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BILLITON AUSTRALIA

THE METALS DIVISION OF THE
SHELL COMPANY OF AUSTRALIA LIMITED

E.L. 103/87

BASIN LAKE - LAKE SELINA

Progress Report on Exploration for the Period Ending 30th October, 1990

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2. Billiton Australia, Melb.
3. Billiton Australia, Tas.

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1. INTRODUCTION

This report details exploration completed and results achieved by Billiton Australia within EL 103/87 during the period to 31st October 1990.

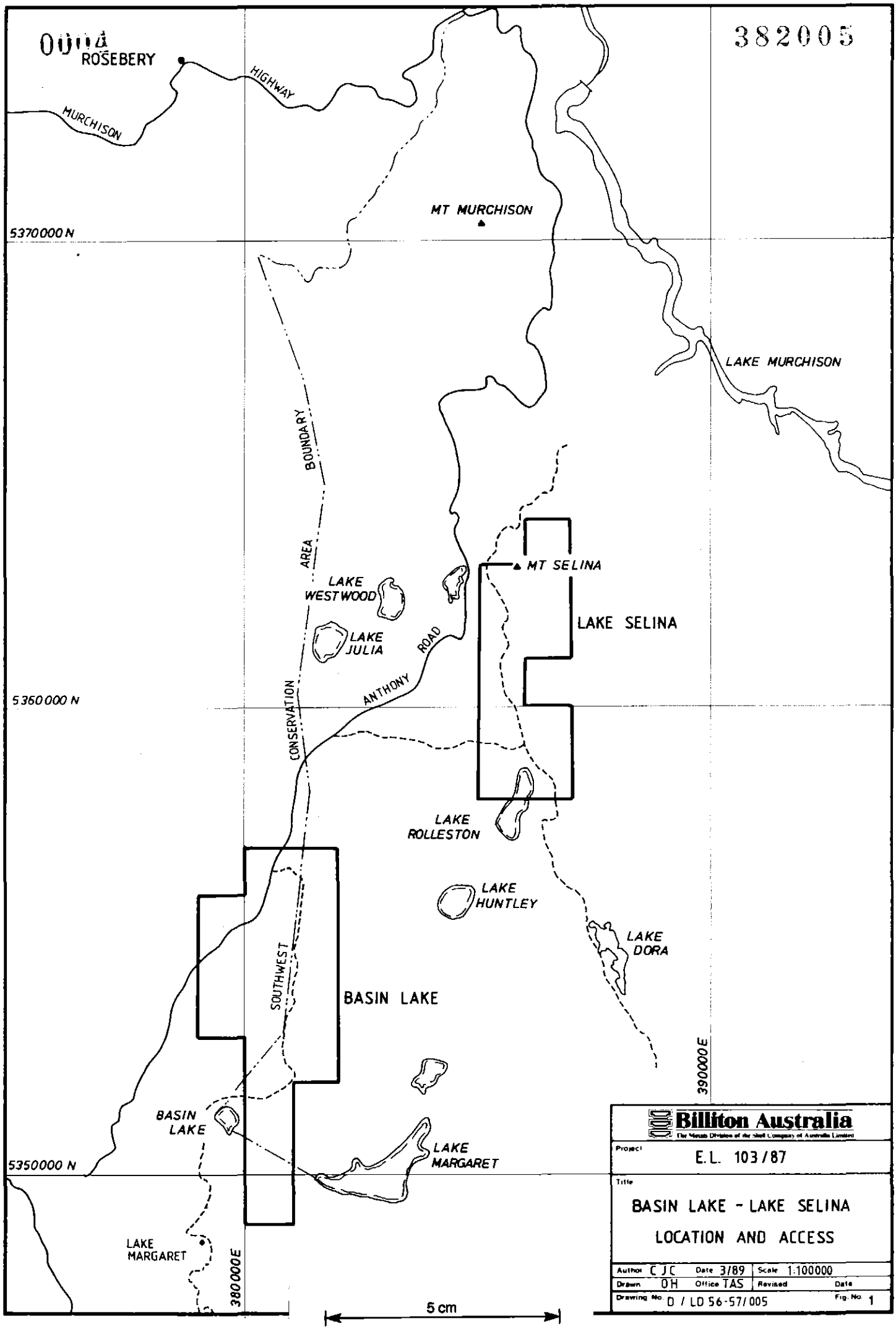
Since that date, exploration responsibilities have been transferred to Aberfoyle Resources, as managers of the newly formed Basin Lake Joint Venture. This agreement includes both the Basin Lake and Lake Selina portions of the tenement.

Exploration philosophy for the licence area has been to locate massive base metal sulphide mineralization within either Central Volcanic Sequence or Tyndall Group lithologies. The poor outcrop and glacial scree cover has necessitated the use of deep penetration electrical/magnetic geophysics to search at depths in excess of 100 metres below surface.

2. LAND TENURE

EL 103/87 was granted to The Shell Company of Australia on the 21st April 1987 and has been renewed until the anniversary date 1991. The licence consists of two separate areas known as Lake Selina (10km^2) and Basin Lake (16km^2) (Fig. 1).

The Basin Lake area comprises 6.9km^2 of Southwest Conservation Area, 7.6km^2 Crown Land and 1.5km^2 of land vested in the HEC


382005
ROSEBERY
HIGHWAY
MURCHISON
MT MURCHISON
5370000 N
LAKE MURCHISON
BOUNDARY
AREA
MT SELINA
LAKE WESTWOOD
LAKE JULIA
LAKE SELINA
ROAD
ANTHONY
CONSERVATION
5360000 N
LAKE ROLLESTON
LAKE HUNTLEY
LAKE DORA
SOUTHWEST
BASIN LAKE
390000E
BASIN LAKE
LAKE MARGARET
5350000 N
LAKE MARGARET
380000E
5 cm
Billiton Australia
The Metals Division of the Shell Company of Australia Limited
Project
E.L. 103/87
Title
BASIN LAKE - LAKE SELINA
LOCATION AND ACCESS
Author C J C
Date 3/89
Scale 1:100000
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Revised
Date
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Fig. No. 1

3. LOCATION & ACCESS

The two licence portions are located on the west coast of Tasmania, immediately west of the Tyndall Range, approximately 15km and 25km respectively, north of Queenstown (Fig 1). Access to the Basin Lake portion is via the Anthony Road, which cross cuts the north western corner of the licence. Within the licence, 4WD tracks provide access from the Anthony Road. Access to the southern portion of the licence is via a walking track which commences at the Lake Margaret power station.

Large steep sided glacial moraines cross-cut (E-W) the southern portion of the licence. Vegetation varies from thick rainforest to sparse buttongrass. A HEC transmission line (un-grounded) passes through two thirds of the licence.

The Lake Selina EL is located on the west coast of Tasmania approximately 13km southeast of Rosebery (Fig 1). Access to the licence is via the Anthony Road at the HEC Newton Camp, and at the northern end of the licence area.

A significant topographical feature within the licence is Mt. Selina (780m), which occupies the northern portion of the licence. Steep rugged terrain persists throughout this area. Vegetation over Mt. Selina consists of thick rainforest and ti-tree scrub whereas the remainder of the licence is flat to gently undulating hills covered in buttongrass and light ti-tree scrub.

4. GEOLOGICAL SETTING

The Basin Lake licence area is located within the Cambrian Mt. Read Volcanics, a northerly trending predominantly felsic volcanic arc on the west coast of Tasmania (Fig 2).

At Basin Lake, the Mt. Read Volcanics are bounded on the western side by the South Henty Fault. To the east, Western Sequence felsic to basic volcanics/intrusives, quartz rich sandstones and greywackes are overlain by Central Volcanic Complex feldspar phyric intermediate volcanics and epiclastics. A pyritic shale-rich portion of this sequence is known as the Basin Lake Sulphide Zone. Conformably overlying this sequence are Tyndall Group quartz-feldspar phyric volcanics and sediments, bounded to the east by the Great Lyell Fault. Ordovician Owen Conglomerate is thrust up against this faulted contact.

At Lake Selina, Tyndall Group quartz feldspar phyric volcanics and sediments are ?overlain by Sticht Range Beds adjacent to a disconformable contact with the PreCambrian Tyennan Nucleus. Two linear alteration systems known as the Western and Eastern Pyrite Zones (WPZ and EPZ, respectively) occur within the Tyndall Group sequence. Ordovician Owen Conglomerate is downthrust against the western margin of the Tyndall Group.

5. PREVIOUS EXPLORATION

Exploration carried out within EL 103/87 prior to April 1990 is reported in Progress Report for Exploration for the Period Ending 21st April 1990. (08.4944,4945).

These reports summarize previous work and give references to historical exploration data.

6. EXPLORATION COMPLETED

Work completed during this reporting period has been essentially confined to the Basin Lake portion of the licence.

Results of the CSAMT survey carried out over the northern half of this portion have been interpreted and anomalies delineated. Down hole EM was also completed for diamond drill hole BLD 89-3. Some sampling of core from previously drilled holes of RGC and Billiton was carried out in addition to aid lithogeochemical fingerprinting of the stratigraphy.

7. EXPLORATION RESULTS

7.1 BASIN LAKE

7.1.1 CSAMT Survey

CSAMT surveying of the northern half of the portion was completed early in 1990 but results were not available

to include in the last report. Details of the survey are listed below:

Survey: 24 line kms at 80m station spacing (Fig 3).

Lines	353000N	379000E - 380000E
	353400N	379000E - 381600E
	353800N	379000E - 381600E
	354200N	379000E - 381600E
	354600N	379000E - 381600E
	355000N	379000E - 381600E
	355400N	379000E - 381600E
	355800N	379000E - 381600E
	356200N	380000E - 381600E
	356600N	380000E - 381600E
	357000N	380000E - 381600E

Equipment: GDP 16/3 Receiver; GGT 6.5km Transmitter

Data Processing: Cagniard RHO

Phase Difference

I-D General Field Modelling Section

Data profiles are included as Appendix 1.

A detailed correlation has been made between interpreted CSAMT conductors, mapped geology and drill hole intersections in order to prioritise drill targets.

After an initial interpretation was completed (see App. 2), the following targets were considered for further work: (see Fig. 4).

357000N 380700E - a strong CSAMT conductor here is along strike from a thick black shale-andesitic volcaniclastic horizon intersected in TYN 3. Although no mineralization was intersected in this hole, a favour-able lithogeochemical boundary correlates with this horizon. (see Section 7.1.3).

357000N 381580E - a CSAMT conductor that correlates well with the projected position of the Great Lyell Fault. This posit-ion was tested 4.5kms south by BLD 89-3.

356600N 381320E - a single line intersecting CSAMT anomaly within Tyndall Group epi-clastics. The characteristics of this anomaly are very encouraging.

356200N 381160E - a CSAMT anomaly that coincides with a powerline and is immediately east of the collar of TYN4, within Tyndall Group volcaniclastics. (This stratigraphic position is almost identical with the Comstock Valley stratiform Pb-Zn deposit at Queenstown). Note that TYN4 did not explain the source of a combined CSAMT-UTEM anomaly, located at 381000E.

355800N 381080E - a combined shallow CSAMT-UTEM anomaly included within a linear array of UTEM anomalies, that is situated at the base of the Tyndall Group. An interesting geological setting (c.f. Comstock Valley).

355800N 381400E - Same rationale as 357000N 381580E.

355000N 381400E - Same rationale as 355800N 381400E.

354600N 379340E - a strike extensive CSAMT anomaly (not mentioned by BXN) that cor-relates with the Bradshaw Road Pyrite Zone. This strongly pyritic and sericitic alteration system has not been previously drilled. It is however, barren of base/precious metal mineralization and has been identified lithogeochemically as "hanging-wall" - type volcanics.

354600N 380360E - a CSAMT-UTEM anomaly that occurs at the contact of the main intrusive hornblende porphyry and upper CVC-type andesitic volcaniclastics and shales. It is located at a similar stratigraphic position as BL4. (see below).

354200N 379300E - a CSAMT anomaly correlated with anomaly 354600N 379340E and which may have been tested by TYN2. The latter hole was actually sited to test an IP anomaly.

380520E - a weak and shallow CSAMT anomaly (not mentioned by BXN) located in a similar stratigraphic position to anomaly 354600N 380360E. This anomaly also occurs immediately along strike from BL4 in which 16m of semi-massive pyrite was intersected. (17.2m @ 11gt Ag).

353800N 380880E - this CSAMT anomaly is coincident with a powerline and is probably correlatable with a line of UTEM conductors, tested by BL2. Minor mineralization was intersected in upper CVC lithologies beneath a black shale.

353400N 381020E - this CSAMT-UTEM anomaly has been tested by BL2.

381540E - a CSAMT anomaly that correlates with the projection of the Great Lyell Fault. Drill hole BLD89-3 has tested this position 700m to the south.

From a geological perspective there appear to be three horizons of interest in terms of exploration prospectivity:

1. Upper Tyndall Group against the Great Lyell Fault. Drill hole BLD 89-3 tested this position towards the southern end of the licence and although essentially barren, a very strong pyrite-sericite-silica alteration zone was intersected.

2. Upper Central Volcanics - Tyndall Group contact. This stratigraphic position is marked by the presence of a marker limestone unit and at Queenstown the Comstock stratiform VMS lens occupies this position.

3. Upper Central Volcanics - Hornblende Porphyry contact. Drill hole BL4 intersected 16m of semi-massive stratiform pyrite at this contact. Strongly anomalous precious metal values were intersected within this zone.

7.1.2 Down Hole EM

Diamond drill hole BLD 89-3 was completed prior to this reporting period and results have been included in the 1989-90 Annual Report. However, downhole EM was not completed in time for inclusion in that report and therefore details of results are presented below. Figure 5 shows the geological setting.

BLD 89-3: Collar 5352760mN 381140mE

Transmitter Loop 1) 352600N-352800N
381050E-381250E

2) 352800N-353000N
381050E-381250E

Results are shown in Figure 6.

Interpretation of these profiles has been delayed due to the farm out of this property to Aberfoyle Resources. This company will report on details of this survey once the digital data has been re-evaluated.

7.1.3 Lithogeochemical Sampling

Sampling of core from selected drill holes (24 samples) was completed in order to geochemically fingerprint the volcanics of both the Central Volcanic Sequence and Tyndall Groups.

The purpose of this programme was to determine whether a favourable horizon for VMS style mineralization occurs within the licence area. This study resulted from an extensive investigation of the Cambrian volcanics of Western Tasmania, carried out by Billiton Research, which has identified two compositionally and spatially distinct rock types whose contact horizon occurs at or close to the known massive sulphide deposits of Western Tasmania. The results from the Anthony Road study (see 1989-90 Ann. Rep.) indicate a significant horizon occurs within the licence area.

Sampling sites are shown in Figure 7 while results are included in Appendix 3 and Table 1.

Plotting of a (Ti, Zr) factor and utilizing Sr, Y values indicates that the two volcanic types, CL (low Ti, Zr) and CH (high Ti, Zr) are present and that the contact between the two correlates with the transition from upper Central Volcanic Sequence lithologies to Tyndall Group lithologies.

TABLE 1: BASIN LAKE LITHOGEOCHEMICAL SAMPLING

Sample	Location		Volcanic Type	
16795	TYN5	71.4m	CL	CL=low Ti, Zr
16796	TYN5	149.4m	CL	CH=high Ti, Zr
16797	TYN5	236.8m	CL	Sh=high Sr
16798	BL 3	220.5m	CL	Sl=low Sr
16799	BL 3	352.5m	CL	
16943	TYN4	73.8m	CHSh	
16944	TYN4	117.4m	CHSh	
16945	TYN4	171.3m	CHSh	
16946	BLD89-3	110 m	CL	
16947	BLD89-3	199.4m	CL	
16948	BLD89-3	301.6m	CHSl	
16949	BLD89-2	100.4m	CL	
16950	BLD89-2	150.5m	CL	
16951	BLD89-1	226.2m	CL	
16952	BL 3	120.6m	CL	
16953	BL 3	435.4m	CHSh	
16954	BL 5	315.1m	CL	
16955	BL 5	280.3m	CL	
16956	BL 4	102.3m	CL	
16957	BL 4	204.5m	CL	
16958	BL 4	276 m	CL	

This correlation indicates that the Basin Lake Sulphide Zone and contact with the Tyndall Group is an important volcanic break of special metallogenic significance. Further work should focus on this contact zone.

7.2 LAKE SELINA

7.2.1 Diamond Drilling Proposal

Two drilling targets occur within this portion of the licence. (see Fig 8 and 1989-90 Ann. Rep).

The first target is situated within an area of button grass plains west of the Western Pyrite Zone. A very strong EM 37 anomaly is located at shallow depth beneath the plains and although the interpreted geological setting is not attractive, the possibilities as to the causative source are of interest.

The second target is located in an area east of Mt. Selina within the Southwest Conservation Area and adjacent to a proclaimed World Heritage Area. A drill hole was planned to test a combined EM 37 anomaly and surface geochemical target within the Eastern Pyrite Zone, a structurally modified linear intense pyrite-sericite-chlorite-silica alteration zone. Approval from the Department of Mines to test this target by diamond drilling was sought and gained but only provided helicopter support was utilized.

8. CONCLUSIONS

At Basin Lake a CSAMT survey has identified numerous anomalous responses that have been geologically and

geophysically prioritised as a basis for determining drilling targets. Special emphasis should be given to those targets close to the CVC-Tyndall Group contact where lithogeochemical sampling results have indicated that a prospective volcanic hiatus occurs.

In particular, the following responses are rated highly:

1. 356600N 381320E
2. 355800N 381080E
3. 355800N 381400E
4. 353400N 381540E

At Lake Selina no exploration has been completed but two geophysical-geochemical anomalies have been previously identified.

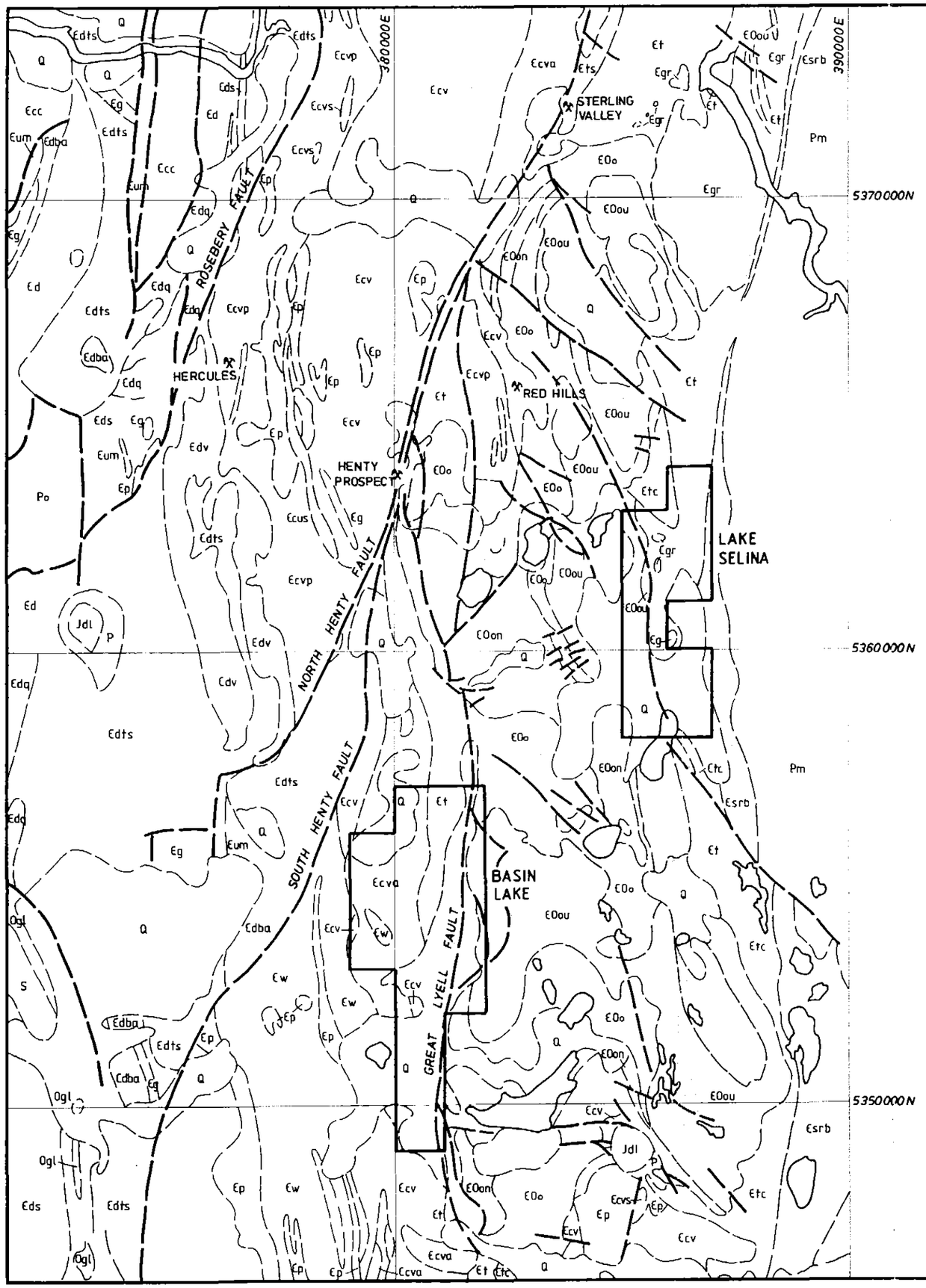
9. RECOMMENDATIONS

At Basin Lake, three diamond drill holes are recommended to test the better anomalies outlined previously.

At Lake Selina, two diamond drill holes are recommended to test existing targets as outlined previously.

APPENDIX 1

Basin Lake CSAMT Survey Data
Cagniard Resistivity Profiles



LEGEND

Q	Quaternary
Jdl	Jurassic
P	Permian
S	Silurian
Ogl	Ordovician
EOou, EOon, EOo	Cambrian Denison Group
Et, Ets, Etc, Esrb	Cambrian Tyndall Group
Ed, Eds, Edts, Edq, Edv, Edba	Cambrian Dundas Group
Ecv, Ecvp, Ecvs, Ecva	Cambrian Central Volcanic Complex
Ew	Cambrian Western Sequence
Ecc	Cambrian Crimson Creek Formation
Po, Pm	Pre Cambrian
Egr, Ep, Eg, Eum	Cambrian Intrusives

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91-3244.

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: E.L. 103/87

Title:

BASIN LAKE - LAKE SELINA
GEOLOGICAL SETTING

Compiled from Corbett & McNeill 1988

Author CJC	Date 3/89	Scale 1:100 000	
Drawn OH	Office TAS	Revised	Date
Drawing No. D/LD 56-57/006			Fig. No. 2

10015

360000 E

385000 E

390000 E

HENTY Au

LAKE WESTWOOD

LAKE SELINA

NORTH HENTY FAULT

SOUTH HENTY FAULT

ANTHONY ROAD

TYNDALL MINE

NEWTON CAMP

HOWARDS ANOMALY

BASIN LAKE

LAKE HUNTLEY

LAKE MARGARET

LAKE MARY

ROLLESTON

YOLANDE RIVER

BRADSHAWS ROAD

ANTHONY ROAD

EPZ

WPZ

MSAZ

FAULT

ANTHONY

GRAVITY

LINE

PYR

TIE

LEECH HILL

SER PY

MINES DEPT DDH

GREAT YELL FAULT

Tx1

Tx2

Tx3

Tx4

364000N

363600N

363200N

362800N

362400N

362000N

361600N

361200N

360800N

360400N

360000N

359600N

359200N

358800N

358400N

358000N

357000N

356400NH

356200N

355800N

355400N

355000N

354600N

354200N

353800N

353400N

353000N

352600N

352200N

351800N

351400N

351000N

350600N

350200N

349800N

349400N

349000N

UTEM Coverage by Goldfields

CSAMT Completed Dec. '88

CSAMT Completed Dec. '88

CSAMT COMPLETED ON ENTIRE GRID NOV-DEC '88

INFILL TEM

BLD 89-1

BLD 89-2

BLD 89-3

BL 801

BL 802

TYN 1

TYN 2

TYN 3

TYN 4

TYN 5

LS 1

LS 2

LS 3

LS 4

LS 5

LS 6

LS 7

LS 10

LS 12

LS 13

5360000 N

5355000 N

5350000 N

< > MAR 89 EM 37

□ EM 37 ANOMALY

▲ CSAMT ANOMALY

LATE CAMBRIAN OWEN CONGLOMERATE

Cθo

Cθou — Pink sandstones, granule pebble conglomerate

Cθom — Thick bedded cobble pebble conglomerate

Cθon — Interbedded micaceous sandstone siltstone + conglomerate

Cθol — Thick bedded conglomerate

Cθj — Volcaniclastic conglomerate

TYNDALL GROUP

Ct

Cts — Shale

Ctvc, Ctct — Mixed quartz feldspar phyric epiclastics. Dominant volcaniclastics (Ctvc), cherty ash (Ctva), volcaniclastic conglomerate (Ctc).

Ctt, Cta — Quartz feldspar phyric tuff, minor andesitic rocks.

Ctu, Ctp, Ctpi, Ctpl — Quartz feldspar phyric porphyry (Ctp) intrusives (Ctpi), + lava (Ctpl)

STICHT RANGE BEDS

Csrb — Csrc, Csrv — Siliciclastic conglomerate, pink pebble conglomerate (Csrc) and minor volcaniclastics (Csrv)

PRECAMBRIAN

Pm — Pp — Pelitic quartz mica phyllite

Ppq — Phyllite, quartzite

Pq — Quartzite

(Legend after Mines Dept.)

LATE CAMBRIAN OWEN CONGLOMERATE

Cθo — Cθs — Interbedded siltstone, sandstone

Cθcs — Interbedded sandstone, conglomerate

Cθc — Siliciclastic conglomerate

Cθon — Siltstone, sandstone, conglomerate

Cθj — Volcaniclastic conglomerate

TYNDALL GROUP

Ct — Ctc — Volcaniclastic conglomerate

Ctt — Crystal ± lithic tuff

Cts — Shale, siltstone

Ctl — Quartz feldspar lava

Cta — Andesitic tuff

HENTY RIVER SEQUENCE

Chf — Chfb — Basaltic volcanics

Chfa — Andesitic volcanics

Chft — Felsic tuff

Chfg — Interbedded lithicwacke, siltstone

CENTRAL VOLCANICS

Ccv — Cp — Quartz feldspar porphyry

Ccvs — Feldspar phyric pyroclastics, lavas

Ccva — Shale siltstone - sandstone

Ccvl — Andesitic lavas

Feldspar phyric rhyolite - dacite lava

WESTERN SEQUENCE

Cws — Cp — Quartz feldspar porphyry

Cwst — Felsic pyroclastics

Cwss — Interbedded siltstone, shale

(Legend after Mines Dept.)

// H A-Mag High

Gravity H

X Gravity Data point

▲ CSAMT Anomaly

91-3244.

382019

5 cm

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project

Title

BASIN LAKE - LAKE SELINA
EXPLORATION STATUS

Author JPR	Dept. TAS	Scale 1:25 000	
Drawn OH	Date 1/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 3		Drawing No. D/LD 56-57/004	

APPENDIX 2

a) Zonge Engineering Final Report CSAMT Survey Basin Lake

b) BAUS Memo: N.Hungerford 10 April 1990

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FINAL REPORT

CSAMT SURVEY
BASIN LAKE PROSPECT
for
Billiton Australia

Zonge Engineering & Research Organization, Inc.
3322 East Fort Lowell Road, Tucson, Az 85716 (602)327-5501

DEVONPORT COPY

Executive Summary

Five of eleven CSAMT lines run for Billiton Australia by Zonge Engineering Australia, Ltd., were processed and interpreted by Zonge Engineering (U.S.). We static-corrected the data using our phase-integration technique, and then performed smooth-model inversions to produce interpretable electrical cross-sections.

The data are of good quality except in the vicinity of a power line, where high noise levels and current-channeling effects invalidated data over a 200 meter wide swathe.

Several north-south trending, conductive features are present in the data. Their persistence from line to line indicates geologic structures with significant strike extent. The data indicate anisotropic geology with strong lateral resistivity contrasts. A narrow, steeply dipping conductive feature on the western ends of lines 353000N and 352600N may be an attractive exploration target.

