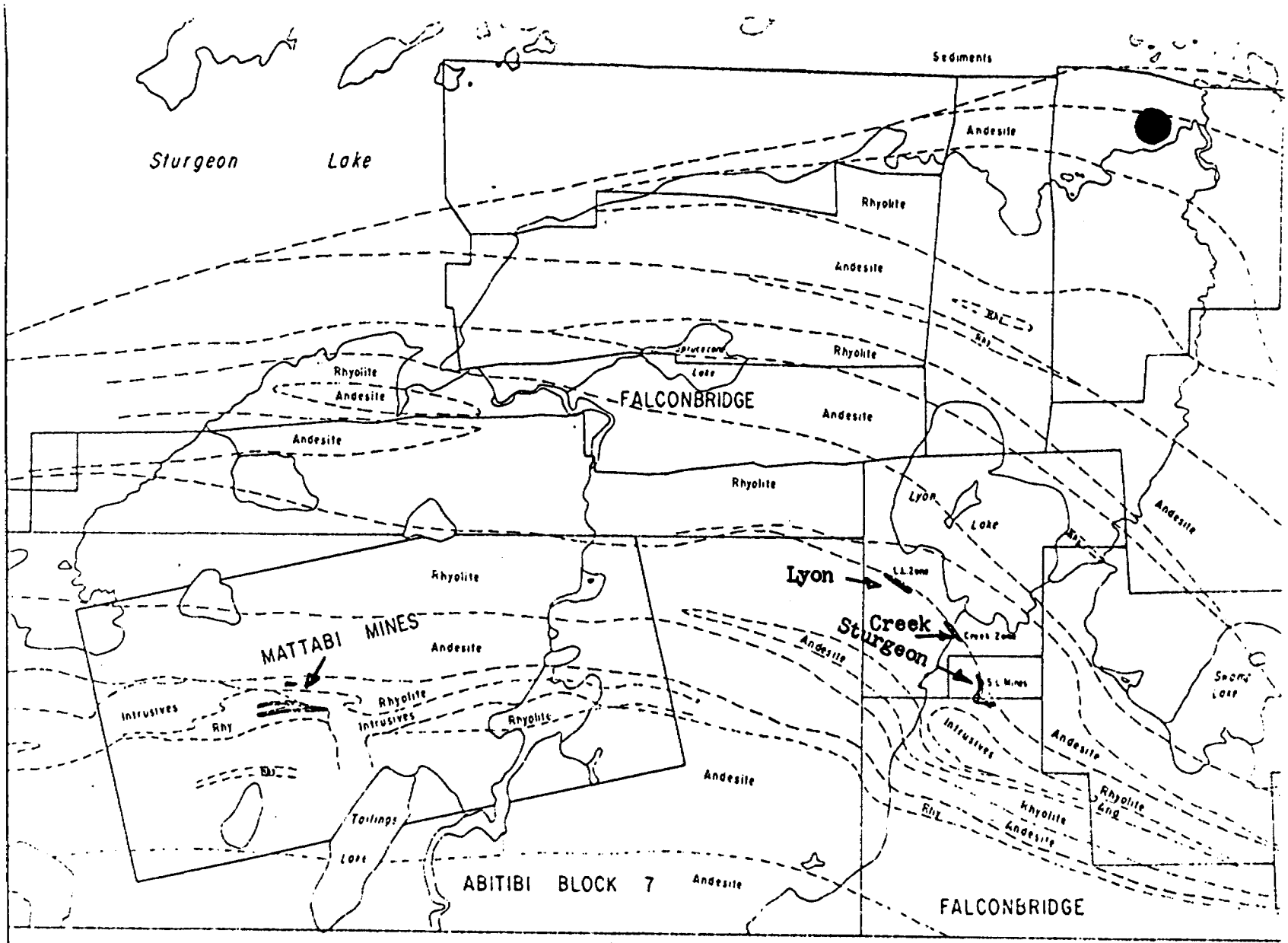

St. Anthony
Felsic Pluton
ARM
STURGEON
LAKE
Northeast Assemblage
Morgan Island
Carbonate Zone
Formation C2
North Arm Felsic Pluton
North Assemblage
NARROWS PROPERTY
Narrows
Carbonate zone
Williams
Porphyry
Potato Lake
Porphyry
Narrows
Central Assemblage
South Assemblage
Subdivisions of the Sturgeon
Lake Greenstone Belt
Trowell (1983)
O.G.S., M.N.R. Report 221
0
5
kilometres
Modified by
L.J.Cunningham,
B.Sc., P.Eng.
March, 1983

