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NORGOLD LIMITED
and
THE SHELL COMPANY OF AUSTRALIA LIMITED

STERLING VALLEY JOINT VENTURE

E.L. 29/88

Annual Report on Exploration Completed
~~to 14th October~~ 1989

89-3013

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3. Billiton Aust., Melbourne
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AMG REFERENCE POINTS ADDED

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SUMMARY

During the first year of tenure of exploration licence 29/88, Billiton has completed a programme of gridding, detailed geological mapping, rock chip sampling, ground magnetics, UTEM surveying and diamond drilling.

Exploration has been mainly concerned with the Cambrian Tyndall Group volcanics in which the detailed geological setting was interpreted. A major strike extensive horizon of high potential was mapped and is considered a prime target for the development of significant VMS mineralization. A UTEM anomaly is not coincident with this horizon although at the northern end and slightly offset, two late channel responses were recorded. These occur in an area transected by two subparallel faults in which significant mineralization has been previously located (old prospector workings).

Future exploration within the Tyndall Group should primarily focus on this horizon by the implementation of additional gridding, mapping, geochemical sampling and diamond drilling.

In the vicinity of the Henty Fault two diamond drill holes have tested strong IP responses and it is concluded that in both cases the source is graphitic pyritic black shale. Interesting geochemical anomalism was recorded in one drill hole. Further exploration should be confined to down hole IP of the recently drilled holes and shallow diamond drilling of one remaining anomaly.

1.0 INTRODUCTION

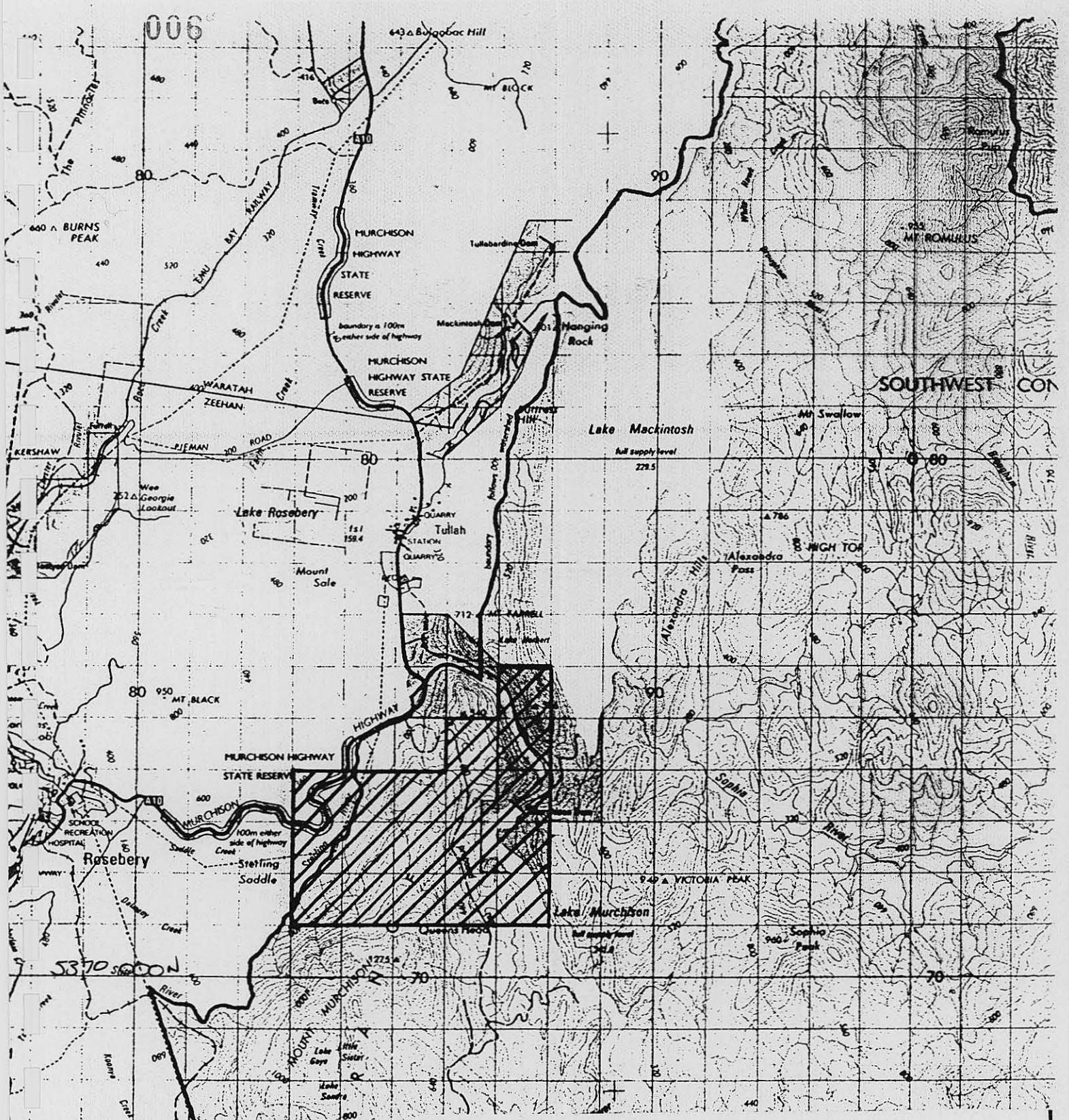
This report details results of exploration carried out by Billiton Australia on behalf of the Sterling Valley Joint Venture during the twelve month period ending 14th October 1989. It is the first annual report pertaining to exploration licence 29/88.

2.0 LOCATION

The licence is situated between Rosebery and Tullah on the West Coast of Tasmania and is transected on its north-western edge by the Murchison Highway. (see Fig. 1). Access is gained via the partially sealed Anthony Road and an HEC powerline track that traverses the western portion of the licence.

3.0 LAND TENURE

Exploration licence 29/88, of 17 sq kms, was granted to Norgold Limited on the 14th October, 1988 for a period of ten years renewable every 12 months. A joint venture agreement is currently in place between Norgold Limited and the Shell Company of Australia Limited whereby Billiton Australia, the Metals Division of The Shell Company of Australia Limited, manages the joint venture.



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

Project	STERLING VALLEY
Title	LOCATION PLAN
	1:100 000

Author	Date	Scale	
Drawn	Office	Revised	Date
Drawing No.			Fig. No. 1

AMG REFERENCE POINTS ADDED

5 cm

Norgold and Billiton entered into a joint venture agreement on 12th November 1986 whereby exploration licence 4/73 was the subject of this agreement. The licence expired on 6th March 1988 but a new exploration licence, namely EL 29/88, was granted to Norgold Limited on behalf of the Sterling Valley Joint Venture (see Fig. 2).

The licence area excludes 0.4 sq km Murchison Highway State Reserve, 1.5 sq km Land vested in the HEC and two mining leases (ML's 1M/55, 2M/55) held by Pasminco. In addition, approximately 80% of the licence is contained within the South West Conservation Area.

4.0 PREVIOUS WORK

Previous exploration was carried out under exploration licence 4/73 by Asarco (Aust) Pty Ltd (1973-74), Cominco Aust. Pty Ltd (1975-78), EZ Co. (1979-86) and Billiton Australia (1987-88).

A list of important references relating to this work is summarized below.

Asarco (Aust) Pty Ltd	EL 4/73 Sterling Valley Tasmania. Progress Report to June 1974.
Cominco Expl. Pty Ltd	Progress Report on EL 4/73 Sterling Valley Tasmania for the 6 months ending 6/3/76 (and summarising work carried out in the previous 6 months).

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MOUNT FARRELL

385000E

390000E

LAKE ROSEBERY

LAKE MACKINTOSH

Murchison

Dam Road

FAULT

Highway

RIVER

SOPHIA RIVER

PROPOSED GRID OVER VOLCANICS

5375000N

5374000N

5373000N

5372000N

5371000N

HENTY

STERLING

Sterling Valley Mine

Mining Lease (Pasminco)

Anthony Road

Base Line

LAKE MURCHISON

SOUTH WEST CONSERVATION AREA

E.L. 29/88

FORMER E.L. 4/73

MOUNT MURCHISON

365000E

Ecv

Ecva

Eof

Et

Egr

5 cm

LEGEND

Eoo	Jukes/Owen Conglomerates
Et	Tyndall Group : volcaniclastics, tuffs, breccias, lavas.
Ef	Farrell Sequence : shales, siltstones, sandstones
Ecva	Central Volcanic Sequence : andesites.
Ecv	Central Volcanic Sequence : pyroclastics lavas ignimbrites.
Egr	Murchison Granite.

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Project: STERLING VALLEY

Title: EL 29/88 TENEMENT STATUS

Author DBH Date 4.88 Scale 1:25,000

Drawn OH Office TAS Revised Date

Drawing No. D/LJ'70/002 Fig. No. 2

Cominco Expl. Pty Ltd	Report on diamond drilling programme. EL 4/73, Sept-Nov 1977.
EZ Co. Report No.133	EL 4/73 Progress Report on Activity July 1979 to June 1980.
143	EL 4/73 Progress Report on Activity July 1980 to June 1981.
146	EL 4/73 Six monthly project review as at 15th Dec. 1981.
150	EL 4/73 Progress report on Activity 15th Dec 1981 to 4th May 1982.
154	EL 4/73 Progress report on Activity 4th May 1982 to 24th Aug. 1982.
161	EL 4/73 Progress report on Activity 24th Aug. 1982 to 20th Nov. 1982.
167	EL 4/73 Progress report on Activity 31st Nov. 1982 to 3rd May 1983.
T181	EL 4/73 Progress report on Activity 16th Nov. 1983 to 1st May 1984.
T202	EL 4/73 Progress report on Activity 2nd May 1984 to 6th March 1985.
T214	EL 4/73 Progress report on Activity 7th March 1985 to 6th March 1986.
Billiton Australia	EL 4/73 Final Report & Report on Exploration to 6th March 1988. 08.3912
Billiton Australia	EL 4/73 Final Report. 08.3915

The Sterling Valley area is one of the more intensively and continuously explored areas of the Mt. Read Volcanics. Since modern systematic exploration began in the late 1950's, the area has been subjected to repeated geophysical, geochemical and geological surveys. A total of 28 diamond drillholes have been drilled for a total of 4,650m.

At least seven small old workings of vein-style Pb-Ag and Cu-Zn sulphides, mark the earliest known phase of exploration in the Sterling Valley area. Most of these date from the period 1908-1915, with some revival again in 1929-1932.

The largest and best known of these workings is the Sterling Valley Mine, which comprised a shaft and several levels, excavated on high grade shoots of galena-sphalerite-arsenopyrite in a shear zone within black shales of the Farrell Slate sequence. The scale of all the old workings can be gauged by the fact that recorded production from the Sterling Valley Mine is only 52 tons of 55% Pb, 1500 g/t Au, ore.

Modern systematic exploration of the Sterling Valley commenced in the late 1950's, when a Joint Venture between EZ and RTAE gridded the main valley area and carried out ground geophysical surveys following a regional airborne TURAM survey. The ground surveys were limited in coverage and comprised magnetics, dip-angle EM, SP, dipole-dipole IP and gravity. Holes STP 101 and 105 were put down in 1960-61 into geophysical responses defined within the Farrell sequence.

Continuous exploration dates from Asarco's pegging of EL 4/73 in early 1973. They stream sediment sampled the EL on a coarse grid with 360m line spacing, with detailed lines at 120m spacing in the main valley area. This work defined a number of basemetal and tin anomalies (the samples were not analysed for gold), and the presence of the tin led to Cominco (later Aberfoyle), becoming involved in a Joint Venture with Asarco.

The JV directed the principal thrust of its exploration towards testing of the tin potential. Further sediment sampling indicated areas of tin mineralization in the Farrell Slate sequence east of the Henty Fault and also in the Mt. Black Volcanics west of the fault. These indications were followed up by bedrock auger sampling, magnetics, vertical loop EM, dipole-dipole IP surveys, and the drilling of holes SV 1 to 3 within the Farrell sequence.

The best intersection was only 1m @ 0.2% Sn in hole SV 1, which was markedly less than the 3m @ 0.65% Sn obtained from trenching of the mineralization at surface. The holes were not assayed for gold. Following the poor drill results, Asarco withdrew from the JV in late 1977.

Apart from a regional aeromagnetic survey flown by Geoex in 1978, little work was done until the formation of a Joint Venture involving EZ (36% equity and Manager) - Aberfoyle (40% and EL holder) - Getty (24%), in May 1979.

EZ immediately rehabilitated and extended the grid in the main valley area and carried out systematic geological mapping, soil sampling, dipole-dipole IP and ground magnetics. The rugged, ungridded eastern portion of the EL was covered by a programme of stream sediment sampling, rock sampling and mapping (NB: none of the samples were assayed for gold). EZ's stated targets were:

1. Volcanogenic massive sulphides in sediment lenses in the Eastern Volcanics (east of the Farrell Slate sequence).

2. Farrell-type Ag-Pb mineralization in the Farrell Slate.

3. Renison-type replacement Sn deposits in both the Farrell Slate and Mt. Black Volcanics (west of the Henty Fault).

The bulk of the work completed by EZ was in the north west corner of the EL, over the Henty Fault Zone. The results of this work are reported separately.

In 1985, following Texaco's decision to sell off Getty Mining, EZ exercised its option to purchase the Getty equity in the JV. Later that year Aberfoyle elected to withdraw from the JV, leaving EZ as the only party exploring EL 4/73.

After a Dighem survey in 1984, which produced several subdued EM responses, EZ drilled two holes in 1985. STP 283 tested beneath the auriferous veins obtained in the costean 900m south of the 'arsenic resource', with a best intersection of 0.45m @ 2 g/t Au and up to 11% As. STP 284 encountered black shales in the Farrell Slate.

In November 1986 Billiton Australia farmed-in and assumed managership of the exploration programme on the EL.

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Billiton continued and completed the programme of gold sampling of the old drillcore, extending it to include intervals originally assayed by aqua-regia AAS, and to the EZ and Aberfoyle holes within the Farrell sequence.

In early 1987 Billiton began their own programme of drill testing along the Henty Fault within EL 4/73. Two diamond drill holes (471m total) tested structural offsets in the Henty Fault but intersected only weak Au, Cu, As, Ag mineralization. A dipole-dipole IP survey was completed over two areas of the Henty Fault for a total of 8.4 line kilometres. Three chargeability highs were considered worthy of drill testing but the imminent expiry of the licence delayed this programme.

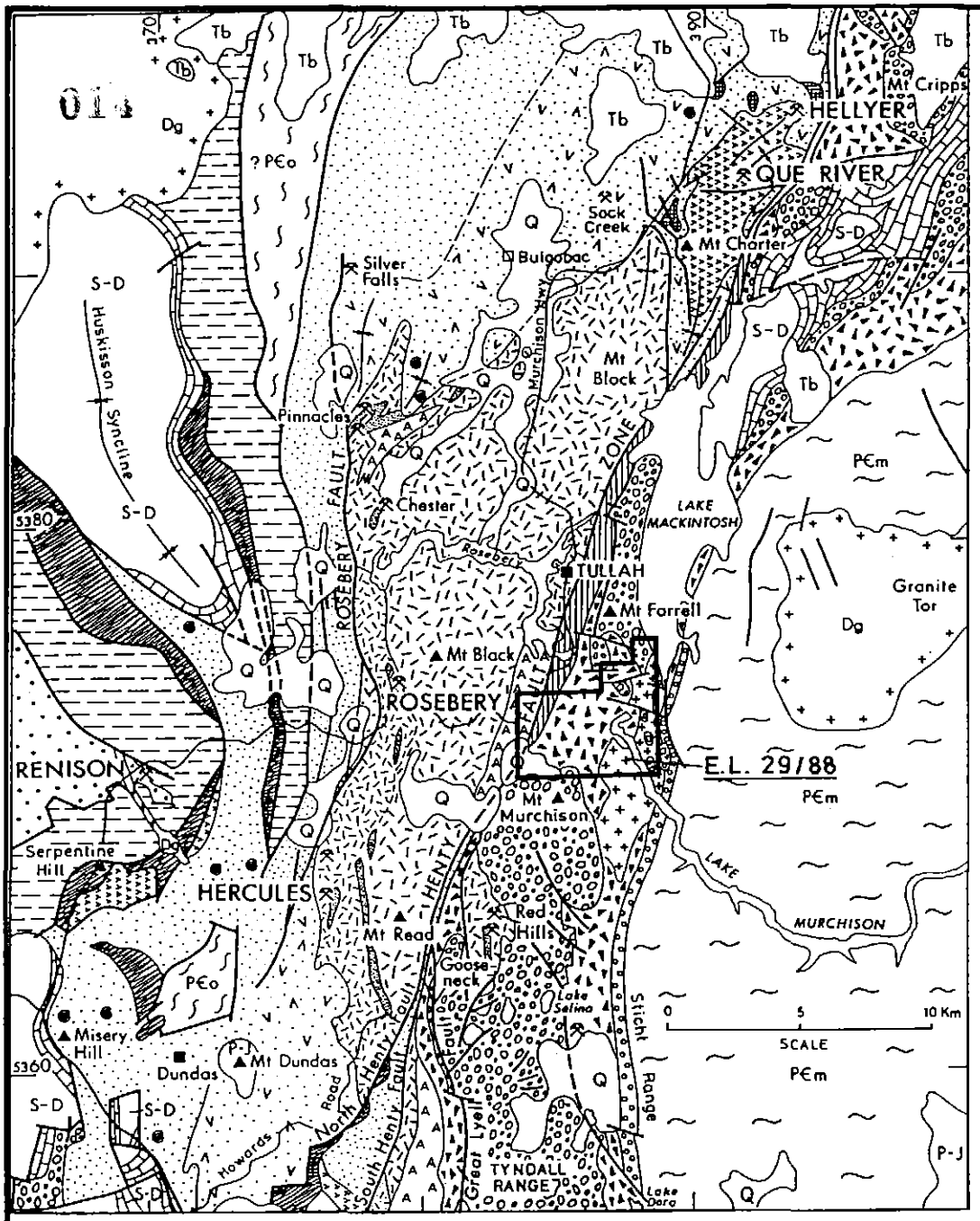
5.0 REGIONAL SETTING

The licence covers a portion of the eastern flank of the Mt. Read Volcanic belt immediately east of Rosebery, (see Fig. 3) and includes a range of structural and stratigraphic features.

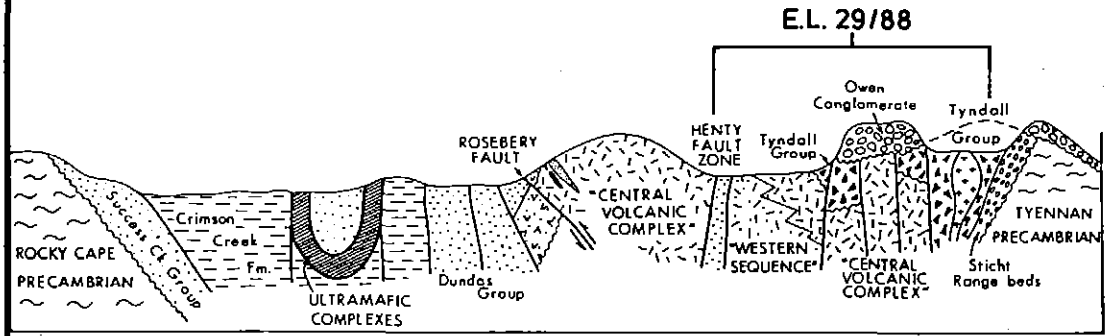
viz. from west to east:

Central Volcanic Sequence (5%) - Mid Cambrian andesitic lavas and volcaniclastics.

Henty Fault Zone - a major NNE trending Cambrian structure that displays Devonian reactivation features.



Geology of Northern Portion of Mt. Read Volcanics.



Diagrammatic Cross Section of Dundas Trough

Maps taken from "Geology and Mineral Resourses of Tasmania." G.S.A. Spec. Publ. 15

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

Project: STERLING VALLEY

Title: REGIONAL SETTING

Author	JPR	Date	8/89	Scale	1:250 000
Drawn	OH	Office	TAS	Revised	Date
Drawing No.					Fig. No. 3

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Farrell Sequence (5%) - Mid to Late Cambrian volcaniclastic sandstones and black shales.

Tyndall Group Volcanics (70%) - Mid to Late Cambrian acid - intermediate lavas and volcaniclast-ics.

Owen Conglomerate (10%) - Late Cambrian to Ordovician silici -clastic conglomerate.

Granite (10%) - Late Cambrian granitic intrusives adjacent to the PreCambrian Tyennan Block.

Within the licence area the Tyndall Group Volcanics and Henty Fault Zone have been the main targets for exploration; the former for VMS style base metal mineralization and the latter for structurally controlled gold-arsenic mineralization.

The Tyndall Group suite has historically been considered to be younger than the Central Volcanic Sequence and consisting of dominant quartz phyric lavas with lesser volcaniclastics and sediments. The sequence has never been systematically explored using modern exploration techniques, having been considered as a less prospective sequence than the Central Volcanics. A major objective in the acquisition of the licence by the Sterling Valley Joint Venture has been to comprehensively evaluate the Tyndall Group as a potential host to VMS style mineralization.

The Henty Fault Zone has received considerable attention recently by RGC at the Henty Prospect and by Billiton - Norgold - Little River Resources at Lakeside. Within this licence area, a small arsenic resource is inferred from limited drilling and low grade gold intercepts have been recorded. It has been the intention of the Sterling Valley Joint Venture to continue

exploration along this mineralized structure in the search for economic gold mineralization.

6.0 EXPLORATION COMPLETED

Emphasis has been placed upon the assessment of the VMS potential of the Tyndall Group and the following exploration methods have been employed:

- Gridding: a total of 54.3 line kilometres have been cut in order to establish a 200m spaced grid over the entire Tyndall Group. Access lines (6.4 kms) have been cut to permit laying of EM loops (see Fig. 4).

- Geological Mapping: the entire grid has been mapped at 1:5000 scale onto a series of four topographic base maps (Figs. 5-8) to which the grid lines have been recovered and added. During the course of this mapping, a total of 78 rock chip samples have been collected and assayed for Cu, Zn, Ag (AAS); Pb, As, Ba (XRF); Au (FA). Results are presented in Appendix 1.

- Ground Magnetics: all E-W grid lines (50 line kms) have been surveyed using two roving and base G856 Memory-Mag magnetometers with 10 metre station spacings. Data has been corrected for diurnal variation and plotted at 1:5000 scale as stacked profiles and contours.

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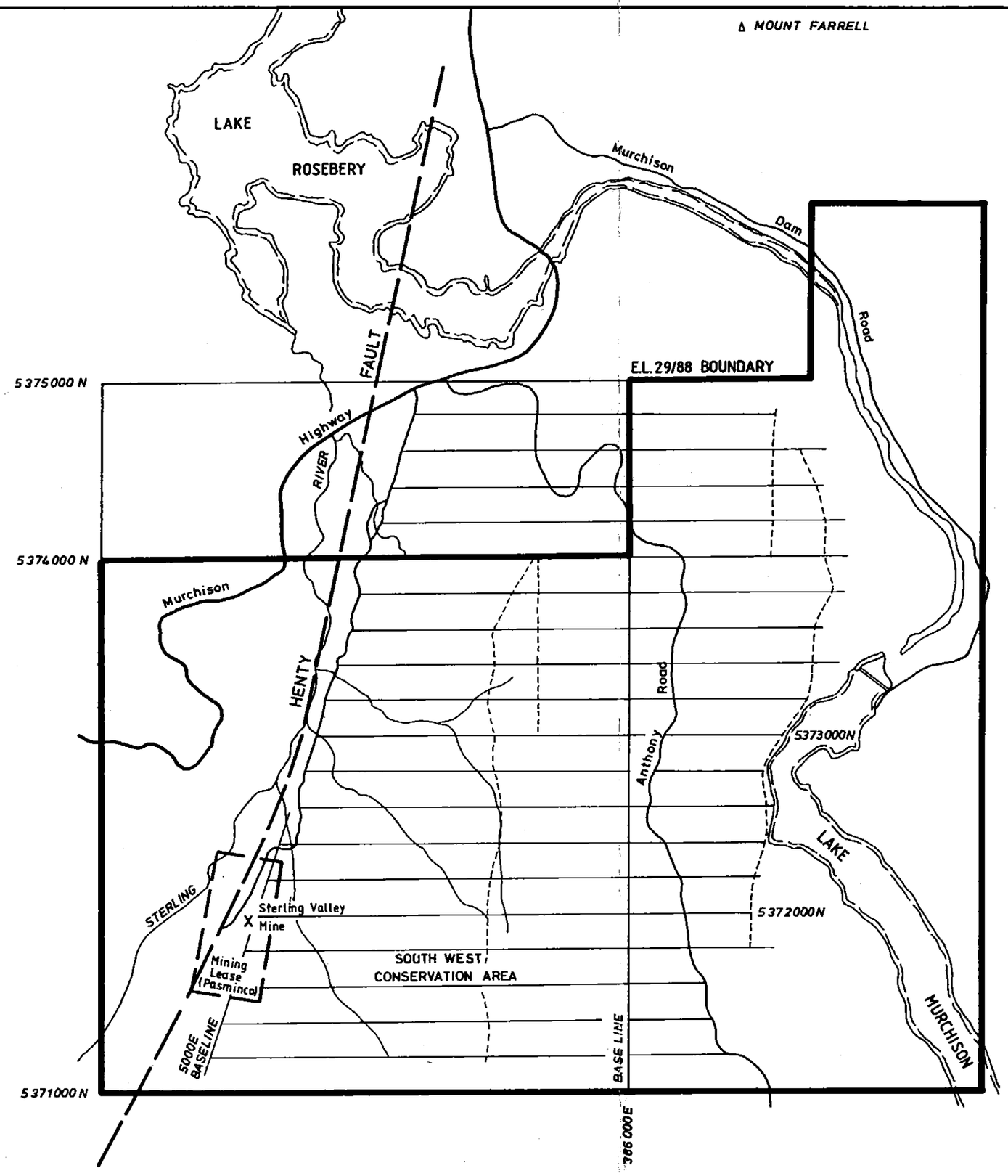

Walking track (Loop access)

Grid Line

5 cm

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

Project: STERLING VALLEY J.V.

Title: LOCATION OF GRID

Author	J P R	Date	8/89	Scale	1 25000
Drawn	O H	Office	TAS	Revised	Date
Drawing No.					Fig. No. 4

- UTEM Surveying: Lamontagne Geophysics have carried out a fixed loop survey over the entire gridded area (47.6 line kms) from four set loops (see Fig. 9). Lines surveyed are tabulated below whilst the data is presented in Appendix 2.

Surveying has been carried out both in and out of loop and hence coupling problems are recognized with varying geometries. Where loop edges are required to be surveyed the loop has been physically moved either north or south to avoid reading along the loop edge.

TABLE 1 : UTEM SURVEY LINES

LINE	LOOP	EASTING	LENGTH (km)	Tx LOOP
374800N	1	384800-386640E	1.84	386000-386800E
374600N	1	384760-387120E	2.36	386000-386800E
374400N	1	384720-387080E	2.36	386000-386800E
374200N	1	384640-387160E	2.52	386000-386800E
374000N	2A	386040-387200E	1.16	385500-386280E
373800N	2	384560-387160E	2.60	385480-386320E
373600N	2	384480-387080E	2.60	385500-386300E
373400N	2	384440-387200E	2.76	385500-386280E
373200N	2	384400-387000E	2.60	385480-386280E
373000N	2	384280-386840E	2.56	385500-386220E
372800N	3A	384240-386760E	2.52	385240-386160E
372600N	3A	384240-386760E	2.52	385260-386160E
372400N	3A	384200-386760E	2.56	385280-386280E
372200N	3A	384000-386720E	2.76	385200-386320E
372000N	4	383960-386680E	2.72	385200-386320E
371800N	4	383880-386680E	2.80	385200-386400E
371600N	4	383720-386440E	2.72	385200-386440E
371400N	4	383720-386440E	2.72	385200-386480E
371200N	4	383680-386660E	2.98	385200-386600E
		TOTAL	47.62 Kms	

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89-3013

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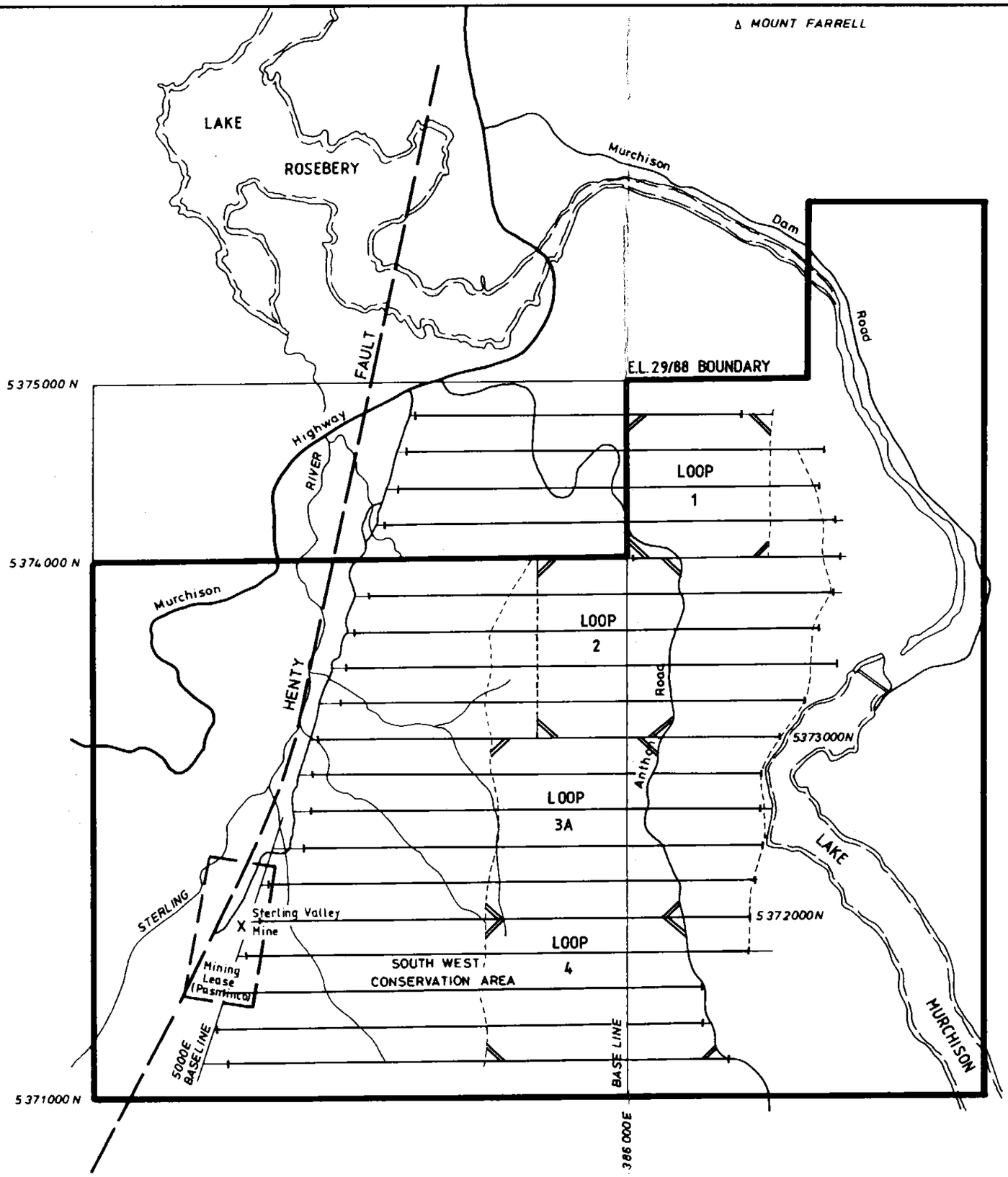

Walking track (Loop access)

Grid Line

UTEM coverage

Loop edge

5 cm

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

Project: STERLING VALLEY J.V.

Title:

LOCATION OF GRID
AND
UTEM LOOP LAYOUT / COVERAGE

Author	J P R	Date	8/89	Scale	1 25000
Drawn	O H	Office	T A S	Revised	Date
Drawing No.					Fig. No. 9

- Diamond Drilling: Two drill holes, SVD 89-1 and 2, were completed for a total metreage of 283.6m. Both holes tested geophysical targets located adjacent to the Henty Fault Zone. A total of 120 samples were split or chipped and assayed for Cu Zn Ag (AAS) Pb As Ba (XRF) and Au (FA). Results are presented in Appendix 1.

7.0 EXPLORATION RESULTS

7.1 Grid Geology & Geochemistry

Geological mapping was carried out by both J. Randell and C. Creagh on an alternate line basis and an abbreviated logging system was utilized to aid interpretation. The geology is presented on four fact maps at 1:5000 scale (Figs. 10-13) which overlay the topographic base maps. In addition, an interpretation of the mapping was made in conjunction with the ground magnetic data to produce a single interpretative map. (Fig. 14).

7.1.1 Lithologies

In a gross sense, there are five major subdivisions of sequences within the licence boundaries viz the Central Volcanic Sequence, Farrell Sequence, Tyndall Group, Murchison Granite and Denison Group.

The Central Volcanic Sequence (CVS) does not occur within the main gridded area but minor outcrops were observed whilst mapping in the Sterling Valley Mine area (see Section 7.4). Regionally the eastern portion of the CVS is dominated by andesitic lava and volcaniclastics. The lavas are feldspar phyric and generally massive whilst the volcaniclastics often have a pumiceous character and are well layered. Alteration can be quite strong, especially against the Henty Fault, and is expressed as silicification, chloritization, carbonatization and/or pyritization.

The Farrell Sequence abuts the CVS on its eastern faulted margin and despite poor outcrop, appears to be a complex interplay of volcaniclastic sandstones-siltstones, black laminated $\pm$ pyritic shales, fine to coarse epiclastics and minor acid lavas. Alteration within the volcaniclastic units is usually quite strong and is typified by pervasive sericite with lesser carbonate. Quartz veining is quite common but often appears to be of tension gash style. There appears to be a general zonation of lithotypes from south to north within the Farrell Sequence. The southern area, particularly in the vicinity of the Sterling Valley Mine, is dominated by multiple lenses of mixed black shale - volcaniclastic siltstone. Thicker and more uniform black shale development occurs to the north

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whilst in the extreme north of the licence and within EL 1/62, volcaniclastic sandstones are dominant. These changes are probably reflecting paleo-environmental differences within the 4km strike from a restricted basin with considerable volcanic detritus input to a quieter basinal setting and then to a more active perhaps turbiditic environment.

The change from Farrell Sequence to Tyndall Group rocks is not sharp nor particularly easy to define. Mapping along 4 km of strike failed to discern any obvious faulting or structural changes but merely a general decrease in acid lava and proportional increase in volcaniclastic detritus.

The Tyndall Group lithologies are represented by acid to acid-intermediate rhyolitic to dacitic lavas and volcaniclastics with minor basaltic dykes. Rhyolitic lavas are massive, blocky, sometimes flow banded and often quartz phyric with fine to coarse quartz phenocrysts. Observed alteration is expressed as ubiquitous chlorite (low percentage content), K-feldspar (the pink alteration), magnetite (very variable), silica and sericite. Pyritic alteration is minor and represented by minor disseminations within the lava matrix.

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Rhyodacitic lavas are typically quartz and feldspar phyric with a poorly defined fabric and variably altered. Sericite and chlorite alteration is generally more noticeable than in rhyolitic lavas but magnetite alteration shows no obvious pattern. Indeed, within individual outcrops there is obviously an erratic distribution of magnetite.

Dacitic rocks are a minor constituent of the overall sequence and are typically feldspar phyric and chloritized. The field description of dacite may in fact be a function of this chloritic overprint and it is unclear whether they are in fact linear intrusives or lavas.

Volcaniclastic units vary in composition from rhyodacitic to dacitic and may be feldspar or quartz-feldspar phyric. They are generally well layered and apparently pumiceous and often strongly sericitized. Grain size is typically fine and some units may be adequately described as "cherty ash". These rocks are sometimes quite massive but more often are finely banded or laminated.

Alteration is dominated by sericite with minor carbonate are pyrite while magnetite was not recorded in any outcrop.

Identifiable epiclastic rocks are rhyodacitic to dacitic in composition and contain medium to coarse lithics of angular to sub rounded nature. Sericite-chlorite alteration is often quite intense obscuring the composition of the lithics but they appear to be dominantly acid lava or clastic fragments. The rocks are not magnetic and are rarely pyritic.

Fine grained basaltic dykes rarely occur within the grid and are typically strongly chloritic and non-magnetic. Minor outcrops are coarse grained and gabbroic in texture but are interpreted to be only minor compositional variants.

Examples of the Murchison Granite observed within the grid are typically coarse equigranular aggregates of quartz, plagioclase, K-feldspar and biotite. Chlorite alteration is very common but magnetite is restricted to certain contact areas of the granite with surrounding Tyndall Group rocks. Pyritic alteration is relatively common often in association with chlorite and occurring as coarse grained clusters of crystals.

The Cambro-Ordovician Denison Group is represented by equivalents of Dora Conglomerate, Newton Creek Sand-stone and Owen Conglomerate. The former consists of rounded volcanic detritus cobbles in a siliceous

hematitic matrix while the Newton Creek Sandstone equivalent, occurs as dirty medium grained quartzites. The Owen Conglomerate member is by far the most abundant and occurs as a pebble to boulder sized conglomerate within a hematitic siliceous matrix.

7.1.2 Structure

Within the Tyndall Group, bedding measurements (11 in total) have been made from outcrops of laminated or layered volcaniclastics/epiclastics. They are considered to represent true bedding and not a later imposed deformation. All readings show a consistent westerly dip in the range 60°-85° with bedding strikes in the range of 315°-00° Mag. Cleavage measurements taken from both lava and clastic units mimic the bedding and range from 335°-355° Mag/42°W-90.

Within the Farrell Sequence bedding strikes are quite consistent (00°-010° Mag) but dips vary considerably from 75°E in the south to 65°W in the northern part of the licence. These bedding measurements mimic the trace and attitude of the Henty Fault and are considered to be modified differentially due to the ductile nature of the sediments in comparison to the more competent Tyndall Group volcanics. This apparent 10-20° variation in strike in the adjacent Tyndall Group and Farrell

Sequence rocks can also be explained by invoking a structural or erosional discontinuity between the two sequences. In the absence of supporting evidence for these conclusions the less dramatic option of sediment ductility is preferred.

Facing criteria (scour marks, graded bedding, cross bedding) were not observed within any of the volcaniclastic outcrops despite particular attention being paid to this observation. It is hoped however that a more detailed search on particular horizons may provide some evidence. Regionally the entire sequence east of the Henty Fault is assumed to face west and facing criteria from an area north of the licence would confirm this inference. However, the drilling recently completed on IP targets adjacent to the Henty Fault provided evidence of an east facing sequence, at least within the Farrell Sequence. It is quite possible that the units in the vicinity of the Henty Fault have been structurally overturned thus providing a reverse facing. However, it is assumed in this report that the overall west facing is correct and that the Farrell Sequence lies stratigraphically above the Tyndall Group.

Faulting within the licence area has been interpreted from regional studies (eg MRV Mapping Project), from ground magnetics and detailed mapping. The most obvious feature is the Henty Fault, a major regional fault that may well have been an original Mid-Cambrian basin margin feature. The attitude of this structure is consistently 00°-010° Mag with a steep westerly dip. Of more interest to this discussion, is the interpretation mainly from the ground magnetic data of three subparallel linear structures of attitude 330° Mag that appear to be splay faults from the Henty Fault, intersecting the latter at Lake Rosebery. Whilst the proof of these structures as faults is not conclusive, several features indicate this probability:

- the features correspond to clear discontinuities in the ground magnetic pattern.
- small workings within the Tyndall Group all are confined by these three structures and are usually located along their trace.
- the gross distribution of lava sequences correlates with these inferred structures.
- several extensive milky quartz blows correlate with the interpreted position of these structures.

The significance of these faults has not been demonstrated so far but importantly, they do appear to localize mineralization and are probably related to the Henty Fault system.

The Mines Department map sheets have shown two subparallel NW-SE trending faults that have laterally displaced the Tyndall Group/Murchison Granite contact in the extreme eastern portion of the licence. The veracity of these structures has not been checked by field mapping but would imply the presence of a block of Tyndall Group volcanics west of Murchison Dam.

Other inferred structures are a series of NE-SW trending features that result from fairly tenuous interpretation. They have been implied because of rapid terminations of strike extensive volcaniclastic units but their inference and attitude is not convincing.

7.1.3 Distribution of Units

Figure 14 shows the distribution of volcanics of the Tyndall Group within the licence area. Three broad subdivision are evident from this interpretation: the western zone (385250E) consists of quartz-feldspar phyric rhyodacitic lavas containing 20-30% volcaniclastic/epiclastic units which are more abundant and thicker north of 372500N. Individual units attain

thicknesses of up to 150 metres and it is suggested that there is a significant break in volcanism from 372500N- 375000N. The central zone constitutes almost 60% of Tyndall Group exposure and is dominated by massive quartz phyric rhyolite lavas with a central spine of quartz-feldspar phyric rhyo-dacitic lava. Both lava units of the central zone contain small (100-300m) lenses of volcaniclastics/epiclastics but these constitute no more than 10% of the total zone. The eastern zone is similar to the western zone in gross lithological character although the proportion of volcaniclastic units is no more than 20% of the total zone.

The Murchison Granite crops out in the south-eastern and eastern edge of the licence but also occurs as small (100-200m) protrusions within the central and eastern zones.

During the course of mapping, alteration assemblages have been recorded and their distribution plotted on the fact maps. Dominant alteration minerals are sericite, chlorite, K-feldspar and magnetite while pyrite and silica are present in only minor cases. There appears to be no preferential association of minerals with each other and all combinations are possible. The distribution of alteration also shows no clear pattern but in general terms, a zonation is

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evident (Fig. 15). Chloritization is widespread and is absent only in the southern portions of the central and western zones (bounding co-ordinates 372000N-372800N, 385000E-386500E). There is however a predominance of chlorite in the western zone. In general terms, sericite alteration is mainly confined to two geographical and geological areas: firstly, the western edge of the western zone close to the gradational contact with the Farrell Sequence, and secondly, within 1km of the Murchison Granite margin in the south - eastern and eastern portion of the licence. In both cases there is the strong possibility that this particular alteration type is a later structural overprint due to, in the former case, reactivation of the Henty Fault and in the latter case, intrusion of the Murchison Granite. K-feldspar alteration is widespread in distribution but there does appear to be a dominance of this alteration type in a subparallel zone between the two sericite alteration zones. Magnetite alteration is very erratic in detail but in gross terms, two subparallel zones are evident: the eastern zone mimics the eastern sericite alteration zone (and is marginal to the granite contact) while the western zone overlies the central portion of the K-feldspar alteration zone.

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In summary, it seems likely that the overall alteration distribution is reflecting a zonation away from and attributable to the intrusion of the Murchison Granite. This pattern can be summarized as a gradational series from the granite outwards of:

(major)	(minor)
magnetite -	chlorite - sericite
K feldspar -	chlorite - magnetite
chlorite -	sericite - k feldspar

There is also an overprint due to reactivation of the Henty Fault system, reflecting in stronger chlorite - sericite alteration.

Pyrite and silica alteration is localized only and often associated with structural features, such as the linears defined by ground magnetics.

7.1.4 Mineralization

This discussion refers to known mineralization within the Tyndall Group volcanics and not to that associated with the Henty Fault. The latter has been described in previous company reports and is not repeated here.

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A series of prospector workings and geochemically anomalous rock chip samples are recorded on Figure 14, being derived from either Mines Dept. maps or from field collection. These are summarized below:

Symmons & Rice - 5371360N 386200E — not located during field mapping but occurring at or near the granite contact.

Barytes Lode - 5371370N 385150E — not located during field mapping.

Maces - 5374000N 385670E — not located during field mapping although a small pit was observed 250m to the east.

Midsons - 5374220N 385300E — a small pit was observed at this locality. Weak quartz veining in chloritic rhyolitic lavas was noted.

Donoghues - 5374840N 385640E — Several pits, costeans and a small adit occur Mineralization hosts are strongly sericitized -chloritized pyritic quartz-feldspar phyric rhyolitic lavas. A dump sample collected here (15954) assayed 11.7% Pb, 1.41% Zn, 190g/t Ag, 490ppm W.

Unnamed Working - 5374820N 385240E — A small adit has been cut into a quartz filled shear at the contact of quartz-feldspar phyric rhyodacitic lavas and fine volcaniclastics. A mineralized dump sample collected here (15952) assayed 3.57% Zn, 0.45% Pb, 1.57% As, 30ppm Ag, 550ppm W, 0.3g/t Au.

Unnamed Working - 5373200N 385600E — A small shaft has been sunk on minor quartz veining within rhyolitic lavas. Visible blebby and disseminated galena, sphalerite, pyrite was observed and a dump sample (16091) assayed 0.51% Pb, 0.72% Zn.

In addition to old prospector diggings, a total of 15 of the 78 rock chip samples collected returned anomalous assays. These are summarized below:

Sample 16218 - 5374400N 385175E — Chloritic and weakly pyritic (2-3%) rhyodacitic volcaniclastic. Best assays 1580ppm Pb, 520ppm Zn, 2700ppm Ba.

Sample 16219 - Weakly quartz veined siliceous rhyolitic lava
5374400N 385385E Anomalous Au assay 0.14 g/t.

Samples 15263,66,70 - Samples collected from road cut. Strong-
5374360N 385600-700E ly sericitic, pyritic and chloritic rhyo
-lytic lavas. Maximum assays (non coincident)
of 2.4% Zn, 0.43% Pb, 22g/t Ag, 490ppm Cu.

Sample 16202 - Fine grained chloritic volcaniclastic. A
5374000N 385370E slight gold anomalism (0.16ppm) was recorded.

Samples 16226-29 - Dacitic to rhyodacitic fine grained volcani-
5373000N clastics and laminated ash units with visible
385070-120E disseminated galena. Marked anomalism in Pb
(460-1920ppm) and Zn (1040ppm) was recorded
from selected rock chips.

Sample 16089 - Weakly disseminated pyrite in strongly
5373200N 385730E magnetic chloritic and k-feldspar altered
rhyodacitic lava. Maximum assays of 230ppm
Pb, 2250ppm Ba were recorded.

Sample 15931 - Quartz veined Dora Conglomerate. Maximum
5371200N 385630E values of 220ppm Cu, 1140ppm Pb were record-
ed.