A second conductive feature is present on the eastern ends of the five lines. It is rather broad and dips at a moderate to steep angle to the west. This second feature is coincident with a known fault.

Project Logistics

The CSAMT project was contracted by Zonge Engineering Australia, Ltd., which can provide details of survey logistics. Work was done on eleven east-west lines using a dipole length of 80 meters, with detailing over part of line 353000N using 40 meter dipoles. Data were obtained between 32 and 4096 Hz. One electric-field and one magnetic-field component were measured at each station using a GDP-12 receiver. This report reviews the results from five of the eleven lines surveyed. Line locations are shown on a plan map in figure 1.

Geology

The survey area is dominated by Cambrian volcanics of very high resistivity, overlain in the south by about 50 meters of resistive glacial cover.

Data Presentation

Billiton has already received Cagniard resistivity and phase difference data. The data presented in this report are static-corrected apparent resistivity and smooth-model inversions.

The static-corrected data are located in plates at the back of this report:

Plate 1	Static-corrected resistivity, line 353000N a=80m
Plate 2	Static-corrected resistivity, line 353000N a=40m
Plate 3	Static-corrected resistivity, line 352600N a=80m
Plate 4	Static-corrected resistivity, line 351800N a=80m
Plate 5	Static-corrected resistivity, line 350200N a=80m
Plate 6	Static-corrected resistivity, line 340400N a=80m

The other information is provided as figures:

Fig. 1	Location map
Fig. 2	Selected magnetic field plots
Fig. 3	Smooth-model inversion, line 353000N
Fig. 4	Smooth-model inversion, line 352600N
Fig. 5	Smooth-model inversion, line 351800N
Fig. 6	Smooth-model inversion, line 350200N
Fig. 7	Smooth-model inversion, line 340400N

Data Quality

The data are typically of good quality. Error bars on resistivity and phase are generally $\pm$10% or better, although data at 2048 Hz is often somewhat noisier. Data near the power line on lines 353000N and 352600N are very noisy and reflect strong cultural contamination.

Data Interpretation

Near-Field Effects

The extremely high resistivities in this area place most of the data in the near-field zone. The transition zone notch typically occurs near 1024 Hz, with near-field saturation occurring at frequencies of about 256 Hz and below. In general, only data at 4096 Hz are truly in the far-field zone. Figure 2 shows averaged magnetic-field magnitude curves for each line as an illustration of the onset of near-field data (see Zonge and Hughes, in press). Figure 2 shows nearly constant magnetic field amplitudes at frequencies below 256 Hz. Frequency independent magnetic-field amplitudes are characteristic of near-field data.

The occurrence of near-field data has important implications for this project. Near-field data are more sensitive to lateral variations in resistivity than far-field data and penetration depths are controlled more by the geometric relationship between source and receiver than by frequency. Reducing the frequency of a near-field measurement will not achieve greater depth penetration.

The implication of this is that data below 256 Hz should be interpreted with great caution. Above 256 Hz, the soundings generally are sensitive enough to frequency to be useful for interpretation.

Surface Anisotropy Effects

The northern three lines have data which suggest a very pronounced conductor at the surface. Plots of log(resistivity) versus log(frequency) show responses which are far more exaggerated than would be expected from a 1D (layered) environment. It is probable that the effect is due to strong surface anisotropy. The anomalously high phase-difference values observed at Basin Lake are also consistent with anisotropic geology. The effect is strongest on the most northern line, diminishing to the south. It is possible that the glacial cover to the south mitigates the anisotropic response. Alternatively, the anisotropic material may be confined to the north of the east-west fault shown in figure 1. Anisotropic geology is probably contributing to the dramatic contrasts in apparent resistivity observed in this area.

Cultural Contamination

Two cultural features are observed in this data set. The most disruptive is the power line which crosses the two northern-most lines. This causes two problems: high noise levels and current-channeling.

High noise levels not only cause scattered data values, but may also saturate the CSAMT magnetic antenna. The result is noisy, peculiarly shaped resistivity sounding curves within several stations of the power line.

Current-channeling is particularly troublesome at Basin Lake due to the high surface resistivities. The CSAMT source fields are strongly coupled into the transmission wires. This problem is exacerbated by the fact that the western electrode of the source bipole was placed very close to the power line. This may

have allowed direct conduction of current down the power line into the area of exploration.

The data show unrealistic patterns of high and low resistivities beneath the power line. These patterns are typical of high-power transmission lines and of direct current-channeling from the source bipole. The result is that several stations on either side of the power line on the northern two lines are not suitable for interpretation. The data have been removed in the smooth-model inversions. This interrupts the continuity of the lines, but the remaining data set is still interpretable.

Topographic Effects

The survey area is relatively flat and produces insignificant topographic effects. Steep topography to the east of the survey area has no discernable effect on the CSAMT data.

Line-by-Line Interpretation

Line 353000N. This line was run with 80 meter dipoles, and part of it was detailed with 40 meter dipoles. Measurements from both data sets are in close agreement.

The 80 meter static-corrected data (plate 1) show surface anisotropy and power line contamination, as discussed above. Figure 3 shows the smooth-model inversion. A nearly vertical contact occurs near station 300, with resistive material to the west and more conductive material to the east. At depth the contact may assume a more easterly, shallower dip. This effect is more pronounced on this line than on any of the other four lines evaluated in this report.

Figure 3 appears to outline a conductive body between stations 300 and 520. Such a body may be of strong exploration interest. However, a key point to note is that the resistor centered on the power line gives this conductor its distinct shape. If the resistor is real, then the conductor is a localized feature; if the resistor is artificial, the conductor is more likely to be the west end of a broad conductive area, a less interesting result. Hence, it is crucial to understand the nature of the resistor.

The fact that the resistor is centered on the power line is not encouraging. Looking at plate 1, we note that all the surface within two stations of the power line is anomalously resistive. The resistor in figures 3 is the result of resistive stations which we did not choose to blank out of the inverted data. It is our opinion that the resistor is artificially induced by the power line.

This finding weakens support for a distinct conductive body in this area. However, magnetic-field information indicates strong lateral contrasts. In the 40 meter dipole data there is a symmetric pattern of low magnetic-field amplitude at station 300, flanked on both sides by symmetrical high amplitude values. The feature is some 200 meters in apparent width. The electric field shows little disturbance in this area; hence there is a distinct resistivity feature near station 300. The feature's unique behavior and almost perfect symmetry suggest a narrow sheet-like or pipe-like vertical conductor. Its lateral dimension is probably less than 80 meters.

We conclude that there is evidence for a steeply-dipping, distinct conductor centered near station 300. The evidence is not conclusive. However, even if one adopts the conservative view that there is no distinct conductor but only a geologic contact, the steep contact at station 300 may still of strong exploration interest.

Other conductors are found east of the structure. The most prominent are found between stations 920 and 1000 and on the extreme east end of the line. These are strong in amplitude and coherent in shape, and might represent exploration targets.

The pronounced apparent resistor centered at depth below station 840 is in the deep near-field and may very well be a geometric effect unrelated to geology under the measurement location. Based upon the available data, no firm conclusion can be drawn on this feature.

Line 352600N. Plate 3 shows the static-corrected resistivity data for this line. Note the power line crossing at station 200. Figure 4 shows the more useful smooth-model inversion. As on the previous line, there is a contact associated with an apparent conductor dipping steeply to the east, this time on the far west end of the line. Unlike the previous line, however, the ground to the east of the contact is not consistently conductive all the way to the east.

As before, we consider whether or not the conductor below station 120 is real or not. Again there is a resistor west of the power line which may be artificial, tending to enhance the appearance of a conductor. But the magnetic field again shows a symmetrical perturbation similar to that observed on line 353000N, suggesting a steeply-dipping conductive sheet or pipe. Thus it is probable that the conductor is real; certainly there is a major contact there. The dip is roughly 70 degrees to the east, as opposed to the near-vertical easterly dip on line 353000N. This might represent an attractive exploration target.

The other feature of interest on this line is the conductor centered on station 1240 and the deeper conductor to the west and deeper. Actually these are both lows in a broad conductive zone which drops roughly vertically from the surface, then dips at an intermediate angle to the west. Although more data would be needed to the east in order to better define this feature, it is most likely a conductive structure.

Line 351800N. Plate 4 shows the static-corrected data for this line. No culture crosses the line to disturb the interpretability of the data.

Figure 5 shows the smooth-model inversion for the line. A narrow conductor is observed beneath station 120. The data do not extend far enough to the west to fully define it, but it appears that the conductor is narrow (probably less than 80 meter wide) and steep in angle (nearly vertical, with a possible westerly dip at depth). This may be the same conductor observed on the more northern lines, but here it is much less pronounced.

A second conductor is observed on the east end of the line at depth. It is broad (roughly 100 meters) and dips at perhaps 75 degrees to the west. It is similar to the one observed on line 352600N but may be deeper.

Line 350200N. Plate 5 shows the static-corrected data for this line. The data behavior is very "normal," with no peculiar surface or other effects.

Figure 6 shows the smooth-model inversion for the line. A narrow conductor is observed beneath station 120, as on line 351800N. The data suggest only a moderate conductor, narrow in width (perhaps 50 meters), with a very nearly vertical dip. It is evident only in the intermediate depths, not at the surface or at depth.

There are no other conductors evident on this line.

Line 349400N. Plate 6 shows the static-corrected data for this southern line. Figure 7 shows the smooth-model inversion for the line. The conductor seen on the other lines is not immediately evident here, but we speculate that it is the feature barely detected by station 40. If so, it confirms a NNE trend to the conductor.

A broad, moderately conductive zone is observed between stations 520 and 880. It seems to be intermediate in depth, not coming to the surface or extending very deep. It is thus similar to the feature seen on line 350200N.

Conclusions

From a geophysical viewpoint, the data clearly identify two interesting conductive features. Communications from Billiton Australia indicate that the western conductor on the northern lines is the most interesting exploration target. Despite complications from the power line, we consider this to be a real conductor which is associated with a significant structure or contact. The feature's appearance on both line 35300N and 352600N indicate that it is a conductor with significant strike extent.

Billiton may benefit from additional processing on the remaining six lines of CSAMT. We took a quick look at two of these, and believe more work could be profitable. Scott MacInnes can discuss the details if you wish.

References

Zonge, K.L., and Hughes, L.J., in press, Controlled source audio-frequency magnetotellurics, *in* E.M. Methods, M.N. Nabighian (Ed.), Society of Exploration Geophysicists.

Scott MacInnes Geophysicist

Norm Carlson Geophysicist

CSAMT Smooth-model Inversion

Smooth-model inversion is a robust method for converting CSAMT measurements to profiles of resistivity versus depth. Observed apparent resistivity and phase data for each station are used to determine the parameters of a layered-earth model. Layer thicknesses are fixed by calculating source-field penetration depths for each frequency. Layer resistivities are adjusted iteratively until the modeled CSAMT response is as close as possible to observed data. Smoothness constraints restrict layer resistivities to minimum variation from layer to layer.

The algorithm for calculating the CSAMT response of a layered model includes the effects of finite transmitter-receiver separation and a three-dimensional source field. Accurate impedance values are calculated for all frequencies and transmitter-receiver separations.

The result of smooth-model inversion is a set of estimated resistivities which vary smoothly with depth. Lateral variation is determined by inverting successive stations along a line. Results for a complete line can be presented in pseudosection form by contouring model resistivities. For contouring, resistivity values are placed at the midpoint of each layer, forming a column below every station. The columns form an array representing modeled resistivities in cross-section.

Inverting apparent resistivity and phase to a smoothly varying model resistivities is an effective way to display the information inherent in CSAMT measurements. Smooth-model inversion does not require any a priori estimates of model parameters. The data are automatically transformed to resistivity as a function of depth. Models with smoothness constraints are complementary to more detailed models incorporating a priori geologic constraints.

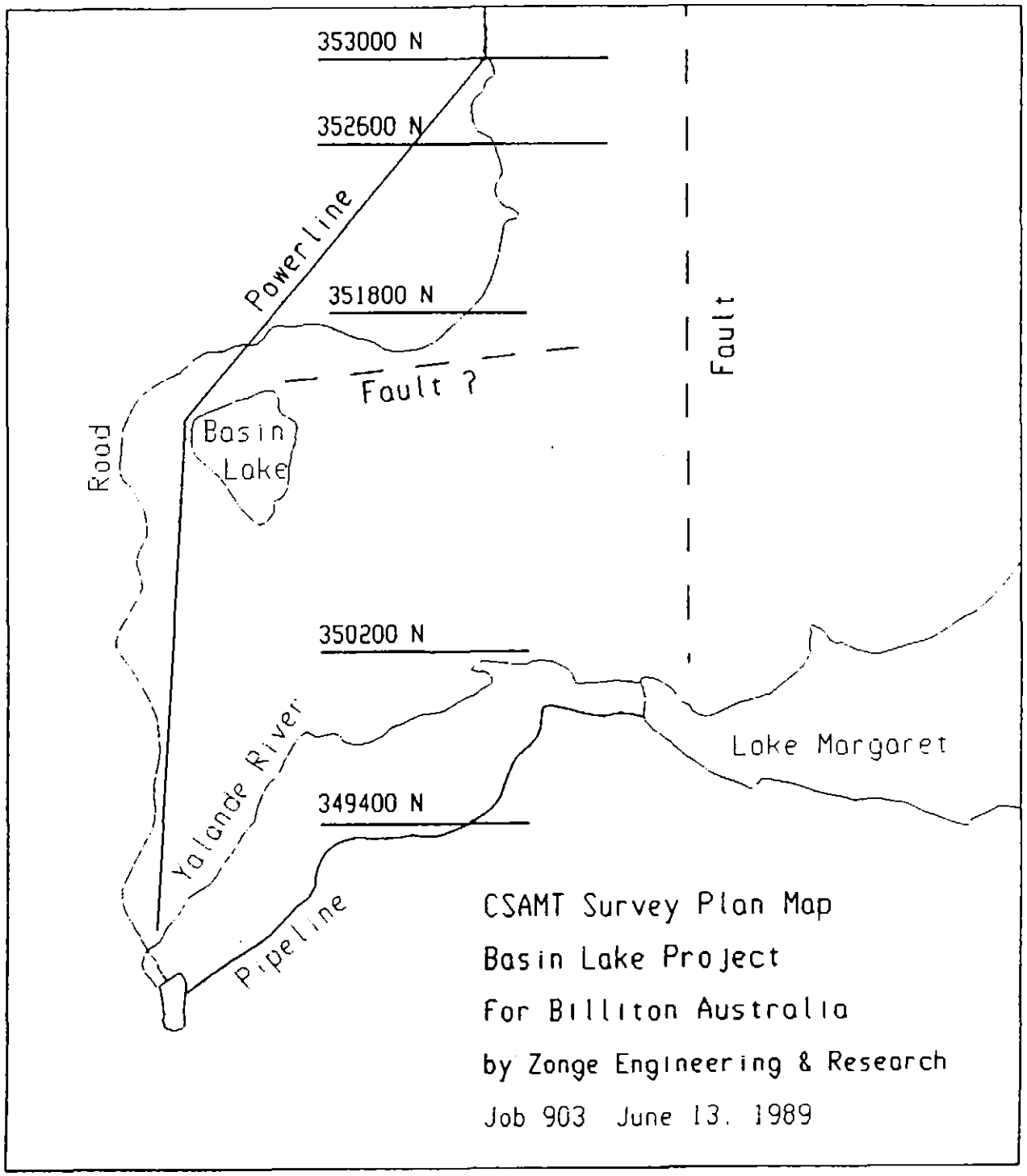


Figure 1: CSAMT line location map.

5 cm

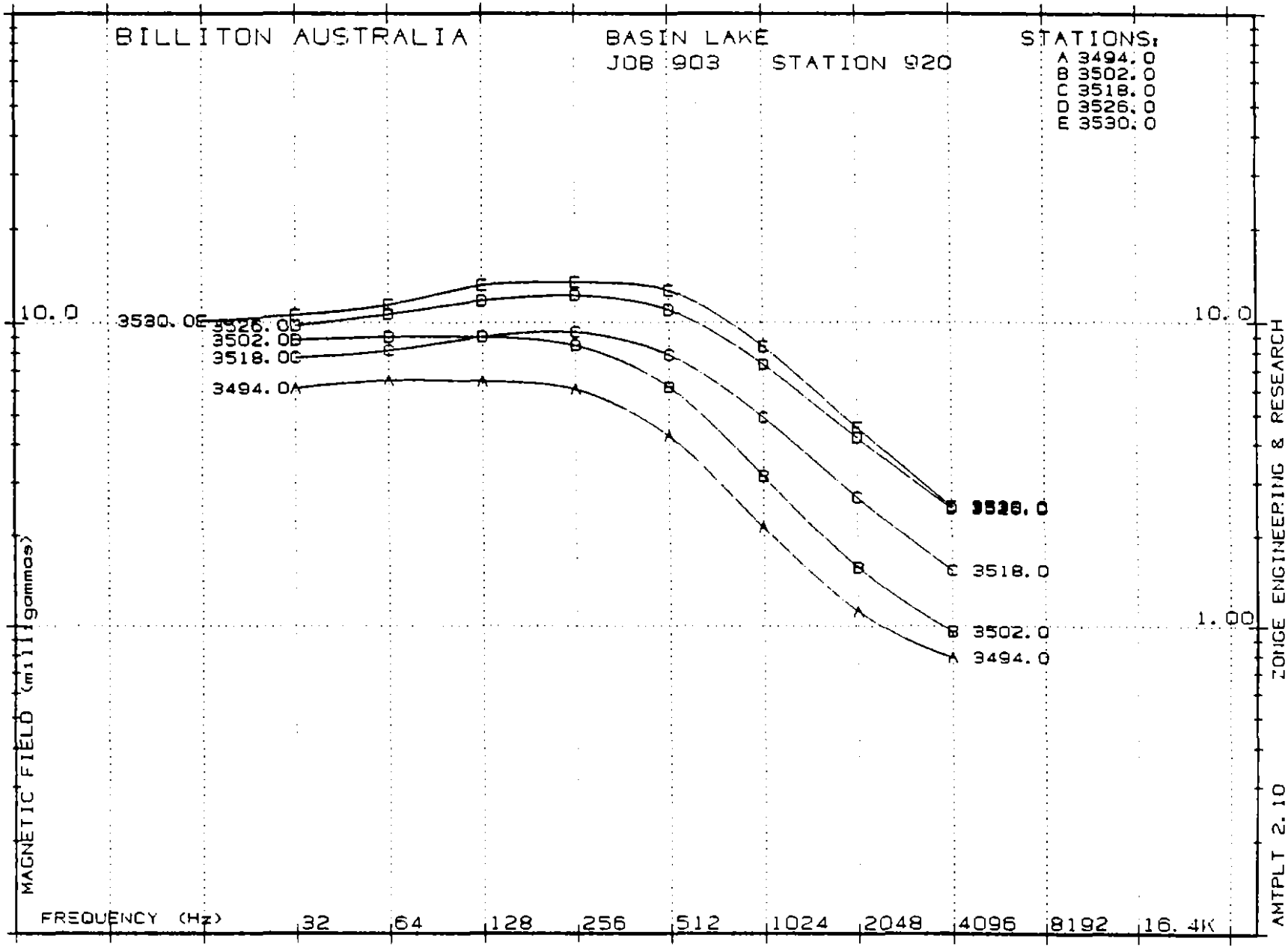


Figure 2: Log-log plot of magnetic-field amplitude versus frequency.

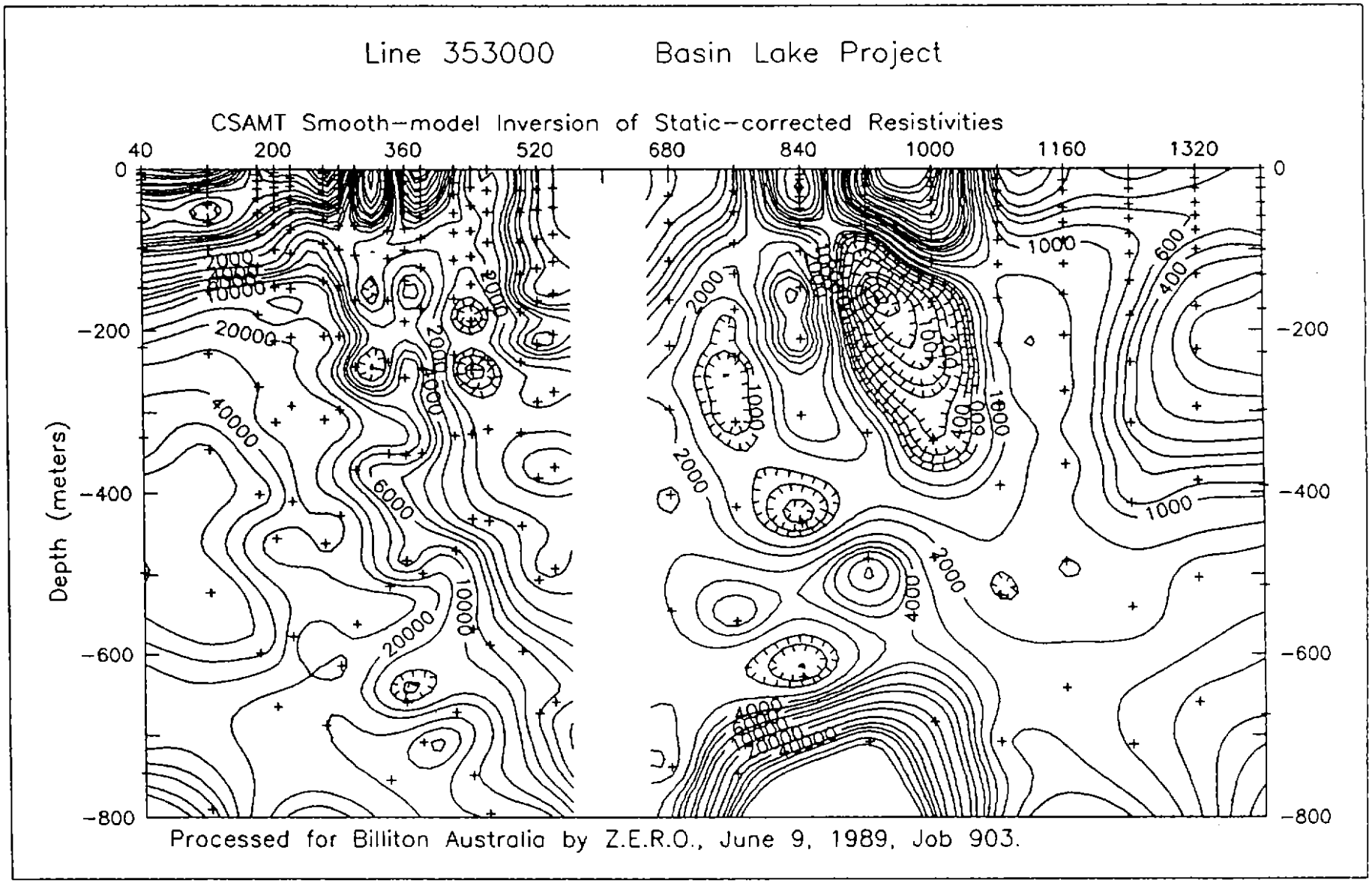


Figure 3: Smooth-model inversion for line 353000N.

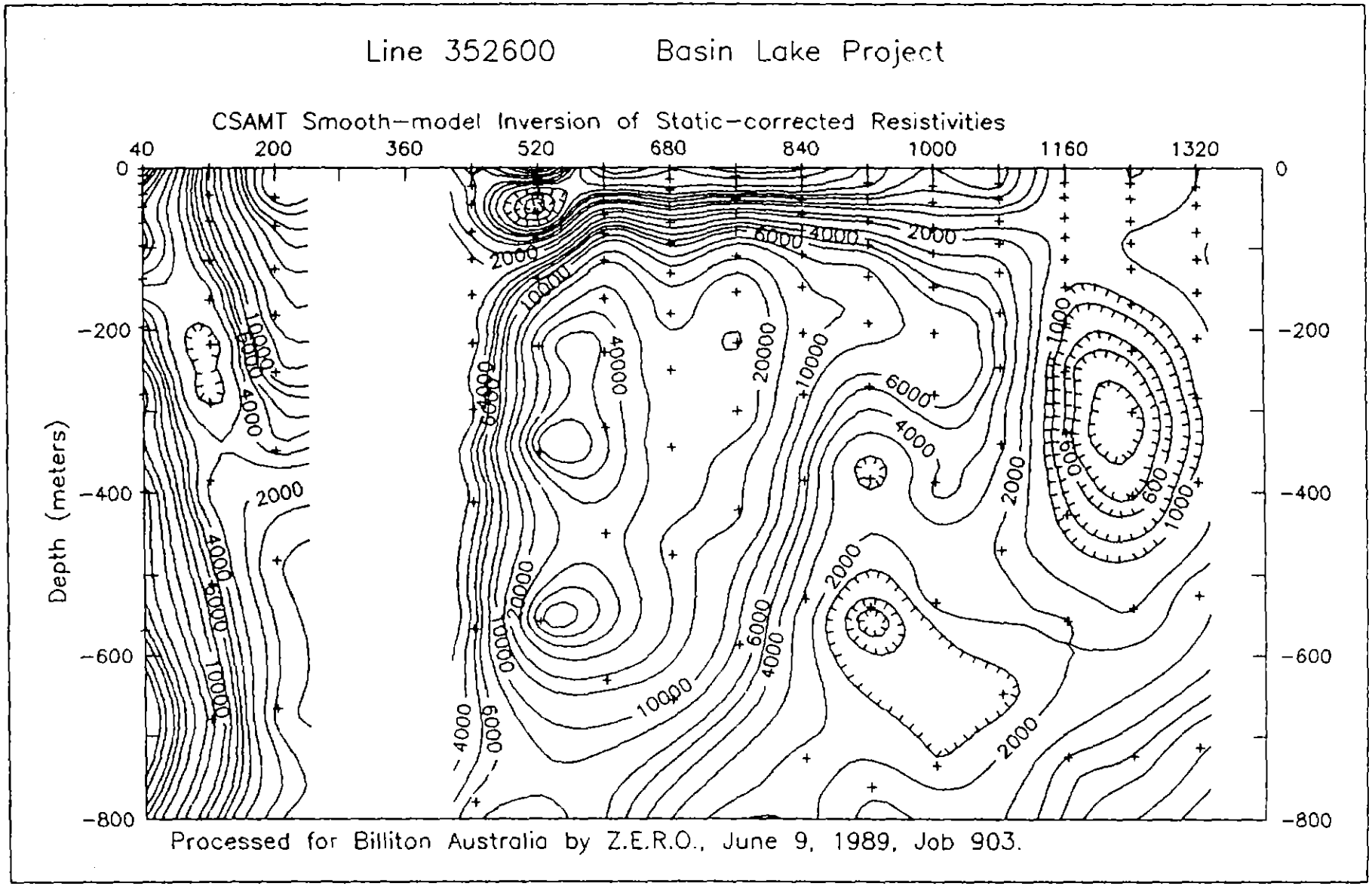


Figure 4: Smooth-model inversion for line 352600N.

