469001 D.K.S.G

COMINCO EXPLORATION PTY. LTD.

Progress Report on

Exploration Licence 4/73

Sterling Valley, Tasmania

for six months ending

March 6, 1976,

(and summarising work carried out in the previous six months period)

Submitted by: D.C. Simpson
Geologist
Cominco Exploration Pty.Ltd.

on behalf of
the Licenceholder,
Asarco (Australia) Pty. Ltd.

INTRODUCTION

During the period under review (12 months), a field programme consisting of stream sediment geochemical sampling, weathered bedrock geochemical sampling, proton magnetometer surveys and a trial induced polarisation survey, was completed. Sampling of core from two holes drilled by Electrolytic Zinc Co. was undertaken to test for magnetic response and tin content.

The results of this work are discussed and data is presented on plans at a scale of 1:2,500. These show geochemical results and magnetic contours. In addition, pseudo-sections for the trial I.P. are included.

GEOCHEMISTRY

1. Stream Sediment Geochemical Survey

79-1037

The exploration programme carried out by Asarco in 1973-74 included stream sediment sampling over the full extent of Exploration Licence 4/73. The sample points were determined at the intersections of streams with the coarse exploration grid (360m line spacing) and in the Sterling Valley itself, with detailed grid lines 120 metres apart (see Plate S.V. 3).

The minus 80 fraction of stream sediment was analysed for Cu, Pb, Zn, Sn, cxCu and cxZn. Asarco thus defined a number of base metal and tin stream anomalies (Barker, 1974). The tin results are shown in Plate S.V.3. Tin threshold was determined at 60 ppm.

The presence of anomalous tin has been the subject of Cominco's active participation in this licence.

The streams with anomalous tin were found to traverse largely re-worked fluvio-glacials and river gravels on the Sterling Valley floor. Barker concluded that in this environment, tin has a very weak stream dispersion.

In Cominco's programme, streams in the vicinity of the Sterling Valley grid were re-sampled to confirm and localize the previously defined tin anomalies. The analyses were by the emission spectrography method, with the recognized limitations in accuracy and at levels of 10, 20, 30, 50, 100, 200, 300 parts per million.

Orientation on three different size fractions of selected samples indicated that the minus 80 fraction consistently showed the best contrast in tin content.

Forty stream samples were collected. The analyses are plotted on Plate S.V.3. If 50 ppm is used as an arbitrary threshold, then 16 samples with 100 to 300 ppm Sn might be considered anomalous.

These results confirm the presence of source of tin in the vicinity of the power line along Sterling Valley, and also suggest the possibility of a tin source on the western side of the Sterling River.

2. Bedrock Geochemical Sampling

Based upon results obtained from the stream sediment sampling programme, a weathered bedrock geochemical sampling programme was conducted over a narrow north-south zone in the floor of the Sterling Valley. Sampling extended eastward from the baseline for up to 250 metres, while towards the south some sampling was carried out west of the baseline. As far as can be determined from surface outcrop and bedrock sampling data, the zone covered includes a belt of black shales and slates, which is now believed to give rise to some of the anomalous tin values.

Weathered bedrock samples were taken using a 10 cm diameter post-hole auger. Sample depth was generally less than 1 metre. In marshy and swampy areas this type of sampling was found to be ineffective because of rapid hole caving. Generally, the sample density is satisfactory (see Plate 6a, b) with a sample spacing of 10 metres along lines but reducing to 5 metres in the vicinity of Turley's lode and supposed strike extensions.

Size analyses showed that there was a slight enhancement of tin values in the -60 + 80# fraction so this fraction was selected for analysis.

Analyses were carried out by the emission spectrographic method for Cu, Sn, Ag and Zn. Duplicate samples were made up at the rate of 1 in 20 samples. These results showed good agreement.

Values obtained for the copper, zinc and silver fall within the background range of the respective rock types encountered (with minor exceptions not considered significant). Inspection of Plates 6a, b will show the following trends of anomalous tin values;

i) An approximately north-south trending zone located between 5150E and 5170E extending from 3560N to 4040N. Turley's workings fall on this trend which is marked by a resistant quartz vein. It is not known if this zone extends northward to 4400N where tin values up to 5000 ppm were obtained.

It is felt, at this stage, that this zone of values reflects tin associated with quartz veins and is relatively narrow.

ii) A less intensely mineralised but broader zone is developed at approximately 5050E between 3560N and 3920N. The anomalous values are associated with black shale.

iii) On 3200N and 3320N at 5030E are two anomalous values of 500 and 1000 ppm tin respectively. Although not high values, they are believed to correlate with tin values obtained from assays of core from the sulphide-rich slates in DDH STP105 drilled by Electrolytic Zinc Co. (See under Drill Core Assays)

GEOPHYSICS

1. Magnetics

A ground magnetometer survey was carried out over the area shown on Plate S.V. 5 to define the anomaly reported to have been obtained by Rio Tinto. The survey was carried out using a proton precession magnetometer with station spacing at 15 metres. Contoured results are shown on the above plate.

There appears to be little direct correlation of magnetic anomalies with known tin values. The high located on 3800N at 5150E, however, may coincide with the strike extension of Turley's workings. (No anomalous tin values were obtained at this point).

There is minor geochemical expression in the vicinity of the magnetic anomaly extending from 3200N to 3560N just east of the baseline.

Interpretation of the source of this anomaly is discussed below (under "Induced Polarisation"). Core from DDH STP105 in this vicinity, which passed through sulphide bearing slates, gave no response with a fluxgate magnetometer, except for one 10 cm wide pyrrhotite vein at 862'.

2. Induced Polarisation

The test I.P. survey at Sterling Valley was designed to check shallow electro-magnetic sources and deep magnetic sources encountered during previous work. Six lines were traversed using 50m dipoles, in dipole-dipole configuration, with dipole separations of n = 1 to 6. Difficulty was experienced in obtaining reliable data in some locations, where very low resistivities (less than 10 ohm. m) were obtained on fifth and sixth separations.

The data show, on all lines, a broad zone of anomalously low resistivities (<100 ohm. m) within a high background (in excess of 500 ohm. m). This low resistivity zone exhibits high frequency effect background (5 to 7%), with several narrow anomalies up to 12%.

Superimposed on this broad anomalous response is a strongly anomalous resistivity low (<10 ohm. m) on most lines. These anomalous effects appear only on fourth to sixth separations, indicating a change in rock type resistivity at depth.

The strong resistivity low on line 3320N and line 3340N correlate exactly with the interpreted magnetic source (centred at 5060E, at depth to top of 135 to 150 metres, dip 55° to 60° W) on these lines. Drill hole STP105 would have passed above this target position.

The correlation between magnetics and I.P. is not as easily ascertained on the northern lines (4280N, 4160N, etc.) due to the distortion of (deep) magnetic anomalies by shallow anomalies.

3. Ground Electromagnetics

One trial line of vertical loop E.M. was run on line 4400N.
The noise induced by the power transmission line (which coincides with the base line) was so great as to make the method ineffective.

CORE ASSAYS

Core from the two holes, STP101 and STP105, drilled by Electrolytic Zinc Co., was sampled and assayed for Sn, Cu, Pb, Zn and Ag.
Assays were by emission spectroscopy. Results are as follows (in ppm):

Hole No. STP101

Footage	Sn	Cu	Pb	Zn	Ag
634	1	100	500	20	0.1
641	800	1500	80	30	5
647	50	300	50	20	3
658	500	10000	2000	50	80
663	80	200	150	20	10
670	30	100	30	80	0.1
682	400	2000	20	50	5
690	4000	1000	80	50	3

Hole No. STP105

572	50	50	50	100	0.1
583	500	50	20	x	0.1
862	300	1000	>1%	>1%	150
876	10	150	80	50	1
923	5	150	20	30	1
950	30	150	80	200	5
960	500	200	50	80	8
971	20	80	20	30	0.3
983	1500	80	80	500	0.3
1041	250	80	50	50	0.3
1048	150	200	80	20	0.5

These results confirm that tin is present in similar concentrations as is detected in bedrock samples.