FIGURE 4



X
F Zone

GEOLOGY
SOUTH VOLCANIC ASSEMBLAGE
STURGEON LAKE AREA
SCALE : 1" = 2640'
Mattagami Lake Explorations Ltd.

TABLE 1. Ore deposits, Sturgeon Lake area

Deposit	Tons	%Cu	%Zn	%Pb	oz/tAg	oz/tAu	%Cu/%Zn
F-Zone	630.000	0.98	8.10	0.49	1.80		0.12
Mattabi	12.866,000	0.91	7.60	0.85	3.13	0.007	0.12
Lyon Lake	3.033.000	1.12	5.85	0.59	3.04	0.007	0.19
Creek Zone	908.000	1.66	8.85	0.76	4.71	0.019	0.19
Sturgeon Lake	2,100.000	2.98	10.64	1.47	6.14	0.021	0.28

FIGURE 5

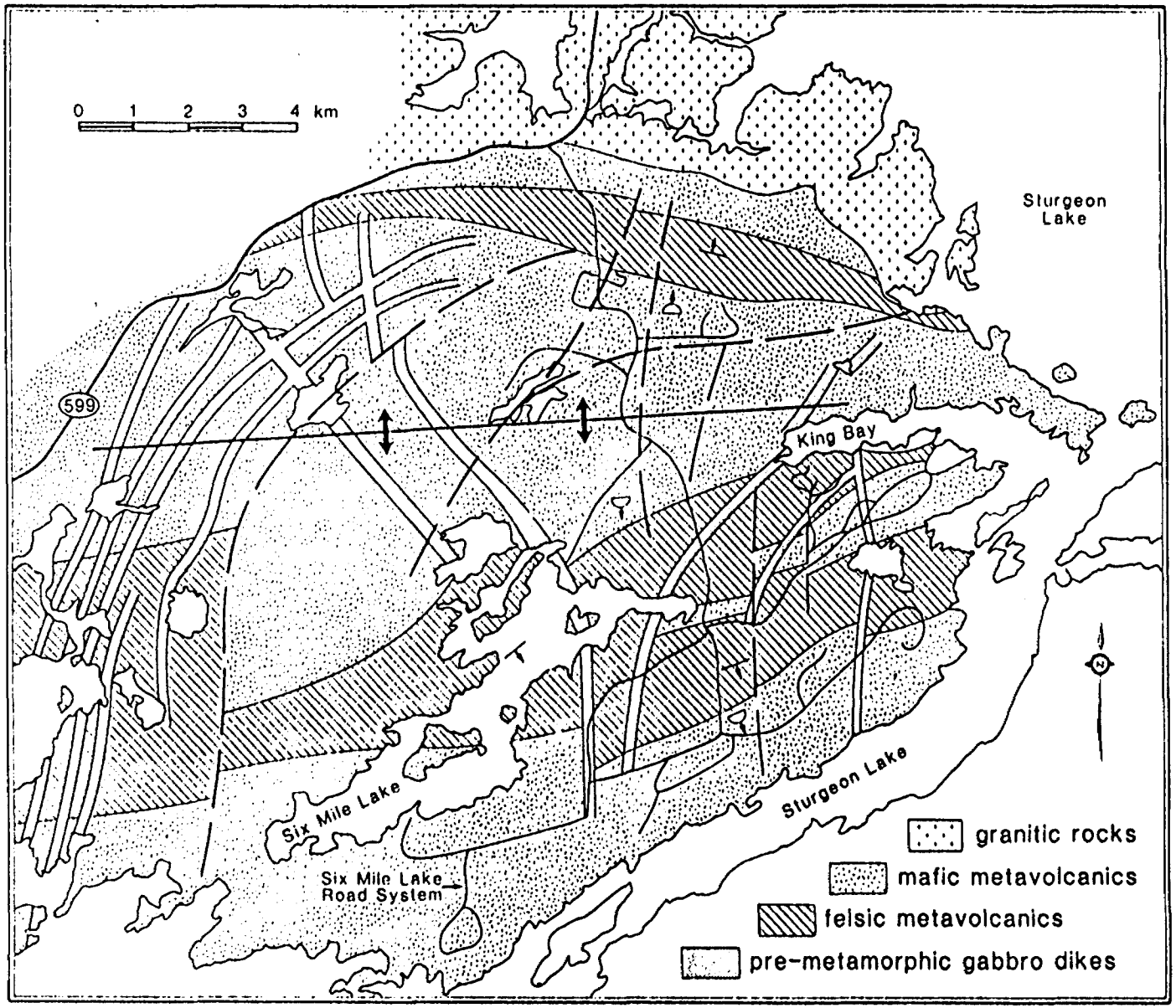


Figure 1 Geological sketch map, central Sturgeon Lake area.

Thurston, 1983 O.G.S. M.P. 116

North Assemblage

FIGURE 6

Sturgeon Lake
Feb. '84

3. A unit of mafic flows with massive, pillowed, and plagioclase-phyric flows and associated hyaloclastite extends the full width of the area. The flows exhibit varied, generally slight degrees of epidotization, silicification, and carbonatization. Principal areas of carbonatization are immediatiely north and south of King Bay of Sturgeon Lake. Epidotization of hyaloclastic mafic flows is prominent immediately north of the southern felsic unit, south of King Bay, and north of Dan's Lake. A major plagioclase-phyric unit occurs just south of unit 2 (described above) and north of unit 4 (described below). The northern occurrence includes, as well as plagioclase phenocrysts, some centimetre scale clots of felsic plutonic material.

4. The southern felsic unit, termed the top of the Jumping-Six-Mile Lake Cycle by Trowell (1983a), is well exposed along the Six-Mile Lake Road and Cobb Bay of Sturgeon Lake. The unit consists of felsic ash flows generally 100 to 200 m thick, which gradually fine upward to tuffaceous tops. Compositional zoning from andesite-dacite to rhyolite is present within individual depositional units. The unit is capped by a 30 to 60 m thickness of cherty, thin-bedded felsic tuff. Generally, top indicators in this sequence suggest south-facing tops.