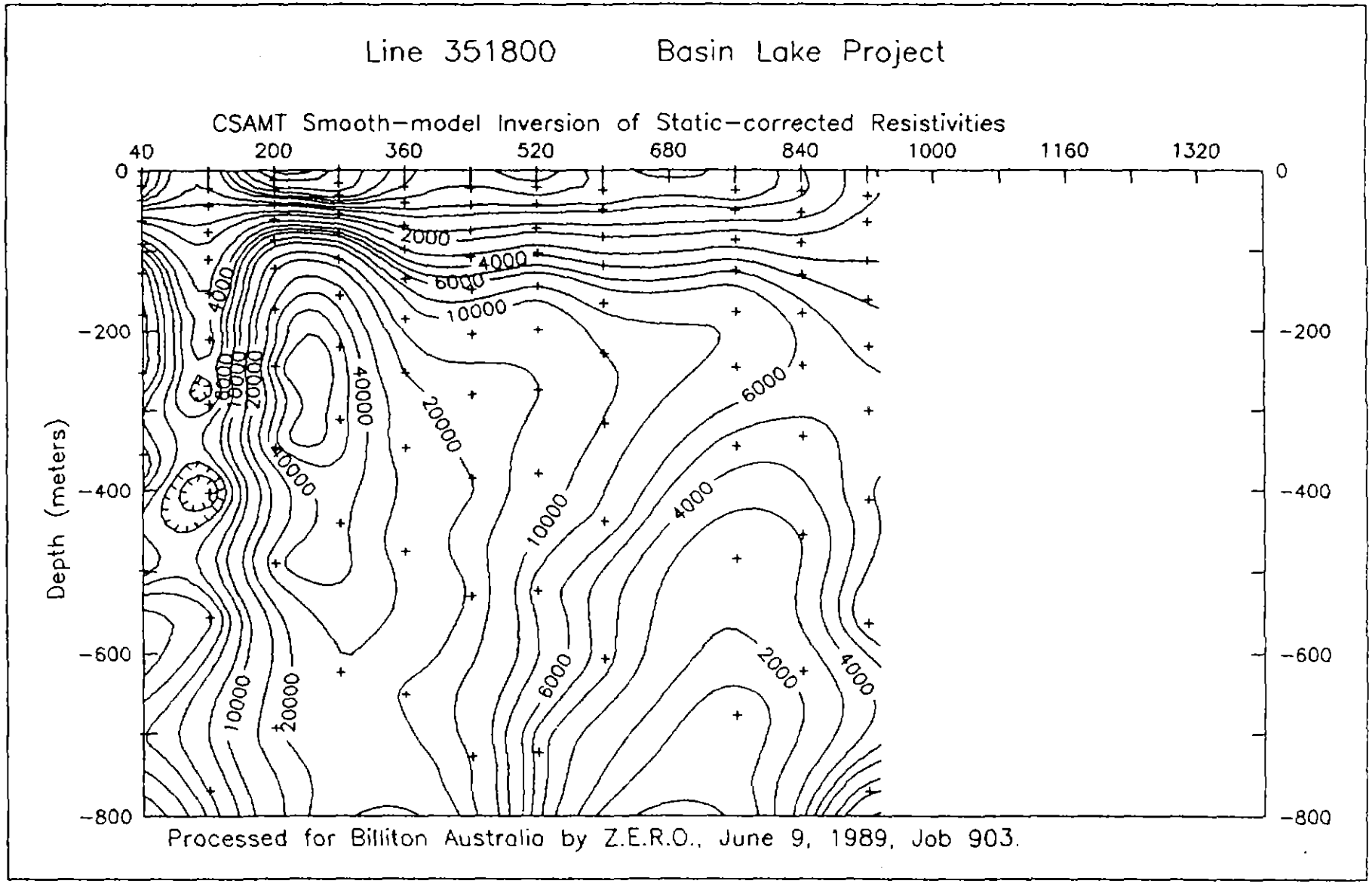


Figure 5: Smooth-model inversion for line 351800N.

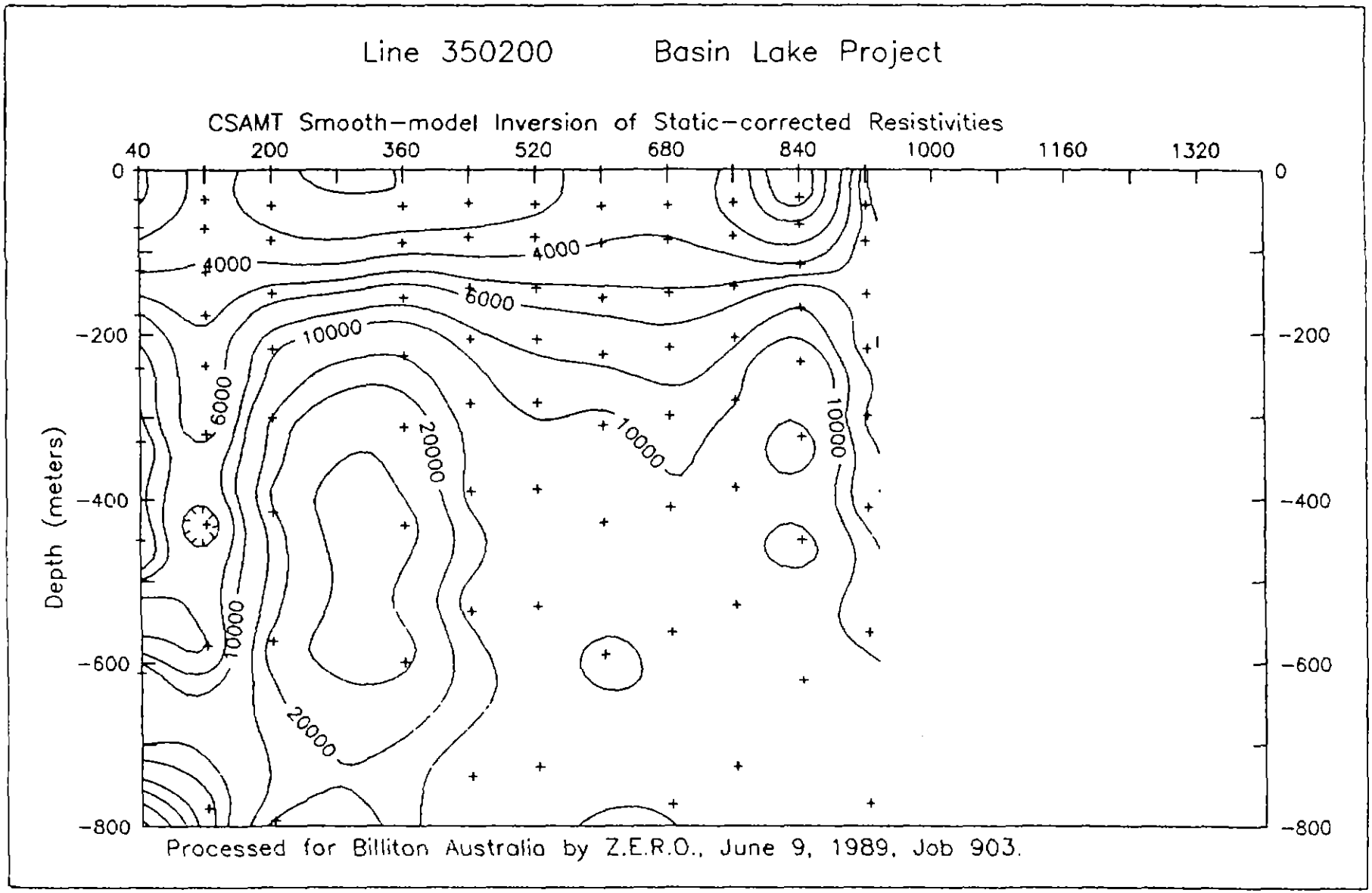


Figure 6: Smooth-model inversion for line 350200N.

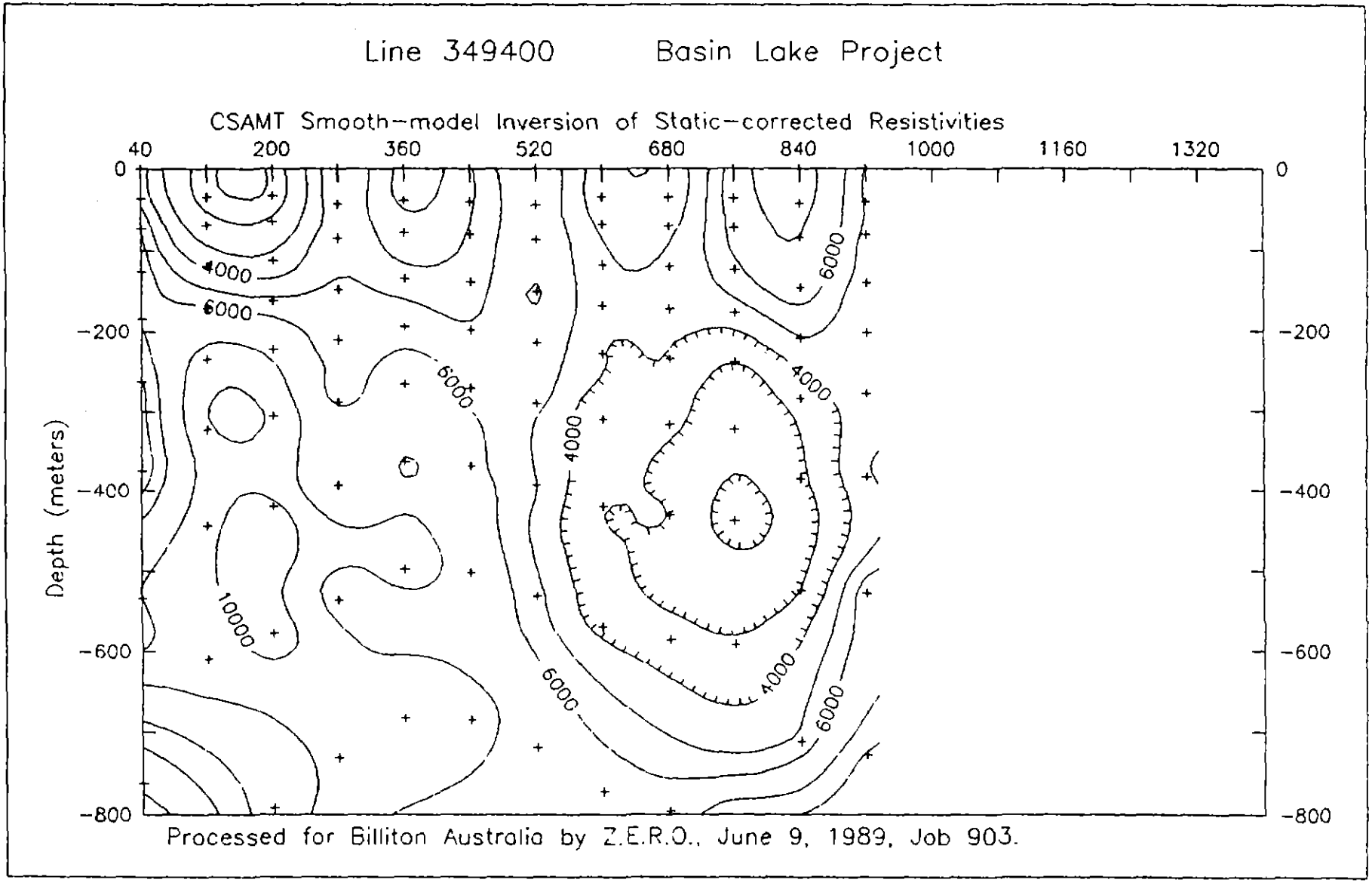


Figure 7: Smooth-model inversion for line 349400N.

LD57
744.

MEMORANDUM

DATE: 10 April 1990

FROM: BXN:MELBOURNE

TO: BXH:DEVONPORT

SUBJECT: BASIN LAKE CSAMT SURVEY - MARCH 1990

Herewith a few preliminary comments on the results.

There do not appear to be any CSAMT anomalies characteristic of a large deposit of massive sulphides, although there are some conductors worth remarking on. However, some of these have already been detected as UTEM anomalies and drilled. In general, the CSAMT survey seems to have detected great lateral variability in resistivity, giving rise to unusual phase effects. These are probably due to considerable lateral changes in lithology across a mixed and steeply-dipping sequence of volcanics and sediments. The only area which appears to lack variability is the north-west of the grid, where there are presumably more massive monotonous rocks (porphry?).

353400N: Low resistivity zone at 81020E. Correlates with carbonaceous shale unit drilled by BL2 (UTEM anomaly).

353800N: BL4 tested a low resistivity zone (UTEM anomaly) at 80560E and intersected black pyritic shales. There is also an interesting conductor at 80880E which appears not to have been tested. It may, however, be a strike continuation of the conductor drilled by BL2 (see RGC's UTEM plan - conductor G). There were no significant conductors tested by the Leech Hill drill hole.

354200N: TYN-2, originally drilled on an IP/Resistivity anomaly, intersected a black shale unit mildly anomalous in base metals. It was also a weak UTEM anomaly and is a CSAMT conductor.

354600N: A conductor at 80360-80440E may well be a further continuation of the conductor mentioned on 353800N. It correlates with UTEM trend D.

355800N: TYN-1 appears to have drilled to the west of a CSAMT/weak UTEM conductor at 81080E which has an unusual phase response (due to nearby powerline). An interesting response also occurs at 81400E which must be close to the Great Lyell Fault.

356200N: A conductor occurs at 81000E which is probably related to the one on 355800N. TYN-4 appears to have drilled this position, but not clearly explained the UTEM and CSAMT conductors. (The UTEM anomaly was attributed to a glacial trough). Down-hole TEM is really required to determine whether a bedrock conductor occurs near TYN-4 which appears to have intersected some quite interesting rock types. A nearby conductor at 81160 is also of some interest (not covered by UTEM).

356600N: TYN-3 and TYN-5 tested a weak UTEM conductor and intersected pyritric black shales (TYN-3). These shales are evident as a CSAMT conductor at 380880E. A conductor also occurs at 381320E. This appears to have a dip to the east and some phase correlation, which makes it interesting. There is no UTEM coverage.

357000N: A conductor at 80700E may be a continuation of that tested by TYN-3. There is also a weak conductor at 81580E adjacent to the great Lyell Fault.

CONCLUSIONS:

There do not appear to be many strong CSAMT anomalies that have not been already tested by drilling on UTEM anomalies. The exceptions are at the eastern end of line 355800N, and on 353800N at 80880E, and on 356600N at 381320E. These are all worth ground checks prior to deciding on drilling.

Transparencies of the CSAMT profiles will be sent to you from Melbourne drafting in due course.

Some data-processing is still being completed by Zonge. I will do a final interpretation when I return.

N. Hungerford
Chief Geophysicist

0093

SOUTH HENTY FAULT

HOWARDS ANOMALY

379000E

381600E

382000E

357000N

356000N

355800N

355400N

355000N

354600N

354200N

353800N

353400N

353000N

352600N

352200N

351800N

351400N

351000N

350600N

350200N

349800N

349400N

349000N

62610

H/62830

H/62720

TYN 3

TYN 4

TYN 5

TYN 1

TYN 2

BL 1

BL 2

BL 3

BL 4

BL 5

BL 801

BL 802

SER PY

HILL

MINES DEPT DDH

INFILL TEM

GRAVITY

LINE

TIE

FAULT

YELL

GREAT

ROAD

BRADSHAWS

ANTHONY

YOLANDE RIVER

BASIN LAKE

LAKE MARGARET

LAK MARY

Ehfc

Ehfg

Ehft

Ehfa

Ecva

Ecv

Ecvq

Ecus

Ews

Ewst

Ewss

Ep

Eta

Etb

Etc

Cfa

Cfs

CBo

24 line kms

CSAMT 1990

CSAMT COMPLETED ON ENTIRE GRID NOV-DEC '88

bre 1988 TEM survey.

A-Mag High

Gravity H

Gravity Data point

CSAMT Anomaly

5 cm

BASIN LAKE

CSAMT SURVEY

1990

1:25000

3820035

APPENDIX 3

Lithogeochemical Sampling

382040

CLASSIC LABORATORIES LTD
Incorporated in WA; a wholly owned subsidiary of Amdel Ltd
Osman Place, Thebarton, South Australia 5031
Telephone: (08) 43 5722 Facsimile: (08) 234 0321

0065

Mr. Jeff Randell
Billiton Australia Ltd
PO Box 860
DEVONPORT
TAS 7310

F I N A L A N A L Y S I S R E P O R T

Your Order No: 11726/LD57/JPR Our Job Number : 0AD1673

Samples received : 28-MAY-1990 Results reported : 22-JUN-1990
No. of samples : 24
Report comprises a cover sheet and pages 1 to 3

This report relates specifically to the samples tested in so far as that the samples as supplied are truly representative of the sample source.

Note:
If you have any enquiries please contact Mr David Eardley-Harris quoting the above job number.

Approved Signatory:

D. Eardley-Harris
pp

John Waters
Technical Manager - Adelaide

MM Mr Jeff Randell Devonport

Report Codes:
N.A. - Not Analysed.
L.N.R. - Listed But Not Received.
I.S. - Insufficent Sample.

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

"RELIABLE ANALYSES AT COMPETITIVE COST"

0066

282041

CLASSIC LABORATORIES LTD

Job: 0AD1673
O/N: 11726/LD57/JPR

ANALYTICAL REPORT

Sample	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O
16795	17.6	3.32	8.05	2.36	2.90	0.13	6.75
16796	15.2	5.75	7.90	3.04	1.62	0.11	6.00
16797	14.9	5.20	8.45	1.43	4.84	0.24	5.30
16798	15.0	5.20	8.75	1.43	4.90	0.15	5.30
16799	15.9	4.84	8.60	1.34	5.25	0.17	5.70
16943	18.8	3.22	10.1	1.11	8.45	0.10	5.30
16944	18.0	3.36	8.70	1.16	7.80	0.13	6.00
16945	17.4	3.38	9.65	0.88	6.60	0.20	6.45
16946	14.6	2.94	4.66	2.56	1.43	0.06	3.20
16947	14.6	3.36	8.35	2.04	4.66	0.17	1.04
16948	11.9	0.93	3.56	2.22	1.56	0.04	3.12
16949	17.7	3.50	8.75	2.30	4.56	0.11	3.88
16950	17.0	3.84	8.65	1.82	3.76	0.08	4.24
16951	12.9	8.10	7.65	1.14	3.84	0.14	3.26
16952	14.5	5.25	8.35	0.50	4.74	0.16	5.35
16953	14.1	10.0	9.55	1.34	4.24	0.20	2.04
16954	15.3	6.30	8.40	0.34	4.34	0.18	3.12
16955	15.1	4.92	7.50	2.38	2.24	0.10	3.00
16956	14.2	7.10	7.20	0.57	2.10	0.09	5.10
16957	13.9	9.40	9.10	1.92	7.35	0.14	1.86
16958	15.4	5.95	7.75	3.20	4.26	0.15	3.56
80069	13.0	1.61	2.46	3.34	1.25	0.07	1.76
80070	13.5	1.89	2.56	2.52	0.94	0.09	3.36
80071	13.9	1.23	2.24	2.58	0.79	0.06	3.62
Units	%	%	%	%	%	%	%
DL	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Scheme	ICP5	ICP5	ICP5	ICP5	ICP5	ICP5	ICP5

382042

CLASSIC LABORATORIES LTD

Job: 0AD1673
O/N: 11726/LD57/JPR

ANALYTICAL REPORT

Sample	P2O5	SiO2	TiO2	LOI
16795	0.16	55.0	0.53	4.14
16796	0.14	55.5	0.44	5.15
16797	0.22	57.1	0.45	2.68
16798	0.21	57.6	0.44	1.88
16799	0.15	56.4	0.46	2.14
16943	0.42	47.3	0.66	5.50
16944	0.42	50.3	0.66	4.48
16945	0.36	51.8	0.61	3.56
16946	0.16	64.9	0.33	4.40
16947	0.27	56.5	0.44	6.80
16948	0.08	71.6	0.28	2.90
16949	0.28	53.1	0.46	3.64
16950	0.25	54.9	0.42	3.24
16951	0.36	51.8	0.47	8.80
16952	0.31	56.3	0.45	2.22
16953	0.24	44.2	0.65	12.1
16954	0.33	55.2	0.49	4.28
16955	0.21	56.2	0.46	6.40
16956	0.25	54.3	0.44	6.75
16957	0.60	50.6	0.50	3.18
16958	0.24	53.0	0.44	4.22
80069	0.10	70.2	0.30	4.02
80070	0.08	69.9	0.31	4.00
80071	0.08	71.3	0.32	3.10
Units	%	%	%	%
DL	0.01	0.01	0.01	0.01
Scheme	ICP5	ICP5	ICP5	ICP5

CLASSIC LABORATORIES LTD

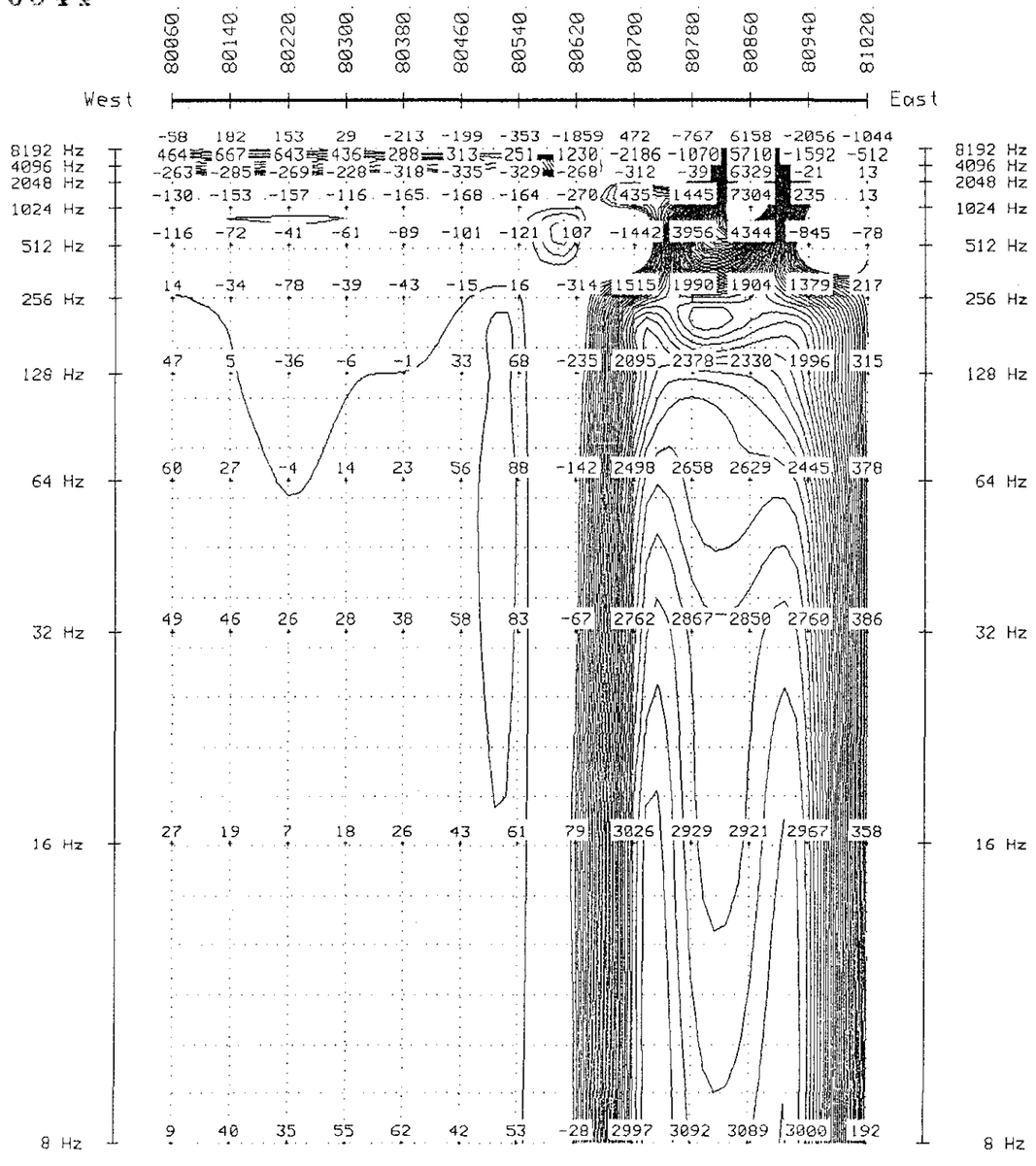
382043

ANALYTICAL REPORT

Job: OAD1673
O/N: 11726/LD57/JPR

Sample	Zr	Sr	Rb	Y	Nb
16795	115	360	40	20	9
16796	100	190	58	18	8
16797	125	410	50	18	9
16798	130	520	42	18	9
16799	100	530	30	18	8
16943	180	330	32	22	14
16944	190	470	42	28	13
16945	165	480	26	24	12
16946	115	300	80	14	9
16947	94	90	60	15	8
16948	250	105	84	30	14
16949	130	810	56	16	9
16950	120	660	38	16	9
16951	140	410	34	24	7
16952	140	520	5	18	10
16953	115	210	36	20	7
16954	135	1220	<2	22	8
16955	100	250	68	20	8
16956	100	680	3	16	9
16957	140	820	32	24	11
16958	110	460	115	20	7
80069	220	130	155	26	13
80070	230	195	125	36	14
80071	240	195	140	30	15
Units	ppm	ppm	ppm	ppm	ppm
DL	4	2	2	4	2
Scheme	XRF1	XRF1	XRF1	XRF1	XRF1

0014



PHASE DIFFERENCE (E - H)
values in milli-radians
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(Interval: 100.00)

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5600	4100	2600	1100
5500	4000	2500	1000
5400	3900	2400	900
5300	3800	2300	800
5200	3700	2200	700
5100	3600	2100	600
5000	3500	2000	500
4900	3400	1900	400
4800	3300	1800	300
4700	3200	1700	200
4600	3100	1600	100
4500	3000	1500	1.00u
4400	2900	1400	[-2860]

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 10 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 357000 N
BASIN LAKE
for
BILLITON AUSTRALIA

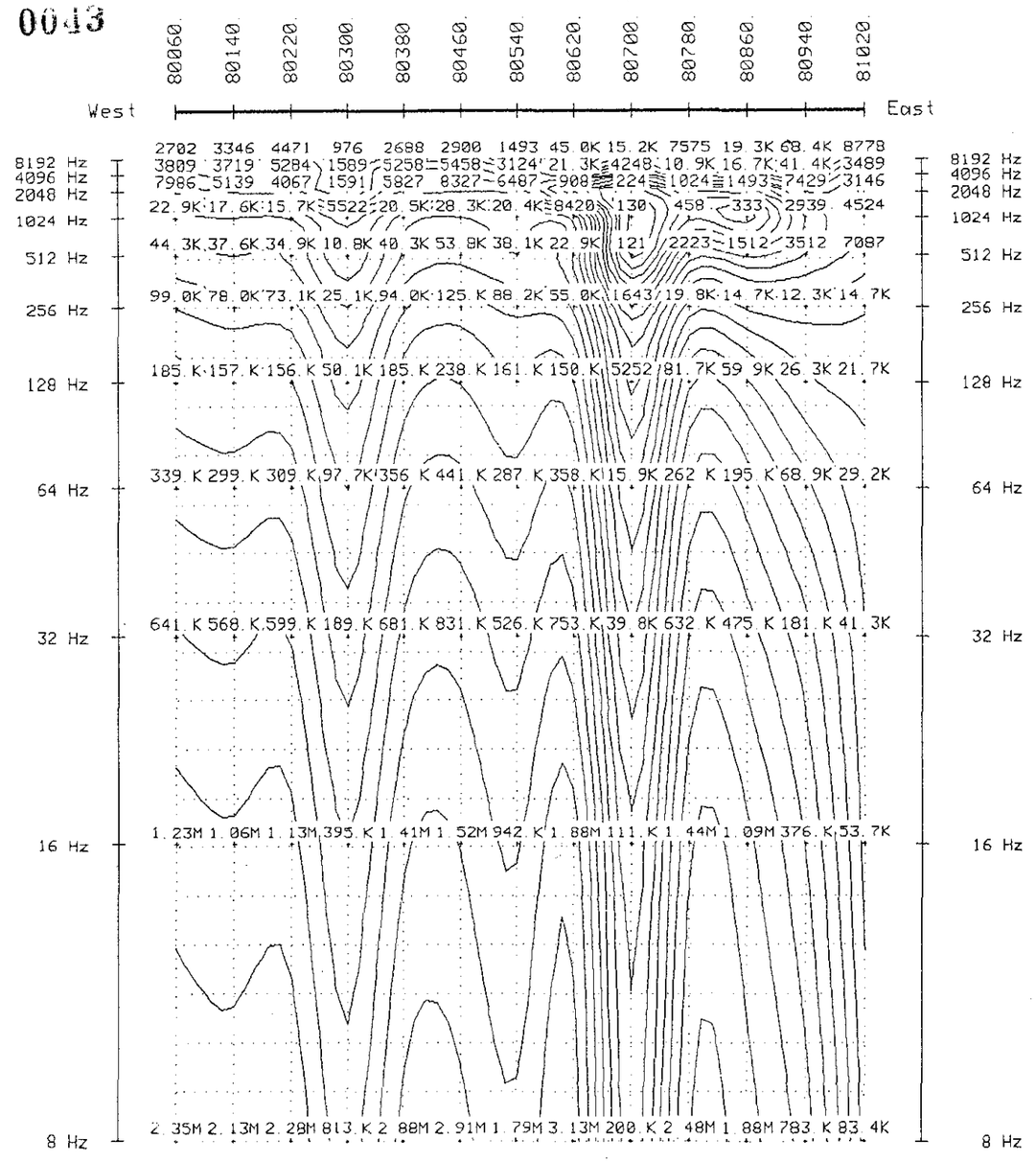
RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 5.4 KM
Rx to Tx= South

382044

91-3244.