MAGNETIC TESTING OF CORE

Core from two holes drilled by Electrolytic Zinc Co., STP101 and STP105, was tested for magnetic response by passing pieces of core, selected from mineralised and unmineralised sections, close to a fluxgate magnetometer. In all cases except one there was no response. The only response came from a pyrrhotite vein at 862' in DDH STP105.

CONCLUSIONS AND PROPOSED WORK

The definition of coincident magnetic and induced polarisation anomalies located in a narrow zone which also contains a tin geochemical anomaly provides encouragement for further exploration.

It is proposed to drill the combined geophysical anomaly in the vicinity of line 3200N to 3600N at 5020E following some further geophysical definition by magnetics and I.P.

FINANCE

Expenditure over the past twelve months is recorded as follows:-

From March 6, 1975 to September 6, 1975 -

Geology	636
Geochemistry	1,266
Tenure	31
	$1,933

From September 6, 1975 to March 6, 1976 -

Geology	225
Geochemistry	3,043
Geophysics	1,080
Miscellaneous	200
	$4,548

Total expenditure for the twelve months - $6,481.

REFERENCE

Barker, R.G. 1974 E.L. 4/73, Sterling Valley, Tasmania, Progress Report to June, 1974.

ATTACHMENTS

Plate S.V. 3	Sterling Valley Stream Sediment Geochemistry (total tin ppm)		
6a	Sterling Valley Weathered Bedrock Geochemistry		1:2500 Sn ppm
6b	"	"	1:2500 Sn ppm
7a	"	"	1:2500 Cu ppm
7b	"	"	1:2500 Cu ppm
8a	"	"	1:2500 Ag ppm
8b	"	"	1:2500 Ag ppm
5	Contours of total magnetic field		1:2500
(6)	I.P. Pseudo-sections - Sterling Valley		
	• 7601-101		
	• 7601-102		
9a	Zn ppp	• 7601-103	
9b	1 : 2500	• 7601-104	
		• 7601-105	
		• 7601-106	

Submitted by: D. C. Simpson

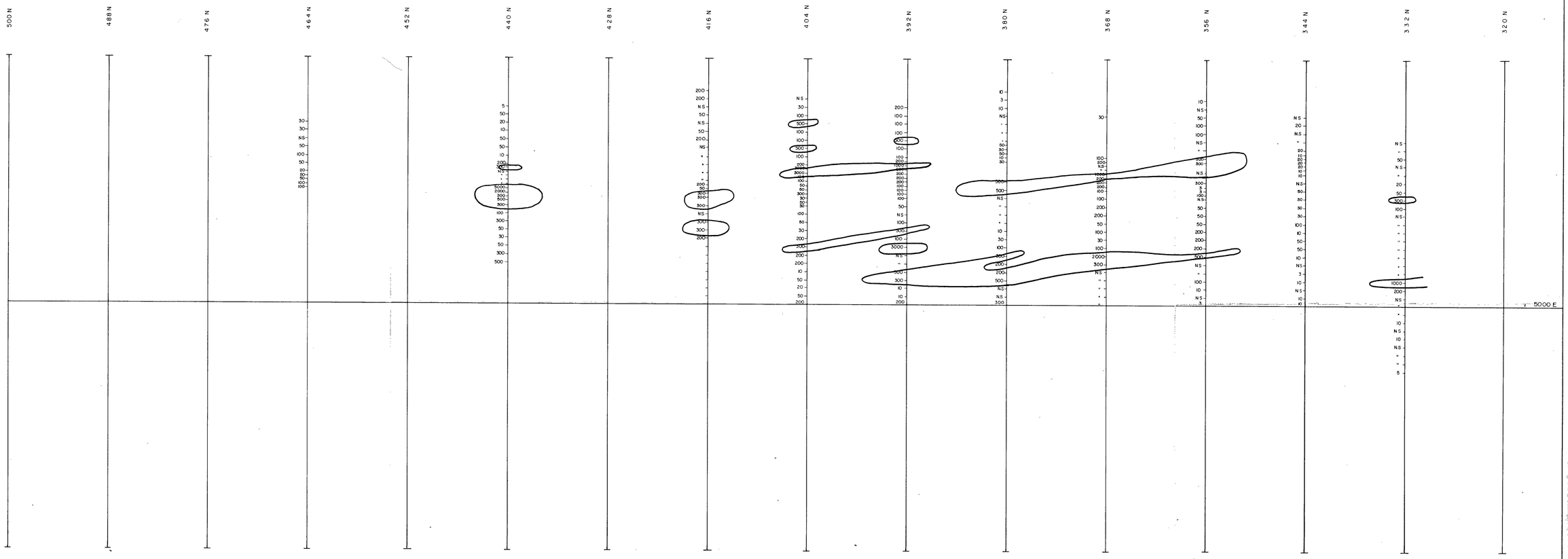
D.C. Simpson
Geologist

Endorsed by:

L.V. Gentle
Chief Geologist.

DCS:KMW
11/3/76.


E.L. 4/73
To Tullah
Baseline
Stirling River
MURCHISON HIGHWAY
To Rosebery
Midson
Sterling Valley Mine
MC 1M/55 (EZ)
MC 2M/55 (EZ)
(Approx only)
SCALE
1:5000
TN
MN
GN
TASMANIA
Road
Vechicle track
Walking track
Creek
Abandoned railway
Abandoned mine
Stream sample location by C E P L 1975, with Sn analysis (p.p.m.) by emission spectroscopy and -80 fraction
Stream sample location by Asarco 1973, with Sn analysis (p.p.m.) by XRF and -80 fraction
5 cm
COMINCO EXPLORATION PTY. LTD.
NORTH WEST TASMANIA
E.L. 4/73 STERLING VALLEY
STREAM SEDIMENT GEOCHEMISTRY
TOTAL TIN (p.p.m.)
Drawn by
Checked by
Traced by P F
Location code K55/6/51
Scale 1:5000
Date May 1975
Plate SV 3
469009
76-1154
1942