Sample 16214 - Ferruginous dacitic epiclastic adjacent to
5371400N 385920E the Murchison Granite contact. A marginal
anomalous Au assay (0.17ppm) was recorded.

Sample 16210 - Weakly pyritic and chloritic rhyolitic lava.
5371600N 386005E A maximum Pb assay of 770ppm resulted from
this sample.

Geochemical anomalism is clustered into three main areas; firstly, the extreme north western portion of the grid (outside of EL 29/88) and bounded by co-ordinates 5374000-5375000N, 385000E-386000E. Mineralization is closely associated spatially with the two NNW trending sub parallel linears and it is considered that the mineralization style is that of irregular quartz vein nature. The exceptions to this are samples 16202, 16218 in which fine disseminated mineralization is associated with a thick volcani-

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clastic-epiclastic horizon that separates the central and western zones.

The second group of geochemical anomalies are located in the vicinity of 373000N 385000E-385800E. The western most samples again are related to the major clastic horizon separating central and western zones and these show a more obvious primary origin. The eastern samples are more typically fault related.

The third group, at the southern end of the licence, are widely distributed areally but are close to the contact of the Tyndall Group volcanics with the Murchison Granite. All samples show weak pyritic disseminations, an expression possibly of a weak alteration front related to the intrusion of the granite.

7.1.5 Prospectivity

The initial programme of grid based mapping, selected rock chip geochemistry and ground magnetic has allowed a geological setting to be interpreted and has highlighted three main zones of volcanics, i.e. western, central and eastern zones. The contacts between these zones are complex and often poorly defined except between the western and central zones north of 5372600N. Here, a thick (150-200m) unit(s)

of volcaniclastics - epiclastics extends over a mapped strike length of 2.4kms. Strongly anomalous base metal geochemistry has been detected from selected rock chip samples in which visible pyrite-galena occurs and the presence of fine laminated cherty ash beds provides evidence of tectonic stability between volcanic episodes. Alteration is not obviously marked although given the outcrop density, this observation may be misleading. It is considered that this horizon rates highly on geological grounds as being permissive for the development of volcanogenic base metal mineralization. Further work should concentrate on closer definition of the geological setting and should define the surface geochemical distribution. Alteration mapping, lead isotope sampling, whole rock analysis and lithogeochemical mapping should also be carried out to assist and back up the geological interpretation.

7.2 UTEM Survey

In March 1989, Lamontagne Geophysics carried out a UTEM survey of about 48 line kms, using large fixed transmitting loops and measuring the vertical component of the secondary magnetic field with a mobile receiver.

The transmitting loops (see Fig. 9) were laid out with no particular regard to geology, since at the time of the UTEM survey this was unknown, in particular the dips. This could

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mean that some areas are not optimally coupled to the transmitter primary EM field. Least response can be expected from a thin, vertically dipping conductor in the centre of each transmitting loop. Since completing the geological mapping, a more logical appraisal of potential coupling problems can be assessed.

viz Loop 1 - this loop covers rhyolite lavas with minor intercalated volcaniclastics of the central zone. Current geological interpretation would not support the need to re-survey using a different loop position.

Loop 2 - the western edge of this loop was re-position -ed to allow for maximum coupling in the vicinity of the western/central zone contact. Within the loop, the central zone is transected by the two major NNW linears with which Pb-Zn anomalism is associated. It is therefore recommended that additional surveying should be carried out to better couple with this zone.

Loop 3 - the loop covers the central zone predominant-ly and covers an area of strong sericite - K feldspar alteration within a mixed rhyolite - rhyodacite lava sequence. Strong structural

features are suggested and it is recommended that this area be re-surveyed to better couple with a potential steep west dipping conductor.

Loop 4 - a zone of strong sericite-chlorite-magnetite alteration is associated with scattered base metal anomalism adjacent to the granite contact. The area is structurally disturbed and geologically complex and it is suggested that re-surveying should be carried out.

All profile data is shown in Appendix 2 and although many are noisy adjacent to power lines, in general the data is of reasonable quality.

Unfortunately the only responses apparent on the profiles occur on the earliest channels indicating poor and shallow conductors probably related to fracturing or faulting. The strongest responses occur at the far western ends of many of the lines, and these are contained by the thick, graphitic Farrell slates that occur east of the Henty Fault. Some very subtle late channel responses on lines 374000N (at 385400E) and 374400N (at 385320E) are of interest, and require further geophysical and geological interpretation and investigation. These anomalies occur in an area of slightly anomalous gold

and base metals in close proximity to a major NNW trending linear and to the central/western zone contact. The anomalies occur just outside EL 29/88 but within the joint venture area covered by EL 1/62.

7.3 Ground Magnetics

The gridded area was surveyed for both UTEM and magnetics on 200 metre line-spacing. The magnetics were surveyed using 3 G856 total field magnetometers (one as a base) on 10 metre stations. The data is reliable but noisy due to variability of magnetite content in the underlying rocks.

The 1:15000 stacked profile plan (Fig. 16) more clearly indicates the general NNE magnetic trend than the 1:5000 magnetic plans (Figs. 17,18). There are two subparallel trends that mimic the gross Murchison Granite - Tyndall Group contact and occur at distances from the granite of 500 metres and 1500 metres respectively. (see Fig. 19). It is considered that these trends are reflecting an alteration zonation around the granite and are not primary constituents of the volcanics.

Several discontinuities are evident from examination of the coloured contoured map and stacked profiles. The most obvious are three subparallel NNW trending structures that transect the entire licence. As mentioned in section 7.1.4 these tend to localize vein style base metal mineralization

and from the displacement observed in the inner NNE magnetic zone there is an apparent post Cambrian (and probably Devonian) movement on these structures producing a kinked pattern. It is quite possible that these structures are splay faults from the Henty Fault itself and as such, may be of mid Cambrian origin and hence of more economic interest as reactivated Cambrian ore localizers.

The individual mapped magnetic trends are quite noisy and discontinuous but probably reflect observations made during mapping of rapidly varying magnetic intensities of rhyolitic - rhyodacitic lavas. Mapping also showed that the majority of the clastic units are not noticeably magnetic, perhaps due to their less brittle physical properties than the more siliceous lavas.

7.4 Diamond Drilling

Within the Henty Fault Zone, a previous BAUS IP survey had identified three responses that warranted diamond drilling viz Anomaly A 2500N 4980E

Anomaly B 1200N 4910E (see Figure 20)

Anomaly C 1000N 4690E

Of these, Anomalies A and C have been diamond drilled (SVD 89-1 and 2 respectively). Anomaly B is located in an area of steep topography and as the anomaly source is shallow, drilling using a portable diamond drill will be much easier to achieve.

Anomaly A is located immediately east of the Henty Fault (see Fig. 21) in an area of mapped black laminated pyritic shale and fine quartz phyric volcaniclastics - epiclastics. A summary log of SVD 89-1 is presented below and Fig. 22 while the complete log is contained in Appendix 3.

SVD 89-1	Collar Co-ords.	2500N 4890E
	Inclination	-50°
	Azimuth	100° Mag
	Depth	154m

Summary Log

	0- 4.2m	Glacial scree
	4.2- 65.2m	Feldspar phyric andesitic lava
	65.2- 76.2m	Chloritized feldspar phyric andesitic volcaniclastic. Massive py po cpy at 66.9m (2cms), 71.9m (30cms), 74.3m (10cms). Strongly broken core and poor core recovery.
Henty Fault Zone	76.2- 79.8m	Interbedded chloritic arenaceous volcaniclastic and chloritic shale.
	79.8- 81.2m	Foliated sericitized coarse arenaceous volcaniclastic.
	81.2-114.0m	Chloritic interbedded fine arenaceous volcaniclastic and chloritic shale.
	114.0-154.1m	Finely laminated pyritic black shale.
	EOH	

The IP source was modelled to be situated at 2500N 4980E at 50m depth. Projection of this down dip correlates well with the pyritic black shale in SVD 89-1 and hence it is assumed that this is the actual source.

Down hole IP logging should however be carried out to confirm this conclusion.

Selected core chip sampling and splitting has been completed and assays of interest are summarized below:

Sample	Interval	Width	Cu	Pb	Zn	Ag	Au	As	Log
17886	71.0-71.9	0.9m		460				0.59%	Chloritic pyritic v'clastic
17887	71.9-72.2	0.3m	2.5%	1620	0.26%	96	0.14	5.0%	Mass. Py Po Cpy
17890	74.3- 76.2 (10% core recovery only)	1.9m	1.0%	1280	0.16%	52	0.06	2.4%	10cms mass. Py Po Cpy +qtz vn v'clastic
17893	78.0- 79.0	1.0m			0.53%				Black shale
17913	114.0-116.0	2.0m			0.23%				Black shale
17915	118.0-120.0	2.0m			0.38%				Black shale
17935	150.1-150.8	0.7m	0.17%			7		3.3%	Chloritic siliceous pyritic breccia

(Values in ppm except where otherwise indicated, blank space implies non anomalous values).

These results demonstrate the polymetallic nature of massive pyritic sulphide, as is often found when drilling adjacent to the Henty Fault. However, the widths and grades are not considered significant and no further work is deemed necessary. ? Analyse for Sn

Anomaly C is also located immediately east of the Henty Fault in an area of poor outcrop. Here the position of the Henty Fault has been inferred from the IP data but experience elsewhere has indicated that this provides a very good approximation.

A summary log of drill hole SVD 89-2 is presented below and in Figure 23. A detailed log is included in Appendix 3.

SVD 89-2	Collar Co-ords.	1000N 4640E
	Inclination	-50°
	Azimuth	100° Mag
	Depth	129.6m

Summary Log

0- 12.1m	Owen Conglomerate scree.
12.1- 19.1m	Chloritized sheared feldspar phyric andesitic lava.
19.1- 27.8m	Silica-carbonate-chlorite breccia.
27.8- 36.4m	Sericitic laminated fine volcaniclastic siltstone.
36.4- 62.4m	Silicified and sericitized banded black siltstone.
62.4- 65.5m	Strongly graphitic fine pyritic black shale.
65.5-129.6m	Fine laminated pyritic black shale. EOH

The IP source has been interpreted at 4700E at 50m depth. This corresponds approximately to a small zone of puggy graphitic pyritic shale immediately above a thick laminated pyritic black shale and is most probably the source of the IP response. Again, down hole IP logging should be carried out to confirm this conclusion.

Selected core chip and split sampling failed to produce any anomalous base or precious metal assays.

One geological observation worthy of comment here is that of stratigraphic facing. In both SVD 89-1 and SVD 89-2, a total of four sedimentary structures were shown to imply a down hole (ie easterly) facing to the stratigraphy. This is not consistent with conclusions drawn from drill core further north at Lakeside nor with the regional interpretation of the stratigraphy. Several possibilities arise:

1. The facing criteria are not primary and therefore not valid.

2. The facing evidence is correct and
   a) The Farrell Sequence here is easterly facing, or
   b) Severe structural perturbations post consolidation have disrupted blocks of the Farrell Sequence.

Evidence from the Tyndall Group would be of obvious benefit here but in the absence of same, it is assumed that a westerly facing is regionally valid.

8.0 CONCLUSIONS

Within the Tyndall Group, a programme of geological mapping, rock chip sampling, ground magnetic and UTEM surveying has resulted in a detailed appreciation of the geological setting and has identified a strike extensive horizon considered favourable for the development of massive base metal sulphide mineralization. No UTEM responses were recorded from the main area of interest within this horizon but two late channel responses are located towards the northern end, in close proximity to a major NNW trending fault. Rock chip anomalism and the presence of old prospector workings further adds to the prospectivity of this area.

Exploration along the Henty Fault has consisted of two diamond drill holes, the results of which have indicated strong IP responses associated with graphitic pyritic black shales. Sub economic widths/grades of base-precious metal geochemistry were recorded in one drill hole while the other was barren.

9.0 RECOMMENDATIONS

Exploration within the Tyndall Group should primarily focus on the horizon of interest at the contact of the western/central zones.

- infill gridding (100m spacing) to accurately map the lithologies and alteration.

- systematic rock chip and auger sampling to map geochemical anomalism and to add to the geological picture in areas of poor outcrop.

- lead isotope analysis of selected samples to prove the Cambrian nature of the mineralization.

- trace element and whole rock analysis using Billiton's lithogeochemical study results.

- diamond drilling of the best UTEM anomaly located at the northern end of the licence.

- diamond drilling of the best geochemical area within the main horizon of interest.

- additional UTEM surveying in areas of minimal coupling resulting from the previous survey.

Within the Henty Fault environs, little more work is recommended. Diamond drilling of Anomaly B using the portable diamond drill is warranted and down hole IP of drill holes SVD 89-1,2 should be carried out.

APPENDIX 1

Rock chip and diamond drill assay results

047

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN W.A.)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

594048

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0168

Your Reference: 11646/LJ70/JPR

Date Received: 31-JAN-1989 Turnaround 2 days
Date Relayed: 2-FEB-1989
Date Reported: 2-FEB-1989

Number of Samples: 18

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

Report Comprising: Cover Sheet
Pages 1 to 2

Comments:

Report Dist'n: Carbon Copies(CC),Electronic Media(EM),Magnetic Media(MM)

Type	Recipient	Location	Date	Copies

Approved Signature:

for

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

043

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Analytical Laboratories (INC. IN WA.)

Job: 9AD0168
O/N: 11646/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16077	<0.01	0.01	<0.01	--	270	390	10
16078	<0.01	--	--	--	13	150	1
16085	<0.01	--	--	--	2	48	<1
16087	0.02	--	--	--	7	160	<1
16088	<0.01	--	--	--	9	20	<1
16089	<0.01	--	--	--	4	250	<1
16090	<0.01	--	--	--	6	54	<1
16091	<0.01	--	--	--	125	7200	6
16092	<0.01	--	--	--	4	180	1
16093	<0.01	--	--	--	5	125	<1
16094	<0.01	--	--	--	2	230	<1
16096	<0.01	--	--	--	11	105	1
16097	<0.01	--	--	--	6	50	<1
16098	<0.01	--	--	--	4	46	<1
16099	<0.01	--	--	--	7	130	<1
15909	<0.01	--	--	--	4	150	1
15910	<0.01	--	--	--	190	135	1
15914	<0.01	--	--	--	9	64	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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Analytical Laboratories (INC. IN WA)

Job: 9AD0168
O/N: 11646/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Sn	Pb	As	Ba
16077	600	2550	62	135
16078	6	52	6	1060
16085	8	19	8	115
16087	10	210	8	1360
16088	10	13	6	650
16089	4	230	3	2250
16090	10	15	5	790
16091	78	5100	<2	280
16092	4	70	6	810
16093	10	60	6	970
16094	6	28	12	2050
16096	<4	22	7	1000
16097	6	62	9	1940
16098	8	62	11	2900
16099	8	68	6	900
15909	4	100	5	1940
15910	6	520	4	1760
15914	<4	78	5	135
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

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File

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0252

Your Reference: 11647/LJ70/JPR

Date Received: 14-FEB-1989 Turnaround 2 days
Date Relayed: 16-FEB-1989
Date Reported: 16-FEB-1989

Number of Samples: 36

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

Report Comprising: Cover Sheet
Pages 1 to 4

Comments:

Report Dist'n: Carbon Copies(CC),Electronic Media(EM),Magnetic Media(MM)

Type	Recipient	Location	Date	Copies

Approved Signature:

for

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

051

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN W.A.)

594052

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16201	<0.01	--	--	--	7	115	<1
16202	0.16	0.09	0.23	--	10	48	<1
16203	0.04	--	--	--	17	50	<1
16204	0.02	--	--	--	9	240	<1
16208	0.04	--	--	--	6	14	<1
16209	0.18	--	--	--	2	84	<1
16210	<0.01	--	--	--	32	160	1
16211	0.09	--	--	--	52	330	2
16212	0.08	--	--	--	12	98	1
16213	0.03	--	--	--	24	140	<1
16214	0.17	0.19	0.15	--	9	90	<1
16215	0.11	--	--	--	6	105	<1
16216	0.02	--	--	--	9	720	1
16217	0.03	--	--	--	3	34	<1
16218	<0.01	--	--	--	110	520	1
16219	0.14	0.13	0.15	--	32	78	1
3600N/8775E	0.06	--	--	--	19	52	<1
3600N/9150E	0.07	--	--	--	16	330	<1
3600N/9175E	0.05	--	--	--	12	40	<1
4000N/8650E	0.01	--	--	--	4	19	<1
4000N/8725E	0.04	0.05	0.02	--	13	90	<1
4000N/8865E	0.01	--	--	--	4	40	<1
4000N/8975E	0.06	--	--	--	3	28	<1
4000N/9095E	<0.01	--	--	--	9	62	<1
4000N/9150E	0.02	--	--	--	14	34	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
15902	0.07	--	--	--	6	26	<1
15903	0.02	--	--	--	56	72	<1
15916	0.06	--	--	--	10	80	<1
15917	0.03	--	--	--	7	40	<1
15920	0.03	0.03	0.02	--	22	125	<1
15921	0.03	--	--	--	140	125	14
15924	0.06	--	--	--	16	26	<1
15925	0.05	--	--	--	12	7	1
15926	<0.01	--	--	--	6	96	<1
15928	0.10	0.09	0.11	--	160	2450	16
15931	<0.01	--	--	--	220	58	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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Analytical Laboratories (INC. IN WA.)

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Pb	As	Ba	Sn
16201	46	4	260	4
16202	9	4	520	<4
16203	7	10	890	8
16204	250	8	2150	<4
16208	240	17	350	6
16209	22	7	1720	4
16210	770	42	1060	6
16211	520	34	75	4
16212	34	26	990	8
16213	58	7	440	4
16214	15	12	860	6
16215	19	12	780	4
16216	115	15	2600	8
16217	19	5	440	6
16218	1580	<2	2700	8
16219	270	13	1040	4
3600N/8775E	40	11	930	10
3600N/9150E	100	13	2200	6
3600N/9175E	8	24	520	<4
4000N/8650E	6	4	860	4
4000N/8725E	38	12	600	<4
4000N/8865E	7	12	460	6
4000N/8975E	5	8	600	<4
4000N/9095E	17	11	730	4
4000N/9150E	12	9	900	<4
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

054
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Analytical Laboratories (INC. IN W.A.)

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Pb	As	Ba	Sn
15902	2	7	920	<4
15903	50	16	910	4
15916	10	6	700	8
15917	9	7	1020	4
15920	28	7	1000	4
15921	2250	<2	1580	8
15924	46	6	25	<4
15925	48	5	95	6
15926	22	5	2250	4
15928	15	36	15	4
15931	1140	46	550	<4
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0379

Your Reference: 11649/LJ70/JPR

Date Received: 6-MAR-1989 Turnaround 3 days
Date Relayed: 9-MAR-1989
Date Reported: 9-MAR-1989

Number of Samples: 82

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

Report Comprising: Cover Sheet
Pages 1 to 8

Comments:

Drill Core 17873-937.

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Approved Signature:

for Harry Fishman

Harry Fishman
Managing Director.
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(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

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Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
15901	<0.01	<0.01	<0.01	--	100	34	<1
15905	0.01	--	--	--	7	175	<1
15906	<0.01	--	--	--	13	100	<1
15932	<0.01	--	--	--	24	98	1
15933	0.16	0.14	0.18	--	180	135	<1
15935	0.04	--	--	--	350	340	2
15936	0.09	0.08	0.10	--	380	230	3
16220	0.01	--	--	--	17	210	1
16221	0.01	--	--	--	60	185	2
16222	<0.01	--	--	--	12	84	<1
16223	<0.01	--	--	--	4	125	<1
16224	<0.01	--	--	--	15	110	<1
16225	0.01	--	--	--	105	125	<1
16226	<0.01	--	--	--	175	630	1
16227	0.01	--	--	--	32	155	<1
16228	<0.01	--	--	--	44	370	1
16229	<0.01	--	--	--	8	1040	1
17873	<0.01	<0.01	<0.01	--	24	520	<1
17874	<0.01	--	--	--	3	170	<1
17875	<0.01	--	--	--	4	110	<1
17876	<0.01	--	--	--	7	170	<1
17877	<0.01	--	--	--	770	1320	2
17878	<0.01	--	--	--	15	145	<1
17879	<0.01	--	--	--	14	155	<1
17880	<0.01	--	--	--	15	490	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
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Job: 9AD0379
O/N: 11649/LJ70/JPR

057

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17881	0.01	--	--	--	520	770	2
17882	<0.01	--	--	--	40	290	1
17883	<0.01	--	--	--	140	660	2
17884	<0.01	--	--	--	94	550	1
17885	<0.01	--	--	--	260	240	1
17886	<0.01	--	--	--	700	450	5
17887	0.10	0.14	0.05	--	2.50%	2600	96
17888	0.01	--	--	--	860	250	6
17889	<0.01	--	--	--	590	190	2
17890	0.05	0.06	0.04	--	1.02%	1640	52
17891	<0.01	--	--	--	80	470	4
17892	<0.01	--	--	--	68	1780	1
17893	<0.01	--	--	--	36	5300	1
17894	<0.01	--	--	--	28	2200	1
17895	<0.01	--	--	--	9	350	1
17896	<0.01	--	--	--	7	165	<1
17897	<0.01	--	--	--	11	200	<1
17898	<0.01	--	--	--	240	155	2
17899	<0.01	--	--	--	190	350	2
17900	<0.01	--	--	--	9	210	<1
17901	<0.01	--	--	--	11	195	<1
17902	<0.01	--	--	--	22	450	1
17903	<0.01	--	--	--	13	800	<1
17904	<0.01	--	--	--	5	250	1
17905	<0.01	--	--	--	22	280	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2
UPPER SCHEME					AAS1C		

058

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17906	<0.01	--	--	--	19	570	1
17907	<0.01	<0.01	<0.01	--	22	165	<1
17908	<0.01	--	--	--	22	750	1
17909	<0.01	--	--	--	50	550	<1
17910	0.01	--	--	--	13	330	<1
17911	<0.01	--	--	--	8	520	1
17912	<0.01	--	--	--	19	370	1
17913	<0.01	--	--	--	190	2300	1
17914	<0.01	--	--	--	135	870	1
17915	<0.01	--	--	--	210	3850	1
17916	<0.01	--	--	--	48	330	<1
17917	<0.01	--	--	--	80	860	1
17918	<0.01	<0.01	<0.01	--	110	1400	1
17919	<0.01	--	--	--	64	340	1
17920	<0.01	--	--	--	105	150	2
17921	<0.01	--	--	--	130	105	1
17922	<0.01	--	--	--	110	105	<1
17923	0.01	--	--	--	100	190	1
17924	<0.01	<0.01	<0.01	--	64	185	1
17925	<0.01	--	--	--	100	185	1
17926	<0.01	--	--	--	80	180	<1
17927	<0.01	--	--	--	92	150	1
17928	<0.01	--	--	--	52	180	<1
17929	<0.01	--	--	--	68	470	1
17930	<0.01	--	--	--	240	430	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17931	<0.01	--	--	--	110	120	1
17932	<0.01	--	--	--	48	70	<1
17933	<0.01	--	--	--	26	72	<1
17934	<0.01	--	--	--	135	72	<1
17935	<0.01	--	--	--	1720	135	7
17936	0.01	--	--	--	140	66	1
17937	<0.01	--	--	--	48	94	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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Analytical Laboratories (INC IN W.A.)

060

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
15901	48	830	20
15905	10	800	22
15906	11	1740	17
15932	17	530	40
15933	30	750	34
15935	48	500	110
15936	66	440	190
16220	470	1020	350
16221	50	430	900
16222	20	650	32
16223	12	950	32
16224	9	590	15
16225	5	2350	17
16226	50	1600	1920
16227	11	1580	540
16228	22	1040	1100
16229	26	260	460
17873	145	210	115
17874	16	105	16
17875	15	70	7
17876	22	65	36
17877	120	30	420
17878	52	30	30
17879	16	120	40
17880	30	175	84
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

061

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17881	60	115	125
17882	640	105	62
17883	40	170	240
17884	430	115	68
17885	420	95	40
17886	5900	65	460
17887	5.00%	<10	1620
17888	1860	65	260
17889	1080	145	360
17890	2.40%	25	1280
17891	165	100	120
17892	230	240	270
17893	110	135	50
17894	130	280	120
17895	24	320	56
17896	86	330	70
17897	56	220	54
17898	105	145	80
17899	145	160	135
17900	92	200	90
17901	72	145	68
17902	92	330	150
17903	42	270	110
17904	74	155	68
17905	260	115	96
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1
UPPER SCHEME	XRF2		

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

(062

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17906	38	220	180
17907	38	200	80
17908	52	250	230
17909	74	155	270
17910	84	185	160
17911	50	125	290
17912	120	115	135
17913	60	195	340
17914	78	200	145
17915	74	250	820
17916	34	220	98
17917	40	185	220
17918	38	240	330
17919	48	220	160
17920	64	175	54
17921	70	165	82
17922	44	165	58
17923	210	190	84
17924	50	320	36
17925	96	320	74
17926	42	290	62
17927	68	300	68
17928	78	370	54
17929	68	155	78
17930	320	75	80
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

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Analytical Laboratories (INC. IN W.A.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

063

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17931	82	240	38
17932	62	260	34
17933	54	260	34
17934	155	195	42
17935	3.30%	10	210
17936	760	300	34
17937	320	290	38
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1
UPPER SCHEME	XRF2		

594065

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File LJ70 846

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0429

Your Reference: 11650/LJ~~50~~70/JPR

Date Received: 15-MAR-1989 Turnaround 2 days
Date Relayed: 17-MAR-1989
Date Reported: 17-MAR-1989

Number of Samples: 61

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

Report Comprising: Cover Sheet
Pages 1 to 6

Comments:

DRILL CORE 17938-93

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Approved Signature:

for Harry Fishman

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

CLASSIC COMLABS LTD
Analytical Laboratories (INC IN WA)

Job: 9AD0429
O/N: 11650/LJ50/JPR

065

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16230	<0.01	<0.01	<0.01	--	125	165	<1
16231	0.03	--	--	--	110	200	1
16232	0.02	--	--	--	120	185	1
16233	<0.01	--	--	--	36	110	<1
16234	<0.01	--	--	--	7	140	<1
17938	<0.01	--	--	--	125	200	<1
17939	<0.01	--	--	--	10	120	<1
17940	<0.01	--	--	--	54	410	<1
17941	<0.01	--	--	--	7	150	<1
17942	<0.01	--	--	--	12	200	<1
17943	<0.01	--	--	--	9	310	1
17944	<0.01	--	--	--	17	330	<1
17945	<0.01	--	--	--	54	430	<1
17946	<0.01	--	--	--	11	88	<1
17947	<0.01	--	--	--	9	62	<1
17948	<0.01	--	--	--	7	210	<1
17949	<0.01	--	--	--	3	26	<1
17950	<0.01	--	--	--	6	28	<1
17951	<0.01	--	--	--	2	20	<1
17952	<0.01	--	--	--	5	22	<1
17953	<0.01	<0.01	<0.01	--	4	30	<1
17954	<0.01	--	--	--	5	60	1
17955	<0.01	--	--	--	6	125	1
17956	<0.01	--	--	--	6	82	1
17957	<0.01	--	--	--	6	30	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
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Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17958	<0.01	--	--	--	4	110	<1
17959	<0.01	--	--	--	3	56	1
17960	<0.01	--	--	--	48	150	3
17961	<0.01	--	--	--	44	230	2
17962	<0.01	--	--	--	24	24	1
17963	<0.01	--	--	--	34	50	<1
17964	<0.01	--	--	--	46	64	<1
17965	<0.01	--	--	--	54	270	1
17966	<0.01	--	--	--	84	290	1
17967	<0.01	--	--	--	72	540	<1
17968	<0.01	--	--	--	62	250	<1
17969	<0.01	--	--	--	72	135	1
17970	<0.01	--	--	--	80	320	1
17971	<0.01	--	--	--	92	110	1
17972	<0.01	--	--	--	92	110	1
17973	<0.01	<0.01	<0.01	--	80	110	1
17974	<0.01	--	--	--	78	105	1
17975	<0.01	--	--	--	92	56	1
17976	<0.01	--	--	--	82	60	1
17977	<0.01	--	--	--	80	46	1
17978	<0.01	--	--	--	84	185	1
17979	<0.01	--	--	--	72	220	2
17980	<0.01	--	--	--	94	46	1
17981	<0.01	--	--	--	74	42	1
17982	<0.01	--	--	--	80	52	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

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Job: 9AD0429
O/N: 11650/LJ50/JPR

067

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17983	<0.01	--	--	--	54	72	1
17984	<0.01	--	--	--	58	76	1
17985	<0.01	--	--	--	64	42	1
17986	<0.01	--	--	--	88	62	1
17987	<0.01	--	--	--	90	96	1
17988	<0.01	--	--	--	82	36	2
17989	<0.01	--	--	--	82	96	1
17990	<0.01	--	--	--	98	125	1
17991	<0.01	--	--	--	105	78	1
17992	<0.01	--	--	--	98	60	1
17993	<0.01	<0.01	<0.01	--	74	60	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

065

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Ba	Pb	As
16230	650	115	14
16231	185	280	140
16232	180	510	92
16233	440	540	15
16234	330	130	11
17938	50	22	88
17939	25	19	100
17940	15	16	32
17941	45	9	64
17942	50	38	82
17943	50	125	72
17944	45	80	105
17945	100	90	54
17946	230	40	11
17947	190	18	16
17948	185	80	17
17949	165	13	13
17950	185	20	16
17951	145	9	16
17952	155	13	14
17953	175	15	14
17954	210	72	13
17955	140	76	12
17956	175	360	9
17957	175	22	14
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

Job: 9AD0429
O/N: 11650/LJ50/JPR

069

ANALYTICAL REPORT

SAMPLE	Ba	Pb	As
17958	170	28	10
17959	195	46	12
17960	140	850	86
17961	230	220	74
17962	230	54	36
17963	230	90	32
17964	250	70	36
17965	230	98	40
17966	210	84	58
17967	230	94	52
17968	250	58	56
17969	210	100	36
17970	210	90	38
17971	240	74	38
17972	185	135	36
17973	190	94	34
17974	230	40	24
17975	210	84	40
17976	240	115	36
17977	200	68	32
17978	185	360	26
17979	240	390	66
17980	220	105	26
17981	190	52	38
17982	220	64	30
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Ba	Pb	As
17983	250	66	36
17984	260	140	60
17985	270	70	54
17986	270	220	54
17987	210	230	36
17988	250	370	60
17989	230	400	98
17990	230	260	105
17991	200	130	140
17992	220	60	125
17993	240	62	160
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

APPENDIX 1

Rock chip and diamond drill assay results

Shell METALS DIVISION

SAMPLE RECORD

SAMPLE TYPE: ROCK CHIP PROJECT / LOCATION: STERLING VALLEY HOLE / GRID: SAMPLER: J. RANDELL C. CREAGH DATE: 2/89

ASSAY LAB: COMLABS SAMPLE DISPATCH ASSAY REPORT Nos: MAP REF:

SAMPLE STORAGE: DEVONPORT A.M.G. ORDER Nos: PHOTO REF:

SAMPLE No.	LOCATION N	INTERVAL E	INTER'L (m)	ANALYSES												DESCRIPTION
16201	373800	385960														Mag. chl. qtz-phyric lava + py.
16202	374000	385350														Qtz vned chl K-spar feldsp viclastic
16203	371800	386690														Qtz felds bio chl granite qvned.
16204	372000	385890														Ferrug qtz felds rhyodac. lava
16208	372000	385640														Banded massive qtz.
16209	372000	384900														Mag-chl K-spar rhyolite lava
16210	371600	386030														Py. qtz phyric chl. rhyolite lava
16211	371600	385810														Pyritic chl. sheared volcanic
16212	371600	384620														Schistose chl-mag-py schist.
16213	371600	384050														Felds. phyric dacitic viclastic (carb)
16214	371400	385920														Ferrug qtz felds chl. epiclastic
16215	371400	385400														Chl. qtz ser schist + 2% py.
16216	371400	385340														Chl mag qtz phyric schist + 2% py.
16217	372400	385880														Epid. K-spar rhyolite lava + 2% py
16218	374400	385160														Chl. felds rhyodacitic viclastic (py)
16219	374400	385370														Sheeted q-vnd silic. rhyolite lava
16220	374000	386320														Ferrug. ser chl Kspar q-rhyolite
16221	374000	387110														Ferrug. chl. qtz phyric rhyolite.
16222	374200	386750														Qtz vned ferrug. chl. epiclastic
16223	374200	386170														Pyritic chl. qtz phyric rhyolite
16224	374400	386650														Pyritic chl. volcanic (epiclastic)
16225	374600	385700														Ferrug. ser chl Kspar rhyol. viclastic
16226	373000	385105														Silicified ash + py sph gal 2% blebs
16227	373000	385090														Sericitic lam. ash + epiclastic
16228	373000	385080														Silic. ash + qvnlets + py + Mn.
16229	373000	385060														Ferrug + Mn chl schist.
16230	371720	386340														Mn ferrug. chl. lava.
16231	372100	386300														Ferrug. py. q vn + viclastic ash.
16232	372100	386300														Pyritic layered ferrug. q-vn.
16233	372120	386300														Pyrite 2% in ferrug. seric viclastic
16234	373920	386280														Ferrug q-phyric rhyolite lava
15904	373000	386340	Not	Assayed												Qtz-K phyric biotite rhyolitic porph
15905	373000	386770														Dacitic chloritic volcaniclastic
15906	373000	Tk Line														Quartz phyric rhyolite.
15909	372800	385100														F.gr. cherty ash + pyrite

REMARKS:

594073

Shell METALS DIVISION

SAMPLE RECORD

SAMPLE TYPE: Rock Chip | PROJECT / LOCATION: Sterling Valley | HOLE / GRID: | SAMPLER: J. Randell, C. Creagh | DATE: 2/89

ASSAY LAB: Comlabs | SAMPLE DISPATCH | ASSAY REPORT NOS: | MAP REF:

SAMPLE STORAGE: Devonport | ORDER NOS: | PHOTO REF:

SAMPLE No.	LOCATION N. AMG	INTERVAL E. AMG	INTER'L (m)	ANALYSES	DESCRIPTION
15912	373000	385170			Pyritic rhyodacitic v'clastic
15914	373400	386490			Siliceous chert.
16077	2500N	5000E	Grid		Pyritic quartz carbonate blackshale
16078	372400	386260			Pty veined ferrug. quartz phyric volc.
16085	372600	386280			Mass. sil. chlorite-magnetite.
16087	372600	384910			Pty veined sil. chl rhyodacite lava
16088	372600	384890			" " K-spar " "
16089	373200	385720			Chl K-spar 1% py. rhyodacitic lava
16090	373200	385660			Sheared q-vned " "
16091	373200	385595			Digging. Chlq-phyric " + gal-sph-py
16092	373200	385 ?			Cherty ash, minor lithics.
16093	373400	385810			Pty phyric K-spar rhyodacite lava 2% py.
16094	373400	385790			Pty felds phyric chl rhyodacite lava + py
16096	373400	385280			Cherty sericitic ash.
16097	372600	385140			Lam cherty ash, trace q-cb-py vns.
16098	373600	385130			Ferrug. & pty veined cherty ser. ash.
16099	373600	385590			1% py in ser. pty phyric rhyodacite
15907	372800	385840	Not	Assayed	Flow banded rhyodacitic lava
15908	372800	385540	"	"	Chloritic quartz phyric volcanic
15911	373000	385090	"	"	Banded chert.
15912	373200	386430	"	"	Basic chloritic intrusive
15913	373200	386490	"	"	Chloritic rhyodacite v'clastic
15918	372100		"	"	Chloritic quartz phyric rhyolitic lava
15919	372200	385930	"	"	Magnetic K-spar Rhyolite lava
15920	372200	384780	"	"	Rhyodacitic lava.
15921	371800	386000	"	"	Sericitic dacitic lava
15922	371800	385900	"	"	Dacitic lava
15923	371800	385760	"	"	Basic intrusive
15924	371800	385760			Quartz breccia veins
15925	371800	385500			Silicified quartz-felds. rhyodacite lava
15926	371800	384590			Pty veined rhyolitic lava.
15928	371240	386000			Silicified pyritic volcanic
15929	371200	385740	Not	Assayed	Rhyodacitic epiclastic
15930	371200	385680	"	"	Quartz phyric epiclastic
15931	371200	385640			Quartz veined + gal. Cambro-Ordovician

REMARKS:

594074

Shell METALS DIVISION

SAMPLE RECORD

Sheet 3 of 3.

SAMPLE TYPE: Rock Chip | PROJECT / LOCATION: Sterling Valley | HOLE / GRID: | SAMPLER: J. Randell C. Creagh | DATE: 2/89

ASSAY LAB: Comlabs | SAMPLE DISPATCH | ASSAY REPORT NOS: | MAP REF:

SAMPLE STORAGE: | ORDER NOS: | PHOTO REF:

SAMPLE No.	LOCATION AMG N	INTERVAL AMG E	INTER'L (m)	ANALYSES	DESCRIPTION
15946	374000	385050			Pyrite veined quartz felds rhyodacite lava
15947	374000	385280			Pyrite chlorite Kspar veins
15948	373800	384550			Chlorite quartz vein stockwork
15949	373800	384630			Pyrite veins in chloritised volcanic
15950	373800	384920			Pyrite veined bio. rhyodac. vitclastic
15951	374200	384980			Massive milky quartz
15952	374800	385220			Pyrite sphal pyrite veins
15954	374800	385600		Not Assayed.	Vanditt volcanic

REMARKS:

59075

DEPARTMENT OF MINES

594076

TASMANIA

Launceston Office:
Chemical and Metallurgical
Laboratory,
287 Wellington Street.
LAUNCESTON 7249

Enquiries: P L James
Phone: 003 442431
Your ref.: 08467
Our file:

26 May 1989

Attent. Jeff Randell

Shell Company of Australia Ltd
Metals Division
PO Box 860
DEVONPORT TAS 7310

Dear Sir

Enclosed please find results of analyses of samples submitted by you.

Determinations were made by methods as follows.

Au: By 50 gram fire assay/AAS finish

Ag, Cu, Zn, Pb, As, Bi: By AAS

Ba, Sn, W, Sb: By XRF

You did require Pb, As and Bi to be determined by XRF. However, there are inherent difficulties in the XRF determination of these elements in the presence of one another, which can cause serious abberations in results. Some of these became apparent in the work done on your samples and accordingly we are giving you AAS results for these three elements. The method of digestion plus special precautions to retain the elements in solution gives reliable results. All minerals of interest will be in solution unless in the form of refractory silicates.

A further note: The XRF determination of tin indicates total value and does not differentiate between cassiterite and stannite. Your sample No 16329 showed a significant amount of tin present.

Checks on a number of gold assays will follow early next week.

Yours faithfully

STERLING VALLEY 15946-52, 54
08467/MT24/JPR.

(P L James)
CHIEF CHEMIST & METALLURGIST

Enc.

RE270

Shell Co of Aust. Reg. No 893282-324 g/t O/No 08467 26.5.8

Reg. Nos	Desc.	Ag	Cu	Zn	Pb	As	Ba	Sn	W	Bi	Sb	Au
893282	15946	<5	90	55	30	3500	1800	25	55	40	<10	<0.05
283	947	<5	55	20	<5	<200	630	<10	<50	<10	<10	<0.05
284	948	<5	40	15	50	<200	<20	160	<50	<10	<10	<0.05
285	949	<5	100	25	90	300	35	35	75	<10	<10	0.06
286	950	<5	40	320	110	<200	3660	<10	50	10	<10	<0.05
287	951	<5	80	60	380	<200	30	<10	<50	15	<10	<0.05
288	952	30	960	35700	4500	15700	700	10	550	15	15	0.30
289	954	190	70	14100	19000	<200	220	<10	490	<10	20	<0.05
290	16301	10	90	110	930	770	230	<10	<50	25	10	0.97
291	302	<5	60	70	35	<200	410	<10	60	<10	<10	<0.05
292	303	<5	50	60	55	<200	450	<10	<50	<10	<10	<0.05
293	304	<5	40	80	20	<200	590	<10	60	<10	<10	<0.05
294	305	<5	35	70	25	<200	660	<10	<50	<10	<10	<0.05
295	306	<5	55	50	20	<200	540	<10	<50	<10	<10	<0.05
296	307	<5	10	10	55	<200	40	<10	<50	<10	20	<0.05
297	308	<5	40	15	10	<200	230	<10	55	<10	<10	<0.05
298	309	<5	45	35	20	<200	510	<10	85	<10	<10	<0.05
299	310	<5	40	15	20	<200	70	<10	70	<10	<10	<0.05
300	311	<5	45	35	5	<200	130	<10	<50	<10	<10	<0.05
301	312	<5	60	10	10	<200	<20	<10	<50	30	<10	<0.05
302	313	<5	60	90	30	<200	230	<10	<50	<10	<10	<0.05
303	314	<5	50	55	65	640	130	<10	<50	10	20	1.18
304	315	<5	40	15	10	<200	60	<10	<50	<10	<10	<0.05
305	316	<5	55	25	<5	<200	170	<10	<50	<10	<10	<0.05
306	317	<5	50	20	<5	<200	200	<10	<50	<10	15	<0.05
307	318	<5	75	45	10	<200	280	<10	<50	<10	<10	<0.05
308	319	<5	30	10	<5	<200	360	<10	<50	<10	<10	<0.05

DEPARTMENT OF MINES

594078

TASMANIA

Launceston Office:
Chemical and Metallurgical Laboratory,
287 Wellington Street,
LAUNCESTON 7249

Enquiries:
Phone:
Your ref.:
Our file:

Shell Company of Aust Ltd
Metal Division
P.O. Box 860
Devonport 7310

1.6.89

Attent. Chris. Craig.

Dear Chris,

The check gold assays on a selection of your samples have now been done. The results are as follows:

		Au g/t		
Reg. No	Description	Reported	Check (s)	
893282	15946	<0.05	0.12	0.18
893285	15949	0.06	0.08	
3288	15952	0.30	0.36	
3290	16301	0.97	1.08	
3300	16311	<0.05	<0.05	
3303	16314	1.18	1.95	2.2
3311	16322	<0.05	0.16	0.06
3318	16329	<0.05	0.08	0.14
3319	16330	<0.05	0.07	
3323	16334	41.6	43.1	
3324	16335	11.8	10.0	

We have checked approximately one in each ten plus those showing significant gold values. Your Ref. No 16330 was checked because a significant amount of arsenic was present.

The deviations in results showing in replicate assays on some samples is almost certainly caused by "shotty" gold.

If you think it necessary we could regrind the assay pulps for a longer period to further "flour" the gold and re-assay.

The only other way to produce a more definitive result would be to do screened fire assays on a comparatively large sample, which is quite costly and time consuming.

Telephone (003) 44 2431 Fax (003) 44 6565

K6278

I must apologise for the delay in sending you the results which went out to you last week.

Your samples were given high priority but unfortunately the XRF assays for lead, bismuth and arsenic, (the method required by Jeff Randell) gave all sorts of trouble. We had consultation with AMDEL on the subject and they experienced same problems and I understand that XRF is no longer used by them for these elements in the presence of one another.

As stated in the letter covering your results, the XRF method was abandoned and results obtained by AAS.

The problems outlined were the main cause of delay and will not occur in future.

It might be of interest to you to know that we have recently taken part in a NATA gold assaying proficiency test.

Our results on the six samples assayed were $\pm$ one standard deviation in all cases.

Some other lab's were not so precise with a few quite outlandish results being recorded.

Yours faithfully,

(P.L. James)
Chief Chemist & Metallurgist (Rela)

DEPARTMENT OF MINES

594080 845

Launceston Office:
Chemical and Metallurgical Laboratory,
287 Wellington Street,
LAUNCESTON 7249

Shell Co of Aust
Metals Division
P.O. Box 860
Devonport 7310

3th July 1989

Attent. Mr. Jeff Randell/Chris Craig

Dear Sirs,

We have had occasion to check a number of lead assays recently done in this laboratory.

Three out of the recent suite of forty three samples submitted by you were included in this exercise.

The results of these check assays are as follows:

		Lead Assay % Pb	
Reg. No	Your Ref.	Previous	Repeat
893288	15952	0.45	0.43
893289	15954	1.9	11.7
893323	16334	0.41	0.39

The possibility of error was only present in samples containing more than 2% Lead.

However, as a matter of course, your other two samples showing significant lead were also checked.

Would you please therefore amend the result of No 893289/15954 from 1.9% (19000g/t) to 11.7%. The other two results in question were found to be correct.

The cause of the error has been identified and the possibility of it occurring again has been eliminated.

I apologise for any inconvenience that may have been caused.

Yours faithfully,

(P.L. James)
Chief Chemist & Metallurgist

Telephone (003) 44 2431 Fax (003) 44 6565

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

594081

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0168

Your Reference: 11646/LJ70/JPR

Date Received: 31-JAN-1989 Turnaround 2 days
Date Relayed: 2-FEB-1989
Date Reported: 2-FEB-1989

Number of Samples: 18

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

Report Comprising: Cover Sheet
Pages 1 to 2

Comments:

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Type	Recipient	Location	Date	Copies

Approved Signature:

for

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0168
O/N: 11646/LJ70/JPR

594082

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16077	<0.01	0.01	<0.01	--	270	390	10
16078	<0.01	--	--	--	13	150	1
16085	<0.01	--	--	--	2	48	<1
16087	0.02	--	--	--	7	160	<1
16088	<0.01	--	--	--	9	20	<1
16089	<0.01	--	--	--	4	250	<1
16090	<0.01	--	--	--	6	54	<1
16091	<0.01	--	--	--	125	7200	6
16092	<0.01	--	--	--	4	180	1
16093	<0.01	--	--	--	5	125	<1
16094	<0.01	--	--	--	2	230	<1
16096	<0.01	--	--	--	11	105	1
16097	<0.01	--	--	--	6	50	<1
16098	<0.01	--	--	--	4	46	<1
16099	<0.01	--	--	--	7	130	<1
15909	<0.01	--	--	--	4	150	1
15910	<0.01	--	--	--	190	135	1
15914	<0.01	--	--	--	9	64	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC IN W.A.)