0043



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[3.55M]	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	[110]
63.1K	
39.8K	
25.1K	
15.8K	
10.0K	
6310	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 10 APR 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 357000 N
BASIN LAKE
for
BILLITON AUSTRALIA

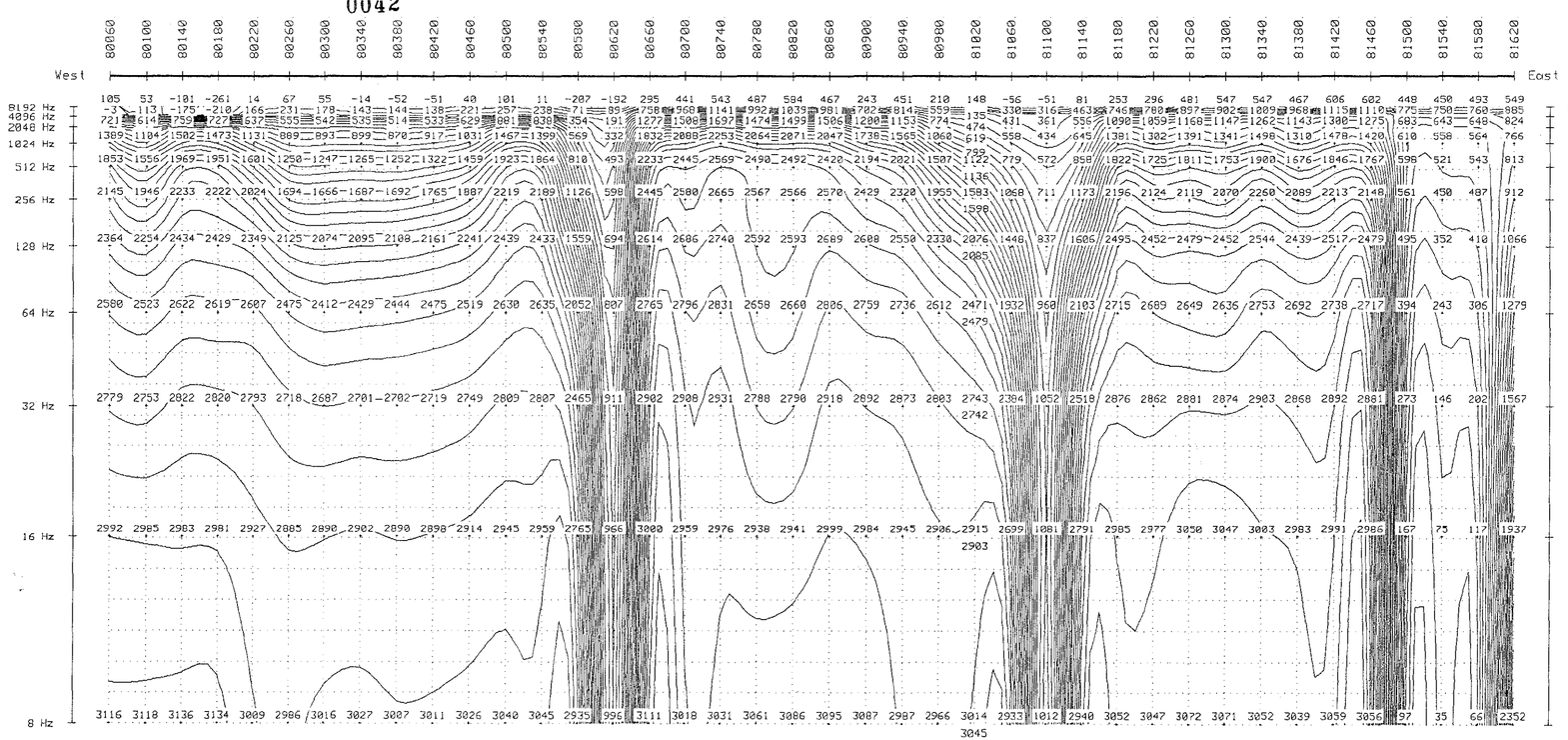
RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient = East
Distance= 5.4 KM
Rx to Tx= South

382045

91-3244.

0042



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

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(Interval 100.00)

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3100	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-261]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	

ZONGE Job 968
PLOT BY CPLOT 5.50 UNAVERAGED
PLOTTED 03 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

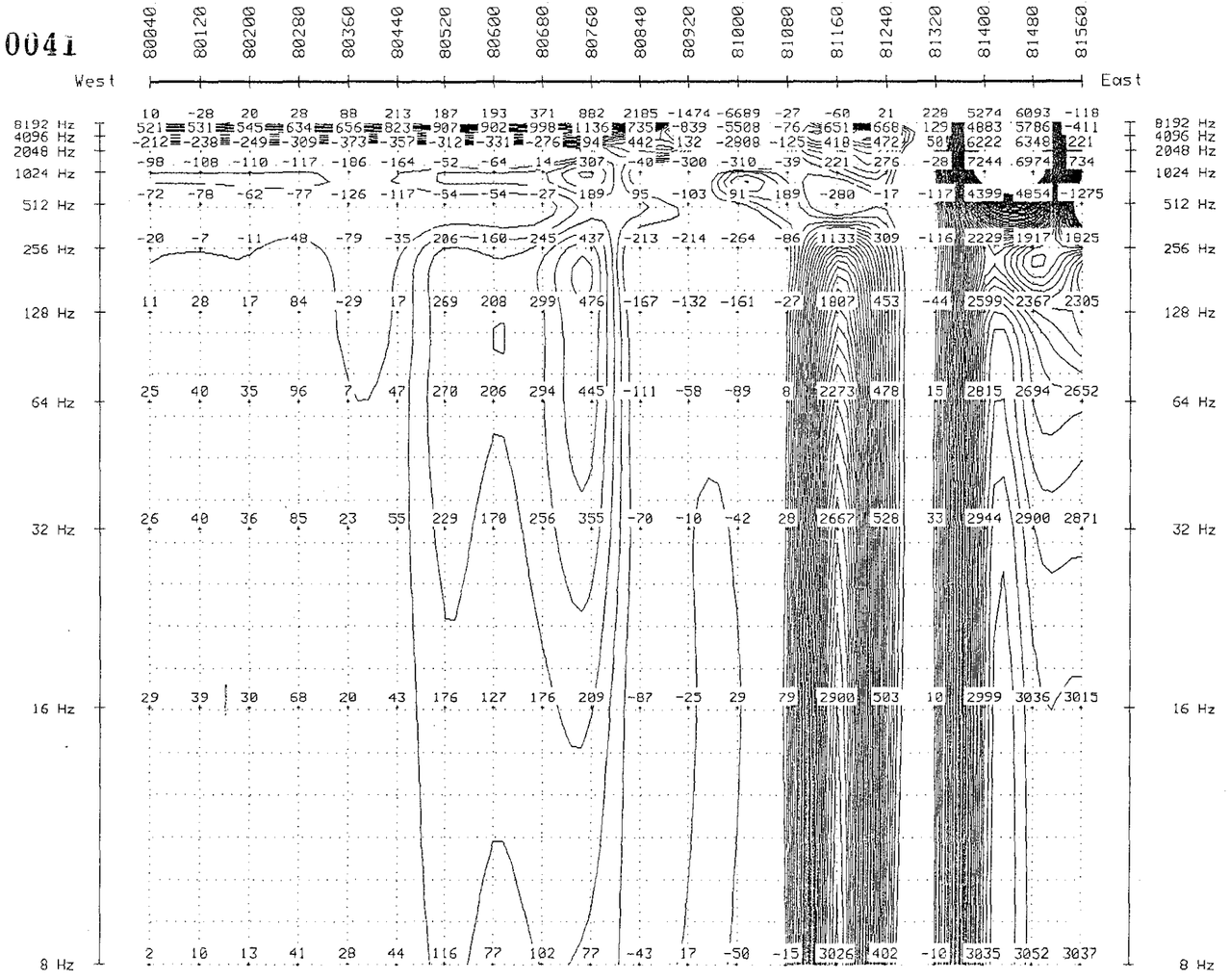
Line 357000 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 40 m
Stn. SPacing = 40 m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient = East
Distance= 2.5 KM
Rx to Tx= North

382046
91-3244.

0041



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

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5700	4200	2700	1200
5600	4100	2600	1100
5500	4000	2500	1000
5400	3900	2400	900
5300	3800	2300	800
5200	3700	2200	700
5100	3600	2100	600
5000	3500	2000	500
4900	3400	1900	400
4800	3300	1800	300
4700	3200	1700	200
4600	3100	1600	100
4500	3000	1500	1.00u
4400	2900	1400	[-6689]

ZONGE Job 968
PLOT BY CPLOT 5 50
PLOTTED 10 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

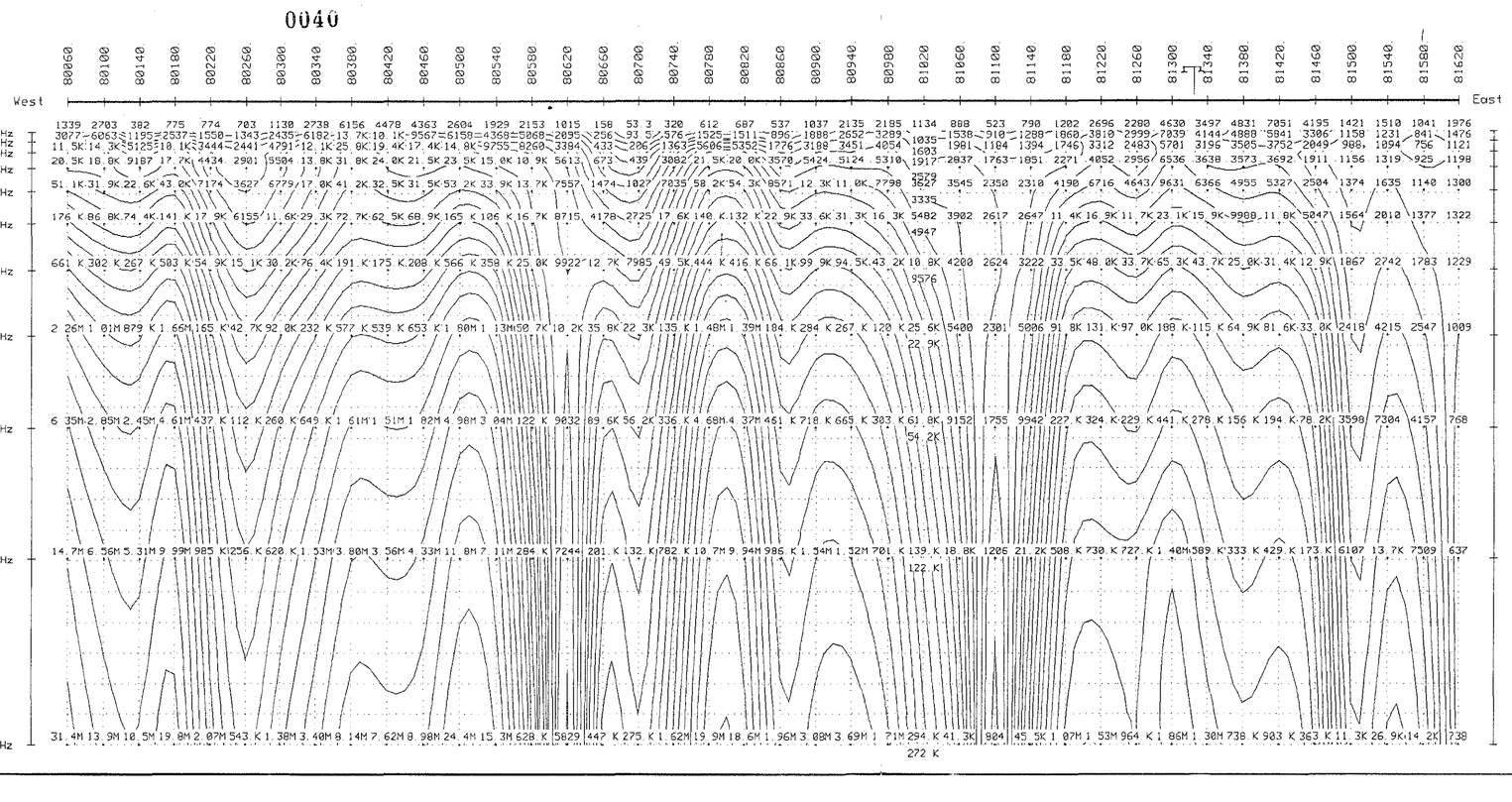
Line 356600 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 5.0 KM
Rx to Tx= South

382047

91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
(RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval= 0.20)

[31.4M]	39.8K [53.3]
25.1M	25.1K
15.8M	15.8K
10.0M	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	100
63.1K	63.1

ZONGE Job 968
PLOT BY CPLOT 5.50 UNAVERAGED
PLOTTED 03 APr 90

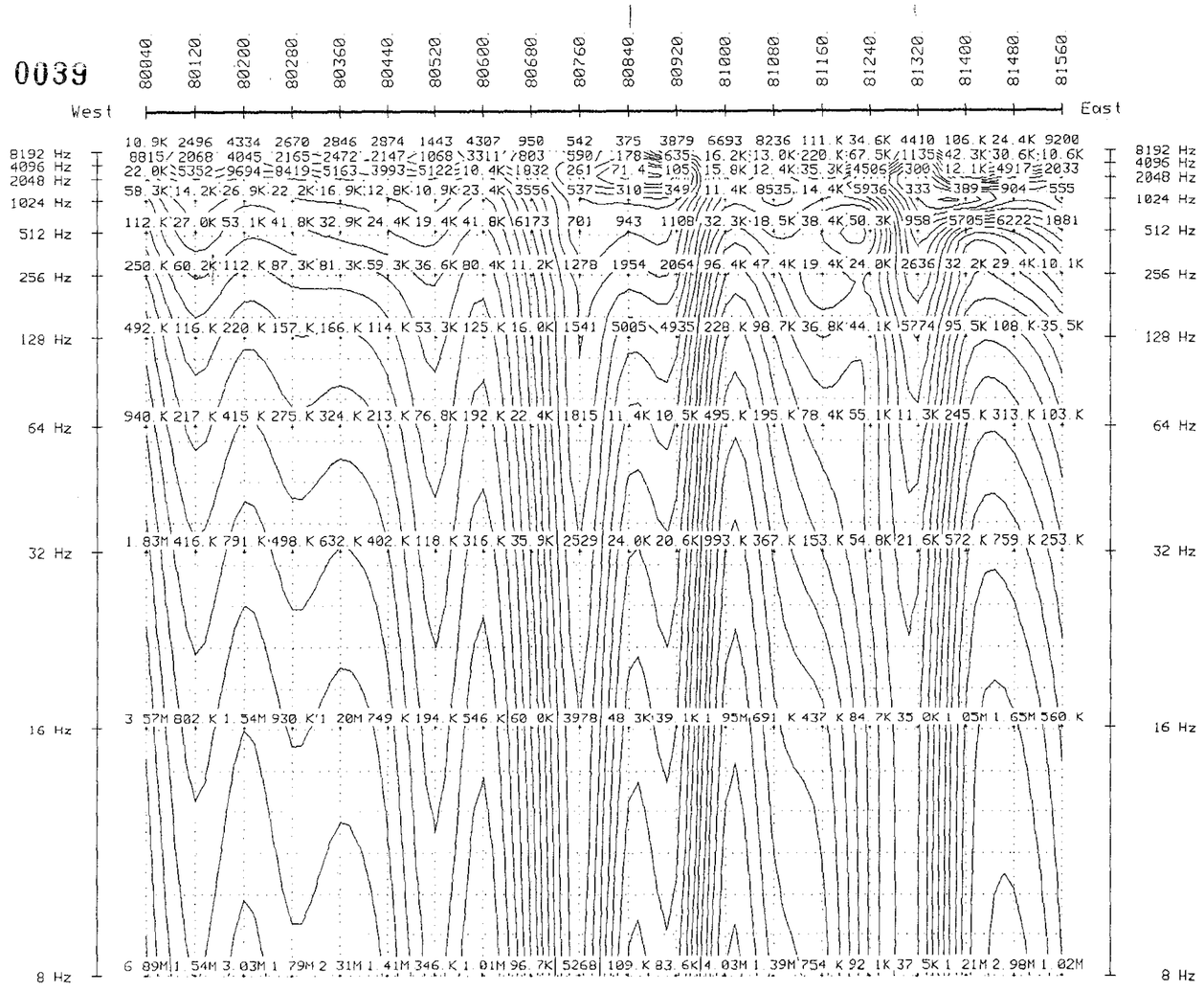
CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 357000 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length = 40 m
Stn SPacing = 40 m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 2.5 KM
Rx to Tx= North

382048
91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[6.89M]	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	100
63.1K	63.1
39.8K	[55.8]
25.1K	
15.8K	

ZONGE Job 968
PLOT 8Y CPLOT 5.50
PLOTTED 10 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 356600 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East

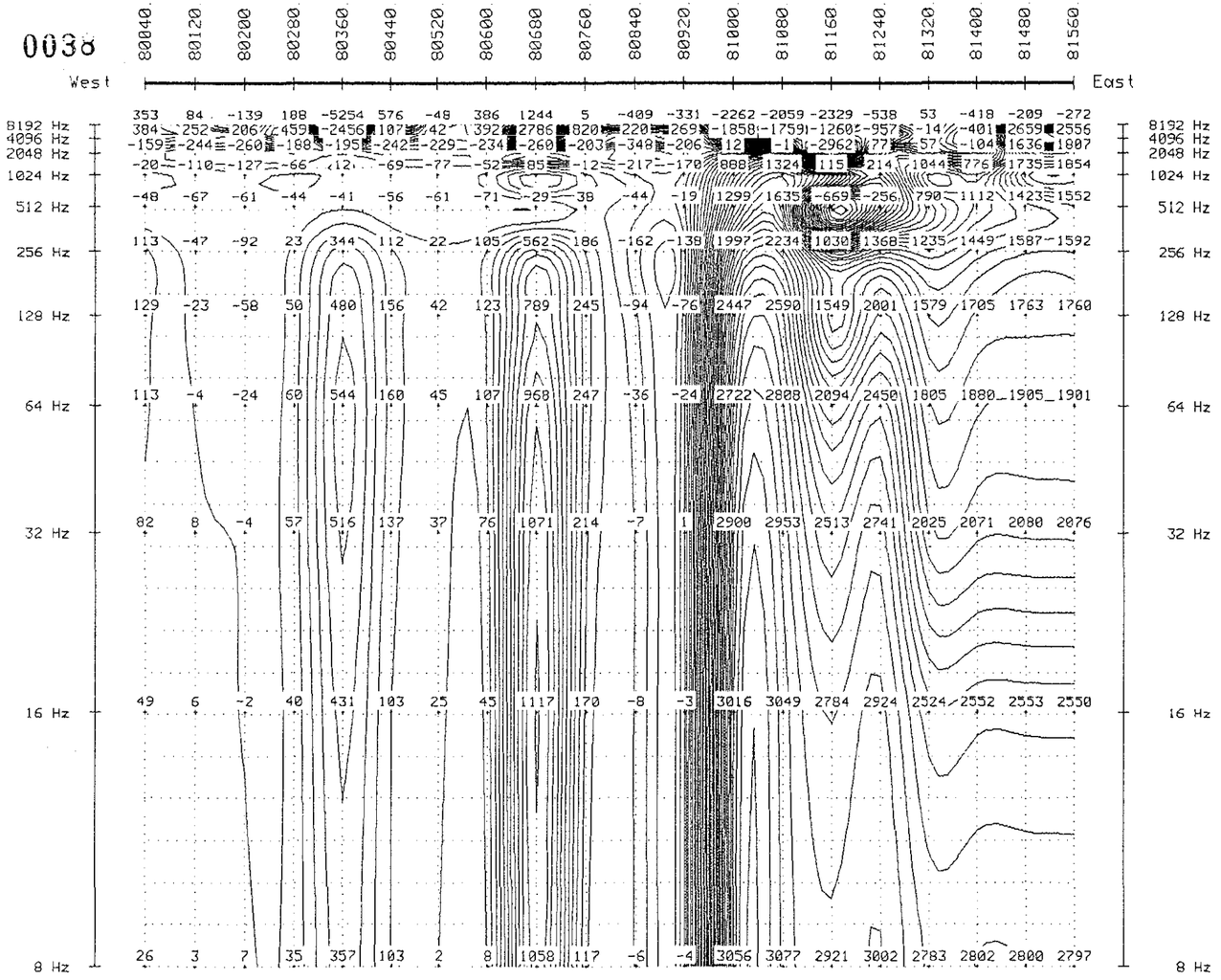
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 5.0 KM
Rx to Tx= South

382049

91-3244.

0038



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval 100.00)

[3327]	1900	400	-1100
3300	1800	300	-1200
3200	1700	200	-1300
3100	1600	100	-1400
3000	1500	1.00u	-1500
2900	1400	-100	-1600
2800	1300	-200	-1700
2700	1200	-300	-1800
2600	1100	-400	-1900
2500	1000	-500	-2000
2400	900	-600	-2100
2300	800	-700	-2200
2200	700	-800	-2300
2100	600	-900	-2400
2000	500	-1000	[-5254]

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 06 APR 90

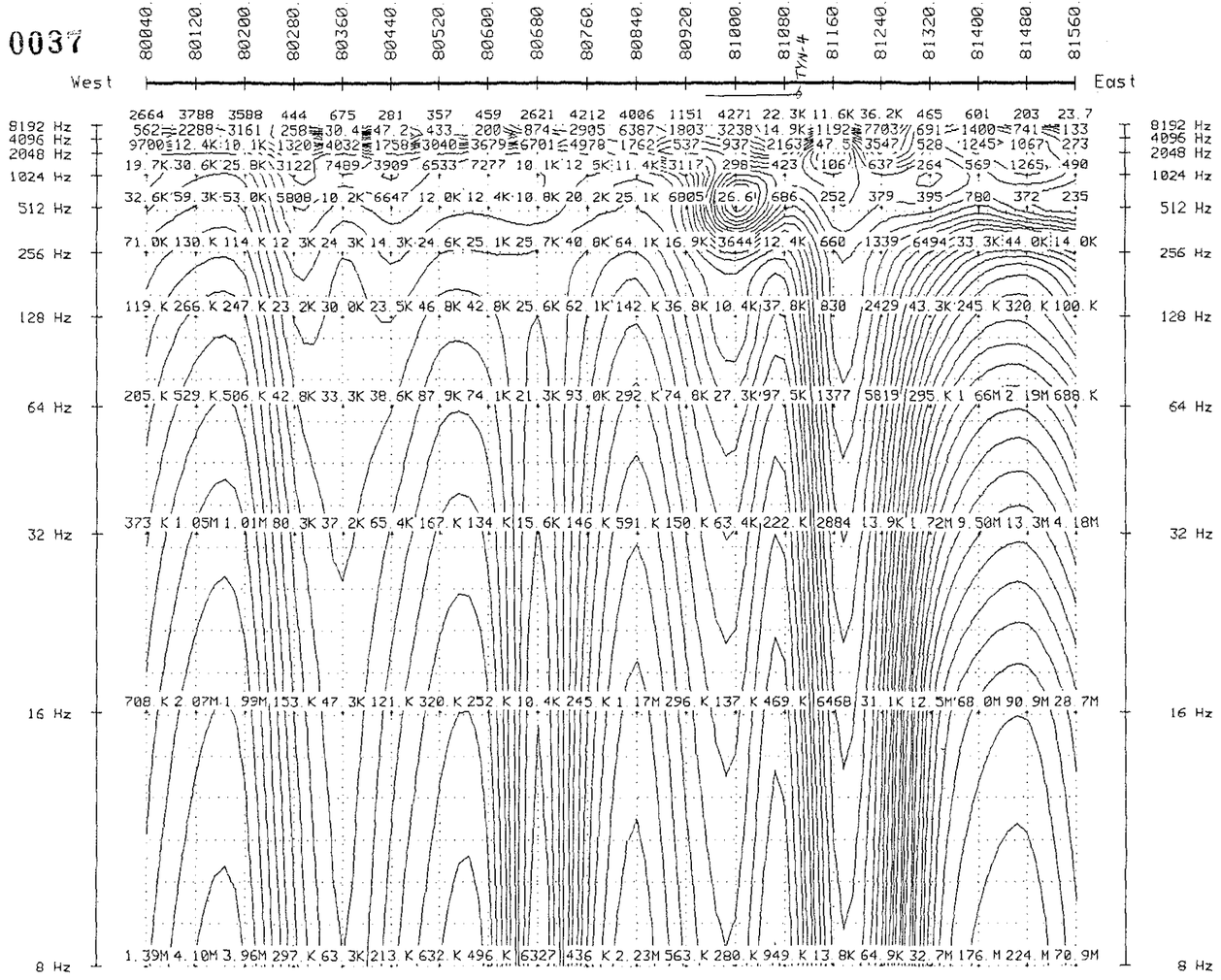
CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 356200 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80 m
Stn. SPacing = 80 m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.6 KM
Rx to Tx= South

382000
91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval 0 20)

[233 M]	251.K	251
158 M	158 K	158
100 M	100 K	100
63.1M	63.1K	63.1
39.8M	39.8K	39.8
25.1M	25.1K	25.1
15.8M	15.8K	[23.7]
10.0M	10.0K	
6.31M	6310	
3.98M	3981	
2.51M	2512	
1.58M	1585	
1.00M	1000	
631 K	631	
398 K	398	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 06 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 356200 N
BASIN LAKE
for
BILLITON AUSTRALIA

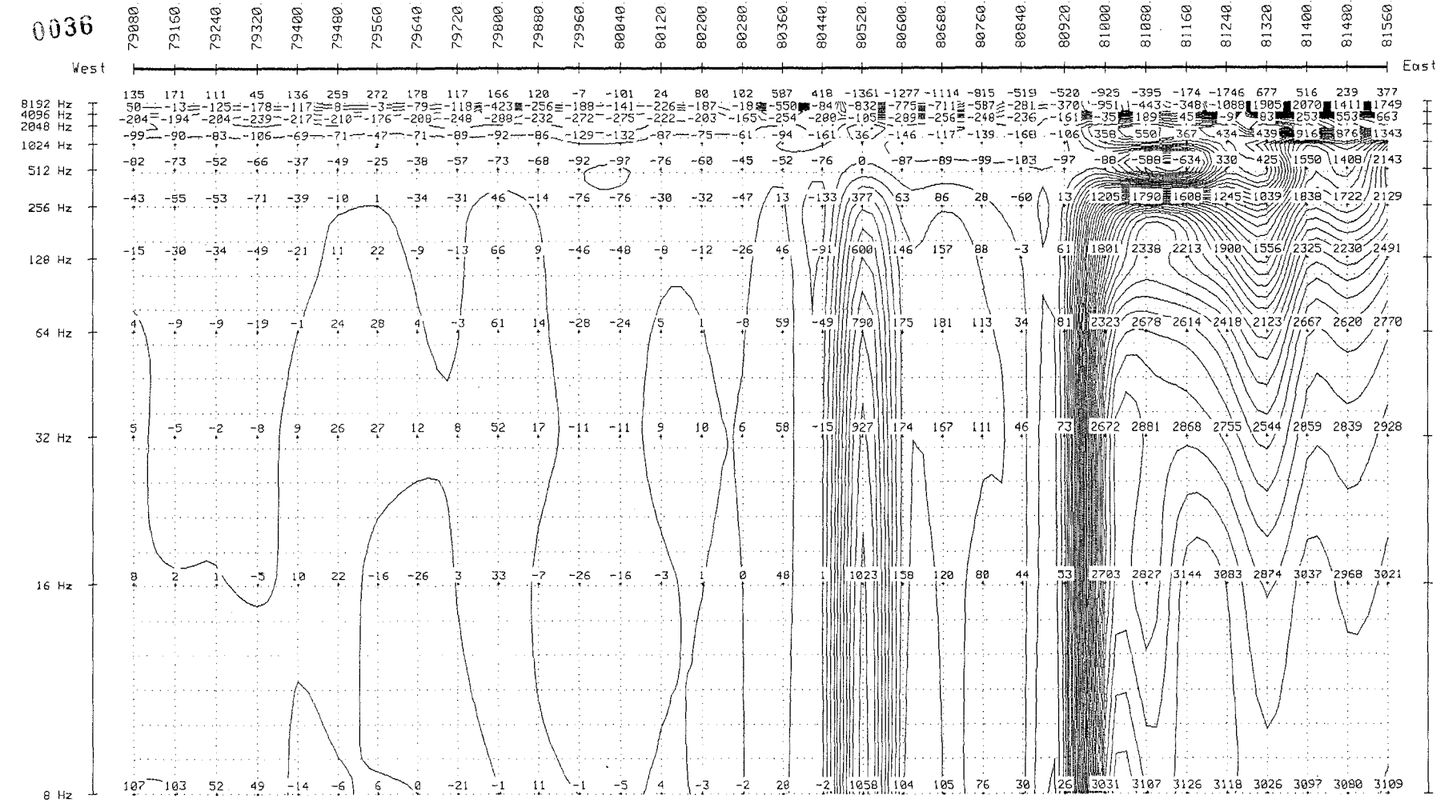
RECEIVER DATA
DiPole Length= 80 m
Stn. SPacing = 80 m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.6 KM
Rx to Tx= South

382051

91-3244.

