

EXPLORATION LICENCE 5/63
 FINAL REPORT ON THE RELINQUISHED
 AREA: RESULTS OF EXPLORATION
 FOR 1987-1988 AND A
 SUMMARY OF ACTIVITIES FOR
 THE PERIOD 1963 - 1988

88-2815

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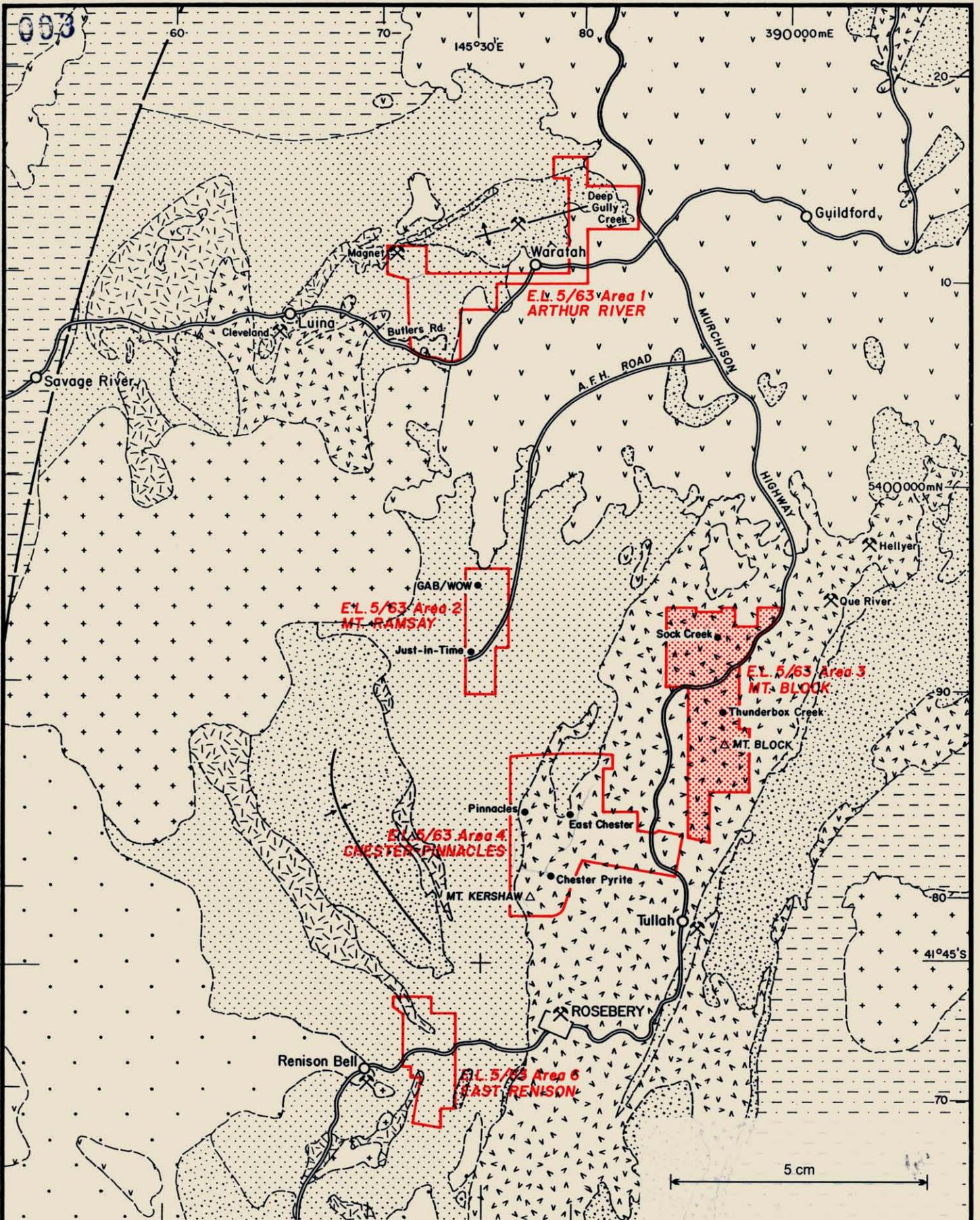
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TERTIARY

Basalt

DEVONIAN

Granite, porphyry

ORDOVICIAN - SILURIAN

Conglomerate, limestone

CAMBRIAN ?

Ultramafite

CAMBRIAN

Sediments with minor volcanics

Volcanics and intrusives

PRECAMBRIAN

Unmetamorphosed sediments

Metamorphosed sediments

Area to be relinquished

Area excluded from this report

0 5 10 15 20 km

Centre
MELBOURNE

776004

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Fig.1

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REGIONAL GEOLOGY AND PROJECT LOCATION

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1. INTRODUCTION

This report describes the results of exploration activity in the period July 1987 to June 1988 carried out by BHP Minerals Ltd. on behalf of the Comstaff Joint Venture in that part of EL 5/63 relinquished on 30th June 1988, as illustrated in Figure 1.

The report also includes a summary of previous exploration carried out in the relinquished portion of EL 5/63 in the period 1963 to 1988.

The results of exploration over Area 3 of the EL in the period July 1987 to June 1988 are reported in a separate document submitted to the Mines Department. An extension of tenure is sought over this area, which comprises approximately 31.5 square kilometres.

2. GROUND TENURE

Exploration Licence 5/63 covering some 1910 square miles (approx. 4947 square kilometres) was granted to Mt. Costigan Mines Ltd. in 1963 and transferred to Comstaff Proprietary Ltd. in 1964. Numerous minor additions and major reductions in the area of the tenement followed and EL 5/63 comprised some 384 sq. km in mid-1977. In that year the Comstaff Joint Venture was formed between Comstaff Pty. Ltd. and Preussag Australia Pty. Ltd. and the EL was subsequently reduced to approximately 126 sq. km according to Mines Department regulations. BHP Minerals Ltd. farmed in to the Comstaff JV in late 1985 and has carried out all exploration work on EL 5/63 since that time. The EL was increased in area by approximately 3.5 sq. km in May 1988 following a change in the status of an adjacent tenement and a concomitant alteration to the boundary of Area 3 of EL 5/63. The EL is to be relinquished in June 1988 according to Mines Department regulations, with the exception of that portion (Area 3) over which an extension of tenure is sought (Fig. 1).

3. SUMMARY OF EXPLORATION 1963 - 1988

Exploration activity has been essentially continuous in EL 5/63 since the late 1960's. During this period, four main deposit types have been sought, viz. gold-rich volcanogenic massive base metal sulfide deposits of Rosebery or Que River type; replacement tin deposits of Renison type; "vein type lodes" of Pb, Ag and Sn; and, sediment hosted massive sulfide deposits.

It is most convenient to summarize previous exploration activity for each block or "Area" of the EL in turn. Details may be obtained via the reference list which is organized alphabetically by year. A guide to the major grids may be found in Figure 2 and the principal geophysical surveys are summarized in Table 1.

3.1 Area 1

Three main regions of interest were investigated by Comstaff in Area 1 ("Arthur River"). Periods of activity in these regions only partly overlapped but overall exploration of Area 1 (Fig. 1) spanned the period 1970 - 1985.

Work in the Magnet Mine region was targeted at Zn-Pb-Ag mineralization of Magnet Mine style along or related to the Cleveland-Magnet-Bischoff line. Exploration commenced in 1970 with stream sediment surveys and regional geological mapping followed by gridding, soil geochemistry and Turam surveys. Various grid extensions followed this work, guided by a model involving structurally controlled hydrothermal mineralization hosted by sediments and mafic volcanics but ultimately related to Devonian granitoids. Exploration in the period 1976-1978 included Crone EM and drilling but with little success. The area was covered by a major Dighem survey in 1983 with no significant results apart from confirmation of a previously known magnetic anomaly near the mine (see Rugless, 1976).

The Deep Gully Creek area was explored by Comstaff for Mt. Bischoff style tin mineralization in the vicinity of altered Devonian porphyries intrusive into the "Bischoff Series" and Crimson Creek correlates. Stream sediment tin anomalies were obtained during a regional program in 1972 and confirmed belatedly in 1981. This led to gridding, soil geochemistry, geological mapping, aeromagnetics, ground magnetics, drilling and some downhole EM. The drilling encountered some Sn mineralization in sediments interbedded with Tertiary basalts but failed to locate "basement" mineralization. Numerous significant Dighem anomalies encountered in this area in the 1983 survey were not followed up (Levings, 1984a).

Work in the Butler's Road portion of Area 1 did not begin until 1984, following the recognition of a cluster of anomalies in the 1983 Dighem data. The region of interest covered a cupola of Meredith Granite and adjacent hornfelsed sediments. The area of geochemical anomalies was gridded and subjected to soil geochemistry, ground magnetics and EM surveys. This work defined a zone of strong Pb, Sn, As, Ag anomalies coincident with pronounced EM and magnetic features. The only subsequent work here was carried out by BHP in 1986 - 1987 and involved a single short drillhole to test the best magnetic/EM anomaly which had a shallow modelled source. Encouraging Sn, Pb, Zn and Ag mineralization was encountered in this hole. The drilling represents the only work carried out by BHP outside Areas 3 and 4 of the EL (see Shaw & Munro, 1984; BHP, 1987).

3.2 Area 2

Exploration of Area 2 ("Mt. Ramsay", Fig. 1) was initiated by Comstaff in 1969 and consisted of stream sediment sampling and reconnaissance mapping as part of a much larger regional program. This led to the definition of several Pb anomalies along with some

areas of high Sn values over probable Precambrian sediments. Gridding in the Will O'Wisp (WOW) area was followed by soil geochemistry, ground magnetics and trial IP, SP and EM surveys with trenching and 6 diamond drillholes in 1972-1973. The drilling results were disappointing but showed that dolomites are present within pyritic black shales so that sediment hosted massive sulfides were considered to be a possible target.

An INPUT survey in 1975 resulted in the recognition of an anomaly ('CAB') adjacent to the old WOW grid but was not followed up until 1983 when additional drillcore analysis revealed widespread elevated Zn and Pb in black shales of the WOW area. Subsequent work included resampling of soils, check sampling of drainages and Genie EM over the CAB anomaly which was finally interpreted as being due to black shales. Exploration in 1984-85 consisted of relocating the old workings at Just in Time along strike. Trenching here encountered Pb-Ba veins in dolomites and black shales with anomalous Pb contents (see Everett, 1984).

3.3. Area 4

Regional exploration of this portion of EL 5/63 was initiated by Comstaff in 1968. The prime target in this area is a gold-rich volcanogenic massive base metal sulfide deposit within the Cambrian Mt. Read Volcanics. The early work included stream sediment sampling and reconnaissance geological mapping along roads and creeks. Follow up of this work in the 1968-1972 period was concentrated near Pinnacles and Chester and involved grid-based soil geochemistry, IP, EM and 3 diamond drillholes (CP1, 2 at Pinnacles, CP3 at Chester). A new metric grid was established at Pinnacles (EAA) and Chester (EAC) in 1974-75. Detailed mapping of these grids was accompanied by soil geochemistry and gradient array IP (see Table 1) and followed by 12 DDH at Chester and 8 at Pinnacles.

Disappointing disseminated and vein mineralization was intersected at Pinnacles while base metal - poor pyritic mineralization at Chester was a very poor second to the earlier intersection in CP3 (2 m at 5.8% Pb, 22% Zn, 65.4 g/t Ag). A lens about 0.5 m thick of massive Zn-Pb-Ba mineralization was discovered in Costean 16, west of Thomas' Tunnel. The entire area was covered by airborne EM in 1975 but without significant results (see Orr & Smith, 1975).

Preussag Australia Pty. Ltd. entered into the Comstaff Joint Venture with Comstaff Pty. Ltd. in 1977 and contributed some detailed mapping of the Pinnacles and portions of the Chester grid. Two diamond holes were drilled at Pinnacles without dramatic encouragement (PIN 1-2). Detailed mapping and trial PEM were carried out on portions of the newly cut EAB grid at East Chester (see Krummei, 1977; Perkin, 1977). Geochemical sampling (soil C horizon) was carried out on various parts of the Pinnacles-Chester grid system in 1978-79 and weak base metal sulfide mineralization was discovered at Leo's Find but subsequently downgraded by an IP survey. Continued mapping led to a structural synthesis which recognized the Que Syncline, Pinnacles Anticline, Burns Peak Syncline and East Chester Anticline (see Hall, 1979) within a complex volcano-sedimentary assemblage.

The exploration program in the period 1980-83 was focused on East Chester. The EAB grid was extended and remapped together with C horizon auger sampling, ground magnetics and IP. The eastern part of Area 4 was also sampled and a regional Dighem survey covered the entire area in 1983. The Pinnacles EAA grid was extended to the Shale Basin area where high Zn values encountered in the early 1970's were found to be due to hydromorphic concentration in limonite and manganese wad. Four diamond holes (EAB 1-4) were drilled at East Chester with only minor encouragement. Reinterpretation of the geology at

Pinnacles was initiated and the old workings were sampled for gold. High rock chip values for Au were returned for both silicified ("cherty") zones and massive sulfides.

A new grid (EAF) was established at Pinnacles in 1984-85 to encompass Brown's Tunnel, Thomas' Tunnel and the Southern Trenches. This grid was mapped and ground magnetics, auger sampling (including Au) and a UTEM survey were undertaken. Subsequent diamond drilling involved 15 holes (ESB1, EAF 1-14) in the vicinity of Brown's Tunnel and resulted in the discovery of several small lenses of massive base metal sulfide on which crude resource calculations were based. At Thomas' Tunnel and Southern Trenches, 4 DDH intersected only patchy sulfide mineralization but some high gold grades. The old EZ and CP series holes were relogged to aid reinterpretation and a new geological model was proposed which suggested no significant folding complications but gross facies changes (see Shaw, 1985).

In late December 1985, BHP farmed in to the Comstaff JV and carried out preliminary field inspections of the Pinnacles and Chester areas together with a major overhaul of all previous exploration results. A new phase of exploration was initiated in 1986, aimed primarily at comprehensively testing the volcanics of Area 4 with large fixed loop TEM surveys (UTEM) in parallel with conceptual geological work. This area was largely regridded in a major line cutting campaign (see BHP 1986, 1987). The Pinnacles-Chester-East Chester region was also subjected to bulk cyanide leach drainage sampling. Detailed geological mapping (1:1000) was carried out at Pinnacles and Chester and all previous Comstaff drillholes were relogged. Where possible, drillholes were also logged with downhole Sirotem, but with disappointing results.

Petrographic and trace element studies were undertaken on both surface and drillcore material to aid in rock classification and assessment of alteration patterns. These investigations during 1986-87 led to the production of an updated interpretative plan at 1:10 000 scale of the geology and mineralization in Area 4 and a surface geochemistry plan was also compiled. An extensive power auger sampling program investigated the geochemical response of weathered bedrock over selected areas but results were generally disappointing. The bulk of Area 4 was tested with UTEM III in late 1986, involving some 170 line kilometres of survey. No significant conductors were located (BHP, 1987).

3.4 Area 6

This portion of EL 5/63 was referred to as "East Renison" and was subjected to a major exploration effort targeted at both replacement-type Sn deposits and vein-type deposits of Sn and/or Pb-Ag. Comstaff work commenced in 1970-71 with silt fraction stream sediment geochemistry and heavy mineral concentrate sampling in conjunction with regional geological mapping. This led to the establishment of 5 grids (see Figure 2) which were variously subjected to soil geochemistry, IP, EM and ground magnetic surveys together with geological mapping, trenching and limited drilling. The main thrust of exploration was aimed at identifying carbonate horizons with potential to host replacement tin bodies or extensions of the Bassett-Federal structural system for lode deposits. Tin mineralization was discovered in outcrop and in trenches on grid 4 and this led to extensions of the gridded area but no direct testing.

An INPUT survey flown in 1975 generated a large number of anomalies which were selectively followed up on 3-line grids which were routinely soil sampled and covered with ground magnetics, EM and geological

mapping but with no real encouragement. Intensive drilling commenced in 1979 targeted at the Fentons Sn and Salmons Pb veins exposed between the Pieman River and the Murchison Highway (see Yardley and Crimeen, 1983 and references therein). This failed to find evidence of a massive replacement type mineralized system but did outline some significant "lode" or vein-type Sn and Pb-Zn-Ag mineralization. The lodges are part of a multiple vein system within sediments and a talc-carbonate horizon in the Crimson Creek Formation. An underlying granitoid was recognized through drilling and zonal contact metamorphic effects. The drilling density allowed some crude resource estimates to be made but these did not favour an economic mining operation.

The lack of success in discovering evidence of Renison style mineralization at shallow depths gave rise to a program of deep (>1000 m) drilling through specific targets to "basement" granite. Both replacement-type and fracture-controlled pyrrhotite mineralization was encountered but Sn values were negligible. A Dighem survey was undertaken over Area 6 in 1983 and this provided some new targets plus better definition of those conductors which had already been recognized in the INPUT data. Only two of these anomalies were followed up in any detail (Genie EM, UTEM, drilling) but without success (see Everett, 1985(b)).

4. RESULTS OF EXPLORATION JULY 1987 - JUNE 1988

Exploration by BHP in 1987-88 was primarily aimed at completing the UTEM coverage over favourable zones within Area 4. A relatively minor amount of line cutting and gridding was undertaken prior to the UTEM survey and some infill gridding was carried out to enable Sirotem follow up of selected UTEM anomalies. The only other work accomplished for Area 4 was the completion of reconnaissance sulfur and lead isotopic studies.

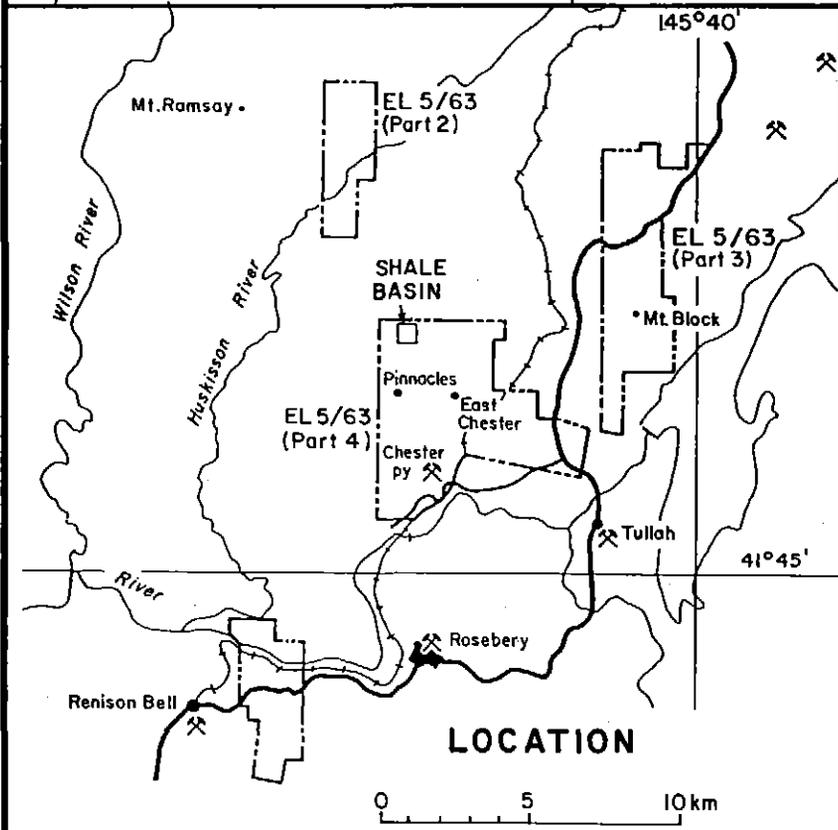
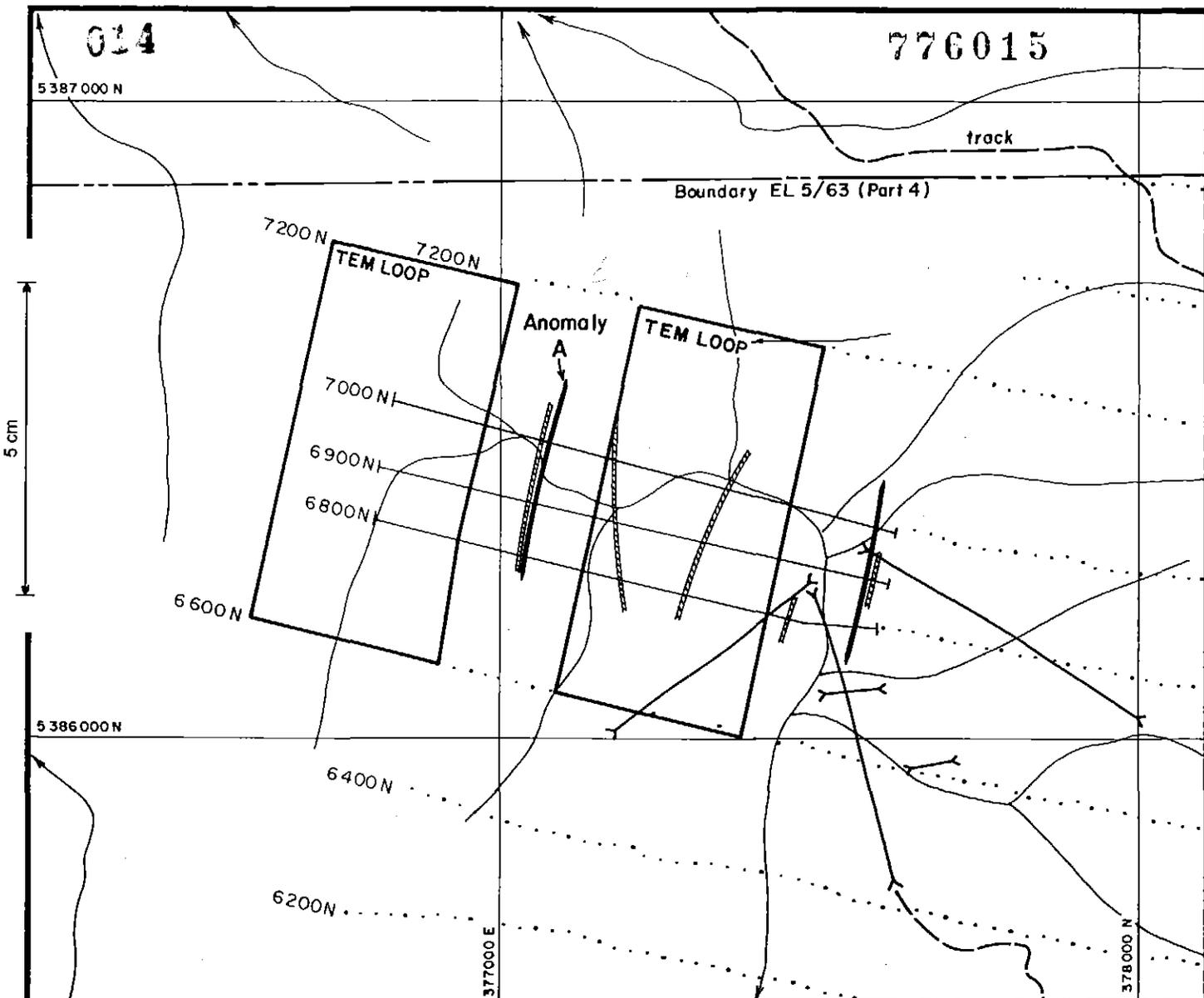
4.1 UTEM Survey

A UTEM III transient electromagnetic survey program was designed to test the entire section of EL 5/63 known as Area 4. The first phase of this program was conducted in the period October–November 1986 and has been previously reported. The final phase of the program was conducted in the period October–December 1987 and forms the subject of this discussion.

During the period October–December 1987 approximately 85 line kilometres were surveyed, using a line spacing of 200 m and a station spacing of 50 m (with 25 m infill in noisy regions). The vertical component was read at all stations, using a transmitter frequency of 26.23 Hz to read 10 channels. Loop sizes varied greatly, from a minimum of 400 x 400 m to a maximum of 1000 m x 2000 m. Location of loops and lines surveyed are presented in Figure 3.

Data are presented in Appendix 1 in the form of continuously normalised plots showing channels 5–10 on the top axis, 2–5 on the central axis and channel 1 on the lower axis. An explanation of symbols and the delay times represented by each channel is presented in Table 2.

No major conductors were located during the survey. However two lesser conductors, A and B in Fig. 3, were deemed worthy of further testing. In addition a peculiar response involving the reversing of early channels was also followed up. This unusual response, X in Fig. 3, was followed up using a small UTEM loop, PM06. The follow up data show that the response probably represents a lithological contact. The odd behaviour is probably due to interference from the two powerlines enclosed by loop PM04.



LEGEND

- UTEM anomaly
- SiroteM anomaly
- SiroteM traverse
- UTEM grid
- Costean
- Track
- Stream

FIG. 4

Scale 1:10 000

0 200 400 600 m

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SIROTEM FOLLOW-UP OVER UTEM ANOMALY A (SHALE BASIN)

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In addition to these 3 anomalies many other early time features could be identified which represent lithological units, contacts or faults. Only conductors A and B were proposed for follow up, using fixed-loop Sirotem.

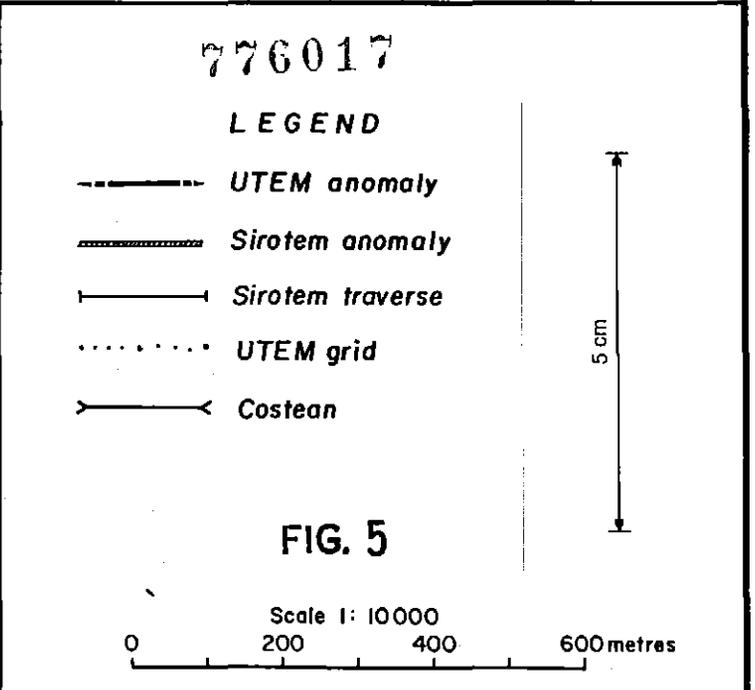
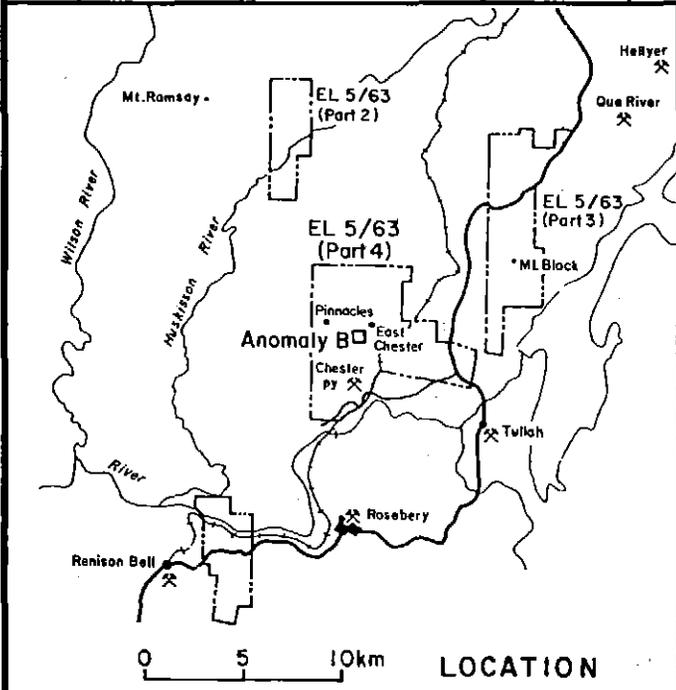
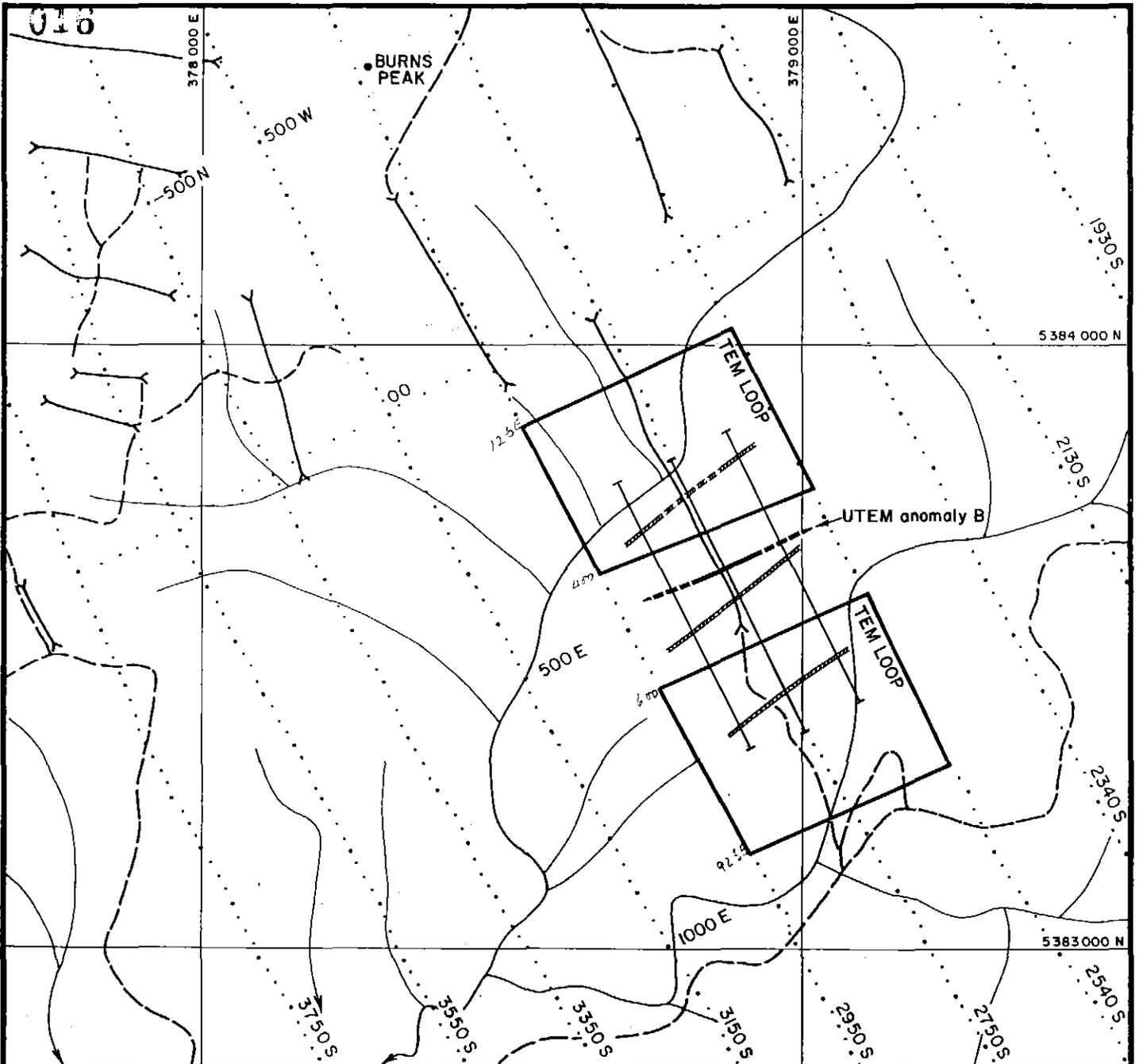
4.2 Sirotem Survey and Geology

A fixed loop Sirotem II transient electromagnetic survey was conducted over UTEM anomalies A and B in March 1988. Approximately 4 line kilometres of data were read on lines 100 m apart, using a station spacing of 25 m. Vertical and horizontal components were read at all stations, with 16 early time and 16 standard time channels being recorded. The plotted data are included as Appendix 2.