— Contour + 250ppm Sn

N.S - not sampled

Sn analyses by Emission Spec

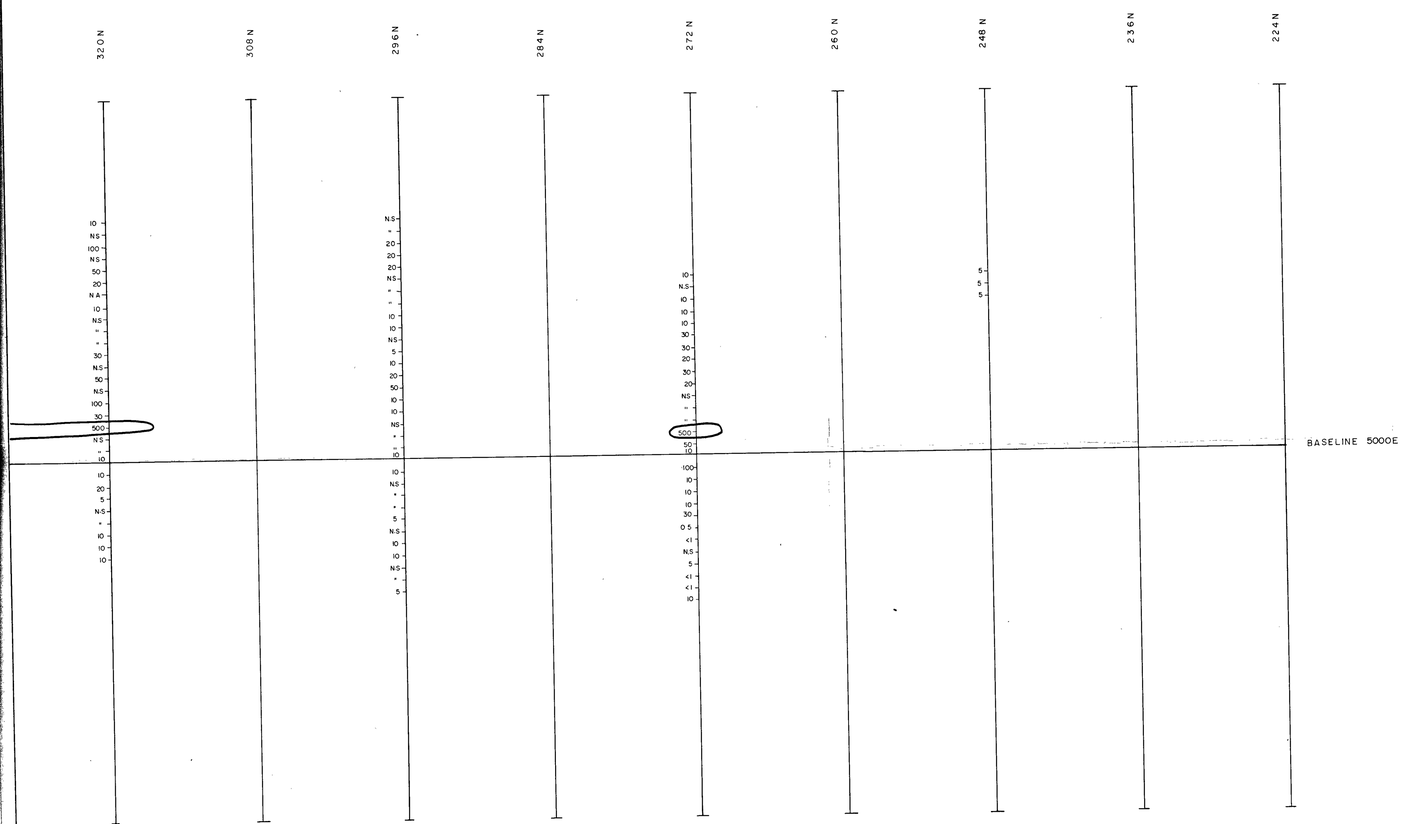
5 cm

469010

76-115R

1343

COMINCO EXPLORATION PTY. LTD.			
Drawn by RKY	Traced by	NORTH WEST TASMANIA	
Checked by		STERLING VALLEY	
		Weathered bedrock geochemistry- Sn p.p.m.	
Location code: K55/6/51	Scale: 1:2500	Date: December, 1975	Plate: Sv 6a



469011

5 cm

76-1154 1344

COMINCO EXPLORATION PTY. LTD.			
Drawn by: RKY	Traced by:	NORTH WEST TASMANIA	
Checked by:		STERLING VALLEY	
		Weathered bedrock geochemistry- Sn p.p.m.	
Location code: K55/6/51		Scale: 1:2500	Date: December, 1975	Plate: Sv 6b

500 N
488 N
476 N
464 N
452 N
440 N
428 N
416 N
404 N
392 N
380 N
368 N
356 N
344 N
332 N
320 N

BASELINE
5000E

5000 E

N.S - not sampled
Cu analyses by Emission S'pec

469012

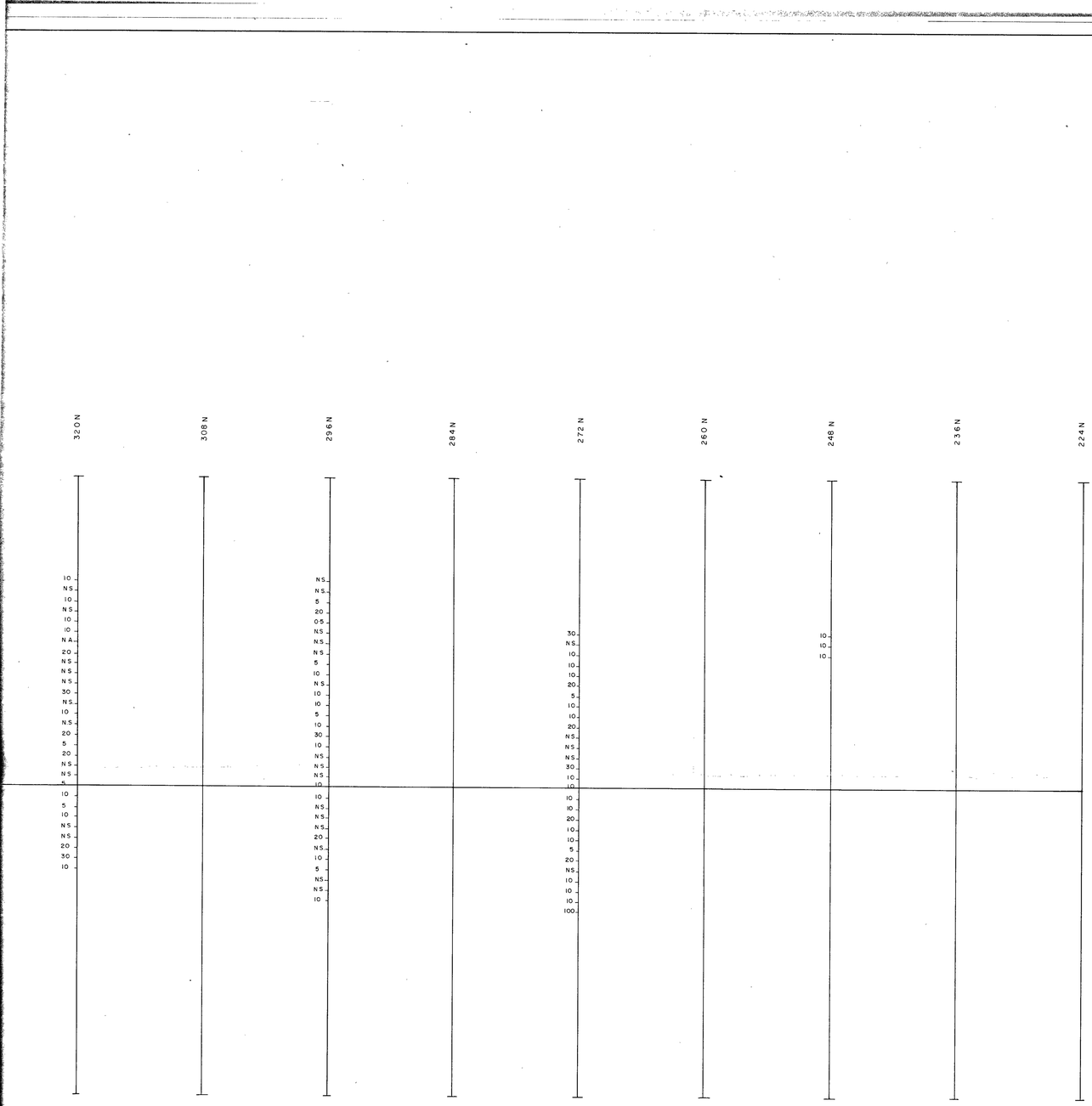
5 cm

76-1134

1345

COMINCO EXPLORATION PTY. LTD.