0036



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100 00)

[3289]	1800	300	-1200
3200	1700	200	-1300
3100	1600	100	-1400
3000	1500	1 00u	-1500
2900	1400	-100	-1600
2800	1300	-200	-1700
2700	1200	-300	[-1746]
2600	1100	-400	
2500	1000	-500	
2400	900	-600	
2300	800	-700	
2200	700	-800	
2100	600	-900	
2000	500	-1000	
1900	400	-1100	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 05 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 355800 N
BASIN LAKE
for
BILLITON AUSTRALIA

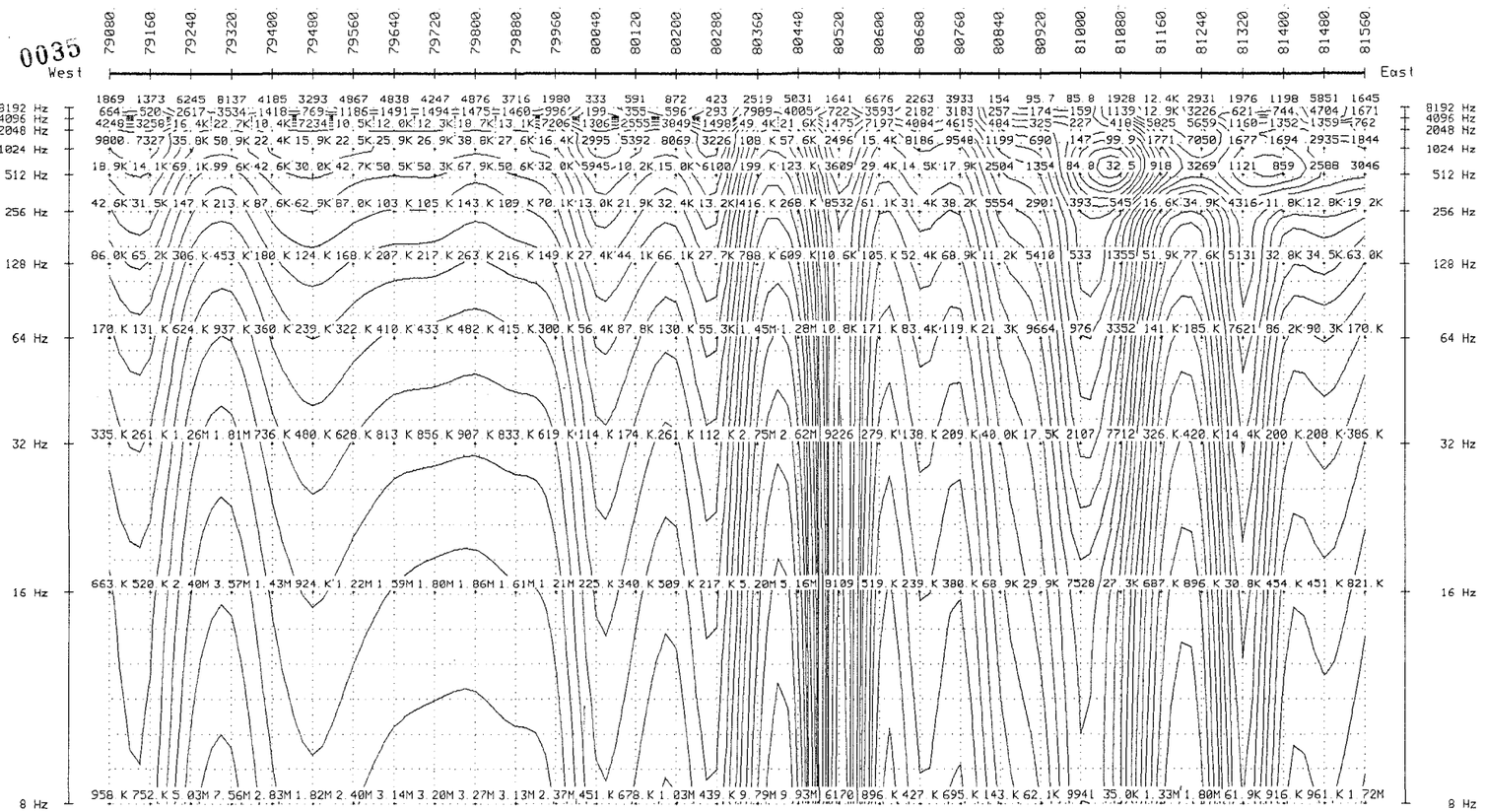
RECEIVER DATA
DiPole Len9th= 80.m
Stn. SPacin9 = 80.m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Len9th = 1500M
Orient. = East
Distance= 4.2 KM
Rx to Tx= South

382052

91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

(Plot limits) and LOGARITHMIC CONTOURS
(Interval: 0.20)

[23.1M]	25.1K [28.3]
15.8M	15.8K
10.0M	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398 K	398
251.K	251
158.K	158
100.K	100
63.1K	63.1
39.8K	39.8

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 05 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 355800 N

BASIN LAKE

for

BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80 m
Stn. SPacing = 80.m

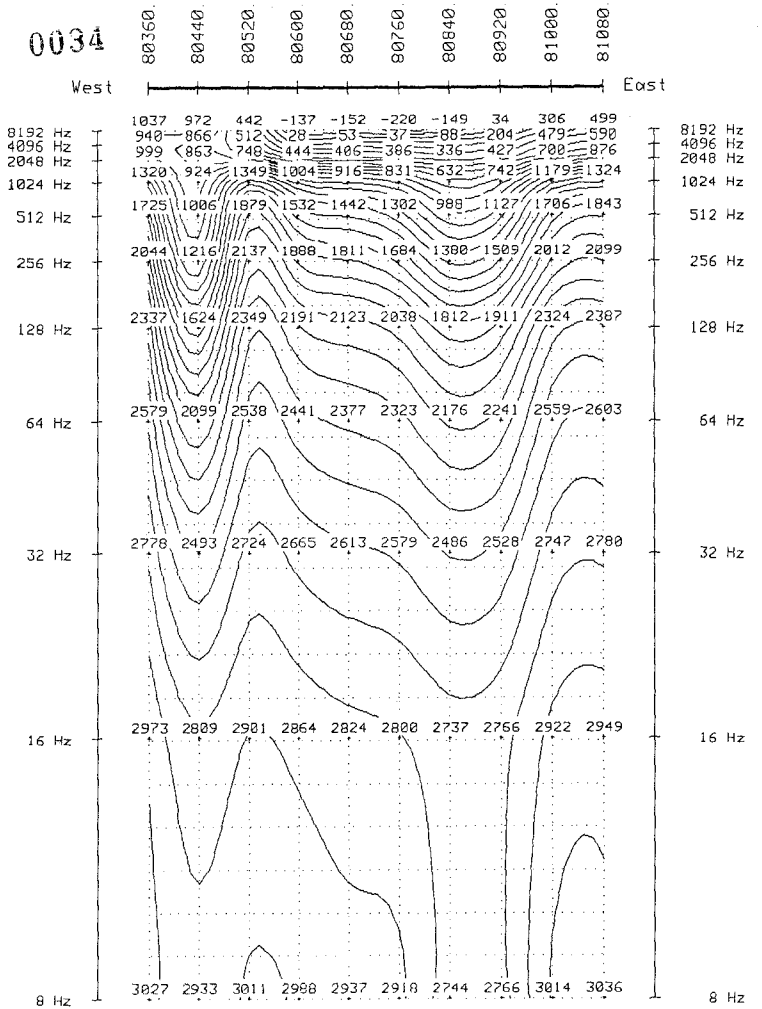
Line Orient= East
DiPole Orient= East

Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.2 KM
Rx to Tx= South

382053

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

[3053]	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-220]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	
1800	300	
1700	200	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 03 Apr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

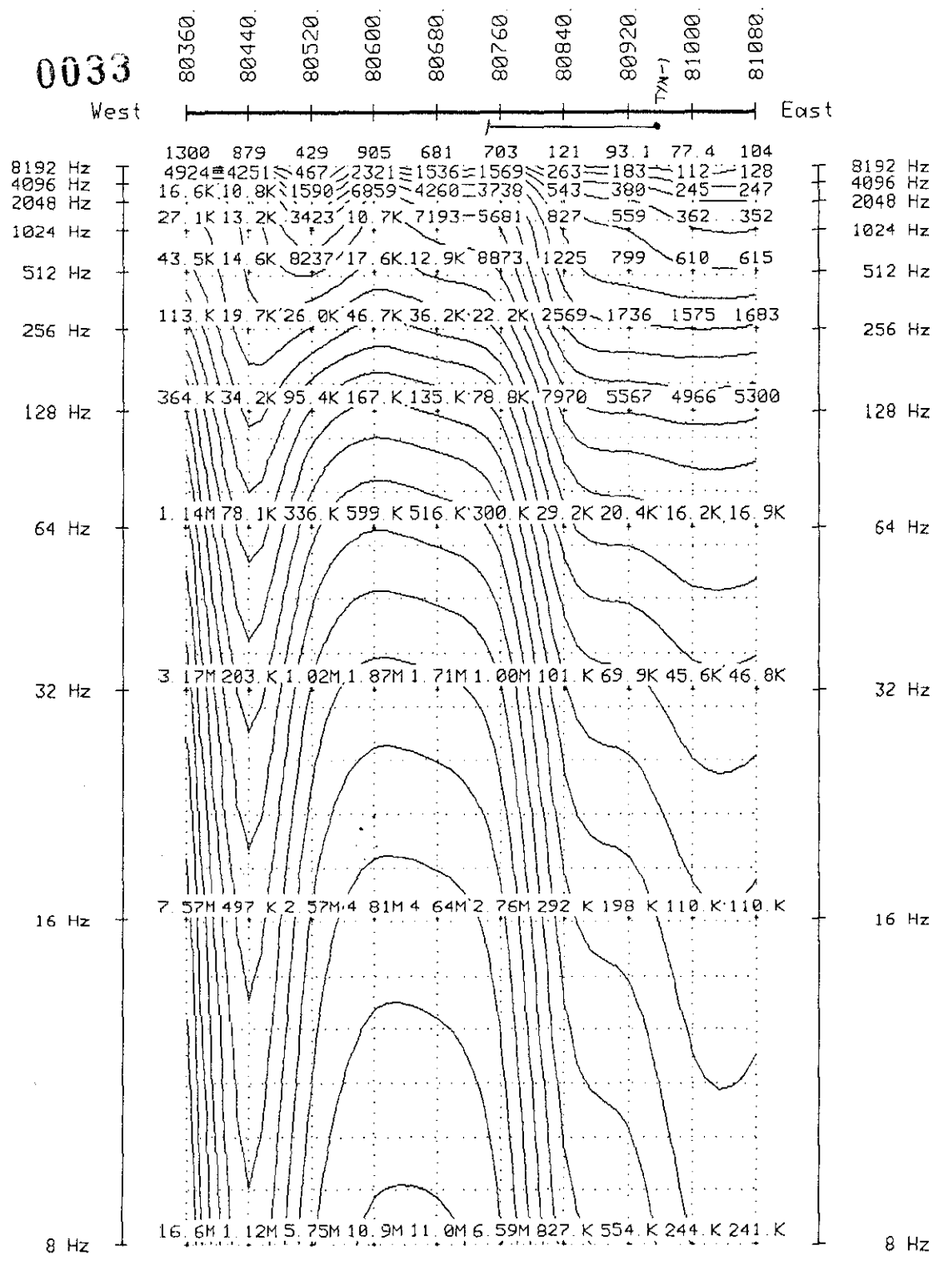
Line 355800 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 3.7 KM
Rx to Tx= North

91-3244.

382054



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[16.6M]	25.1K
15.8M	15.8K
10.0M	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	100
63.1K	[77.4]
39.8K	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 03 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 355800 N

BASIN LAKE

for

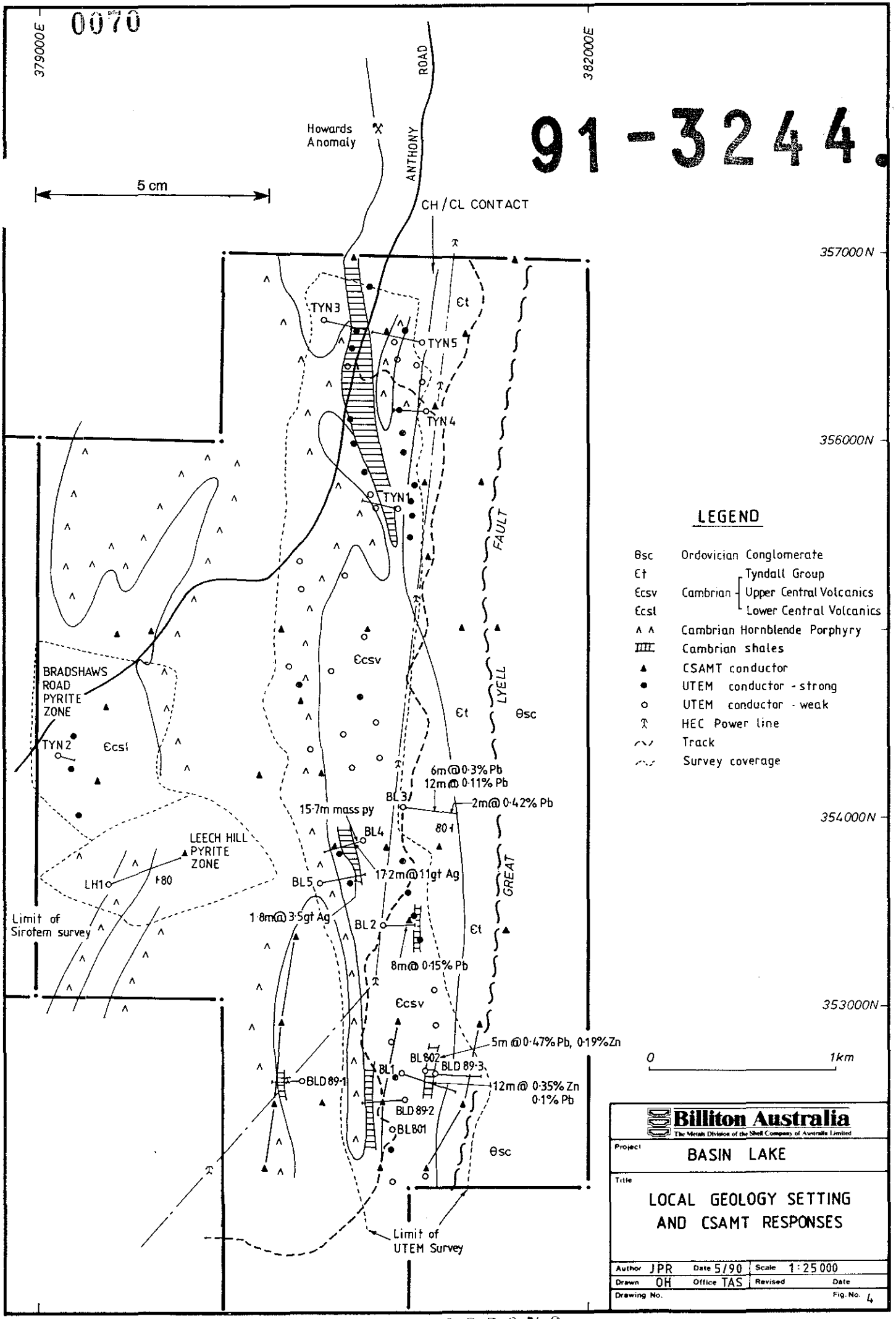
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 3.7 KM
Rx to Tx= North

382055

91-3244.



LEGEND

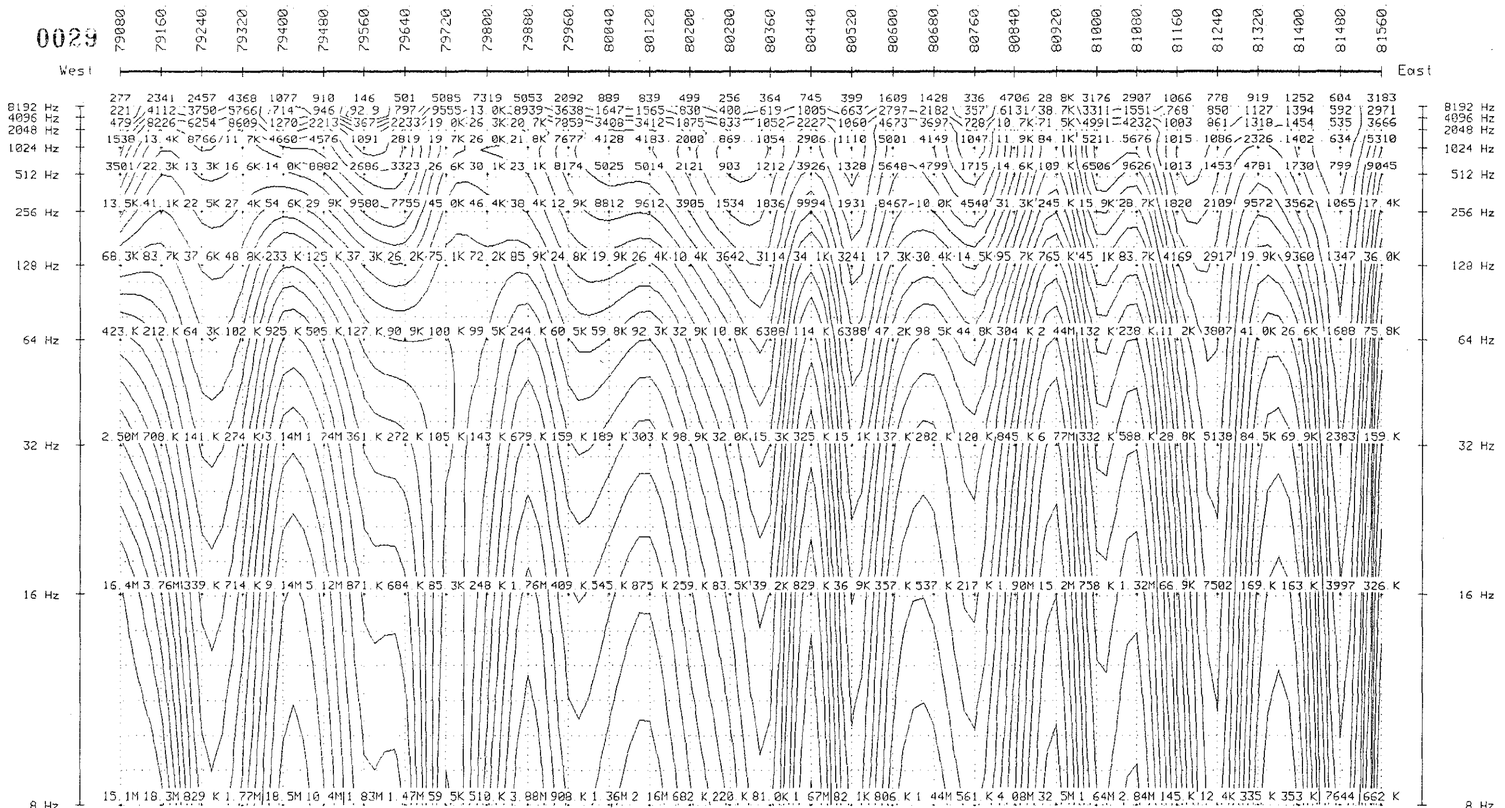
Θsc	Ordovician Conglomerate
Et	Cambrian – Tyndall Group
Ecsv	Cambrian – Upper Central Volcanics
Ecsl	Cambrian – Lower Central Volcanics
∧∧	Cambrian Hornblende Porphyry
IIII	Cambrian shales
▲	CSAMT conductor
●	UTEM conductor - strong
○	UTEM conductor - weak
	HEC Power line
	Track
	Survey coverage

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: BASIN LAKE

Title: LOCAL GEOLOGY SETTING AND CSAMT RESPONSES

Author JPR	Date 5/90	Scale 1:25 000	
Drawn OH	Office TAS	Revised	Date
Drawing No.			Fig. No. 4



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval= 0.20)

[32 5M]	39 8K
25 1M	25 1K
15 8M	15 8K
10 0M	10 0K
6 31M	6310
3 98M	3981
2 51M	2512
1 58M	1585
1 00M	1000
631 K	631
398 K	398
251 K	251
158 K	158
100 K	100
63 1K	[92 9]

ZONGE Job 968
PLOT BY CPLOT 5 50
PLOTTED 09 APR 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

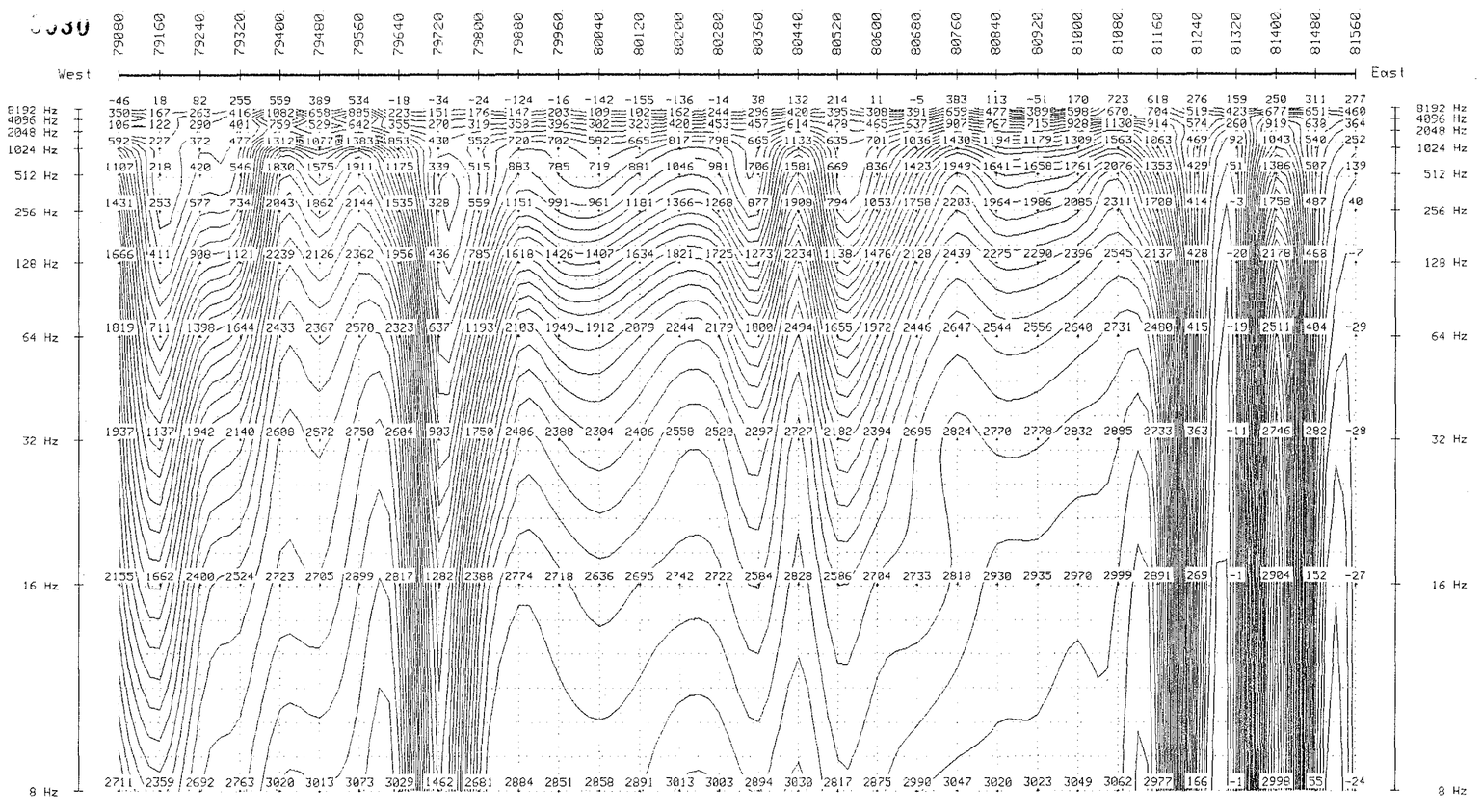
Line 355000 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80 m
Stn. SPacing = 80 m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Length = 1500M
Orient = East
Distance= 4 5 KM
Rx to Tx= North

382057
91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval 100.00)

[3217]	1800	300
3200	1700	200
3100	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	-300
2600	1100	[-382]
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 10 APR 90

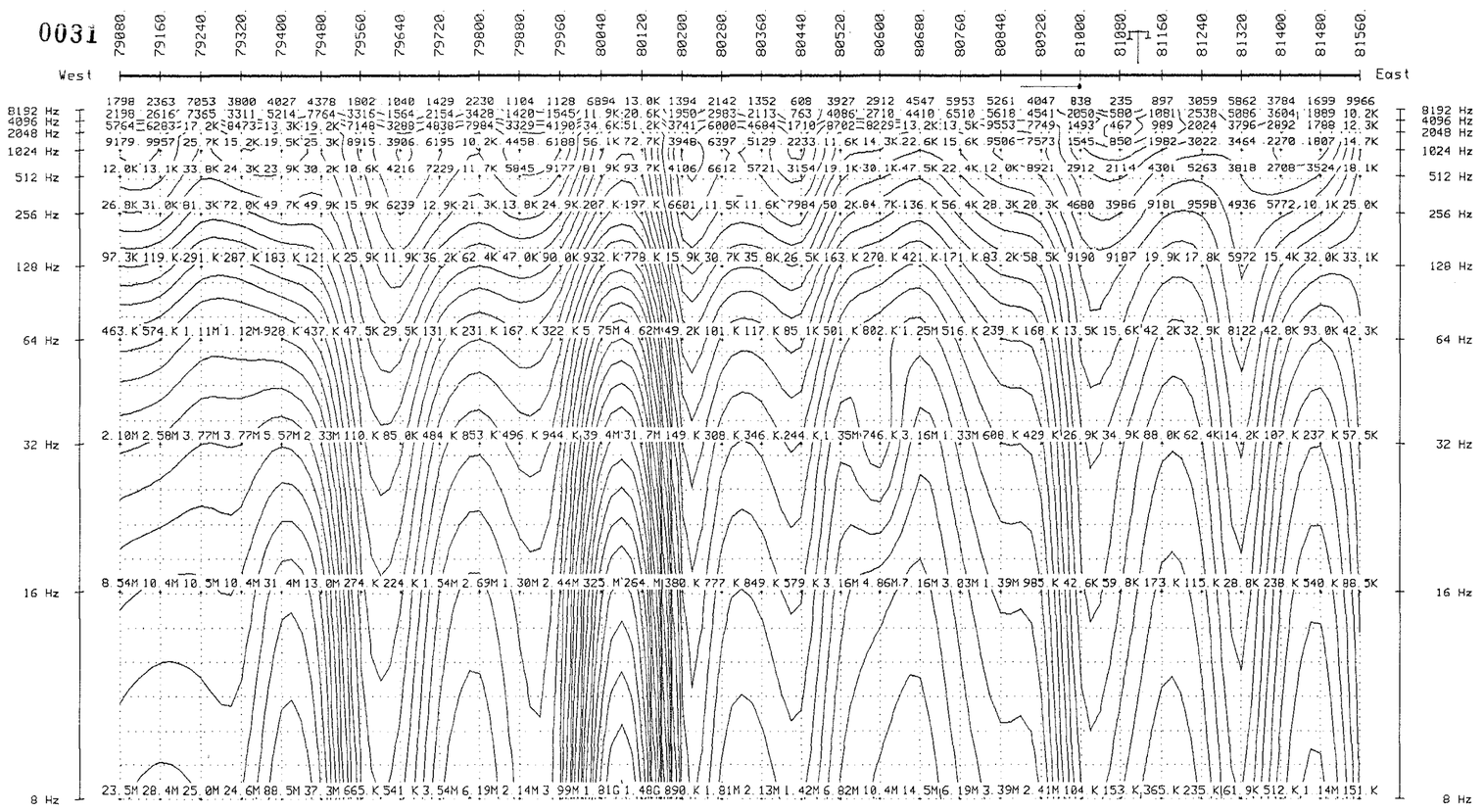
CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 355000 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80 m
Stn. SPacing = 80 m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.5 KM
Rx to Tx= North