Loops used in the survey at anomaly A were 600 m x 300 m. Loops used in the survey at anomaly B were 400 m x 400 m. Readings were taken both inside and outside the loops. Locations of loops and surveyed lines relative to the UTEM anomalies are presented in Figures 4 and 5.

The Sirotem survey over Anomaly A confirmed the location of the UTEM anomaly (Figure 4). Interpretation is difficult due to strong "loop effects" in the data. Three additional anomaly trends visible in the Sirotem data 100 - 400 m east of the UTEM anomaly show NS or NNE-SSW strikes and probably represent geological contacts or structures.

There is no exposure on any of the lines over the UTEM anomaly position. This feature lies within a large patch of glacials which include erratics up to 6 m across. Exposures some 150 to 300 m to the east include dark grey to black, slightly carbonaceous thinly bedded shales and siltstones with minor pyrite along with quartzose and vitric siltstone and sandstone. It is possible that the UTEM/Sirotem



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SIROTEM FOLLOW-UP OVER ANOMALY B

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anomalies are a reflection of lithologies or contacts within this sequence but the overall interpretation is equivocal due to the strong loop effects. No significant alteration or geochemical anomalism is apparent in (float) samples of pyritic shale or in stream sediments from this area (Appendix 3).

The Sirotem survey over Anomaly B once again confirmed the UTEM anomaly (Figure 5). Two lesser trends were also identified in the Sirotem data, possibly reflecting lithological features. The anomalous zone broadly coincides with a zone of no outcrop along the contact between basaltic andesite lava to the north and a dacitic volcanoclastic to the south. Very minor disseminated base metal sulfides and pyrite are associated with weak chlorite-epidote-quartz-carbonate alteration in the basalt while the dacite shows only weak silicification and albitisation with rare chlorite or limonite after chlorite/pyrite (see Appendix 3). There is no outstanding geological support for the TEM anomalies so this zone could not be regarded as a high priority drill target given the present time limitations.

4.3 Sulfur and Lead Isotope Study

A sulfur isotope investigation was conducted in 1987 in an attempt to better understand the nature and significance of the hydrothermal systems identified at several prospects in the altered volcanics of Area 4. This survey included disseminated, vein and massive sulfide from drillcore, trenches, shafts and outcrop and covered the systems at Pinnacles, Hollway, East Chester and Chester. The S^{34} S data are listed in Appendix 4 which includes a guide to sample locations and mineralogy.

With the exception of sphalerite from Costean 16, the general Pinnacles area has fairly tightly clustered sulfur isotope ratios between +9.0 and +12.9. This

contrasts markedly with the data for Chester which are generally negative, in the range -12.3 to +1.9. The Hollway results are similar to those for Chester and, sphalerite from the East Chester Andesite is also strongly negative. Comparison with sulfur isotope data for large volcanogenic massive sulfide systems suggests that the Pinnacles zone may be generally more prospective than the Chester-Hollway-East Chester zones to the south and east.

Lead isotope data have been obtained for samples of drillcore, outcrop and auger sample material. The results are listed in Appendix 4. Data from both surface and drillcore sample in the Pinnacles area exhibit substantial scatter which is significantly greater than experimental error. The cause(s) of this variation is not well understood. At Chester the least radiogenic result is similar to the signature obtained from Rosebery but any firm comparison is complicated by the presence of several samples with considerably more radiogenic Pb. Similar scatter is observed in the data for auger samples from Hollway, Chester-Mt. Kershaw and the Rosebery Fault. At least in the case of the Rosebery Fault, this variation may reflect a Tabberaberan overprint.

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TABLE 1
SUMMARY OF GEOPHYSICAL SURVEYS

AREA EL 5/63 REGIONAL

GRID/LOCALITY	SURVEY TYPE	DATE
Entire Lease	Aeromagnetic	1982 (Aug.)
Area 1 (NW & W of Waratah)	Aeromagnetic	1982
Area 2 (Southern Portion)	Aeromagnetic	Jan.-Mar. 1982
Entire Lease (Except Area 1)	Input EM	April 1975
Areas 1, 6 and all of Area 4 <u>except</u> sth of Chester Mine	Dighem EM	August 1983

GRID/LOCALITY	SURVEY TYPE	DATE
Mt. Magnet	Ground Magnetics	Feb.-Apr. 1975
	Crone EM	October 1973
		Nov.-Dec. 1975
		Aug. 76 - Mar. 77
		April 1978
BAB	Crone EM	December 1975
Arthur River	Turam EM	March 1971
Mt Bischoff	Ground Magnetics	Jan.-Mar. 1982
Deep Gully Creek	Ground Magnetics	Apr.-Dec. 1973
	Downhole EM	July 83 - June 84
	Geophysical follow up of Dighem	July - Dec. 1984
Butler's Road (BRG)	Ground Magnetics	July - Sept. 1984
	Genie EM	Sept. 1974

GRID/LOCALITY	SURVEY TYPE	DATE
WOW	Self Potential	December 1972
	Ground Magnetism	January 1973 March 1976
	Crone EM	January 1973 March 1976
	Genie EM	Oct.-Dec. 1983
CAB	Ground Magnetism	March 1976
	Crone EM	February 1976
	Genie EM	Oct.-Dec. 1983
	Induced Polarisation	January 1985

GRID/LOCALITY	SURVEY TYPE	DATE
Chester Metric Grid (incl. Sth Extension)	Induced Polarisation	Jan.-Mar. 1974 July-Aug. 1974 September 1977
	Self Potential	Feb.-Mar. 1974
	Crone EM	Feb.-Mar. 1974 Sept.-Oct. 1974
	Ground Magnetics	Feb.-Mar. 1974 June 1974 Sept.-Oct. 1974 February 1978
East Chester	Induced Polarisation	September 1977 April 1978
	Ground Magnetics	April 1978
Leo's Find (Chester)	Induced Polarisation	June-July 1979
Magnetic Grid (Chester/Pinnacles)	Ground Magnetics	July 83-June 84
EAA	Induced Polarization	March 1978 February 1979
EAB	Ground Magnetics	March 1978
	Induced Polarization	March 1978 Nov.-Dec. 1980 January 1981
	Self Potential	May-June 1978
EAD/EAD NEW	Ground Magnetics	March 1978
	Self Potential	June 1978
	Crone EM	April 1979

GRID/LOCALITY	SURVEY TYPE	DATE	
Chester-Pinnacles	Induced Polarisation	March 1971 August 1972 Oct.-Nov. 1972 February 1981	
	Crone EM	Oct.-Nov. 1972	
	Ground Magnetics	September 1971 November 1972 May 1974 August 1980 October 1980	
	Self Potential	March 1971	
	UTEM	1984 1986 1987	
	Pinnacles/Silver Falls	Ground Magnetics	1956 - 1962
	Gravity	1956 - 1962	
EM	1956 - 1962		
	AFMAG	1959	
	Induced Polarisation	1966	
	Crone EM	Jan.-Feb. 1973	
Silver Falls Rd	Scintillometer	January 1968	
	Ground Magnetics	January 1968	
Pinnacles Metric Grid	Induced Polarisation	July 1974 April 1978	
	Crone EM	July 1974	
	Pulse EM	February 1977	
	Ground Magnetics	April 1978	
Chester	Gravity	1956	
	EM	Pre 1962	
	Afmag	1962	

GRID/LOCALITY	SURVEY TYPE	DATE
No 5	Crone EM	November 1973
	Induced Polarisation	December 1973
		February 1974
		February 1979
Fenton's	Ground Magnetics	February 1979
	Crone EM	November 1973
	Induced Polarisation	July 1979
	Mise a la Masse (RBE 12, 14, 16, 17, 18, 19)	February 1980 Nov./Dec. 1980
Ring River	TEM	October 1978
Basset Federal Junction	Ground Magnetics	April/June 1982
120AX, 60D, 180H	Ground Magnetics	June 83 - June 84
	UTEM (120AX only)	1984
GAG	Crone EM	February 1977
GAH	Ground Magnetics	April 1976
GAI	Ground Magnetics	March 1976
GAK	Ground Magnetics	October 1975 March 1976
	Crone EM	November 1975 February 1976
GAO	Ground Magnetics	May 1979
	Crone EM	May 1979

GRID/LOCALITY	SURVEY TYPE	DATE	
GAP	Ground Magnetics	July 1977 February 1978 March 1979 June 1980 Jan.-Mar. 1982 Apr.-June 1982	
	Crone EM	April 1977 Mar. '78-May '78	
	TEM	October 1978	
	EM	March 1979	
	Induced Polarisation	September 1977 Jan.-Mar. 1978	
	Self Potential	Feb.-Mar. 1978 Apr.-June 1978 October 1978	
	Mise a la Masse (RBE 10A)	August 1980	
	(RBE D1, D2)	Oct. '82-Mar. '83	
	GAR	Ground Magnetics	March 1979 June 1979 June 1980 Nov/Dec 1980 Apr/June 1982
		Crone EM	March 1979
Mise a la Masse (RBE 10A, 11) (RBE 12, 14, 16, 17, 18, 19)		February 1980 Apr/May 1980 August 1980 Nov/Dec 1980	
Downhole Sirotem (RBE 28)		Jan/Mar 1982	
GA5		Ground Magnetics	September 1979
GAT	Ground Magnetics	April 1981 June 1981 Oct/Nov 1981 Jan/Mar 1982	

TABLE 2
UTEM DATA PLOTTING SPECIFICATIONS

SYMBOL	CHANNEL NUMBER	NOMINAL TIME WINDOWS (for a base frequency of 26.23Hz)		
		START (ms)	CENTRE (ms)	END (ms)
◇	10	.018	.027	.036
△	9	.036	.054	.072
⊗	8	.072	.108	.144
7	7	.144	.216	.288
∟	6	.288	.432	.576
Σ	5	.576	.864	1.152
□	4	1.152	1.73	2.304
\	3	2.304	3.46	4.608
/	2	4.608	6.91	9.216
	1	9.216	13.82	18.43

All channels are plotted as

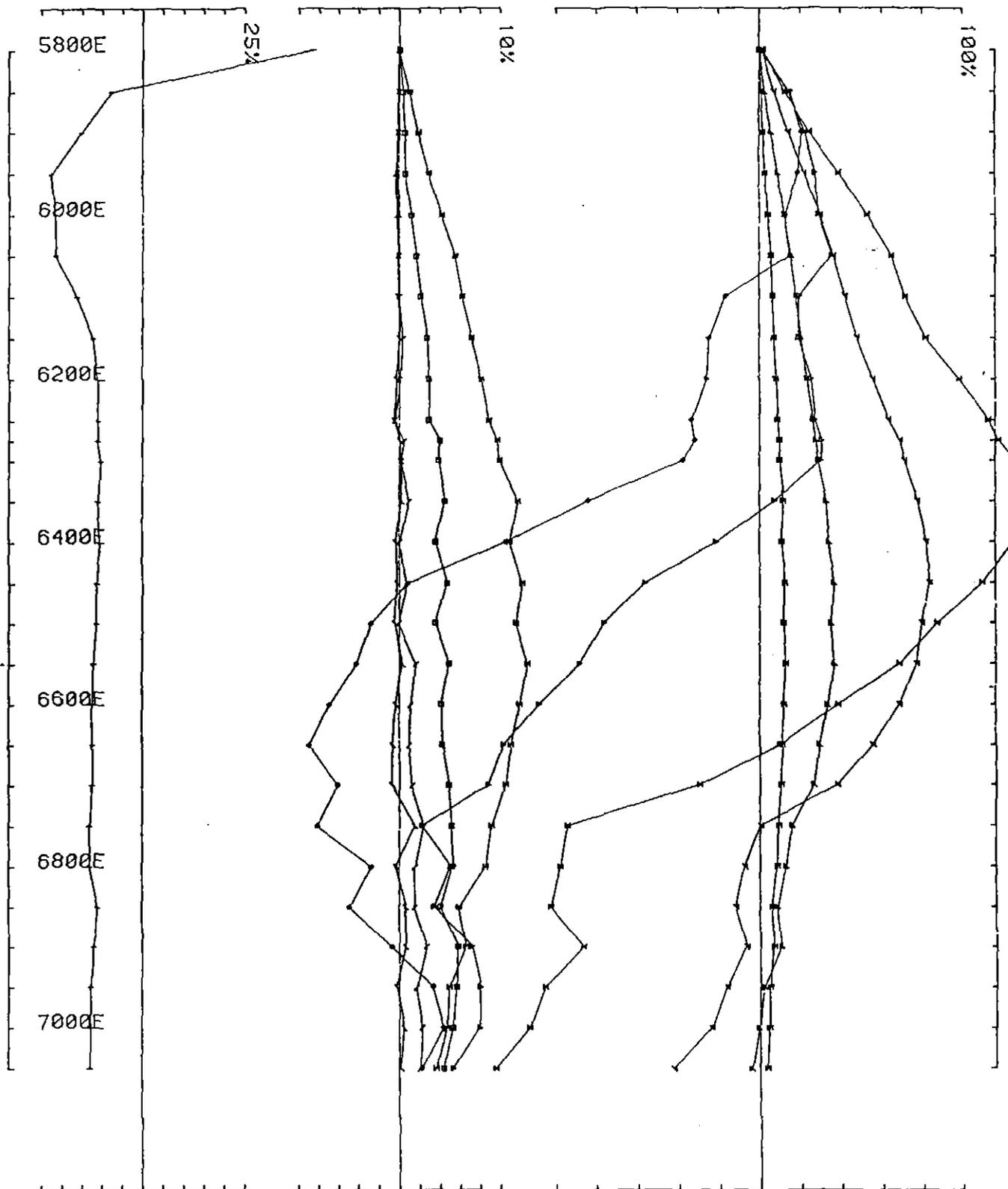
$$\frac{\text{Channel} - \text{reference}}{\text{base}} \times 100\%$$

Where reference = primary (for channel 1)
= channel 1 (for all other channels)

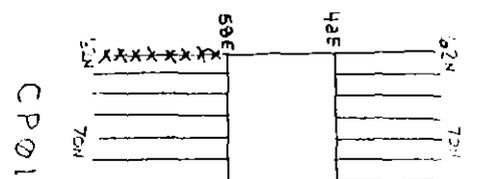
APPENDIX 1

UTEM Profiles

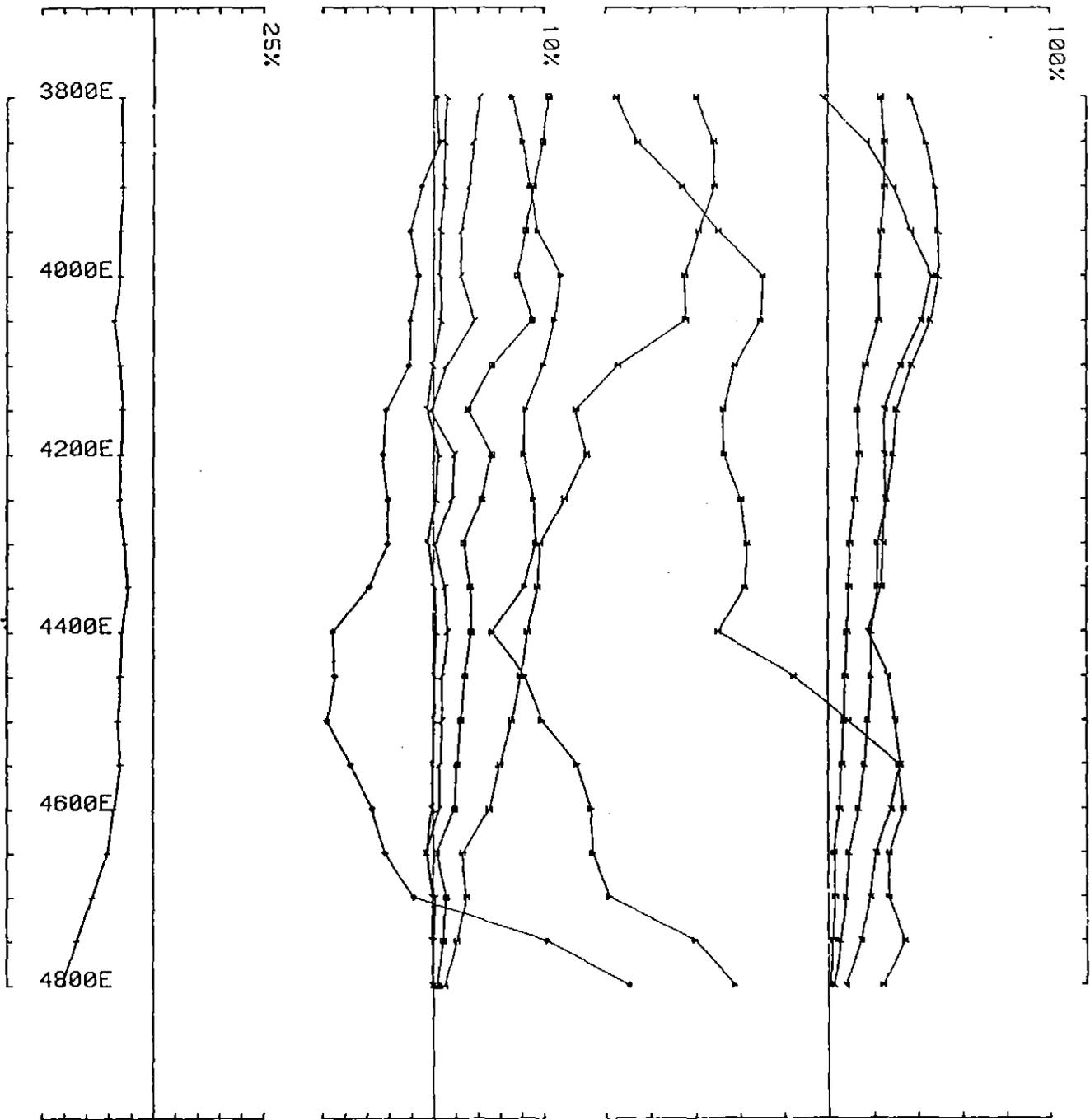
040



UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO PM Job 8724 base freq (hz) 26.230
 loop no 1 line 6200N component Hz secondary field Ch 1 contin. norm.



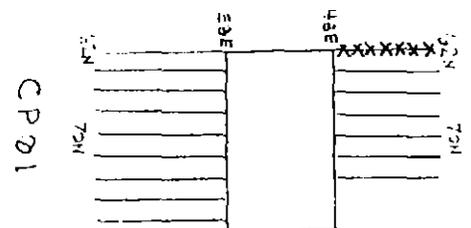
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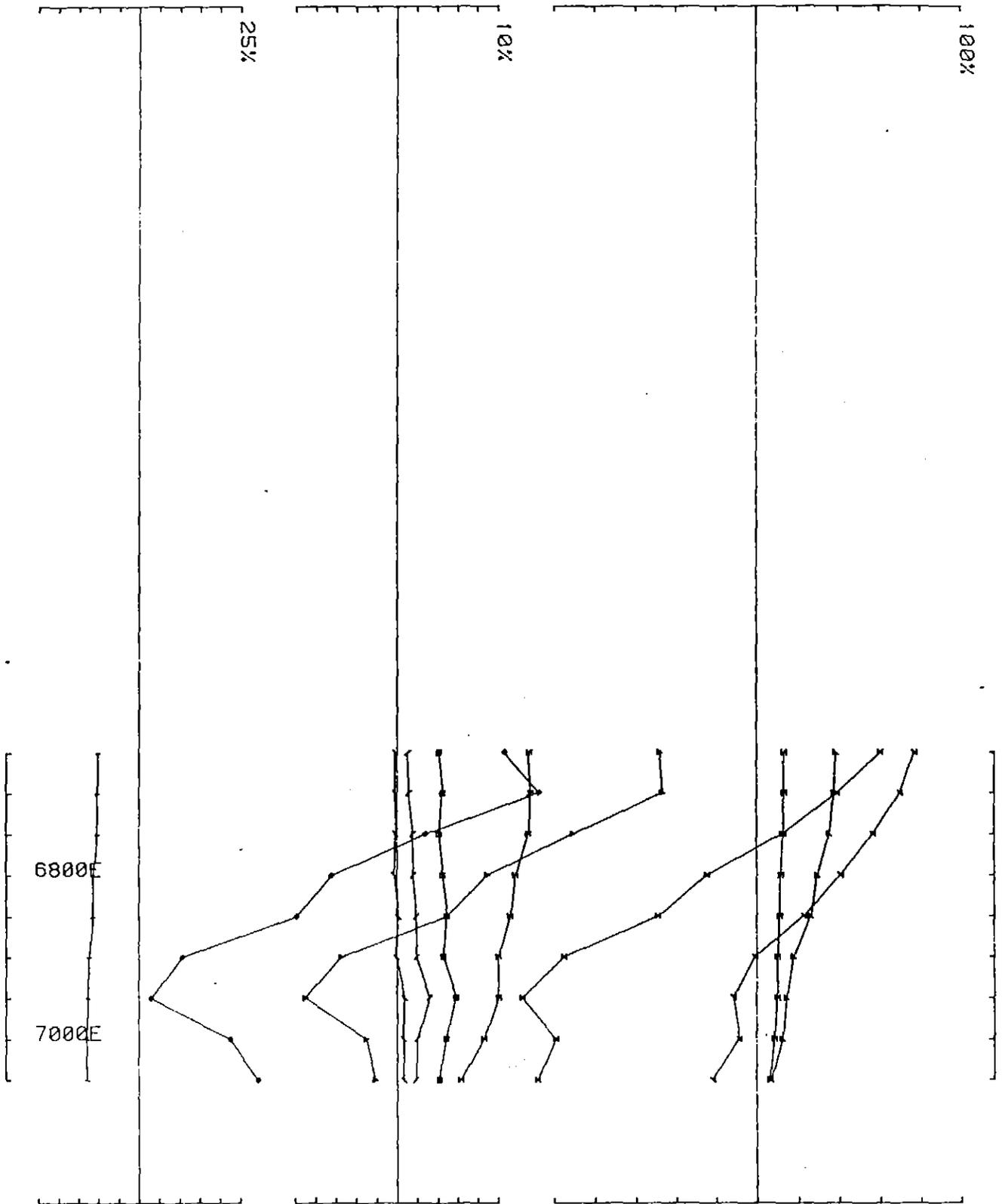


UTEM SURVEY at CHESTER PINNACLES for B H P

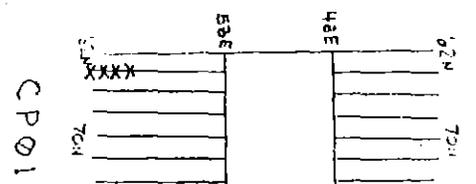
conducted by HU PO PM job 8724 base freq (hz) 26.230 ** CAL 65 ***

loop no 1 line 6200N component HZ secondary field Ch 1 contin. norm.

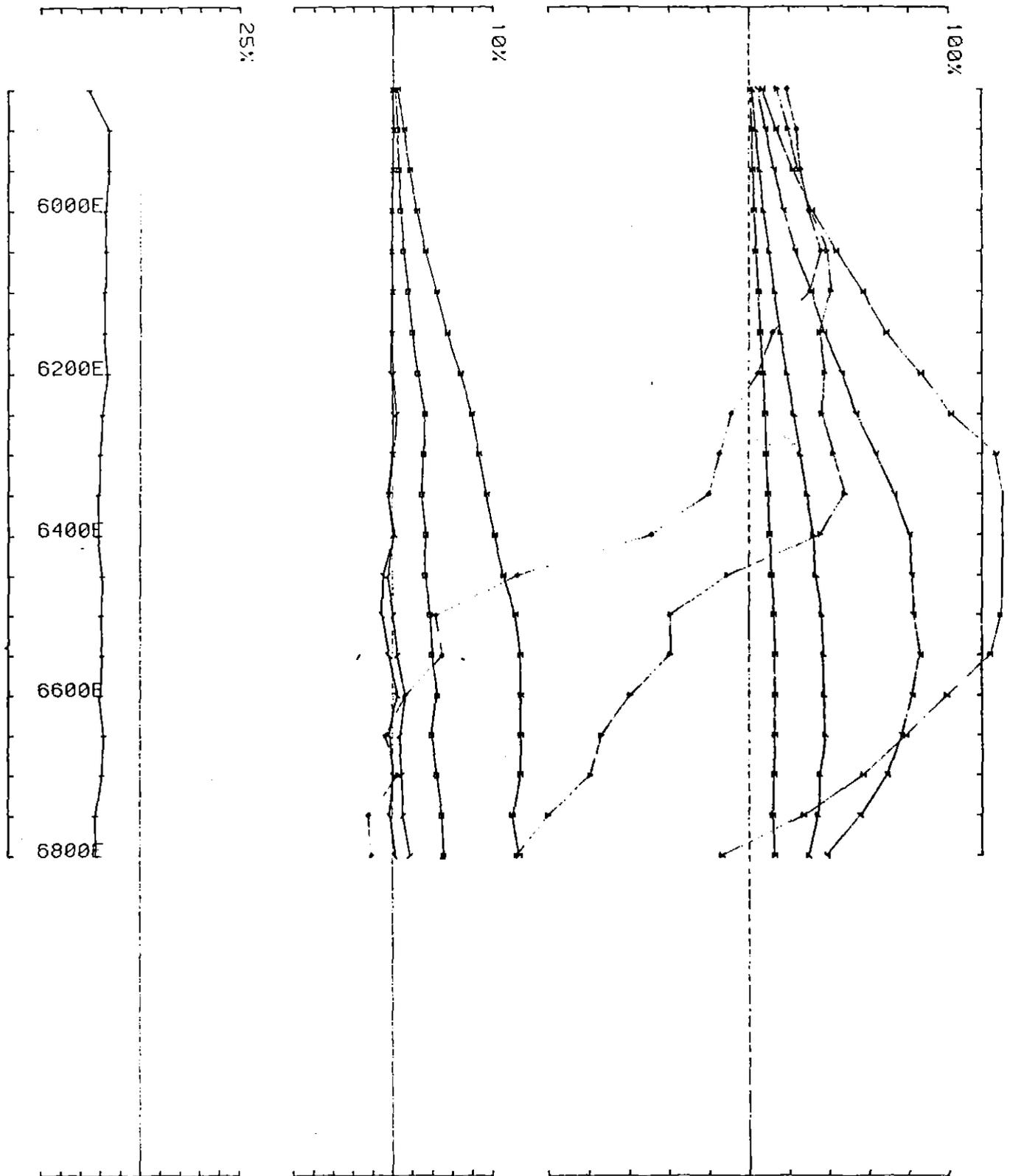




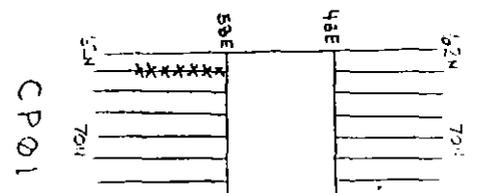
UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO PM Job 8724 base freq (hz) 26.230
 loop no 1 line 6400N component Hz secondary field Ch 1 contin. norm.

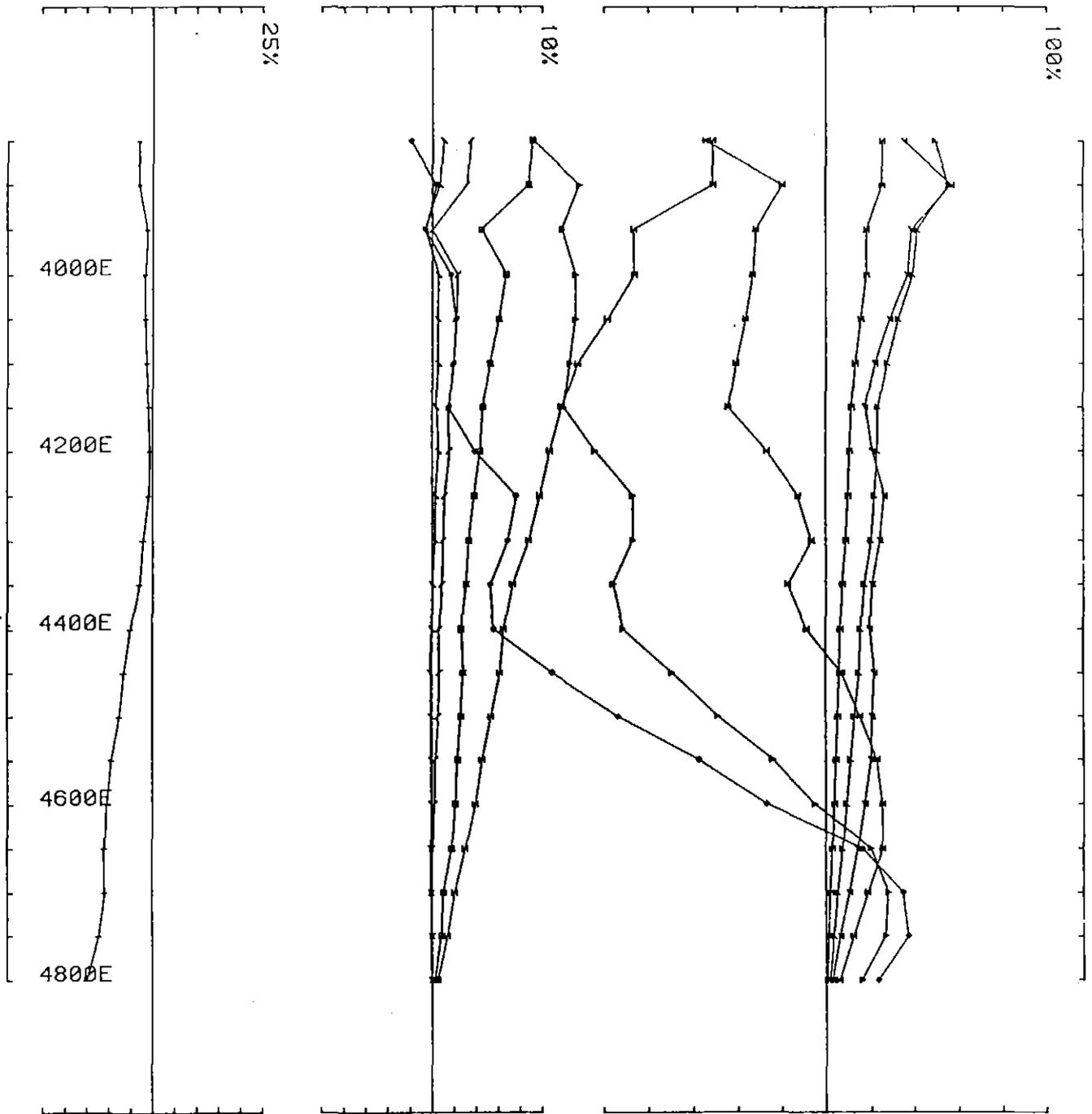


043



UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PC FM job 8724 base freq (hz) 26.230
 loop no 1 line 6400ft component Hz secondary field Ch 1 contin. norm.