Job: 9AD0168
O/N: 11646/LJ70/JPR

594083

ANALYTICAL REPORT

SAMPLE	Sn	Pb	As	Ba
16077	600	2550	62	135
16078	6	52	6	1060
16085	8	19	8	115
16087	10	210	8	1360
16088	10	13	6	650
16089	4	230	3	2250
16090	10	15	5	790
16091	78	5100	<2	280
16092	4	70	6	810
16093	10	60	6	970
16094	6	28	12	2050
16096	<4	22	7	1000
16097	6	62	9	1940
16098	8	62	11	2900
16099	8	68	6	900
15909	4	100	5	1940
15910	6	520	4	1760
15914	<4	78	5	135
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

594084

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

File

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0252

Your Reference: 11647/LJ70/JPR

Date Received: 14-FEB-1989 Turnaround 2 days
Date Relayed: 16-FEB-1989
Date Reported: 16-FEB-1989

Number of Samples: 36

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

Report Comprising: Cover Sheet
Pages 1 to 4

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Approved Signature:

for

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16201	<0.01	--	--	--	7	115	<1
16202	0.16	0.09	0.23	--	10	48	<1
16203	0.04	--	--	--	17	50	<1
16204	0.02	--	--	--	9	240	<1
16208	0.04	--	--	--	6	14	<1
16209	0.18	--	--	--	2	84	<1
16210	<0.01	--	--	--	32	160	1
16211	0.09	--	--	--	52	330	2
16212	0.08	--	--	--	12	98	1
16213	0.03	--	--	--	24	140	<1
16214	0.17	0.19	0.15	--	9	90	<1
16215	0.11	--	--	--	6	105	<1
16216	0.02	--	--	--	9	720	1
16217	0.03	--	--	--	3	34	<1
16218	<0.01	--	--	--	110	520	1
16219	0.14	0.13	0.15	--	32	78	1

UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
15920	0.03	0.03	0.02	--	22	125	<1
15921	0.03	--	--	--	140	125	14
15924	0.06	--	--	--	16	26	<1
15925	0.05	--	--	--	12	7	1
15926	<0.01	--	--	--	6	96	<1
15928	0.10	0.09	0.11	--	160	2450	16
15931	<0.01	--	--	--	220	58	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Pb	As	Ba	Sn
16201	46	4	260	4
16202	9	4	520	<4
16203	7	10	890	8
16204	250	8	2150	<4
16208	240	17	350	6
16209	22	7	1720	4
16210	770	42	1060	6
16211	520	34	75	4
16212	34	26	990	8
16213	58	7	440	4
16214	15	12	860	6
16215	19	12	780	4
16216	115	15	2600	8
16217	19	5	440	6
16218	1580	<2	2700	8
16219	270	13	1040	4
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0252
O/N: 11647/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Pb	As	Ba	Sn
15920	28	7	1000	4
15921	2250	<2	1580	8
15924	46	6	25	<4
15925	48	5	95	6
15926	22	5	2250	4
15928	15	36	15	4
15931	1140	46	550	<4
UNITS	ppm	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1	XRF1

594089

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN W.A.)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0379

Your Reference: 11649/LJ70/JPR

Date Received: 6-MAR-1989 Turnaround 3 days
Date Relayed: 9-MAR-1989
Date Reported: 9-MAR-1989

Number of Samples: 82

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

Report Comprising: Cover Sheet
Pages 1 to 8

Comments:

Drill Core 17873-937.

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Approved Signature:

for Harry Fishman

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

594090

CLASSIC COMLABS LTD

Analytical Laboratories (INC IN WA)

Job: 9AD0378
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
15905	0.01	--	--	--	7	175	<1
15906	<0.01	--	--	--	13	100	<1
16220	0.01	--	--	--	17	210	1
16221	0.01	--	--	--	60	185	2
16222	<0.01	--	--	--	12	84	<1
16223	<0.01	--	--	--	4	125	<1
16224	<0.01	--	--	--	15	110	<1
16225	0.01	--	--	--	105	125	<1
16226	<0.01	--	--	--	175	630	1
16227	0.01	--	--	--	32	155	<1
16228	<0.01	--	--	--	44	370	1
16229	<0.01	--	--	--	8	1040	1
17873	<0.01	<0.01	<0.01	--	24	520	<1
17874	<0.01	--	--	--	3	170	<1
17875	<0.01	--	--	--	4	110	<1
17876	<0.01	--	--	--	7	170	<1
17877	<0.01	--	--	--	770	1320	2
17878	<0.01	--	--	--	15	145	<1
17879	<0.01	--	--	--	14	155	<1
17880	<0.01	--	--	--	15	490	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17881	0.01	--	--	--	520	770	2
17882	<0.01	--	--	--	40	290	1
17883	<0.01	--	--	--	140	660	2
17884	<0.01	--	--	--	94	550	1
17885	<0.01	--	--	--	260	240	1
17886	<0.01	--	--	--	700	450	5
17887	0.10	0.14	0.05	--	2.50%	2600	96
17888	0.01	--	--	--	860	250	6
17889	<0.01	--	--	--	590	190	2
17890	0.05	0.06	0.04	--	1.02%	1640	52
17891	<0.01	--	--	--	80	470	4
17892	<0.01	--	--	--	68	1780	1
17893	<0.01	--	--	--	36	5300	1
17894	<0.01	--	--	--	28	2200	1
17895	<0.01	--	--	--	9	350	1
17896	<0.01	--	--	--	7	165	<1
17897	<0.01	--	--	--	11	200	<1
17898	<0.01	--	--	--	240	155	2
17899	<0.01	--	--	--	190	350	2
17900	<0.01	--	--	--	9	210	<1
17901	<0.01	--	--	--	11	195	<1
17902	<0.01	--	--	--	22	450	1
17903	<0.01	--	--	--	13	800	<1
17904	<0.01	--	--	--	5	250	1
17905	<0.01	--	--	--	22	280	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2
UPPER SCHEME					AAS1C		

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17906	<0.01	--	--	--	19	570	1
17907	<0.01	<0.01	<0.01	--	22	165	<1
17908	<0.01	--	--	--	22	750	1
17909	<0.01	--	--	--	50	550	<1
17910	0.01	--	--	--	13	330	<1
17911	<0.01	--	--	--	8	520	1
17912	<0.01	--	--	--	19	370	1
17913	<0.01	--	--	--	190	2300	1
17914	<0.01	--	--	--	135	870	1
17915	<0.01	--	--	--	210	3850	1
17916	<0.01	--	--	--	48	330	<1
17917	<0.01	--	--	--	80	860	1
17918	<0.01	<0.01	<0.01	--	110	1400	1
17919	<0.01	--	--	--	64	340	1
17920	<0.01	--	--	--	105	150	2
17921	<0.01	--	--	--	130	105	1
17922	<0.01	--	--	--	110	105	<1
17923	0.01	--	--	--	100	190	1
17924	<0.01	<0.01	<0.01	--	64	185	1
17925	<0.01	--	--	--	100	185	1
17926	<0.01	--	--	--	80	180	<1
17927	<0.01	--	--	--	92	150	1
17928	<0.01	--	--	--	52	180	<1
17929	<0.01	--	--	--	68	470	1
17930	<0.01	--	--	--	240	430	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17931	<0.01	--	--	--	110	120	1
17932	<0.01	--	--	--	48	70	<1
17933	<0.01	--	--	--	26	72	<1
17934	<0.01	--	--	--	135	72	<1
17935	<0.01	--	--	--	1720	135	7
17936	0.01	--	--	--	140	66	1
17937	<0.01	--	--	--	48	94	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
15905	10	800	22
15906	11	1740	17
16220	470	1020	350
16221	50	430	900
16222	20	650	32
16223	12	950	32
16224	9	590	15
16225	5	2350	17
16226	50	1600	1920
16227	11	1580	540
16228	22	1040	1100
16229	26	260	460
17873	145	210	115
17874	16	105	16
17875	15	70	7
17876	22	65	36
17877	120	30	420
17878	52	30	30
17879	16	120	40
17880	30	175	84
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17881	60	115	125
17882	640	105	62
17883	40	170	240
17884	430	115	68
17885	420	95	40
17886	5900	65	460
17887	5.00%	<10	1620
17888	1860	65	260
17889	1080	145	360
17890	2.40%	25	1280
17891	165	100	120
17892	230	240	270
17893	110	135	50
17894	130	280	120
17895	24	320	56
17896	86	330	70
17897	56	220	54
17898	105	145	80
17899	145	160	135
17900	92	200	90
17901	72	145	68
17902	92	330	150
17903	42	270	110
17904	74	155	68
17905	260	115	96
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1
UPPER SCHEME	XRF2		

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17906	38	220	180
17907	38	200	80
17908	52	250	230
17909	74	155	270
17910	84	185	160
17911	50	125	290
17912	120	115	135
17913	60	195	340
17914	78	200	145
17915	74	250	820
17916	34	220	98
17917	40	185	220
17918	38	240	330
17919	48	220	160
17920	64	175	54
17921	70	165	82
17922	44	165	58
17923	210	190	84
17924	50	320	36
17925	96	320	74
17926	42	290	62
17927	68	300	68
17928	78	370	54
17929	68	155	78
17930	320	75	80
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0379
O/N: 11649/LJ70/JPR

ANALYTICAL REPORT

SAMPLE	As	Ba	Pb
17931	82	240	38
17932	62	260	34
17933	54	260	34
17934	155	195	42
17935	3.30%	10	210
17936	760	300	34
17937	320	290	38
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1
UPPER SCHEME	XRF2		

594098

CLASSIC COMLABS LTD

Analytical Laboratories (INC. IN WA)

305 South Road, Mile End South, South Australia, 5031
Telephone: (08) 43 5722 Fax: (08) 234 0321 Telex: LABCOM AA89323

File
LJ70
846

Mr. Jeff Randell
Billiton Australia Ltd
30 Mersey Main Road
Spreyton
Devonport
TAS 7310 Australia

JOB NUMBER: 9AD0429

Your Reference: 11650/LJ~~60~~70/JPR

Date Received: 15-MAR-1989 Turnaround 2 days
Date Relayed: 17-MAR-1989
Date Reported: 17-MAR-1989

Number of Samples: 61

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

Report Comprising: Cover Sheet
Pages 1 to 6

Comments:

DRILL CORE 17938-93

Report Dist'n: Carbon Copies(CC),Electronic Media(EM),Magnetic Media(MM)

Type	Recipient	Location	Date	Copies

Approved Signature:

for Harry Fishman

Harry Fishman
Managing Director.
CLASSIC COMLABS LTD
(Please address any enquiries to Mr. Trevor Francis)

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

CLASSIC COMLABS LTD
Analytical Laboratories (INC IN W.A.)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
16230	<0.01	<0.01	<0.01	--	125	165	<1
16231	0.03	--	--	--	110	200	1
16232	0.02	--	--	--	120	185	1
16233	<0.01	--	--	--	36	110	<1
16234	<0.01	--	--	--	7	140	<1
17938	<0.01	--	--	--	125	200	<1
17939	<0.01	--	--	--	10	120	<1
17940	<0.01	--	--	--	54	410	<1
17941	<0.01	--	--	--	7	150	<1
17942	<0.01	--	--	--	12	200	<1
17943	<0.01	--	--	--	9	310	1
17944	<0.01	--	--	--	17	330	<1
17945	<0.01	--	--	--	54	430	<1
17946	<0.01	--	--	--	11	88	<1
17947	<0.01	--	--	--	9	62	<1
17948	<0.01	--	--	--	7	210	<1
17949	<0.01	--	--	--	3	26	<1
17950	<0.01	--	--	--	6	28	<1
17951	<0.01	--	--	--	2	20	<1
17952	<0.01	--	--	--	5	22	<1
17953	<0.01	<0.01	<0.01	--	4	30	<1
17954	<0.01	--	--	--	5	60	1
17955	<0.01	--	--	--	6	125	1
17956	<0.01	--	--	--	6	82	1
17957	<0.01	--	--	--	6	30	<1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17958	<0.01	--	--	--	4	110	<1
17959	<0.01	--	--	--	3	56	1
17960	<0.01	--	--	--	48	150	3
17961	<0.01	--	--	--	44	230	2
17962	<0.01	--	--	--	24	24	1
17963	<0.01	--	--	--	34	50	<1
17964	<0.01	--	--	--	46	64	<1
17965	<0.01	--	--	--	54	270	1
17966	<0.01	--	--	--	84	290	1
17967	<0.01	--	--	--	72	540	<1
17968	<0.01	--	--	--	62	250	<1
17969	<0.01	--	--	--	72	135	1
17970	<0.01	--	--	--	80	320	1
17971	<0.01	--	--	--	92	110	1
17972	<0.01	--	--	--	92	110	1
17973	<0.01	<0.01	<0.01	--	80	110	1
17974	<0.01	--	--	--	78	105	1
17975	<0.01	--	--	--	92	56	1
17976	<0.01	--	--	--	82	60	1
17977	<0.01	--	--	--	80	46	1
17978	<0.01	--	--	--	84	185	1
17979	<0.01	--	--	--	72	220	2
17980	<0.01	--	--	--	94	46	1
17981	<0.01	--	--	--	74	42	1
17982	<0.01	--	--	--	80	52	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Au Avg	Au Dp1	Au Dp2	Au Dp3	Cu	Zn	Ag
17983	<0.01	--	--	--	54	72	1
17984	<0.01	--	--	--	58	76	1
17985	<0.01	--	--	--	64	42	1
17986	<0.01	--	--	--	88	62	1
17987	<0.01	--	--	--	90	96	1
17988	<0.01	--	--	--	82	36	2
17989	<0.01	--	--	--	82	96	1
17990	<0.01	--	--	--	98	125	1
17991	<0.01	--	--	--	105	78	1
17992	<0.01	--	--	--	98	60	1
17993	<0.01	<0.01	<0.01	--	74	60	1
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	FA1	FA1	FA1	FA1	AAS1	AAS1	AAS2

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN WA)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Ba	Pb	As
16230	650	115	14
16231	185	280	140
16232	180	510	92
16233	440	540	15
16234	330	130	11
17938	50	22	88
17939	25	19	100
17940	15	16	32
17941	45	9	64
17942	50	38	82
17943	50	125	72
17944	45	80	105
17945	100	90	54
17946	230	40	11
17947	190	18	16
17948	185	80	17
17949	165	13	13
17950	185	20	16
17951	145	9	16
17952	155	13	14
17953	175	15	14
17954	210	72	13
17955	140	76	12
17956	175	360	9
17957	175	22	14
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

SAMPLE	Ba	Pb	As
17958	170	28	10
17959	195	46	12
17960	140	850	86
17961	230	220	74
17962	230	54	36
17963	230	90	32
17964	250	70	36
17965	230	98	40
17966	210	84	58
17967	230	94	52
17968	250	58	56
17969	210	100	36
17970	210	90	38
17971	240	74	38
17972	185	135	36
17973	190	94	34
17974	230	40	24
17975	210	84	40
17976	240	115	36
17977	200	68	32
17978	185	360	26
17979	240	390	66
17980	220	105	26
17981	190	52	38
17982	220	64	30
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

CLASSIC COMLABS LTD
Analytical Laboratories (INC. IN W.A.)

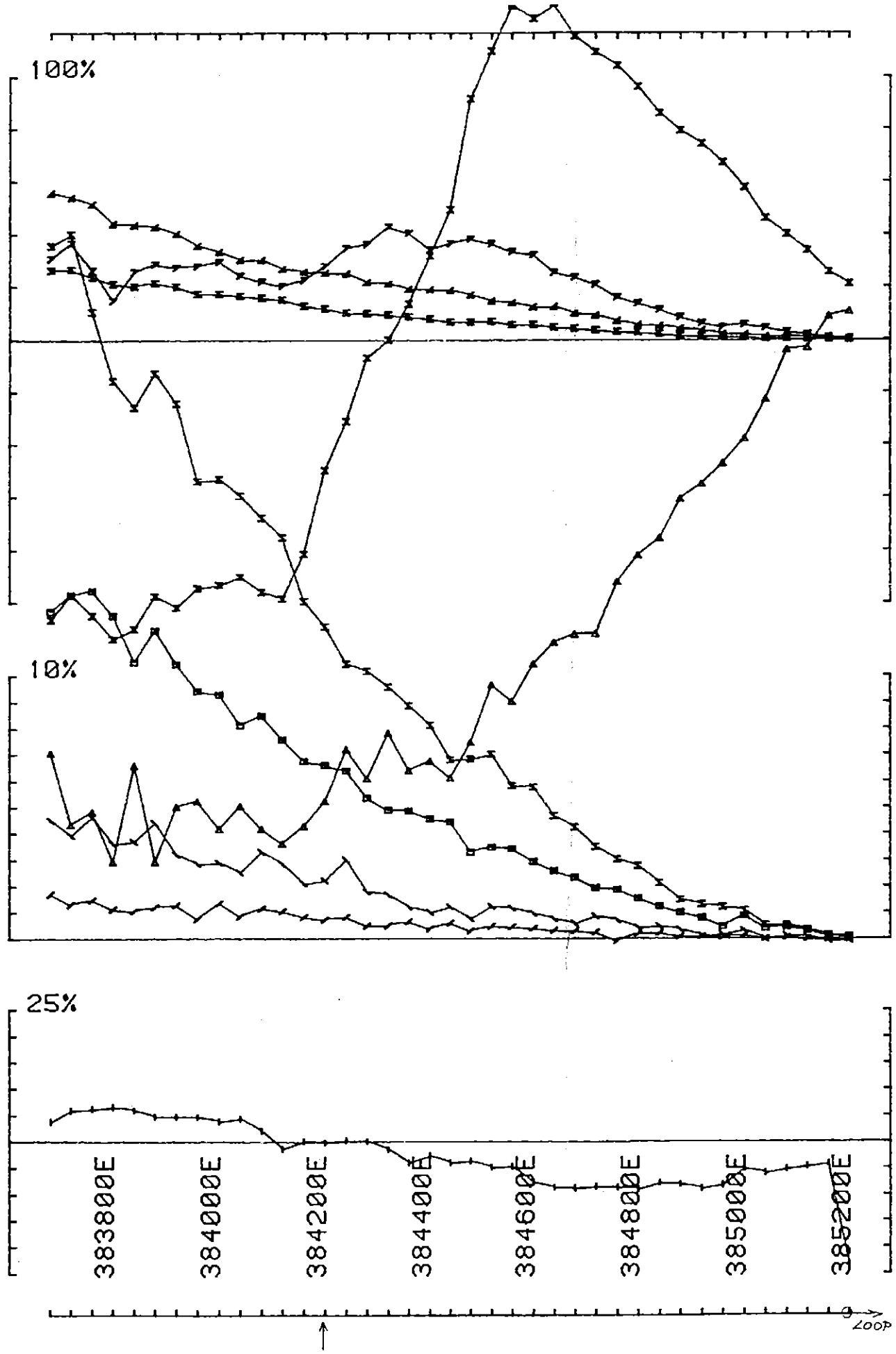
Job: 9AD0429
O/N: 11650/LJ50/JPR

ANALYTICAL REPORT

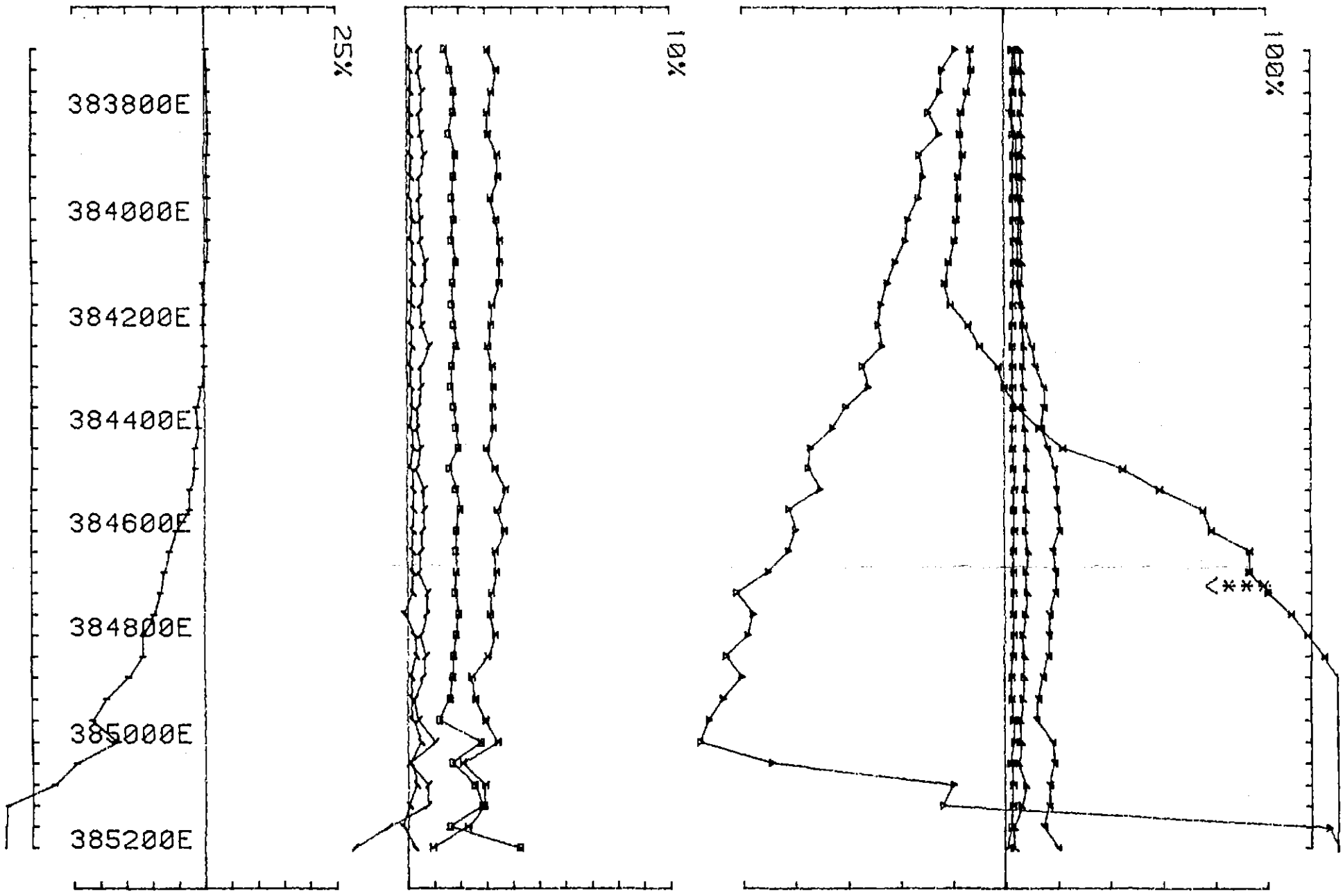
SAMPLE	Ba	Pb	As
17983	250	66	36
17984	260	140	60
17985	270	70	54
17986	270	220	54
17987	210	230	36
17988	250	370	60
17989	230	400	98
17990	230	260	105
17991	200	130	140
17992	220	60	125
17993	240	62	160
UNITS	ppm	ppm	ppm
SCHEME	XRF1	XRF1	XRF1

APPENDIX 2

UTEM profiles, point/continuous normalized



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89
loop no 4 line 371200N component Hz secondary field Ch 1 contin. norm.



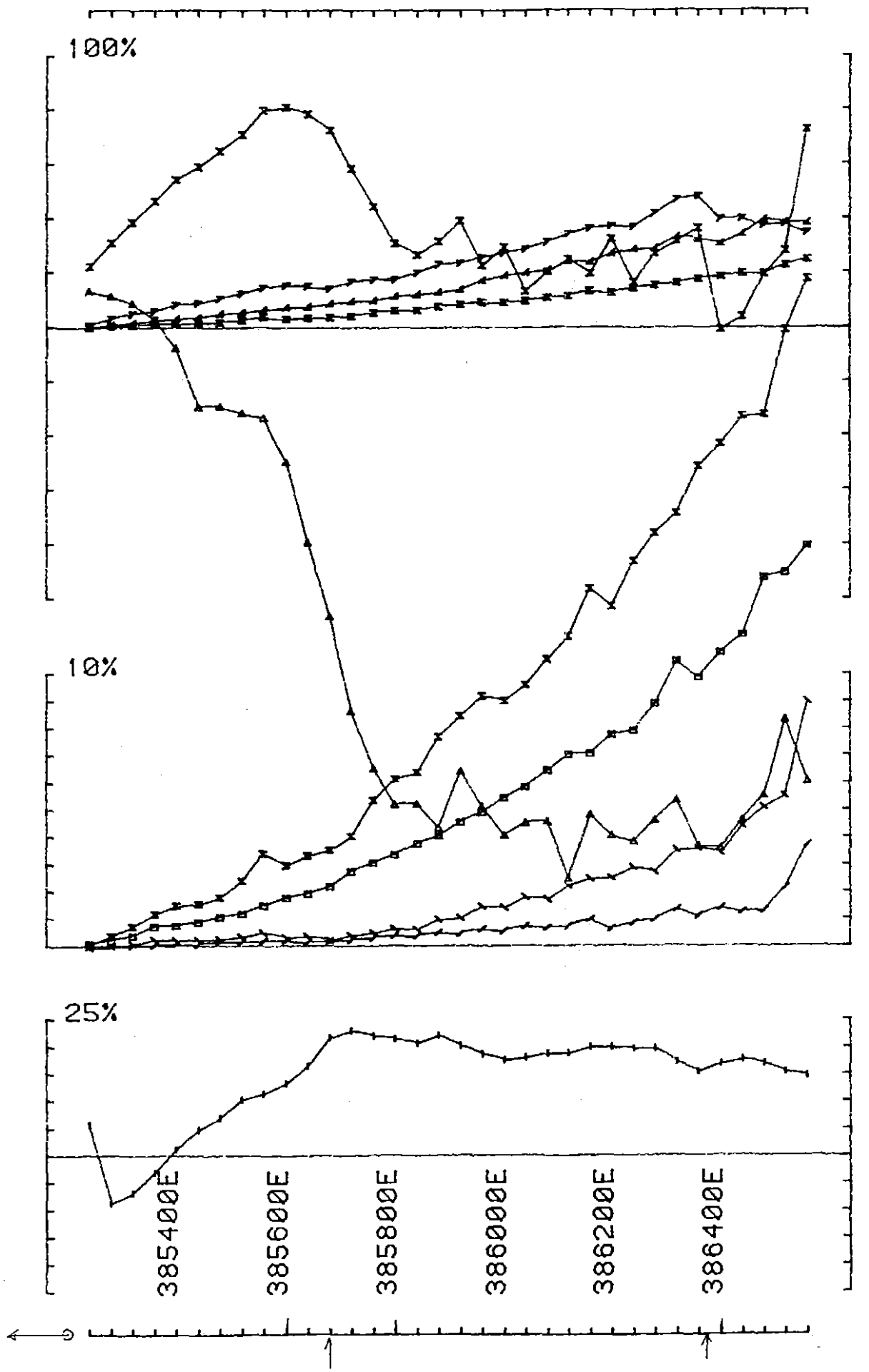
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

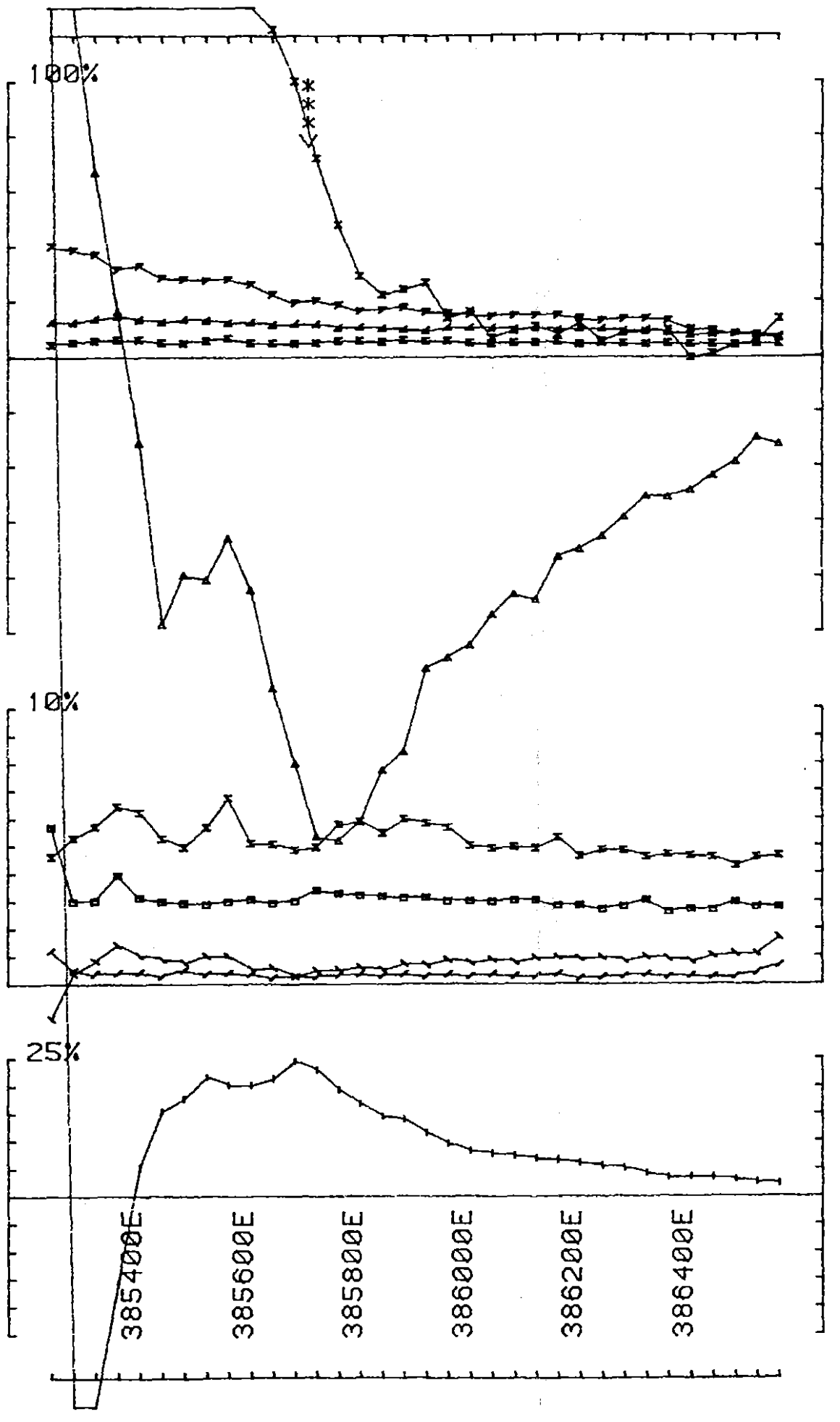
conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

loop no 4 line 371200N component Hz secondary field Ch 1 point norm.

074

594108


100%
10%
25%
385400E
385600E
385800E
386000E
386200E
386400E
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89
loop no 4 line 371200N component Hz secondary field Ch 1 contin. norm.

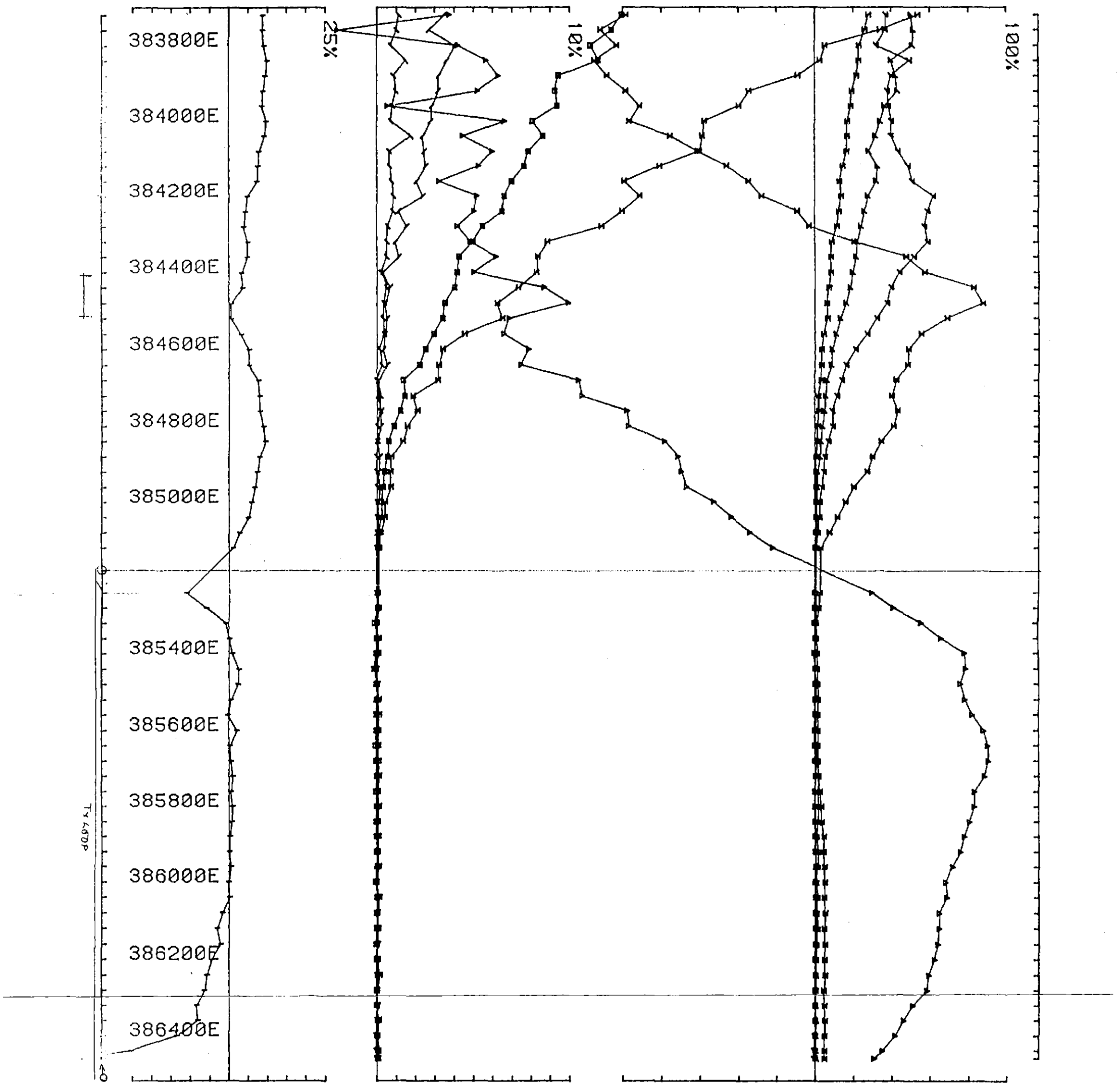


UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89

loop no 4 line 371200N component Hz secondary field Ch 1 point norm.

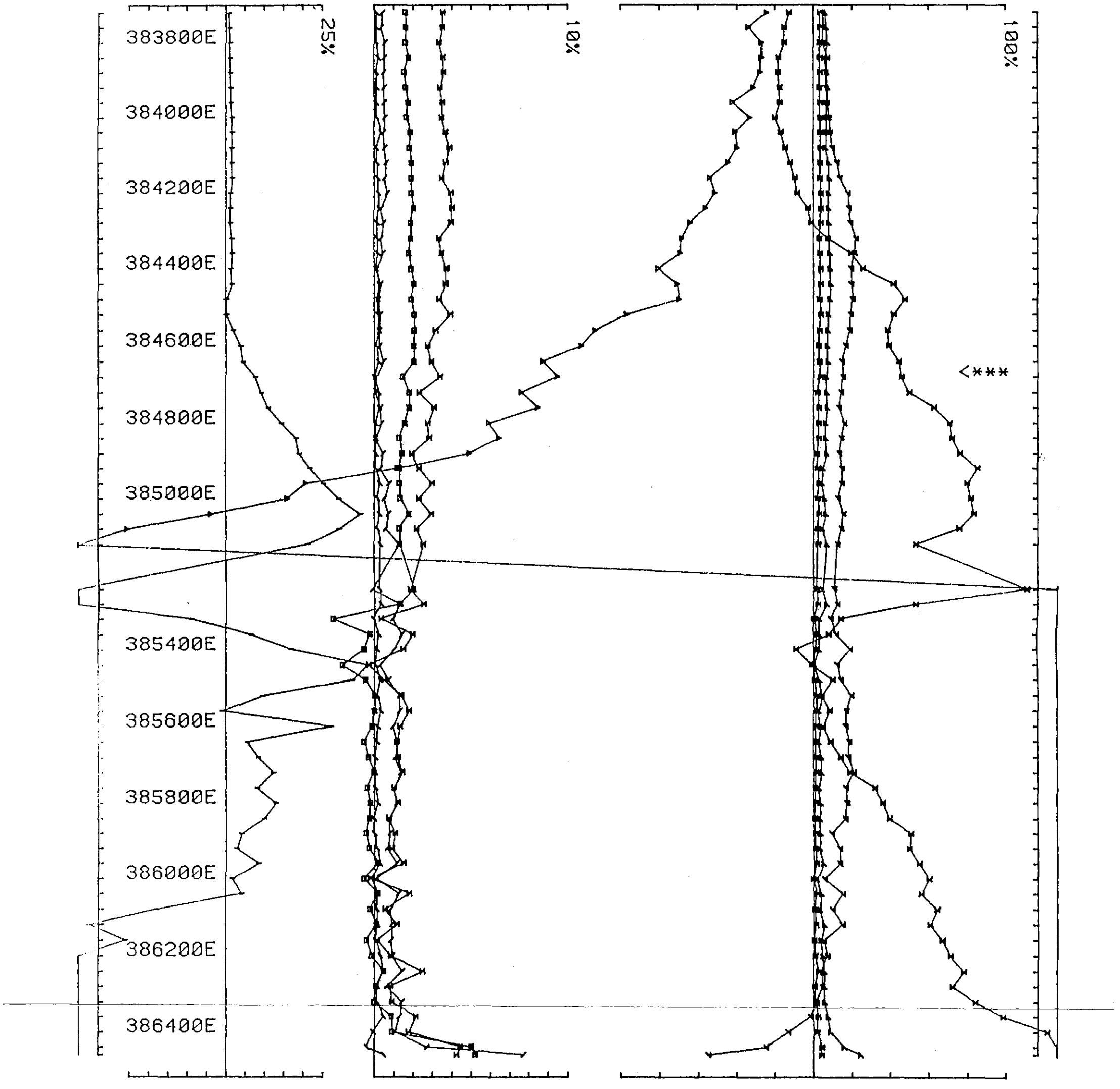
5941110



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 33.409 FEB 1989

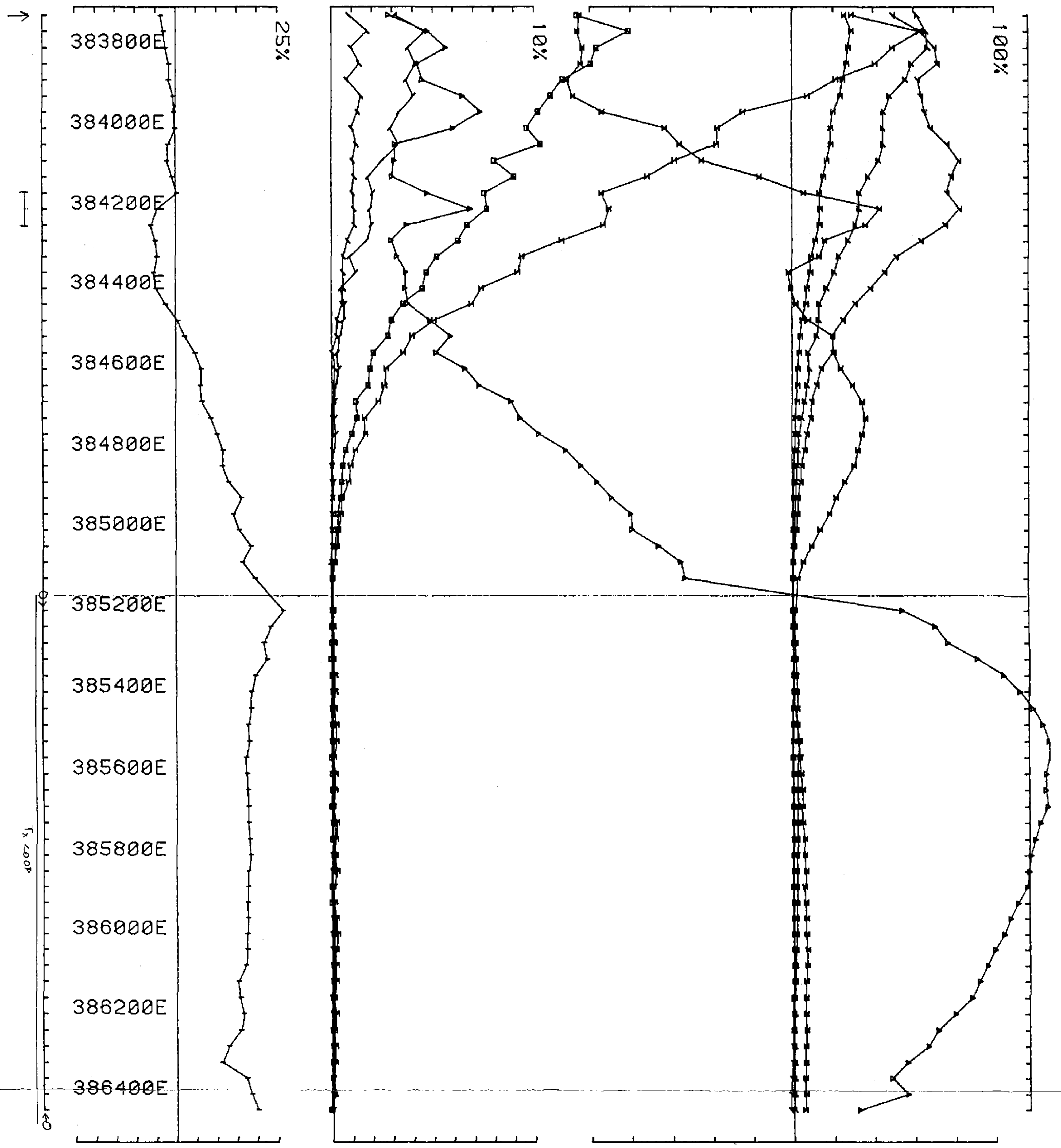
loop no 4 line 371400N component Hz secondary field Ch 1 contin. norm.



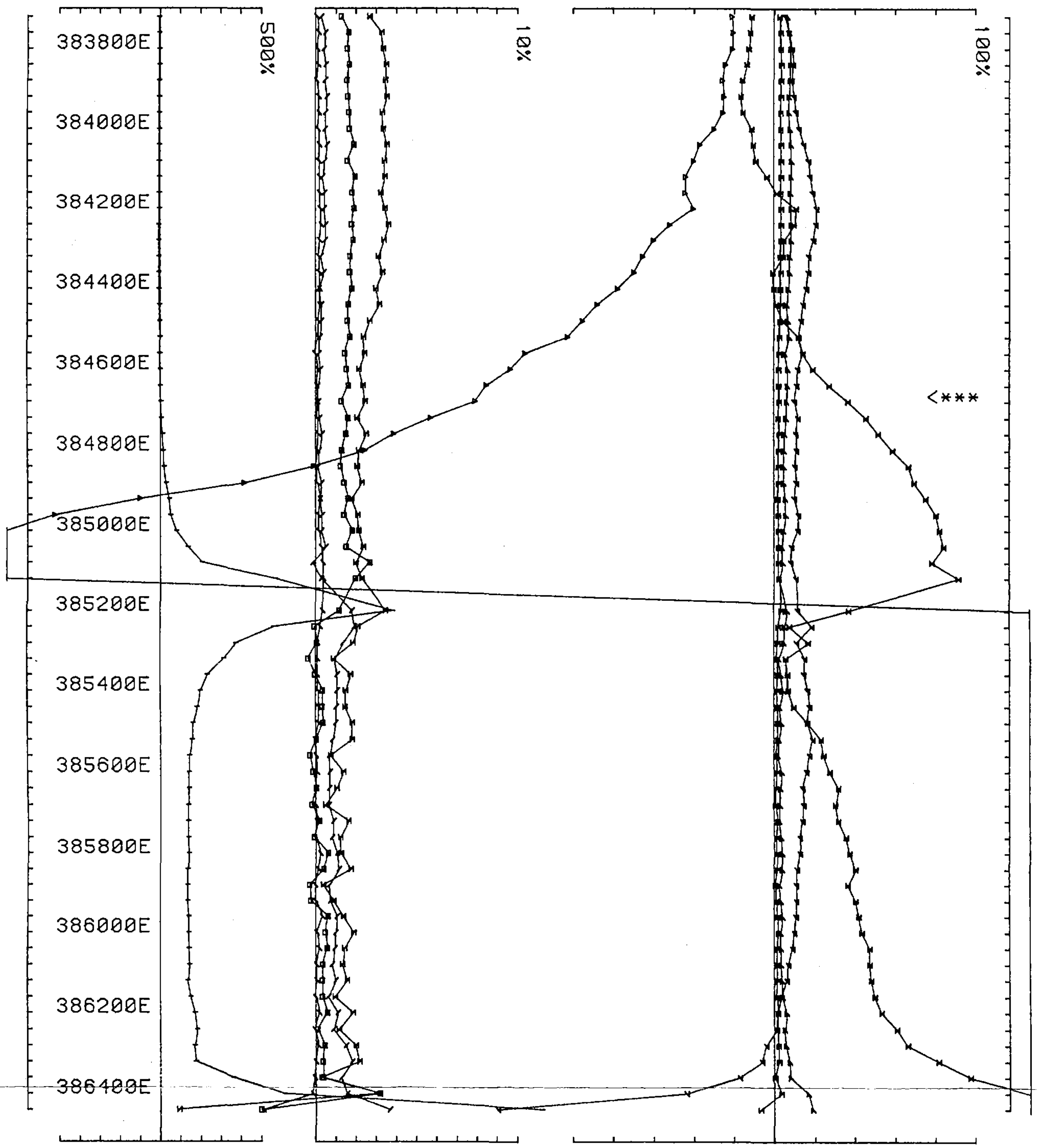
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 33.409 FEB 1989

loop no 4 line 371400N component Hz secondary field Ch 1 point norm.