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-E

[Plot limits] and LOGARITHMIC CONTOURS
(Interval= 0.20)

[4.42G]	6.31M	6310
3.98G	3.98M	3981
2.51G	2.51M	2512
1.58G	1.58M	1585
1.00G	1.00M	1000
631.M	631.K	631
398.M	398.K	398
251.M	251.K	251
158.M	158.K	[235]
100.M	100.K	
63.1M	63.1K	
39.8M	39.8K	
25.1M	25.1K	
15.8M	15.8K	
10.0M	10.0K	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 03 APR 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

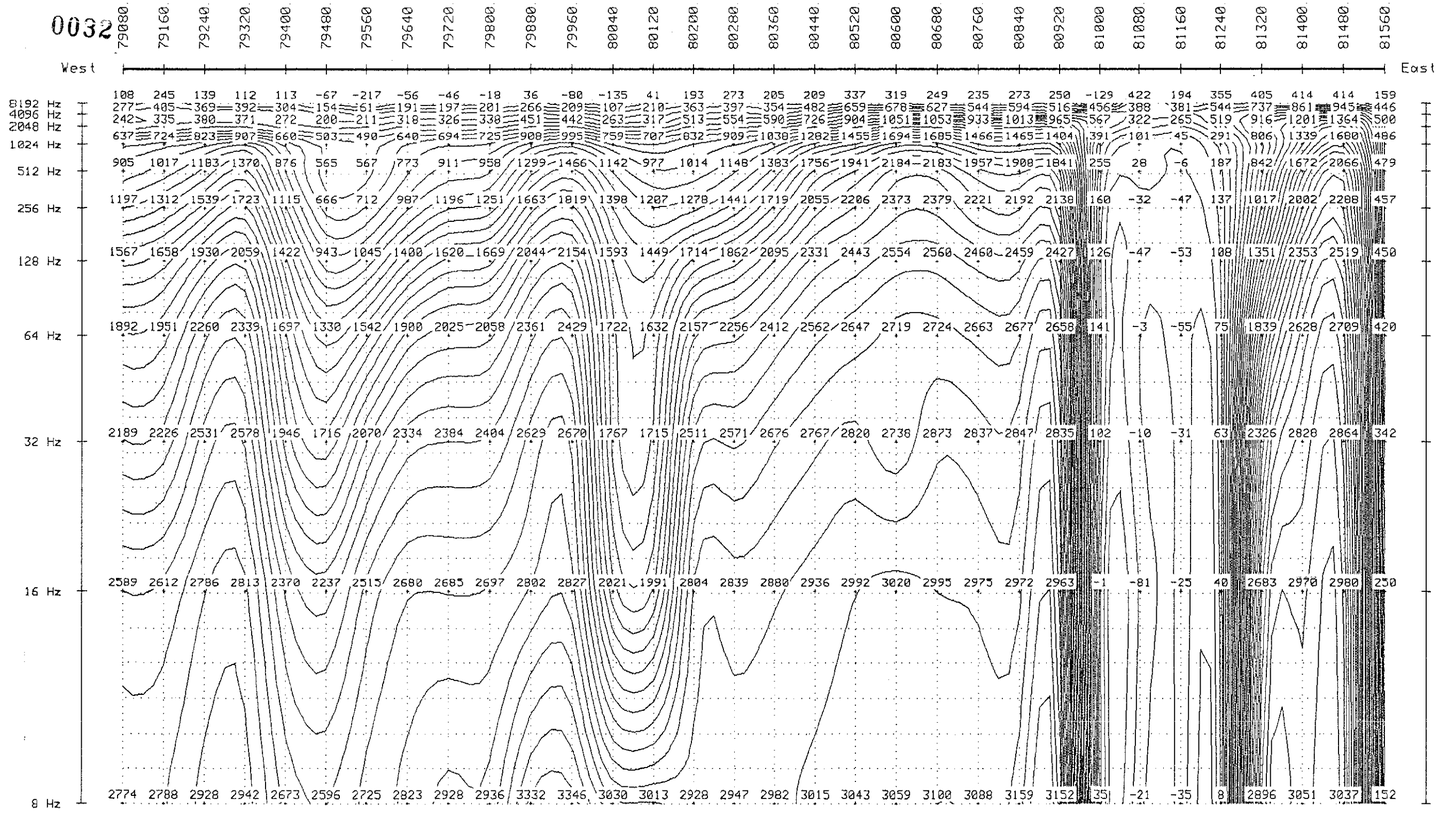
Line 355400 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.1 KM
Rx to Tx= North

382059

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

3400	1900	400
3300	1800	300
3200	1700	200
3100	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-272]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 03 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

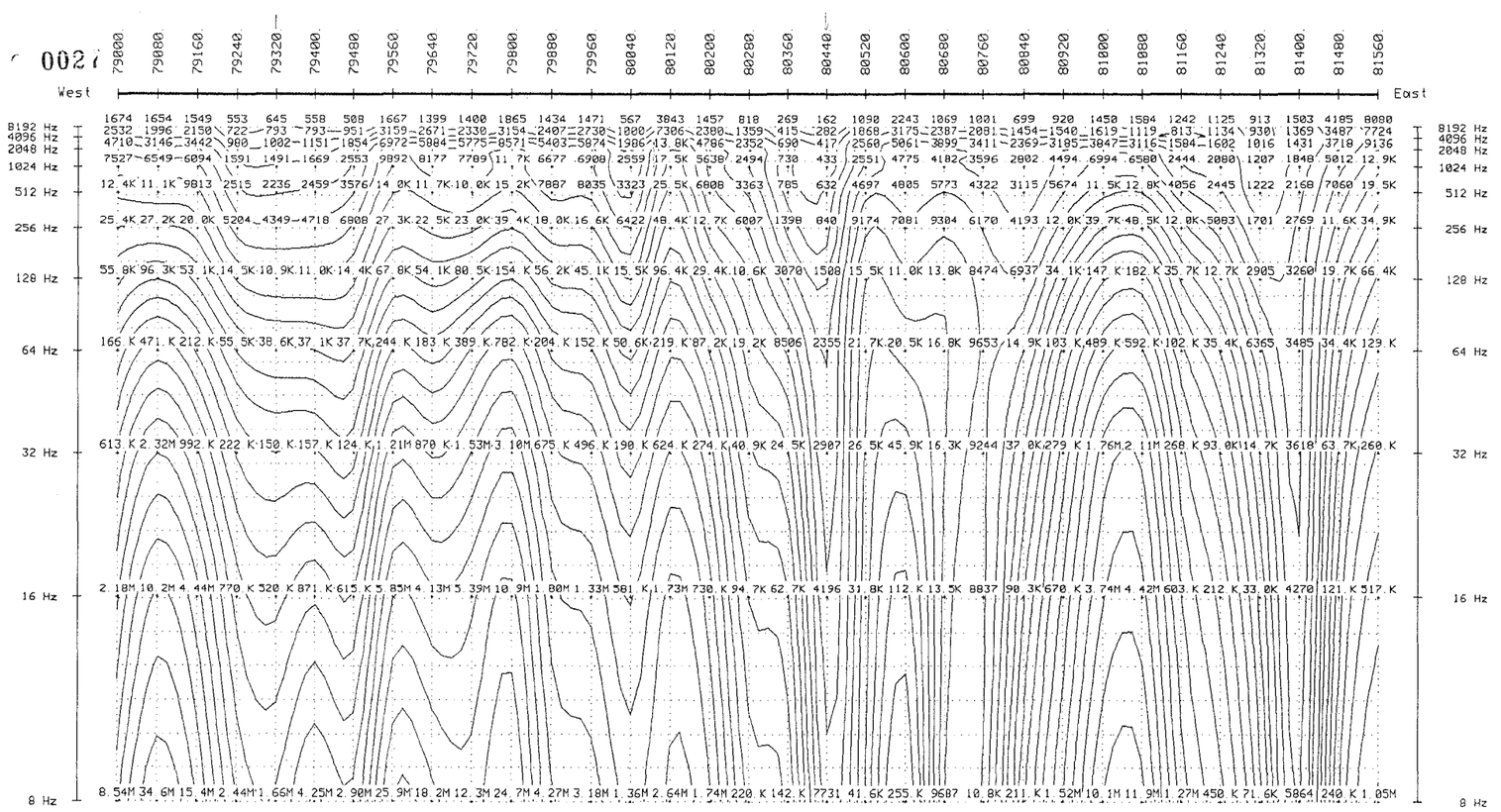
Line 355400 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.1 KM
Rx to Tx= North

382060

91-3244.1



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[34.6M]	39.8K
25.1M	25.1K
15.8M	15.8K
10.0M	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	[152]
63.1K	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

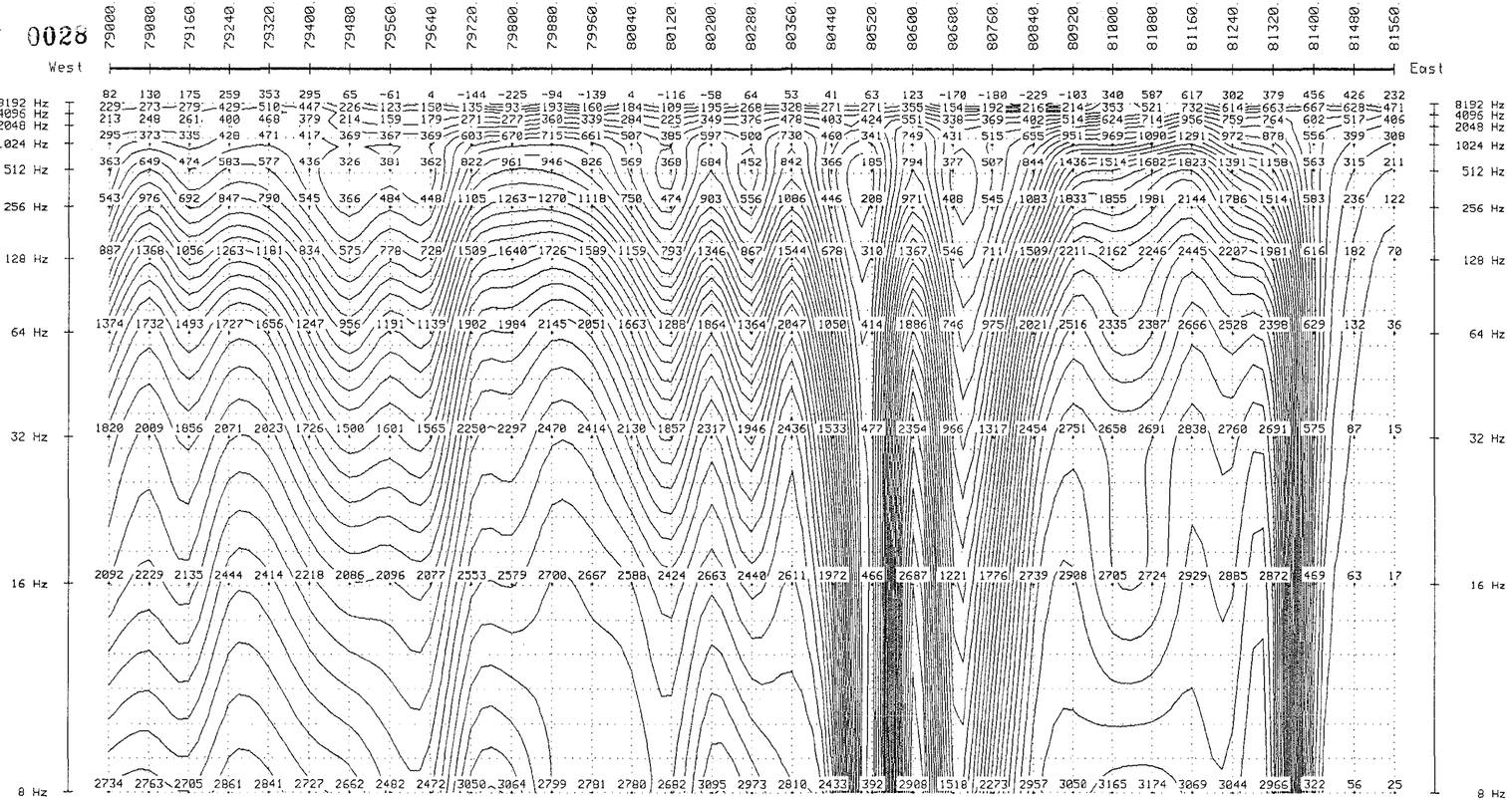
Line 354600N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.9 KM
Rx to Tx= North

382061

91-3244.1



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

[3196]	1700	200
3100	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-229]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	
1800	300	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APR 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 354600 N

BASIN LAKE

for

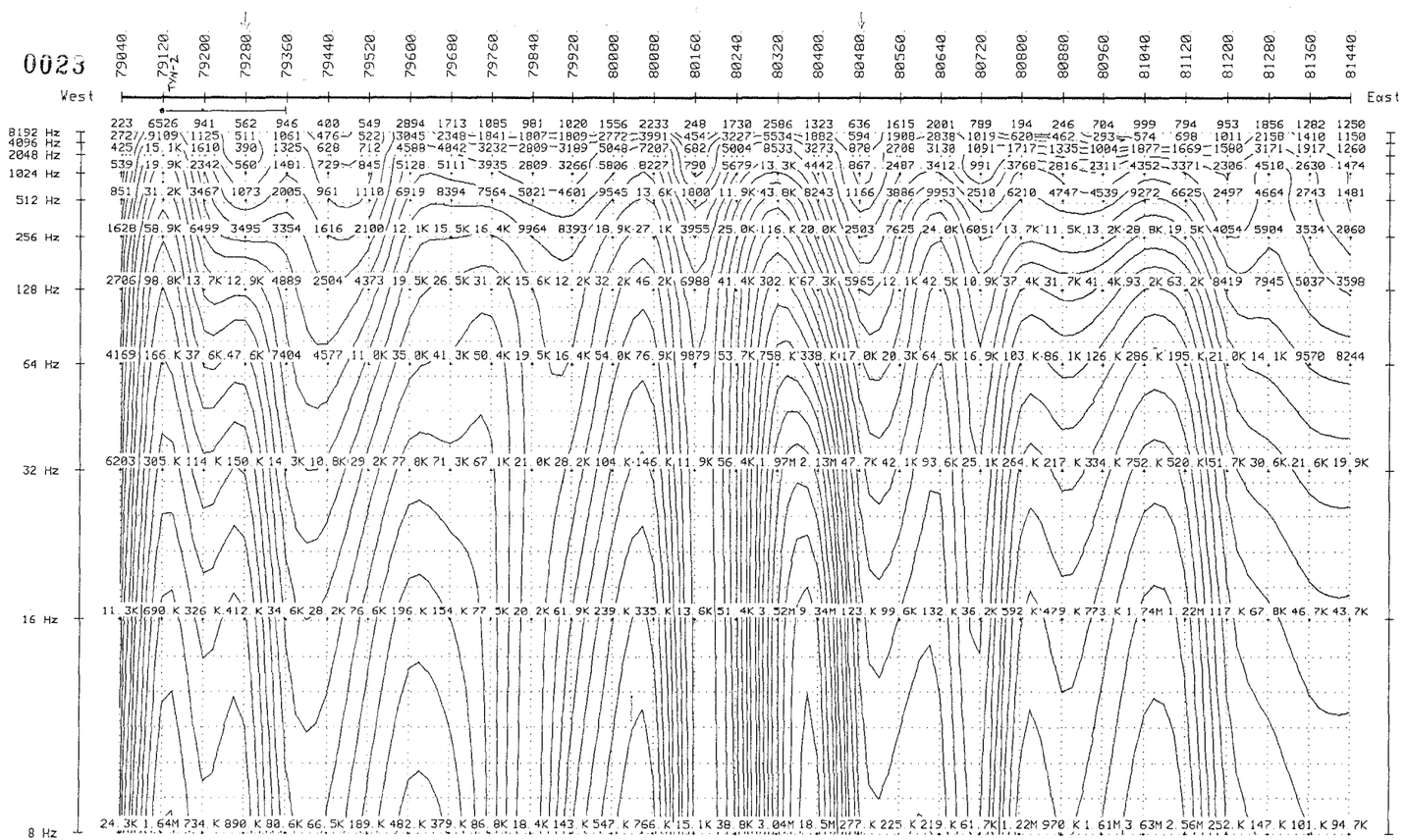
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. Spacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 4.9 KM
Rx to Tx= North

382062

91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[20.4M]	25.1K
15.8M	15.8K
10.0M	10.0K
6.31M	6310
3.98M	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	[178]
100.K	
63.1K	
39.8K	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

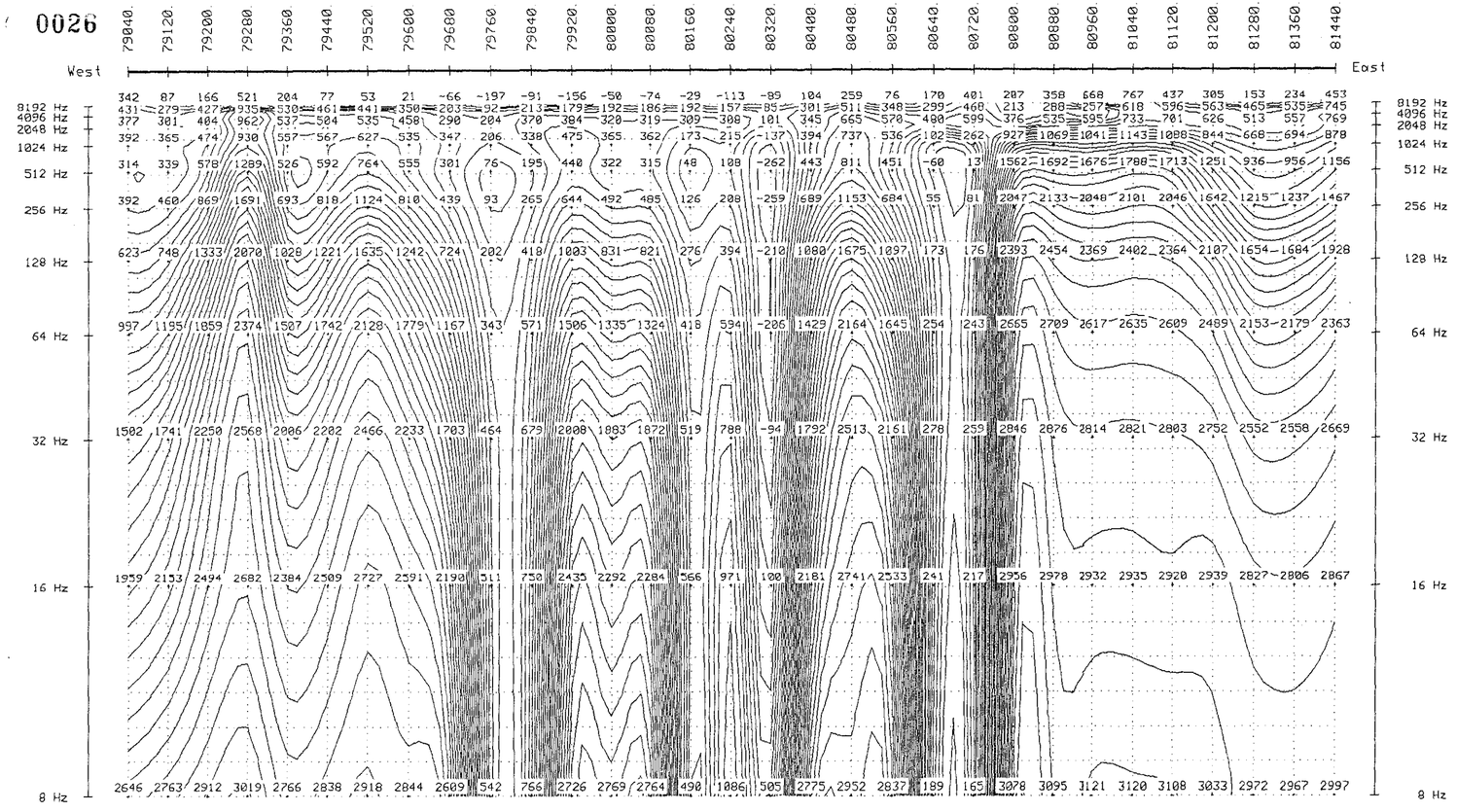
Line 354200N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 5.3 KM
Rx to Tx= North

382063

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

[3303]	1900	400
3300	1800	300
3200	1700	200
3100	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-263]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APR 90

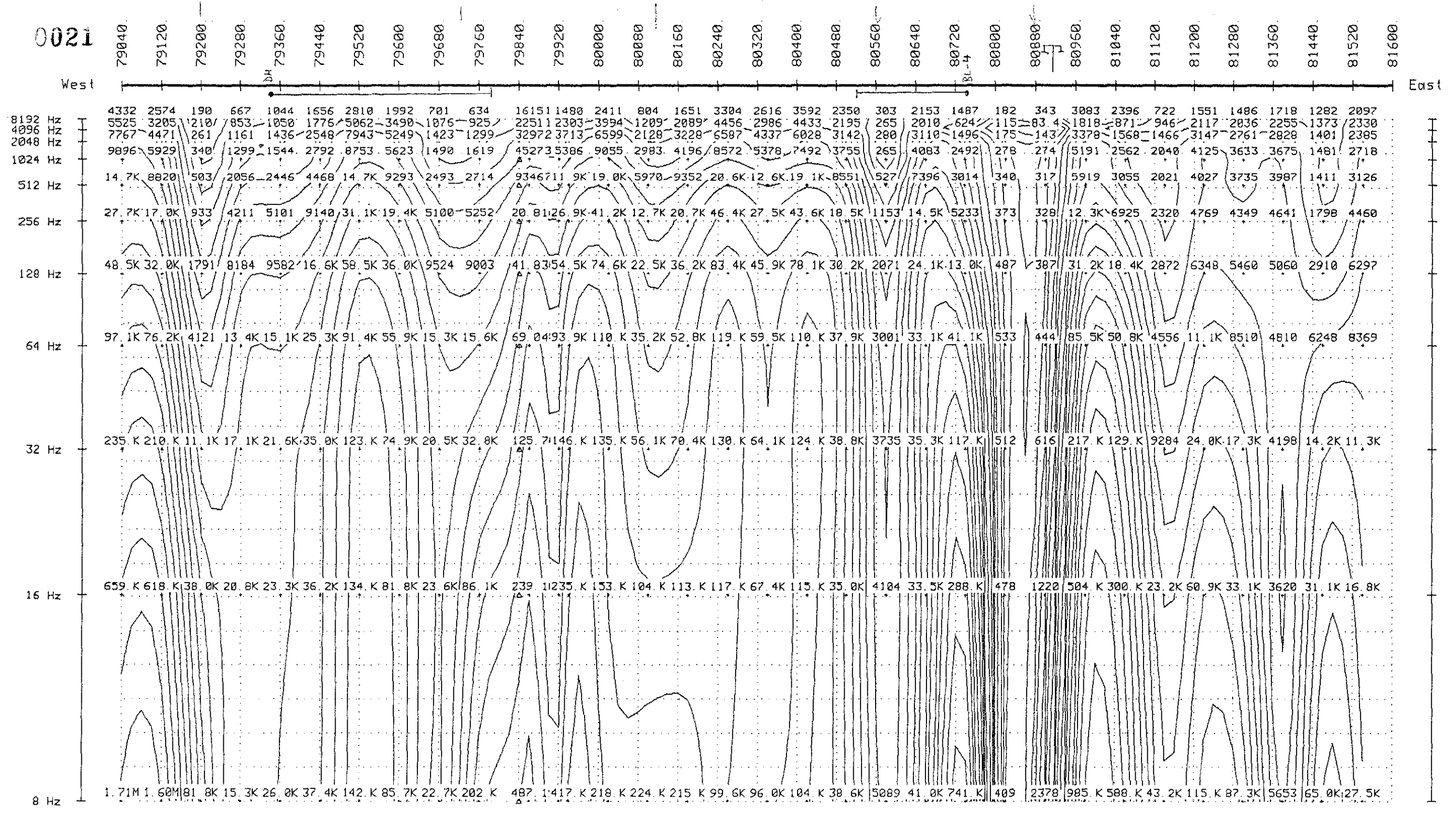
CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 354200 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Len9th= 80.m
Stn. SPacin9 = 80.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Len9th = 1500M
Orient = East
Distance= 5.3 KM
Rx to Tx= North

382064
91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

(2.31M)	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	100
63.1K	(66.4)
39.8K	
25.1K	
15.8K	
10.0K	
6310	
3981	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APR 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 353800N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m

Line Orient= East
DiPole Orient= East

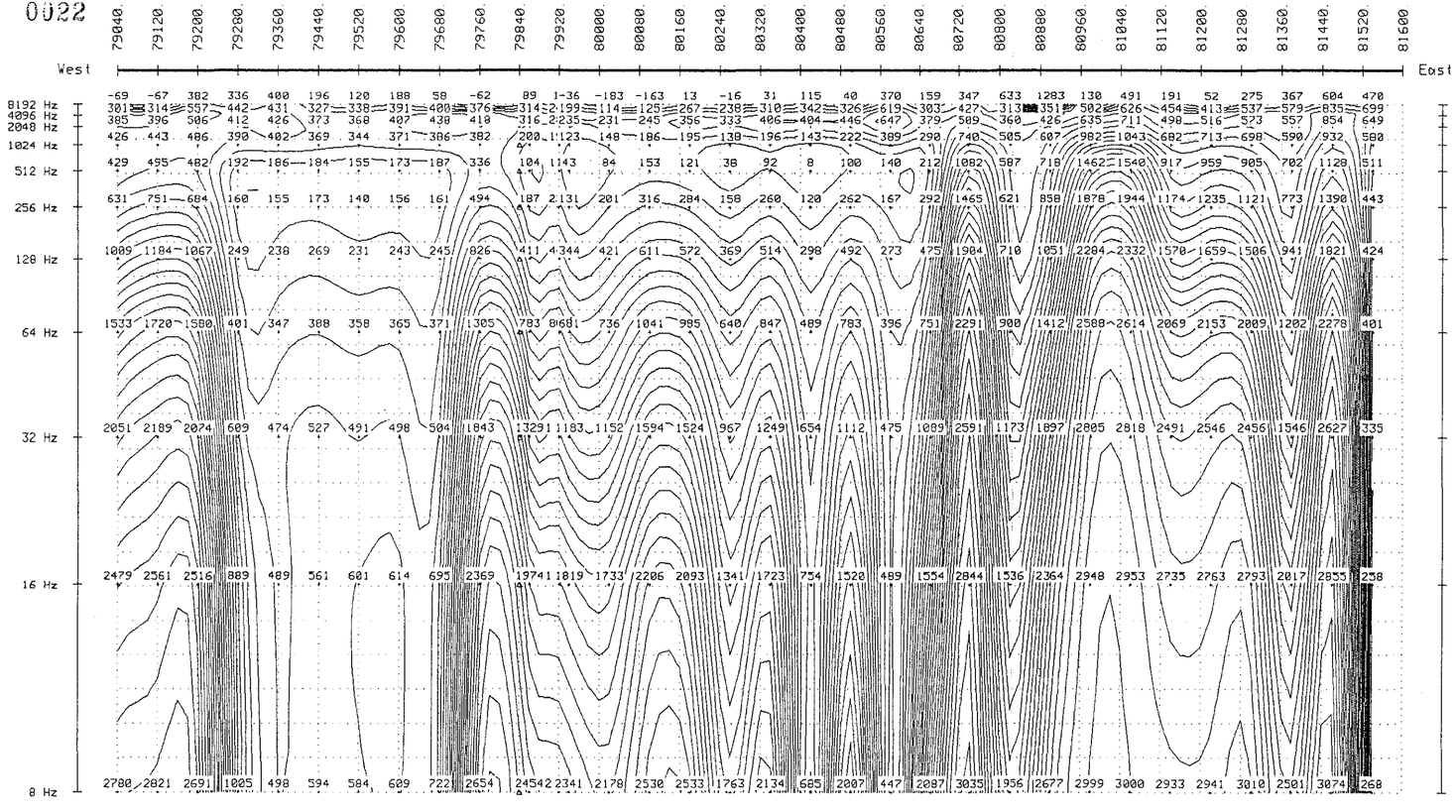
Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 5.7 KM
Rx to Tx= North

382065

91-3244.