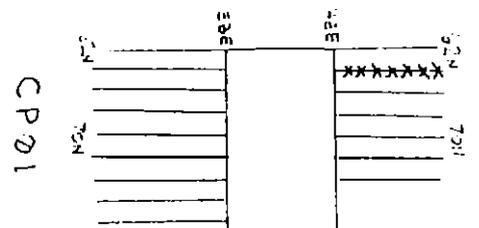




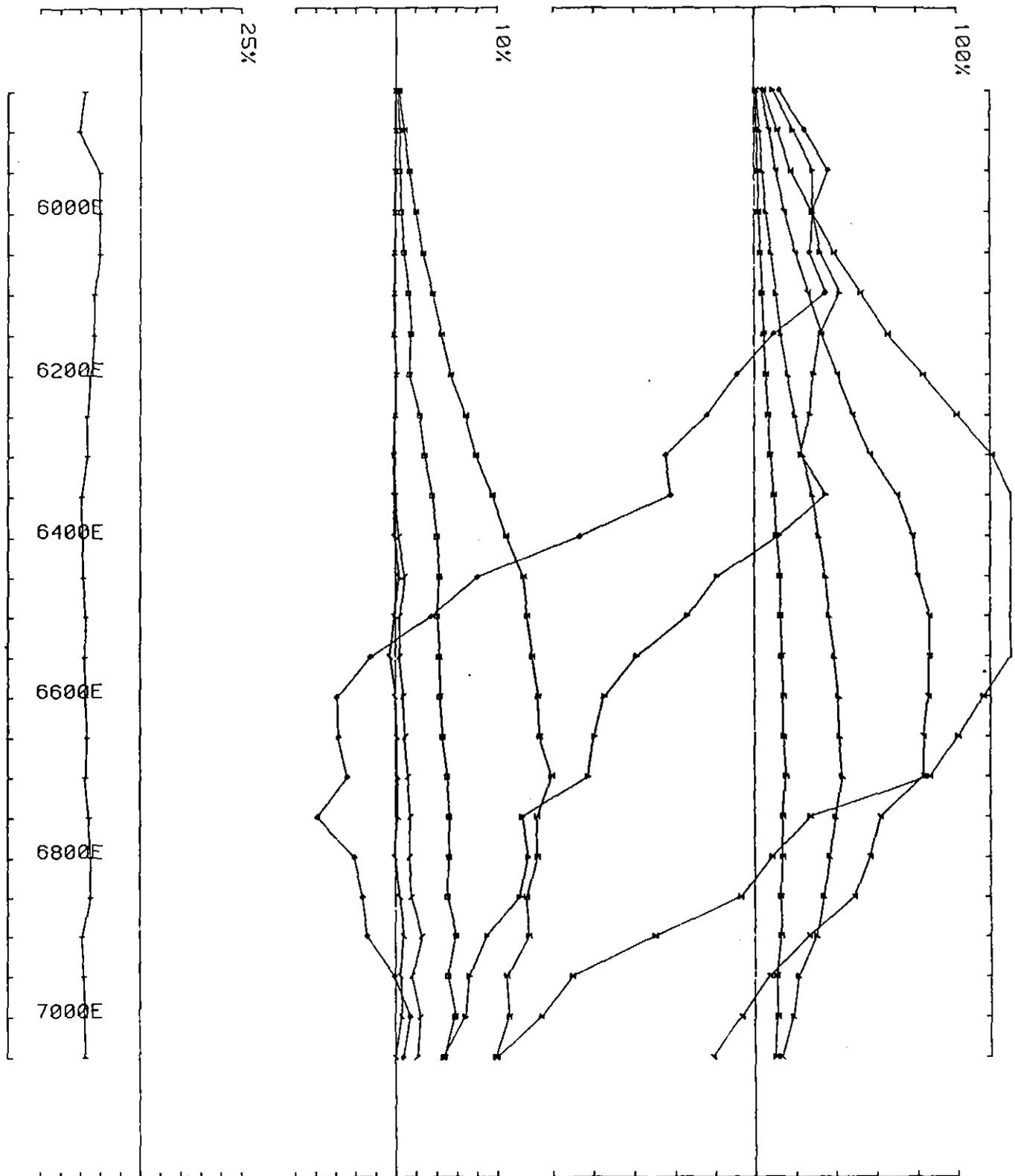
UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM job 8724 base freq (hz) 26.230

loop no 1 line 6400N component Hz secondary field Ch 1 contin. norm.



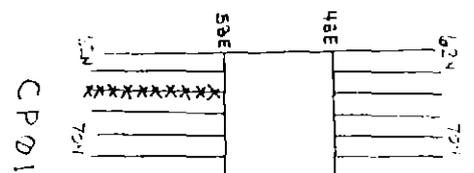
045

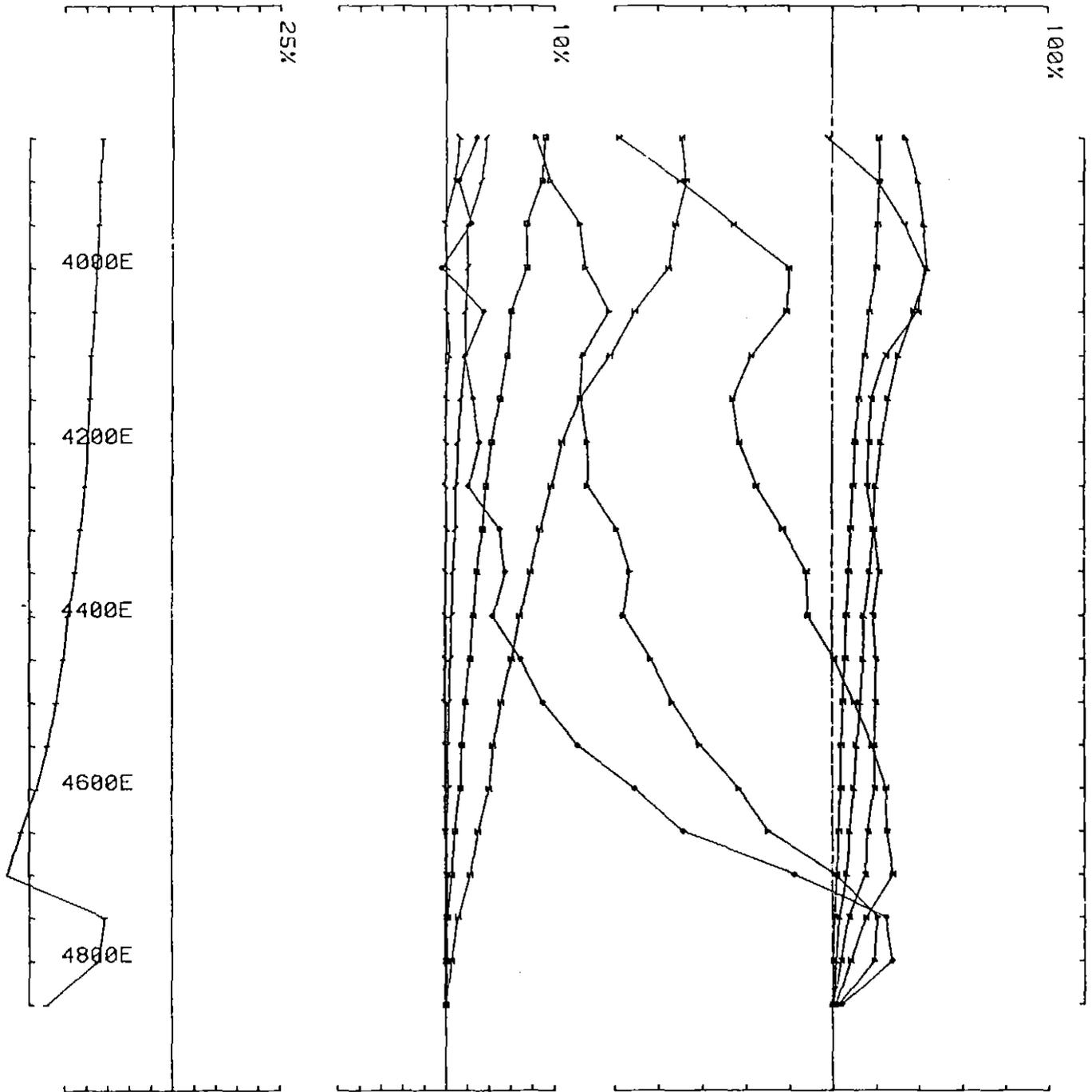


UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM Job 8724 base freq (hz) 26.230

loop no 1 line 6600N component Hz secondary field Ch 1 contin. norm.

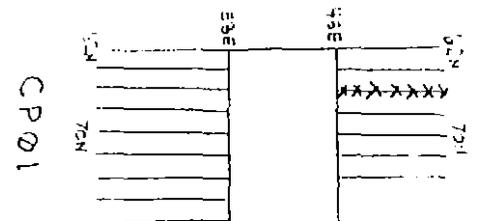


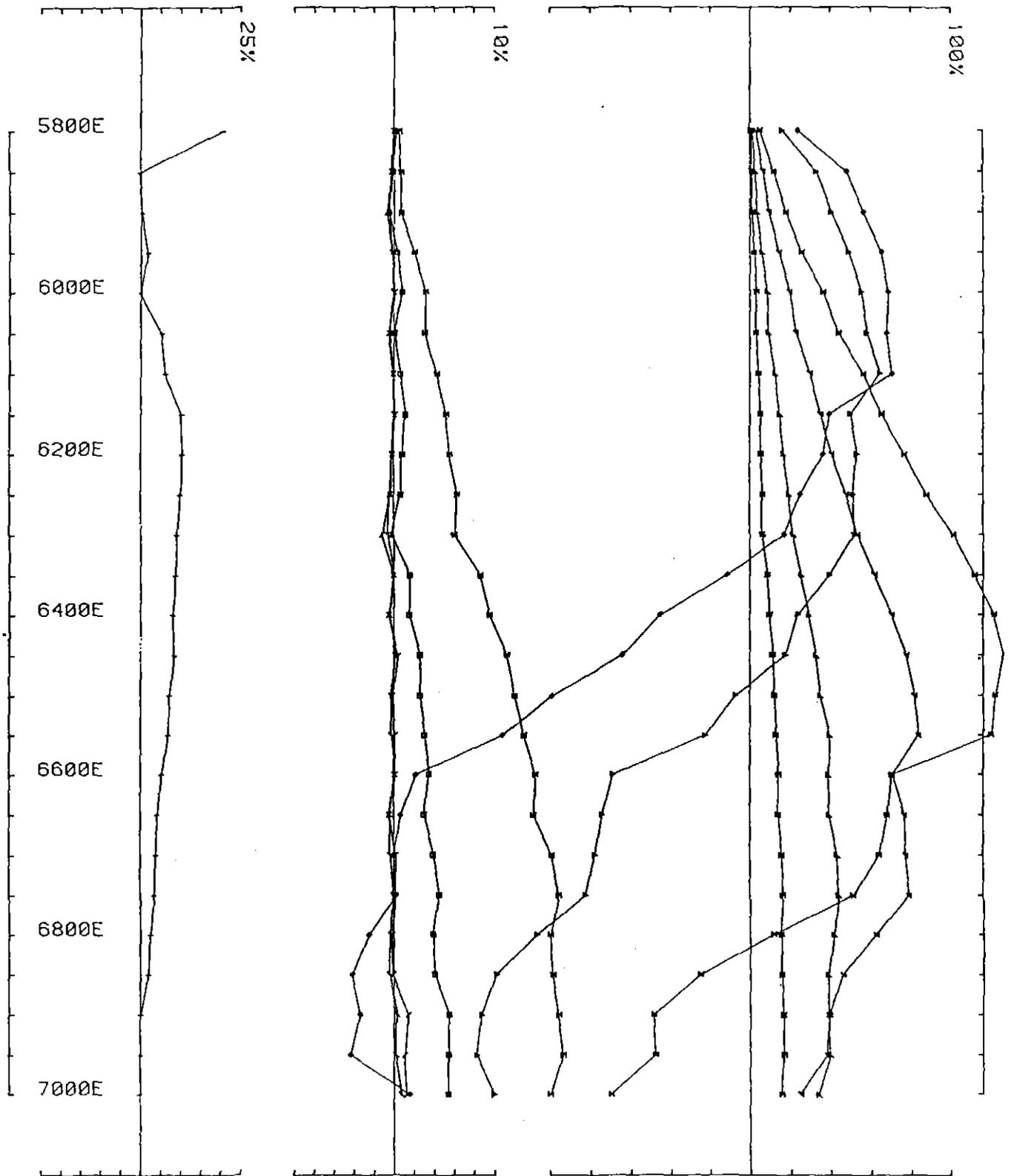


UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM job 8724 base freq (hz) 26.230 ** CH1 ?? **

loop no 1 line 6600N component Hz secondary field Ch 1 contin. norm.

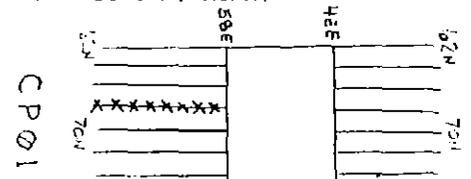


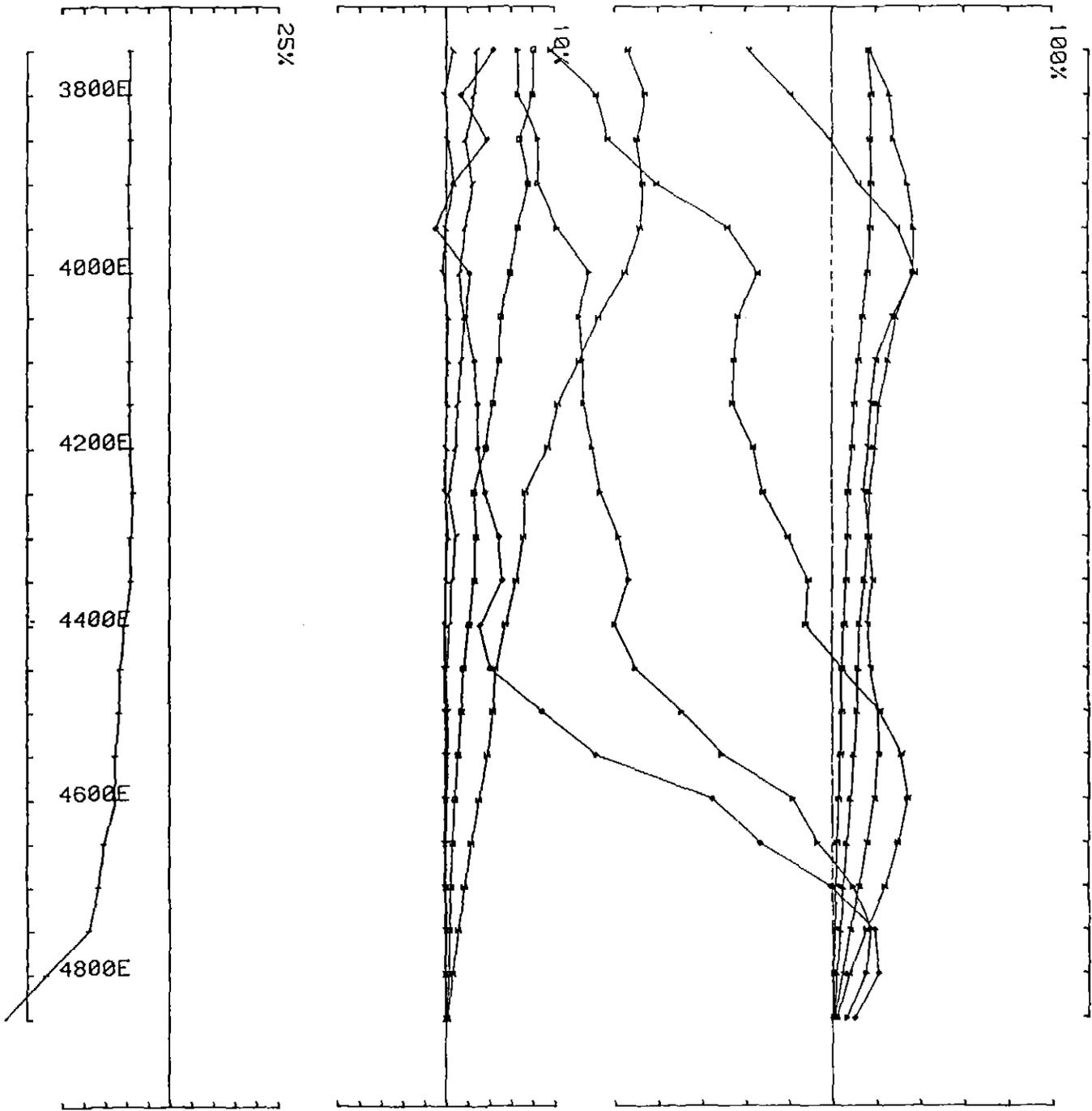


UTEM SURVEY at CHESTER PINNACLES for B H P

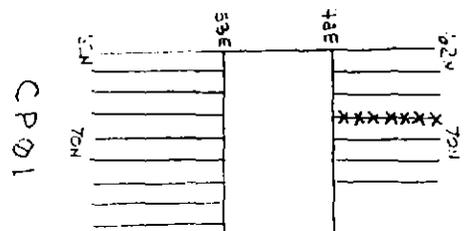
conducted by HU PO PM job 8724 base freq (hz) 26.230

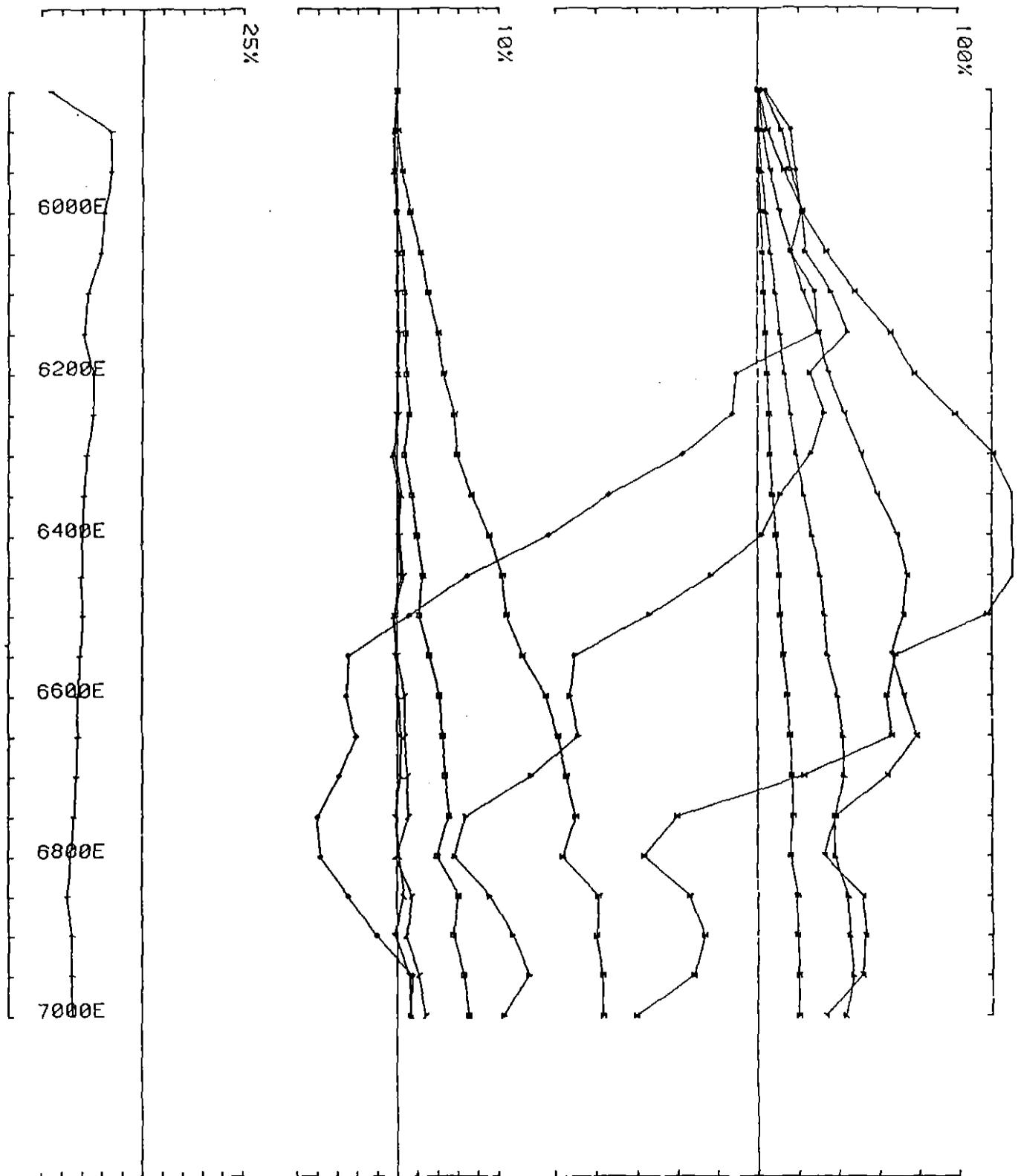
loop no 1 line 6800N component Hz secondary field Ch 1 contin. norm.



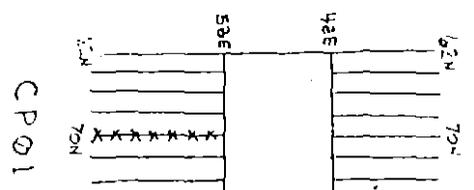


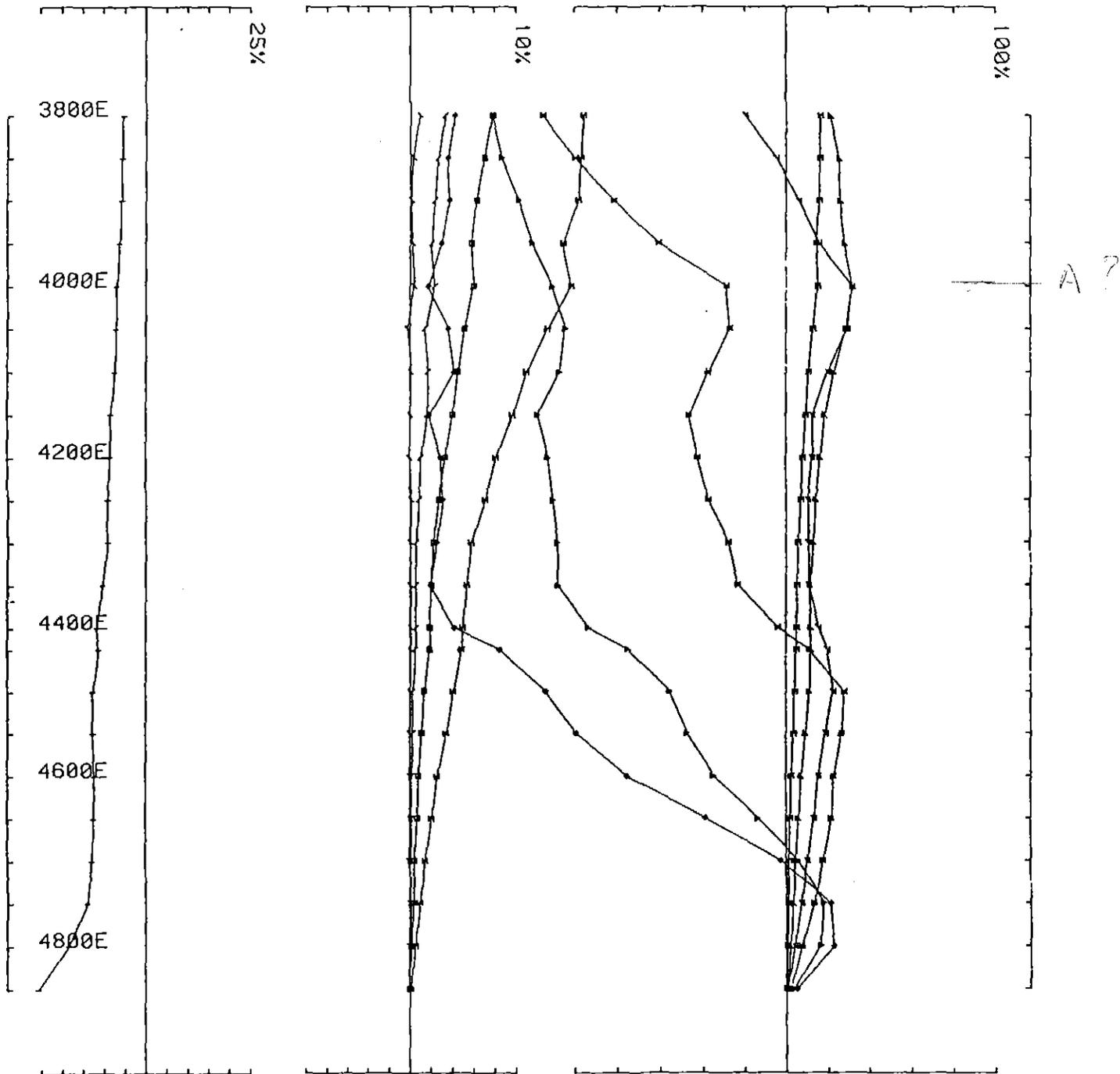
UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO PM job 8724 base freq (hz) 26.230
 loop no 1 line 6800N component Hz secondary field Ch 1 contin. norm.



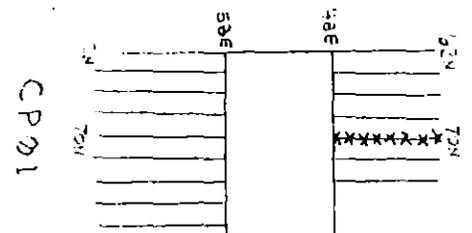


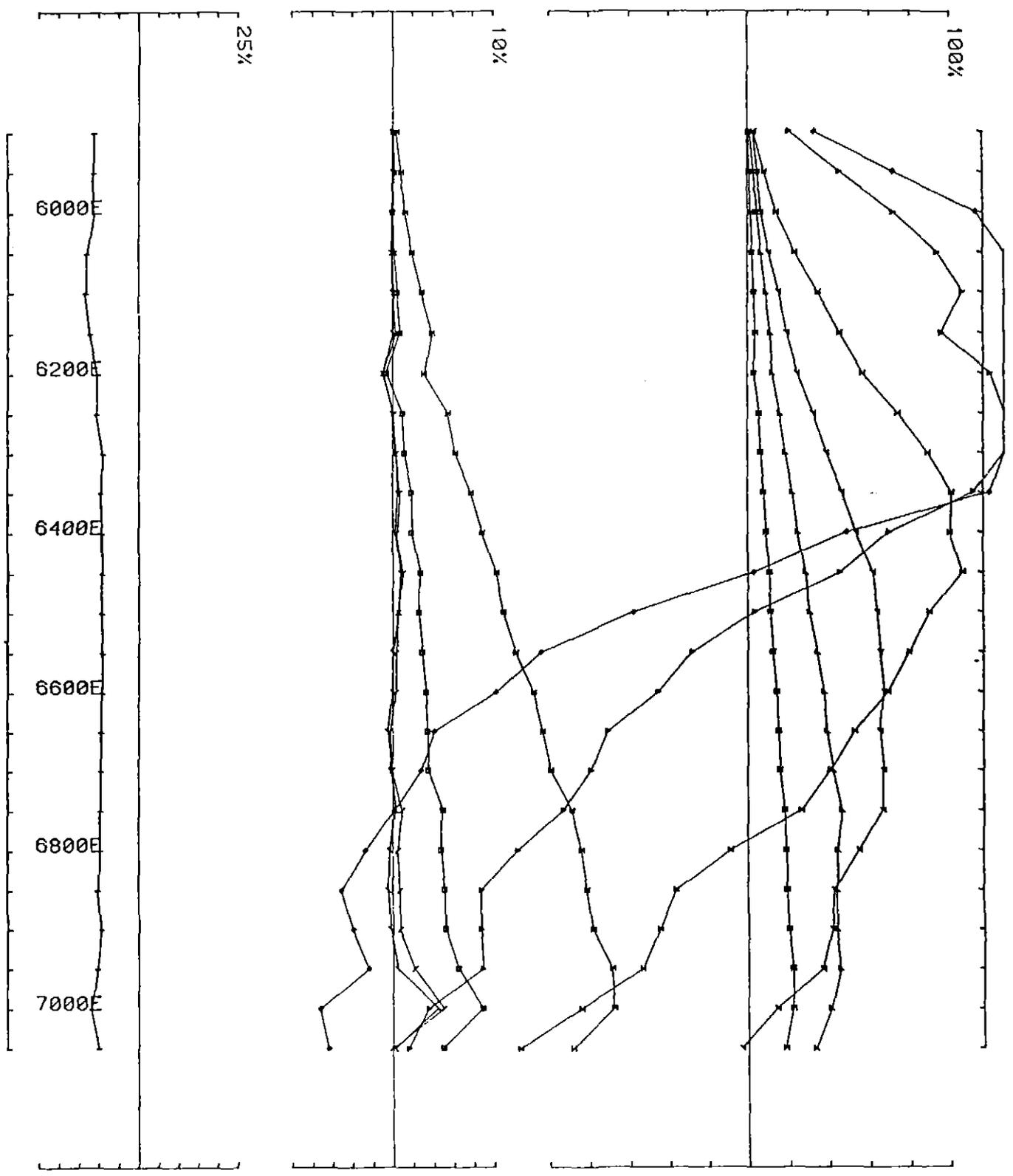
UTEM SURVEY at CHESTER PINNACLES for B H P
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 loop no 1 line 7000N component Hz secondary field Ch 1 contin. norm.