Drawn by RKY	Traced by	NORTH WEST TASMANIA
Checked by		STERLING VALLEY
		Weathered bedrock geochemistry- Cu p.p.m.
Location code: K55/6/51	Scale: 1:2500	Date: December, 1975 — Plate: Sv 7a



469013

5 cm

76-1154 - 1946

COMINCO EXPLORATION PTY. LTD.			
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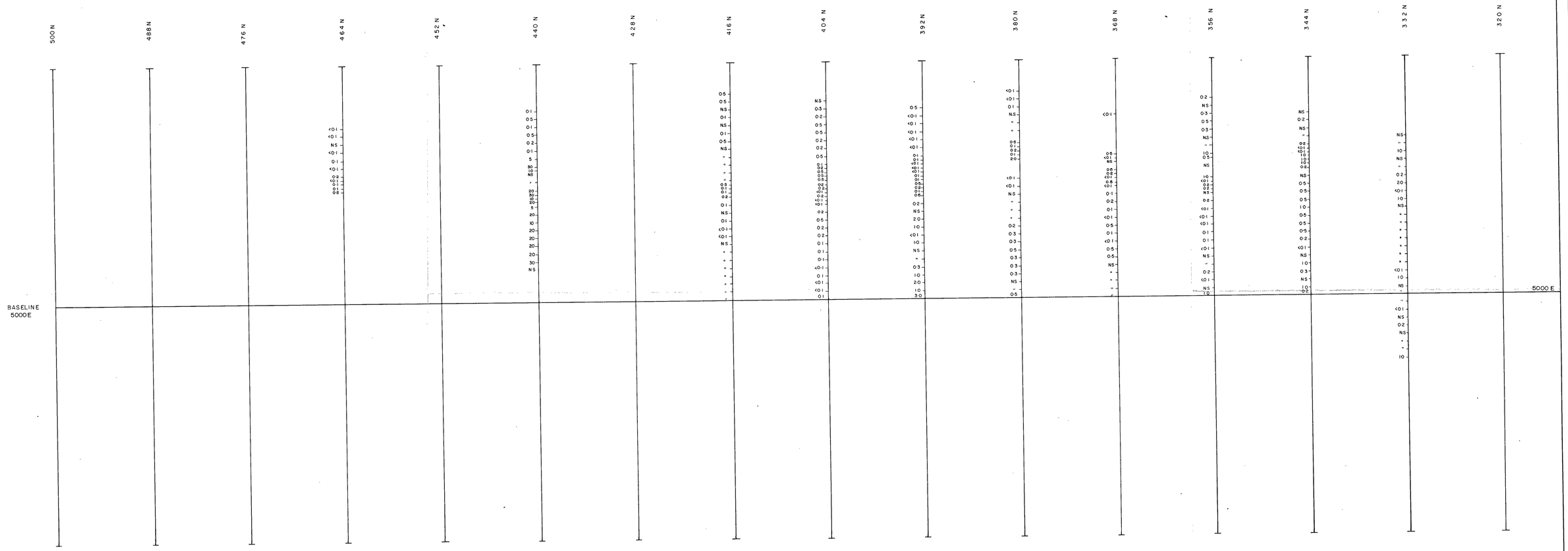
Checked by		STERLING VALLEY	
		Weathered bedrock geochemistry- Cu p.p.m.	
Location code: K55/6/51	Scale: 1:2500	Date: December, 1975	Plate: Sv 7b



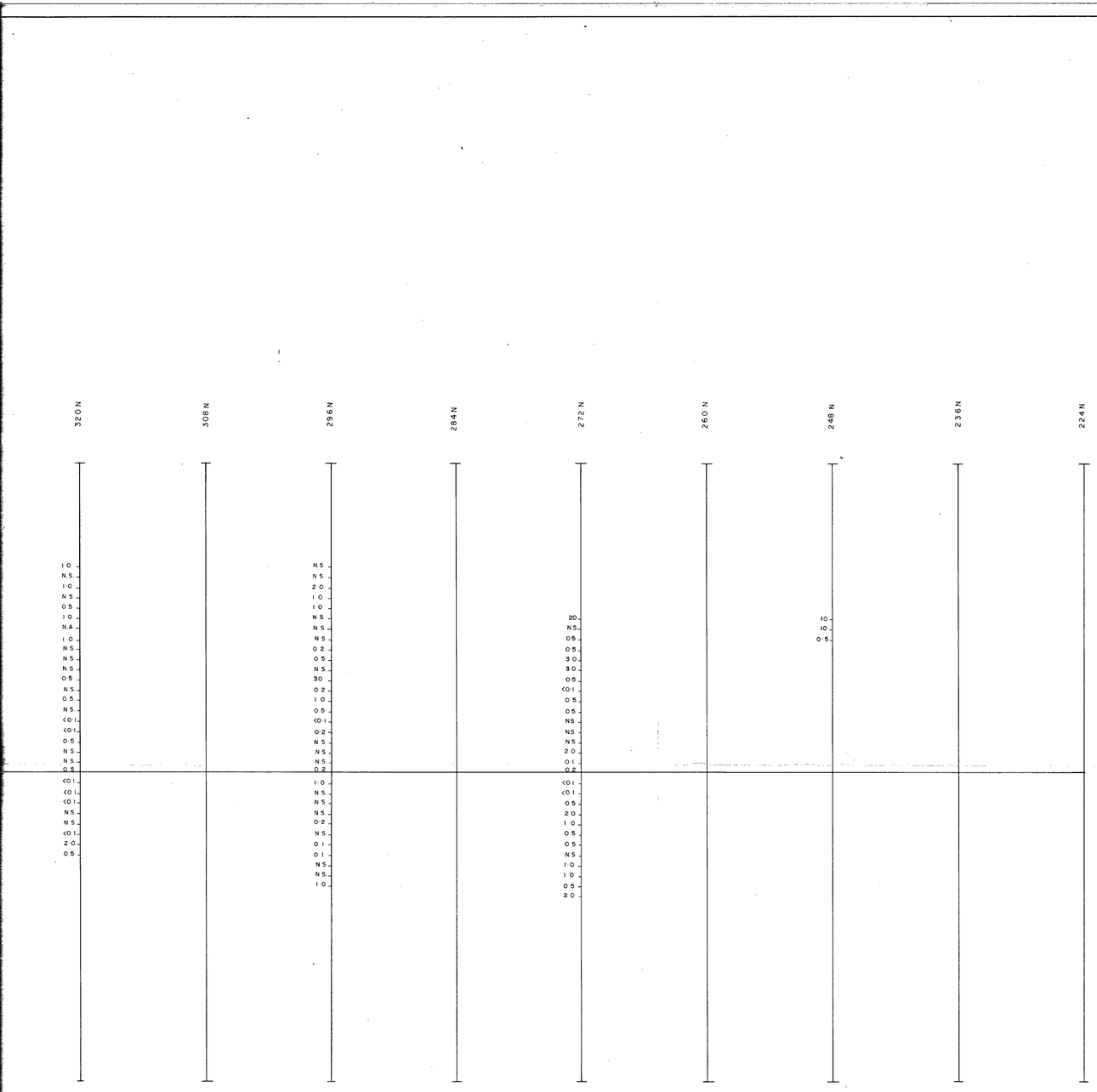
NS - not sampled
Ag analyses by Emission Spec

469014

5 cm

76-1154 1347

COMINCO EXPLORATION PTY. LTD.			
Drawn by RKY	Traced by	NORTH WEST TASMANIA	
Checked by		STERLING VALLEY	
		Weathered bedrock geochemistry- Ag p.p.m.	
Location code: K55/6/51		Scale: 1:2500	Date: December, 1975	Plate: Sv. 8a