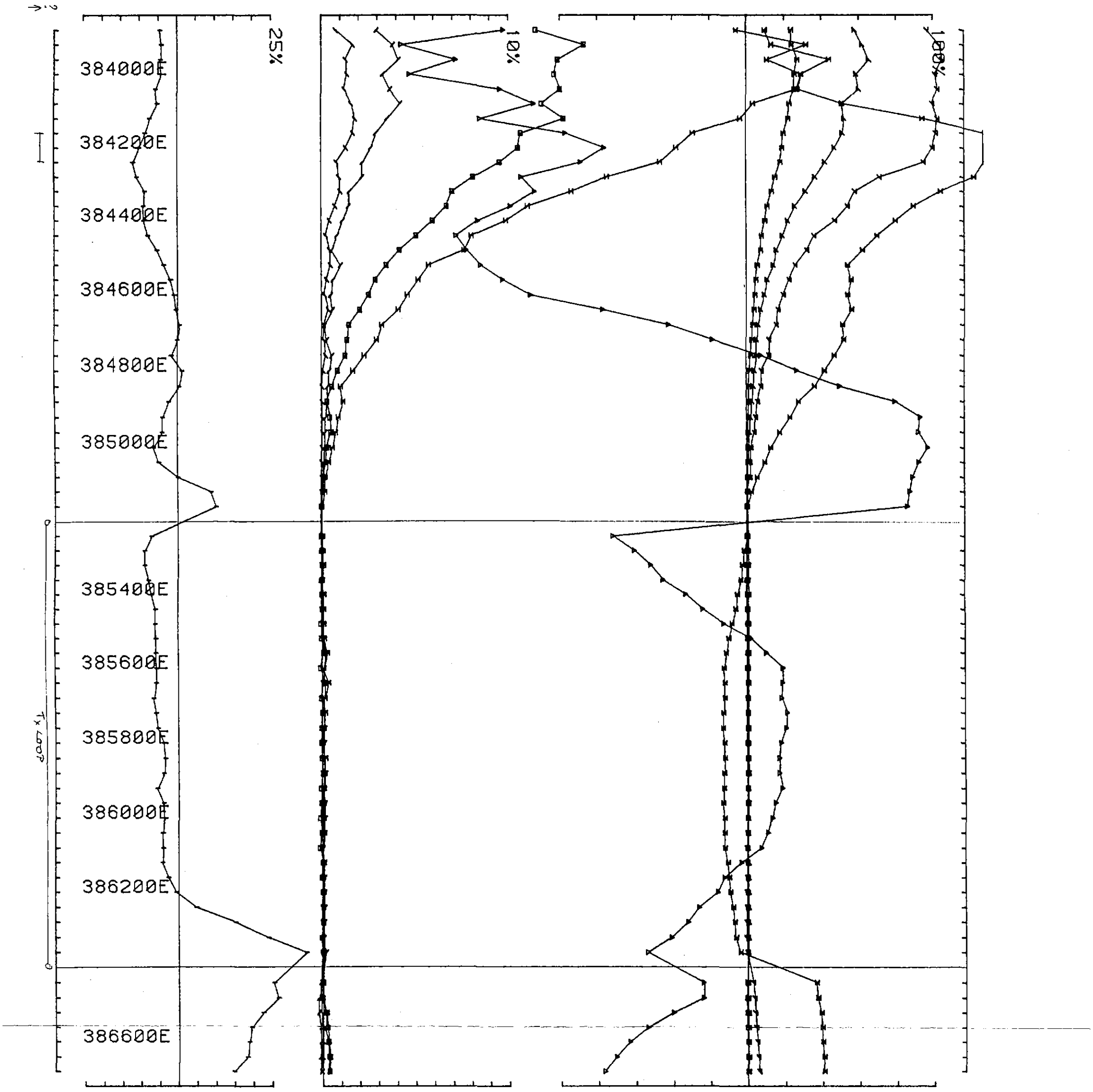


UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 33.409 MAR 1989
loop no 4 line 371600N component Hz secondary field Ch I contin. norm.

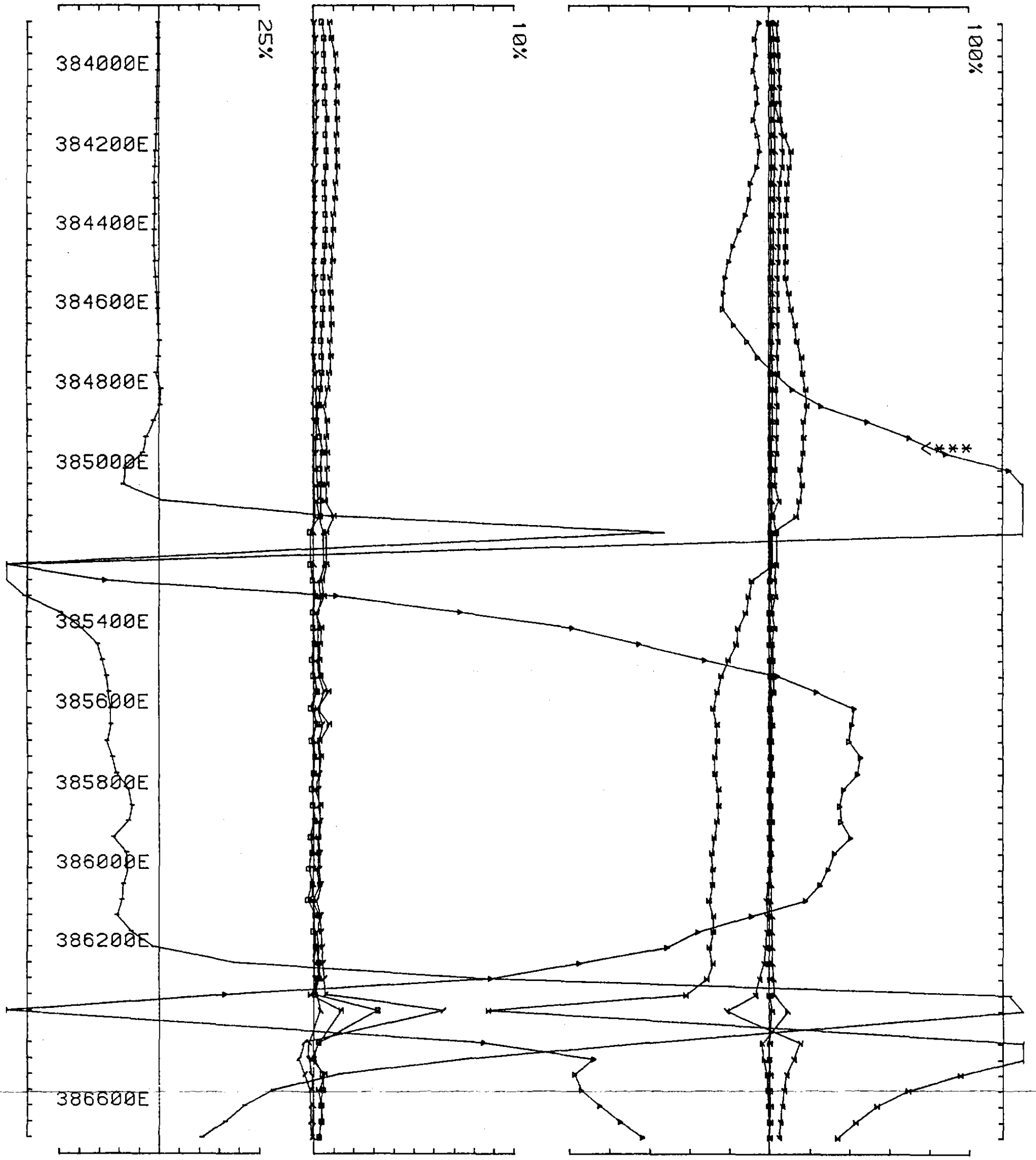


UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 33.409 MAR 1989
loop no 4 line 371600N component Hz secondary field Ch I point norm. .

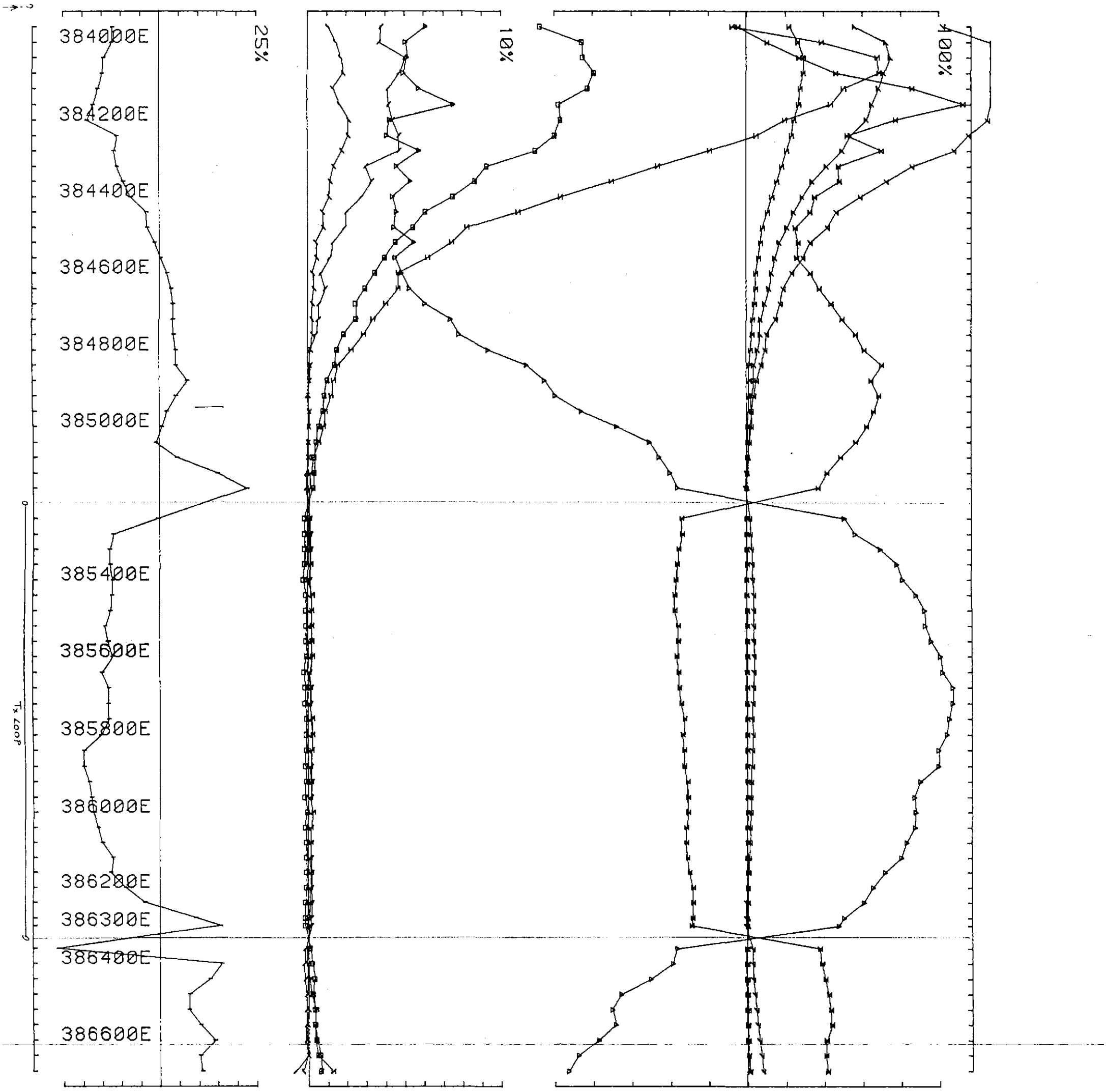
594113



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89
loop no 4 line 371800N component Hz secondary field Ch 1 contin. norm.



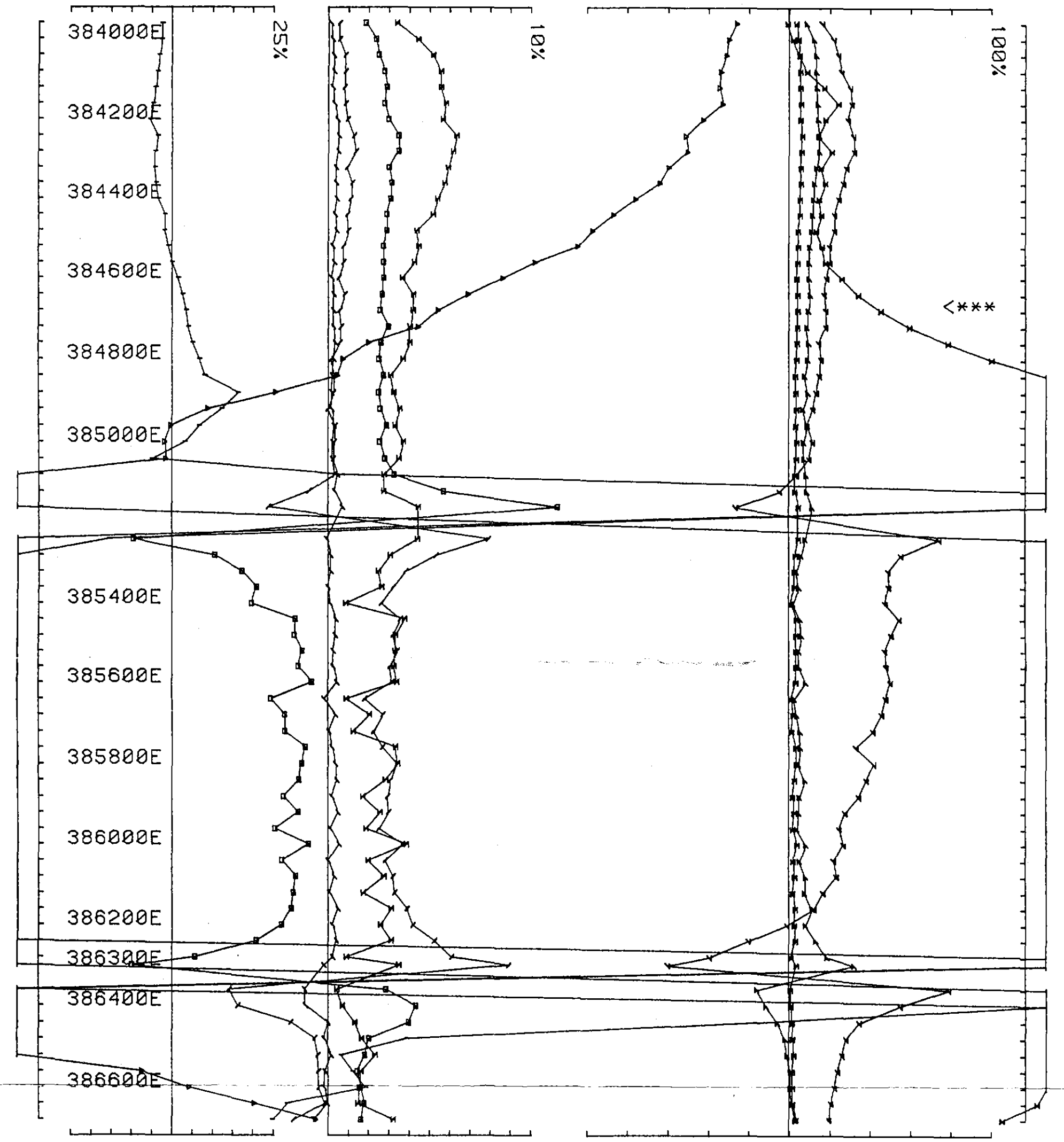
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89
loop no 4 line 371800N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

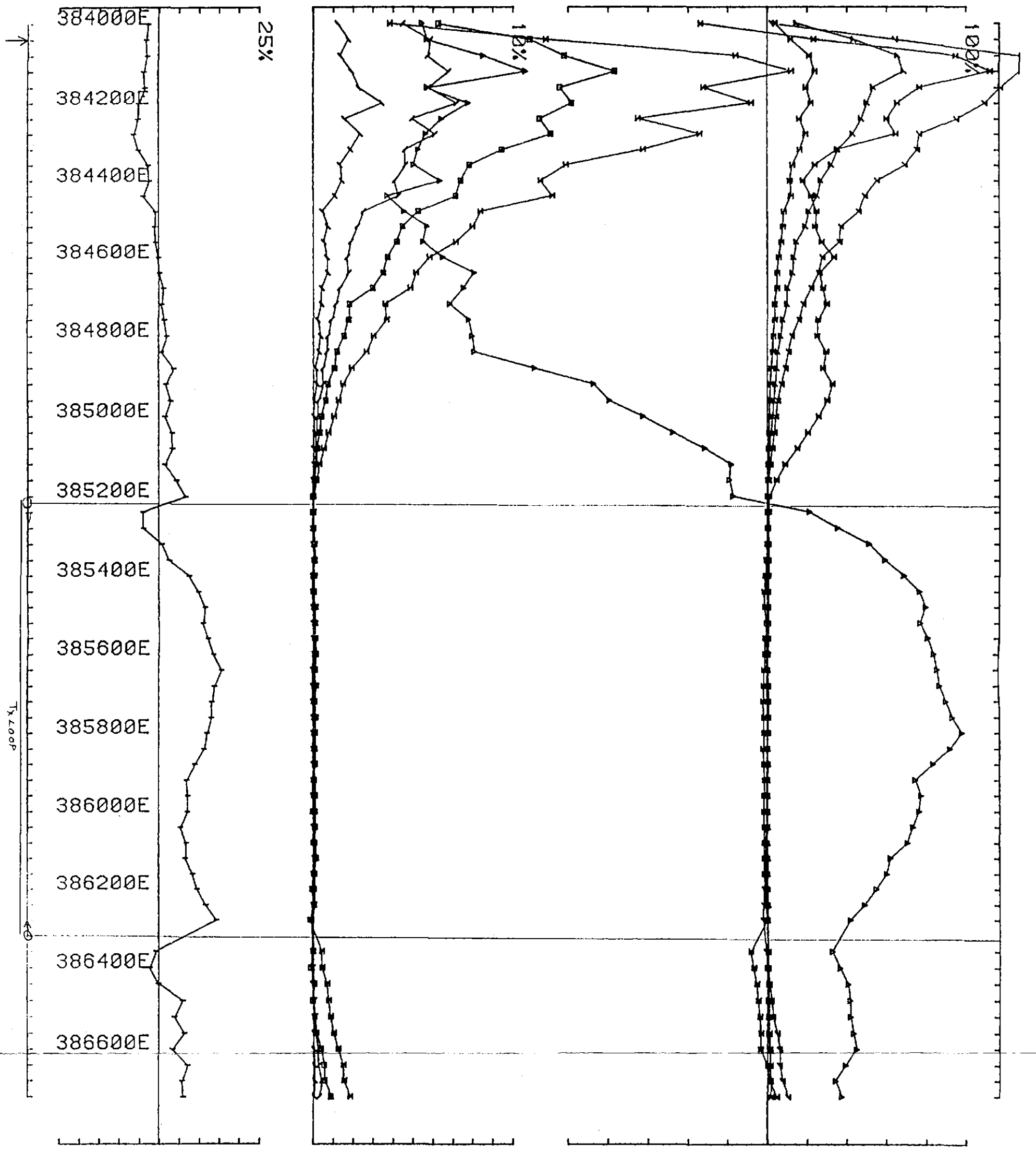
loop no 4 line 372000N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89

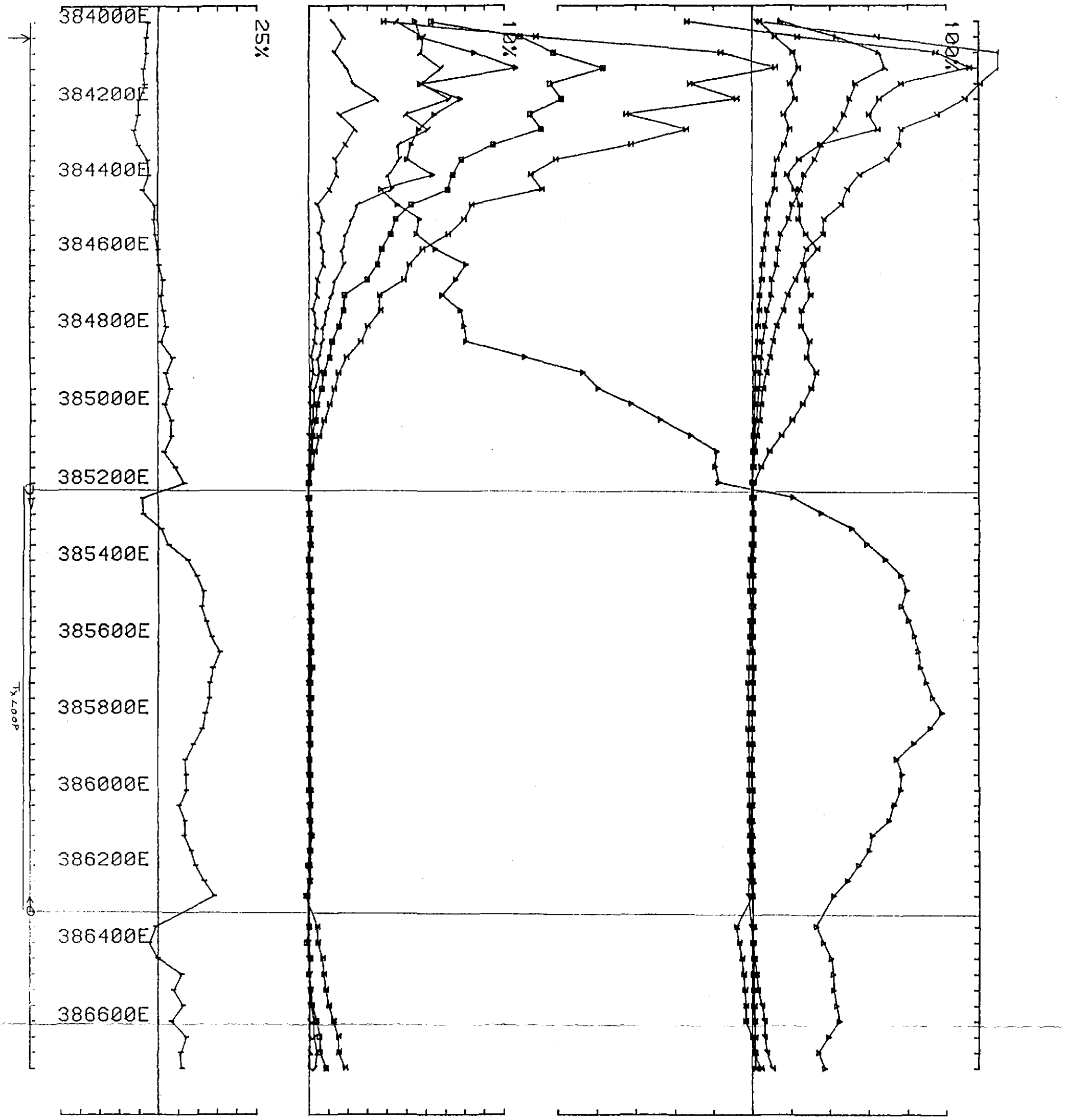
loop no 4 line 372000N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. Job 8902 base freq (hz) 33.409 FEB 1989

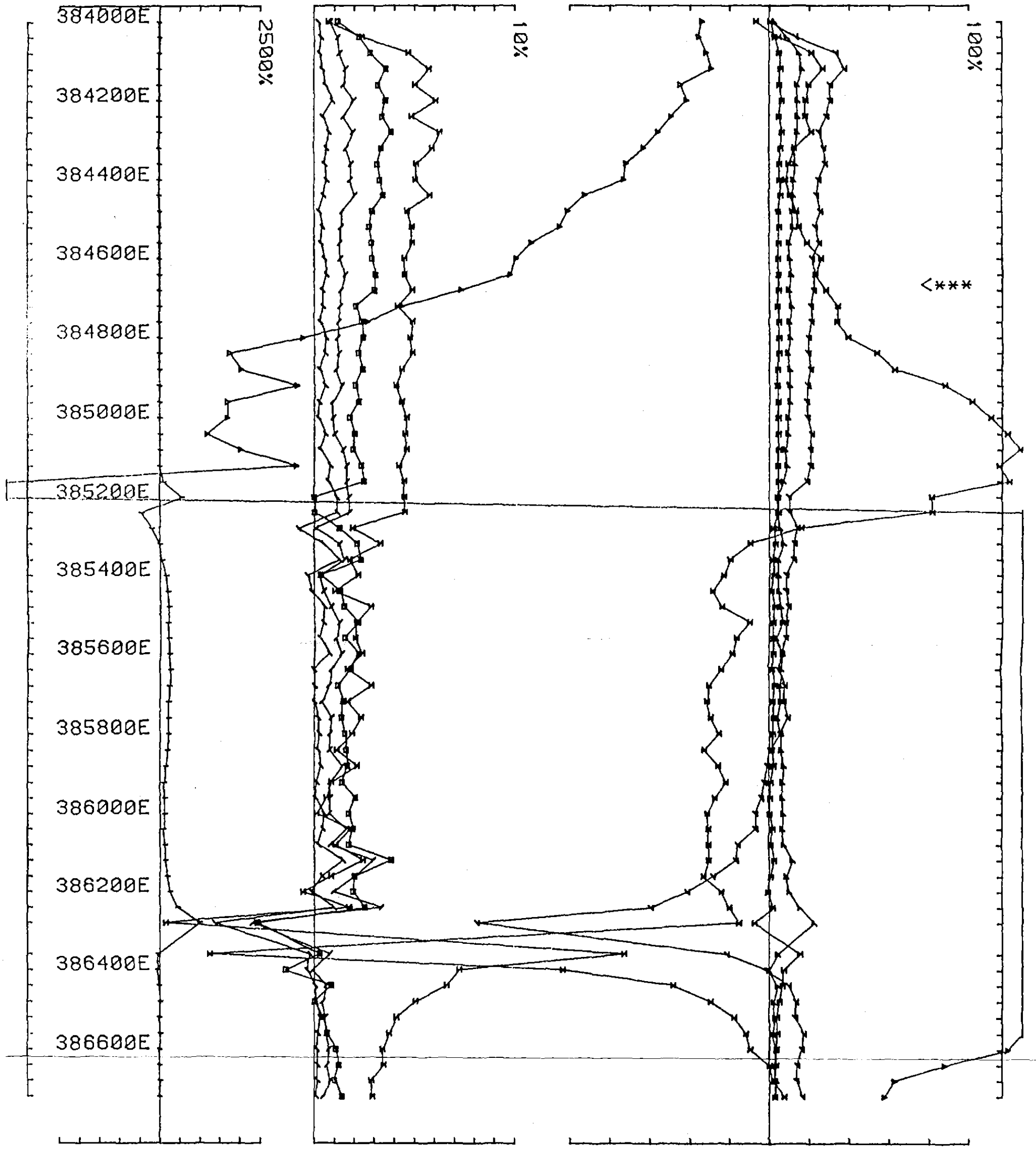
loop no 3a line 372200N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

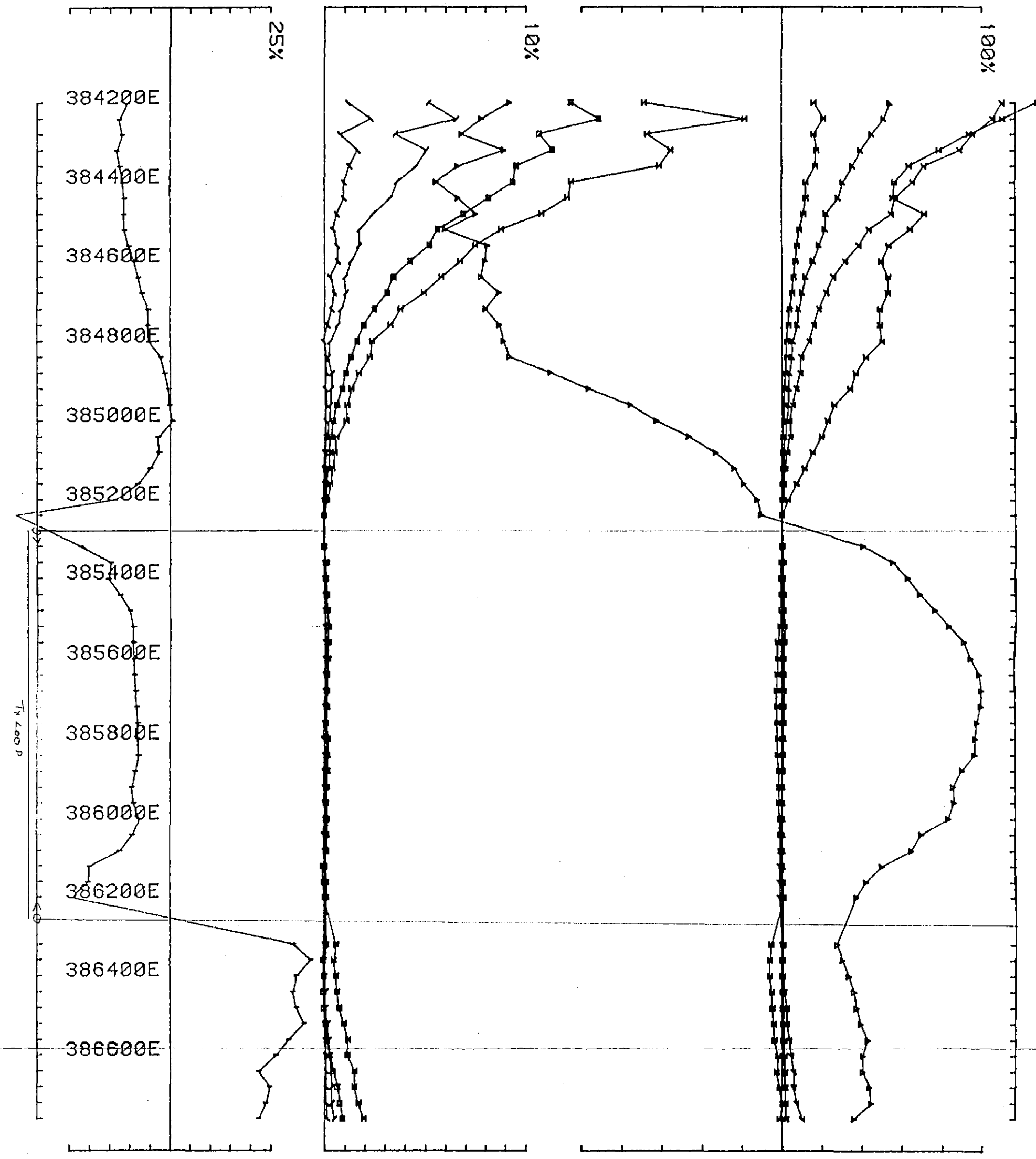
conducted by LAMONTAGNE & SJV CONS. Job 8902 base freq (hz) 33.409 FEB 1989

loop no 3a line 372200N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE & SJV CONS. Job 8902 base freq (hz) 33.409 FEB 1989
loop no 3a line 372200N component Hz secondary field Ch 1 point norm.

8767

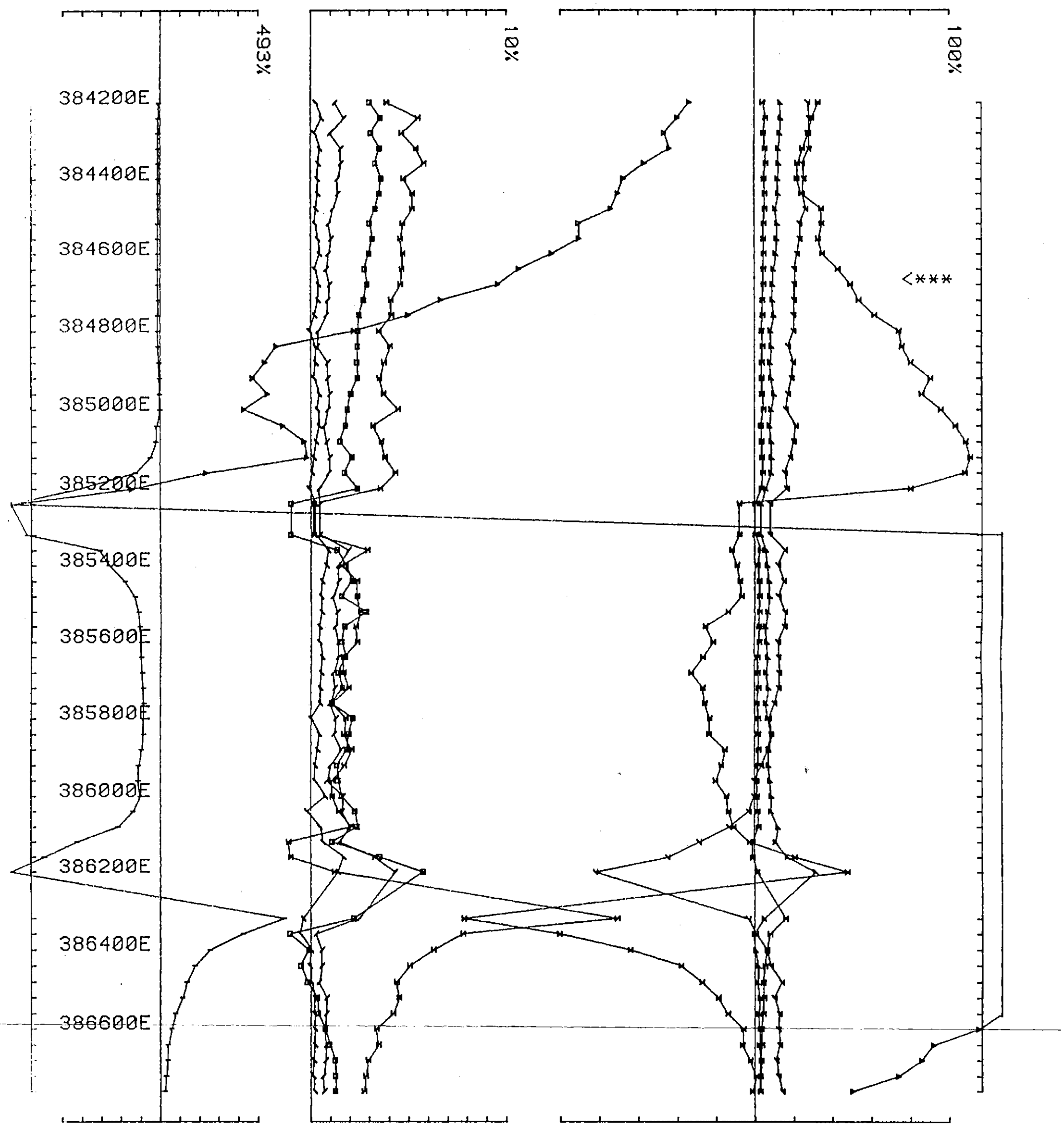


UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 33.409 FEB 1989

loop no 3a line 372400N component Hz secondary field Ch 1 contin. norm.

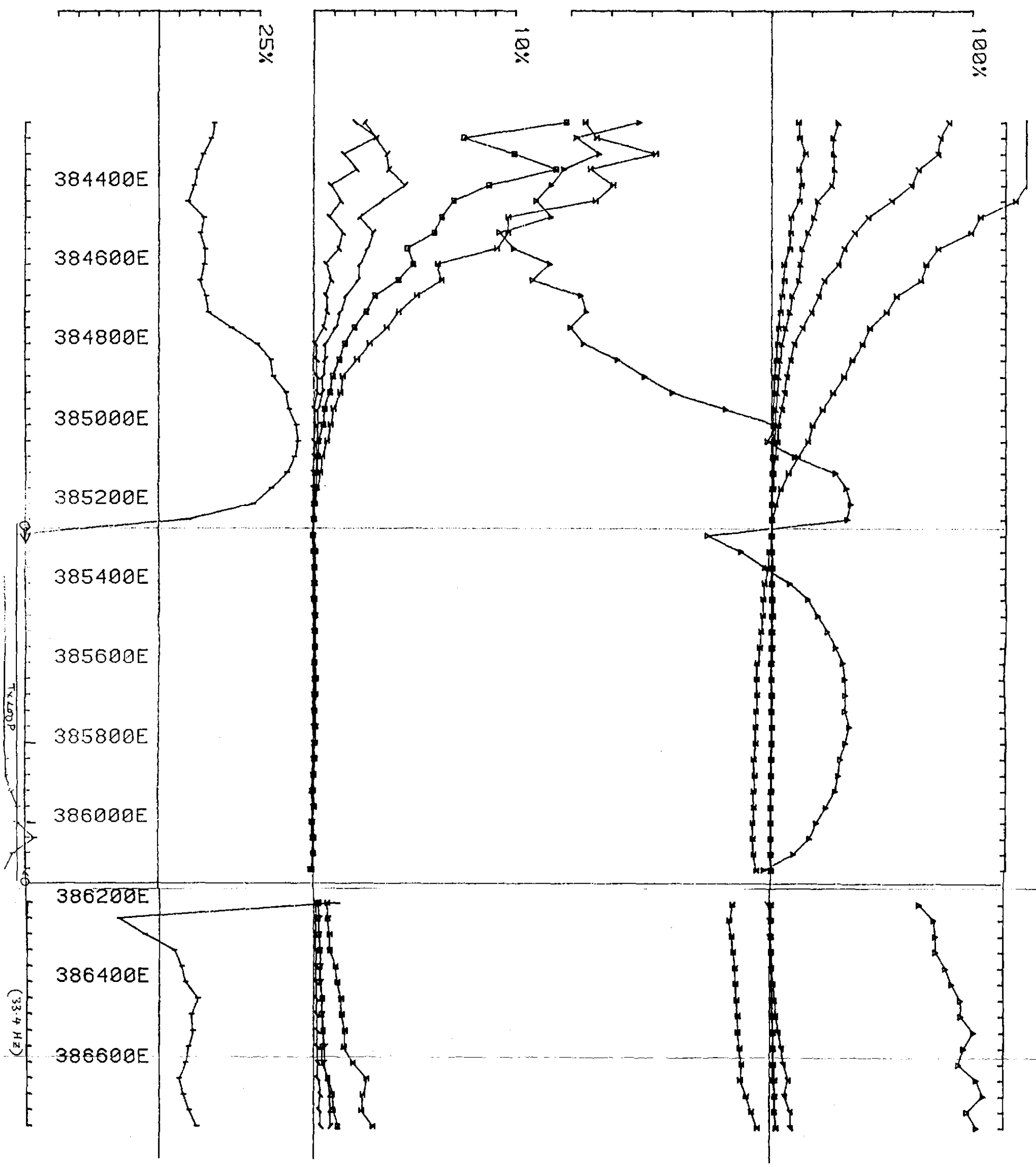
5941121



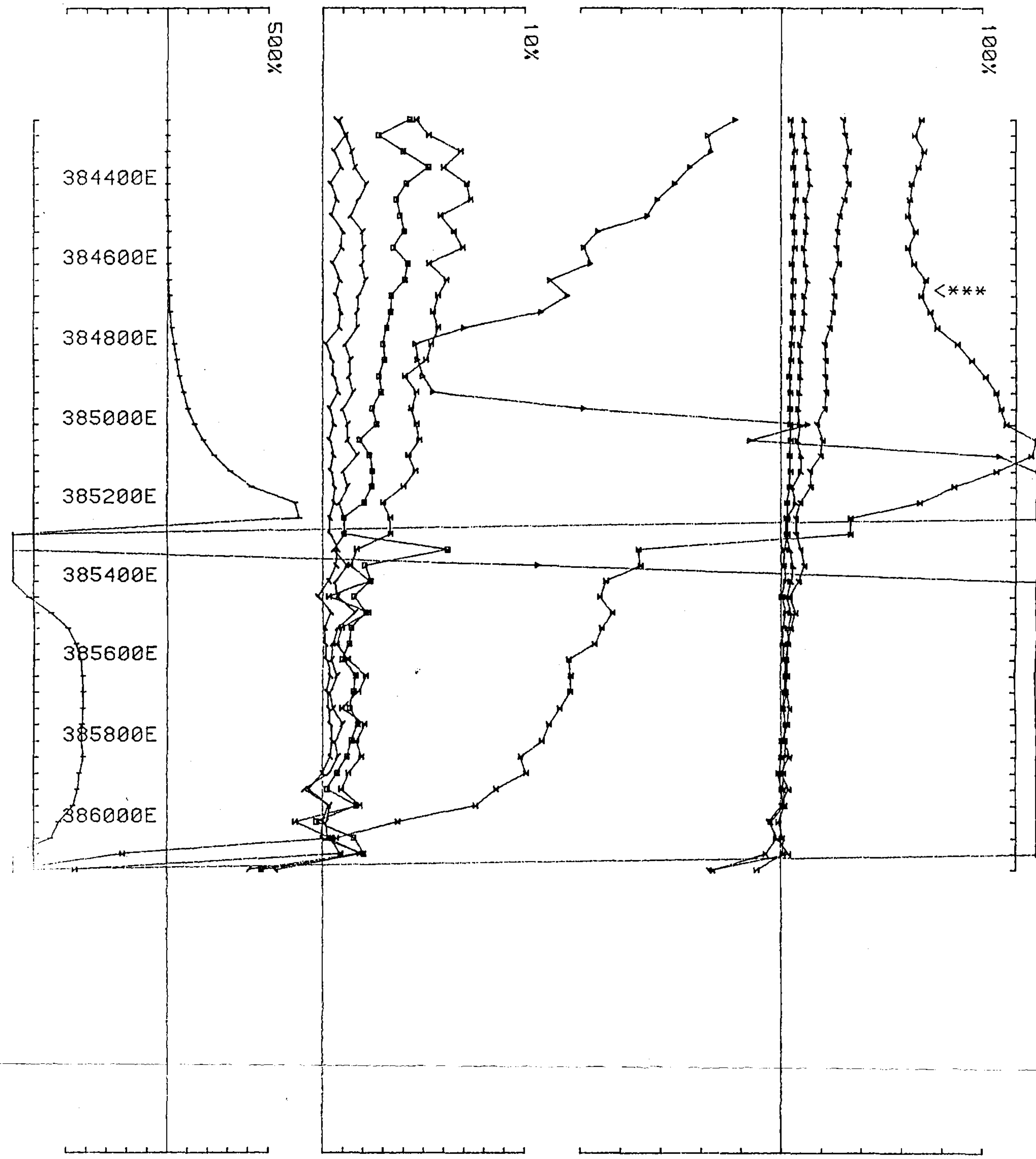
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. Job 8902 base freq (hz) 33.409 FEB 1989

loop no 3a line 372400N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE & SJV CONS. Job 8902 base freq (hz) 25.230 FEB 1989
loop no 3a line 372600N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
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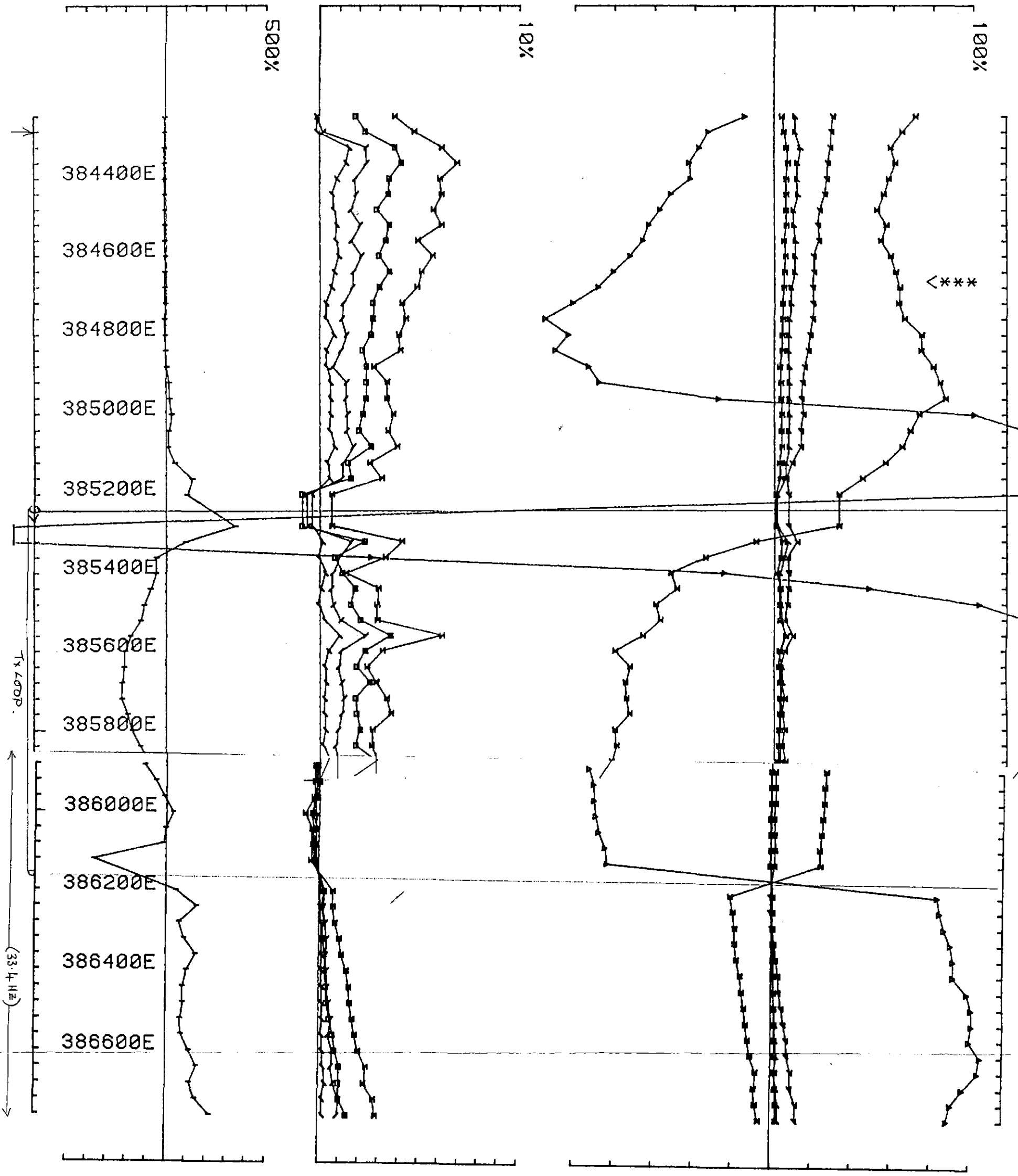
loop no 3a line 372600N component Hz secondary field Ch 1 point norm.