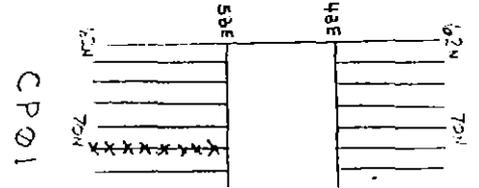


UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO PM job 8724 base freq (hz) 26.230
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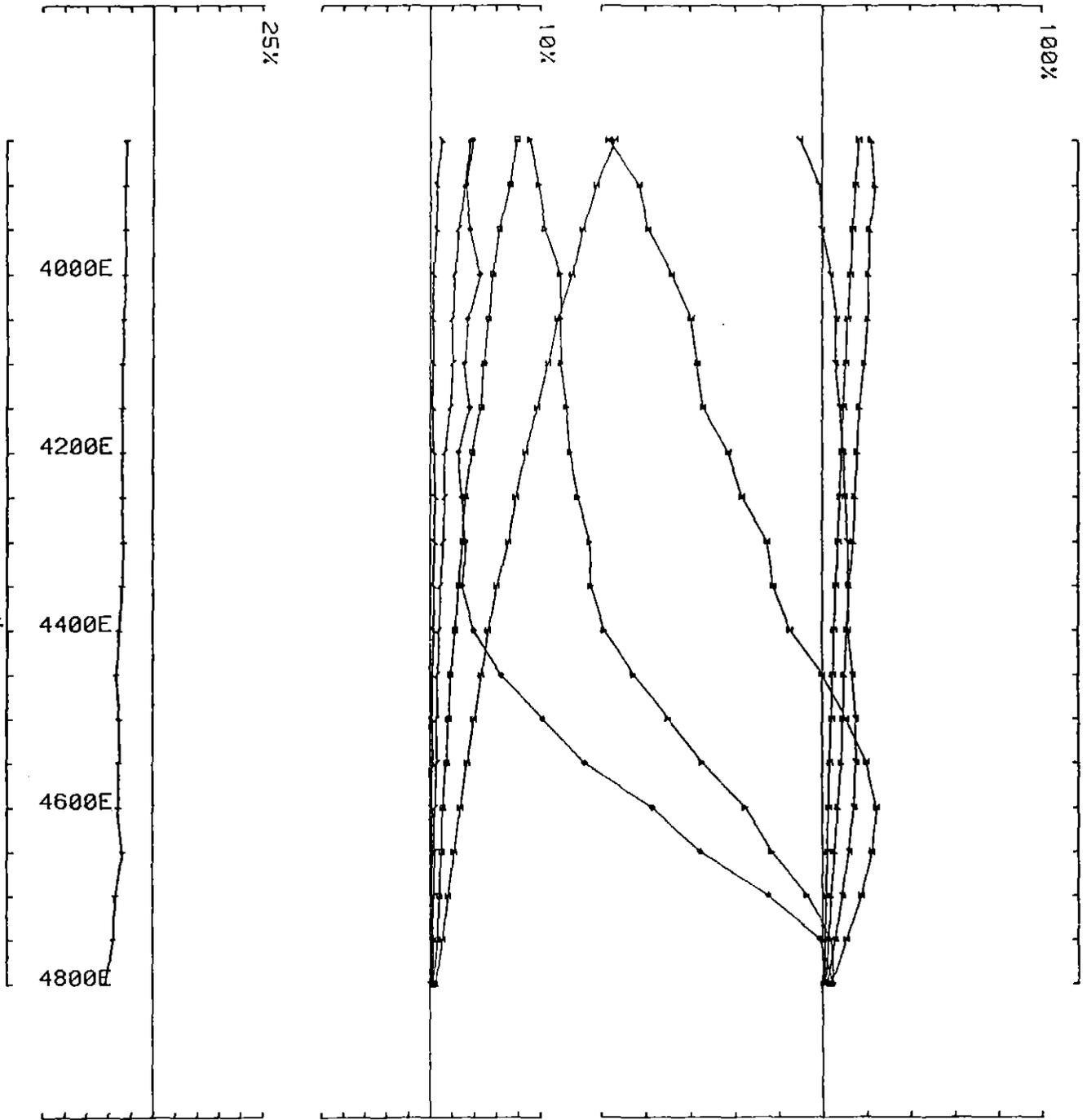




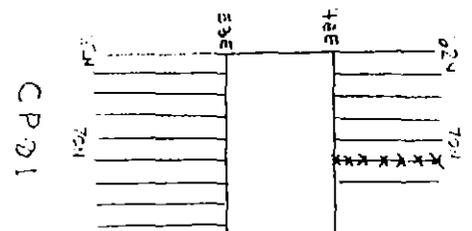
UTEM SURVEY at CHESTER PINNACLES for B H P
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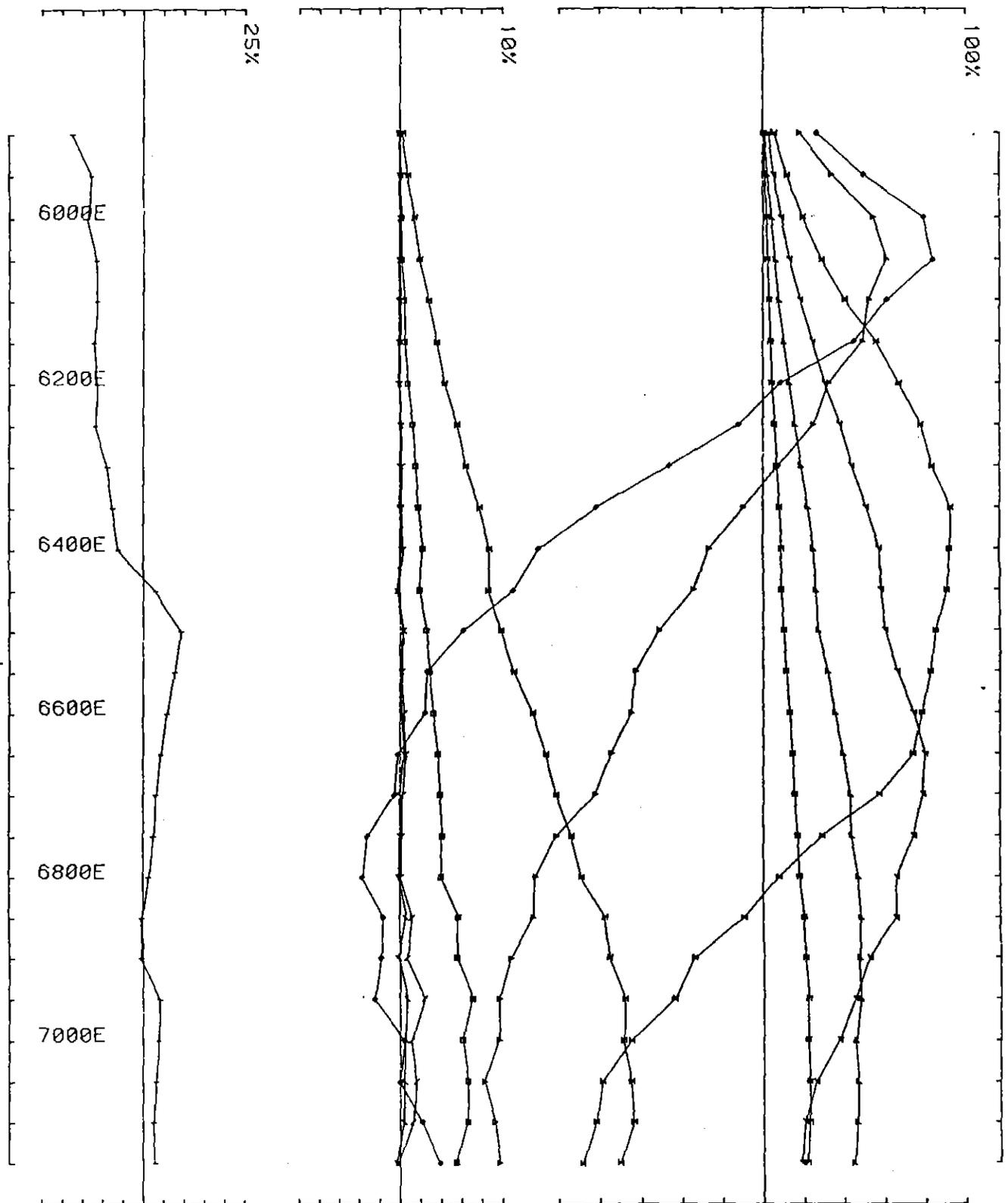


052



UTEM SURVEY at CHESTER PINNACLES for B H P
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 loop no 1 line 7200N component Hz secondary field Ch 1 contin. norm.

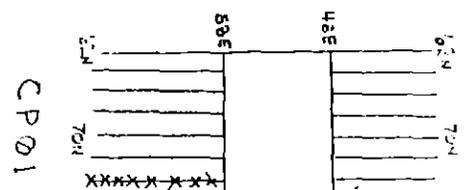




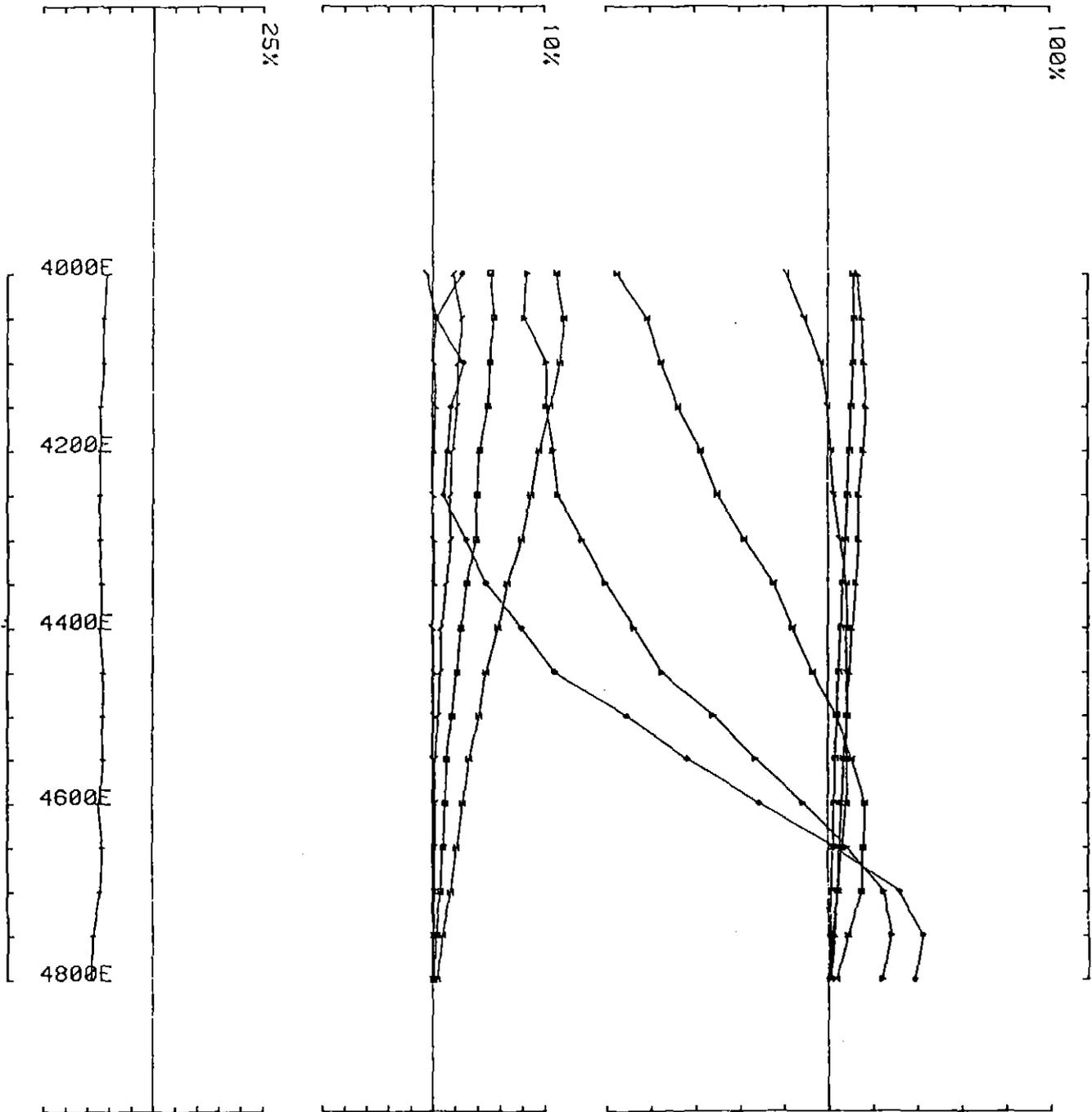
UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM Job 8724 base freq (hz) 26.230

loop no 1 line 7400N component Hz secondary field Ch 1 contin. norm.



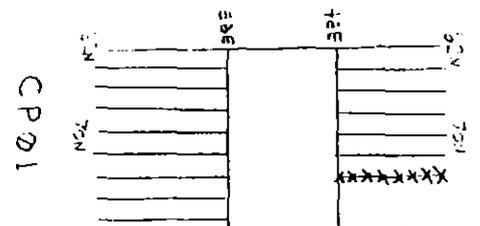
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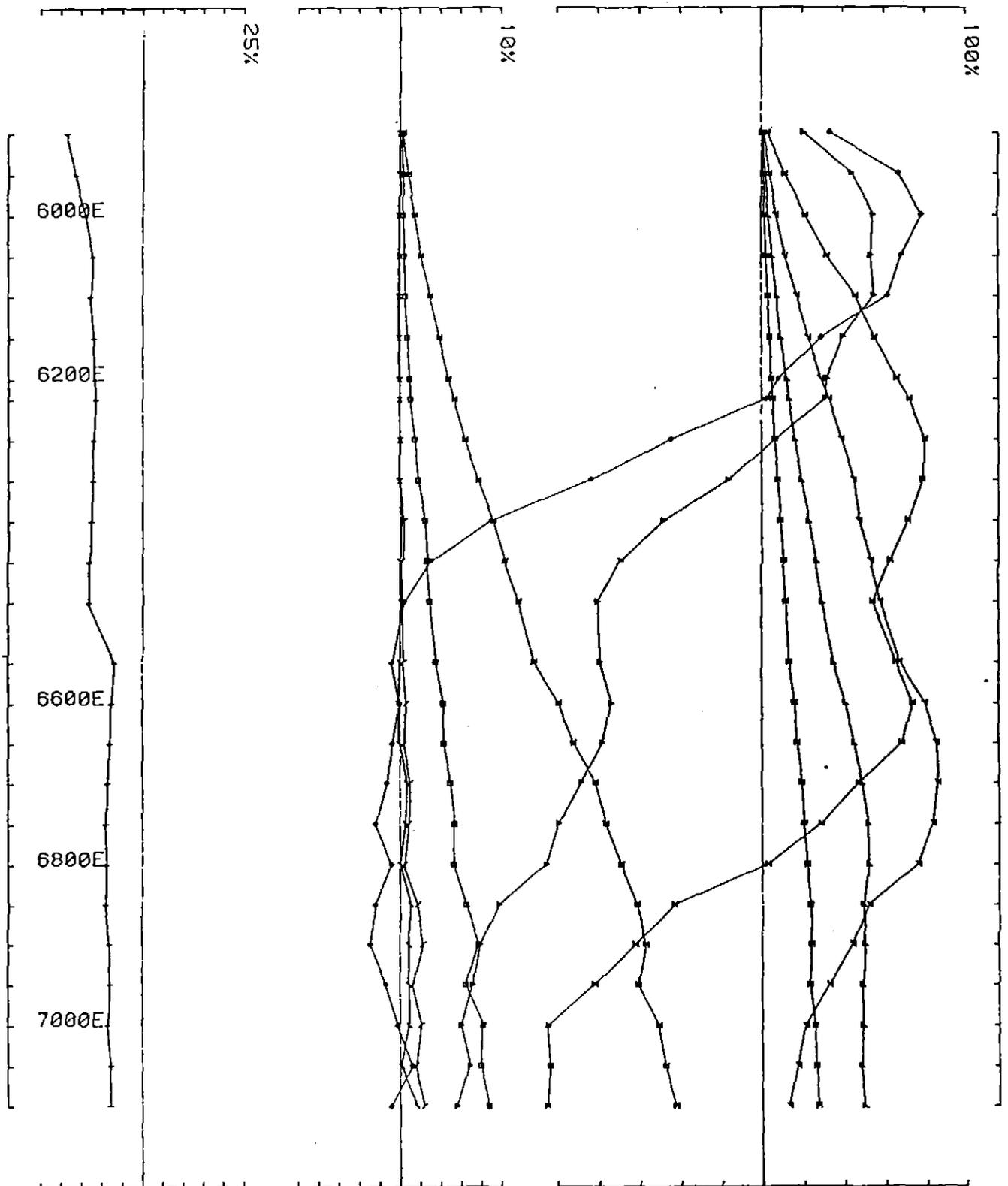
UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM job 8724 base freq (hz) 26.230

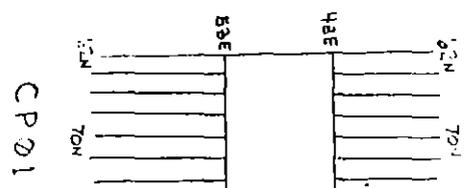
loop no 1 line 7400N component HZ secondary field Ch 1 contin. norm.

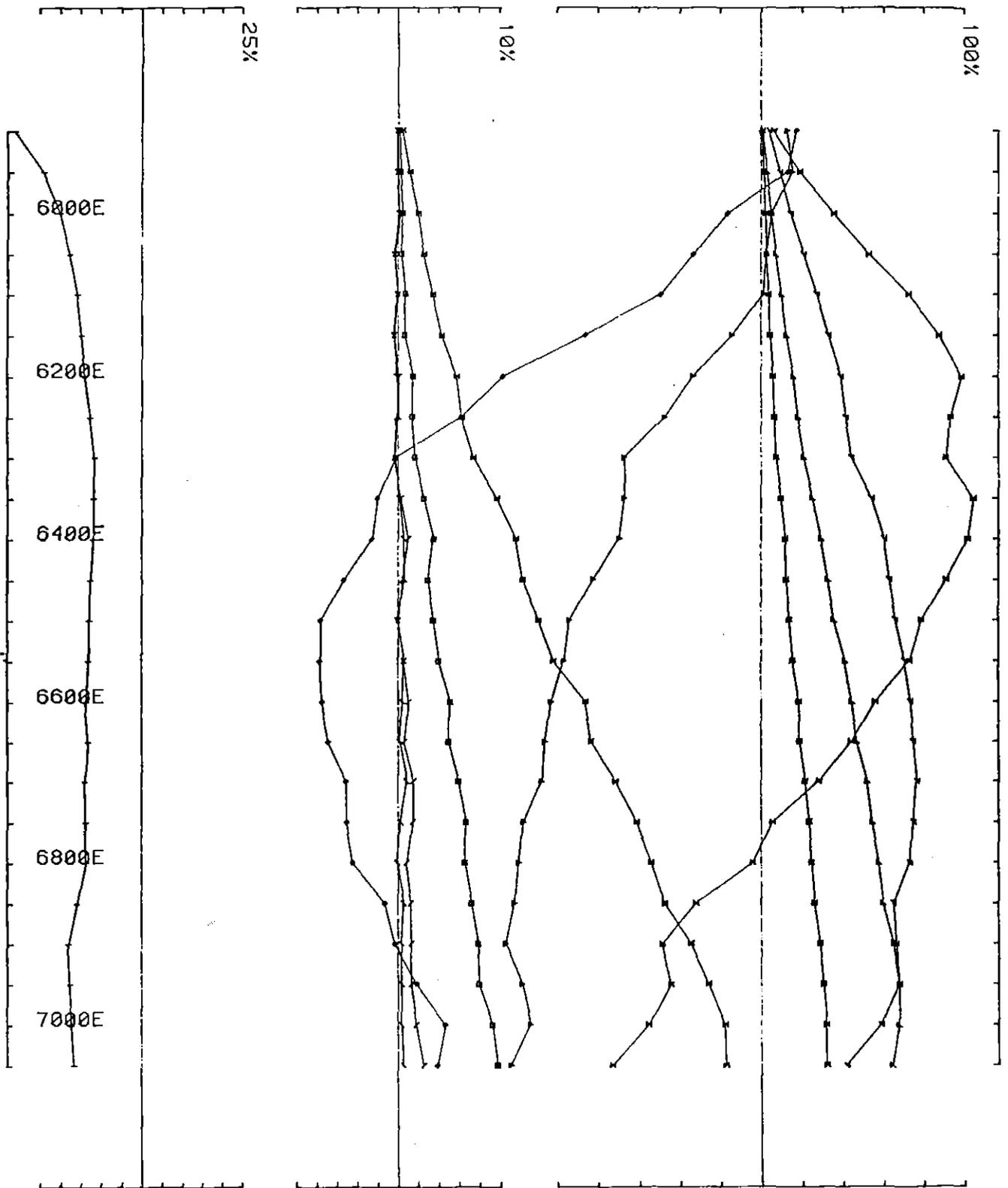


055



UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO PM Job 8724 base freq (hz) 26.230
 loop no 1 line 7600N component Hz secondary field Ch 1 contin. norm.

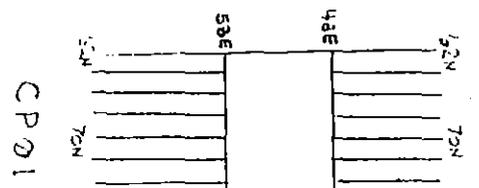




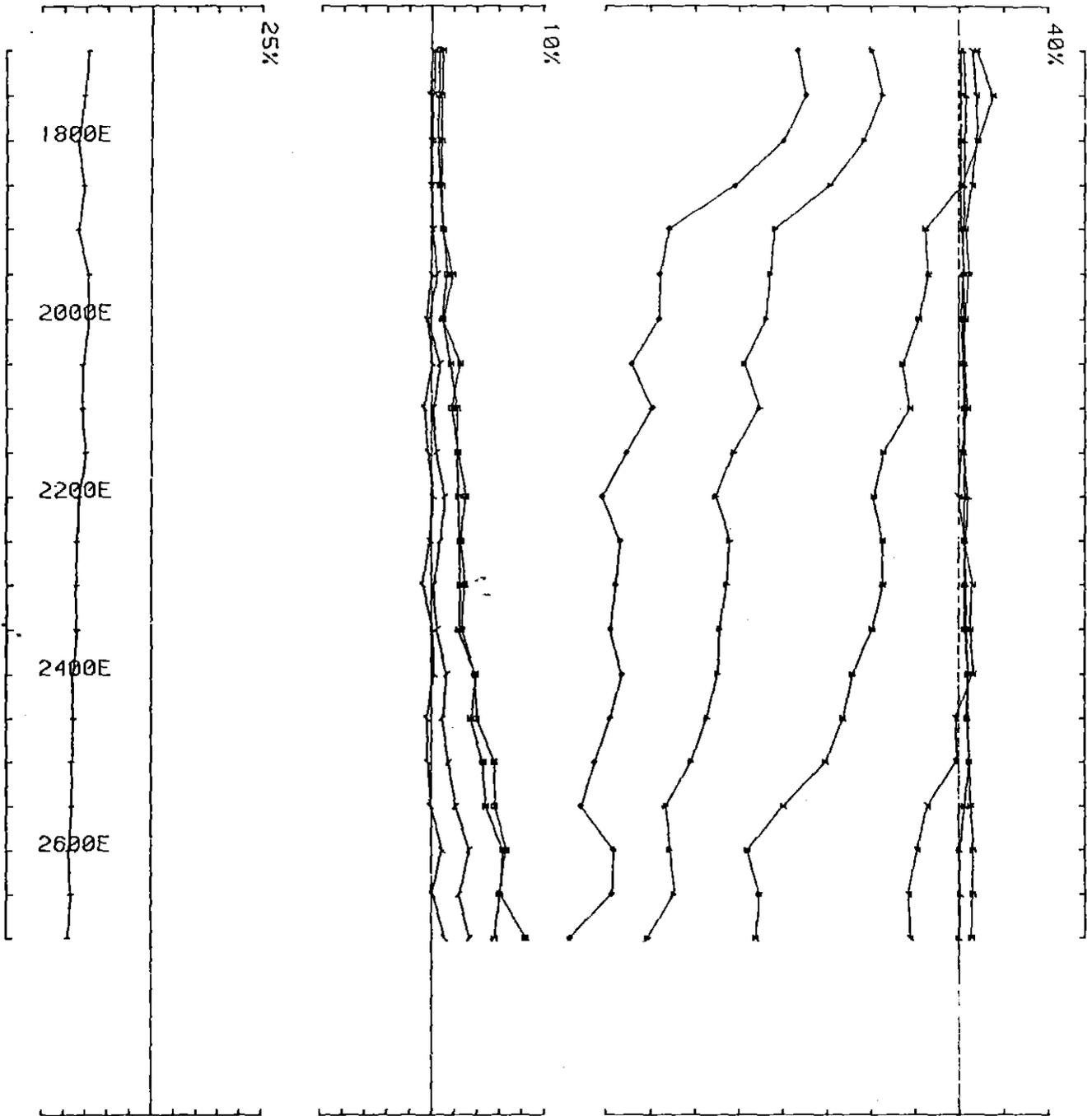
UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO PM job 8724 base freq (hz) 26.230

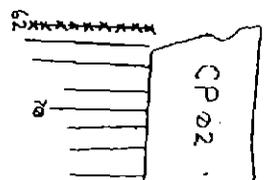
loop no 1 line 7800N component Hz secondary field Ch 1 contin. norm.

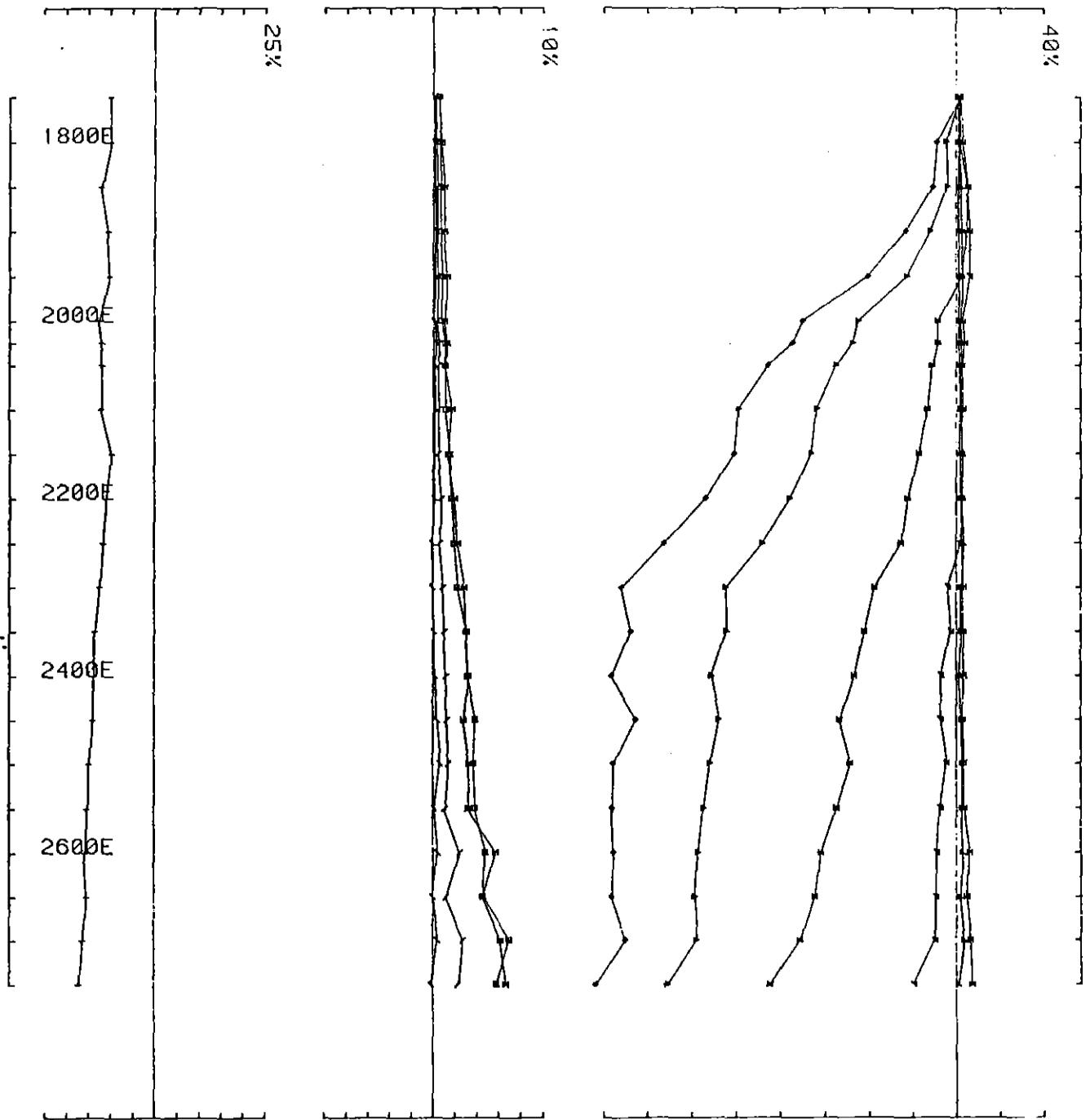


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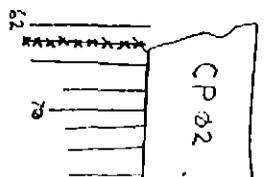


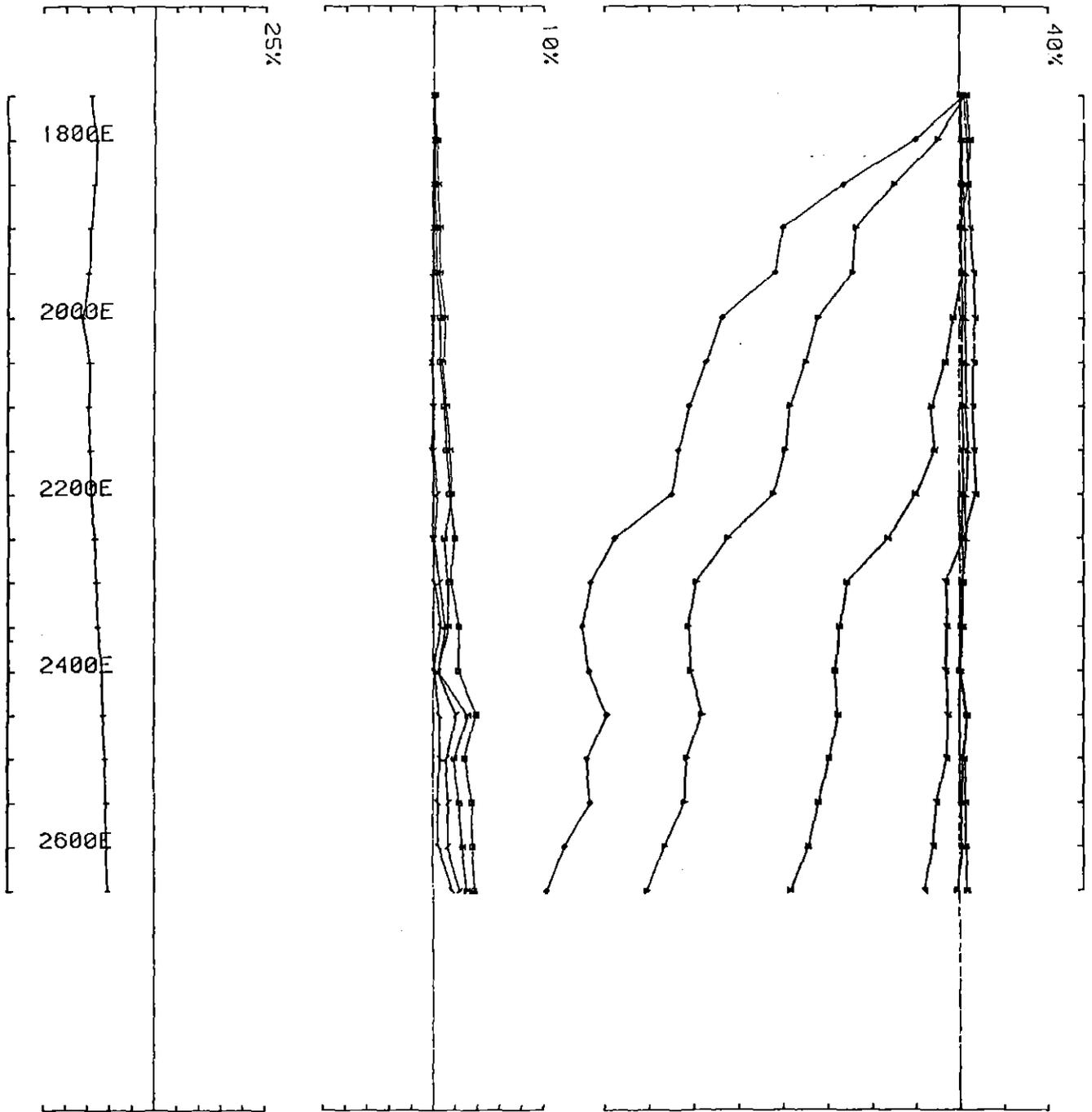
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230
 loop no 2 line 6200N component HZ secondary field Ch 1 contin. norm.