0022



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval, 100.00)

[3086]	1600	100
3000	1500	1 00u
2900	1400	-100
2800	1300	[-194]
2700	1200	
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	
1800	300	
1700	200	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 02 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 353800 N
BASIN LAKE
for
BILLITON AUSTRALIA

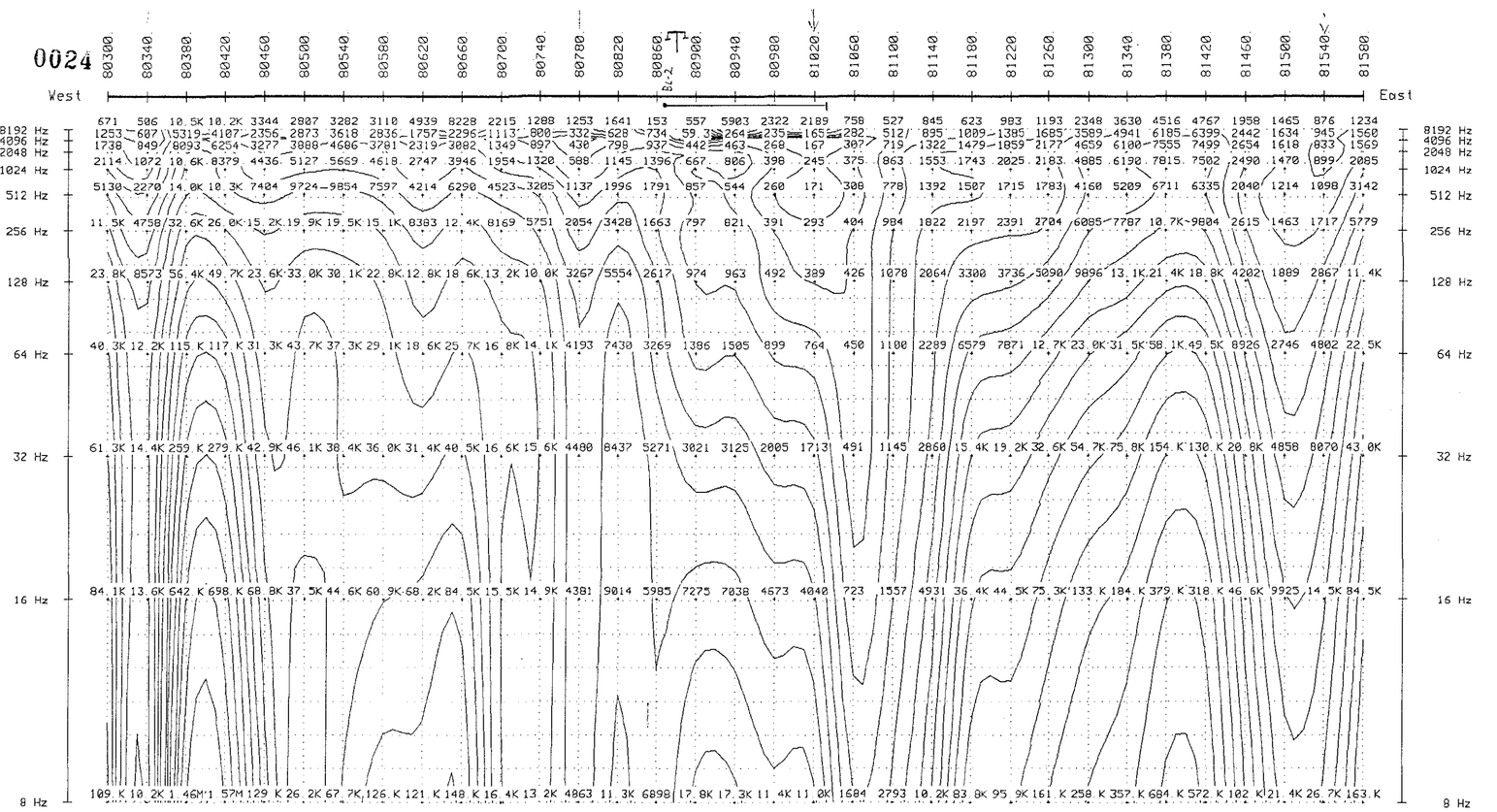
RECEIVER DATA
DiPole Len9th= 80.m
Stn. SPacin9 = 80.m
Line Orient= East
DiPole Orient= East

Date of survey= JAN 90

TRANSMITTER DATA
Len9th = 1500M
Orient. = East
Distance= 5.7 KM
Rx to Tx= North

382066

91-3244.



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[2.60M]	3981
2.51M	2512
1.58M	1585
1.00M	1000
631.K	631
398.K	398
251.K	251
158.K	158
100.K	100
63.1K	63.1
39.8K	[59.3]
25.1K	
15.8K	
10.0K	
6310	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 01 APr 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

Line 353400 N

BASIN LAKE

for

BILLITON AUSTRALIA

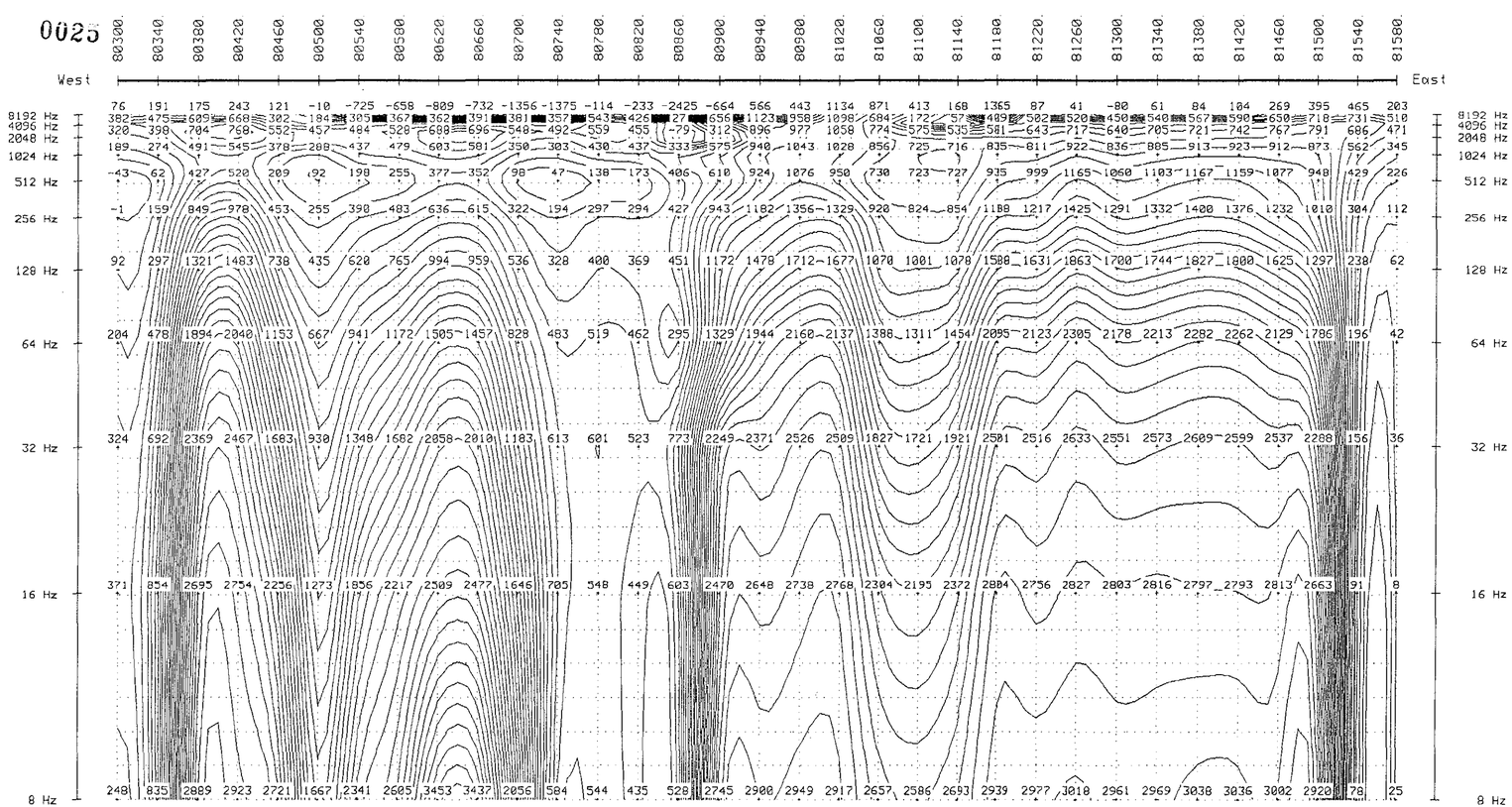
RECEIVER DATA
DiPole Length= 40.m
Stn. SPacing = 40 m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 6.1 KM
Rx to Tx= North

382067

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

[3588]	2100	600	-900
3500	2000	500	-1000
3400	1900	400	-1100
3300	1800	300	-1200
3200	1700	200	-1300
3100	1600	100	-1400
3000	1500	1.00u	-1500
2900	1400	-100	-1600
2800	1300	-200	-1700
2700	1200	-300	-1800
2600	1100	-400	-1900
2500	1000	-500	-2000
2400	900	-600	-2100
2300	800	-700	-2200
2200	700	-800	[-2425]

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 01 APr 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 353400 N
BASIN LAKE
for
BILLITON AUSTRALIA

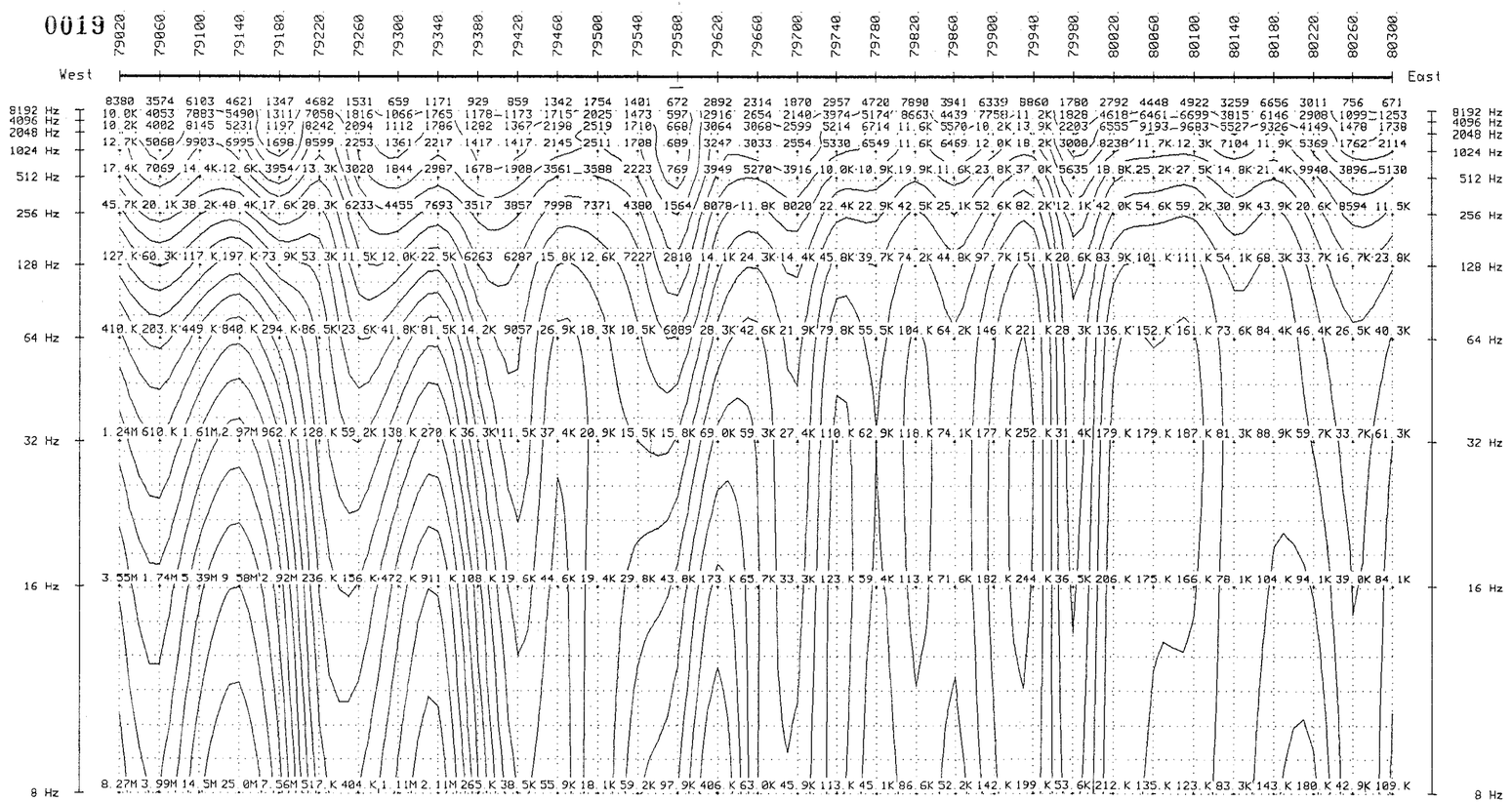
RECEIVER DATA
DiPole Length= 40.m
Stn. SPacing = 40.m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 6.1 KM
Rx to Tx= North

382068

91-3244.



CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

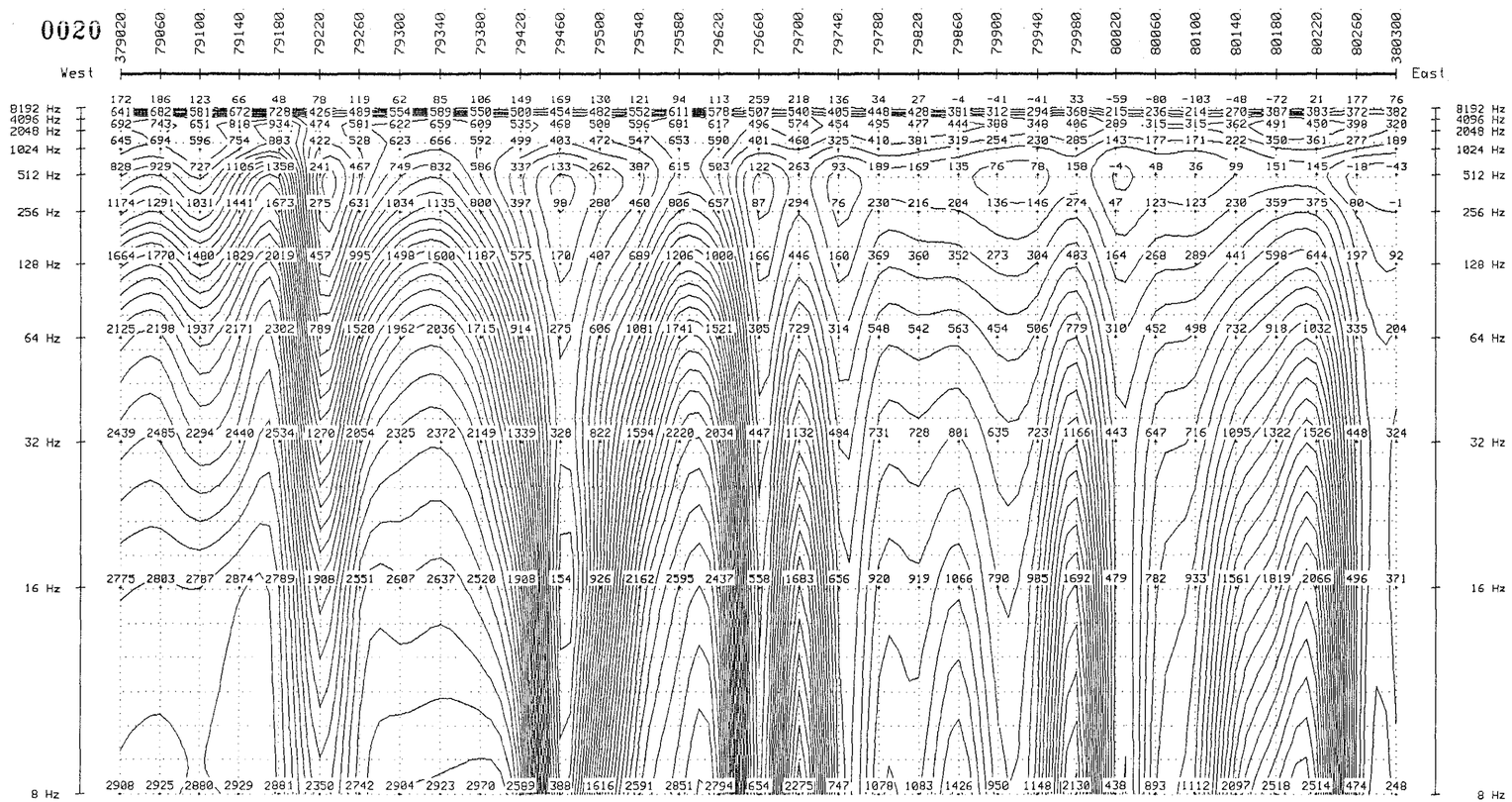
Line 353400 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Len9th= 40.m
Stn. SPacin9 = 40.m
Line Orient= East
DiPole Orient= East
Date of survey= JAN 90

TRANSMITTER DATA
Len9th = 1500M
Orient. = East
Distance= 6.1 KM
Rx to Tx= North

382069

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval, 100.00)

[3015]	1600	100
3000	1500	1.00u
2900	1400	-100
2800	1300	[-103]
2700	1200	
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	
1800	300	
1700	200	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 31 Mar 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 353400 N
BASIN LAKE
for
BILLITON AUSTRALIA

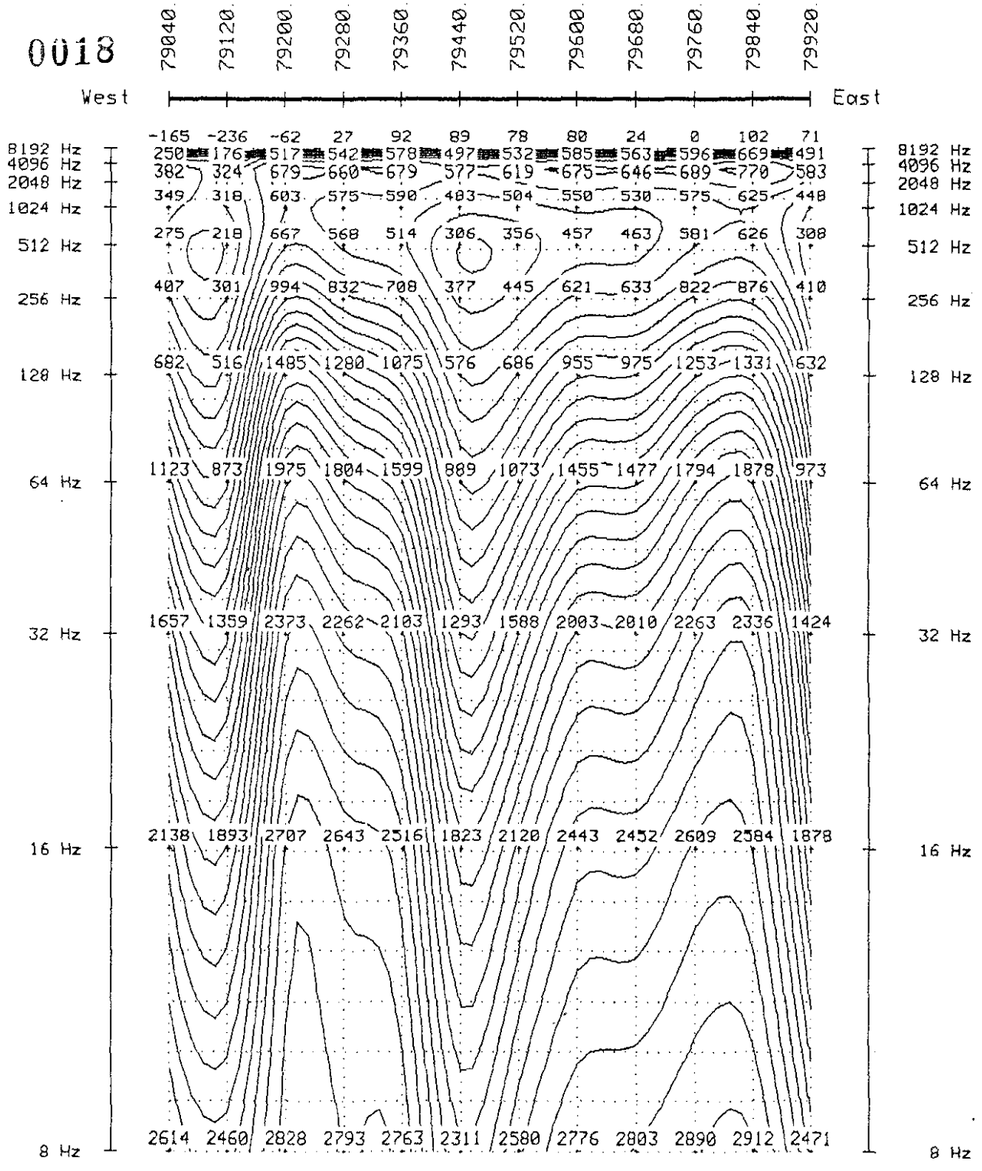
RECEIVER DATA
DiPole Length= 40 m
Stn. SPacing = 40 m
Date of survey= JAN 90

Line Orient= East
DiPole Orient= East

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 6.1 KM
Rx to Tx= North

382070

91-3244.



PHASE DIFFERENCE (E - H)
values in milli-radians
<PDIFF

[Plot limits] and ARITHMETIC CONTOURS
(Interval: 100.00)

[2935]	1500	1.00u
2900	1400	-100
2800	1300	-200
2700	1200	[-243]
2600	1100	
2500	1000	
2400	900	
2300	800	
2200	700	
2100	600	
2000	500	
1900	400	
1800	300	
1700	200	
1600	100	

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 31 Mar 90

CSAMT SURVEY DATA
PHASE DIFFERENCE (E - H)

Line 353000 N

BASIN LAKE

for

BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m

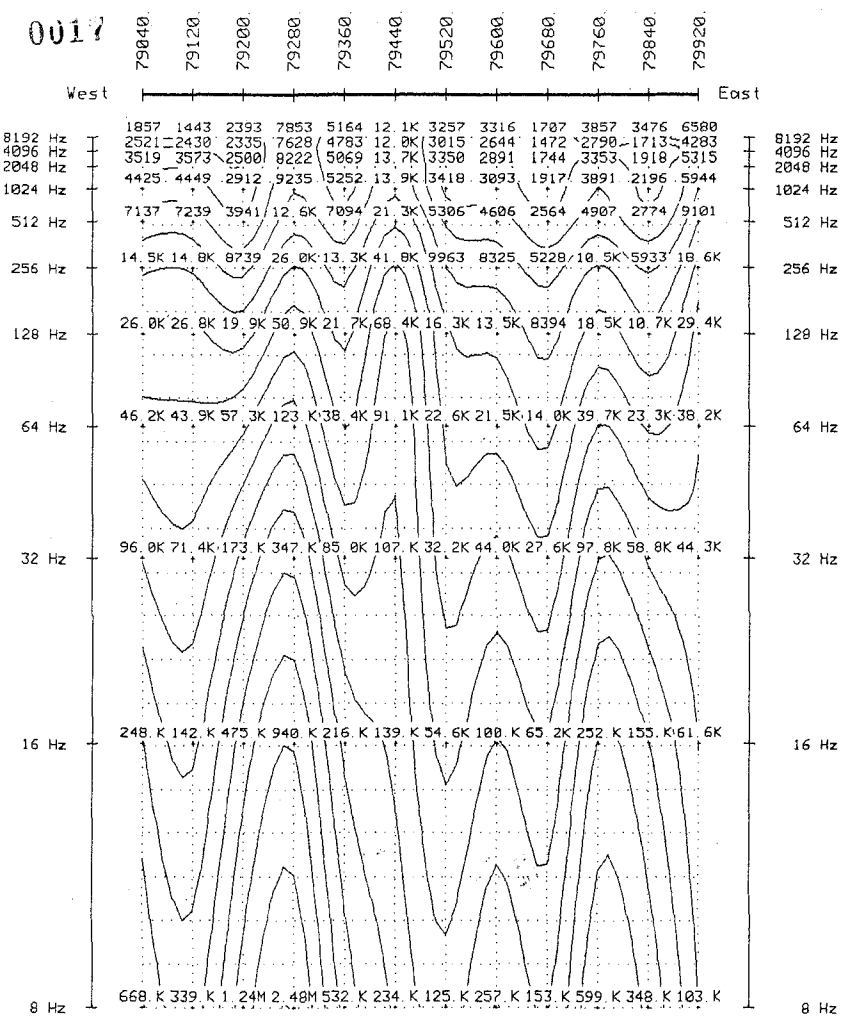
Line Orient= East
DiPole Orient= BadBrg

Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 6.5 KM
Rx to Tx= North

382071

91-3244



CAGNIARD RESISTIVITY
values in ohm-meters
<RHO-C

[Plot limits] and LOGARITHMIC CONTOURS
(Interval: 0.20)

[2.55M] 3981
2.51M 2512
1.58M 1585
1.00M [1443]
631.K
398.K
251.K
158.K
100.K
63.1K
39.8K
25.1K
15.8K
10.0K
6310

ZONGE Job 968
PLOT BY CPLOT 5.50
PLOTTED 31 Mar 90

CSAMT SURVEY DATA
CAGNIARD RESISTIVITY

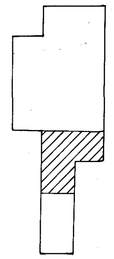
Line 353000 N
BASIN LAKE
for
BILLITON AUSTRALIA

RECEIVER DATA
DiPole Length= 80.m
Stn. SPacing = 80.m
Line Orient= East
DiPole Orient= BadBrg

Date of survey= JAN 90

TRANSMITTER DATA
Length = 1500M
Orient. = East
Distance= 6.5 KM
Rx to Tx= North

10016



5 353 000 N

5 352000N

382 000 E

LEGEND

Quaternary	Qg	Glacial sediments and alluvials
Ordovician	Oc	Owen Conglomerate
Cambrian	Ct	Tyndall Group. Predominantly felsic volcaniclastics, epiclastics and lavas. Base marked by mixed intermediate and felsic volcanics. Includes Comstock Tuff.
	Ci	Dacitic-andesitic shallow level intrusives. Autobrecciated along margins. Majority possibly sills. Lavas increasing towards east. Pyritic towards margins.
	Ccsh	Interbedded sandstones, siltstones and black shales (partly graphitic)
	Ccsu	Central Volcanic Sequence upper. Includes Basin Lake sulphide zone. Predominantly intermediate volcanics with felsic content increasing towards the east. Abundant disseminated pyrite in parts. Minor stratiform pyrite lenses.
	Ccsl	Central Volcanic Sequence lower. Predominantly intermediate volcanics with minor felsic volcanic lenses incorporated. Disseminated pyrite common.
	Cws	Western Volcanosedimentary Sequence. Mixed felsic-intermediate volcaniclastic sequence.