5. South of this is a sequence of mafic flows containing a prominent unit about 60 m thick with 1 to 5 cm plagioclase phenocrysts, succeeded to the south by pillowed, variably epidotized, and silicified mafic flows with rare felsic tuff interflow pyroclastic-epiclastic units.

The sequence is cut by pre-metamorphic north- to northeast-trending gabbro to diorite dikes which range from single phase to composite dikes. The dikes have chilled margins against the country rocks and chilled margins between phases. They range in width from miniscule to 150 to 250 m. They often comprise up to 30% of the crustal volume, particularly in areas underlain by felsic metavolcanics

The area is cut by syn- to post-tectonic granitoid intrusions varying from trondhjemite to quartz monzonite.

Cunningham, et al. (1983) mapped an area between Sixmile Lake and Sturgeon Narrows and suggest modifications (Figure 7) to Thurston (1983).

1. The south (upper) felsic part of the southern felsic unit is subdivided into two felsic units with an intercalated mafic horizon. Facings are south with steep dips.
2. The top of the intercalated mafic unit and the overlying felsic pyroclastic unit are hydrothermally altered; the former shows intense carbonatization, the latter carbonatization, sericitization and epidotization in addition to intense shearing. Facings are south with steep dips.
3. The overlying mafic unit (pillowed basalts - the lowest member of the central assemblage) shows extensive epidotization, local development of quartz tourmaline veining and discrete patches of silicification. Facing directions are predominantly southwesterly indicating a possible discordant relationship with the underlying felsic unit (NE to E striking).
4. Three quartz-feldspar porphyry bodies were identified and are considered intrusive.
5. The upper felsic pyroclastic unit (1) apparently terminates to the west, (2) grades from predominantly coarse clastic in the west to fine clastic, thin bedded units in the east and (3) becomes intercalated with the East