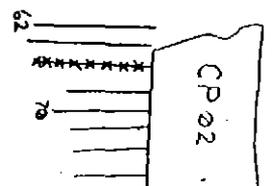


UTEM SURVEY at CHESTER-PINNACLES for B H P
conducted by HU PM PO job 8724 base freq (hz) 26.230
loop no 2 line 6400N component Hz secondary field Ch 1 contin. norm.

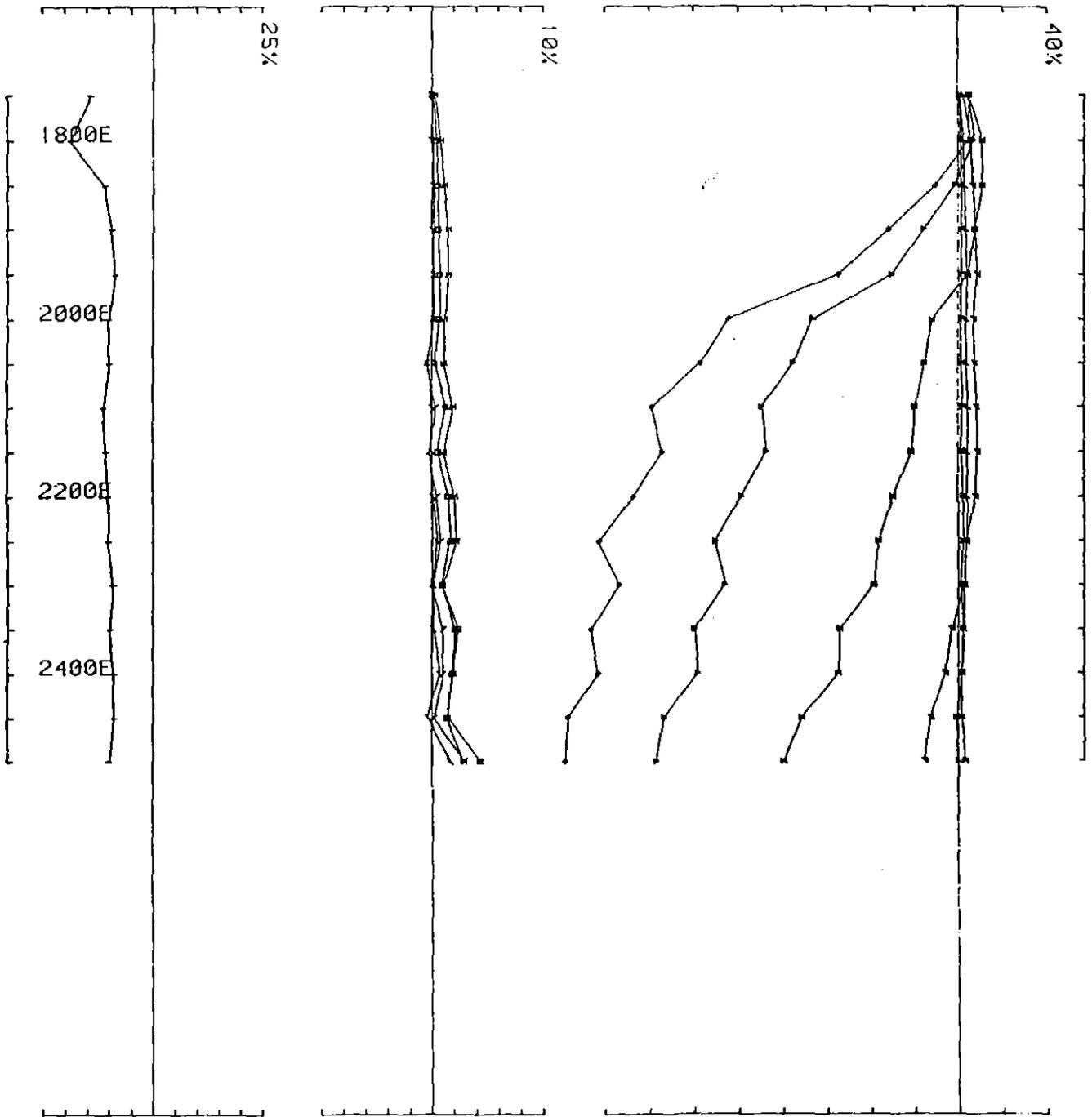




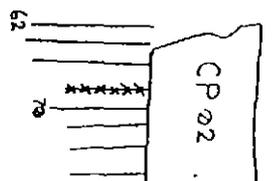
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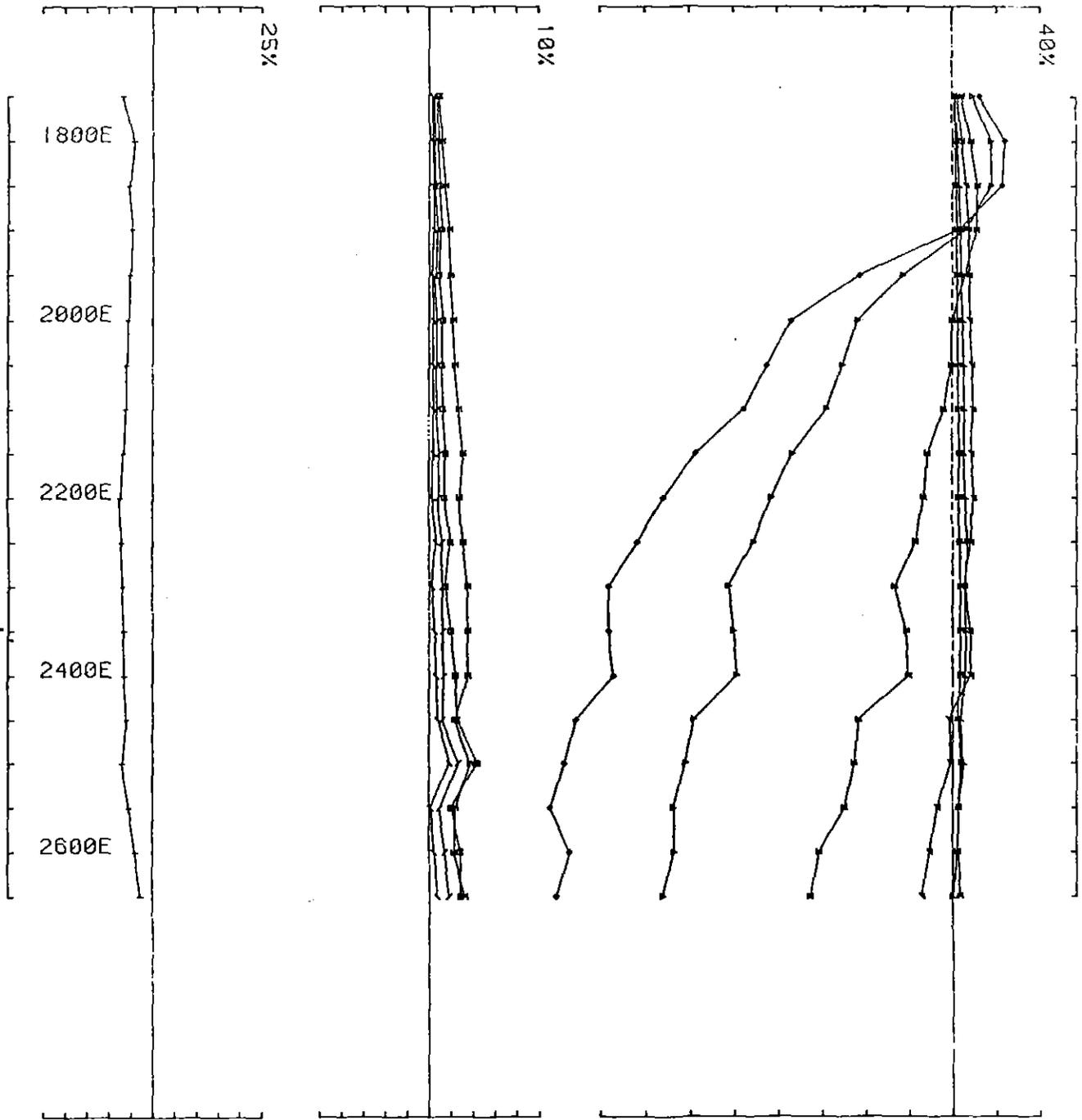


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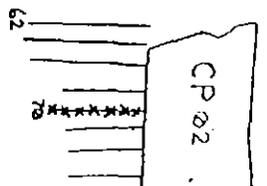


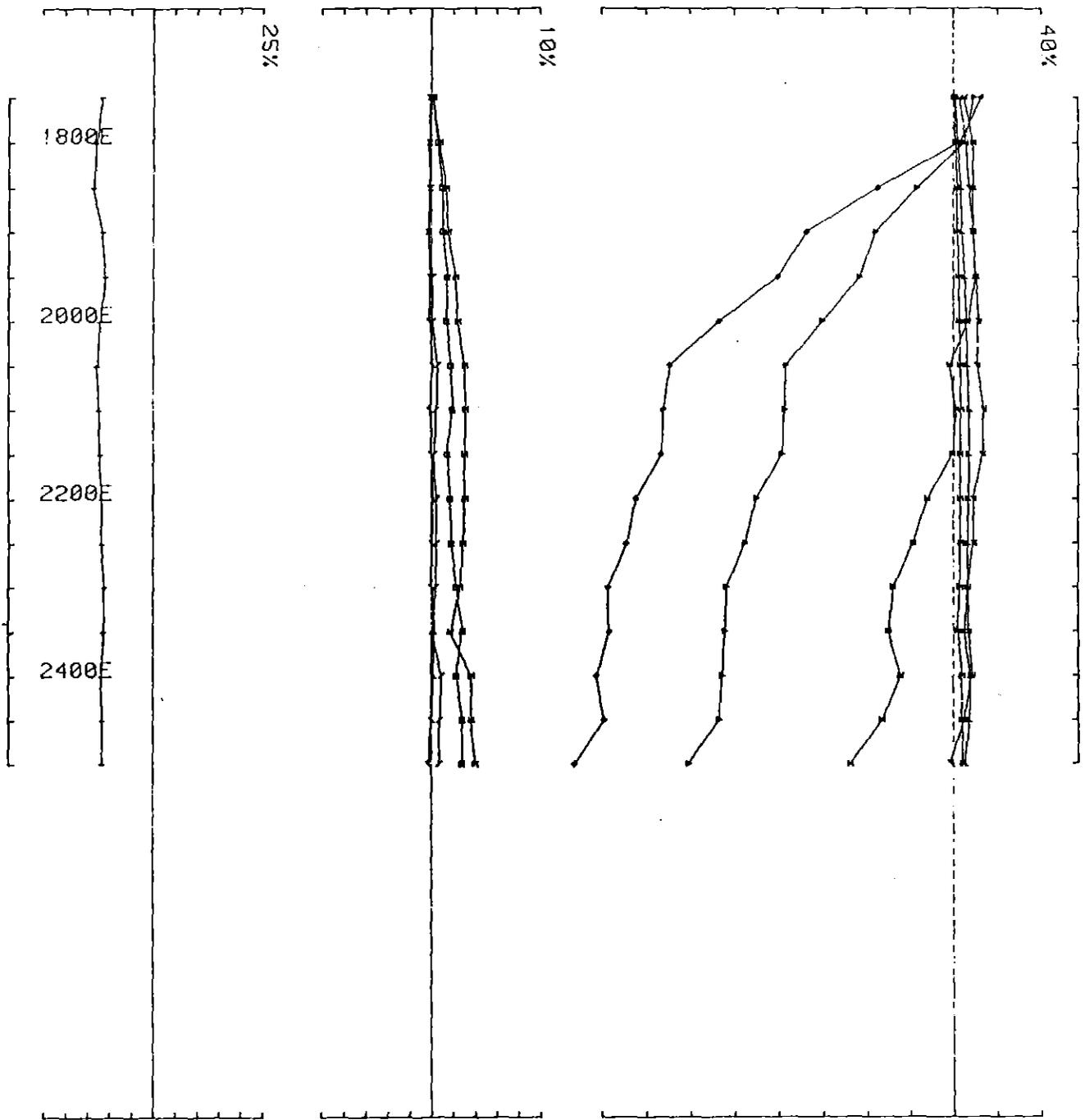
UTEM SURVEY at CHESTER-PINNACLES for B H P
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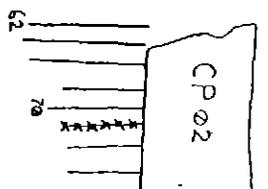


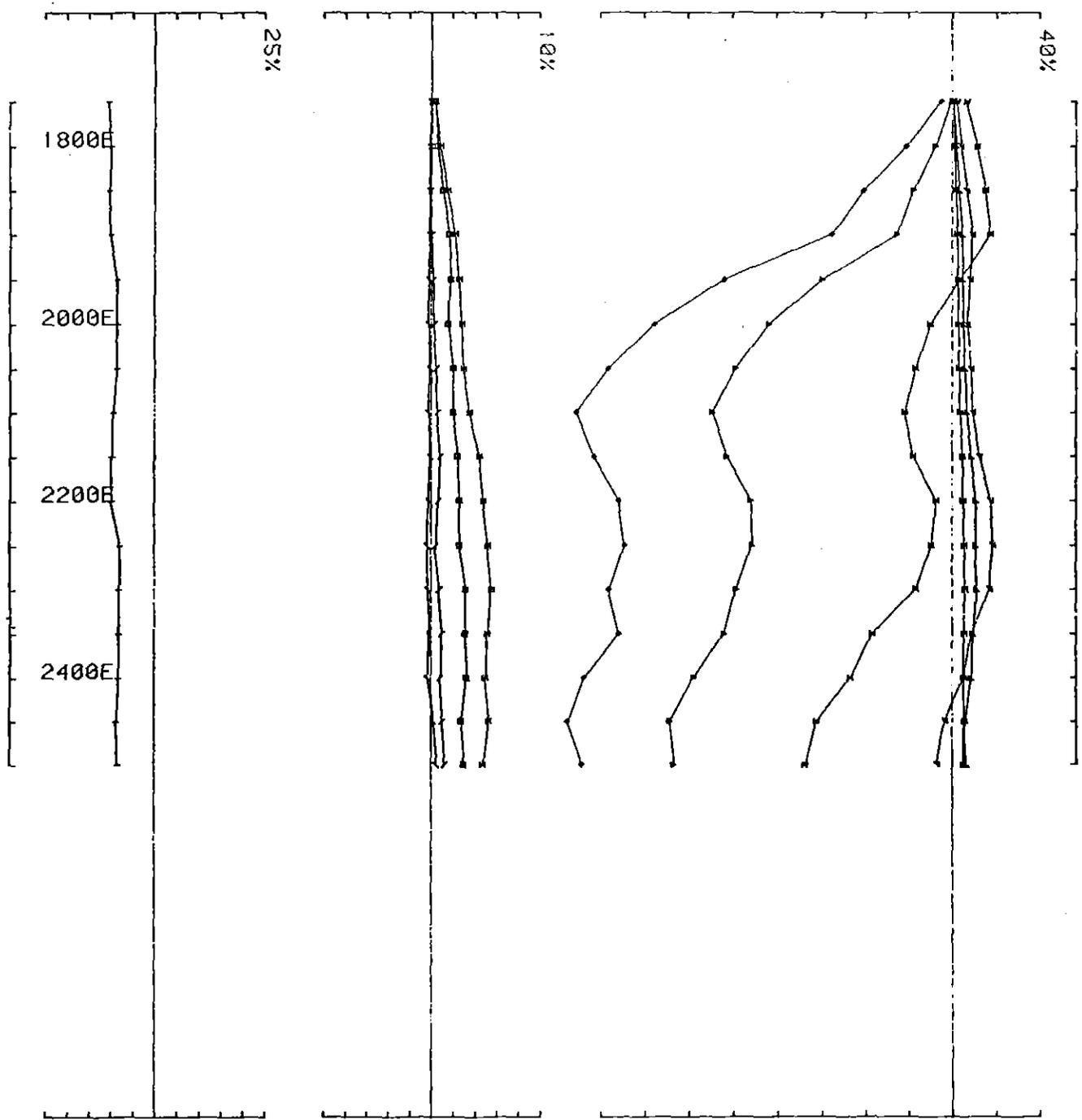
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230
 loop no 2 line 7000N component Hz secondary field Ch 1 contin. norm.



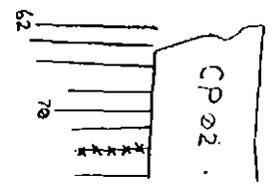


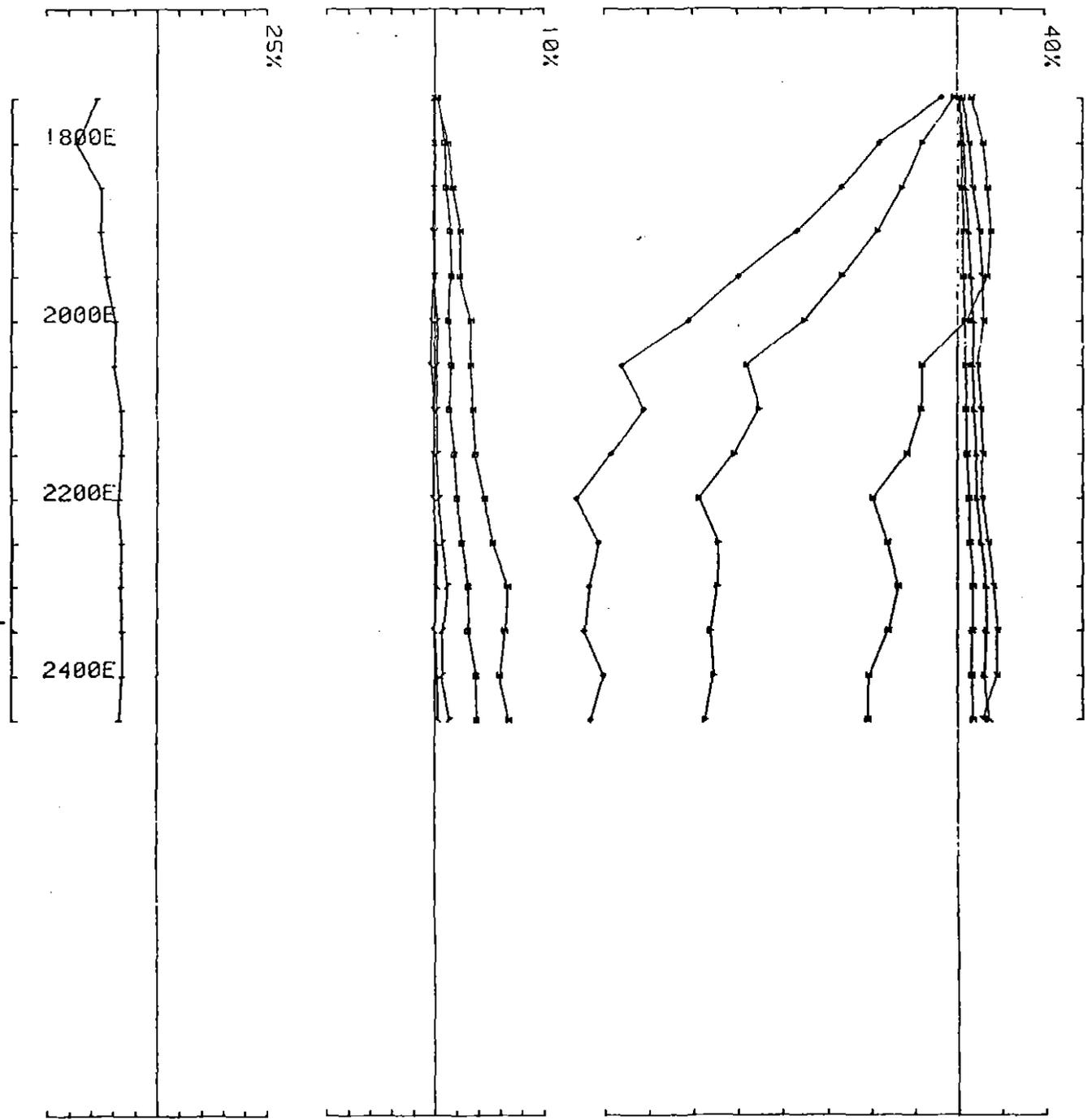
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230
 loop no 2 line 7200N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230
 loop no 2 line 7400N component Hz secondary field Ch 1 contin. norm.

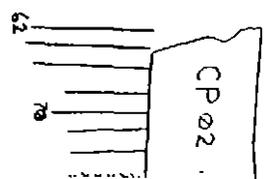


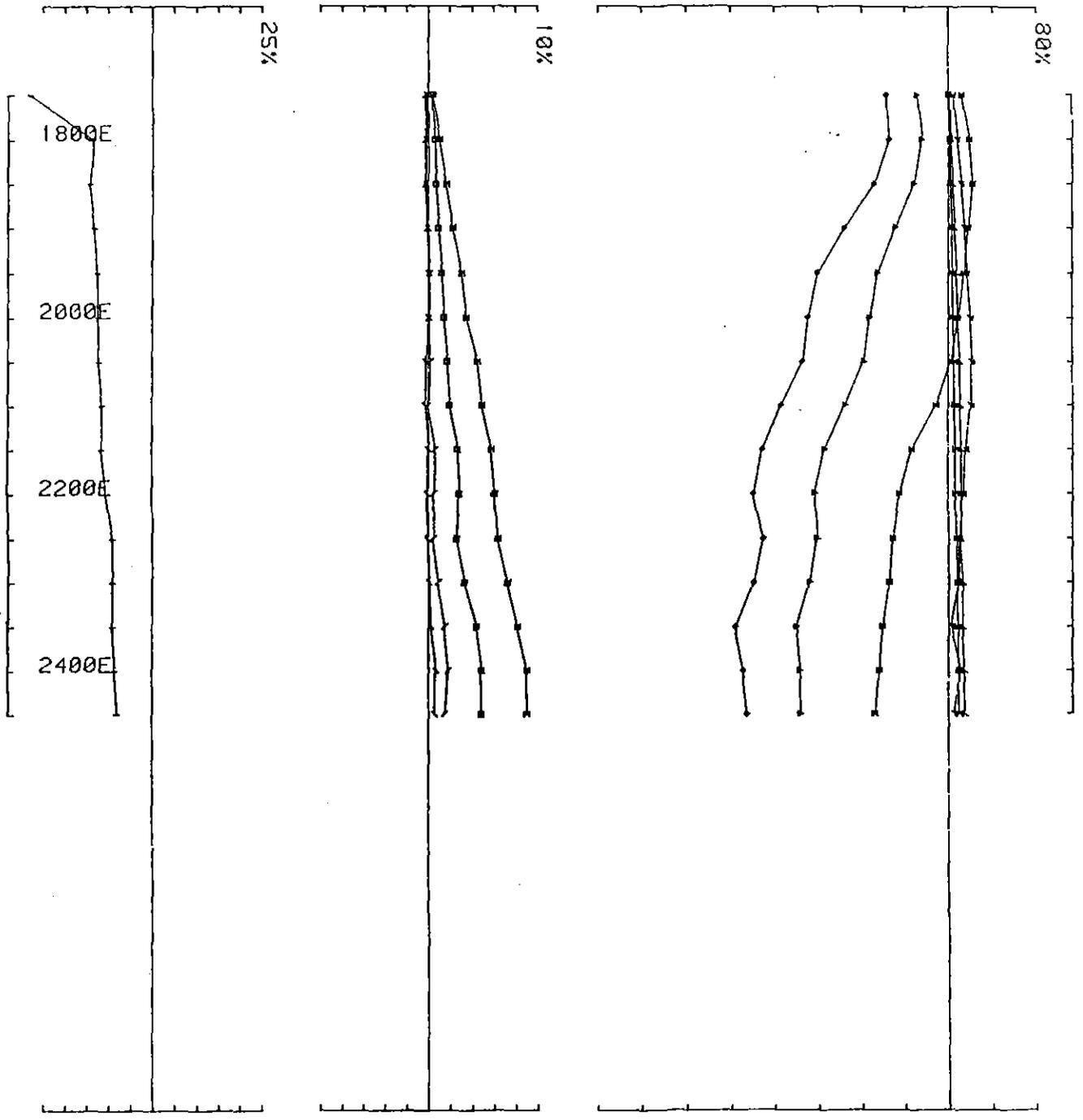


UTEM SURVEY at CHESTER-PINNACLES for B H P

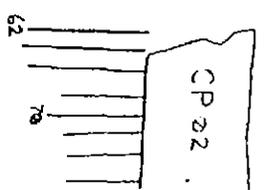
conducted by HU PM PO job 8724 base freq (hz) 26.230

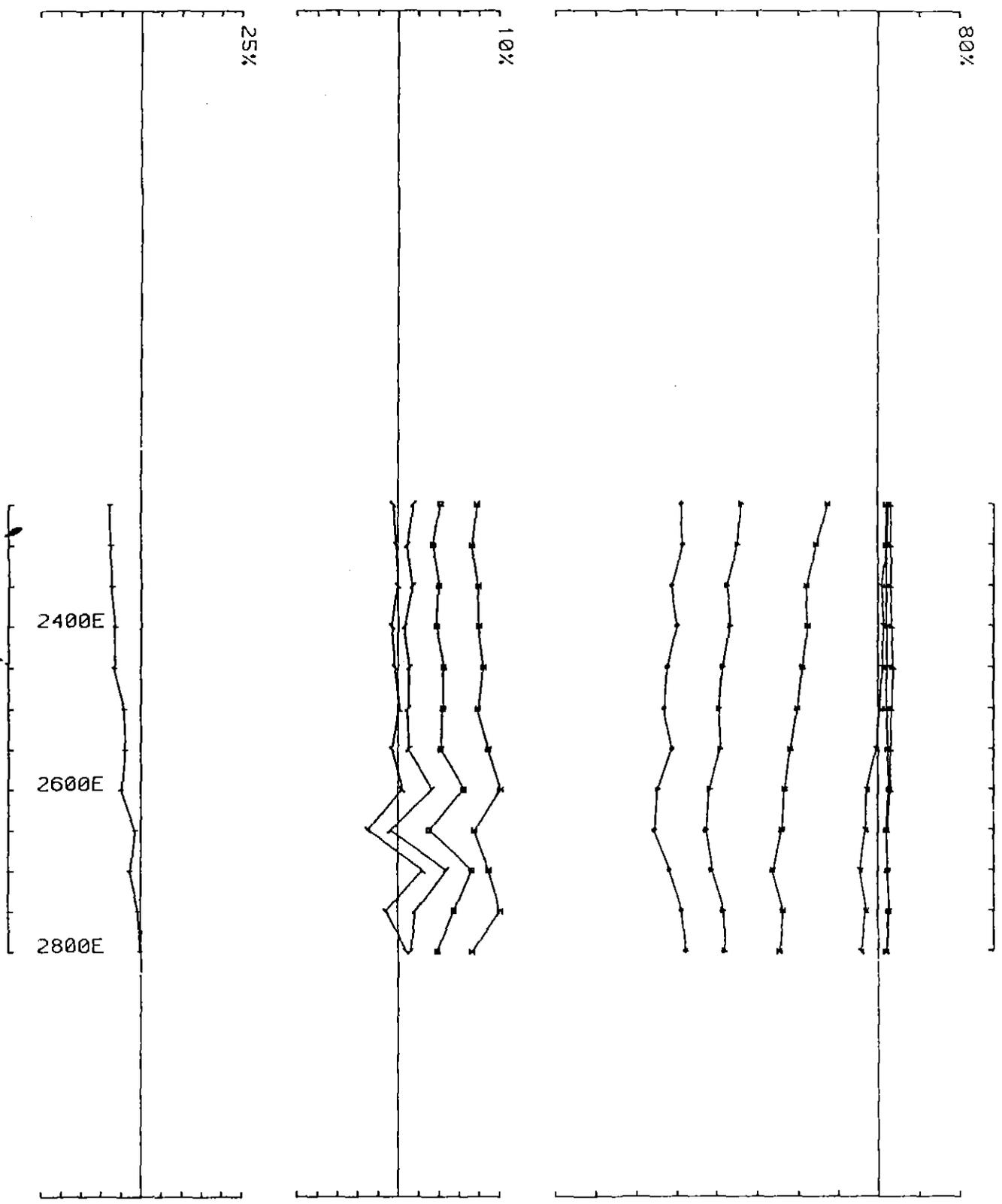
loop no 2 line 7600N component Hz secondary field Ch 1 contin. norm.



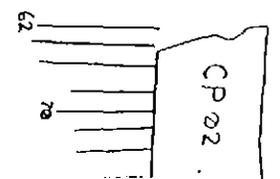


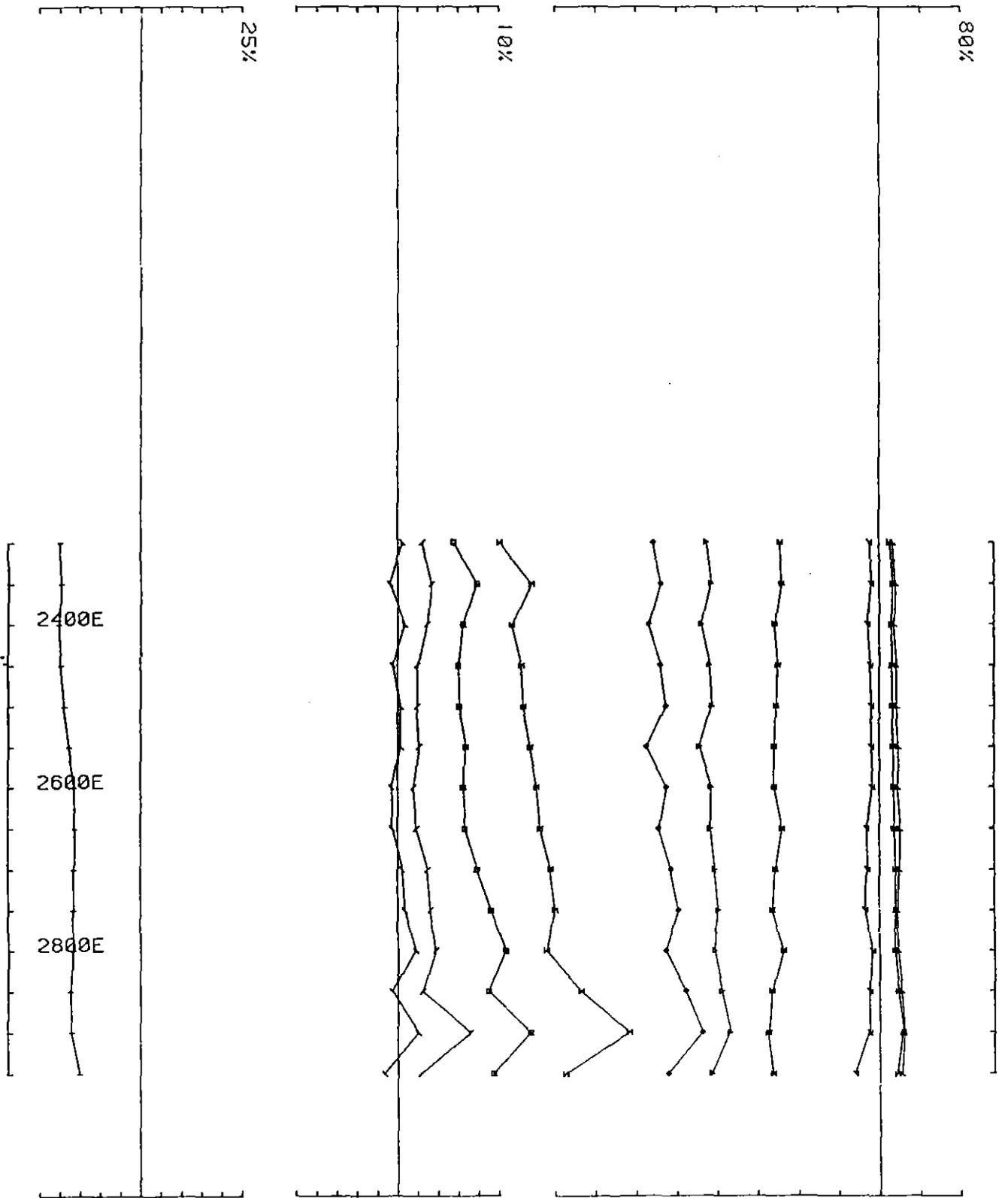
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230 ** TOP AXIS SCALE **
 loop no 2 line 7800N component Hz secondary field Ch 1 contin. norm.