594124

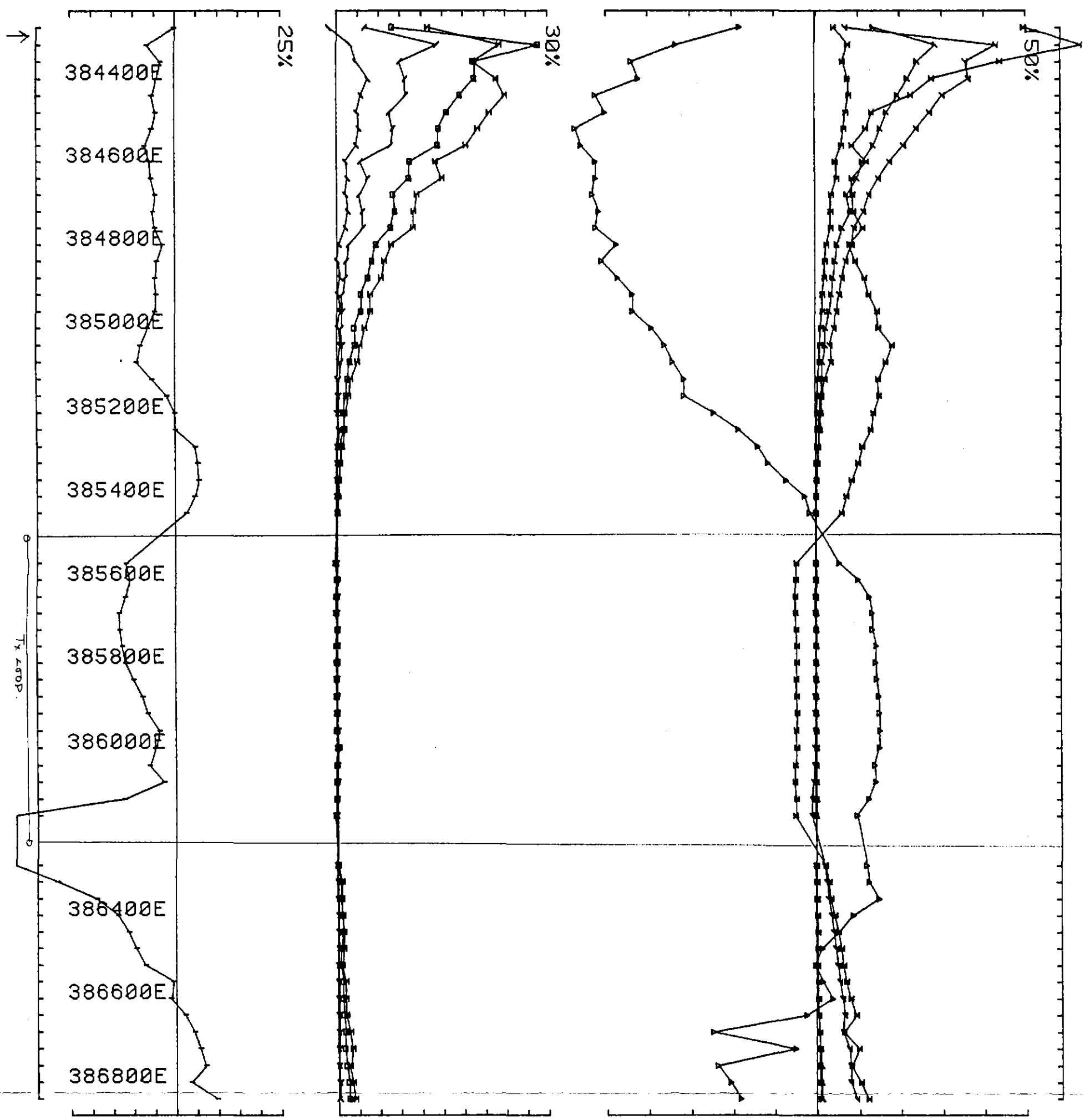
T4478



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE & SJV CONS. job 8902 base freq (hz) 25.230 FEB 1989

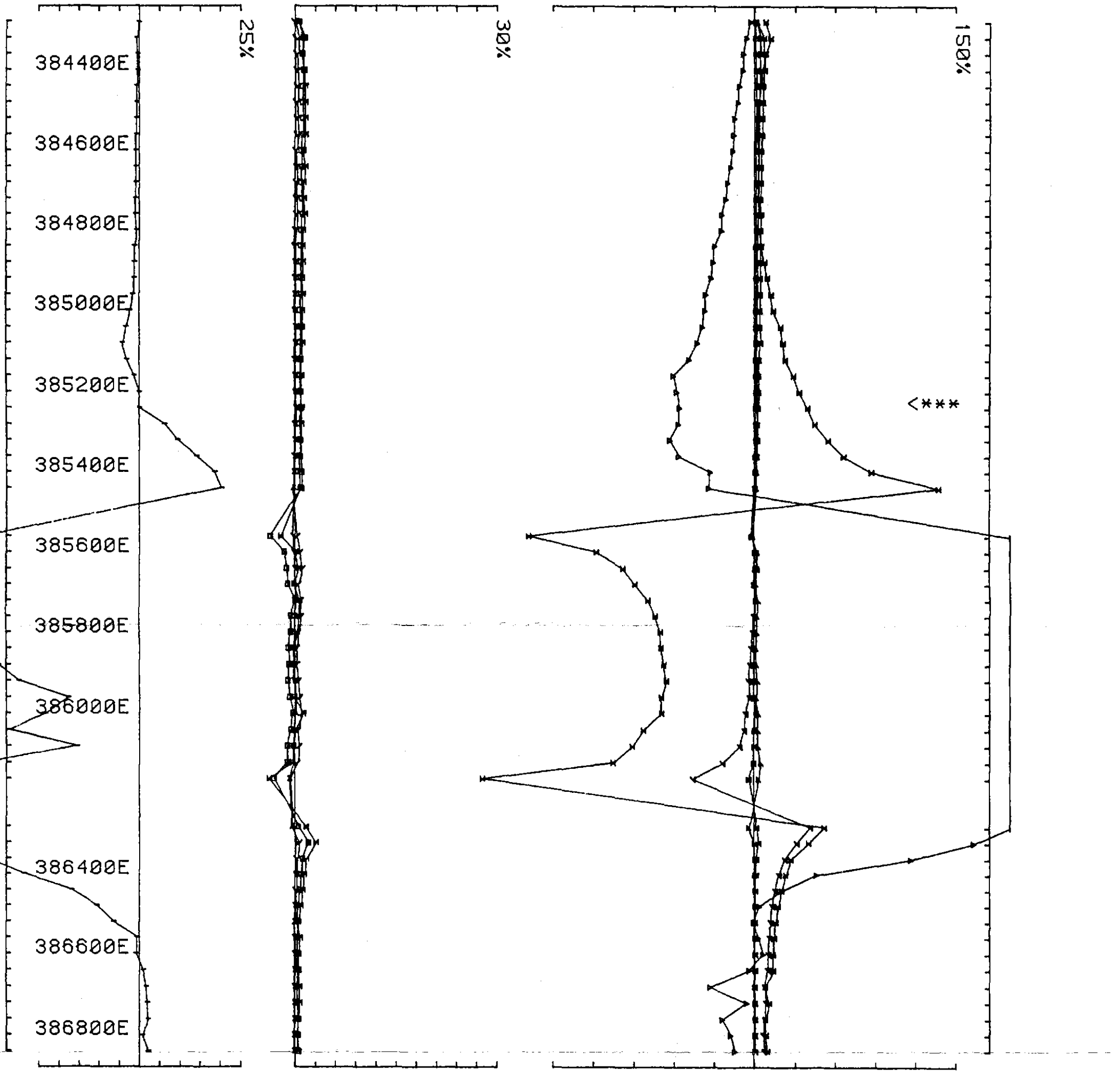
loop no 3a line 372800N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

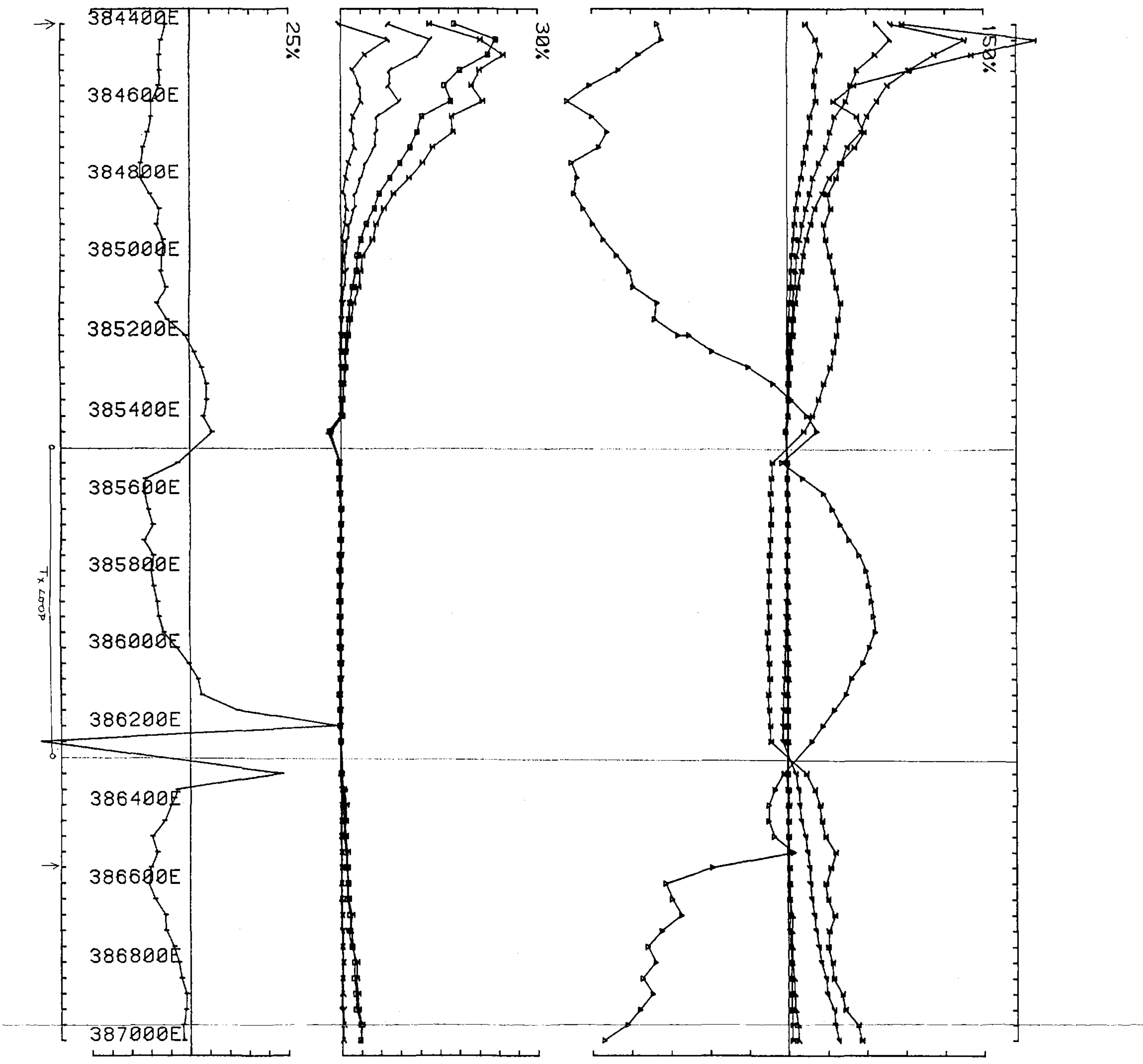
loop no 2 line 373000N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

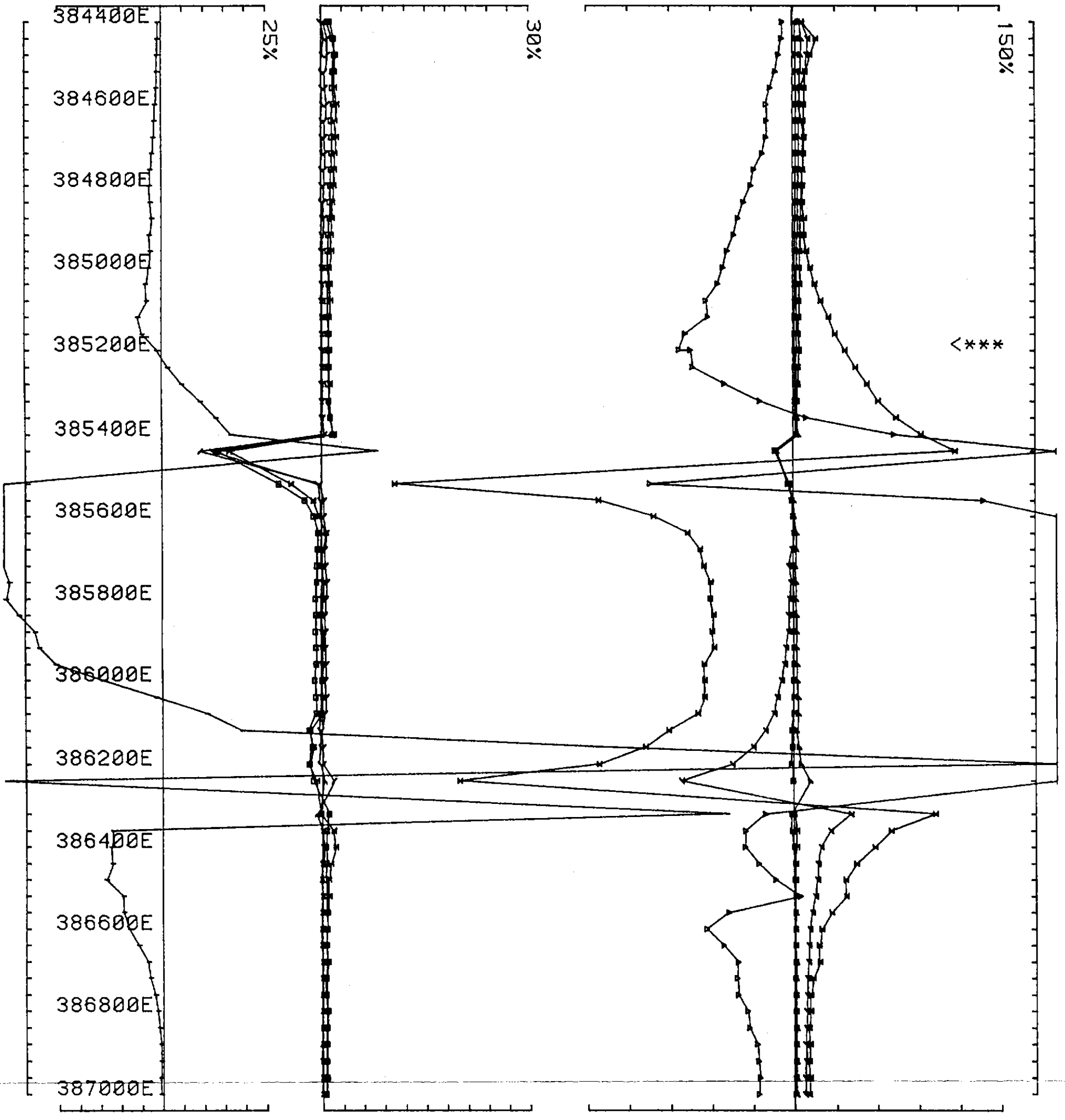
loop no 2 line 373000N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

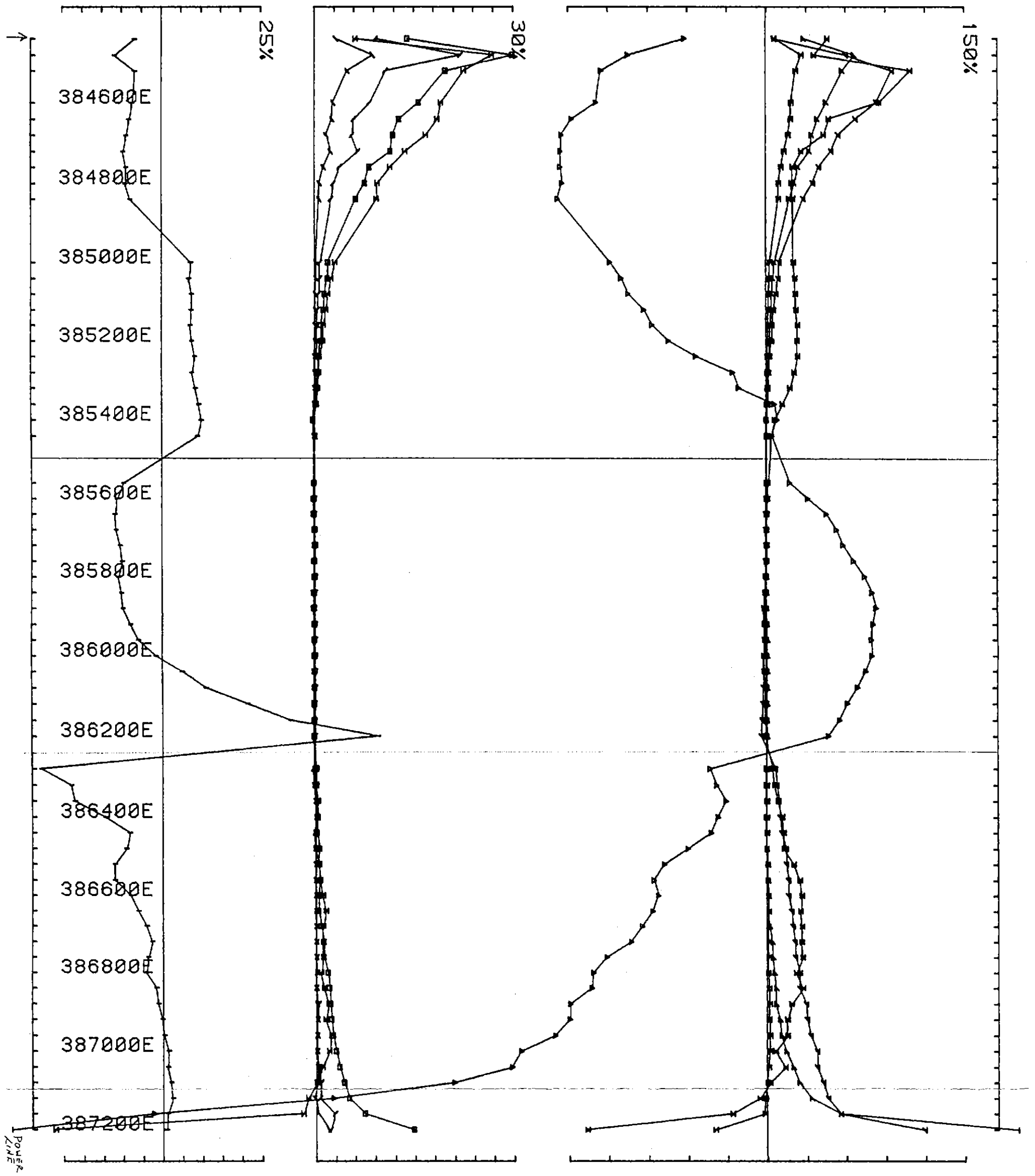
loop no 2 line 373200N component Hz secondary field Ch I contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

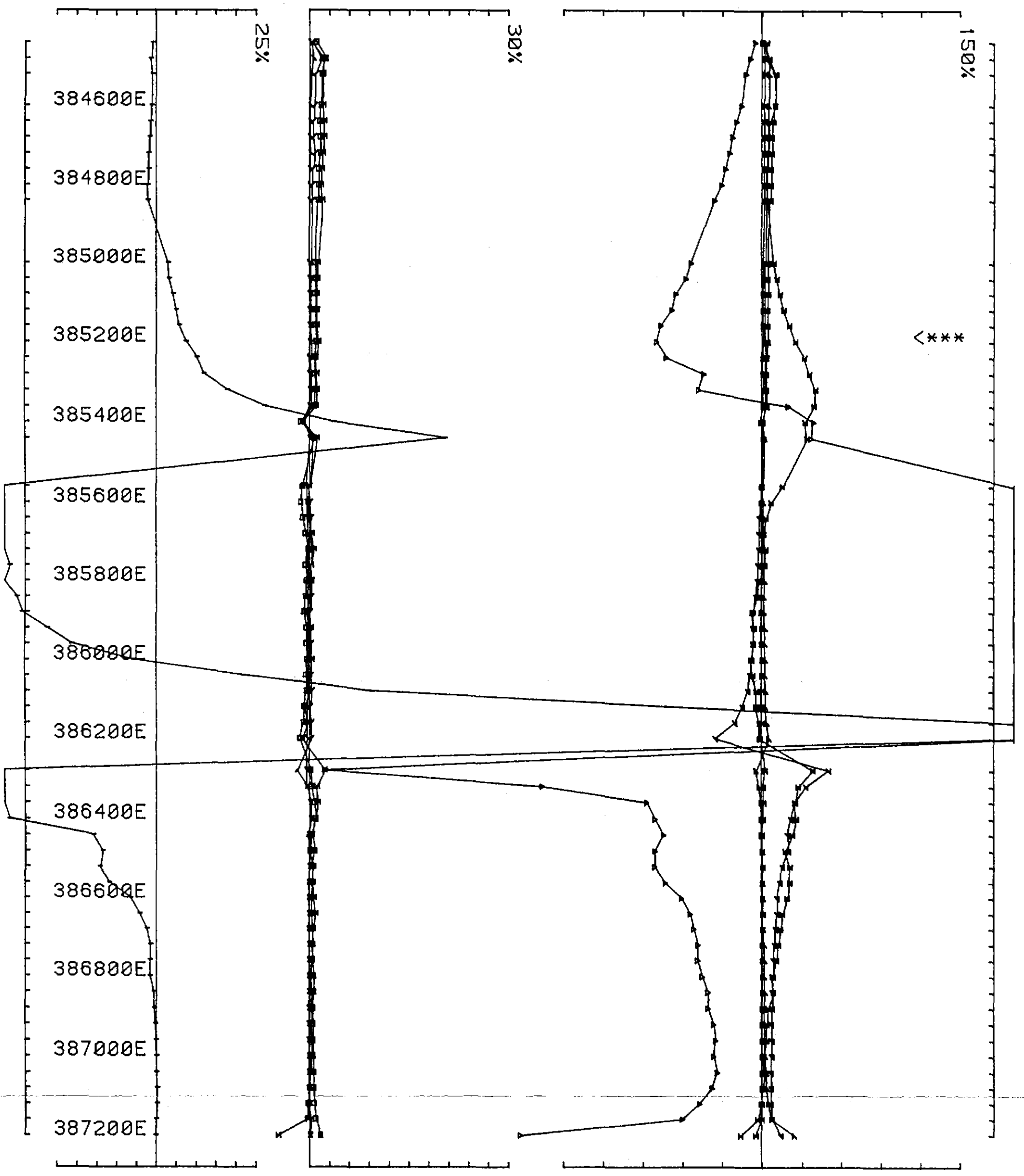
loop no 2 line 373200N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

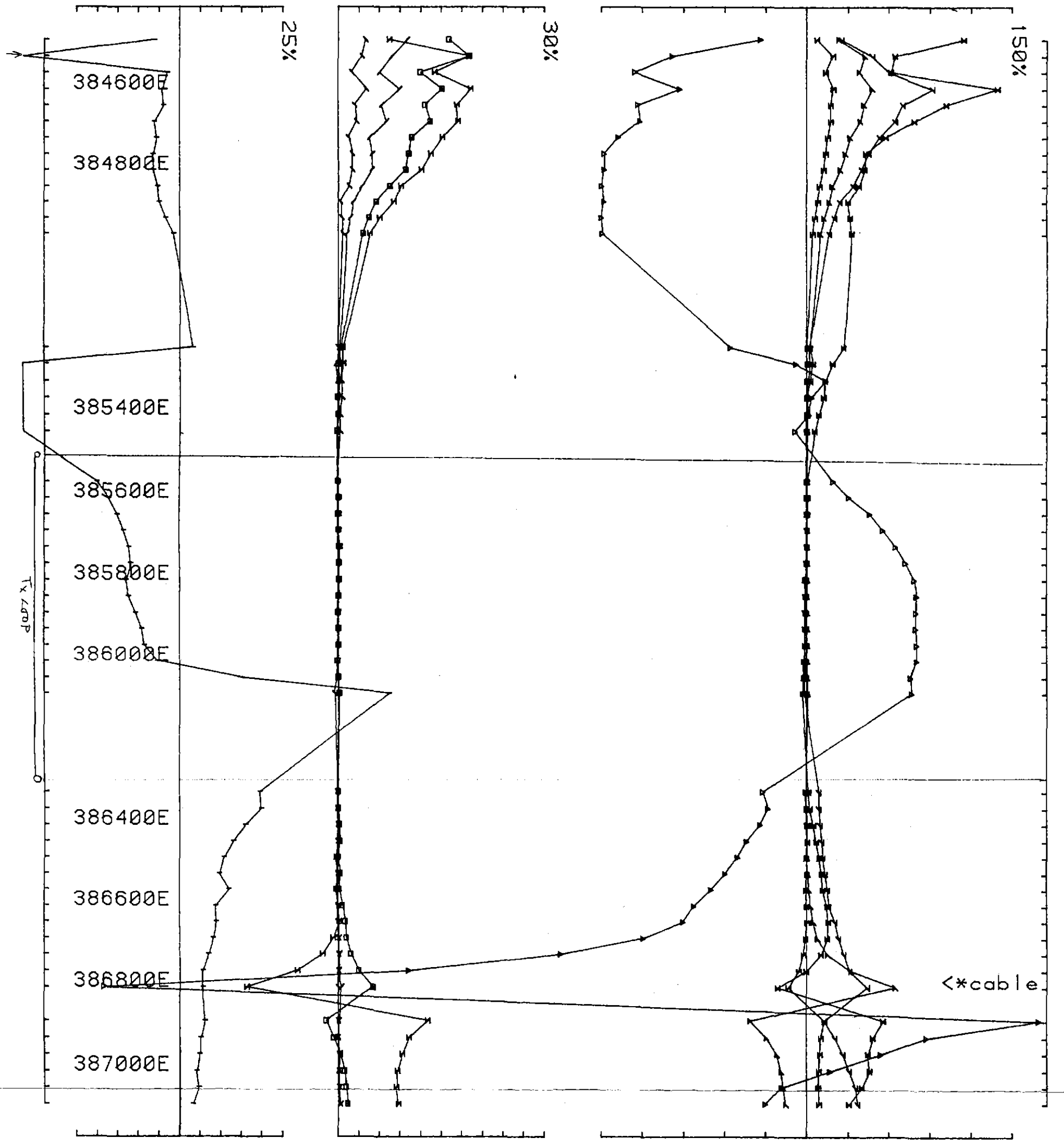
conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

loop no 2 line 373400N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89
loop no 2 line 373400N component Hz secondary field Ch 1 point norm.

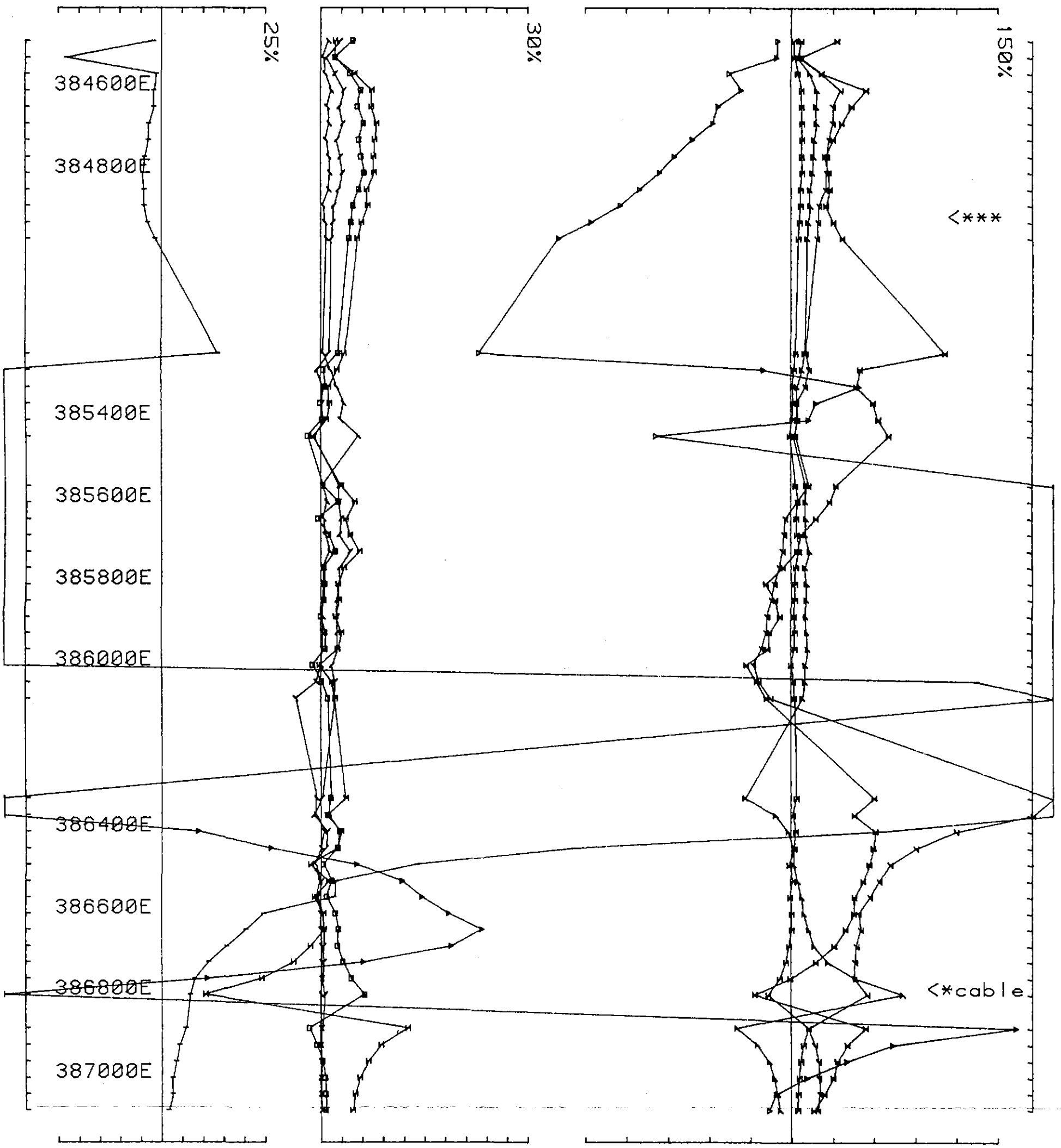
8143



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 MAR 1989

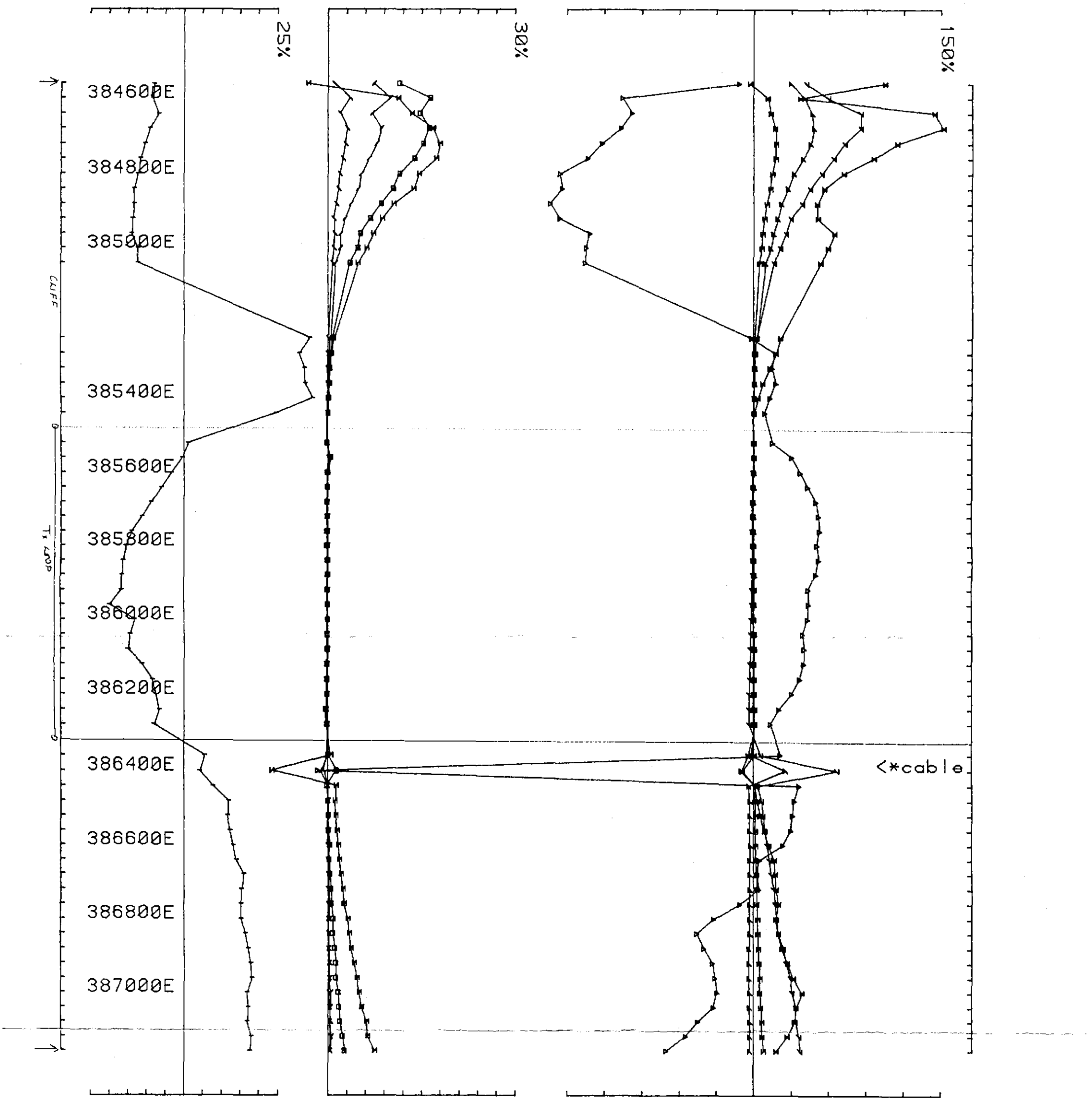
loop no 2 line 373600N component Hz secondary field Ch 1 contin. norm.



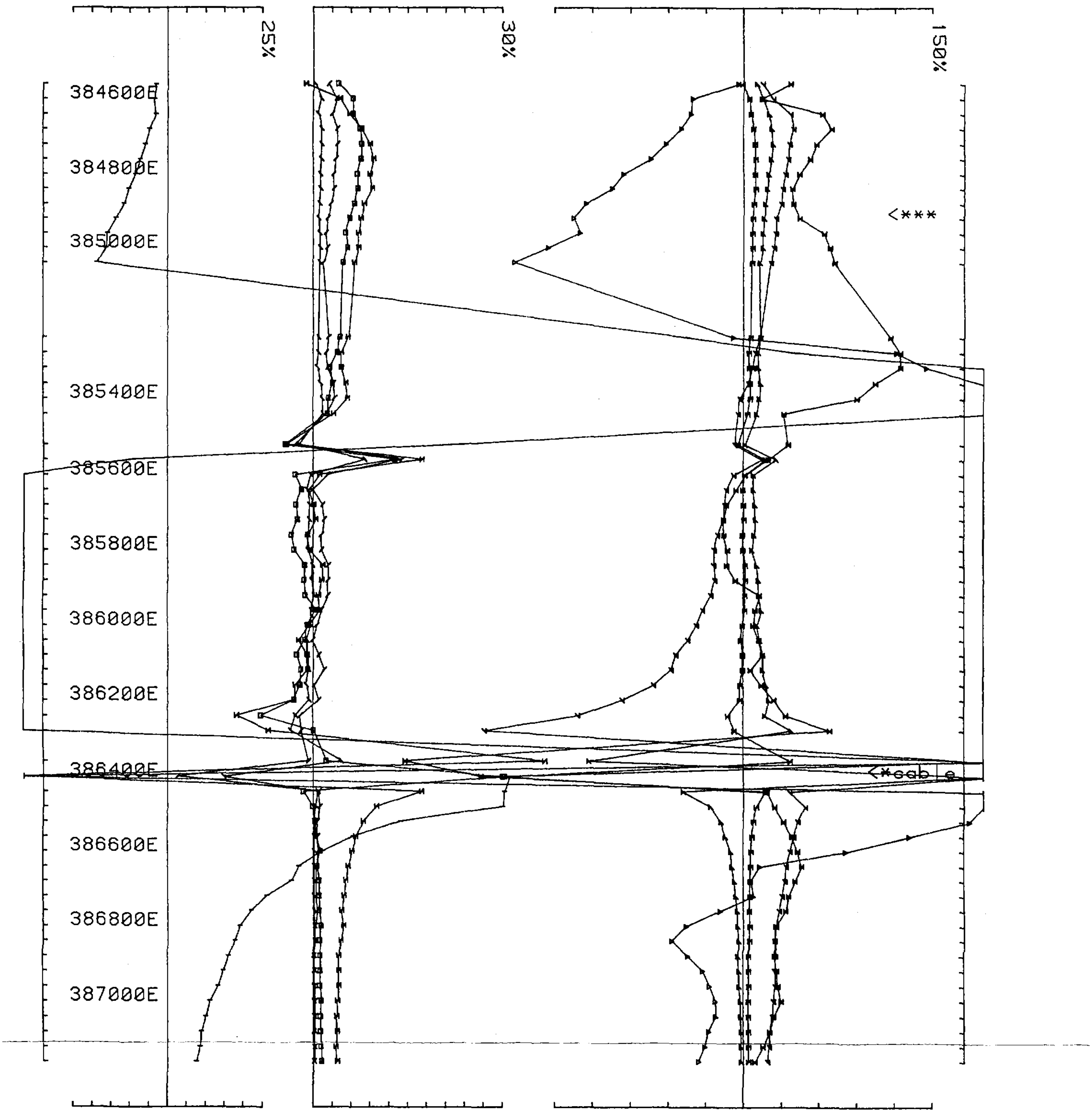
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 MAR 1989

loop no 2 line 373600N component Hz secondary field Ch 1 point norm.



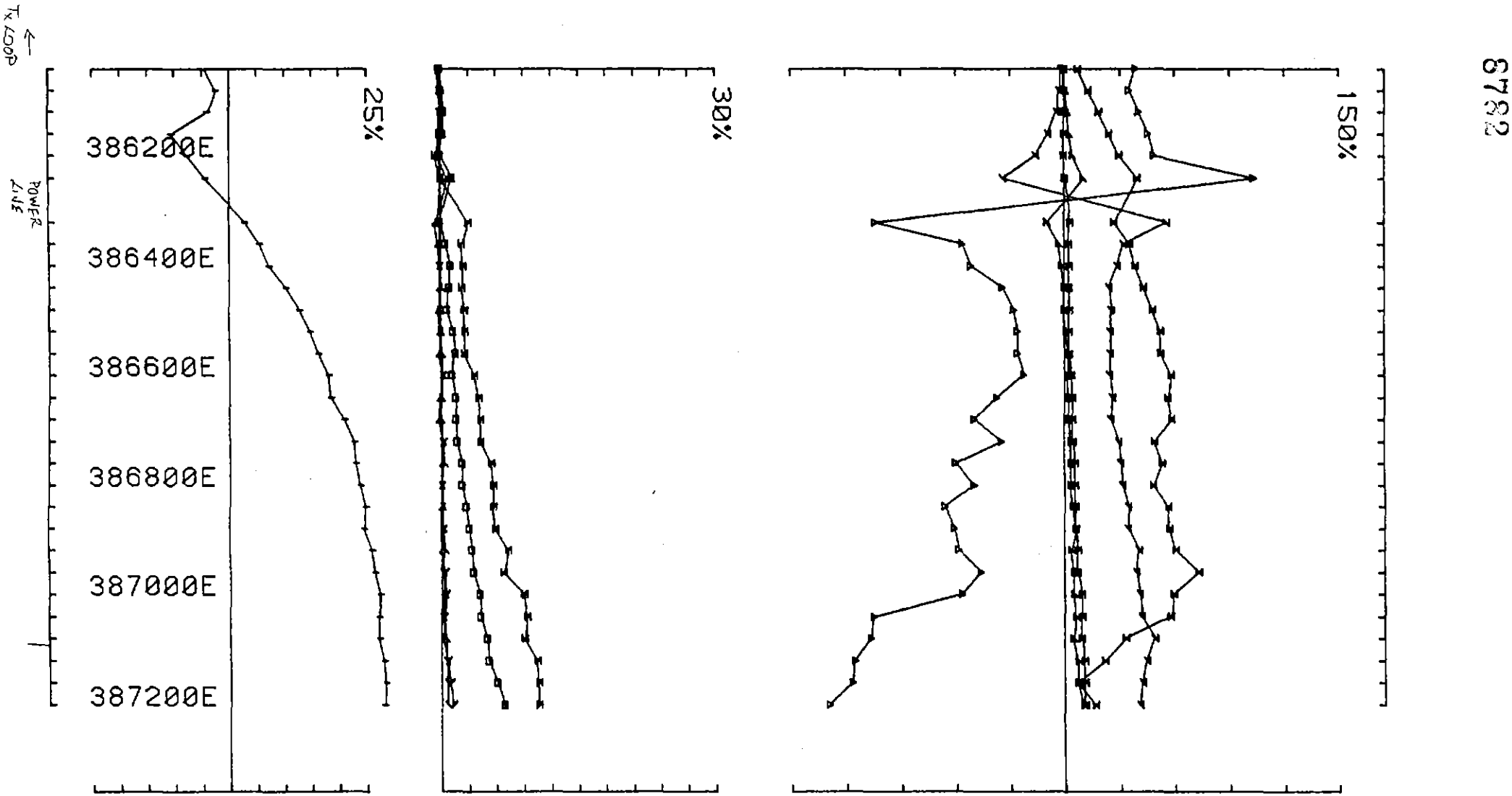
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 MAR 1989
loop no 2 line 373800N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 MAR 1989

loop no 2 line 373800N component Hz secondary field Ch 1 point norm.



8782

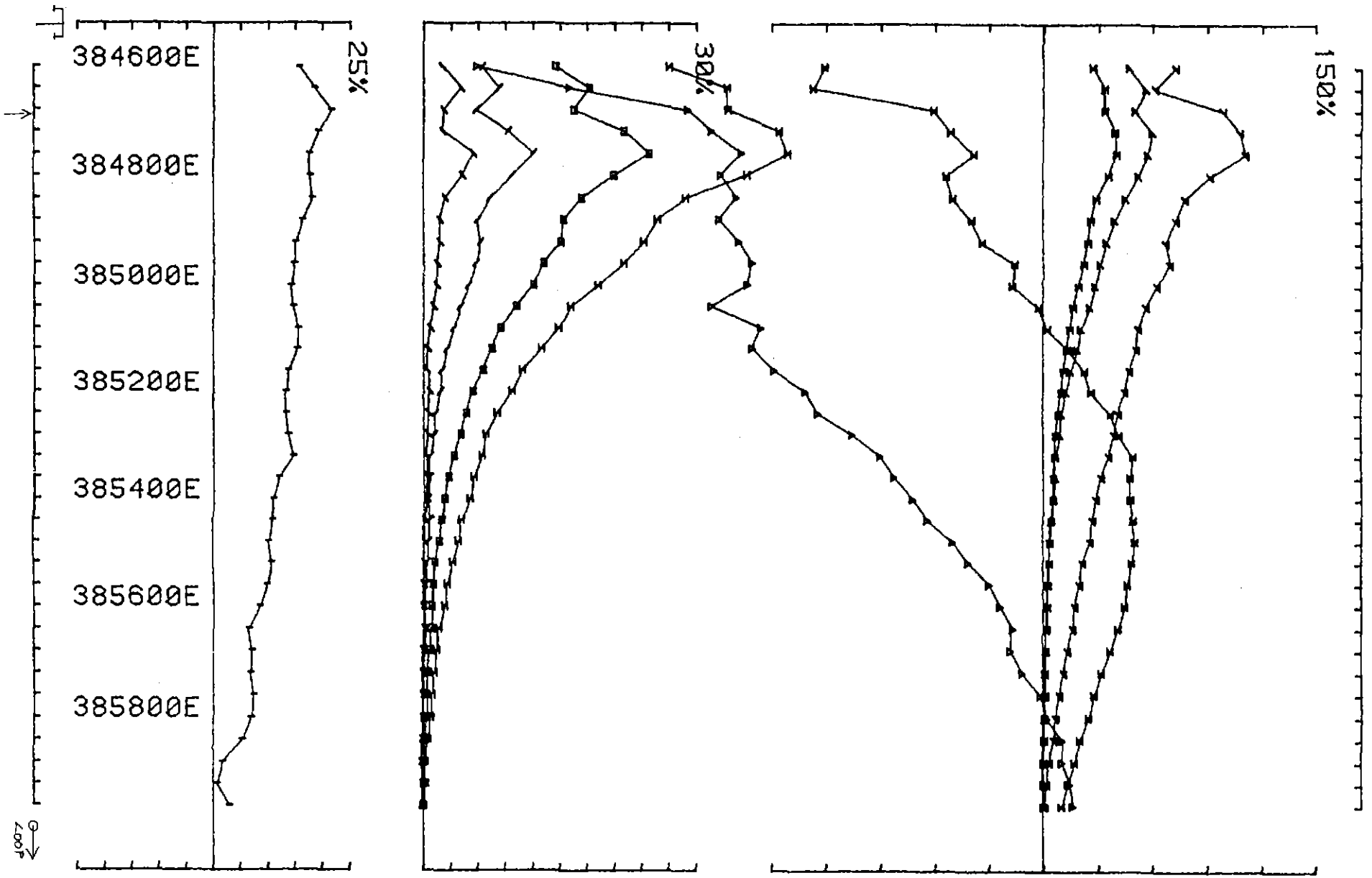
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 MAR 1989

loop no 2a line 374000N component Hz secondary field Ch 1 contin. norm.

8782

5941136



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 Mar 89

loop no 1 line 374000N component Hz secondary field Ch 1 contin. norm.