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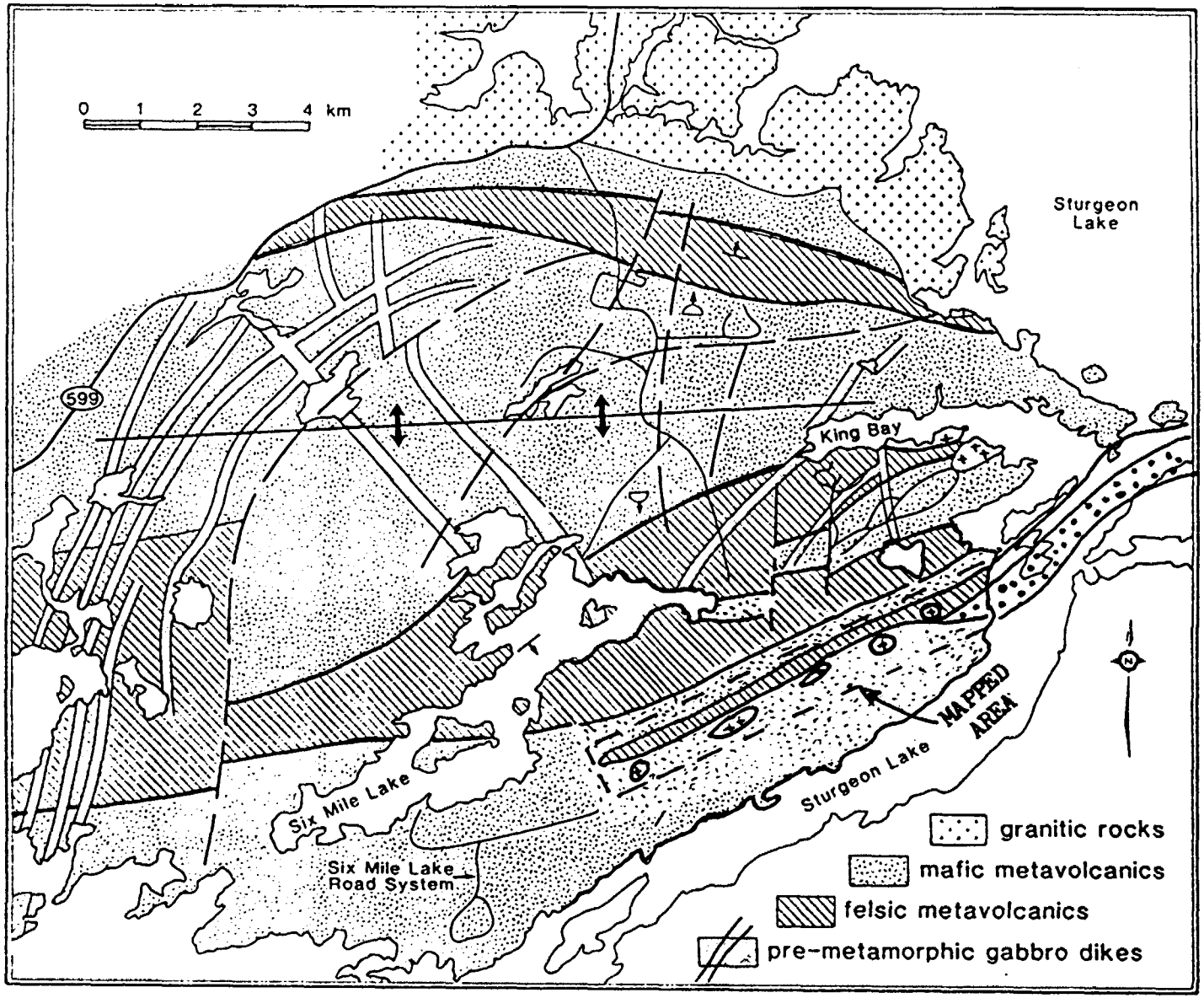

Figure 1. Geological sketch map, central Sturgeon Lake area.
Thurston 1983 O.G.S. M.P. 116
Modified by Cunningham 1984

North Assemblage

Qtz-Feldspar Porphyry Intrusives

Sediments

FIGURE 7

Sturgeon Lake
Feb. '84

Bay-Coveney Island sediments, (4) contains several graphitic-pyritic horizons.