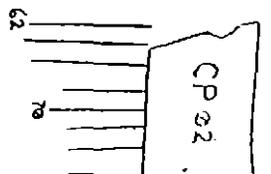


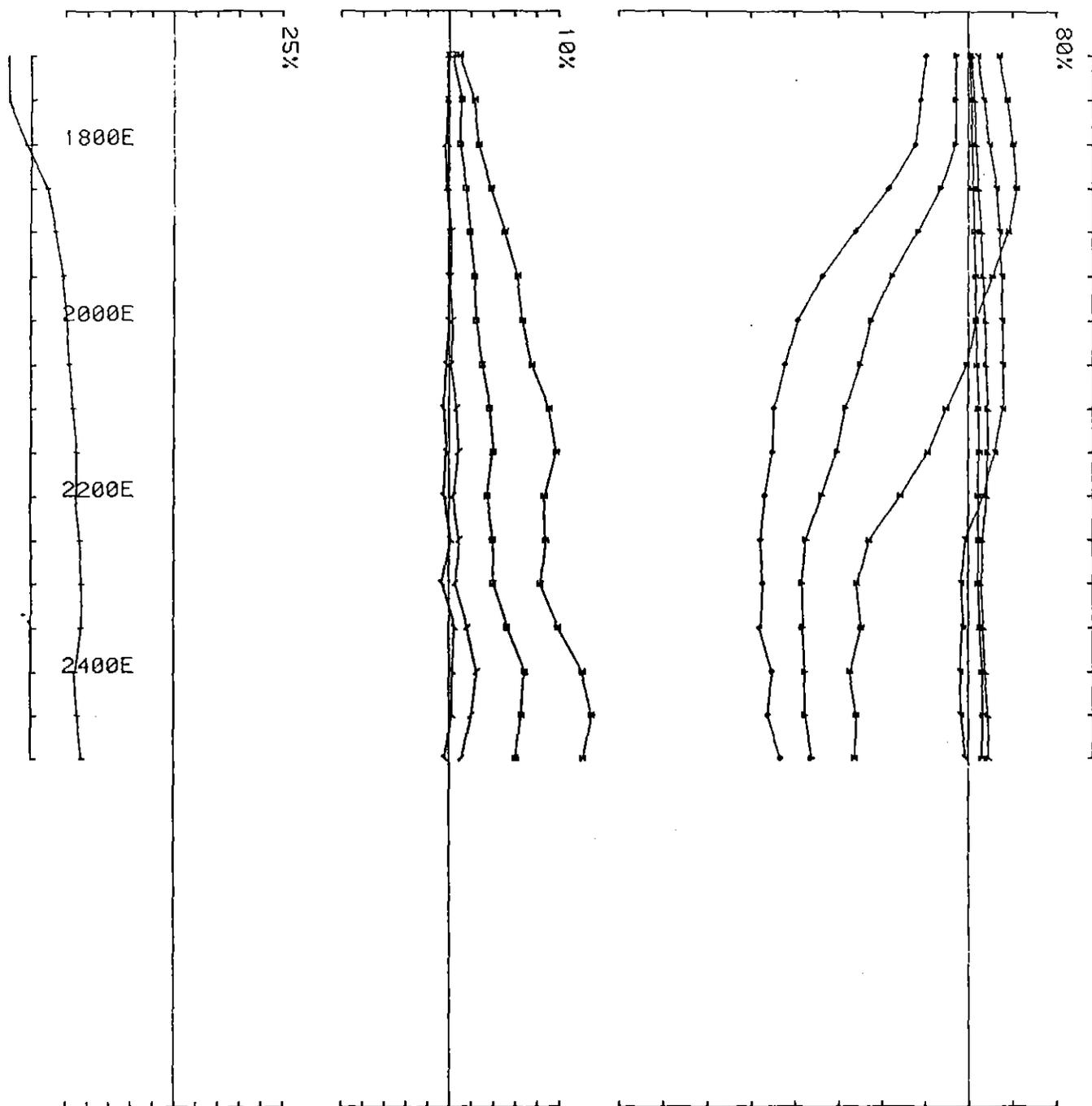
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230 ** TOP AXIS SCALE **
 loop no 2 line 7800N component Hz secondary field Ch 1 contin. norm.





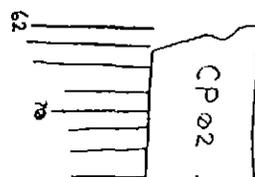
UTEM SURVEY at CHESTER-PINNACLES for B H P
 conducted by HU PM PO job 8724 base freq (hz) 26.230 ** TOP AXIS SCALE **
 loop no 2 line 8000N component Hz secondary field Ch 1 contin. norm.

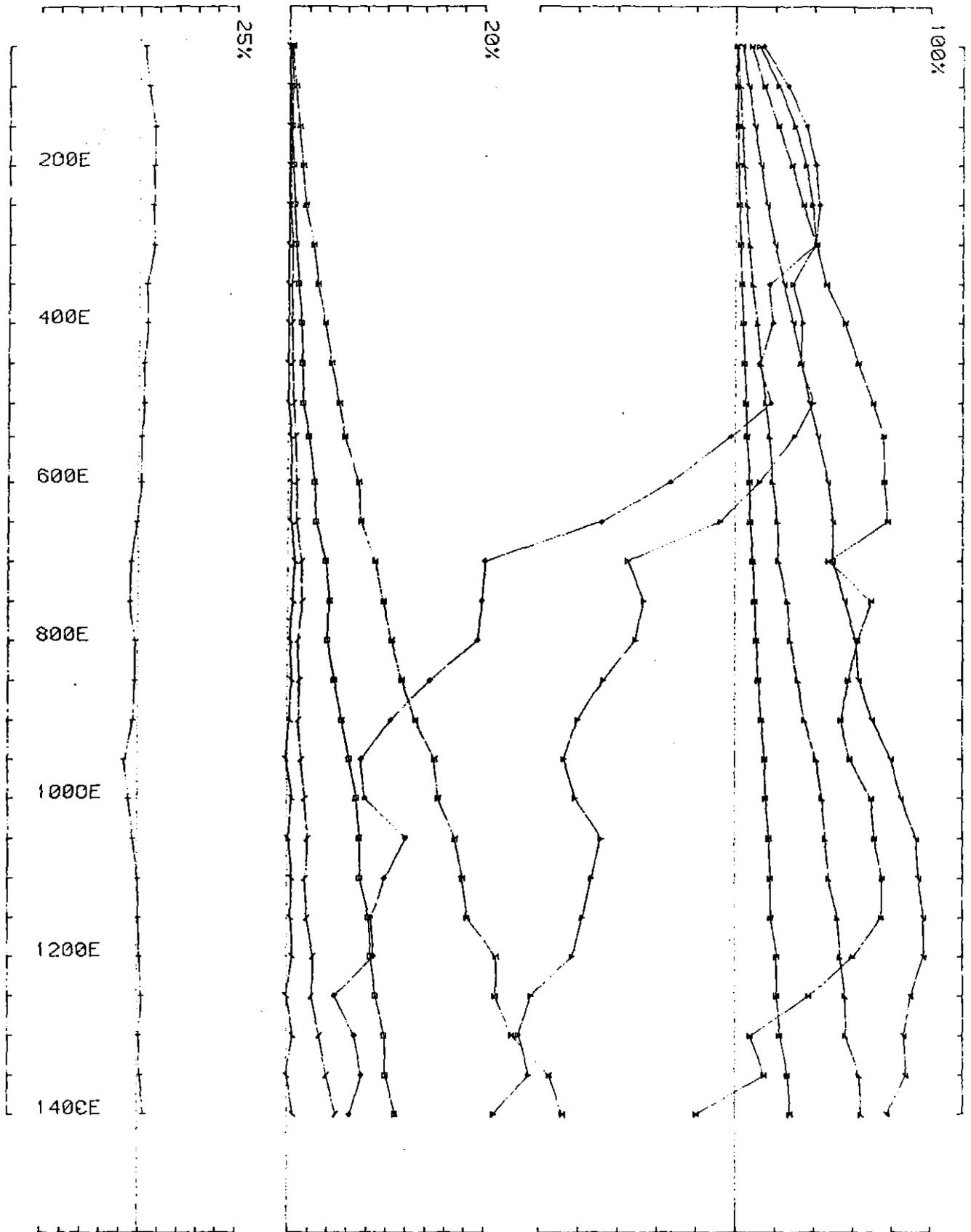




UTEM SURVEY at CHESTER-PINNACLES for B H P

conducted by HU PM PO job 8724 base freq (hz) 26.230 ** TOP AXIS SCALE **
 loop no 2 line 8000N component Hz secondary field Ch 1 contin. norm.



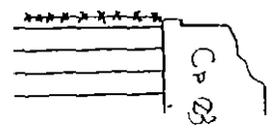


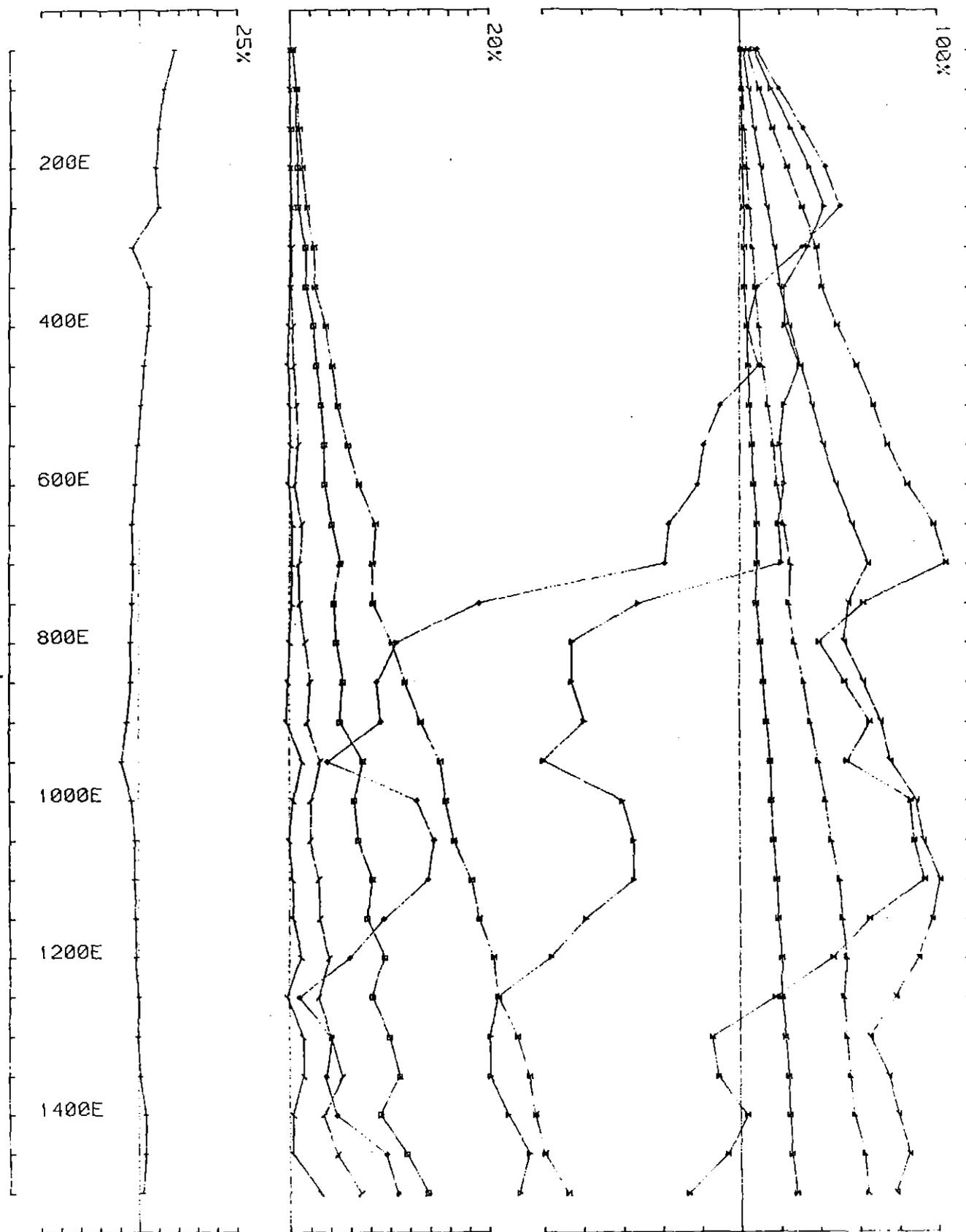
UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO DL job 8724 base freq (hz) 25.230

loop no 3 line 38505 component Hz secondary field Ch 1 contin. norm.

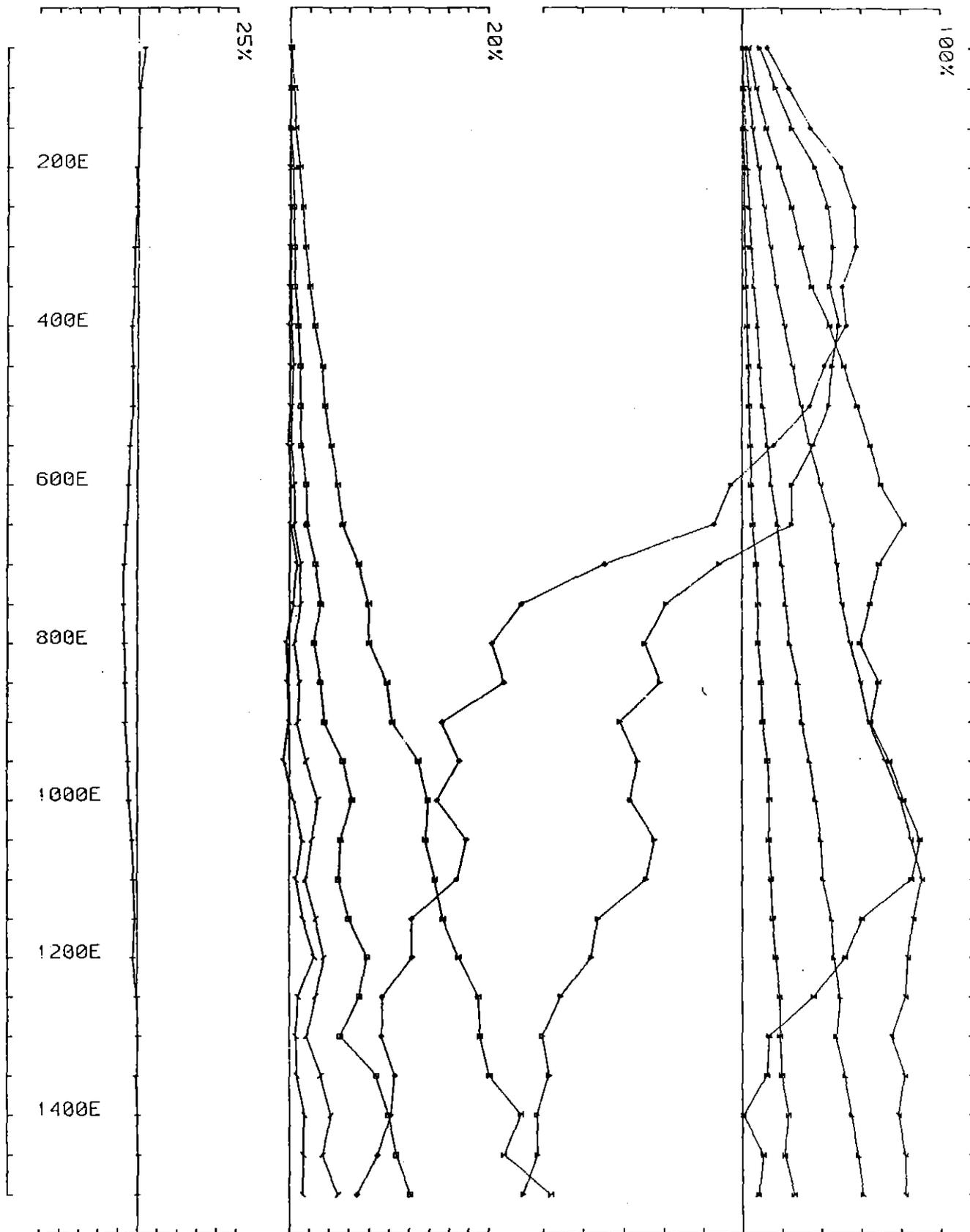
2





UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PJ DL Job 8724 base freq (hz) 23.230
 loop no 3 line 3750S component Hz secondary field Ch 1 contin. norm.

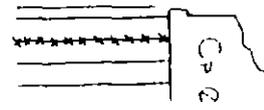


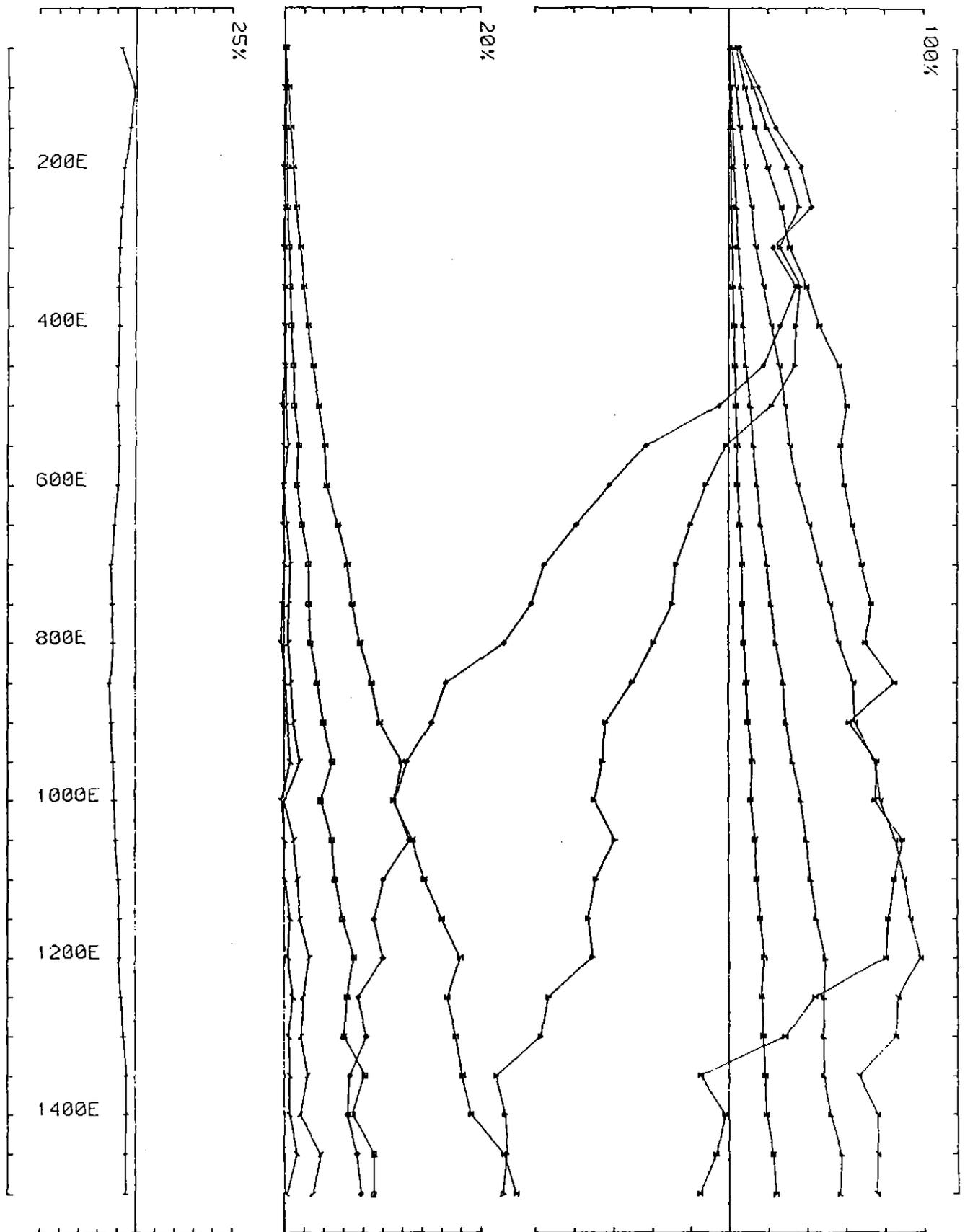


UTEM SURVEY at CHESTER PINNACLES for B H P

conducted by HU PO DL job 8724 base freq (hz) 26.230

loop no 3 line 3550S component Hz secondary field Ch 1 contin. norm.

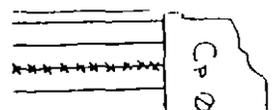


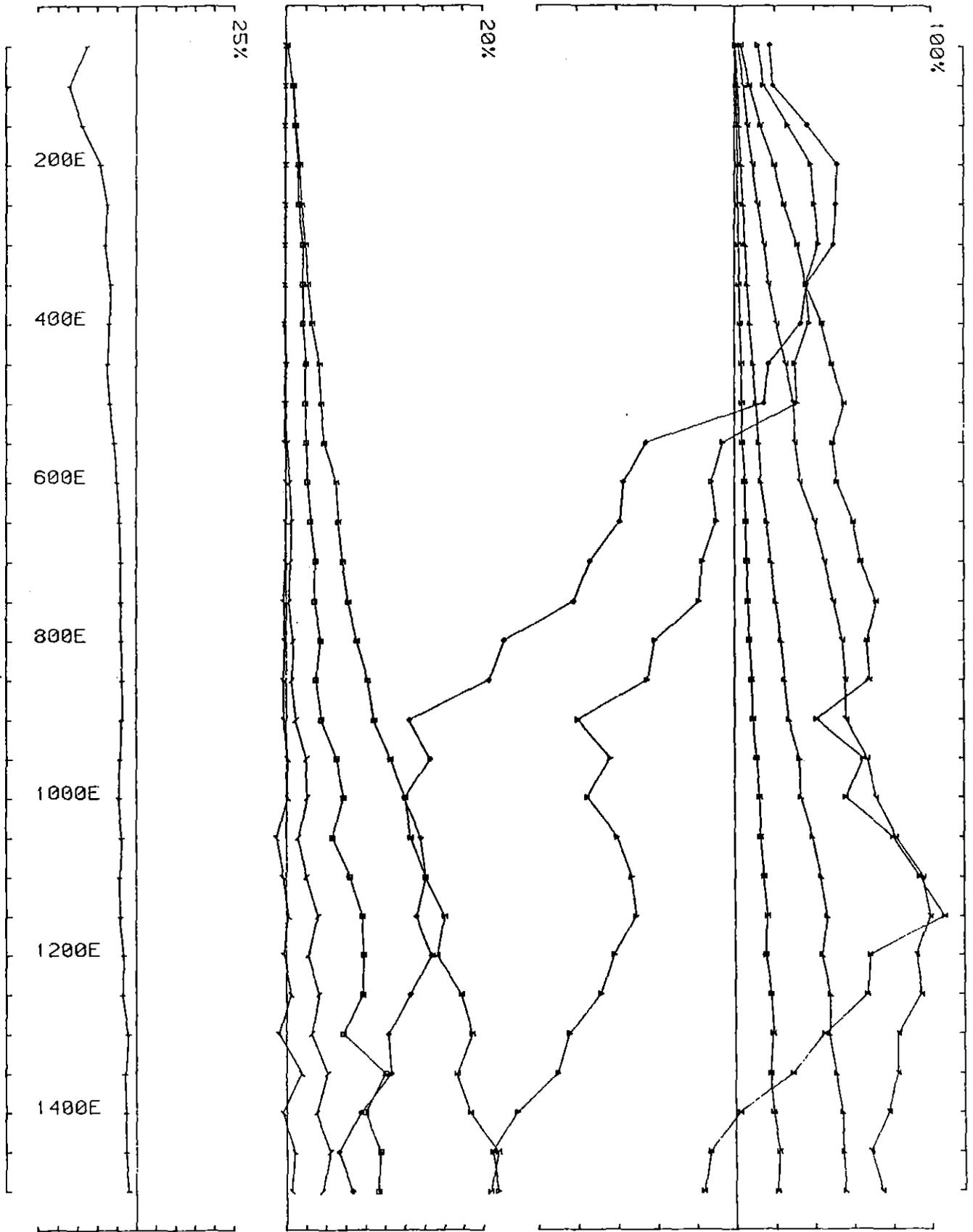


UTEM SURVEY at CHESTER PINNACLES for B H P

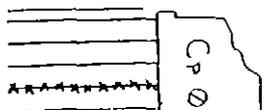
conducted by HU PO DL job 8724 base freq (hz) 26.230

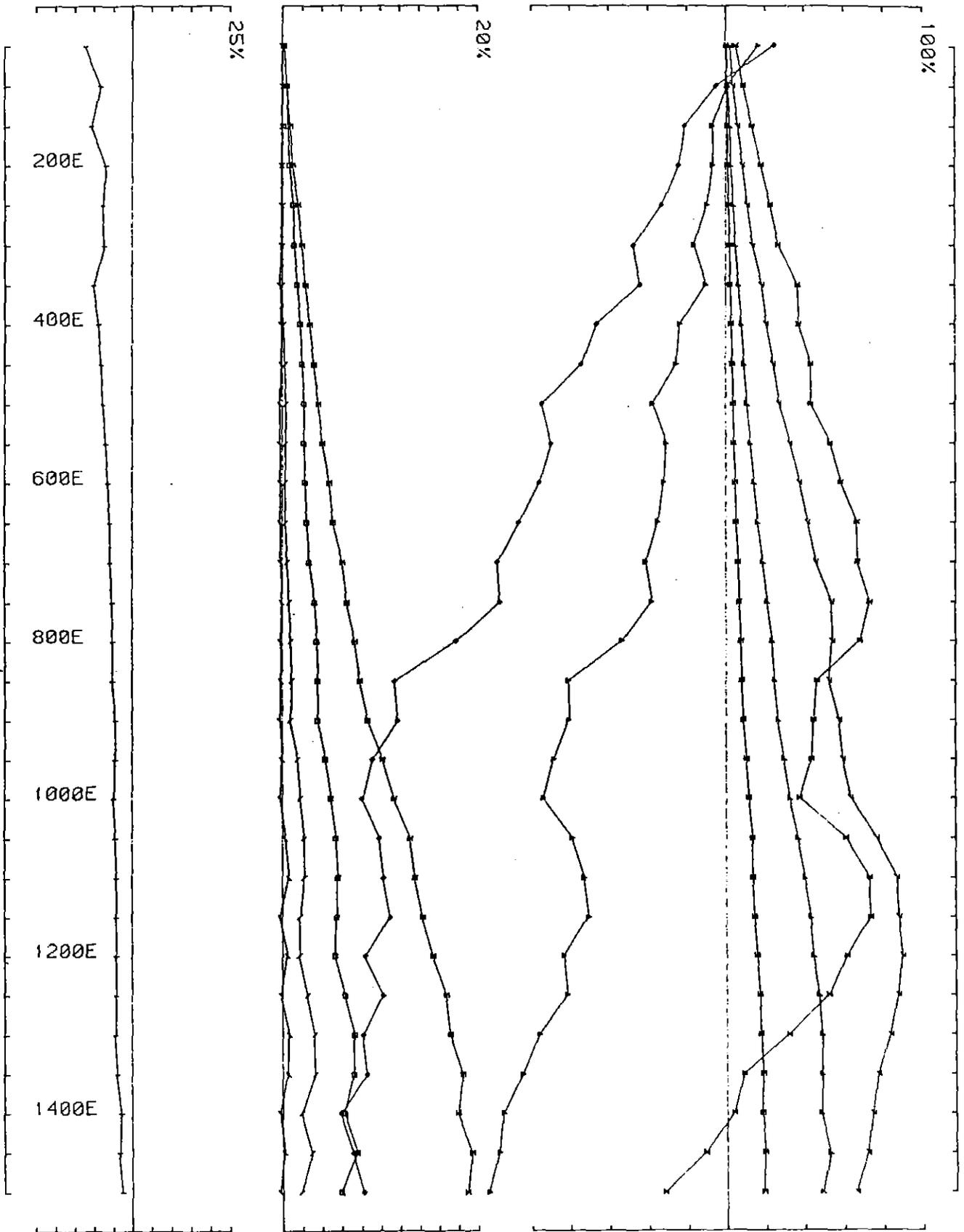
loop no 3 line 3350S component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU PO DL job 8724 base freq (hz) 26.230
 loop no 3 line 3150S component HZ secondary field Ch 1 contin. norm.