S7784

25%

30%

150%

384800E

385000E

385200E

385400E

385600E

385800E

386200E

386400E

386600E

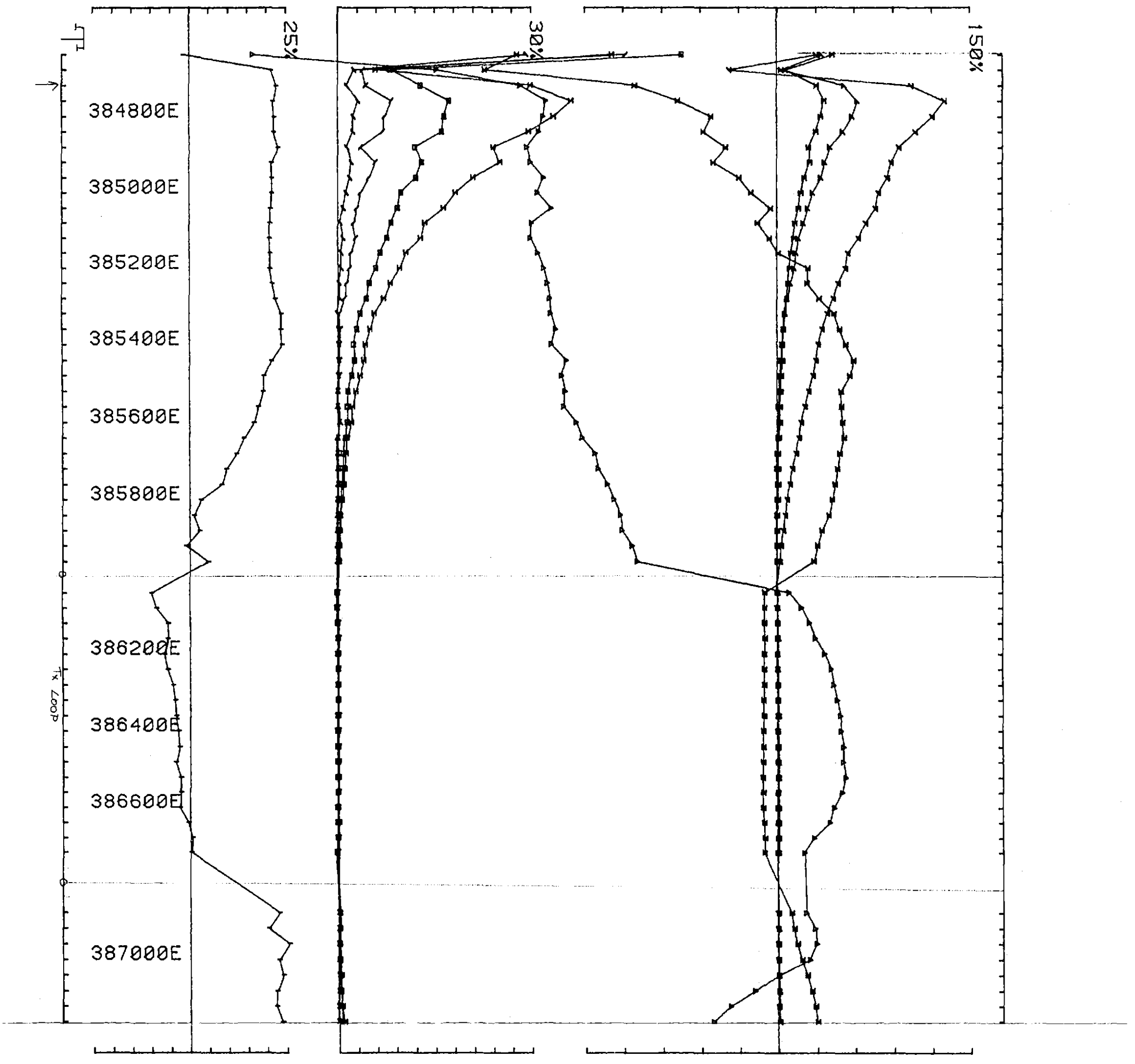
387000E

<***

UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

loop no 1 line 374200N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
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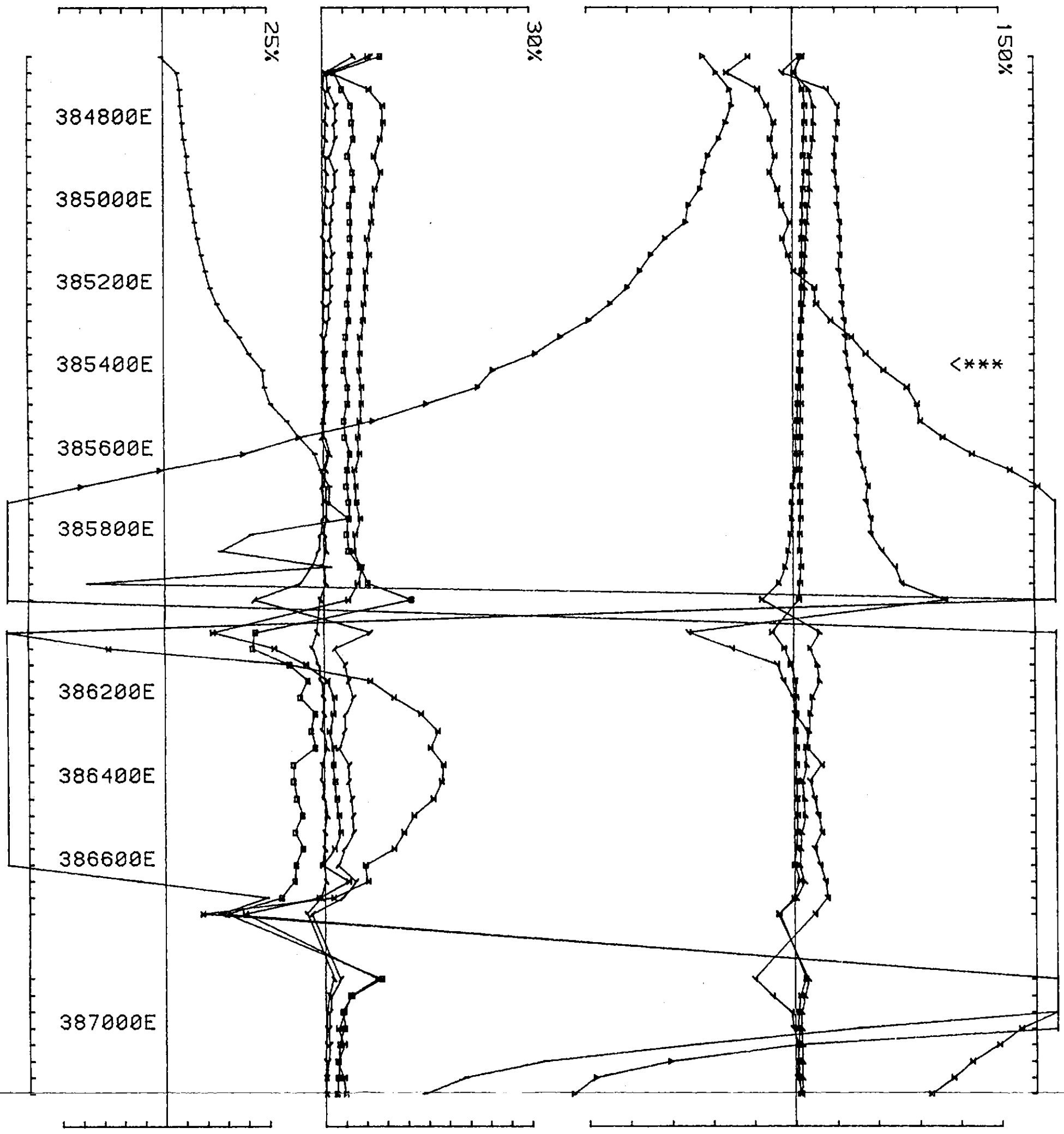
loop no 1 line 374200N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

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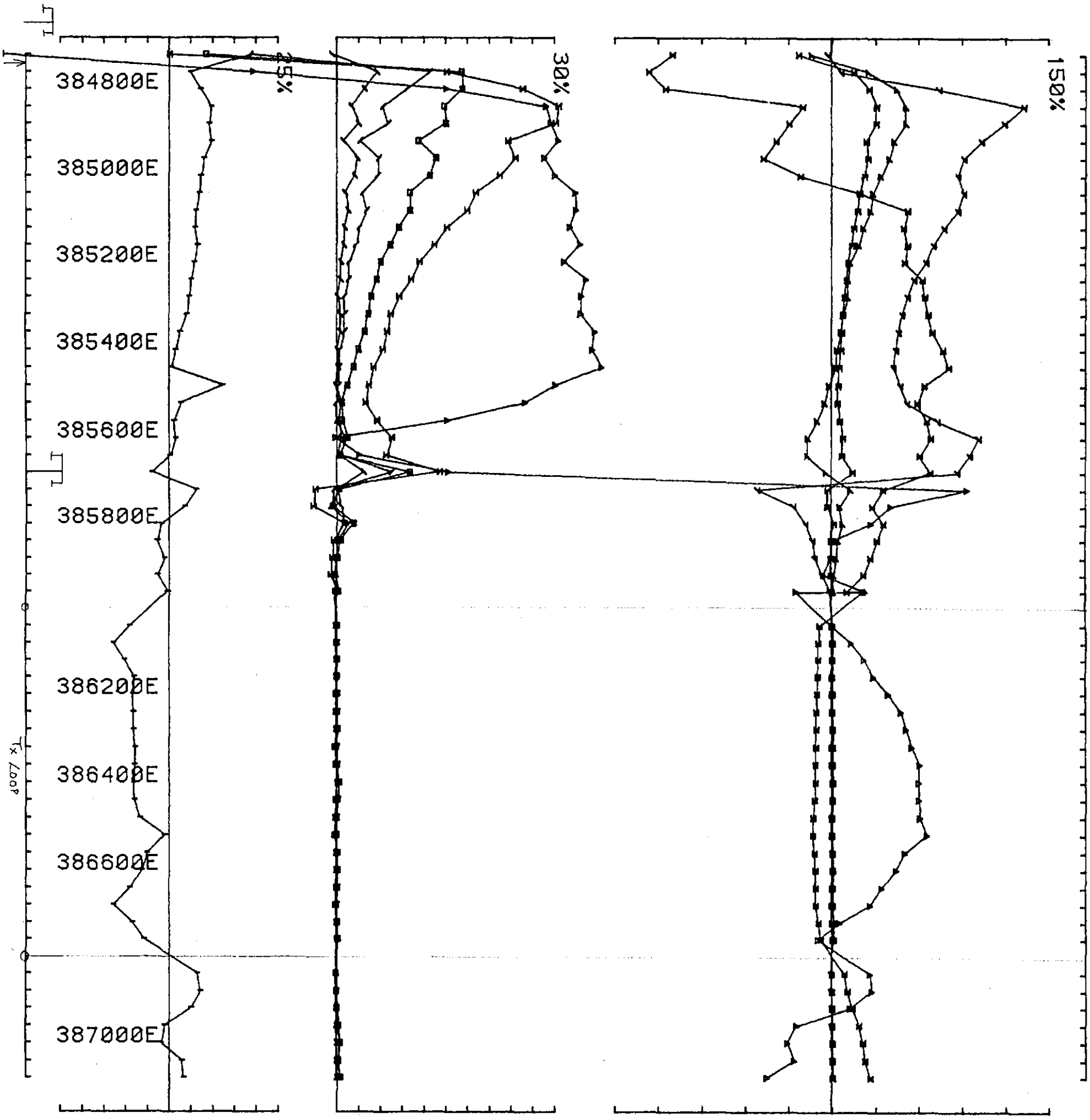
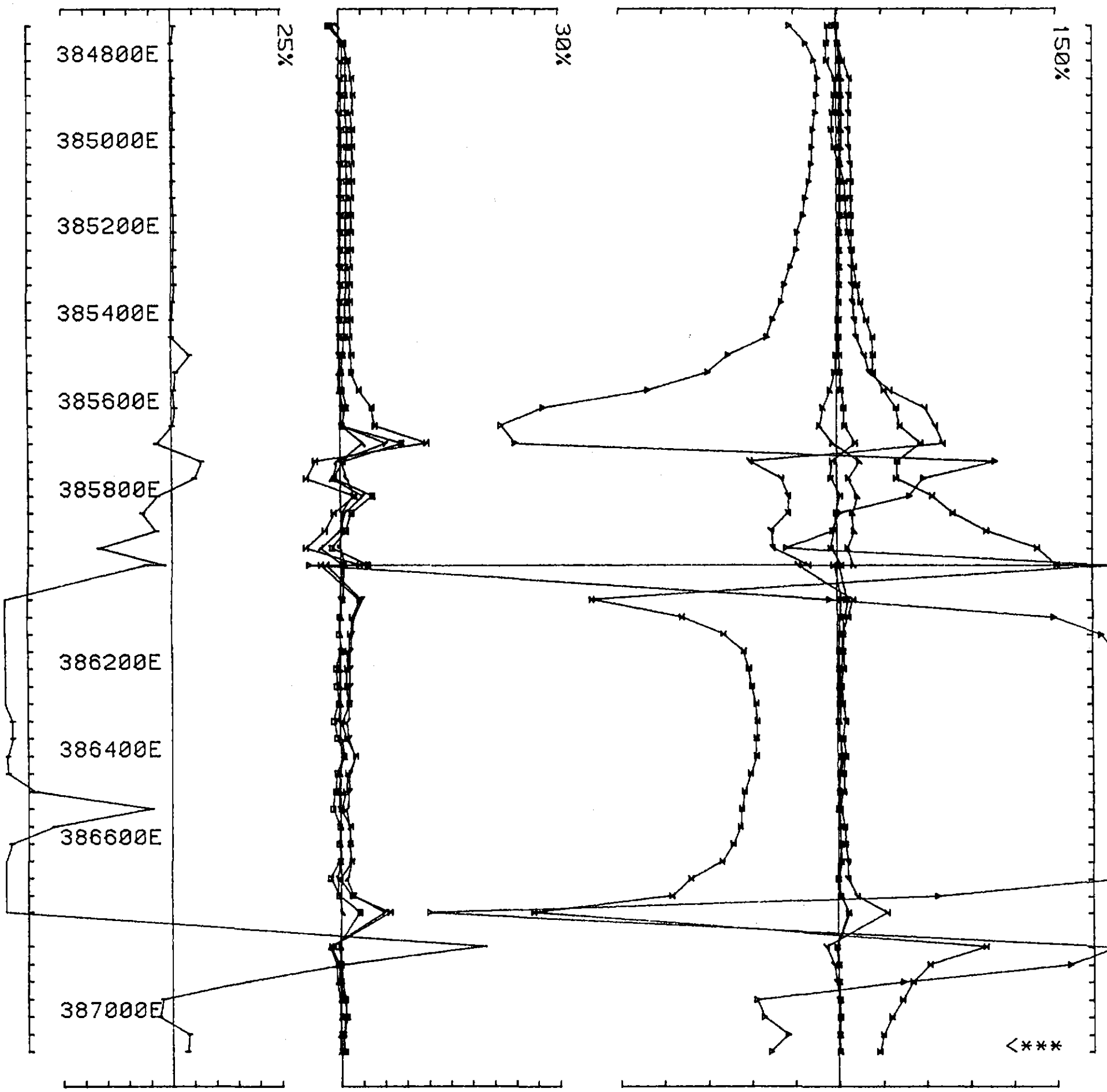
loop no 1 line 374200N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

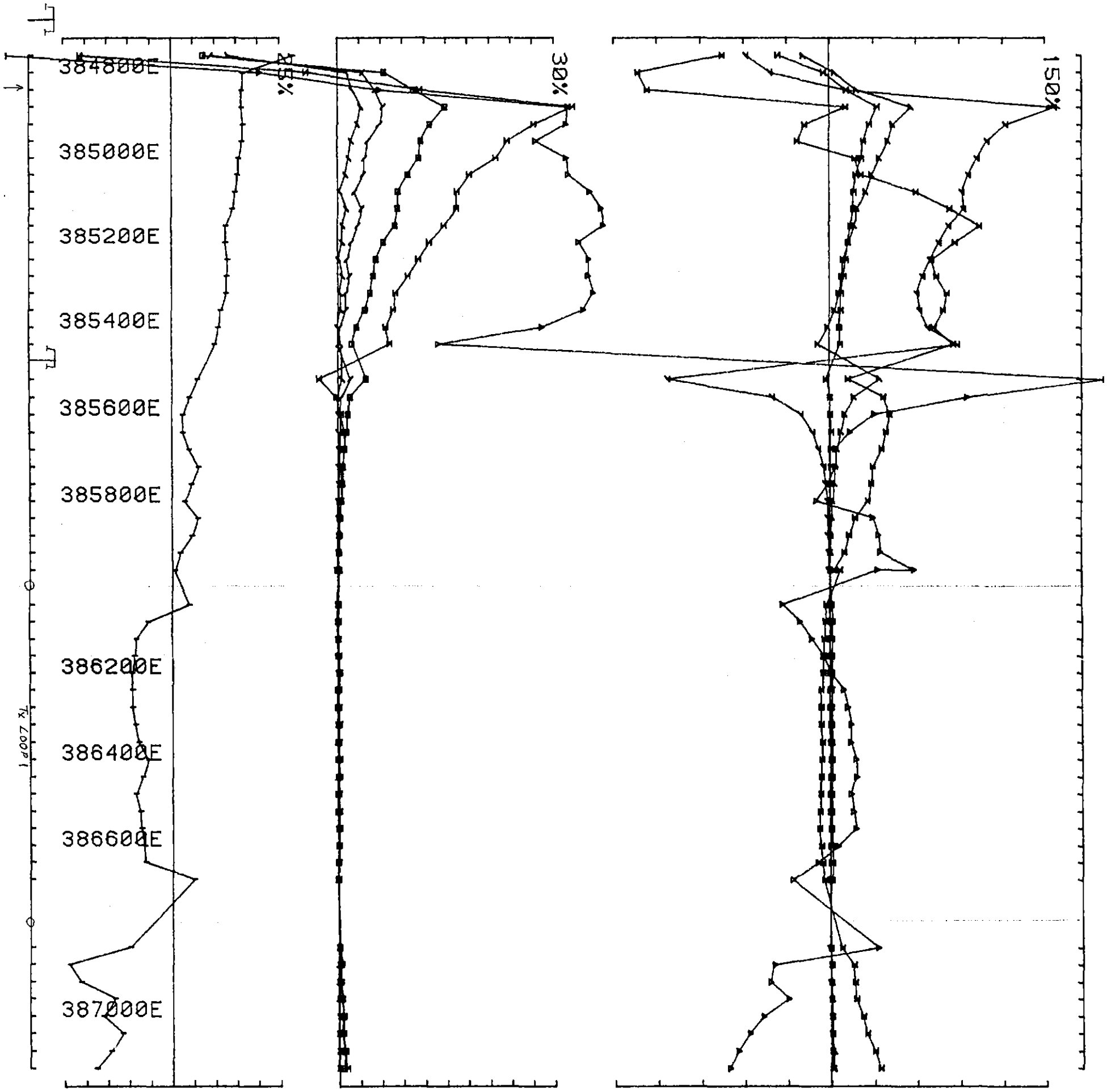
loop no 1 line 374400N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

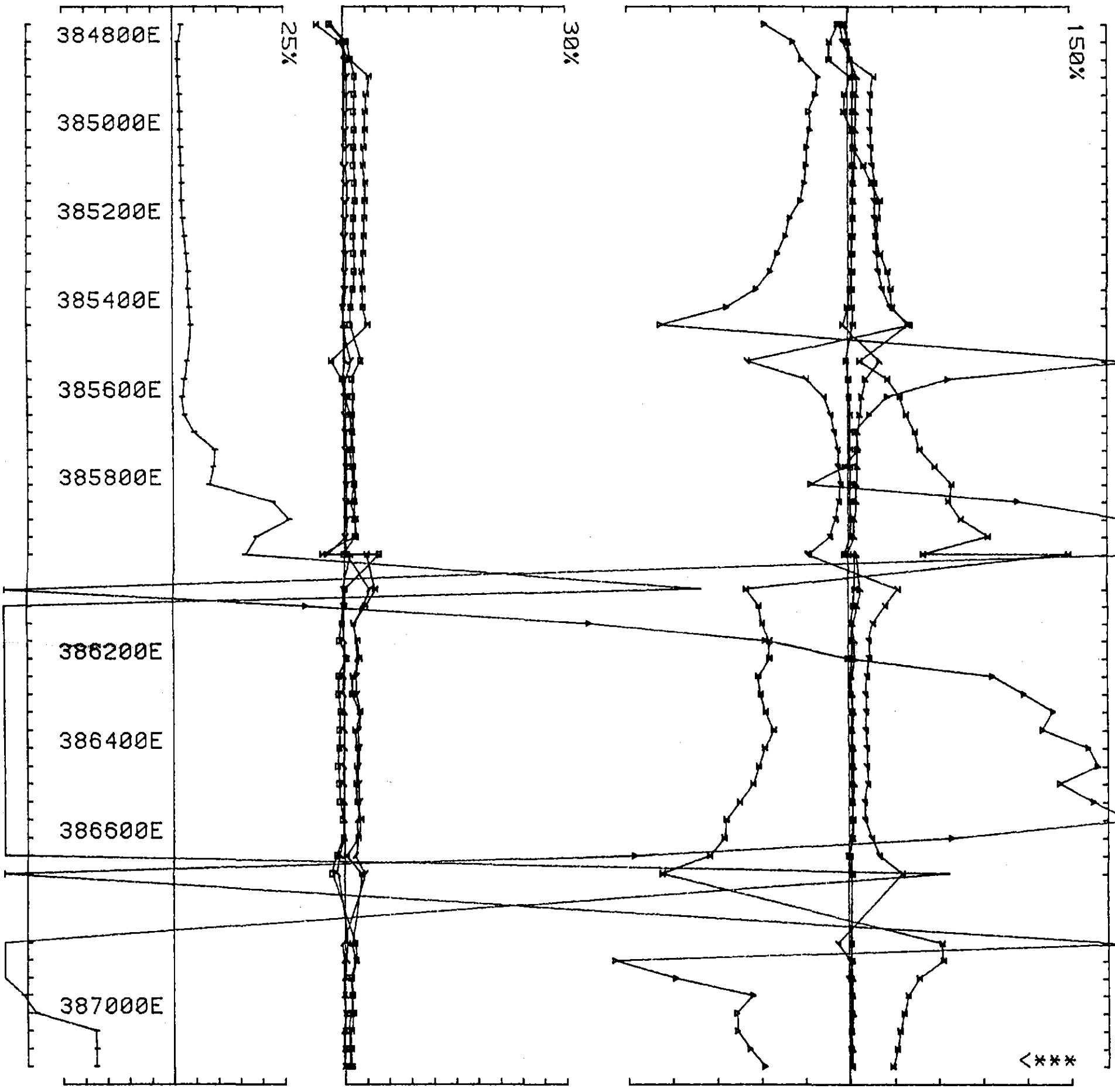
loop no 1 line 374400N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

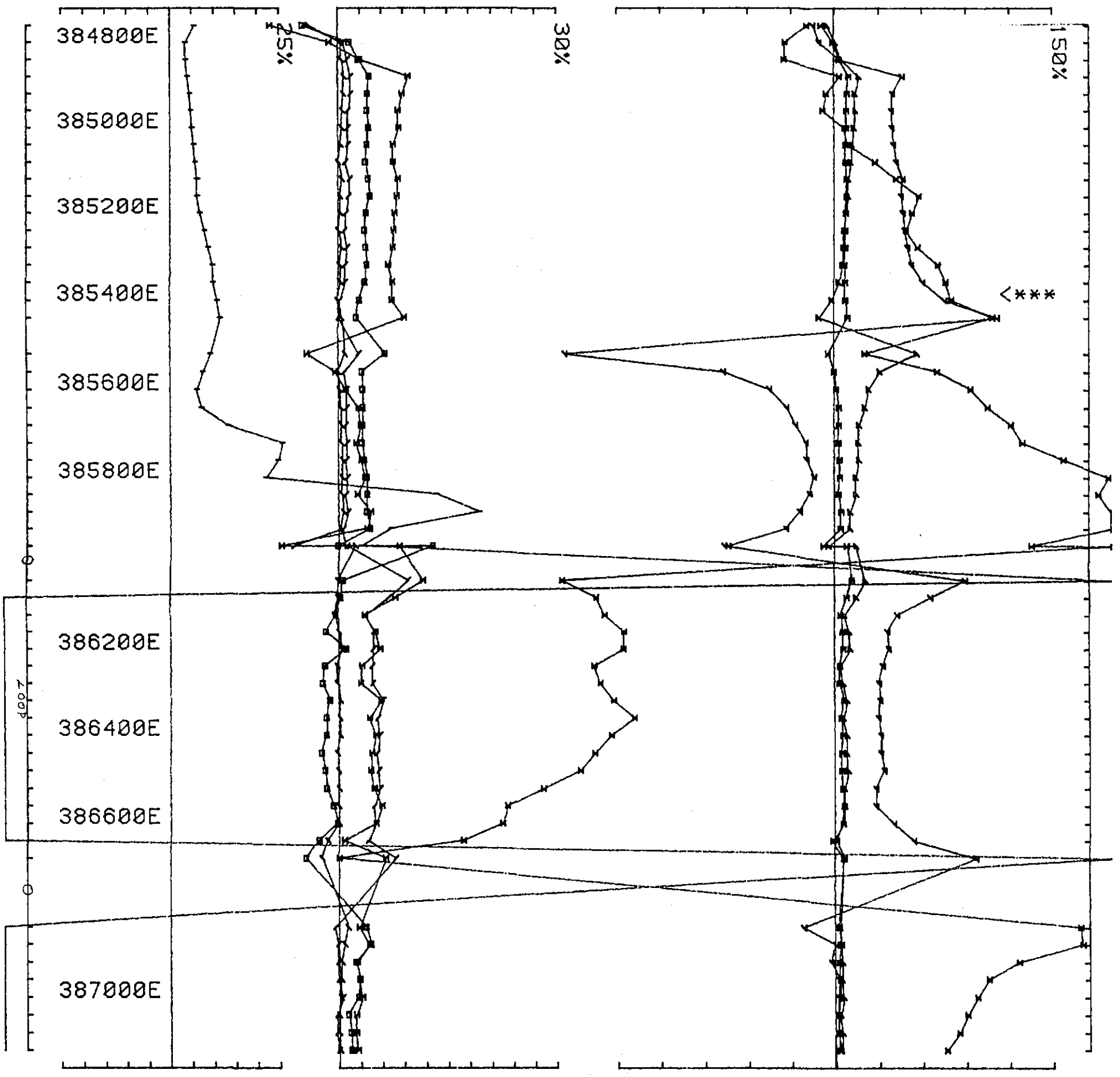
loop no 1 line 374600N component Hz secondary field Ch 1 contin. norm.



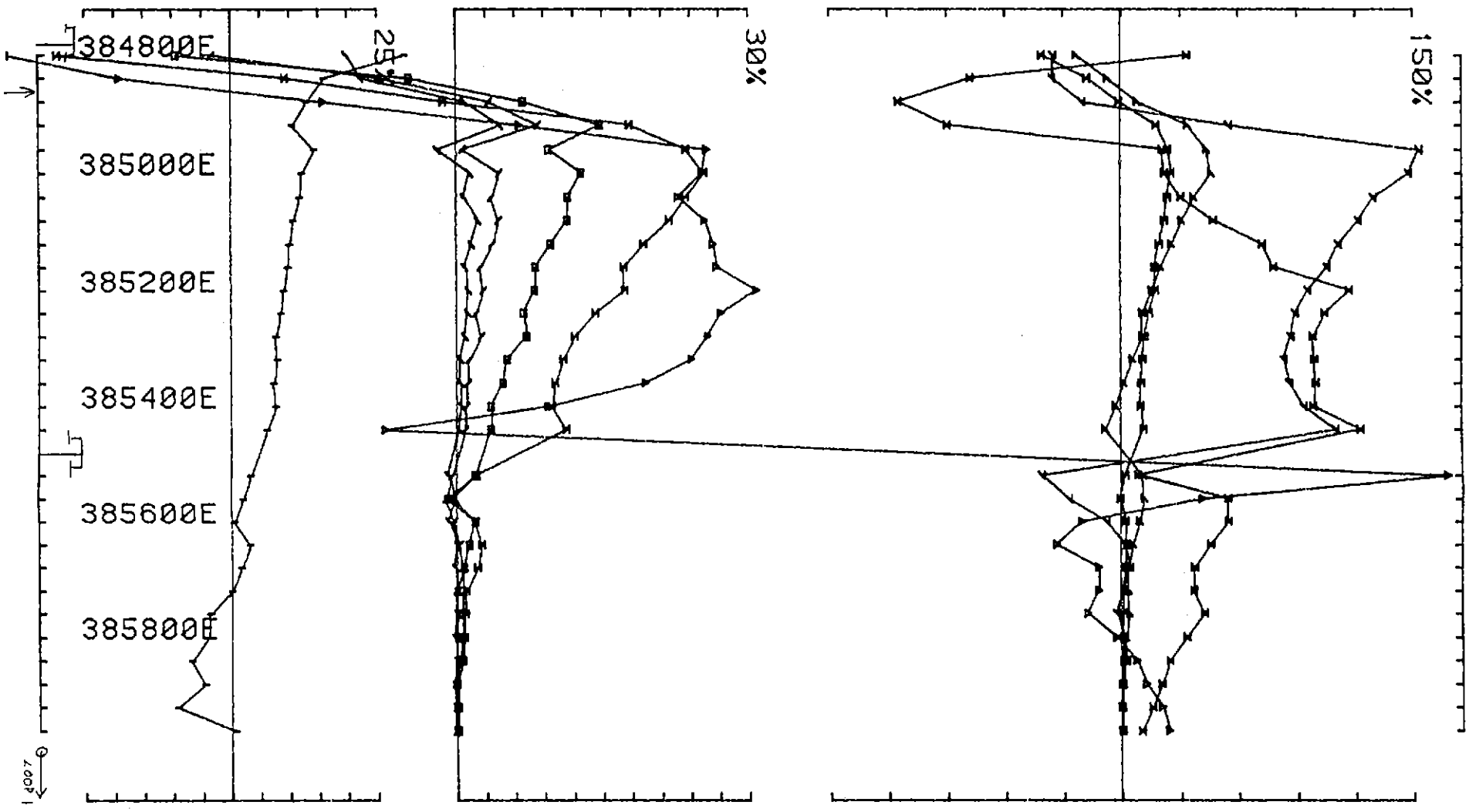
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

loop no 1 line 374600N component Hz secondary field Ch 1 point norm.



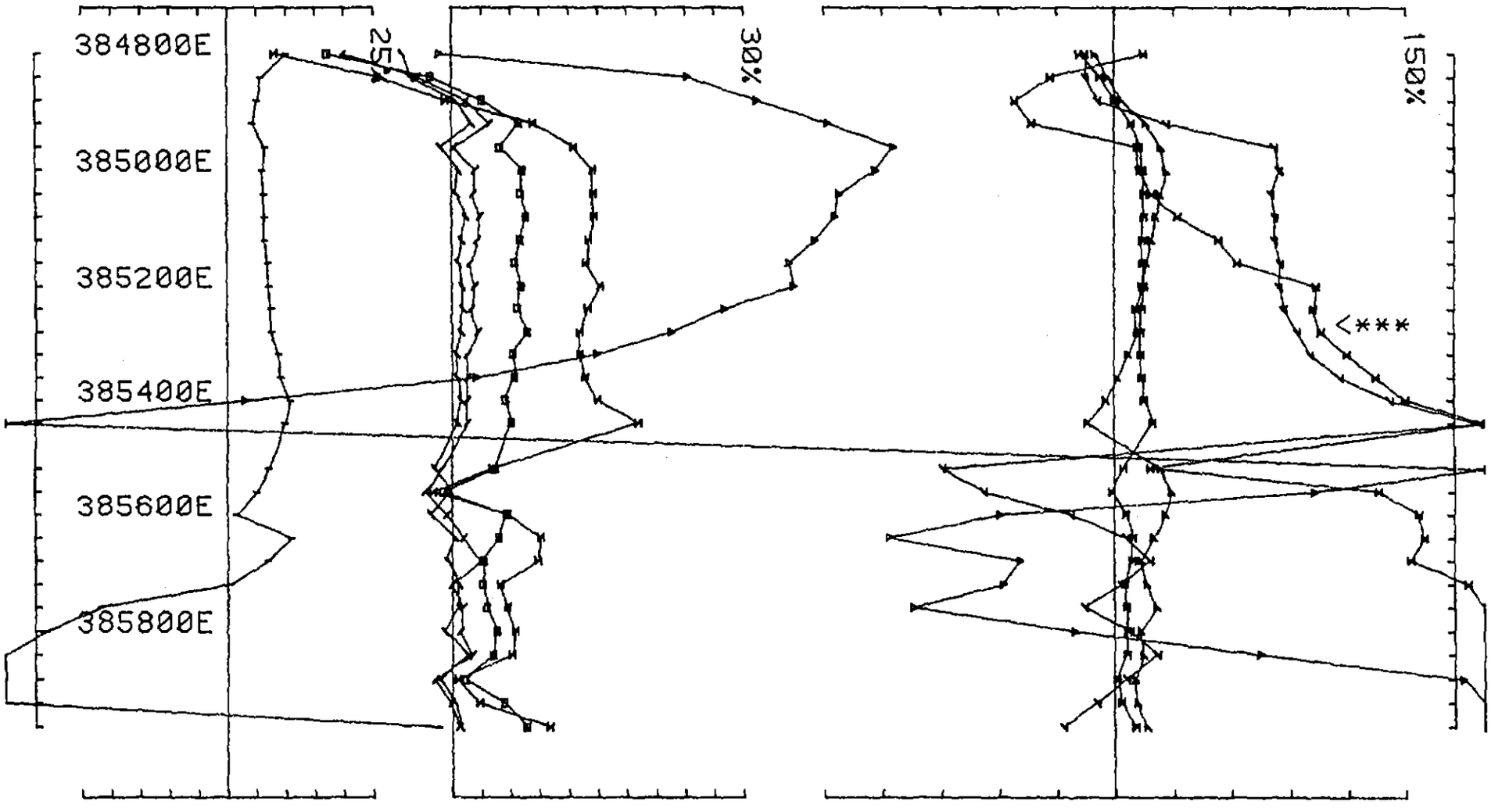
UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)
conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89
loop no 1 line 374600N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

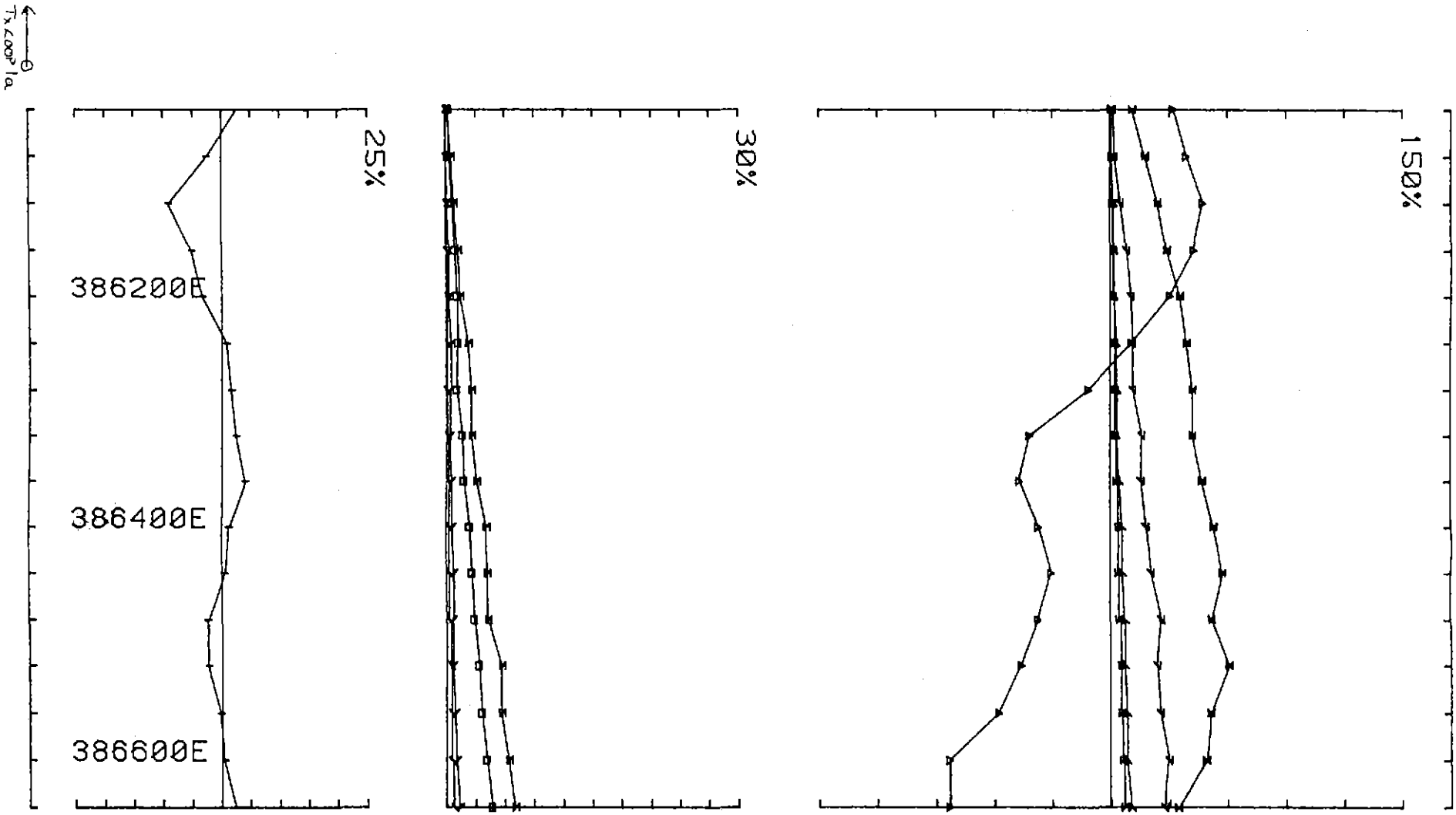
loop no 1 line 374800N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 Mar 89

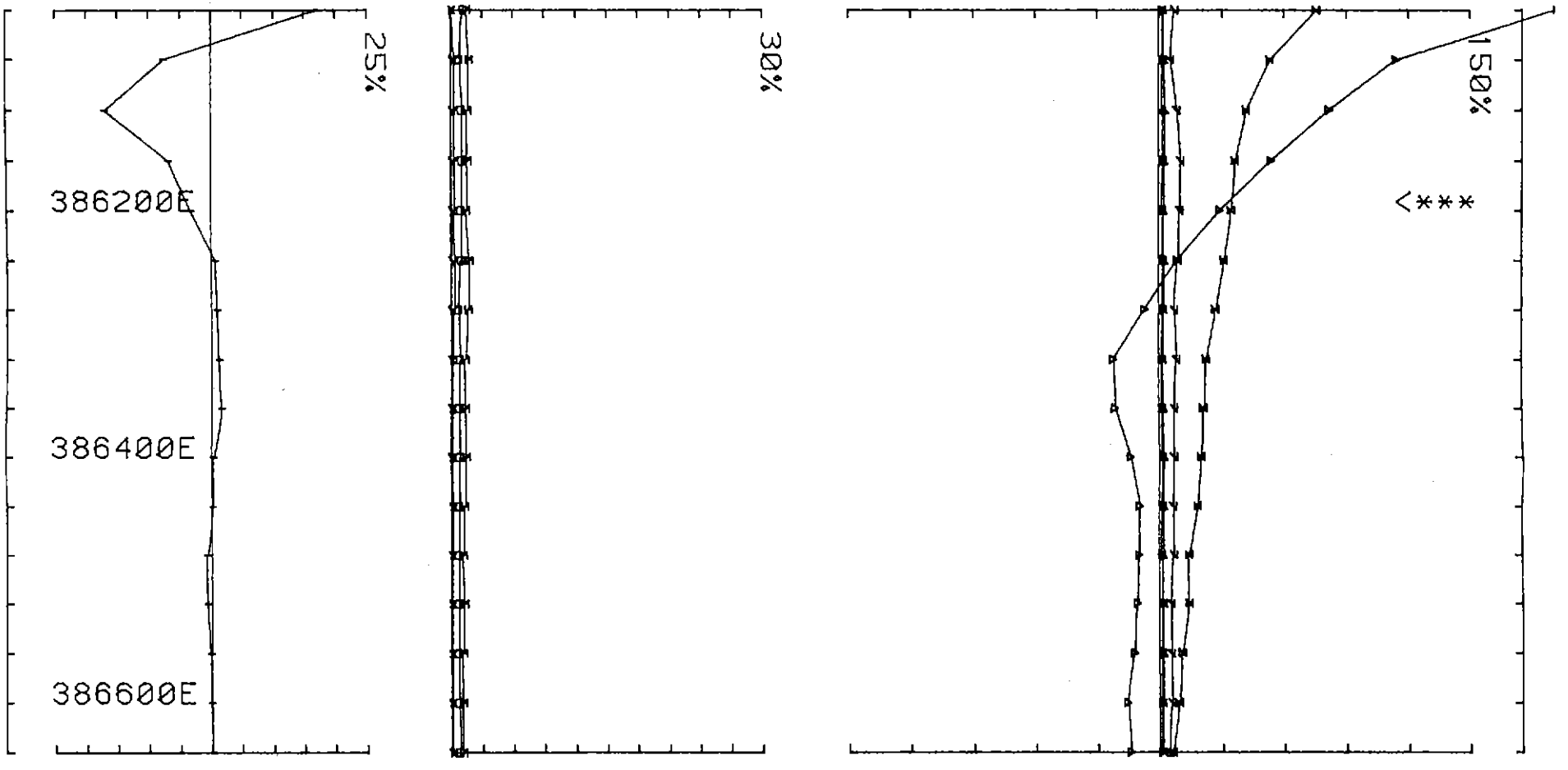
loop no 1 line 374800N component Hz secondary field Ch 1 point norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. Job 8902 base freq (hz) 33.409 MAR 1989

loop no 1a line 374800N component Hz secondary field Ch 1 contin. norm.



UTEM SURVEY at STERLING VALLEY for BILLITON AUSTRALIA (SHELL)

conducted by LAMONTAGNE GEOPHYSICS. job 8902 base freq (hz) 33.409 MAR 1989

loop no 1a line 374800N component Hz secondary field Ch 1 point norm.

APPENDIX 3

Drill logs SVD 89-1, 89-2

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

087

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

HEADING SHEET

COLLAR INFORMATION

DATA TYPE	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP	HOLE NAME	TOTAL DEPTH	HOLE TYPE	DESC CODE	REMARKS
	4890	2500		100	50	SVD89-1	154.1			

PROJECT	STERLING VALLEY	HOLE NAME	SVD 89-1
LOGGED BY	J. RANDELL	TOTAL DEPTH	154.1m
CONTRACTOR	EAST COAST DRILLING	RIG	LY38
CREW	W. HOW	DATE STARTED 10/2	FINISHED 21/2

CORE STORAGE: Nº OF TRAYS / LOCATION
SAMPLE STORAGE
M&P LAB
ASSAY LAB

DESC.	SIZE	FROM	TO	TOTAL	REMARKS
NON CORE					
CORE	HQ	0	57.0	57.0	
	NQ	57.0	154.1	97.1	
	BQ				
CASING					
CASING LEFT	PVC	0	154.1		(S) steel (P) plastic

SURVEY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	AZIMUTH	DIP	REMARKS
0		100	50	
50		100	50	
100		100	47	
150		097	44	

PLOTTING KEY

SYMBOL DES. CODE	G/LOG	INTERVAL FROM	TO	SYMBOL DES. CODE	G/LOG	INTERVAL FROM	TO

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM							SAMPLE Nº	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG

DESCRIPTIVE LOG

0 – 4.2 // GLACIAL SCREE

4.2 – 65.2 // FELDSPAR PHYRIC ANDESITIC LAVA

4.2-5.5. Yellow brown, very weathered.
5.5-10.5. Yellow brown green, weathered. Fine to medium grained feldspar, minor chloritic wisps defining foliation at 45° LCA.
10.5-16.0. Deep green weathered irregular chloritic wisps, weakly magnetic, minor volcaniclastic bands.
16.0-18.0. Dark green, minor bleached parts mod. fresh. Fine carbonate-quartz veinlets, mod. fractured.
18.0-19.8. Mod. broken weathered + chloritized.
19.8-22.0. Strongly chloritic, broken, finely feldspar phyric, some bleached bands, minor chloritic ash lenses.
22.0-24.0. Yellow green, mod. broken + weathered. Some bands chloritic ash @ 45° LCA. Quartz vein at 23.8m, 30° LCA.
24.0-26.9. Chloritic, fresh but broken. Numerous epidotized veinlets, minor quartz. Minor elongate feldspar phenocrysts.
26.9-55.0 Fresh finely foliated 40-45° LCA. Mod. quartz-carbonate veinlets. Mod. chloritic ash.

DRILLING OBJECTIVES / SUMMARY: Test HFZ for epigenetic auriferous mineralization as indicated by an IP anomaly east of the fault within black shales, volcaniclastic sandstones. The hole intersected slugs of massive pyrite, pyrrhotite within the HFZ and pyritic black shales at the down dip projection of the IP anomaly.

REPORT REFERENCE:

SHEET 1 OF 4

59151

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

HEADING SHEET

DATA TYPE	COLLAR CO-ORDINATES EASTING	NORTHING	ELEVATION	COLLAR SURVEY AZIMUTH	DIP	HOLE NAME	TOTAL DEPTH	HOLE TYPE	DESC CODE	REMARKS
	4890	2500		100	50	SVD89-1	154.1			

PROJECT	STERLING VALLEY
HOLE NAME	SVD 89-1
LOGGED BY	J. RANDELL
TOTAL DEPTH	154.1 m
CONTRACTOR	EAST COAST DRILLING
RIG	LY38
CREW	W. HOW
DATE STARTED	10/2
FINISHED	21/2
CORE STORAGE — Nº OF TRAYS	
LOCATION	
SAMPLE STORAGE	
M&P LAB	
ASSAY LAB	

DESC.	SIZE	FROM	TO	TOTAL	REMARKS
NON CORE					
CORE	HQ	0	57.0	57.0	
	NQ	57.0	154.1	97.1	
	BQ				
CASING					
CASING LEFT	PVC	0	154.1		(S) steel (P) plastic

SURVEY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	AZIMUTH	DIP	REMARKS
0		100	50	
50		100	50	
100		100	47	
150		097	44	

PLOTTING KEY

SYMBOL DES. CODE	G/LOG	INTERVAL FROM	TO	SYMBOL DES. CODE	G/LOG	INTERVAL FROM	TO

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM							SAMPLE Nº	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG

DESCRIPTIVE LOG

0 – 4.2 // GLACIAL SCREE

4.2 – 65.2 // FELDSPAR PHYRIC ANDESITIC LAVA

4.2-5.5. Yellow brown, very weathered.
5.5-10.5. Yellow brown green, weathered. Fine to medium grained feldspar, minor chloritic wisps defining foliation at 45° LCA.
10.5-16.0. Deep green weathered irregular chloritic wisps, weakly magnetic, minor volcaniclastic bands.
16.0-18.0. Dark green, minor bleached parts mod. fresh. Fine carbonate-quartz veinlets, mod. fractured.
18.0-19.8. Mod. broken weathered + chloritized.
19.8-22.0. Strongly chloritic, broken, finely feldspar phyric, some bleached bands, minor chloritic ash lenses.
22.0-24.0. Yellow green, mod. broken + weathered. Some bands chloritic ash @ 45° LCA. Quartz vein at 23.8m, 30° LCA.
24.0-26.9. Chloritic, fresh but broken. Numerous epidotized veinlets minor quartz. Minor elongate feldspar phenocrysts.
26.9-55.0 Fresh finely foliated 40-45° LCA. Mod. quartz-carbonate veinlets. Mod. chloritic ash.