6. Gabbro bodies are interpreted as rounded stocks to sill-like forms rather than north/south dikes.

On the Joint Venture property:

(1) Three pyritic zones of mineralization have been located within the felsic unit:
   a) The CC showing is semi massive auriferous pyrite in a siliceous brecciated unit - considered to be of volcanogenic. hydrothermal origin.
   b) The 96 showing is thinly laminated massive pyrite in fine grained clastic sediments - possibly a sulphide facies iron formation.
   c) The Williams showings - disseminated to stringer pyrite in a highly siliceous rock - considered to be of hydrothermal origin.

(2) The east part of the property is geologically complex due to (i) faulting, (ii) intrusion of mafic and felsic bodies, (iii) interfingering of felsic pyroclastics, clastic sediments and mafic flows and (iv) hydrothermal alteration.

(3) Several genetic models are proposed:
   1. Sea floor volcanism and hydrothermal activity as proposed by Fyon & Crocket (1983) for the Timmins Area:
   "Carbonate alteration took place at the sea floor/sea water interface" "alteration zones, which represent regions of hydrothermal fluid discharge into the hydrosphere, are spatially associated with felsic volcanic complexes and with syngenetic, auriferous, cherty dolomite mineralization."

Sturgeon Lake
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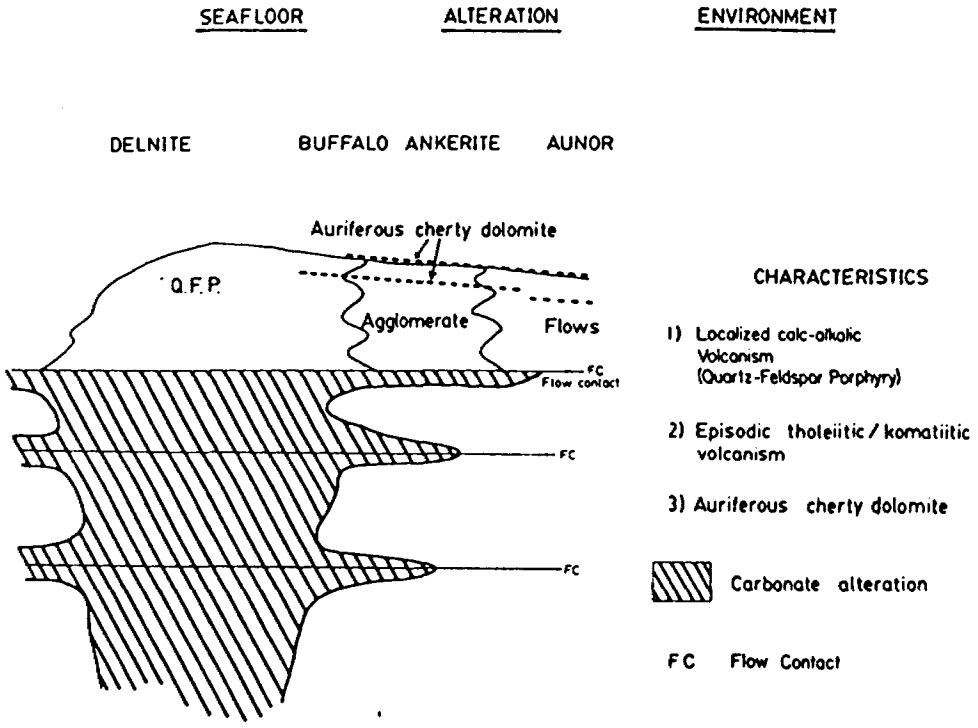


Figure 14–Sketch illustrating the essential characteristics of the auriferous, sea floor alteration environment.