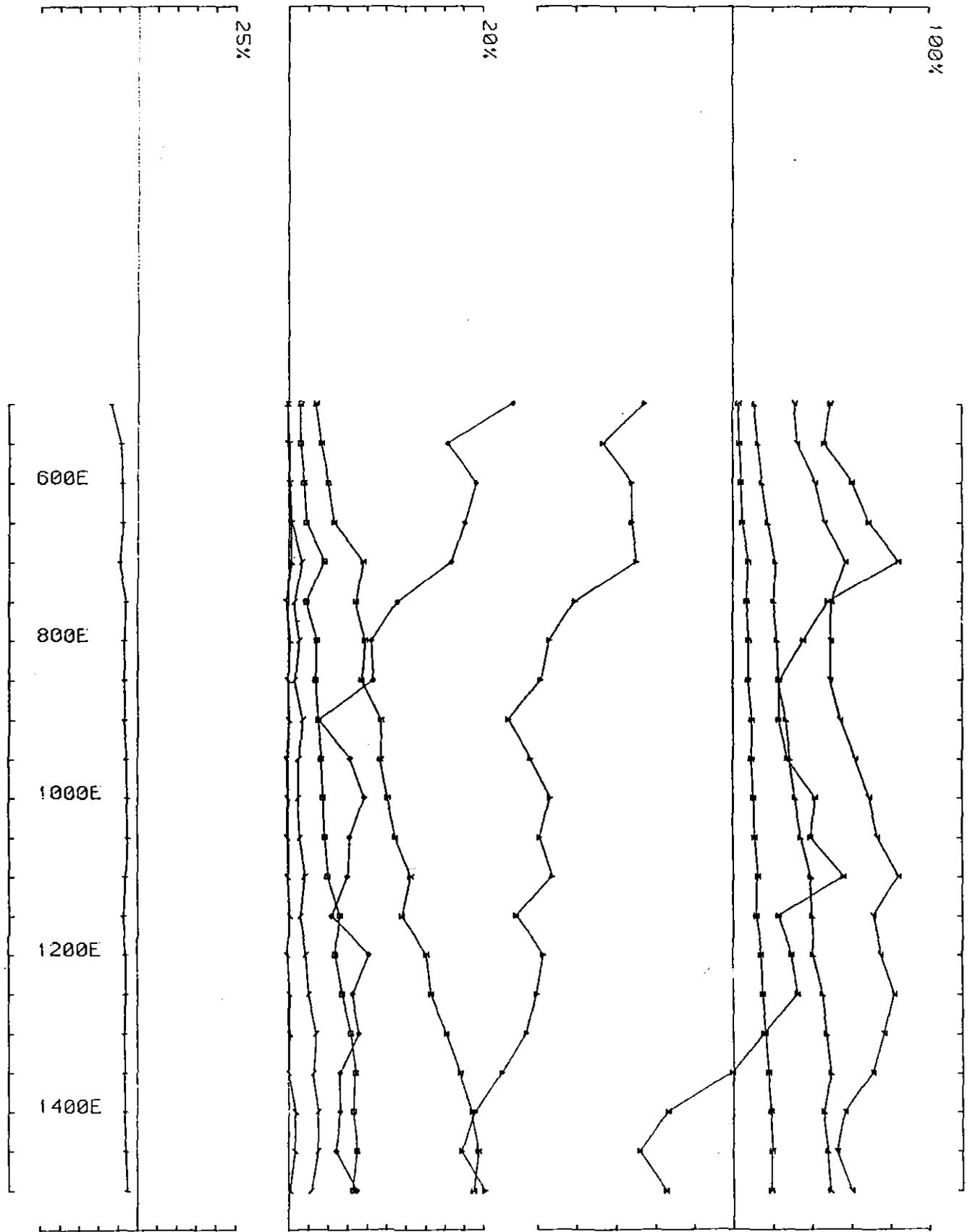


UTEM SURVEY at CHESTER PINNACLES for B H P

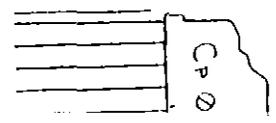
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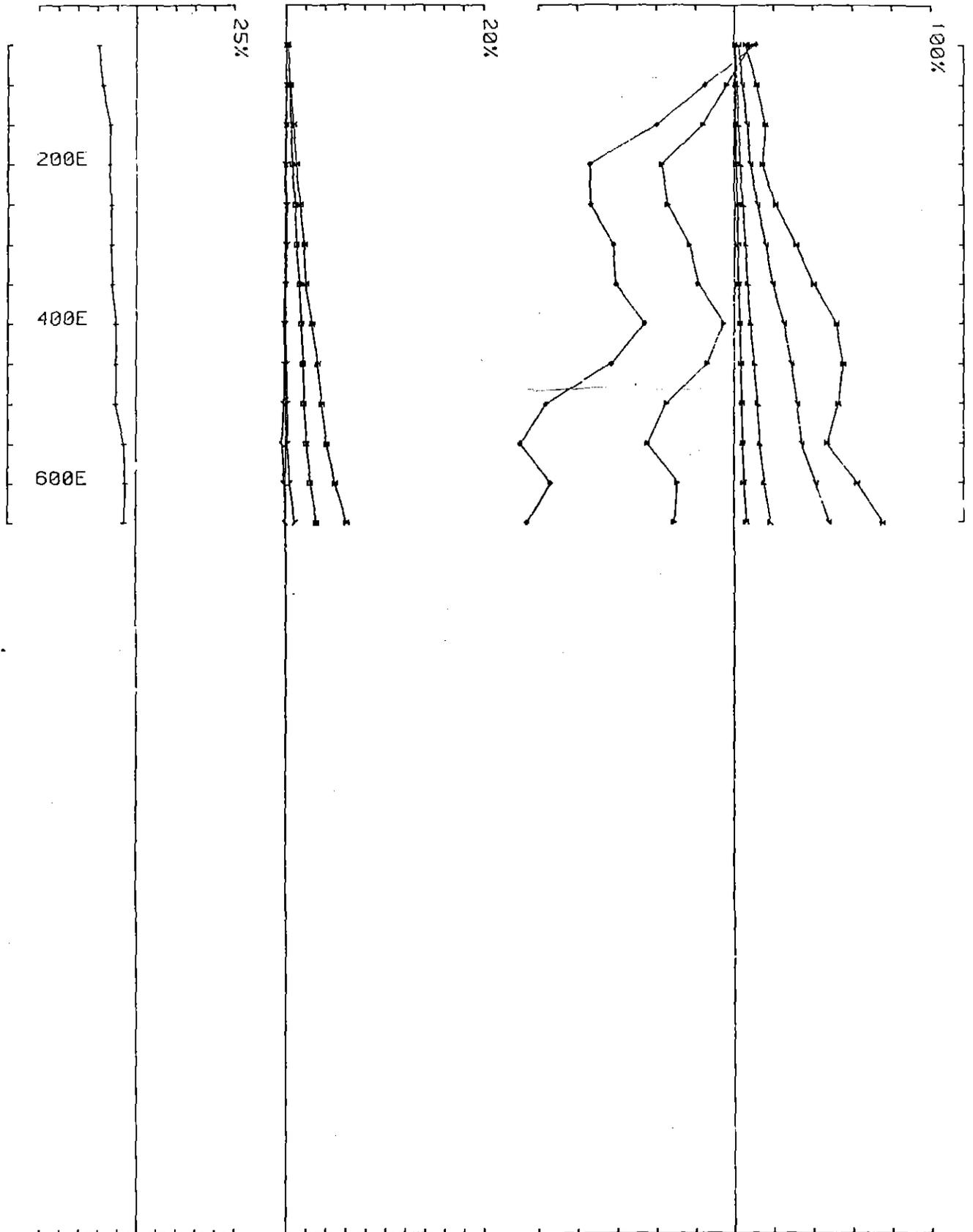
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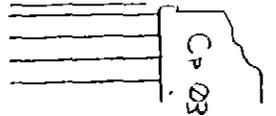


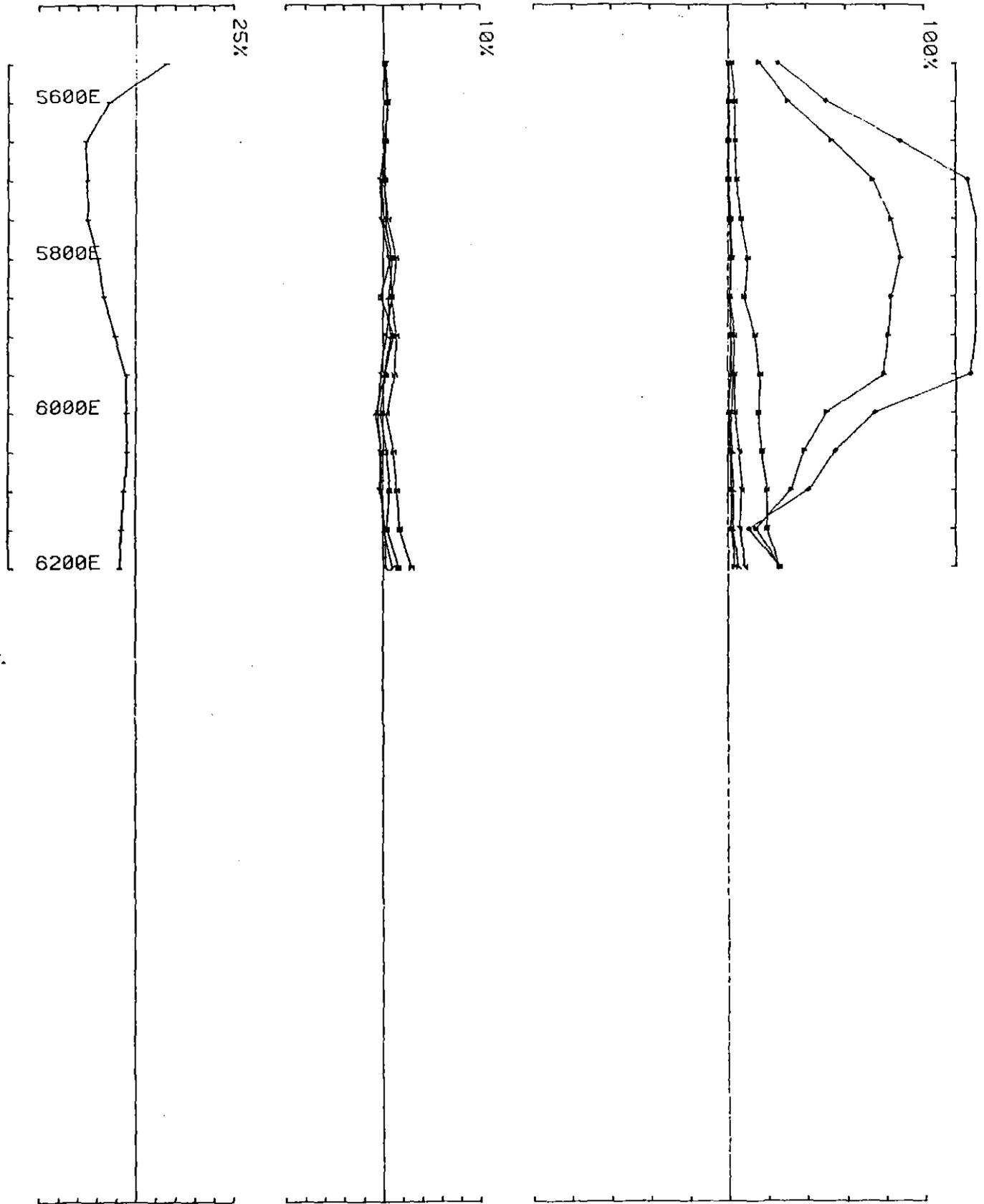
UTEM SURVEY at CHESTER PINNACLES for B H P
conducted by HU PO DL job 8724 base freq (hz) 26.230
loop no 3 line 2750S component Hz secondary field Ch 1



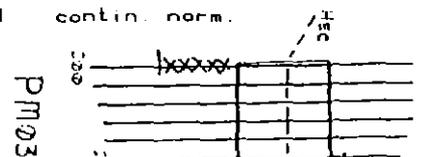


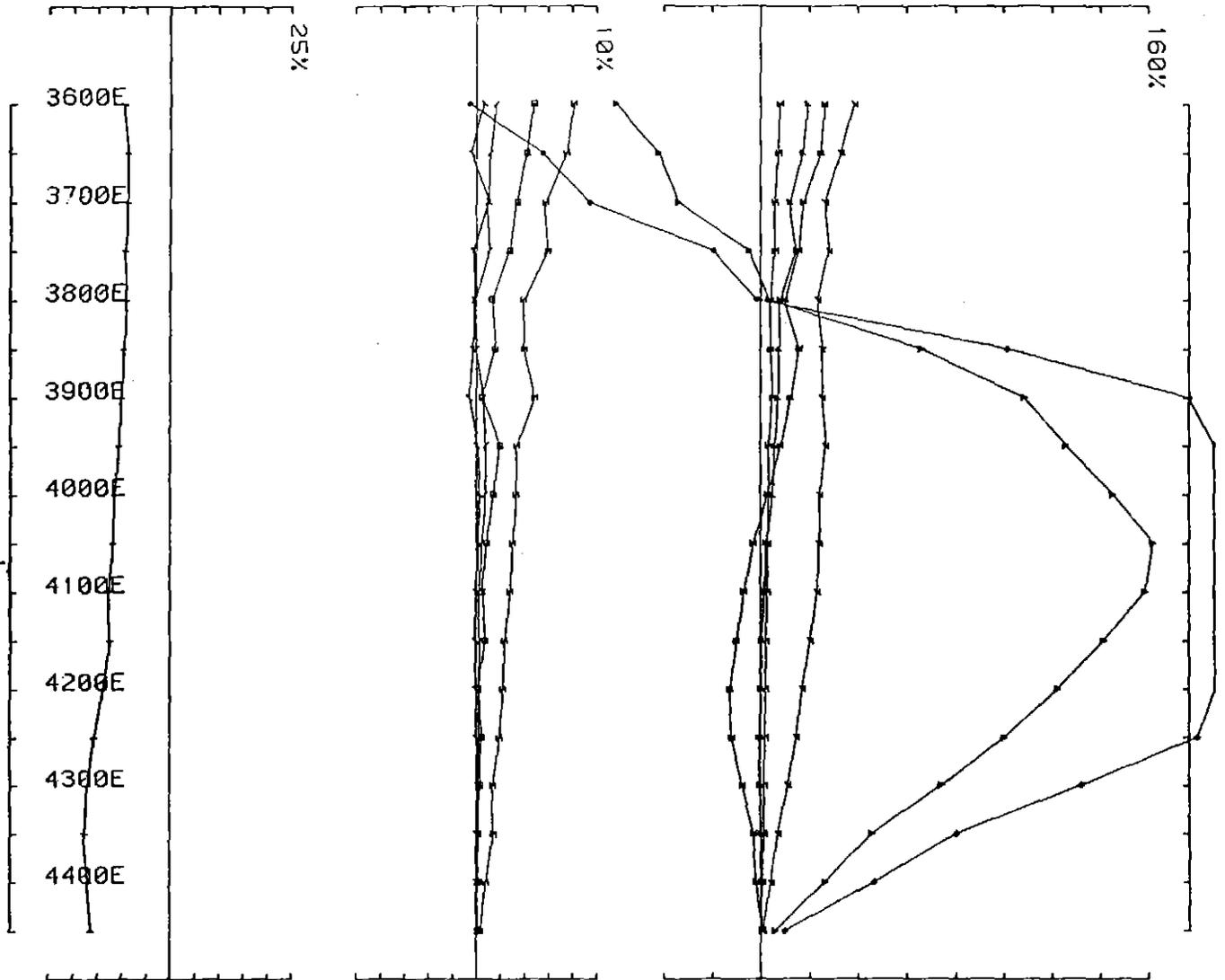
UTEM SURVEY at CHESTER PINNACLES for B H P
 conducted by HU P0 DL job 8724 base freq (hz) 26.230
 loop no 3 line 2750S component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20000N component Hz secondary field Ch 1 contin. norm.



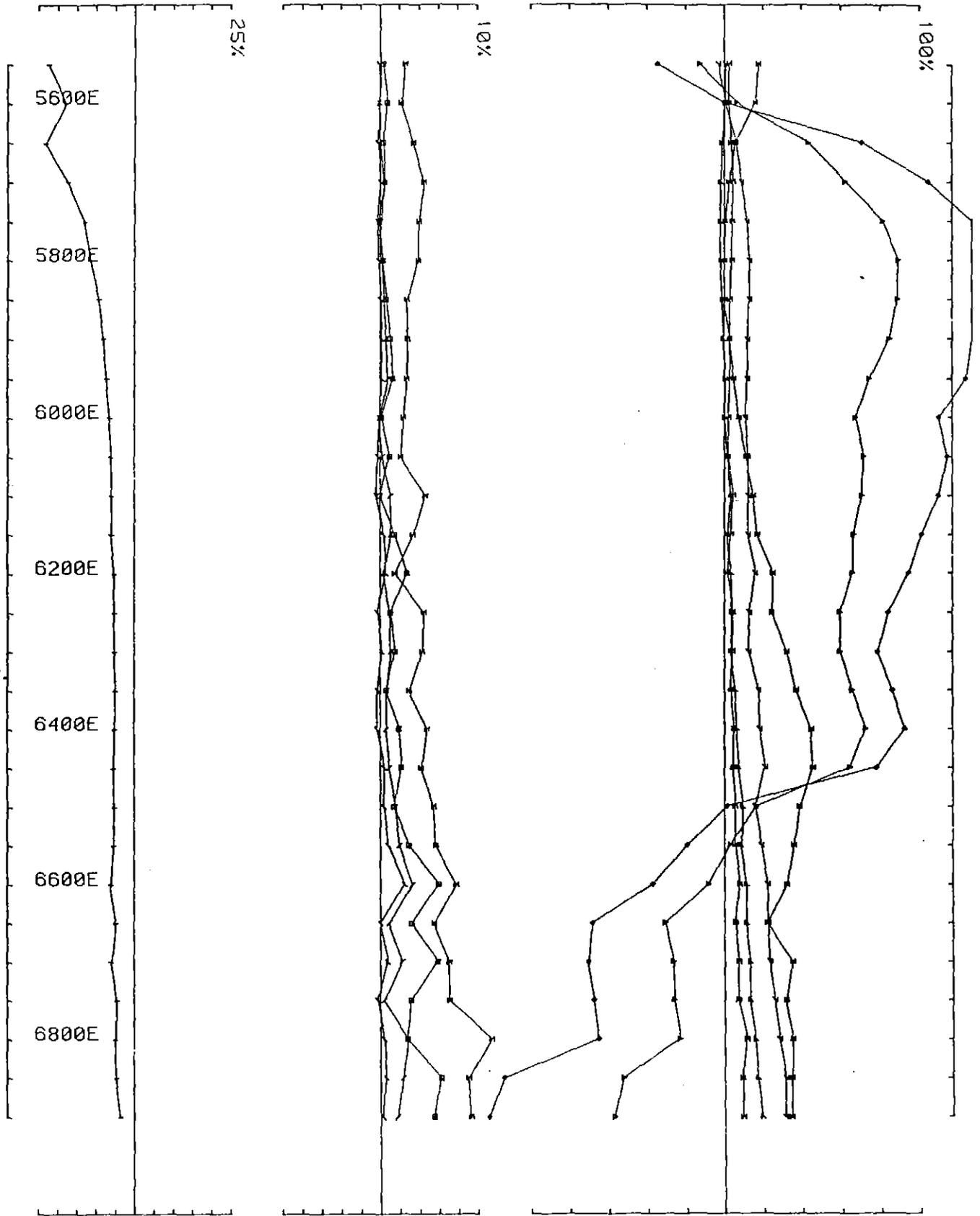


UTEM SURVEY at PIEMAN for B H P

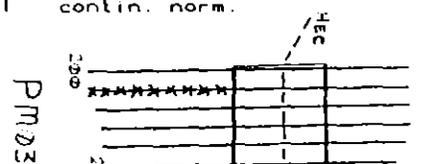
conducted by HU PM PO job 8723 base freq (hz) 26.230

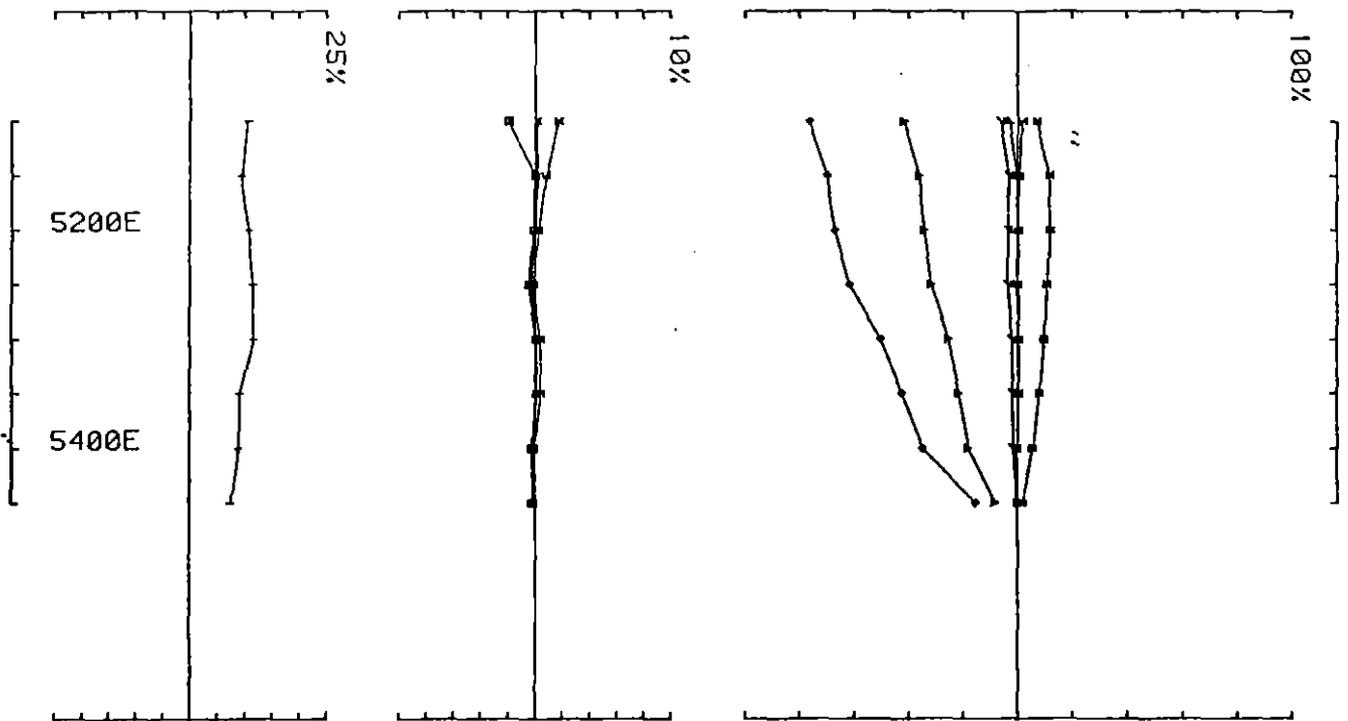
loop no 3 line 20000N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20200N component Hz secondary field Ch 1 contin. norm.

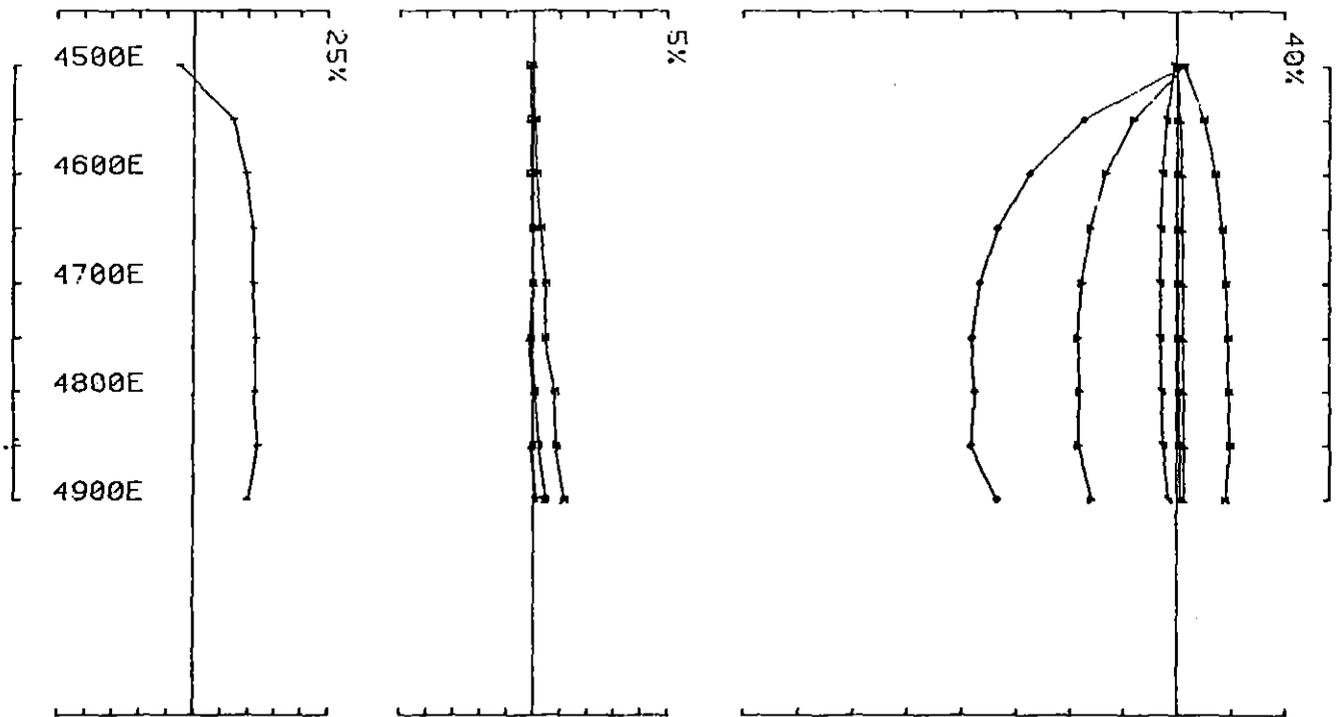




UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 503 line 20200N component Hz secondary field Ch 1 contin. norm.



031



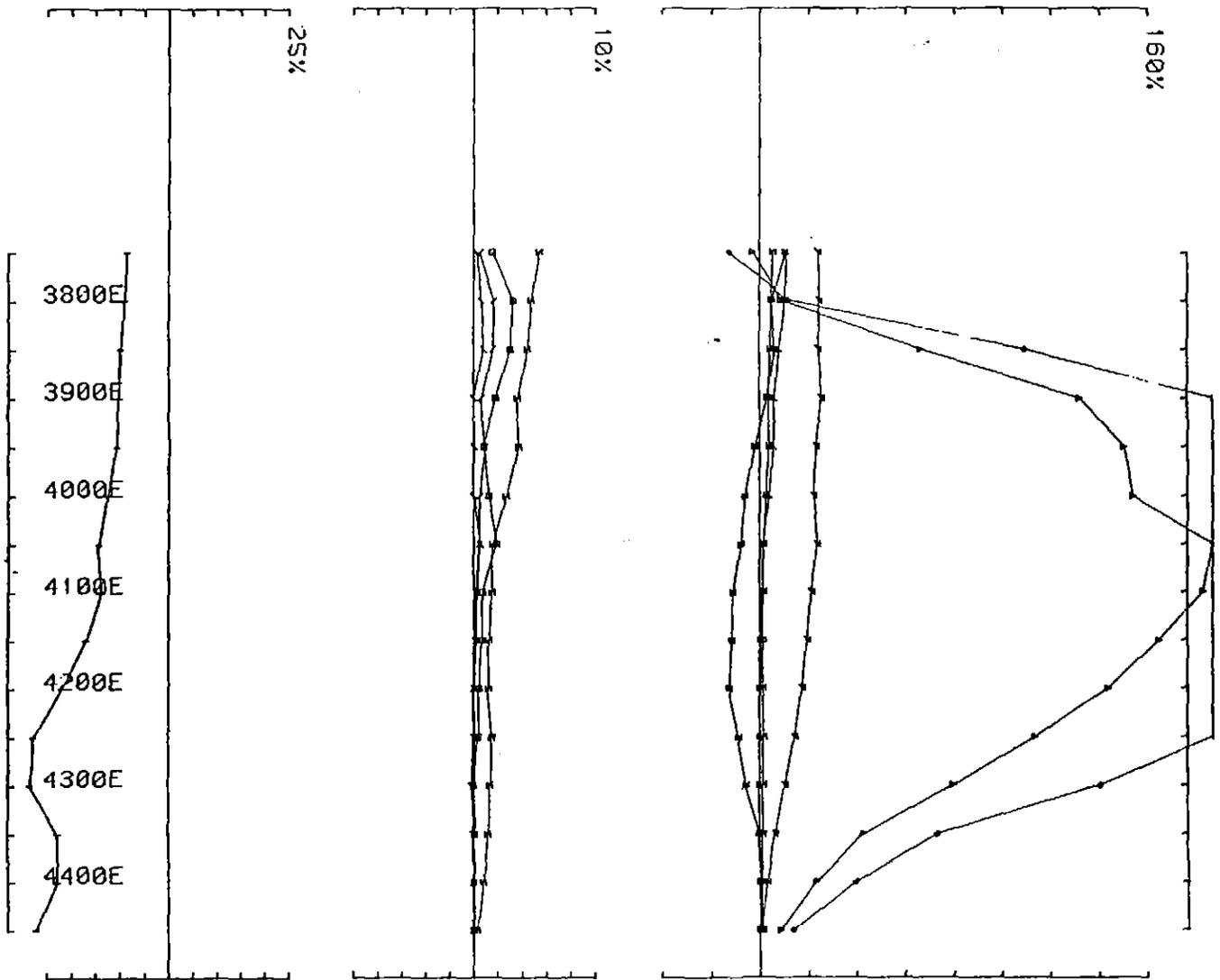
UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 3 line 20200N component Hz secondary field Ch 1 contin. norm.



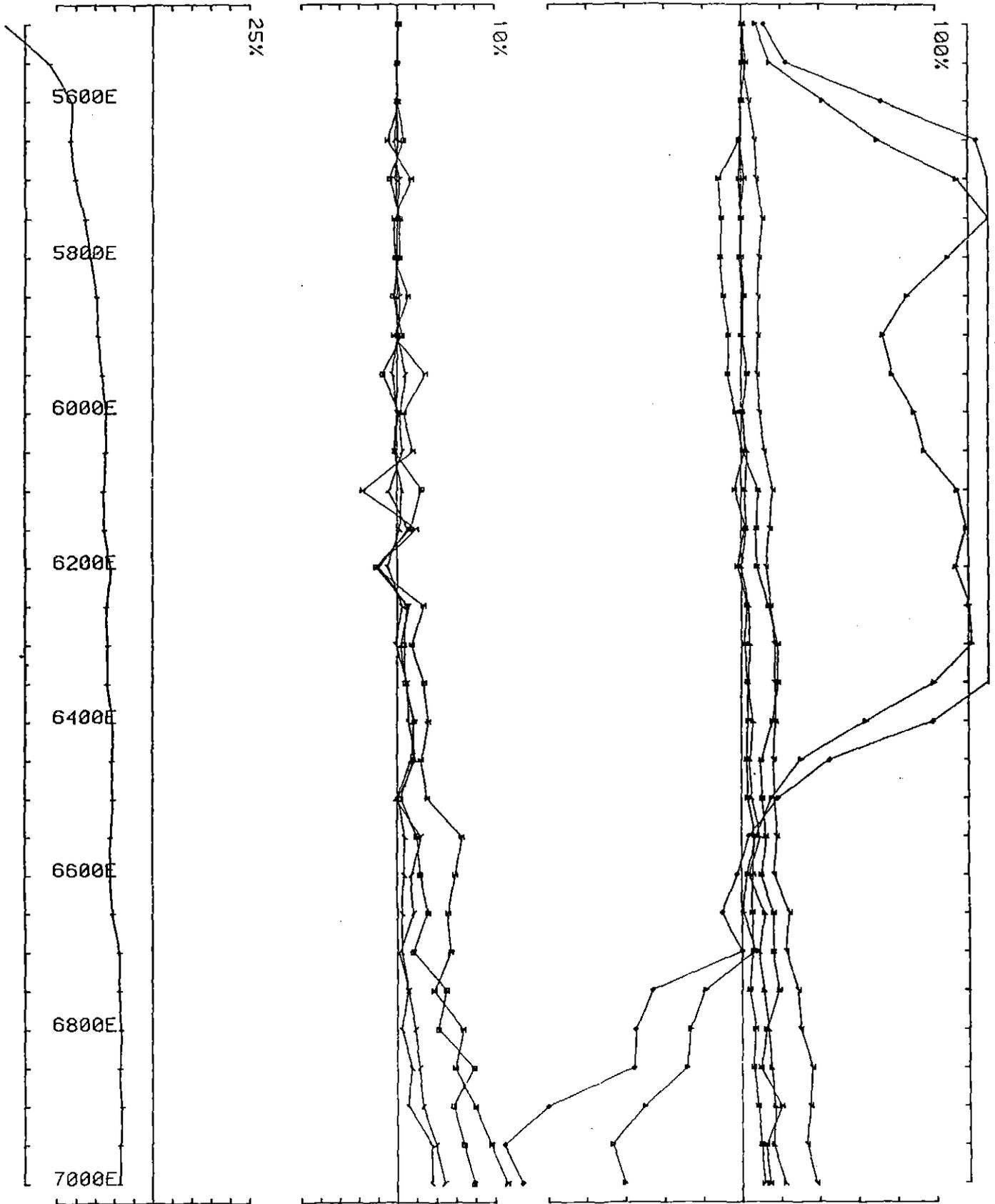
082



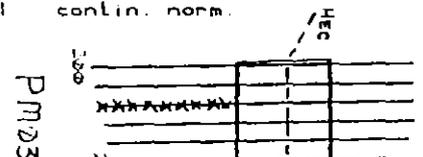
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PD job 8723 base freq (hz) 26.230
 loop no 3 line 20200N component Hz secondary field Ch 1 contin. norm.