DRILLING OBJECTIVES / SUMMARY: Test HFZ for epigenetic auriferous mineralization ~~as~~ as indicated by an IP anomaly east of the fault within black shales, volcaniclastic sandstones. The hole intersected strings of massive pyrite, pyrrhotite within the HFZ and pyritic black shales at the down dip projection of the IP anomaly.

REPORT REFERENCE:

SHEET 1 OF 4

594152

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

SP = Split
CH = chip

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 89-1
LOGGED BY	J. RANDELL	TOTAL DEPTH	154.1m

DISTANCE FROM COLLAR TO TOP	DISTANCE FROM COLLAR TO BOTTOM	SAMPLE No	CORE ANGLE	ROCK TYPE	DESC CODE	GRAPHIC LOG
SP 58.4	59.4	178773				
59.4	60.4	178774				
60.4	61.4	178775				
61.4	62.4	178776				
62.4	63.4	178777				
63.4	64.4	178778				
64.4	65.2	178779				
65.2	66.0	178780				
66.0	67.0	178781				
67.0	68.0	178782				
68.0	69.0	178783				
69.0	70.0	178784				
70.0	71.0	178785				
71.0	71.9	178786				
71.9	72.2	178787				
72.2	73.8	178788				
73.8	74.3	178789				
74.3	76.2	178790				
76.2	77.0	178791				
77.0	78.0	178792				
78.0	79.0	178793				
SP 79.0	79.8	178794				

ASSAY INFORMATION

DESCRIPTIVE LOG

Weakly magnetic. Increasing epidote + quartz blebs to 40m.

At 43.2m, 2mm veinlet ch-quartz-sph-gal.

55.0 - 59.4. Increasing chlorite, mildly foliated

59.3m. 1cm laminae pypo Cpy 20%.

59.4 - 65.2. Intense silicification with quartz veining. Mottled. Dap green chloritic. Trace disseminated pypo.

65.2 - 76.2 // CHLORITIZED FELDSPAR PHYRIC VOLCANICLASTIC

Sericitic in places, strongly chloritized with carbonate blebs. Some quartz bands. Foliation 45 - 75° CA.

66.9 - 66.92. 2cm massive py. Sharp contacts 65°

Mod. broken core, increasing down hole until 68-72m interval. Mod. foliation 50° CA.

Minor sulphide along foliation planes

e.g. 68.4m. 7cm 5-10% laminae po py (Cpy)

70.3m. 5% blebby po py.

71.8 - 71.9. Massive chlorite plug with fragments of massive pyrite

71.9 - 72.2. Massive Py 70%, Po 25%, Cpy 5%, vaguely banded 45° CA.

N.B Bad Core Loss 72.1 - 73.8. 18% Recovery

?72.2 - 73.8. Chloritic and graphitic mod. Quartz veining, possible volcaniclastic.

73.8 - 74.3. Strongly chloritized, quartz veined. Fine grained volcaniclastic.

74.3 - ?74.4. Massive Py 75%, Po 25%, Cpy 5%.

N.B. Core Loss 74.3 - 76.2m 10.5% Recovery

74.4 - 76.2. Strongly quartz banded + veined chloritic fine volcaniclastic.

76.2 - 79.8. INTERBEDDED CHLORITIC ARENACEOUS VOLCANICLASTIC AND CHLORITIC SHALE.

Strongly foliated, mod. quartz veined, strongly chloritic, dominantly fine sand size clastic with lesser bands of very fine grained chloritic black shale, sometimes laminated. 50° CA.

Fine disseminated pyrite throughout

SHEET 2 OF 4

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 89-1
LOGGED BY	J. RANDELL	TOTAL DEPTH	154.1m

	DISTANCE FROM COLLAR TO TOP	DISTANCE FROM COLLAR TO BOTTOM	SAMPLE No	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
SP	79.8	81.2	178895						79.8 – 81.2 // FOLIATED SERICITIZED COARSE ARENACEOUS VOLCANICLASTIC
CH	81.2	83.0	178896						Green well cleaved. Fine qvartz veinlets subparallel to foliation. Some chloritic ash laminae.
	83.0	85.0	178897						Sharp contacts upper 45-50° LCA
	85.0	87.0	178898						lower 45° LCA.
	87.0	89.0	178899						
	89.0	91.0	178900						81.2 – 114.0 // CHLORITIC INTERBEDDED FINE ARENACEOUS VOLCANICLASTIC
	91.0	93.0	178901						• AND CHLORITIC SHALE.
	93.0	95.0	178902						
	95.0	97.0	178903						Strongly foliated poorly laminated weak qvartz-(carb.) veining. Trace disem + blebby Cpy. Minor sericit. Some banded sections at 75° LCA. Consistent fine grain size, only minor chloritic bands Shale.
	97.0	99.0	178904						94.0 – 96.0. 40% fine grained chloritic shale bands (45° LCA) in fine sandy matrix. Mod. qvartz veining, irregular, contorted.
	99.0	101.0	178905						99.0. 3cm band, blebby py po (Cpy) 7-10%.
	101.0	103.0	178906						101.0 – 101.8. Well laminated, banded fine ash and chloritic shale.
	103.0	105.0	178907						Facing evidence at 101.2m from scouring indicates downhole is Up.
	105.0	107.0	178908						103.0 – 107.0 Strongly qvartz veined, irreg. veinlets, some qvartz bands.
	107.0	109.0	178909						109.3. Qvartz-(carb) band 3cm 55° LCA.
	109.0	111.0	178910						112.0 – 113.5. Strongly broken core, qvartz veined.
	111.0	114.0	178911, 12						
	114.0	116.0	178913						114.0 – 154.4 // FINELY LAMINATED PYRITIC BLACK SHALE.
	116.0	118.0	178914						
	118.0	120.0	178915						Pyrite along thin wispy veinlets almost SVG parallel to bedding 50° LCA.
	120.0	122.0	178916						Minor clasts pyrite (1-2cm diam.)
	122.0	124.0	178917						Estimated 1-2% disem. pyrite.
	124.0	126.0	178918						Minor bands fine to medium grained volcaniclastic mod. qvartz veining along bedding planes. Well laminated 45-50° LCA.
	126.0	128.0	178919						123.6m. 5mm band 40% Sph.
	128.0	130.0	178920						130.3m. 5mm band 40% Py.
V	130.0	132.0	178921						133.2 – 133.9. 3cm massive Py. then 5-10%
CH	132.0	133.2	178922						irregular veinlets + blebs Py in qvartz veined
SP	133.2	133.9	178923						shale estim. 40% qvartz.
CH	133.9	136.0	178924						138.0 – 138.2. 80% qvartz 10% carb 10% chlorite
CH	136.0	138.0	178925						Sharp contacts 45° LCA.
CH	138.0	140.0	178926						139.4m. Facing criteria from Scouring indicate DownHole is Up.

ASSAY INFORMATION

SHEET 3 OF 4

594154

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTINUATION SHEET

PROJECT STERLING VALLEY	HOLE NAME SVD 89-1
LOGGED BY J. RANDELL	TOTAL DEPTH 154.1m

	DISTANCE FROM COLLAR TO TOP	TO BOTTOM		SAMPLE No	CORE ANGLE	ROCK TYPE	CLASS	DESC CODE	GRAPHIC LOG
CH	140.0	141.0		179227					
SP	141.0	142.0		179228					
SP	142.0	143.0		179229					
SP	143.0	144.0		179230					
SP	144.0	145.0		179231					
CH	145.0	147.0		179232					
CH	147.0	149.0		179233					
CH	149.0	150.1		179234					
SP	150.1	150.8		179235					
CH	150.8	152.0		179236					
CH	152.0	154.1		179237					

Core Recovery

FROM	TO	INTERVAL	RECOV.	%
0.0	4.2	4.2	0.5	12
4.2	5.7	1.5	1.5	100
5.7	7.2	1.5	1.5	100
7.2	8.7	1.5	1.0	67
8.7	9.9	1.2	0.7	58
9.9	11.5	1.6	1.6	100
11.5	13.0	1.5	1.5	100
13.0	14.6	1.6	1.6	100
14.6	16.2	1.6	1.6	100
16.2	17.5	1.3	1.3	100
17.5	18.8	1.3	1.3	100
18.8	20.3	1.5	1.5	100
20.3	21.9	1.6	1.6	100
21.9	23.5	1.6	1.6	100
23.5	25.1	1.6	1.6	100
25.1	26.7	1.6	1.6	100
26.7	28.2	1.5	1.5	100
28.2	29.7	1.5	1.5	100
29.7	31.2	1.5	1.5	100
31.2	32.7	1.5	1.5	100
32.7	34.2	1.5	1.5	100
34.2	35.7	1.5	1.5	100
35.7	37.2	1.5	1.5	100
37.2	38.7	1.5	1.5	100
38.7	40.2	1.5	1.5	100
40.2	41.7	1.5	1.5	100
41.7	43.2	1.5	1.5	100
43.2	44.7	1.5	1.5	100
44.7	46.2	1.5	1.5	100
46.2	47.7	1.5	1.5	100
47.7	49.2	1.5	1.5	100
49.2	50.7	1.5	1.5	100
50.7	52.2	1.5	1.5	100
52.2	53.7	1.5	1.5	100
53.7	55.2	1.5	1.5	100
55.2	57.0	1.8	1.8	100
57.0	58.2	1.2	1.2	100
58.2	61.2	3.0	3.0	100
61.2	64.2	3.0	3.0	100
64.2	66.1	1.9	1.9	100
66.1	68.1	2.0	2.0	100
68.1	69.14	1.3	1.3	100
69.14	71.13	1.9	1.9	100
71.13	72.1	0.8	0.8	100
72.1	73.8	1.7	0.3 *	18
73.8	74.3	0.5	0.5	100
74.3	76.2	1.9	0.2 *	11
76.2	77.5	1.3	1.2 *	92
77.5	78.7	1.2	1.2	100
78.7	81.0	2.3	2.3	100
81.0	82.3	1.3	1.3	100
82.3	83.9	1.6	1.6	100
83.9	85.44	1.5	1.5	100
85.44	86.3	0.9	0.9	100
86.3	87.3	1.0	1.0	100
87.3	89.4	2.1	2.1	100
89.4	91.5	2.1	2.1	100
91.5	93.3	1.8	1.8	100
93.3	95.3	2.0	2.0	100
95.3	97.9	2.6	2.6	100
97.9	99.6	1.7	1.7	100
99.6	100.9	1.3	1.3	100
100.9	102.7	1.8	1.8	100
102.7	104.6	1.9	1.9	100
104.6	106.7	1.9	1.9	100
106.7	109.4	2.3	2.3	100
109.4	110.9	1.9	1.9	100
110.9	112.5	1.6	1.6	100
112.5	113.7	1.2	1.2	100
113.7	115.2	1.5	1.5	100
115.2	117.7	1.5	1.5	100
117.7	118.8	1.1	1.1	100
118.8	120.2	1.4	1.4	100
120.2	122.5	2.3	2.3	100
122.5	125.2	2.7	2.7	100
125.2	127.3	2.1	2.1	100
127.3	128.6	1.0	1.3	100
128.6	130.2	1.6	1.6	100
130.2	131.9	1.7	1.7	100
131.9	133.2	1.3	1.3	100
133.2	134.7	1.5	1.5	100
134.7	135.2	0.5	0.5	100
135.2	136.1	0.9	0.9	100
136.1	137.2	1.1	1.1	100
137.2	138.6	1.44	1.4	100
138.6	141.1	2.5	2.5	100
141.1	143.9	2.8	2.8	100
143.9	145.9	2.0	2.0	100
145.9	148.2	2.3	2.3	100
148.2	151.0	2.8	2.8	100
151.0	152.7	1.7	1.7	100
152.7	154.1	1.4	1.4	100

DESCRIPTIVE LOG

141.0 – 146.5. More quartz (cb-chl) bands sometimes irreg. contacts.

143.3 – 143.4. 50% irreg. fg in graphitic chloritic matrix.

146.5 – 150.1. Fine wavy laminae, pyritic 50° CCA.

150.1 – 150.8. Sharp contacts upper 45° lower 40° Green chloritic cherty laminated siliceous and pyritic (5-30%) breccia.

150.8 – 154.1. Fine laminated shale dominantly but with arenaceous band 153.6 – 154.

E.O.H. 154.1m.

ASSAY INFORMATION

SHEET 4 OF 4

594155

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Steel Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

HEADING SHEET

COLLAR INFORMATION	DATA TYPE	COLLAR CO-ORDINATES: EASTING	NORTHING	ELEVATION	COLLAR SURVEY: AZIMUTH	DIP	HOLE NAME	TOTAL DEPTH	HOLE TYPE	DESC CODE	REMARKS
		4640	1600		100	-50	SVD 89-2	129.5			

PROJECT	STERLING VALLEY
LOGGED BY	J. RANDELL
CONTRACTOR	EAST COAST DRILLING
CREW	W. HON.
HOLE NAME	SVD 89-2
TOTAL DEPTH	129.5 m
RIG	LY 38
DATE STARTED 23/2 FINISHED	6/3/89

CORE STORAGE: No OF TRAYS	LOCATION	SAMPLE STORAGE
19	DIPORT	DEVONPORT
M&P LAB		ASSAY LAB: COMLABS

SURVEY INFORMATION: DISTANCE FROM COLLAR TO TOP	TO BOTTOM	AZIMUTH	DIP	REMARKS
0		100	-50	
50		105	-48	
126		104	-44	

PLOTTING KEY

SYMBOL: DRG. CODE	G/LOG	INTERVAL: FROM	TO	SYMBOL: DRL CODE	G/LOG	INTERVAL: FROM	TO

DESC.	SIZE	FROM	TO	TOTAL	REMARKS
NON CORE					
CORE	HQ	0	13.8	13.8	Hole caved had
	NQ	12	129.5	117.5	to redrill 12-13.8.
	BQ				
CASING					
CASING LEFT	PVC	0	129.5		(S) steel (P) plastic

ASSAY INFORMATION: DISTANCE FROM COLLAR TO TOP	TO BOTTOM	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
CH 19.1	21.0	179138					
21.0	23.0	179139					
23.0	25.0	179140					
25.0	27.0	179141					
CH 27.0	29.0	179142					

DESCRIPTIVE LOG

0 – 12.1 // OWEN CONGLOMERATE SCREE.

Pebble to cobble conglomerate generally well rounded. Very poor core recovery. Unconsolidated boulders and running sands.

12.1 – 79.1 // CHLORITIZED SHEARED FELDSPAR PHYRIC ANDESITIC LAVA.

Mod. weathered chloritic feldspar phenocrysts, medium grained schistose 45° CA Strongly broken core.

18 – 19.1. Epiclastic character, minor lithics, strong schistosity.

79.1 – 27.8 // SILICA – CARBONATE – CHLORITE BRECCIA.

Dominantly silicified + carbonatized, hyperchloritic. Rounded breccia fragments. Mod. poor core recovery. Strongly broken core. Sometimes totally silicified. Strong foliation in parts 45° CA.

22 – 22.5. Strong epiclastic character. Rare trace pyrite.

DRILLING OBJECTIVES / SUMMARY: Test I.P. anomaly east of Henty Fault Zone. Strong chargeability anomaly suggested signature similar to Lakeside. The hole confirmed the IP source as graphitic (pyritic) shale east of and adjacent to the HFZ. Down hole logging will confirm this conclusion.

REPORT REFERENCE:

SHEET 1 OF 3

594156

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONFORMATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 89-2
LOGGED BY	J. RANDELL	TOTAL DEPTH	129.5m

DISTANCE FROM COLLAR TO TOP	TO BOTTOM		SAMPLE No	CORE ANGLE	ROCK TYPE	DUMP	DESC CODE	GRAPHIC LOG	DESCRIPTIVE LOG
									27.8 - 36.4 // SERICITIC LAMINATED FINE VOLCANICLASTIC SILTSTONE
CH	29.0	31.0	179443						Finely laminated uniformly mod. sericitic with fine quartz veinlets. Some contorted bedding at low angle but overall 40° LCA @ 30m. 70° LCA @ 32.5m.
	31.0	33.0	179444						Trace disseminated pyrite.
	33.0	35.0	179445						35.0 - 36.4. Mod. silicified well laminated but
	35.0	37.0	179446						very contorted. Trace pyrite.
	37.0	39.0	179447						
	39.0	41.0	179448						36.4 - 62.4 // SILICIFIED AND SERICITIZED BANDED BLACK SILTSTONE
	41.0	43.0	179449						
	43.0	45.0	179450						Well banded / laminated often wavy banding
	45.0	47.0	179451						at 45-65° LCA. Becoming more often banded
	47.0	49.0	179452						60° LCA to 42m.
	49.0	51.0	179453						42 - 48. Mod - str. broken wavy banding
	51.0	53.0	179454						defined by black laminae. Rare thin pyrite
	53.0	55.0	179455						laminae and blebs 2%.
	55.0	57.0	179456						48 - 52. Mod. irregular carb-quartz veinlets,
	57.0	59.0	179457						contorted banding, crenulated. Rare specks
V	59.0	61.0	179458						pyrite. Rare thin quartz-carb veins.
CH	61.0	62.4	179459						52 - 62.4. More regular laminations but still laminated
SP	62.4	64.5	179460						45-60° LCA, becoming more obtuse towards bottom.
SP	64.5	65.5	179461						
SP	65.5	66.5	179462						62.4 - 65.5 // STRONGLY GRAPHITIC FINE PYRITIC BLACK SHALE.
CH	66.5	69.0	179463						
	69.0	71.0	179464						62.4 - 64.5. Soft black pvg + 40% quartz clots,
	71.0	73.0	179465						minor pyrite laminae.
	73.0	75.0	179466						Poor core recovery.
V	75.0	77.0	179467						
CH	77.0	79.0	179468						65.5 - 129.6 // FINE LAMINATED + PYRITIC BLACK SHALE.
									Regular fine laminations pyrite 1-2% in non-contorted black shale.
									67 - 71.3. 60% fine volcaniclastic with shale
									lenses, regular laminations.
									Fine pyritic laminations throughout.
									Facing evidence (cross bedding) at 72.3m indicate
									down hole is stratigraphically up.
									71.3 - 79. Well laminated finely pyritic
									45-50° LCA.

ASSAY INFORMATION

SHLMET SYSTEM
METRIC
DECIMAL POINTS AS REQUIRED

The Shell Company of Australia Limited
METALS DIVISION

DRILL LOG SHEET

CONTAMINATION SHEET

PROJECT	STERLING VALLEY	HOLE NAME	SVD 89-2
LOGGED BY	J. RANDELL.	TOTAL DEPTH	129.5m

ASSAY INFORMATION

DISTANCE FROM COLLAR TO TOP	TO BOTTOM	SAMPLE NO	CORE ANGLE	ROCK TYPE	DIAM	DESC CODE	GRAPHIC LOG
CH 79.0	81.0	179690					
81.0	83.0	179701					
83.0	85.0	179711					
85.0	87.0	179721					
87.0	89.0	179731					
89.0	91.0	179741					
91.0	93.0	179751					
93.0	95.0	179761					
95.0	97.0	179771					
97.0	99.0	179781					
99.0	101.0	179791					
101.0	103.0	179801					
103.0	105.0	179811					
105.0	107.0	179821					
107.0	109.0	179831					
109.0	111.0	179841					
111.0	113.0	179851					
113.0	115.0	179861					
115.0	117.0	179871					
117.0	119.0	179881					
119.0	121.0	179891					
121.0	123.0	179901					
123.0	125.0	179911					
V 125.0	127.0	179921					
CH 127.0	129.5	179931					

DESCRIPTIVE LOG

79 - 86.2. Becoming more siliceous with long amplitude folds, some banding parallel to core axis. Poorer defined banding. Minor pyritic laminations.

86.2 - 86.4. Strong quartz-carbonate development + 3% pyrite blebs.

86.4 - 98.1. Black mod. laminated shale. Minor pyrite blebs + laminae. Some quartz laminae.

98.1 - 99. Strongly graphitic, broken core.

99 - 118. Well laminated siliceous, regular laminations 45° CCA. Trace fine pyritic laminations. Facing at 108 m from cross bedding indicate down hole is stratigraphic up.

111.4. 0.6 - 1cm band massive pyrite.

118 - 122. Significant quartz clotting + band. broken core, strongly graphitic. Fine pyritic laminations in places.

122 - 126.2. Strongly broken core, strongly graphitic, moderate quartz carbonate veining.

E.O.H. 129.5 m.

DEPTH	INTVAL	RECOVD	%	DEPTH	INTVL	RECOV	%	DEPTH	INTVL	RECOV	%	DEPTH	INT.	REC.	%
3.0	3.0	0.5	16.7	35.0	1.7	1.5	88	76.4	3.1	2.1	100	124.0	1.7	1.7	100
6.0	3.0	0.8	26.7	38.4	1.4	1.4	100	78.1	1.7	1.7	100	125.4	1.4	1.4	100
9.0	3.0	0.5	16.7	39.2	2.8	2.8	100	81.1	3.0	3.0	100	126.2	0.8	0.8	100
MG 13.8	4.8	2.8	58.3	41.8	1.6	1.6	100	84.1	3.0	3.0	100	127.3	1.1	1.1	100
MG 13.3	1.3	1.2	92.3	43.4	1.6	1.6	100	87.2	3.1	3.1	100	129.5	2.2	2.2	100
15.1	1.8	1.8	100	45.8	1.4	1.4	100	90.2	3.0	3.0	100				
16.7	1.6	1.6	100	48.2	2.4	2.4	100	92.5	2.3	2.3	100				
19.3	2.6	0.7	27	50.8	2.6	2.6	100	94.4	1.9	1.9	100				
20.9	1.6	1.0	63	52.3	1.5	1.5	100	96.6	2.2	2.2	100				
22.8	1.9	1.1	58	52.6	0.3	0.3	100	98.3	1.7	1.7	100				
23.4	0.6	0.4	67	54.7	2.1	2.0	95	98.9	0.6	0.6	100				
24.7	1.3	1.3	100	57.2	2.5	2.5	100	101.9	3.0	3.0	100				
25.9	1.2	1.2	100	58.9	1.7	1.7	100	104.6	2.7	2.7	100				
27.5	1.6	1.6	100	61.4	2.5	2.5	100	107.6	3.0	3.0	100				
27.6	0.1	0.1	100	63.8	2.4	1.4	58	110.6	3.0	3.0	100				
29.2	1.6	1.2	75	65.5	1.7	1.0	59	113.6	3.0	3.0	100				
29.8	0.6	0.6	100	67.7	2.2	2.2	100	116.6	3.0	3.0	100				
31.0	1.2	1.2	100	69.6	1.9	1.9	100	119.6	3.0	3.0	100				
31.8	0.8	0.8	100	72.7	2.4	2.4	100	121.3	1.7	1.7	100				
33.3	1.5	1.5	100	73.3	1.3	1.3	100	122.3	1.0	1.0	100				

SHEET 2 OF 3

5941158

594159

89-3013.

Age	Symbol	Unit		Description
EARLY ORDOVICIAN	Θsc	OWEN CONGLOMERATE		Pebble to boulder conglomerate of quartzite, often hematitic and k-feldspar altered.
	Θss	?NEWTON CK. SANDSTONE		Dirty medium grained quartzite.
LATE CAMBRIAN - EARLY ORDOVICIAN	ЄDC	DORA CONGLOMERATE JUKES BRECCIA		Strongly hematitic and silicified pebble conglomerate of predominantly volcanic detritus
LATE CAMBRIAN	Єgr	MURCHISON GRANITE		Coarse grained epigranular quartz feldspar biotite ± chlorite. Often strongly altered k-spar, chlorite, pyrite.
	Єss/sbs	FARRELL SEQUENCE		Fine laminated black shales and massive sandstone. Some volcaniclastic character.
MID CAMBRIAN	Єvlr	TYNDALL GROUP VOLCANICS	Rhyolite Lava	Massive siliceous, may be quartz phyric, fine to coarse phenocrysts.
	Єvlrd		Rhyodacitic Lava	Quartz feldspar phyric often foliated may be sericitized.
	Єvld		Dacitic Lava	Feldspar phyric often chloritized.

Group	Symbol	Unit	Description
TYNDALL GROUP VOLCANICLASTICS (EPICLASTICS)	Єvvrd	Rhyodacitic Volcaniclastic	Fine grained quartz-feldspar phyric often sericitized, layered, pumiceous.
	Єvvd	Dacitic Volcaniclastic	Dominantly feldspar phyric chloritized fine to medium grained pumiceous.
	Єvv	Undiff. Volcaniclastic	Fine grained strongly altered undetermined composition.
	Єverd	Rhyodacitic Epiclastic	Medium to coarse lithics in sericitized matrix. Often quartz phyric.
	Єved	Dacitic Epiclastic	Chloritic coarse lithic component, strongly altered.
INTRUSIVE	Єbi	Basaltic Dyke	Fine grained chloritic massive.

ALTERATION

Chl	Chlorite
K	K-feldspar
Ser	Sericite
Py	Pyrite
Q-vn	Quartz vein

PHYRIC COMPONENT

(q)	Weakly quartz phyric
q	Strong quartz phyric
(f)	Weakly feldspar phyric
f	Strong feldspar phyric
f/m	Superscript over phyric
c	Component as grain size

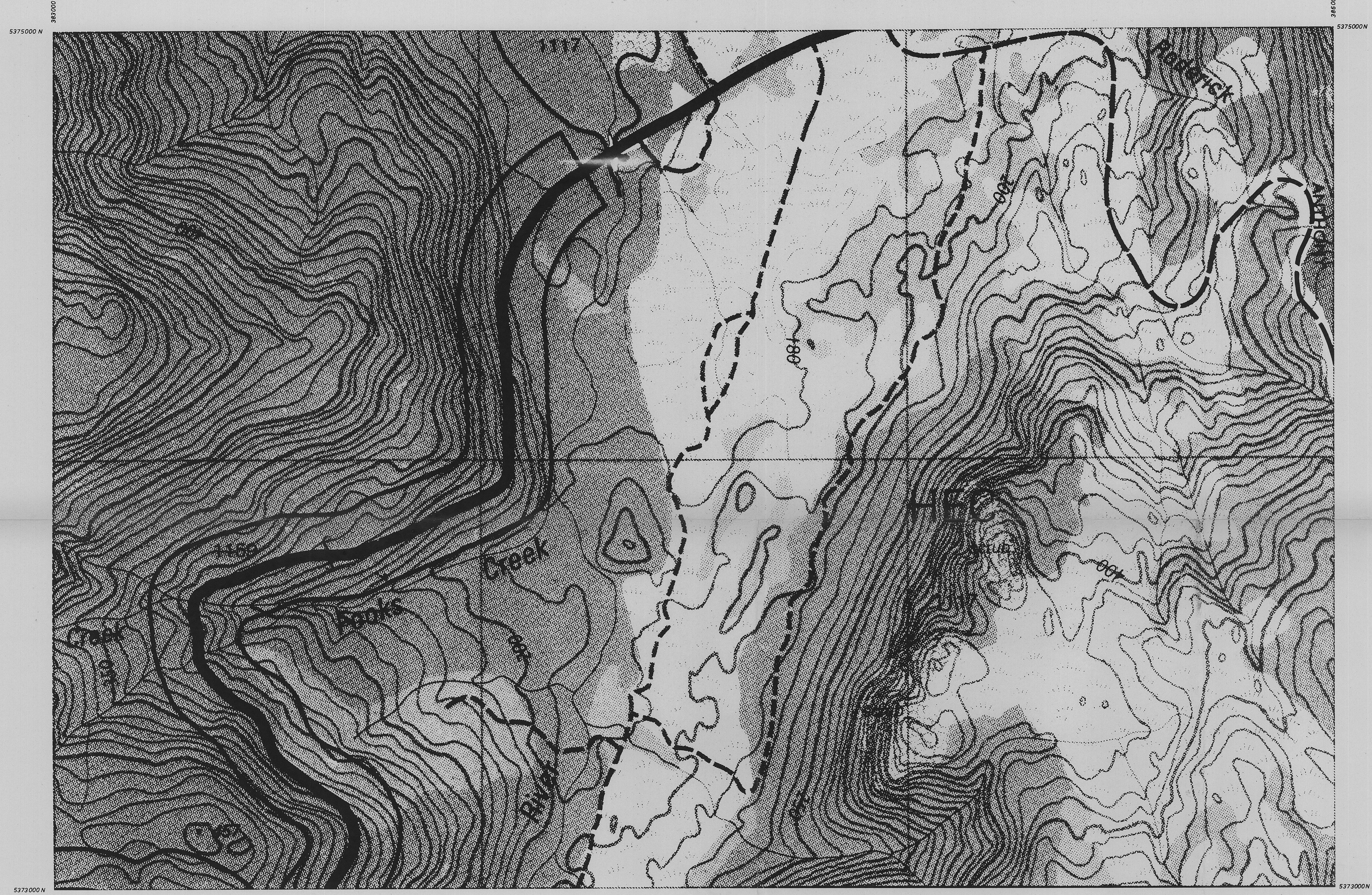
Outcrop
Subcrop
Float
Strike/Dip Bedding
Strike/Dip Cleavage
Access Line
Creek
Road
Track

MAPPING BY C. CREAGH & J. RANDELL, FEB '89

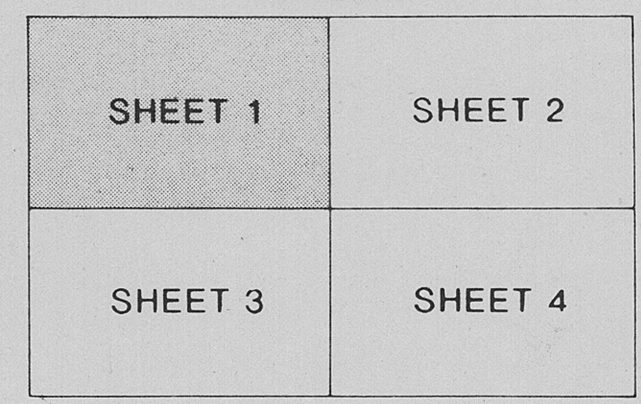
Billiton Australia
The Metals Division of the Shell Company of Australia Limited

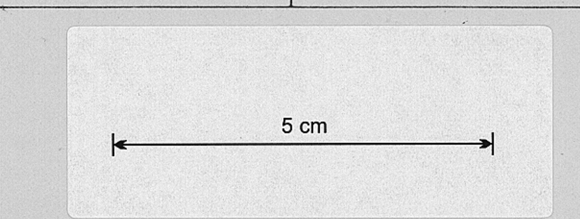
Project	STERLING VALLEY		
Title	GEOLOGICAL FACT MAPPING SHEET 1		
Author JPR	Dept. TAS	Scale 1:5000	
Drawn OH	Date 5/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 4		Drawing No. D/LJ 70/011	

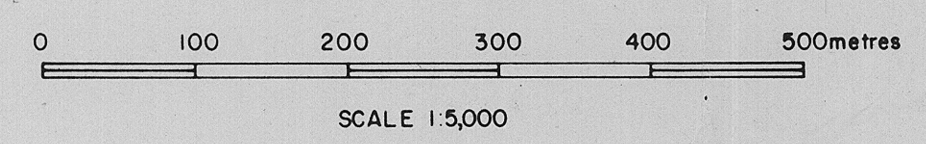
8789



594160







89-3013

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The Metals Division of the Shell Company of Australia Limited

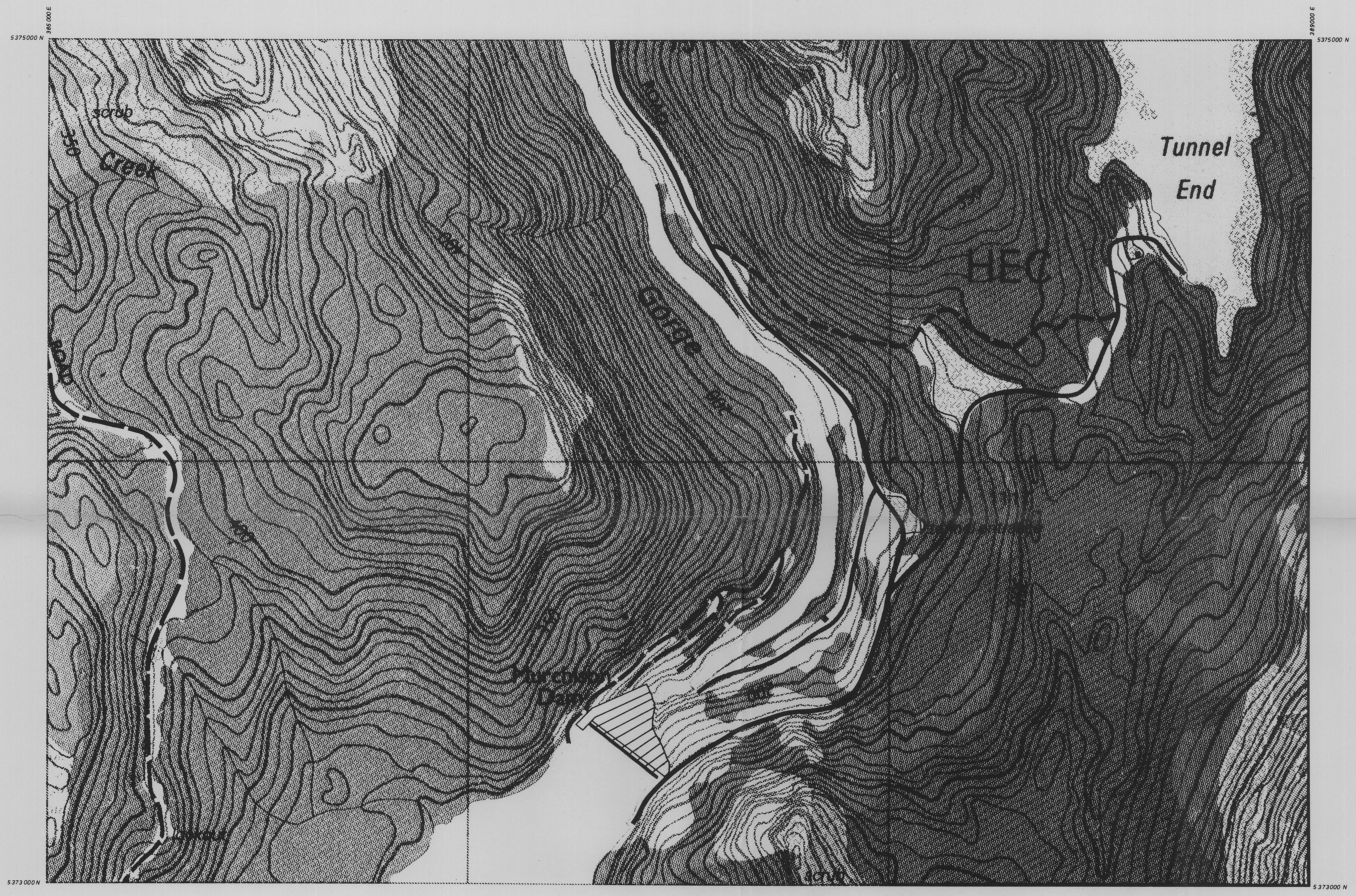
Project: STERLING VALLEY JOINT VENTURE

Title:

TOPOGRAPHIC BASE PLAN SHEET 1

Author	Dept	Scale	1:5000
Drawn	Date 2/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No.	FIG 5	Drawing No.	LJ70/1024

8790



0 100 200 300 400 500metres

SCALE 1:5,000

594161

5 cm

SHEET 1	SHEET 2
SHEET 3	SHEET 4

89-3013 1

Billiton Australia

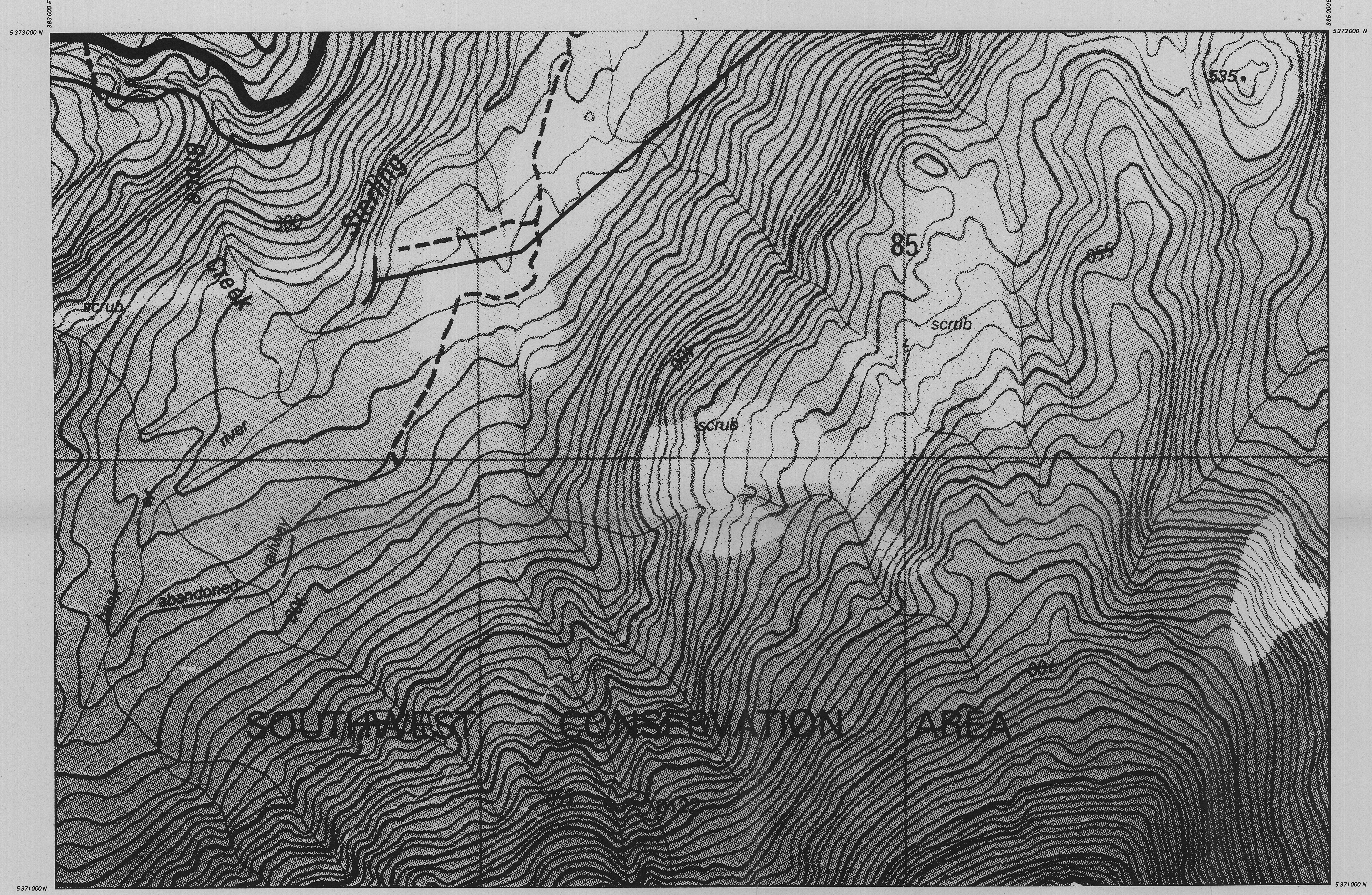
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY JOINT VENTURE

Title: **TOPOGRAPHIC BASE PLAN SHEET 2**

Author	Dept.	Scale 1:5000	
Drawn	Date 2/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 6		Drawing No. LJ70/1025	

8791



5 cm

SHEET 1	SHEET 2
SHEET 3	SHEET 4

594162

89-3013

0 100 200 300 400 500metres

SCALE 1:5,000

Billiton Australia

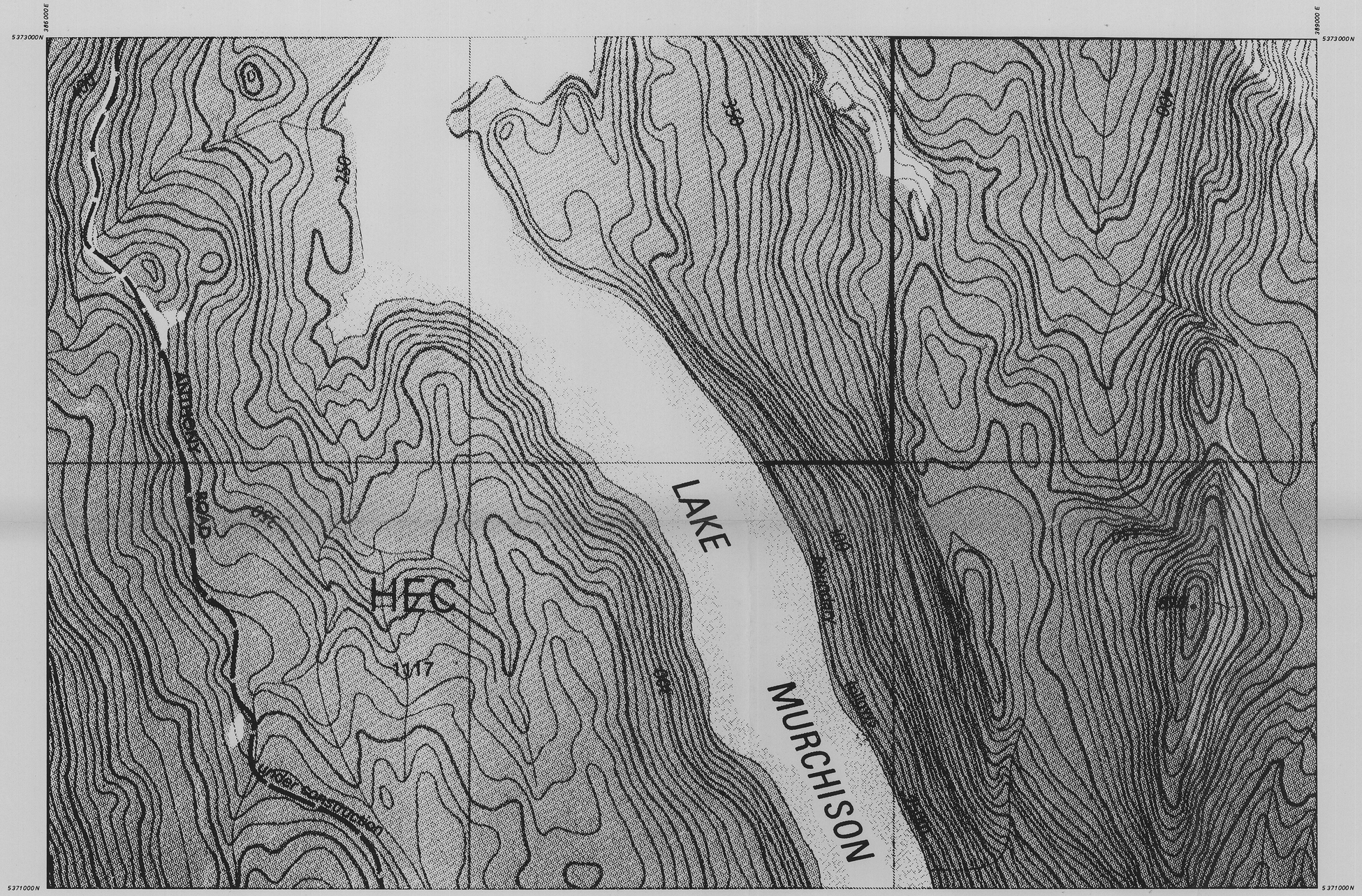
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY JOINT VENTURE

Title: **TOPOGRAPHIC BASE PLAN SHEET 3**

Author	Dept.	Scale	1:5000
Drawn	Date 2/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No.	FIG 7	Drawing No.	LJ70/1026

8792



0 100 200 300 400 500metres

SCALE 1:5,000

594163

5 cm

SHEET 1	SHEET 2
SHEET 3	SHEET 4

89-3013

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

Project: STERLING VALLEY JOINT VENTURE

Title: **TOPOGRAPHIC BASE PLAN SHEET 4**

Author	Dept.	Scale	1:5000
Drawn	Date 2/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 8		Drawing No.	LJ70/1027

8793

383000E

386000E

5375000N

E.L. 1/62 (STERLING VALLEY J.V.)

E.L. 29/88 BOUNDARY

RIVER

STERLING

HENTY FAULT ZONE (Approx.)

MURCHISON HIGHWAY

E.L. 29/88 BOUNDARY

3746000N

3744000N

3742000N

3740000N

3738000N

3736000N

3734000N

3732000N

End of grid 385210E

End of grid 385160E

End of grid 385000E

LOOP 2

594164

5 cm

89-3013

5373000N

SEE SHEET 3

EARLY ORDOVICIAN	Bsc	OWEN CONGLOMERATE	Pebble to boulder conglomerate of quartzite, often hematitic and K-feldspar altered.
	Bss	?NEWTON CK. SANDSTONE	Dirty medium grained quartzite.
LATE CAMBRIAN - EARLY ORDOVICIAN	CDC	DORA CONGLOMERATE JUKES BRECCIA	Strongly hematitic and silicified pebble conglomerate of predominantly volcanic detritus
LATE CAMBRIAN	Egr	MURCHISON GRANITE	Coarse grained epigranular quartz feldspar biotite ± chlorite. Often strongly altered K-spar, chlorite, pyrite.
	Css/sbs	FARRELL SEQUENCE	Fine laminated black shales and massive sandstone. Some volcaniclastic character.
MID CAMBRIAN	Evlr	TYNDALL GROUP VOLCANICS	Rhyolite Lava: Massive siliceous, may be quartz phyric, fine to coarse phenocrysts.
	Evlrd		Rhyodacitic Lava: Quartz feldspar phyric often foliated may be sericitized.
	Evld		Dacitic Lava: Feldspar phyric often chloritized.

TYNDALL GROUP VOLCANICLASTICS (EPICLASTICS)	Evvrd	Rhyodacitic Volcaniclastic	Fine grained quartz-feldspar phyric often sericitized, layered, pumiceous.
	Evvd	Dacitic Volcaniclastic	Dominantly feldspar phyric chloritized fine to medium grained pumiceous.
	Evv	Undiff. Volcaniclastic	Fine grained strongly altered undetermined composition.
	Everd	Rhyodacitic Epiclastic	Medium to coarse lithics in sericitized matrix. Often quartz phyric.
	Eved	Dacitic Epiclastic	Chloritic coarse lithic component, strongly altered.
INTRUSIVE	Ebi	Basaltic Dyke	Fine grained chloritic massive.