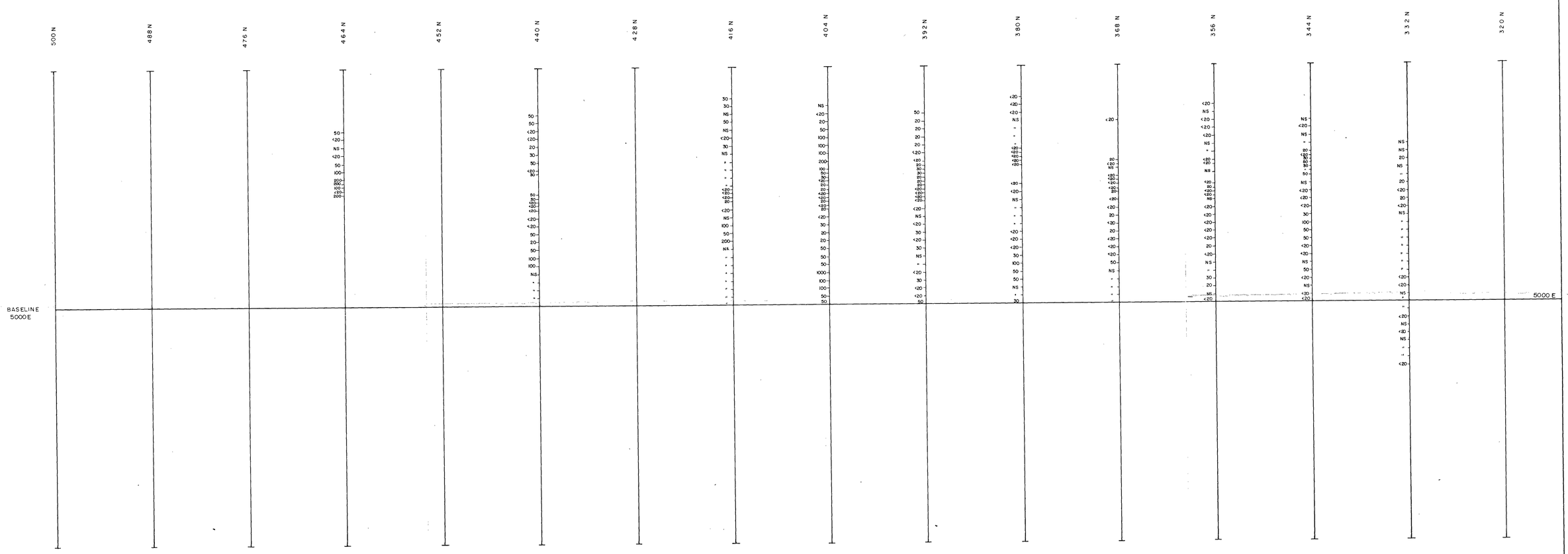


46901

5 cm

76-1154 1948

COMINCO EXPLORATION PTY. LTD.			
Drawn by:	Traced by:	NORTH WEST TASMANIA	
Checked by:		STERLING VALLEY	
		Weathered bedrock geochemistry- Ag p.p.m.	
Location code K55/6/51	Scale 1:2500	Date: December, 1975	Plate: Sv 8b



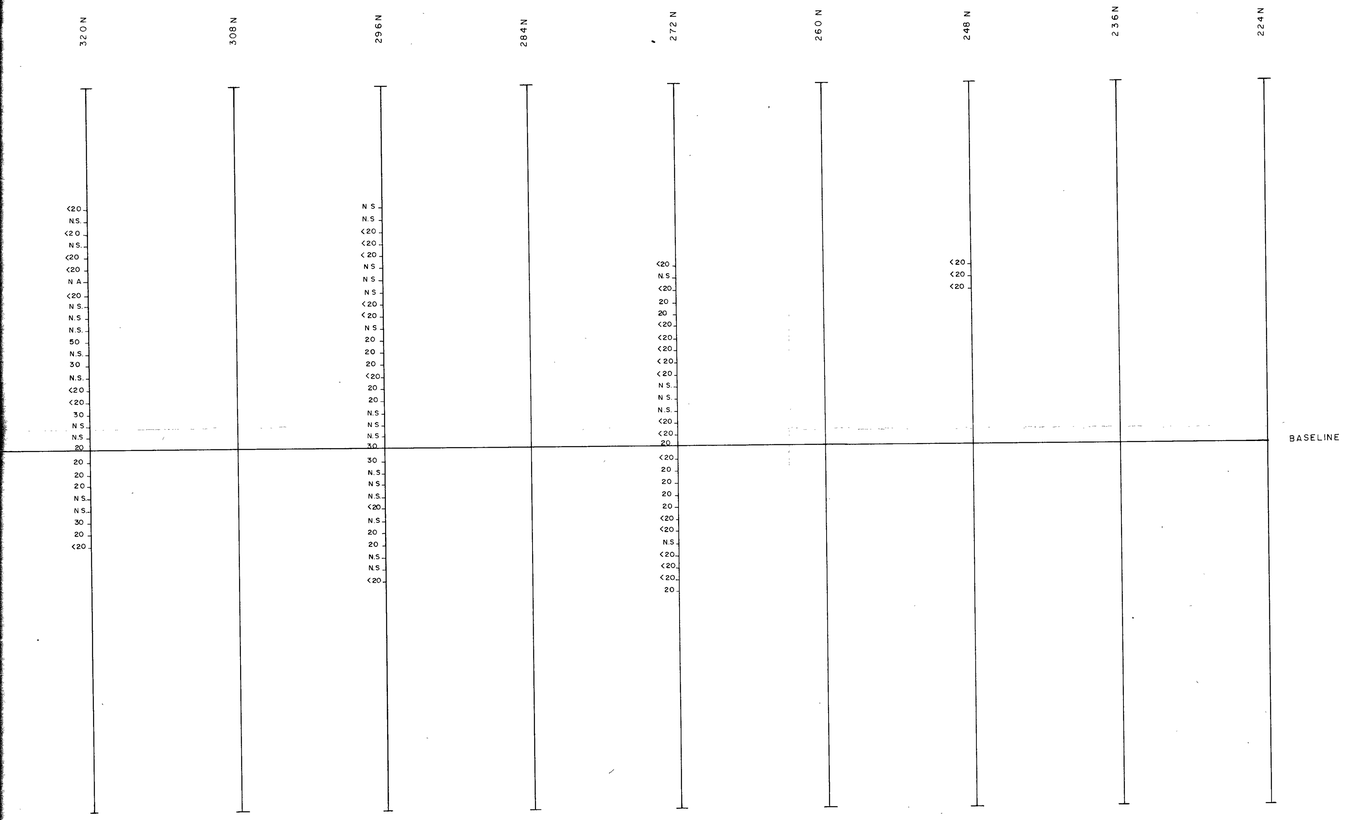
N.S. - not sampled
Zn analyses by Emission Spec

469016

5 cm

76-1154 1043

COMINCO EXPLORATION PTY. LTD.			
Drawn by: RKY	Traced by	NORTH WEST TASMANIA	
Checked by		STERLING VALLEY	
		Weathered bedrock geochemistry- Zn p.p.m.	
Location code: K55/6/51		Scale 1:2500	Date: December, 1975	Plate: Sv 9a