Gold Exploration in the Timmins Area O.G.S. Study 26
J.A. Fyon and J. H. Crockett 1983

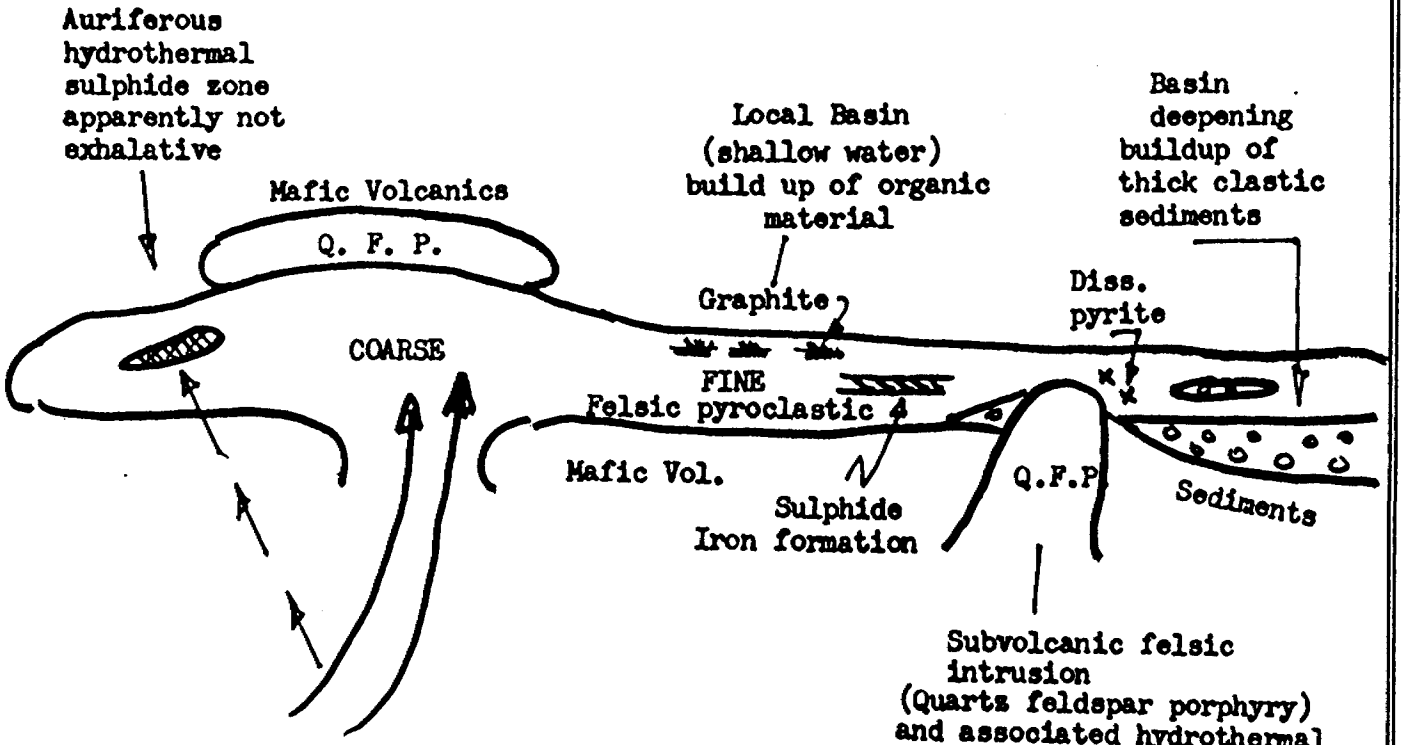
FIGURE 8

2. A tectonic model as suggested by Franklin* (1983 verbal communication). - The intense shearing and alteration within the upper felsic unit may represent a splay or branch fault (of the Sturgeon Narrows fault zone) along which mafic and felsic intrusions have taken place accompanied by hydrothermal mineralizing solutions.
3. A sedimentary model (Hogg 1984):
"Gold in the area is believed of sedimentary origin, probably deposited within sediments in a shallow marine environment. Accordingly, depending on local conditions, it may occur in strata-bound form, or in veining in structurally deformed or recrystallized areas."

* Franklin, J.M. Geological Survey of Canada

Sturgeon Lake
Feb. '84

The writer favours sea floor volcanism and suggests the following sequence of events (after Severin (1982) model for Sturgeon Lake Deposit).



Signed,

L. J. Cunningham, B.Sc., P. Eng.,
Mining Engineer

Dated at
Kirkland Lake, Ontario
11th February, 1984

Listing of Some Sources of Information on the Sturgeon Lake Area and the Canadex Sturgeon Narrows Property.