ALTERATION

Chl	Chlorite
K	K-feldspar
Ser	Sericite
Py	Pyrite
Q-vn	Quartz vein

PHYRIC COMPONENT

(q)	Weakly quartz phyric
q	Strong quartz phyric
(f)	Weakly feldspar phyric
f	Strong feldspar phyric
fm	Superscript over phyric
c	Component as grain size

- Outcrop
- Subcrop
- Float
- Strike/Dip Bedding
- Strike/Dip Cleavage
- Access Line
- Creek
- Road
- Track

MAPPING BY C. CREAGH & J. RANDELL, FEB '89

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

Project: STERLING VALLEY

Title: GEOLOGICAL FACT MAPPING SHEET 1

Author JPR	Dept. TAS	Scale 1:5000	
Drawn OH	Date 5/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 10		Drawing No. D/LJ 70/011	

8794

EARLY ORDOVICIAN	Θsc	OWEN CONGLOMERATE	Pebble to boulder conglomerate of quartzite, often hematitic and k-feldspar altered.
	Θss	?NEWTON CK. SANDSTONE	Dirty medium grained quartzite.
LATE CAMBRIAN - EARLY ORDOVICIAN	ЄDC	DORA CONGLOMERATE JUKES BRECCIA	Strongly hematitic and silicified pebble conglomerate of predominantly volcanic detritus
LATE CAMBRIAN	Єgr	MURCHISON GRANITE	Coarse grained epigranular quartz feldspar biotite ± chlorite. Often strongly altered k-spar, chlorite, pyrite.
	Єss/sbs	FARRELL SEQUENCE	Fine laminated black shales and massive sandstone. Some volcaniclastic character.
MID CAMBRIAN	Єvlr	TYNDALL GROUP VOLCANICS — Rhyolite Lava	Massive siliceous, may be quartz phyric, fine to coarse phenocrysts.
	Єvlrd	Rhyodacitic Lava	Quartz feldspar phyric often foliated may be sericitized.
	Єvld	Dacitic Lava	Feldspar phyric often chloritized.

TYNDALL GROUP VOLCANICLASTICS (EPICLASTICS)	Єvvrd	Rhyodacitic Volcaniclastic	Fine grained quartz-feldspar phyric often sericitized, layered, pumiceous.
	Єvvd	Dacitic Volcaniclastic	Dominantly feldspar phyric chloritized fine to medium grained pumiceous.
	Єvv	Undiff. Volcaniclastic	Fine grained strongly altered undetermined composition.
	Єverd	Rhyodacitic Epiclastic	Medium to coarse lithics in sericitized matrix. Often quartz phyric.
	Єved	Dacitic Epiclastic	Chloritic coarse lithic component, strongly altered.
INTRUSIVE	Єbi	Basaltic Dyke	Fine grained chloritic massive.

ALTERATION

Chl Chlorite
K K-feldspar
Ser Sericite
Py Pyrite
Q-vn Quartz vein

PHYRIC COMPONENT

(q) Weakly quartz phyric
q Strong quartz phyric
(f) Weakly feldspar phyric
f Strong feldspar phyric
f/m Superscript over phyric
c Component as grain size

Outcrop
Subcrop
Float
Strike/Dip Bedding
Strike/Dip Cleavage
Access Line
Creek
Road
Track

89-3013

MAPPING BY C. CREAGH & J. RANDELL, FEB '89

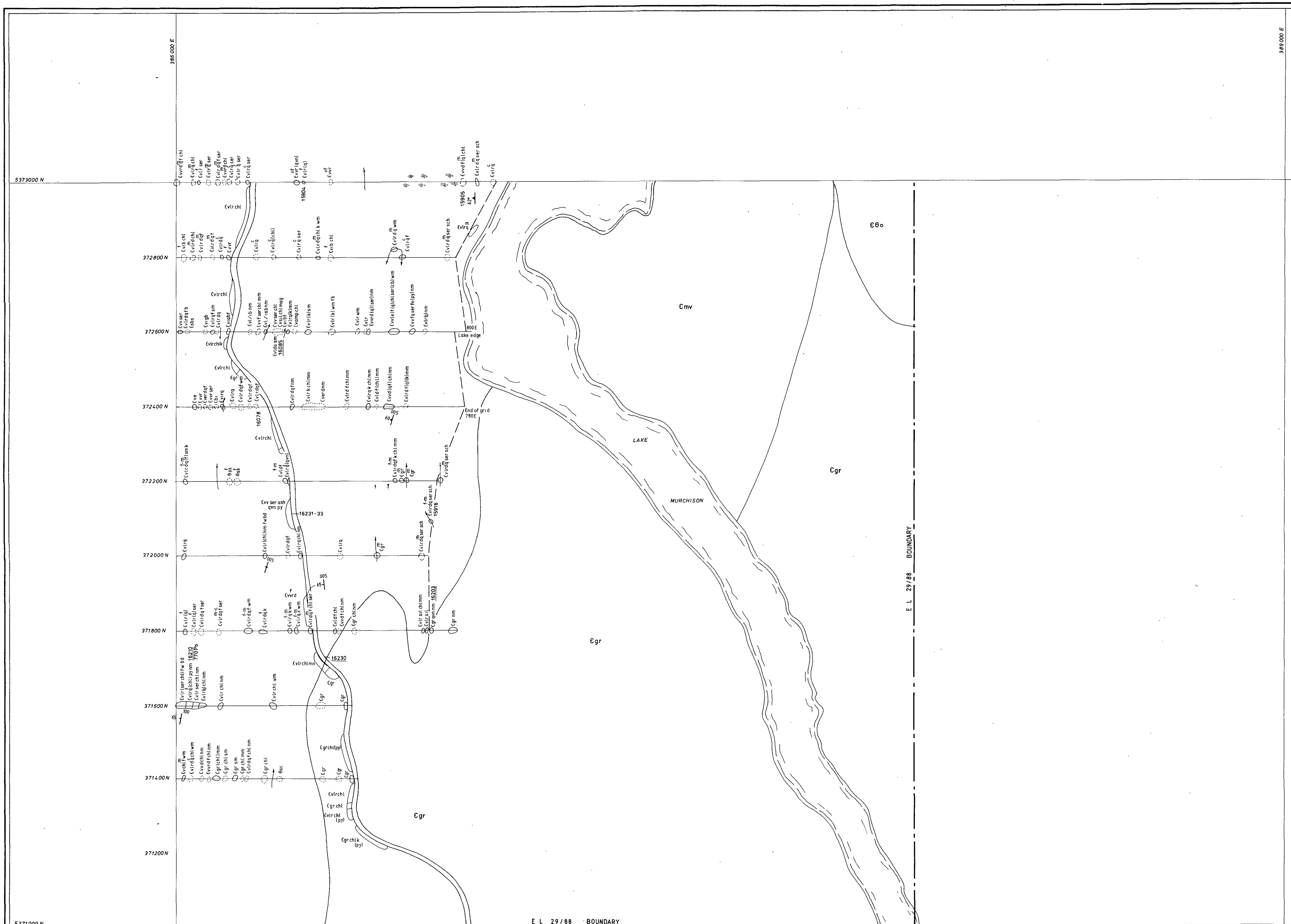
Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY

Title: GEOLOGICAL FACT MAPPING SHEET 2

Author J P R	Dept. TAS	Scale 1:5000	
Drawn O H	Date 5/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 11		Drawing No. D/LJ 70/012	

89-3013.
594166
MAPPING BY C CREAGH & J RANDELL, FEB '89
Billiton Australia
The Metals Division of the Shell Company of Australia Limited
Project STERLING VALLEY
Title GEOLOGICAL FACT MAPPING SHEET 3
Author JPR Dept. TAS Scale 1:5000
Drawn OH Date 5/89 Revised Date
Checked Date S'ceded Date
Sheet No. FIG 12 Drawing No. D/LJ 70/013
5 cm
EARLY ORDOVICIAN
Θsc OWEN CONGLOMERATE Pebble to boulder conglomerate of quartzite, often hematitic and k-feldspar altered
Θss ?NEWTON CK SANDSTONE Dirty medium grained quartzite
LATE CAMBRIAN - EARLY ORDOVICIAN
ЄDC DORA CONGLOMERATE JUKES BRECCIA Strongly hematitic and silicified pebble conglomerate of predominantly volcanic detritus
LATE CAMBRIAN
Єgr MURCHISON GRANITE Coarse grained epigranular quartz feldspar biotite ± chlorite Often strongly altered k-spar, chlorite, pyrite
Єss/sbs FARRELL SEQUENCE Fine laminated black shales and massive sandstone Some volcaniclastic character
MID CAMBRIAN
Єvlr Єvlrd Єvld TYNDALL GROUP VOLCANICS
Rhyolite Lava Massive siliceous, may be quartz phyric, fine to coarse phenocrysts
Rhyodacitic Lava Quartz feldspar phyric often foliated may be sericitized
Dacitic Lava Feldspar phyric often chloritized
TYNDALL GROUP VOLCANICLASTICS (EPICLASTICS)
Єvrd Rhyodacitic Volcaniclastic Fine grained quartz-feldspar phyric often sericitized, layered, pumiceous
Єvd Dacitic Volcaniclastic Dominantly feldspar phyric chloritized fine to medium grained pumiceous
Єv Undiff Volcaniclastic Fine grained strongly altered undetermined composition
Єverd Rhyodacitic Epiclastic Medium to coarse lithics in sericitized matrix Often quartz phyric
Єved Dacitic Epiclastic Chloritic coarse lithic component, strongly altered
INTRUSIVE
Єbi Basaltic Dyke Fine grained chloritic massive
ALTERATION
Chl Chlorite
K K-feldspar
Ser Sericite
Py Pyrite
Q-vn Quartz vein
PHYRIC COMPONENT
(q) Weakly quartz phyric
q Strong quartz phyric
(f) Weakly feldspar phyric
f Strong feldspar phyric
f/m Superscript over phyric
c Component as grain size
Outcrop
Subcrop
Float
Strike/Dip Bedding
Strike/Dip Cleavage
Access Line
Creek
Road
Track
E.L 29/88 BOUNDARY
STERLING RIVER
HENTY FAULT ZONE
LOOP 4
LOOP 3
BASE LINE
5371000 N
5373000 N
383000 E
386000 E
371200 N
371400 N
371600 N
371800 N
372000 N
372200 N
372400 N
372600 N
372800 N
16216 720Zn 2600Ba
16211 520Pb
16214 0.17Au
15931 220Cu 1140Pb
15921 140Cu 2250Pb 14Ag
16229 460Pb 1040Zn
16228 1100Pb
16227 540Pb
16226 1920Pb
15910 520Pb 190Cu



89-3013.

E L 29/88 BOUNDARY

EARLY ORDOVICIAN	Θsc	OWEN CONGLOMERATE	Pebble to boulder conglomerate of quartzite, often hematitic and k-feldspar altered
	Θss	?NEWTON CK SANDSTONE	Dirty medium grained quartzite
LATE CAMBRIAN - EARLY ORDOVICIAN	ЄDC	DORA CONGLOMERATE JUKES BRECCIA	Strongly hematitic and silicified pebble conglomerate of predominantly volcanic detritus
LATE CAMBRIAN	Єgr	MURCHISON GRANITE	Coarse grained epigranular quartz feldspar biotite ± chlorite Often strongly altered k-spar, chlorite, pyrite
	Єss/sbs	FARRELL SEQUENCE	Fine laminated black shales and massive sandstone Some volcaniclastic character

MID CAMBRIAN	Єvlr	TYNDALL GROUP VOLCANICS	Rhyolite Lava	Massive siliceous, may be quartz phyric, fine to coarse phenocrysts
	Єvlrd		Rhyodacitic Lava	Quartz feldspar phyric often foliated may be sericitized
	Єvld		Dacitic Lava	Feldspar phyric often chloritized

TYNDALL GROUP VOLCANICLASTICS (EPICLASTICS)	Єvvrd	Rhyodacitic Volcaniclastic	Fine grained quartz-feldspar phyric often sericitized, layered, pumiceous
	Єvvd	Dacitic Volcaniclastic	Dominantly feldspar phyric chloritized fine to medium grained pumiceous
	Єvv	Undiff Volcaniclastic	Fine grained strongly altered undetermined composition
	Єverd	Rhyodacitic Epiclastic	Medium to coarse lithics in sericitized matrix Often quartz phyric
	Єved	Dacitic Epiclastic	Chloritic coarse lithic component, strongly altered
INTRUSIVE	Єbi	Basaltic Dyke	Fine grained chloritic massive

ALTERATION

Chl	Chlorite
K	K-feldspar
Ser	Sericite
Py	Pyrite
Q-vn	Quartz vein

PHYRIC COMPONENT

(q)	Weakly quartz phyric
q	Strong quartz phyric
(f)	Weakly feldspar phyric
f	Strong feldspar phyric
f / m	Superscript over phyric
c	Component as grain size

Outcrop
Subcrop
Float
70 350 Strike/Dip Bedding
70 350 Strike/Dip Cleavage
Access Line
Creek
Road
Track

MAPPING BY C CREAGH & J RANDELL, FEB '89

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

Project: STERLING VALLEY

Title: GEOLOGICAL FACT MAPPING SHEET 4

Author J P R	Dept. TAS	Scale 1 5000	
Drawn O H	Date 5/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 13		Drawing No. D / LJ 70 / 014	

E.L. 1/62

E.L. 29/88 BOUNDARY

CENTRAL VOLCANIC SEQUENCE

FARRELL SEQUENCE

HENTY FAULT ZONE

WESTERN ZONE

CENTRAL ZONE

EASTERN ZONE

LAKE MURCHISON

MURCHISON GRANITE

DONOGHUES
1·41% Zn
11·3% Pb

0·2 Au 1·57% As
3·57% Zn
0·45% Pb

1580 Pb
2700 Ba
520 Zn

UTEM

0·14 Au

MIDSONS

2·4% Zn
300 Pb
22 Ag
490 Cu

200 Pb
630 Zn

330 Cu
690 Zn
20 Ag
4300 Pb

0·16 Au

MACES

520 Pb

1100 Pb 540 Pb
1040 Zn
460 Pb
84

1920 Pb

0·51% Pb
0·72% Zn
125 Cu

2250 Ba
230 Pb

STERLING VALLEY

M.L.'s 1M/55, 2M/55

BARYTES LODE

720 Zn
2600 Ba

220 Cu
1140 Pb

SYMMONS & RICE

770 Pb

0·17 Au

8797

375000 N

374000 N

373000 N

372000 N

371000 N

383000 E

384000 E

385000 E

386000 E

387000 E

- Granite
- Λ_R Rhyolite lava
- Λ_{RD} Rhyodacite lava
- V_D Dacite lava
- V_B Basalt
- V_A Andesitic lava
- -v- Volcaniclastic
- Δ E Δ Epiclastic
- Siltstone, shale
- Sandstone

- Prospector workings
- Rock chip sample
- Interpreted fault
- 80 / Strike dip bedding (S_0)
- 60 Strike dip foliation (S_1)
- UTEM Anomaly

G.N.

M.N.

5 cm

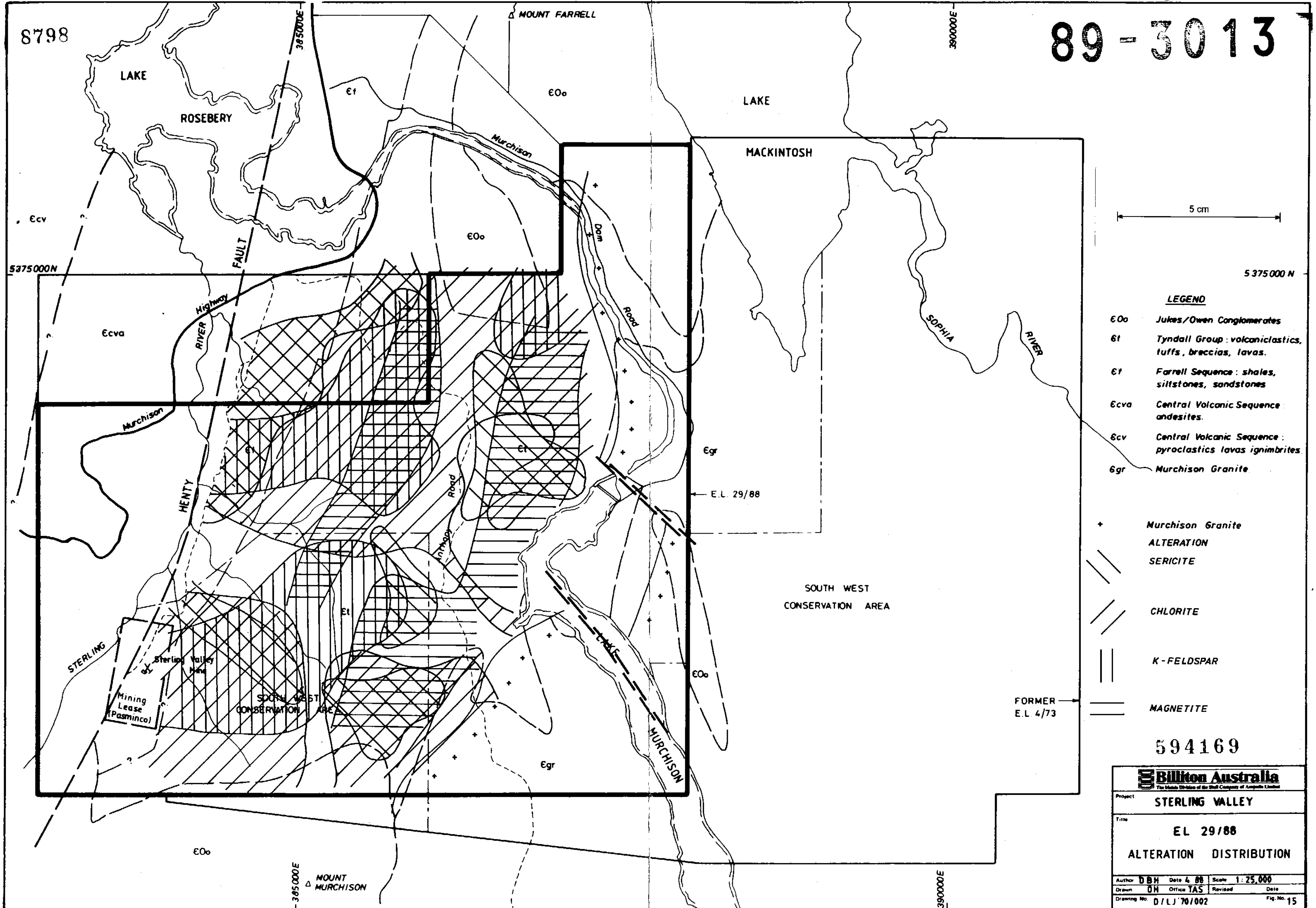
89-3013

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

Project	STERLING VALLEY J.V.
Title	GEOLOGICAL INTERPRETATION
	594168
Author J P R	Dept. TAS.
Drawn O H	Date 9 89
Checked	Date
Sheet No. FIG. 14	
Scale 1:5000	
Revised	Date
S'ceded	Date
Drawing No. D/LJ 70/015	

8798

89-3013



594169

Billiton Australia

Project	STERLING VALLEY
Title	EL 29/88 ALTERATION DISTRIBUTION
Author D B H	Date 4 88
Scale	1 : 25,000
Drawn D H	Office YAS
Revised	Date
Drawing No. D / LJ 70 / 002	Fig. No. 15

8799

Base Level : 62000.0
Plan Scale 1: 15000.0
Profile Scale (units/cm): 1000.0

Easting

383800.
384000.
384200.
384400.
384600.
384800.
385000.
385200.
385400.
385600.
385800.
386000.
386200.
386400.
386600.
386800.
387000.
387200.
387400.

5371000. 5371200. 5371400. 5371600. 5371800. 5372000. 5372200. 5372400. 5372600. 5372800. 5373000. 5373200. 5373400. 5373600. 5373800. 5374000. 5374200. 5374400. 5374600. 5374800. 5375000. 5375200.

Northing

594170

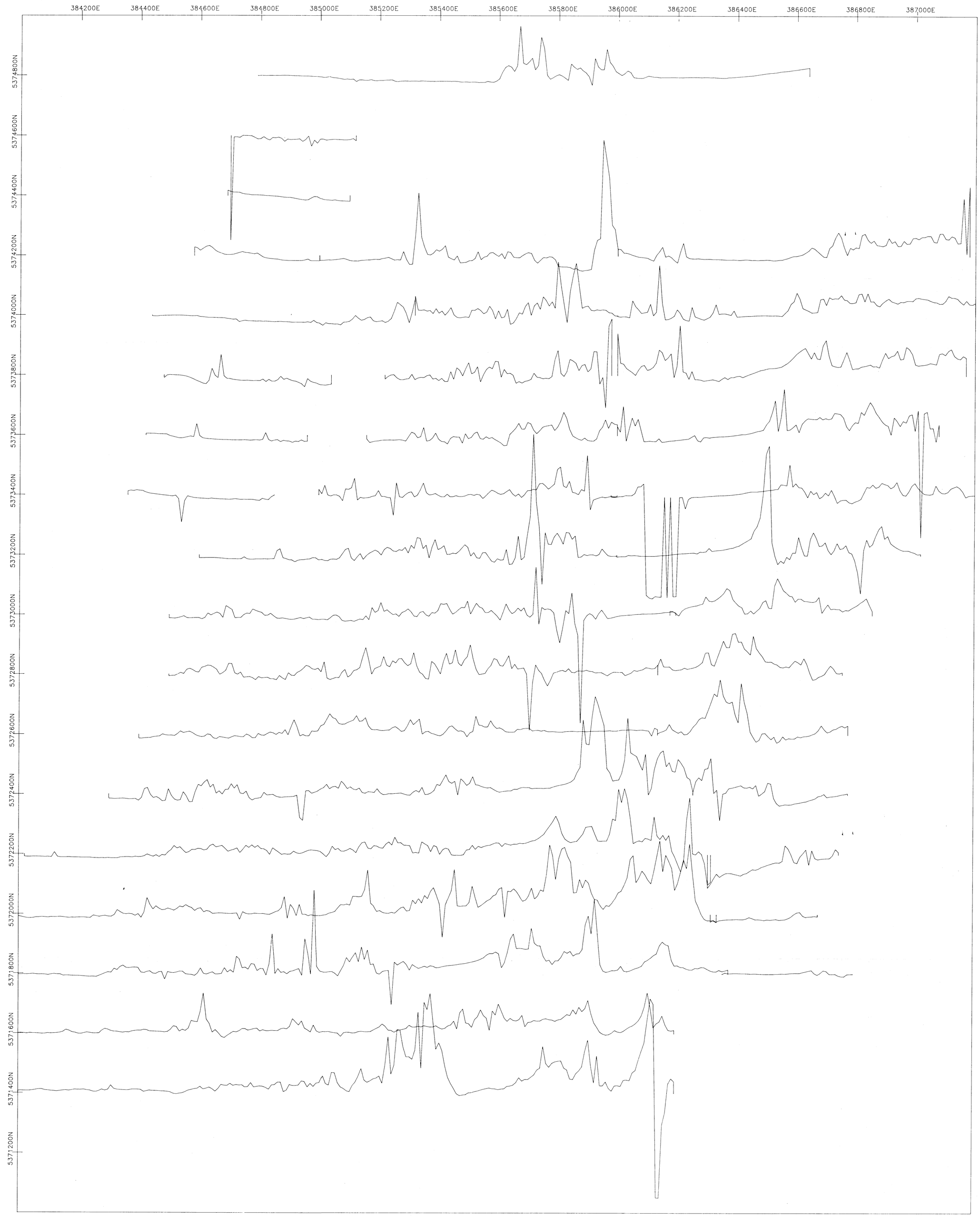
5 cm

89-3013

STERLING VALLEY, TAS
MURCHISON GRID
GROUND MAGNETICS

FIG.NO: 16	REPT.NO:
ENCL.NO:	DRG.NO:
DATE: 4/89	AUTHOR:
DRAWN:	OFFICE:

8800



5 cm

594171 8800

89-3013

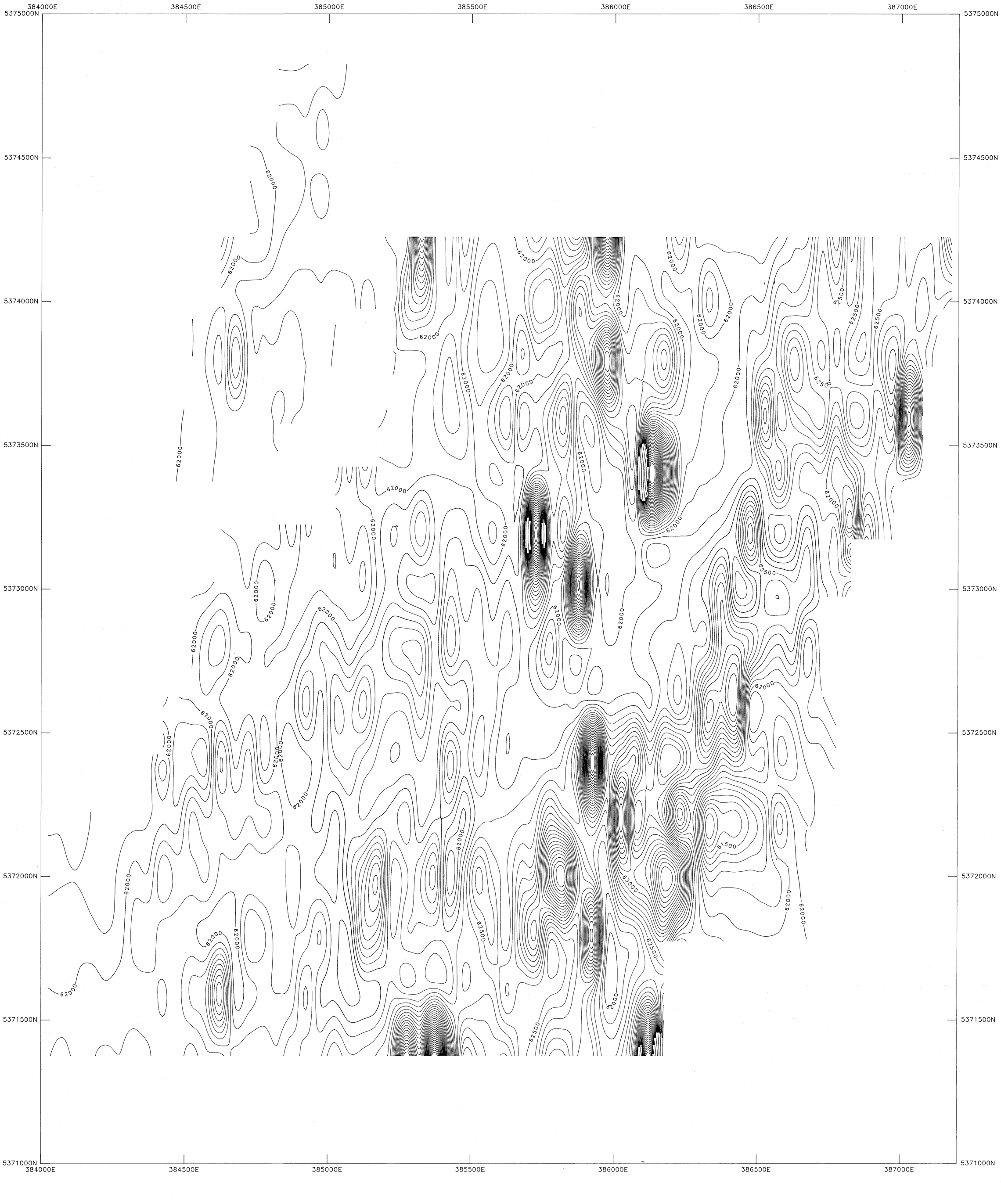
Billiton Australia
The Metals Division of the Shell Company of Australia Limited

Project: STERLING VALLEY, TAS.

Title: **GROUND MAGNETIC PROFILES**
TOTAL MAGNETIC FIELD
500nT/cm
STATION SPACING=10m
G-856 MAGNETOMETERS

Author N.H.	Dept. AHO	Scale 1:5 000	
Drawn	Date 8.89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG 17		Drawing No. LJ70/1048	

8801



594172_ 8801

89-3013

5 cm

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

Project: STERLING VALLEY, TAS.

Title: **TOTAL MAGNETIC FIELD GROUND MAGNETICS**

C.I. = 100nT
STATION SPACING = 10m
LINE SPACING = 200m
MESH SIZE = 50x50m

Author N.H.	Dept. AHO	Scale 1:5 000	
Drawn	Date 7.8.89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No. FIG. 18		Drawing No. LJ70/1047	

8302

5374000 N

5373000 N

5372000 N

384000 E

385000 E

386000 E

387000 E

+ Granite

Linear discontinuities

Magnetic trends

Generalized high magnetic zones

Magnetic intense lows

5 cm

594173

89-3013

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

Project: STERLING VALLEY J.V.

Title: GROUND MAGNETIC INTERPRETATION

Author J P R	Dept. TAS	Scale 1:5000	
Drawn O H	Date 9/89	Revised	Date
Checked	Date	S'ceded	Date
Sheet No.		Drawing No. FIG 19	

8804

383 500 E

384 000 E

5 372 500 N

5 372 000 N

5 371 500 N

SVD 89-1

SVD 89-2

STP 100

STP 98

STP 96

STERLING VALLEY

2500 N

2200 N

2000 N

1800 N

1600 N

1400 N

1200 N

1000 N

5000 E

Henty Fault

Trace of

BASELINE

MINING LEASE BOUNDARY
(Excluded from Exploration Licence)

5 cm

DIAMOND DRILL HOLE
SVD 89-1

89-3013

594174

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

Project: MURCHISON ETA 37

Title: CHARGEABILITY CONTOURS AND DRILL HOLE LOCATIONS

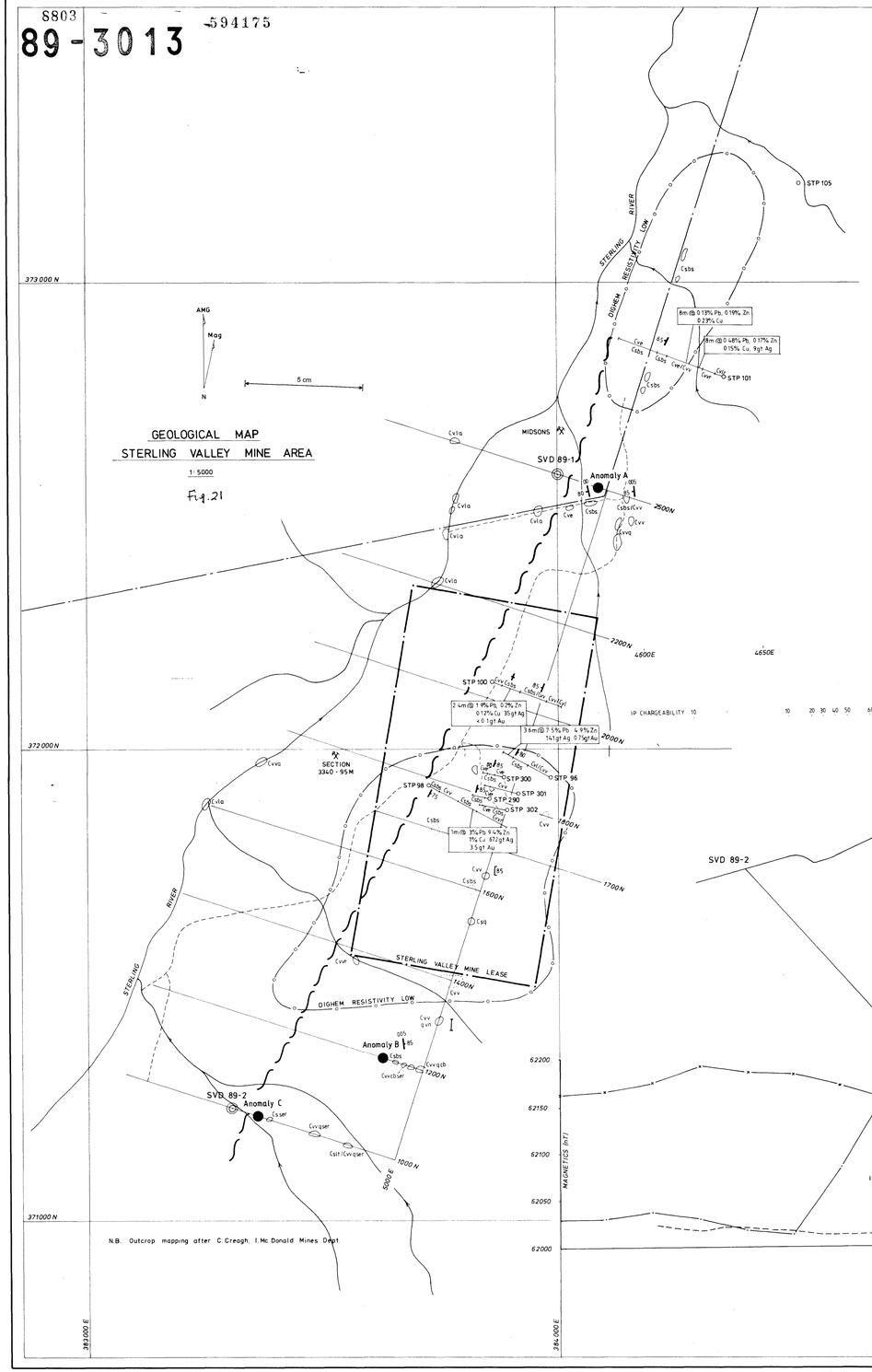
Author D. B. H.	Date 4/88	Scale 1:5000	
Drawn O.H.	Office TAS	Revised	Date
Drawing No. D/L J 70/003		Fig. No. 20	

8803
89-3013
594175

GEOLOGICAL MAP
STERLING VALLEY MINE AREA

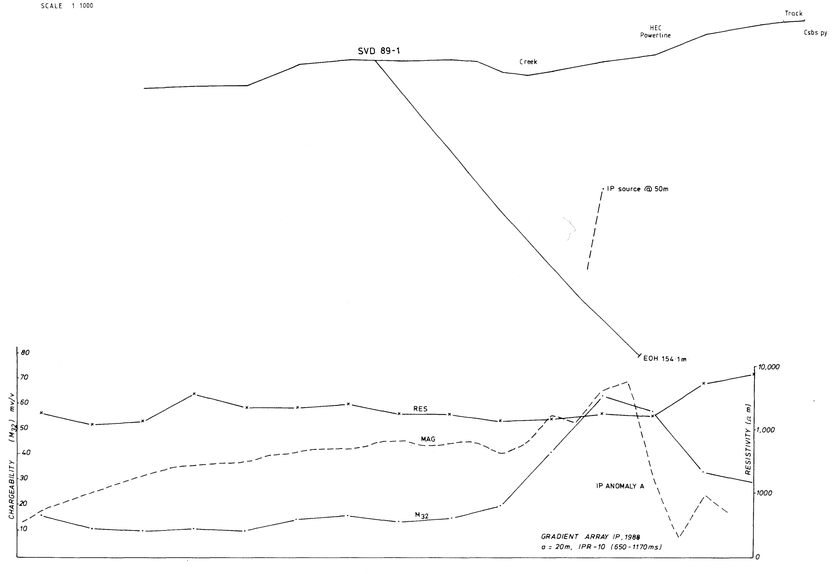
1:5000

Fig.21

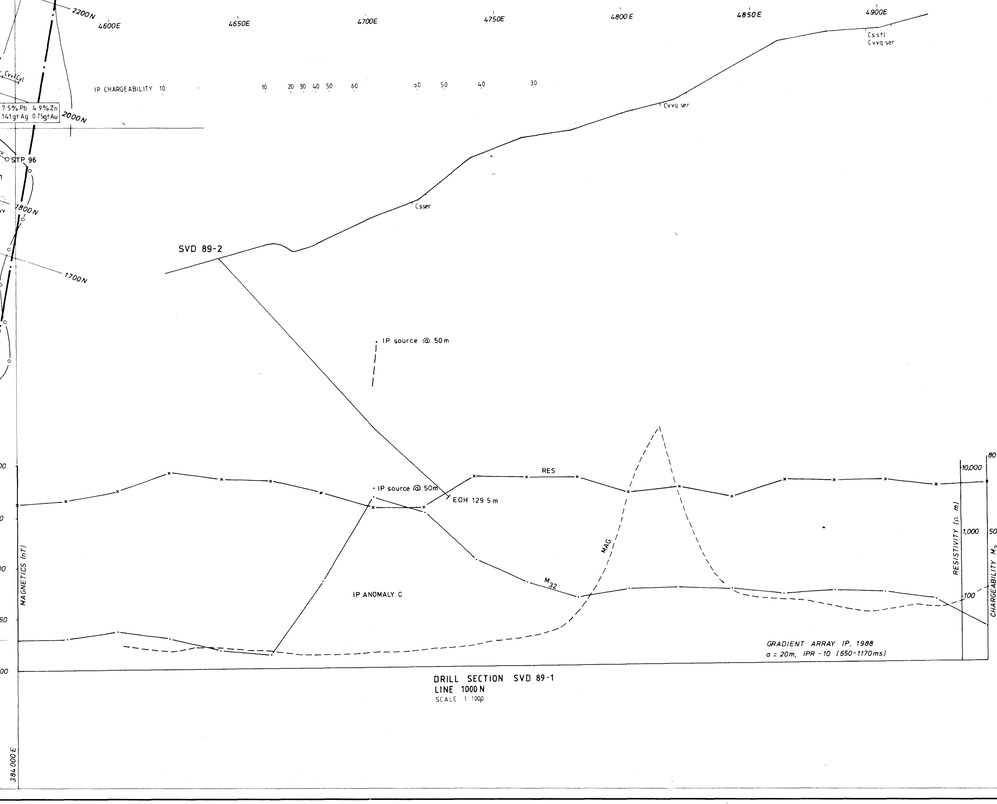


N.B. Outcrop mapping after C. Creagh, T. Mc Donald Mines Dept.

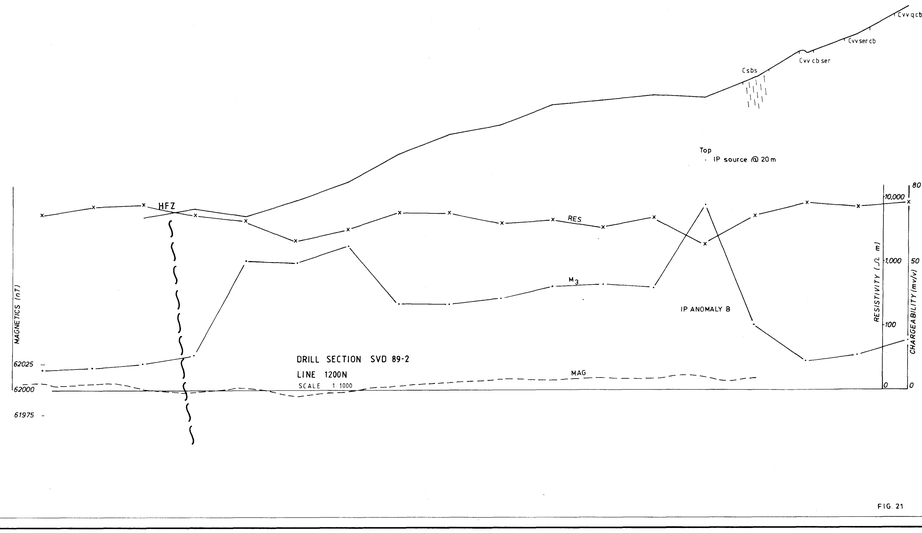
DRILL SECTION SVD 89-3
LINE 2500N
SCALE 1:1000



DRILL SECTION SVD 89-1
LINE 1000N
SCALE 1:1000



DRILL SECTION SVD 89-2
LINE 1200N
SCALE 1:1000



LEGEND

Cvla	Andesitic lava - feldspar phyric, medium grained.
Cvlr	Rhyolitic lava - quartz phyric, massive, silicified.
Cvv	Felsic volcaniclastic - fine grained, strongly cleaved, some feldspar phyric, probable epiclastic.
Cvvr	Rhyolitic volcaniclastic - as above but acid in composition.
Csq	Quartz rich sediment - possible siliceous ash.
Csbs	Black shale - fine grained, laminated, often pyritic, mineralization host at mine.
Csit	Siltstone - grey brown, fine grained, cleaved, massive.
Csser	Altered sediment - sericitic fine grained ash.
Cve	Epiclastic - matric as for Cvv but with elongate shale fragments.

- Henty Fault Zone (HFZ)
- Strike - dip bedding
- Strike - dip cleavage
- Dighem resistivity anomaly
- I.P. Anomaly centre
- Track
- Stream
- HEC Powerline
- Mine lease boundary

FIG. 21

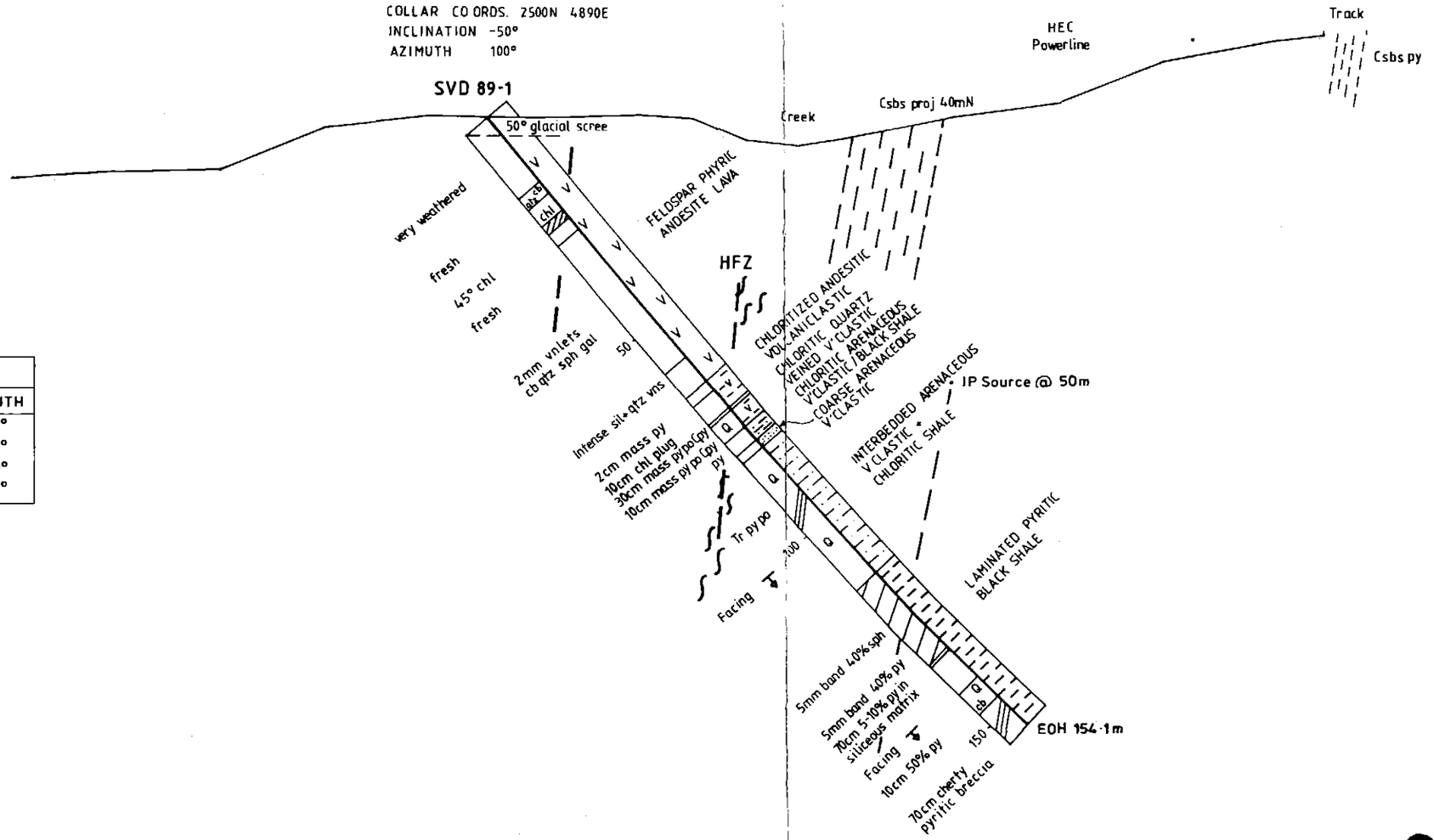
8805

4800E 4850E 4900E 4950E 5000E 5050E

594176

COLLAR CO ORDS. 2500N 4890E
INCLINATION -50°
AZIMUTH 100°

SVD 89-1



SURVEY DETAILS		
DEPTH	DIP	AZIMUTH
0 m	50	100°
50 m	50	100°
100 m	47	100°
150 m	44	097°

5 cm

89-3013

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Project	STERLING VALLEY		
Title	DRILL SECTION SVD 89-1 LINE 2500N		
Author JPR	Date 2 89	Scale 1:1000	
Drawn OH	Office TAS	Revised	Date
Drawing No. D/LJ 70/009		Fig. No. 22	

4600E 4650E 4700E 4750E 4800E 4850E 4900E

IP CHARGEABILITY 10 10 20 30 40 50 60 60 50 40 30

Cs slt
Evvq ser

Evvq ser

Esser

HFZ (from IP)

SVD 89-2

OWEN CONGLOM
CHLORITIZED SHEARED FELDSPAR PHYRIC ANDESITIC LAVA
SIL-CARB-CHL BRECCIA
SERICITIC LAMINATED VOLCANICLASTIC SILTSTONE
SILICIFIED SERICITIZED BANDED BLACK SHALE
GRAPHITIC PYRITIC SHALE
FINE LAMINATED PYRITIC BLACK SHALE

scree only
epiclastic character
poor core recovery
wavy bedding fine py laminae
piggy + qtz v clastic siltst bds
Facing
Qtz carb-py
Strongly graphitic
Facing
Strongly graphitic
Broken core

IP SOURCE o 50m

HFZ

EOH 129·5m

MAG SOURCE

SURVEY DETAILS		
Depth	Inclin.	Azimuth
0	50	100
50	48·5	105
126	44	104

5 cm

Billiton Australia
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Project: STERLING VALLEY

Title: DRILL SECTION SVD 89-2
LINE 1000N

Author	J P R	Date	3/89	Scale	1:1000
Drawn	O H	Office	TAS	Revised	Date

Drawing No. D/LJ 70/010 Fig. No. 23