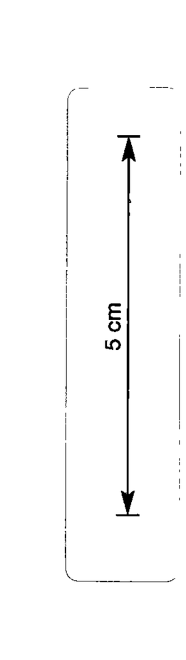
469017

5 cm

76-1154 1950

COMINCO EXPLORATION PTY. LTD.		
Drawn by:	Traced by:	NORTH WEST TASMANIA
Checked by:		STERLING VALLEY
		Weathered bedrock geochemistry- Zn p.p.m.
Location code: K55/6/51	Scale: 1:2500	Date: December, 1975 — Plate: Sv 9b

NOTE Contour interval 50 gammas



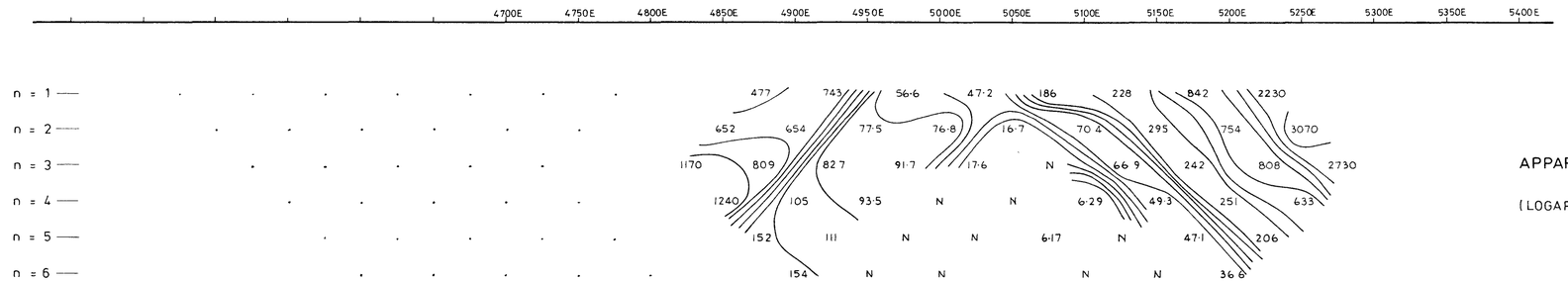
469018

COMINCO EXPLORATION PTY. LTD		
Drawn by RMSW	Traced by · EA	NORTH WEST TASMANIA STIRLING VALLEY **CONTOURS OF TOTAL MAGNETIC FIELD**
Checked by ·		
Location code ·	Scale 1 2500	Date FEBRUARY 1976 · Plate SV 5

76-1154

1951

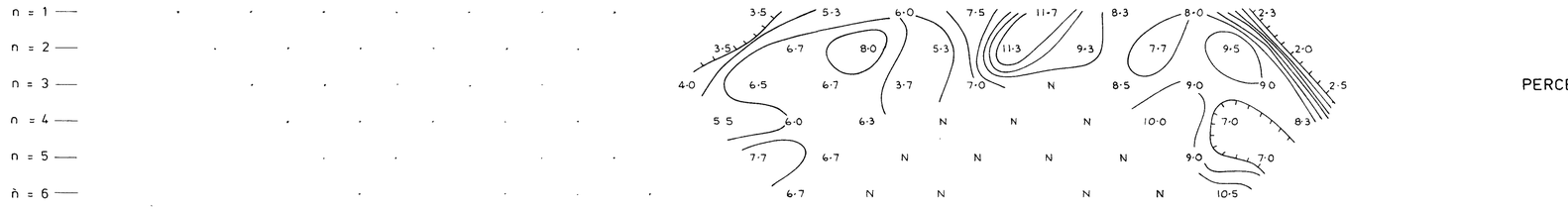
I.P. PSEUDO SECTION



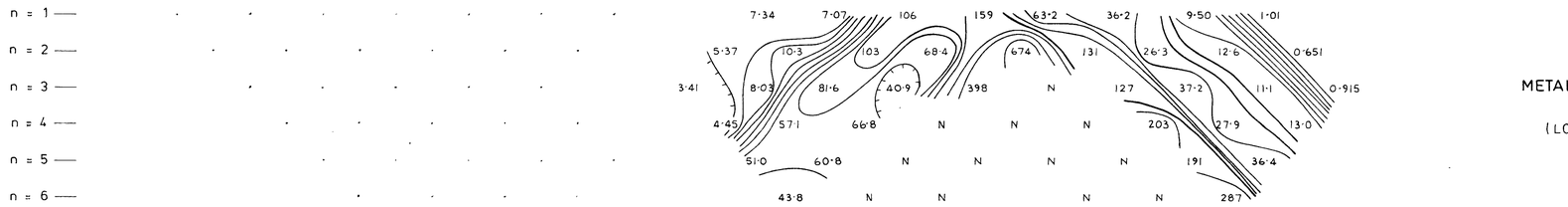
APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT : COMINCO EXPLORATION

AREA : STERLING VALLEY

JOB NUMBER : 7601

TRAVERSE : 3320N

SPACING (a) : 50m

FREQUENCIES : 2·5 - 0·3 Hz

DATE SURVEYED : 12 FEBRUARY 1976

COMMENT : Minimum contour value 1·0 for MCF

PARTY LEADER : N.G.H.