Moore, E.S.	1911	The Sturgeon Lake Gold Field. O.D.M. Vol. 20, Pt. 1.
Cunningham, L.J.	1973	Geology Report on Claims 325812-13, Santa Maria Mines, Six Mile Lake, Sturgeon Lake Area. Private Report.
King, H.L., Werry J.D.	1974	Six Mile Lake Area. O.D.M. Prelim. Map P.928
Meyer, G.	1974	Report on S. Johnson Gold Showing, Sturgeon Narrows. Private Report.
Trowell, N.F.	1974	Geology of the Bell Lake- Sturgeon Lake Area. O.D.M. G.R. 114.
Janes D.A.	1981	Annual Report of Regional and Resident Geologists. O.G.S. MP.95.
Severin, P.W.	1982	Geology of the Sturgeon Lake Base Metal Deposit. C.I.M.M. Bull. Oct.1982
Cunningham L.J.	1982	Report on the Sturgeon Narrows Property of Canadex Resources et al. Pvt. Report.
Trowell, N.F.	1983	Geology of the Sturgeon Lake Area, Districts of Thunder Bay and Kenora, O.G.S. Report 221.
Kidd, R.	1983	Report on the Sturgeon Narrows Property, Sturgeon Lake Area, Northwestern Ontario. Private Report to Canadax Res.Ltd.
Thurston, P.C.	1983	Sturgeon Lake Gold Area. O.G.S. M.P. 116
O.G.S./G.S.C.	-	Aeromagnetic Sheets; Bell Lake, 1117G, and Sturgeon Lake 1118G
O.G.S	-	Geological Compilation Series Map 2442
M N R.	-	Assessment Files, Claim Map M.2877.
Fyon, J.A. & Crockett, J.H.	**-**	**Gold Exploration in the Timmins Area O.G.S. Special Paper 26**
Hogg, G.M.	**1984**	**Report on the Sturgeon Narrows Gold Property of Canadex Resources, et al, Sturgeon Lake, Ontario**

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L56W L52W L48W L44W L40W L36W L32W L28W L24W L20W L16W L12W L8W L4W

12N

8N

4N

BASE LINE

4S

8S

12S

MARIA LAKE

SIX MILE LAKES Rd.

642974

642976

642977

642978

642979

642980

642981

DDH 85-10

DDH 85-9

DDH 85-7a

DDH 85-2

DDH 85-8

DDH85-1

DDH 85-3

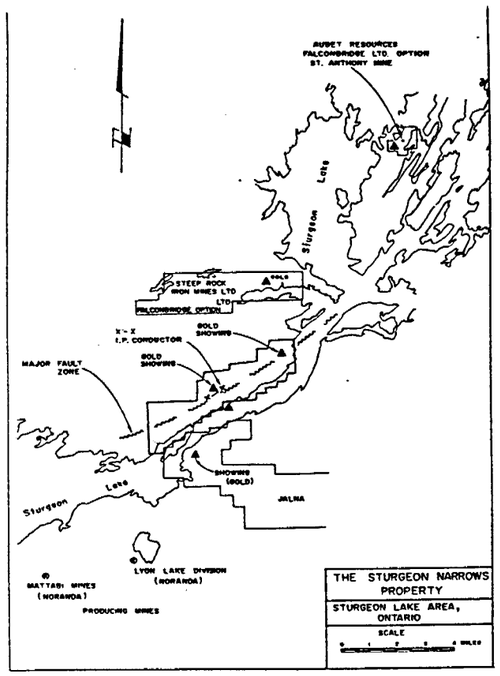
DDH 85-6

DDH 85-4

DDH 85-5

0 400 1000

SCALE in feet



INTERNATIONAL SANTANA RESOURCES

STURGEON NARROWS PROPERTY

6 MILE LAKE AREA

CLAIM MAP M.2877

STURGEON LAKE AREA, ONTARIO

SHOWING 1985 DRILL PROGRAM

26 MAR 86

Diamond drill log
duplicates for hole
no. 85-1 to -10, incl.
may be found on fiche
52 G/15 NW- 0045
R.O.W #11 for 1986