- Access track
- Power line
- Grid line
- Geological boundary inferred
- Fault inferred location
- Diamond drill hole
- E.L. boundary
- Bedding
- Facing

NOTE. OUTCROP WITHIN THE E.L. BOUNDARY IS SPARCE. THE MAJORITY OF THE LICENCE IS COVERED BY QUATERNARY GLACIALS, SEDIMENTS.

91-3244.

0 100 200 300m
1:5000

382073 5 cm

Billiton Australia
The Metals Division of the Shell Company of Australia Limited

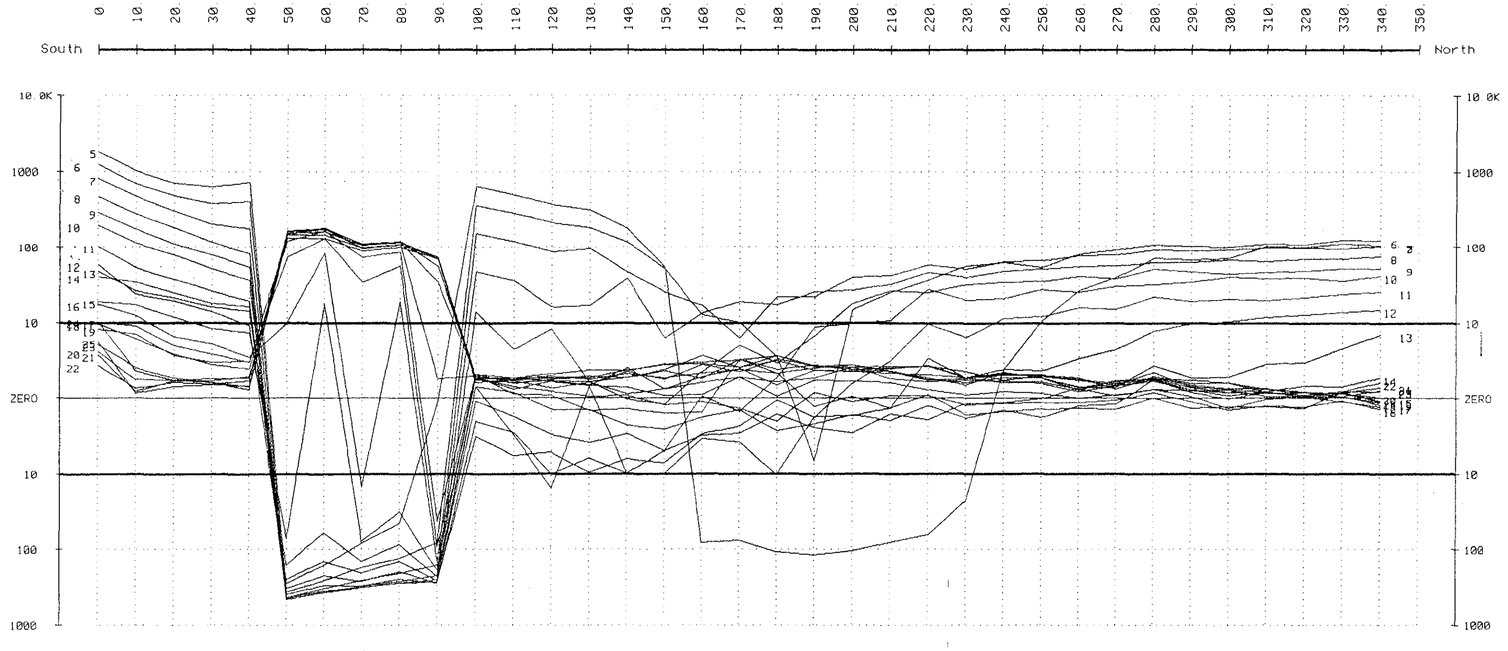
Project: BASIN LAKE			
Title: GEOLOGICAL INTERPRETATION			
			SHEET 3
Author CJC	Dept. TAS	Scale 1:5000	
Drawn OH	Date 2/90	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 5		Drawing No. D/LD 57/032	

0074

TRANSIENT EM SURVEY DATA
Window MAGNITUDE

Line BLD893
BASIN LAKE/A1
for
BILLITON AUSTRALIA

FIG. 6a.

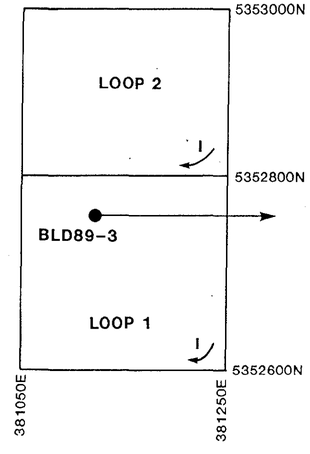


Window MAGNITUDE
values in microV/amPere
data collected 27 March 1990
ComPonent "CH1" Z , Rxng= 10000
Downhole ZEROTEM
log9ed to9 to bottom
Loop 1, 200m by 200m
8 amPs at 16 Hz

SURVEY LINE DATA
Line Orient= North
A - SPacing= 10.m
Date of survey= MAR 90

382074

91-3244.



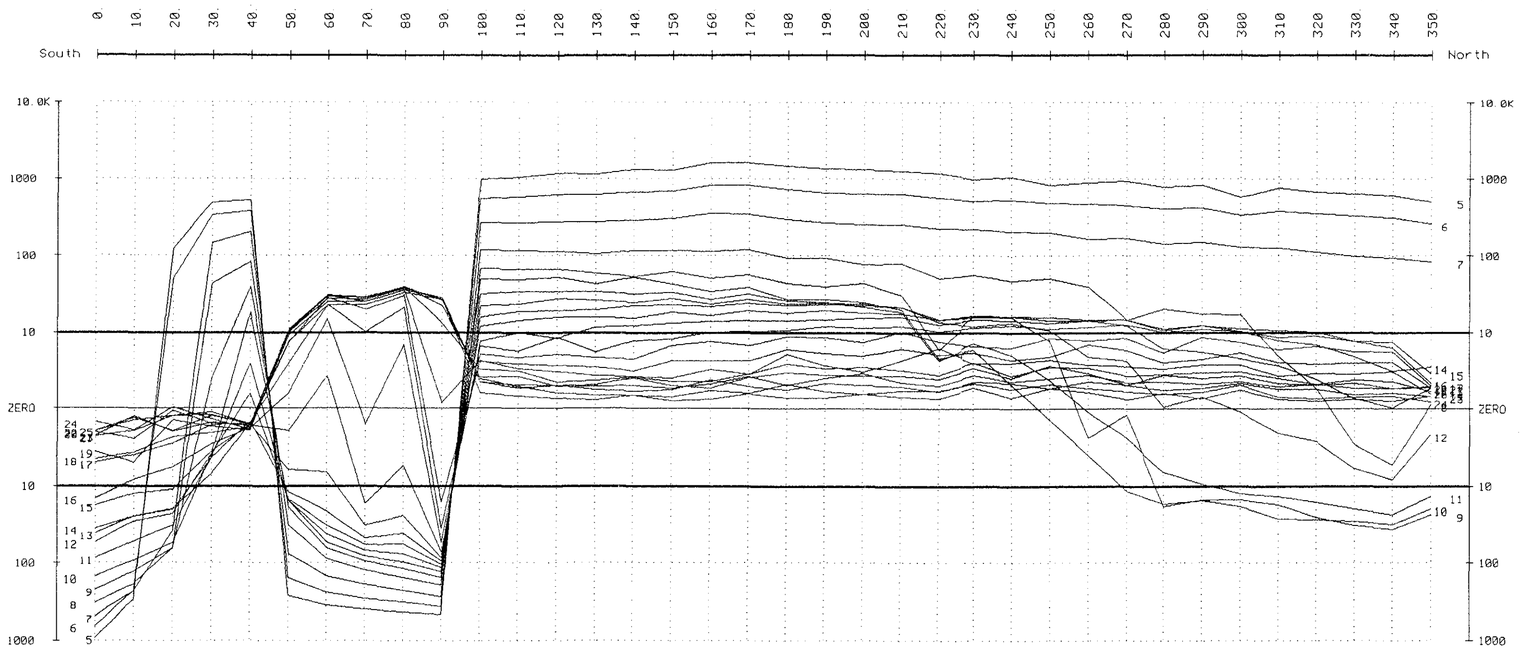
ZONGE Job 976
PLOT BY CPLOT 5.50
PLOTTED 08 APr 90

072

TRANSIENT EM SURVEY DATA
Window MAGNITUDE

Line BLD893
BASIN LAKE/A2
for
BILLITON AUSTRALIA

FIG. 6b.

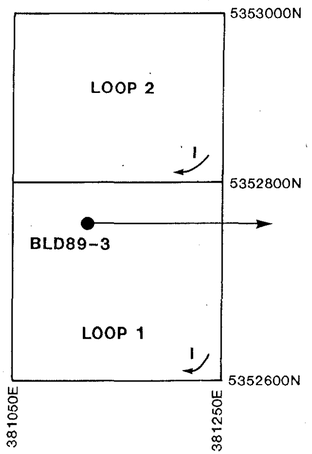


Window MAGNITUDE
values in microV/ampere
data collected 27 March 1990
Downhole ZEROTEM
logged top to bottom
Component "CH1 Z", Rxno= 10000
Loop 2, 200m by 200m
8 amps at 16 Hz

SURVEY LINE DATA
Line Orient= North
A - SPacing= 10 m

Date of survey= MAR 90

382073
91-3244



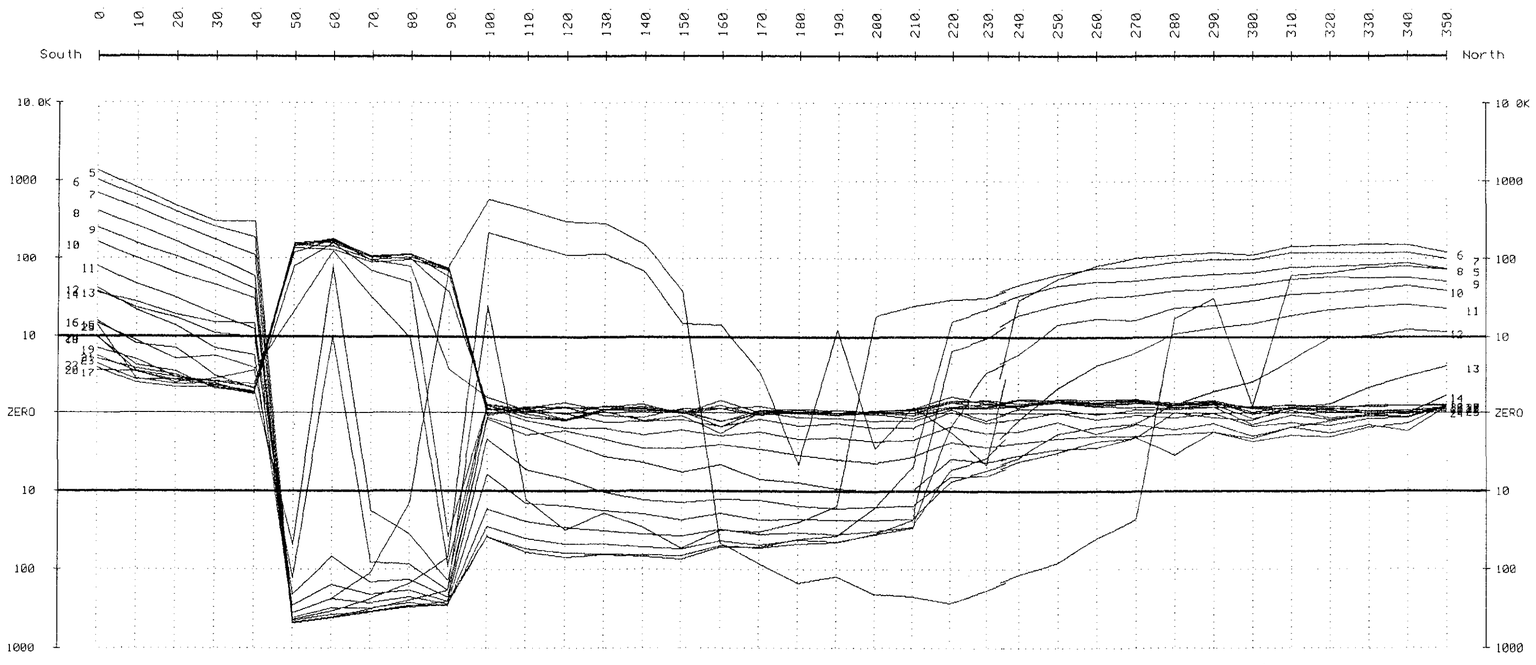
ZONGE Job 976
PLOT BY CPLOT 5.50
PLOTTED 08 APr 90

0075

TRANSIENT EM SURVEY DATA
Window MAGNITUDE

Line BLD893
BASIN LAKE/D1
for
BILLITON AUSTRALIA

FIG. 6c



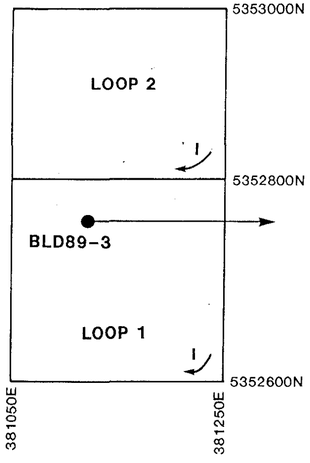
Window MAGNITUDE
values in microV/amPere
data collected 27/28 March 1990
Downhole ZEROTEM
ComPonent "CH1 Z , Rxna= 10000
Loop 1, 200m by 200m
combined log
8 amPs at 16 Hz

SURVEY LINE DATA
Line Orient= North
A - SPacing= 10 m

Date of survey= MAR 90

91-3244

382076

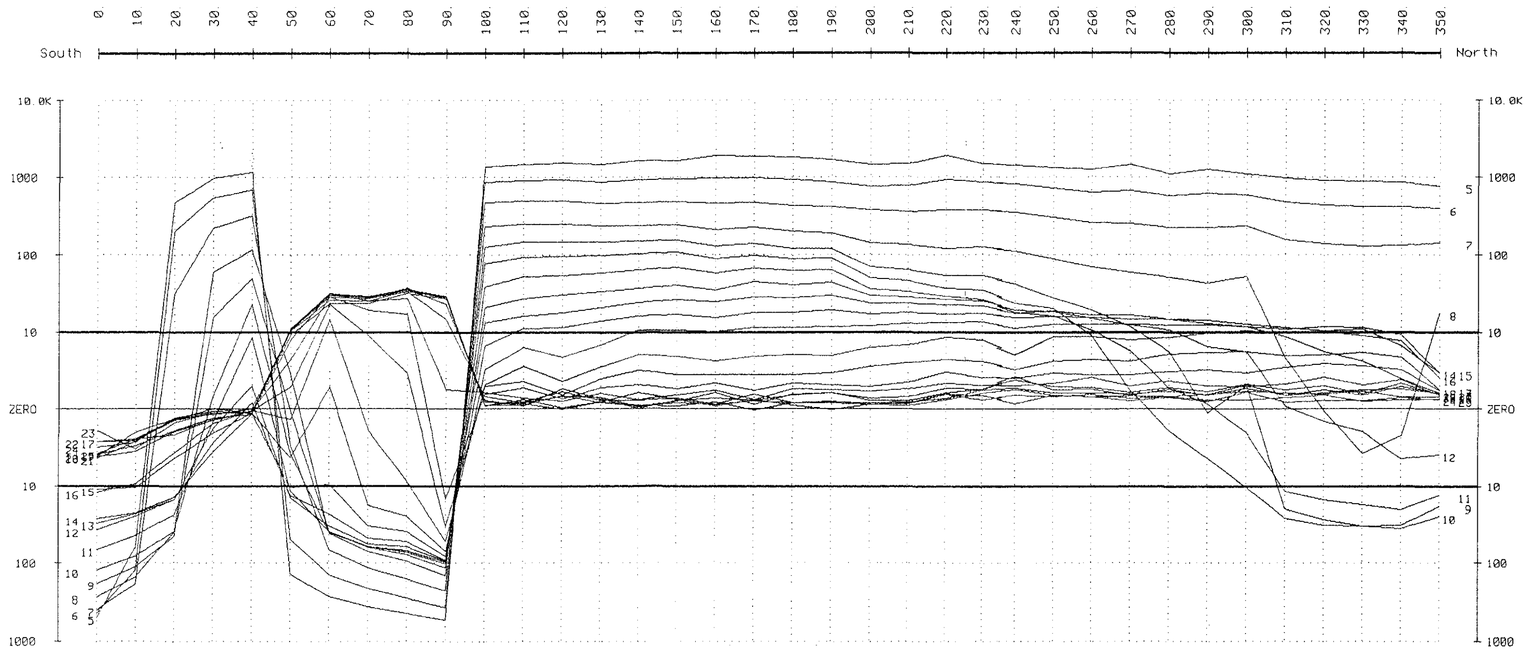


ZONGE Job 976
PLOT BY CPLOT 5.50 AVERAGED
PLOTTED 08 Apr 90

TRANSIENT EM SURVEY DATA
Window MAGNITUDE

Line BLD893
BASIN LAKE/D2
for
BILLITON AUSTRALIA

FIG. Gd

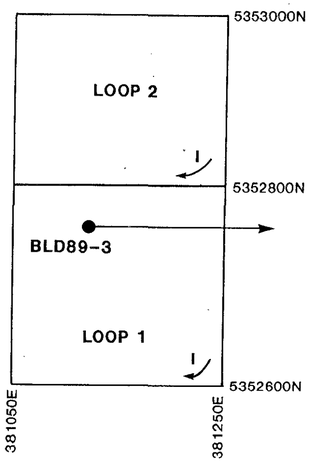


Window MAGNITUDE
values in microV/amPere
data collected 27/28 March 1990
Downhole ZEROTEM
ComPonent: "CH1 Z", Rxno= 10000
Loop 2, 200m bY 200m
combined log
8 amPs at 16 Hz

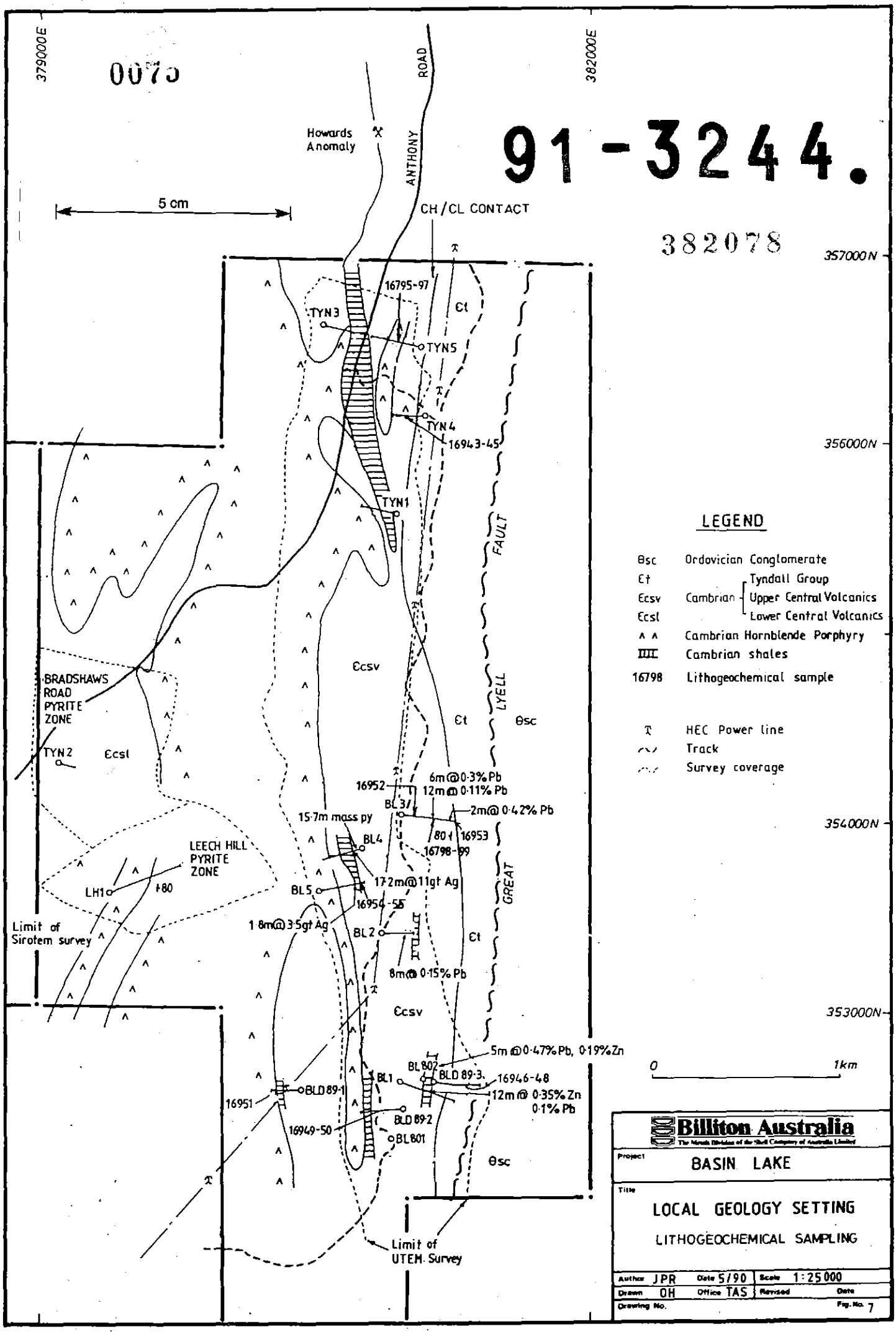
SURVEY LINE DATA
Line Orient= North
A - SPacing= 10.m

Date of survey= MAR 90

382077
91-3244.



ZONGE Job 976
PLOT BY CPLOT 5.50 AVERAGED
PLOTTED 08 APr 90


379000E
382000E
0075
91-3244.
382078
Howards Anomaly
ANTHONY ROAD
5 cm
CH/CL CONTACT
357000N
356000N
354000N
353000N
16795-97
TYN3
TYN5
TYN4
16943-45
TYN1
Ct
FAULT
LYELL
GREAT
Ecsv
Ecsl
Θsc
BRADSHAWS ROAD PYRITE ZONE
TYN2
LEECH HILL PYRITE ZONE
LH1
LH80
Limit of Sirotem survey
16952
6m@0·3% Pb
12m@0·11% Pb
BL3
2m@0·42% Pb
15·7m mass py
BL4
80-1
16953
16798-99
BL5
17·2m@11gt Ag
16954-55
1·8m@3·5gt Ag
BL2
8m@0·15% Pb
5m@0·47% Pb, 0·19% Zn
BL802
BLD89-3
BL1
16946-48
12m@0·35% Zn
0·1% Pb
16951
BLD89-1
BLD89-2
16949-50
BL801
Limit of UTEM Survey
0
1km
LEGEND
Θsc Ordovician Conglomerate
Ct Tyndall Group
Ecsv Cambrian Upper Central Volcanics
Ecsl Lower Central Volcanics
Cambrian Hornblende Porphyry
Cambrian shales
16798 Lithogeochemical sample
HEC Power line
Track
Survey coverage
Billiton Australia
The Metals Division of the Shell Company of Australia Limited
Project
BASIN LAKE
Title
LOCAL GEOLOGY SETTING
LITHOGEOCHEMICAL SAMPLING
Author JPR
Date 5/90
Scale 1:25000
Drawn OH
Office TAS
Revised
Date
Drawing No.
Fig. No. 7

0076

382079

91-3244.

LAKE SELINA
GEOLOGICAL SETTING

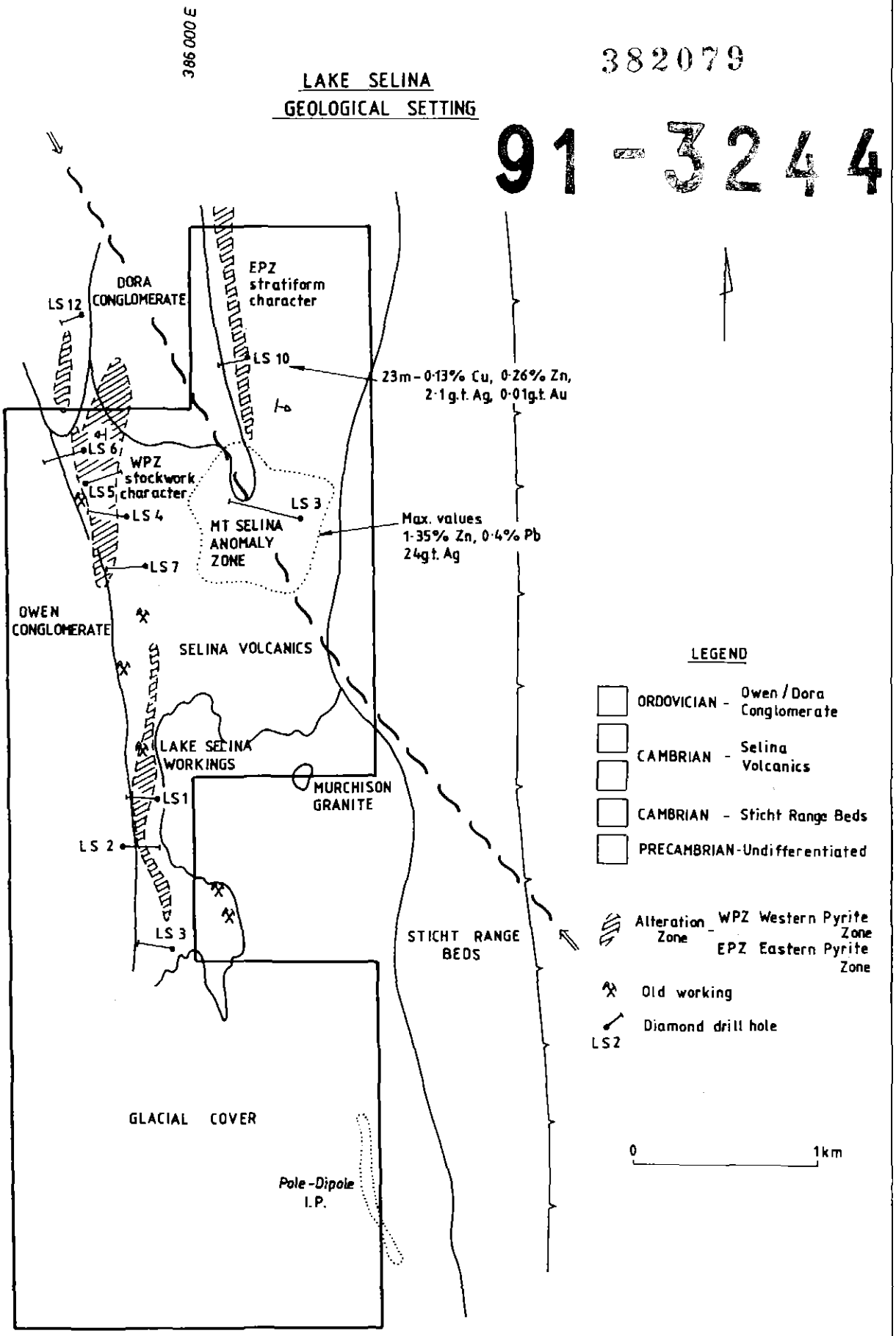


FIG. 8

5 cm