469019

5 cm

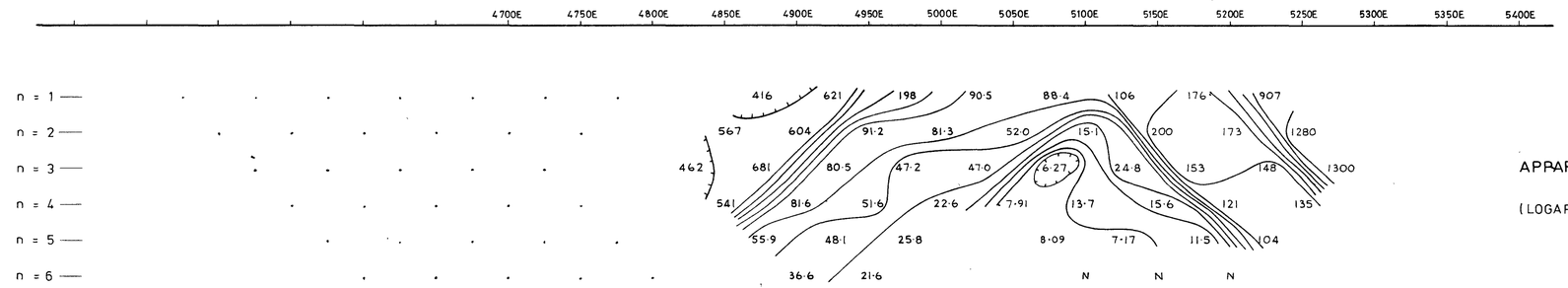
GEOQUEST PTY LIMITED

76-1154

1952

DWG. No. 7601-101

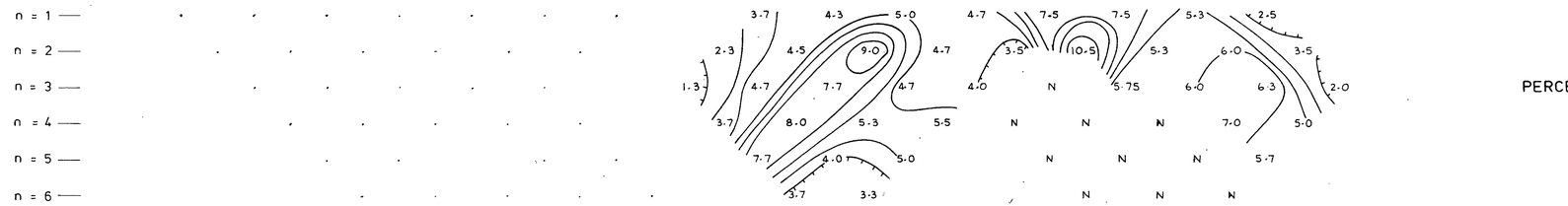
I.P. PSEUDO SECTION



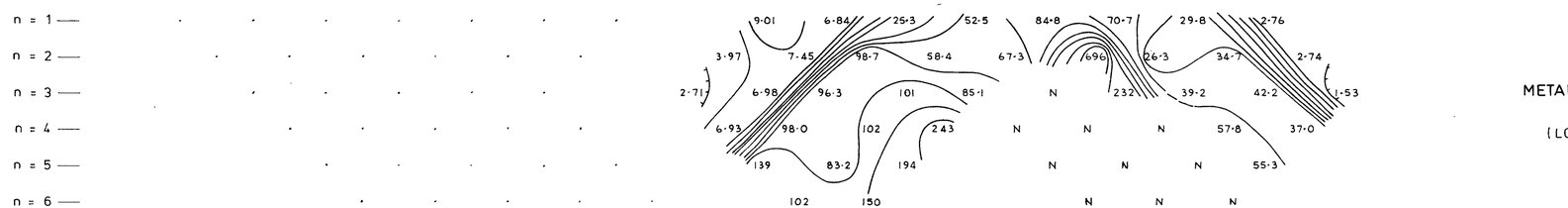
APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT :	COMINCO EXPLORATION
AREA :	STERLING VALLEY
JOB NUMBER :	7601
TRAVERSE :	3440 N
SPACING (a) :	50m
FREQUENCIES :	2·5 - 0·3 Hz
DATE SURVEYED :	12 FEBRUARY 1976
COMMENT :	
PARTY LEADER :	NGH

5 cm

469020

GEOQUEST PTY LIMITED

76-1154

DWG. No. 7601 - 102

1953

I.P. PSEUDO SECTION

4700E 4750E 4800E 4850E 4900E 4950E 5000E 5050E 5100E 5150E 5200E 5250E 5300E 5350E 5400E

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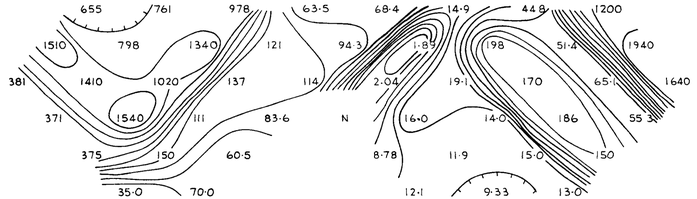
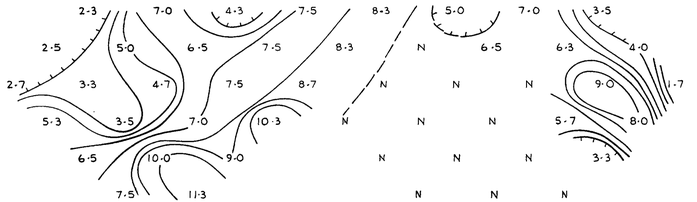
n = 2
n = 3
n = 4
n = 5
n = 6



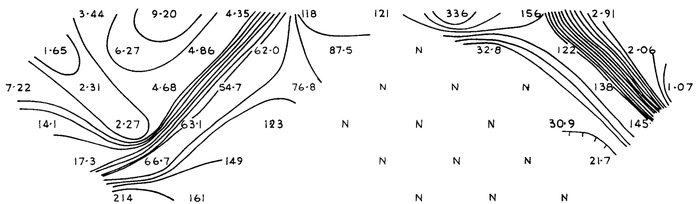
APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT : COMINCO EXPLORATION
AREA : STERLING VALLEY
JOB NUMBER : 7601
TRAVERSE : 3800N
SPACING (a) : 50m
FREQUENCIES : 2·5 – 0·3Hz
DATE SURVEYED : 11 FEBRUARY 1976
COMMENT :
PARTY LEADER : N.G.H.

469021

5 cm

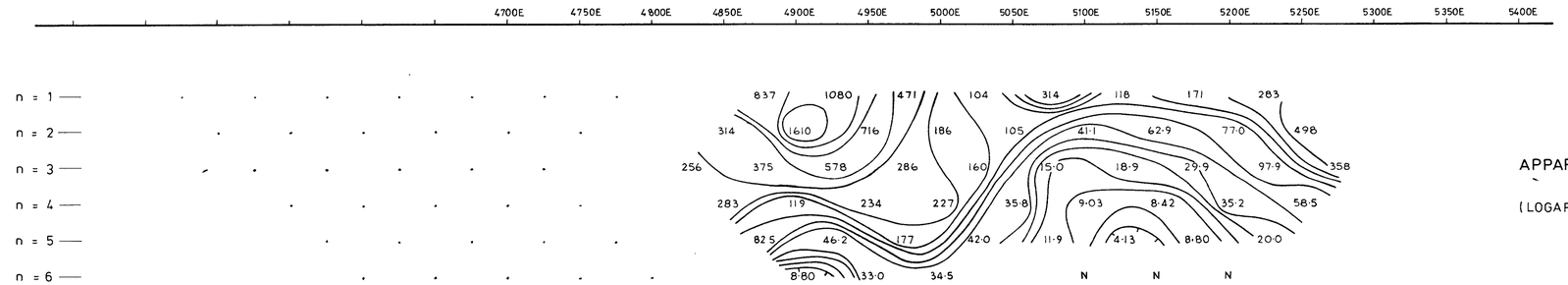
GEOQUEST PTY LIMITED

76-1154

DWG. No. 7601 – 103

1954

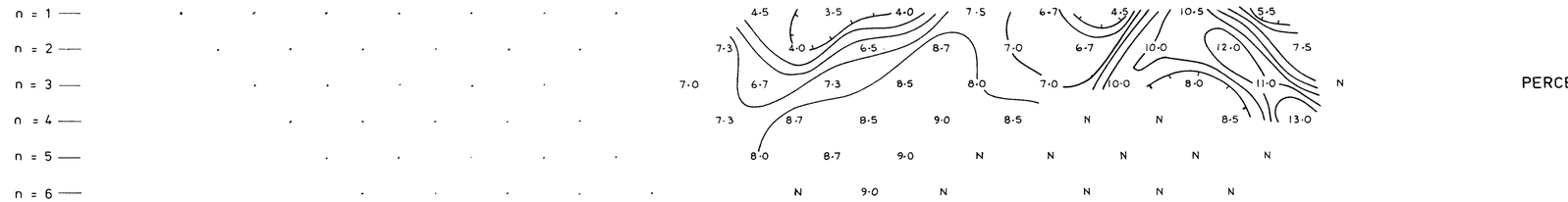
I.P. PSEUDO SECTION



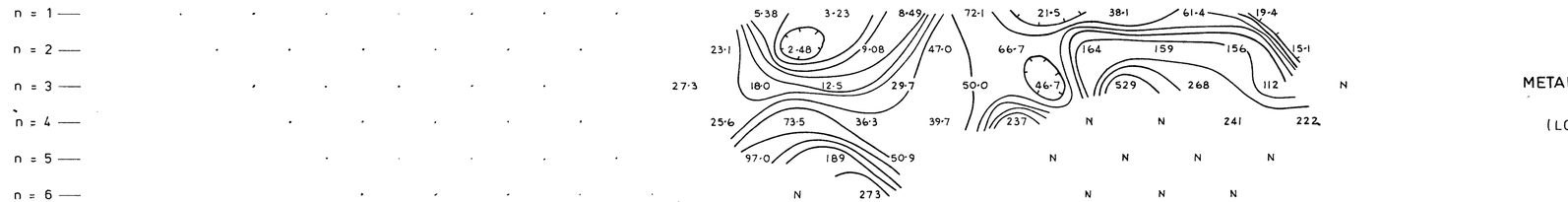
APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT : COMINCO EXPLORATION

AREA : STERLING VALLEY

JOB NUMBER : 7601

TRAVERSE : 4160N

SPACING (a) : 50m

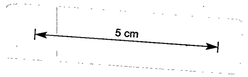
FREQUENCIES : 2·5 – 0·3 Hz

DATE SURVEYED : 11 FEBRUARY 1976

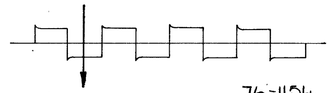
COMMENT :

PARTY LEADER : N.G.H.

469022



GEOQUEST PTY LIMITED



76-1154

DWG. No. 7601-104

1955

I.P. PSEUDO SECTION

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n = 2
n = 3
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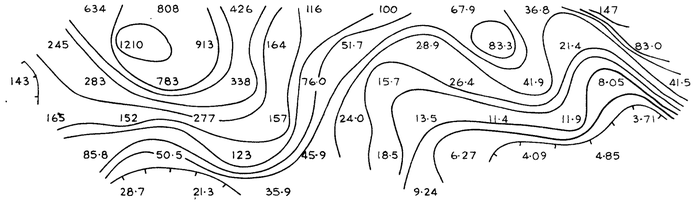
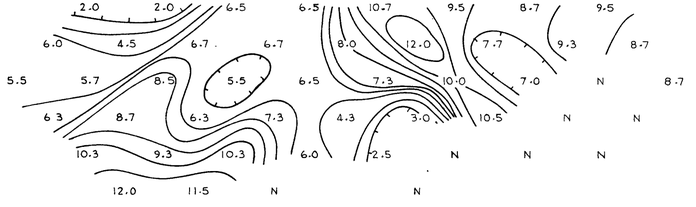


APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

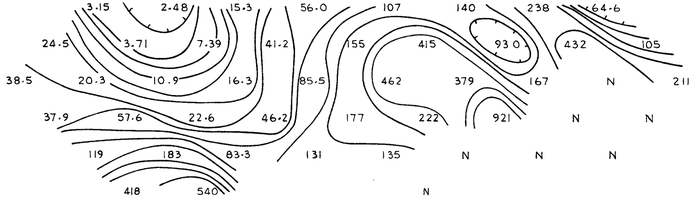
Power line

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT :	COMINCO EXPLORATION
AREA :	STERLING VALLEY
JOB NUMBER :	7601
TRAVERSE :	4280 N
SPACING (a) :	50 m
FREQUENCIES :	2·5 – 0·3 Hz
DATE SURVEYED :	10 FEBRUARY 1976
COMMENT :	
PARTY LEADER :	N.G.H.

5 cm

469023

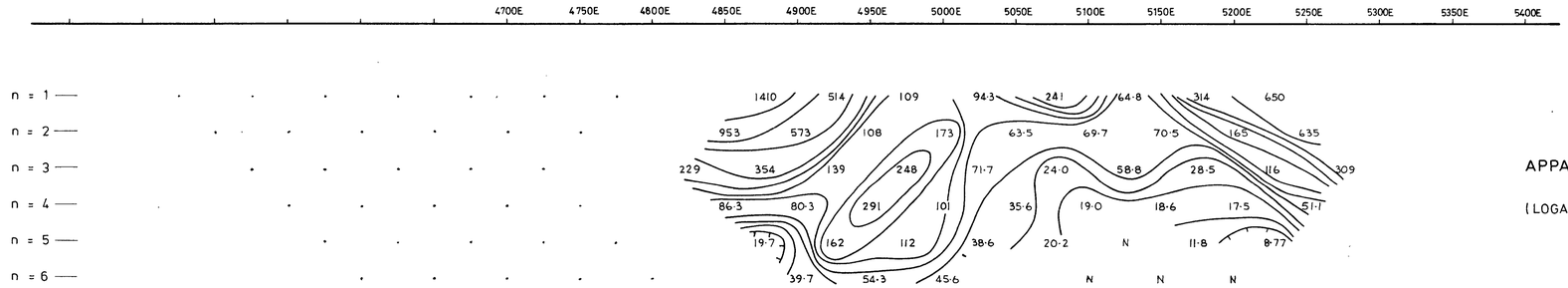
GEOQUEST PTY LIMITED

76-1154

DWG. No. 7601-105

1956

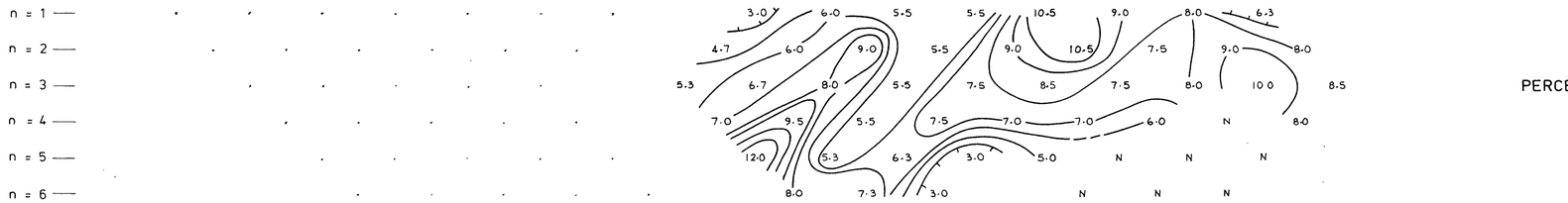
I.P. PSEUDO SECTION



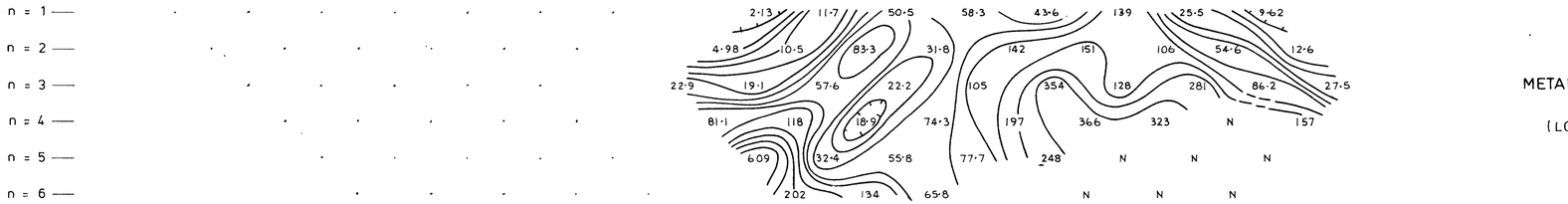
APPARENT RESISTIVITY
OHM. METRES
(LOGARITHMIC CONTOURING)

CULTURAL AND PHYSIOGRAPHIC FEATURES

TRAVERSE BEARING °



PERCENTAGE FREQUENCY EFFECT
(LINEAR CONTOURING)



METALLIC CONDUCTION FACTOR
MHOS.METRES^{-1}
(LOGARITHMIC CONTOURING)

CLIENT : COMINCO EXPLORATION

AREA : STERLING VALLEY

JOB NUMBER : 7601

TRAVERSE : 4400N

SPACING (a) : 50m

FREQUENCIES : 2·5 - 0·3Hz

DATE SURVEYED : 10 FEBRUARY 1976

COMMENT :

PARTY LEADER : N.G.H.

5 cm

469024

GEOQUEST PTY LIMITED

76-1154

DWG. No. 7601-106

1957