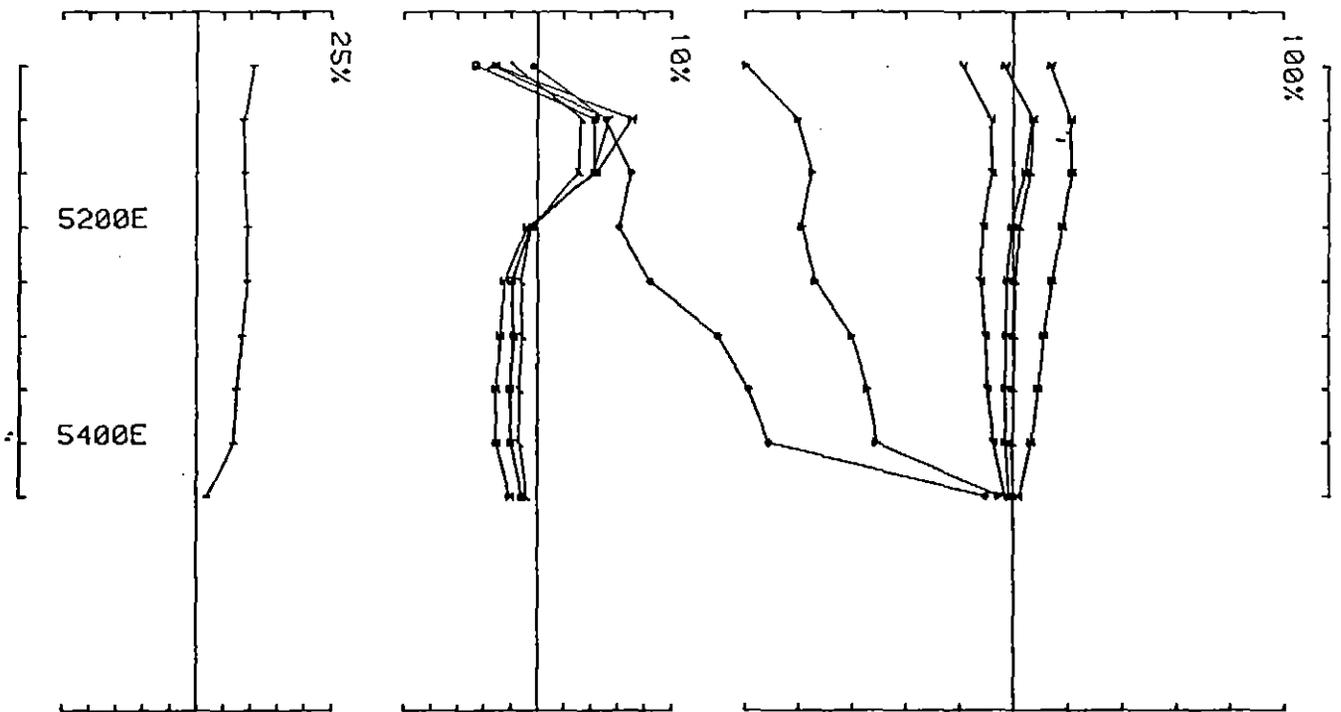
033



UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20400N component Hz secondary field Ch 1 contin. norm.



084



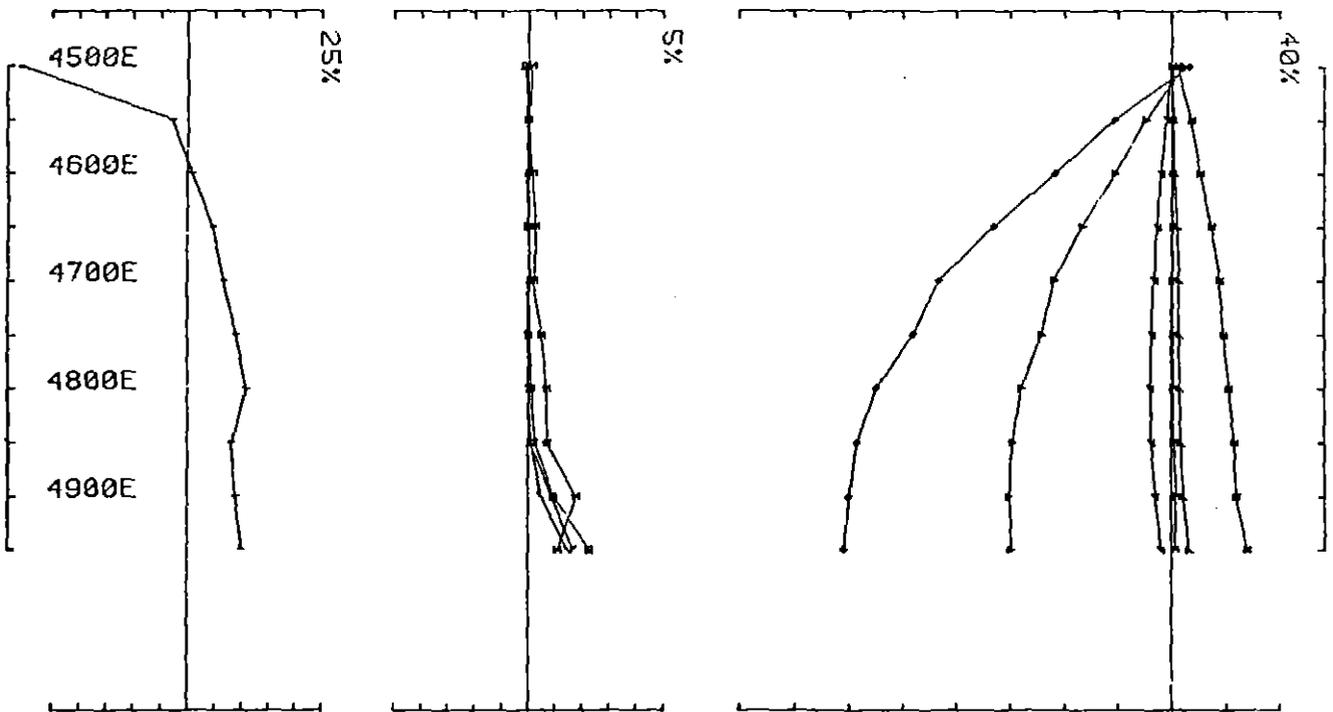
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conducted by HU PM PO Job 8723 base freq (hz) 26.230

loop no 3 line 20400N component HZ secondary field Ch 1 contin. norm.



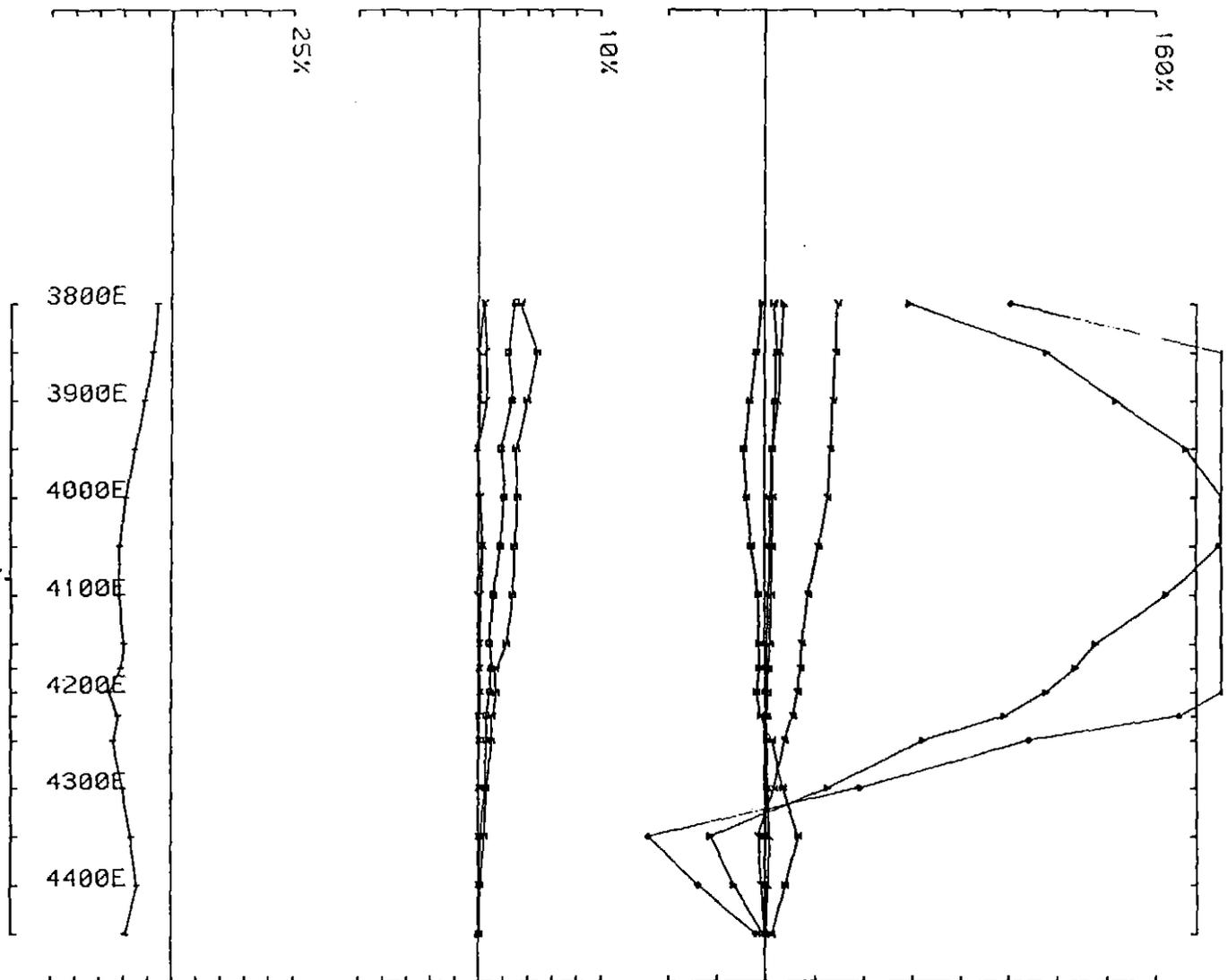
085



UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20400N component Hz secondary field Ch 1 contin. norm.



086

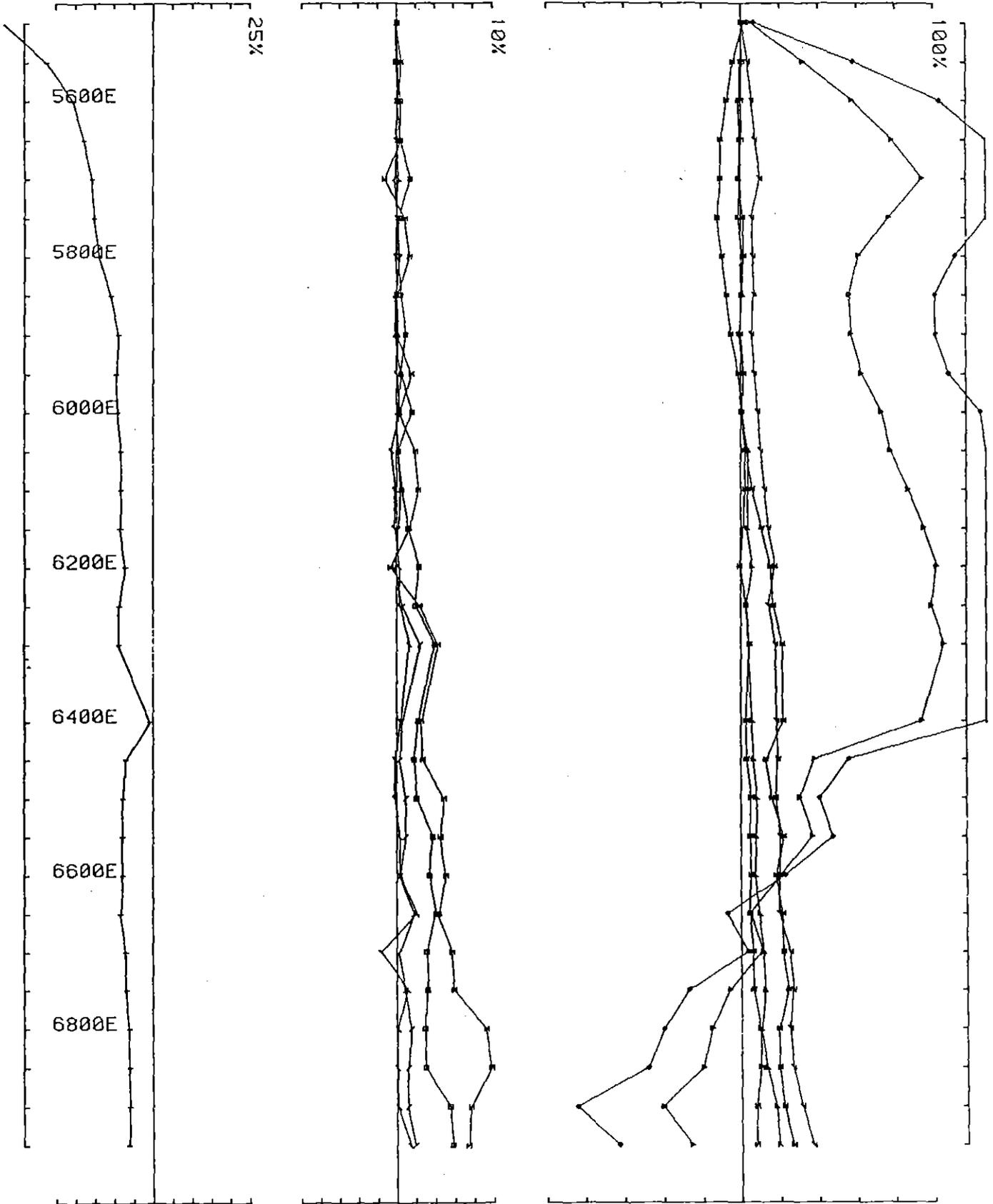


UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20400N component Hz secondary field Ch 1 contin. norm.



087

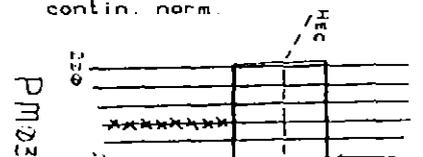
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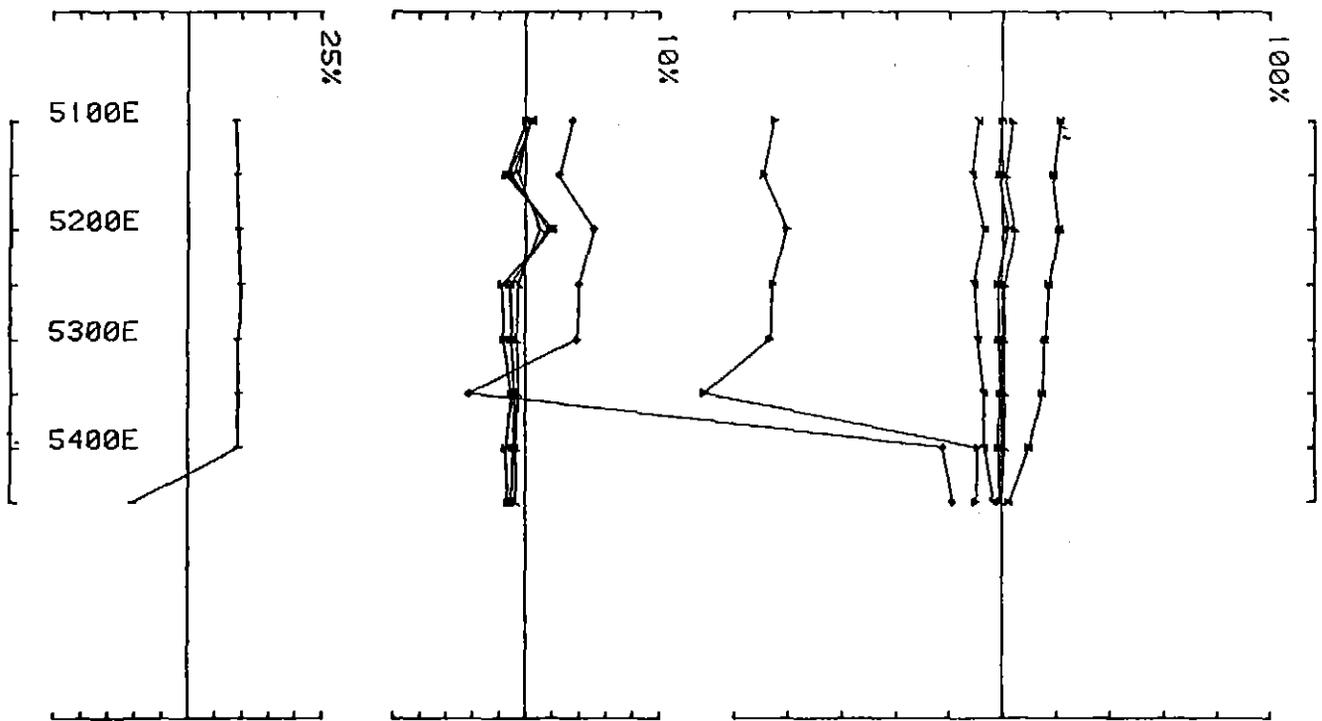


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PD job 8723 base freq (hz) 26.230

loop no 3 line 20600N component Hz secondary field Ch 1 contin. norm.

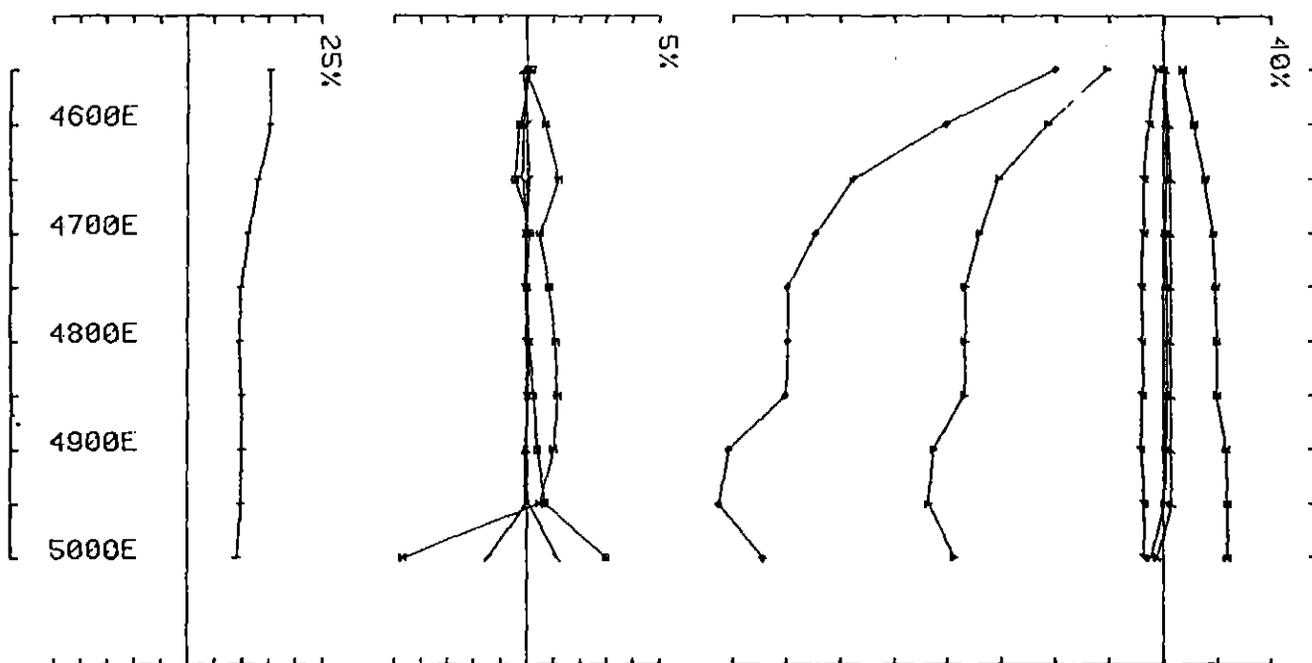




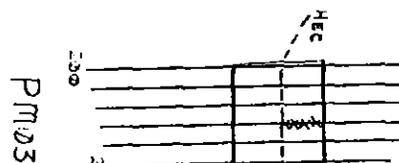
UTEM SURVEY at PIEMAN for B H P
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 loop no 3 line 20600N component Hz secondary field Ch 1 contin. norm.



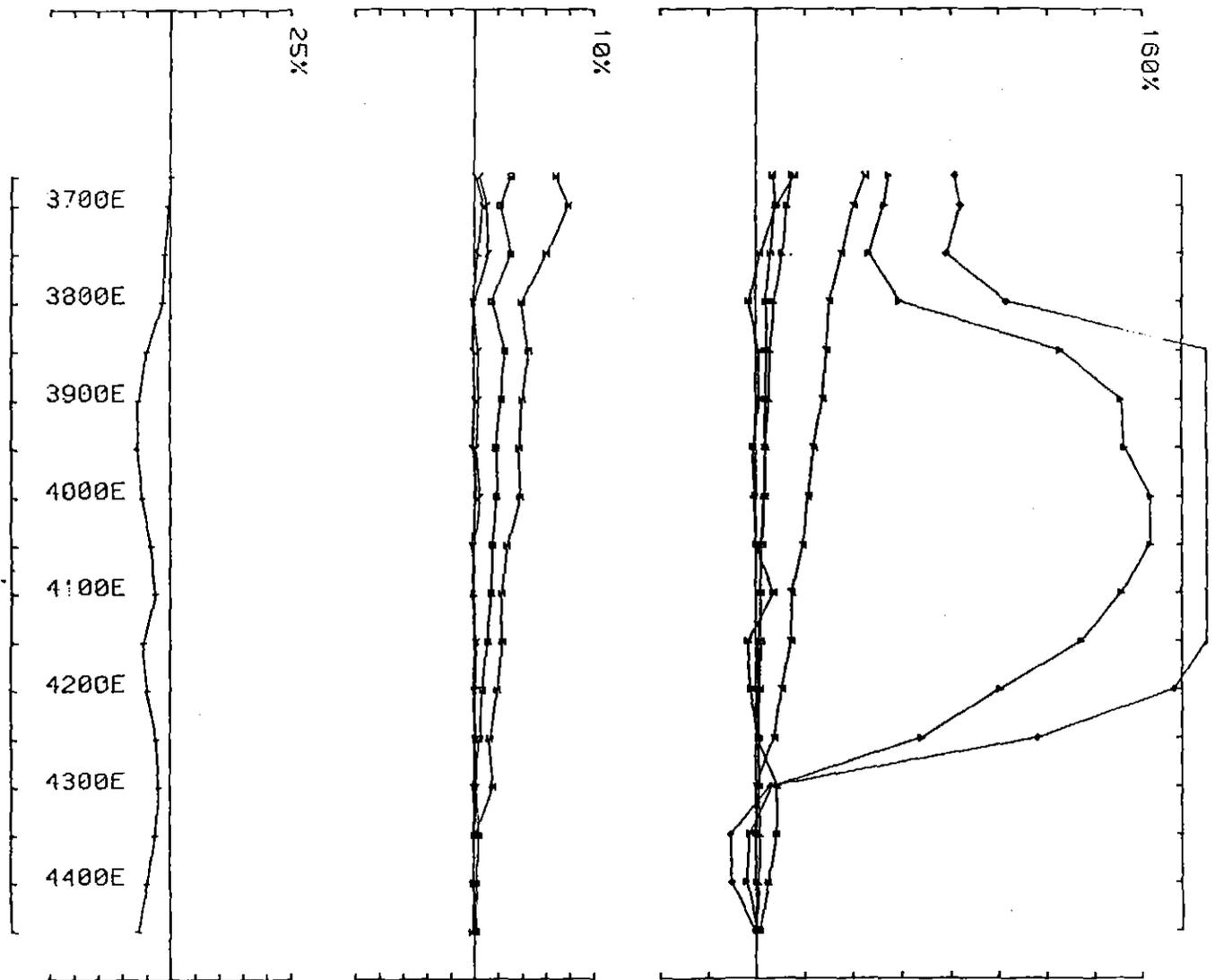
089



UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PO job 8723 base freq (hz) 26.230
 loop no 3 line 20600N component Hz secondary field Ch 1 contin. norm.



090

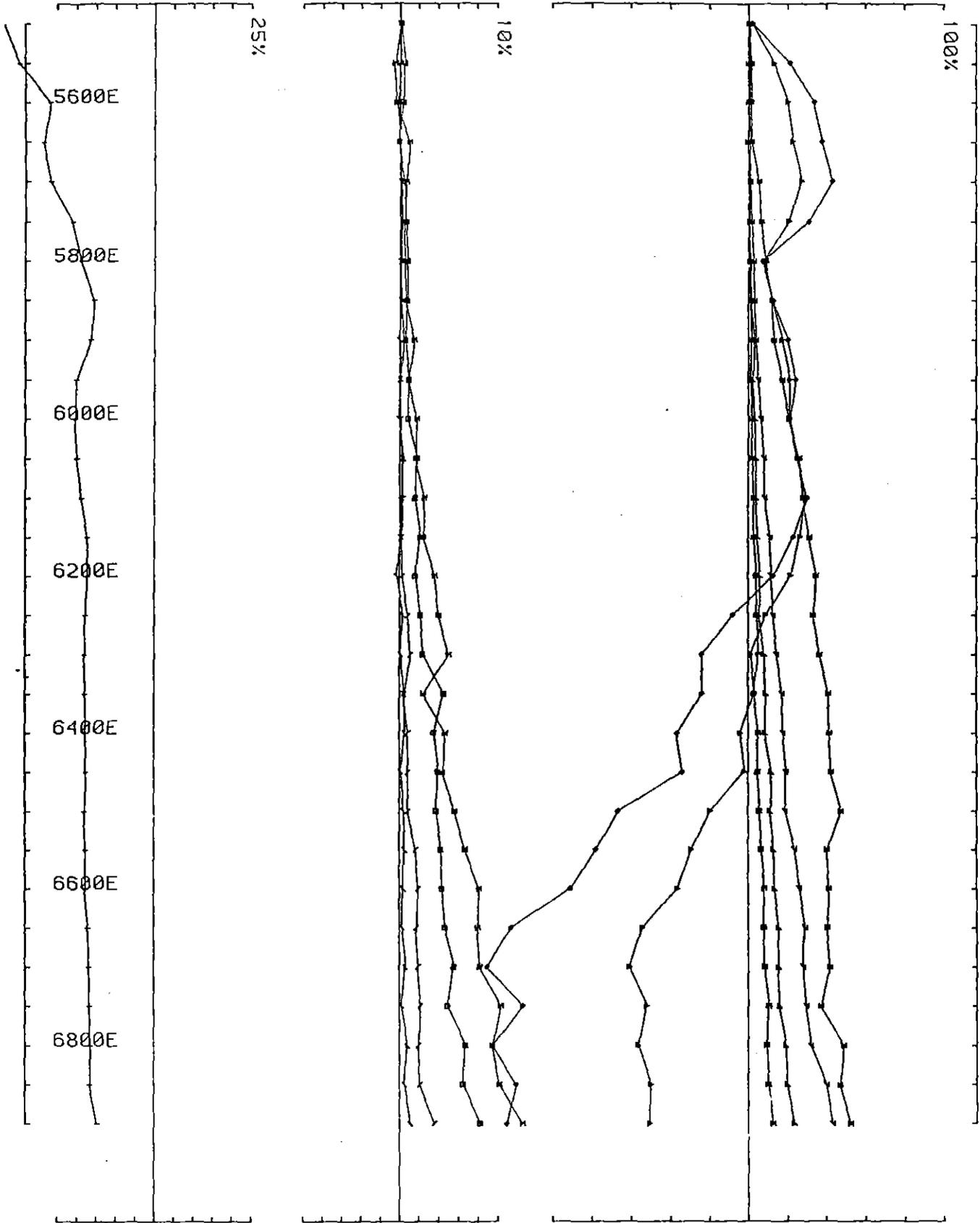


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 loop no 3 line 20600N component Hz secondary field Ch 1 contin. norm.



091

776092

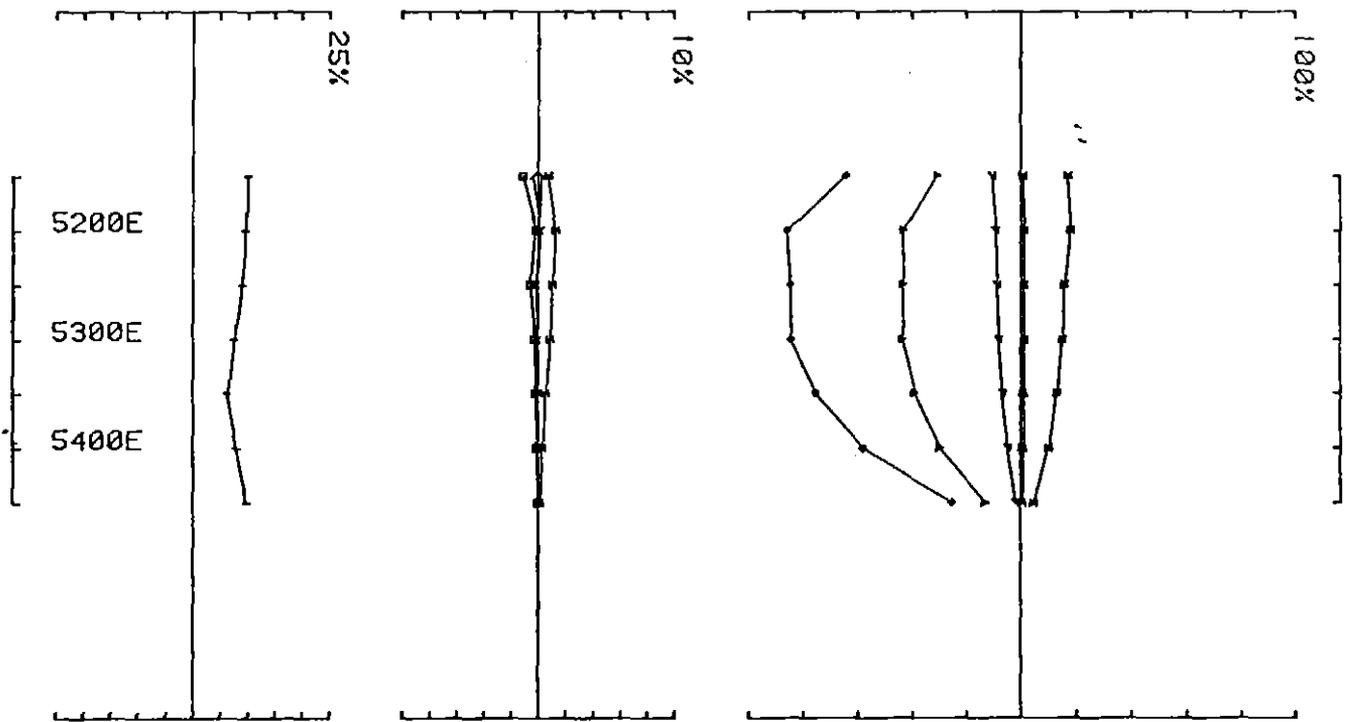


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 3 line 20800N component Hz secondary field Ch 1 contin. norm.

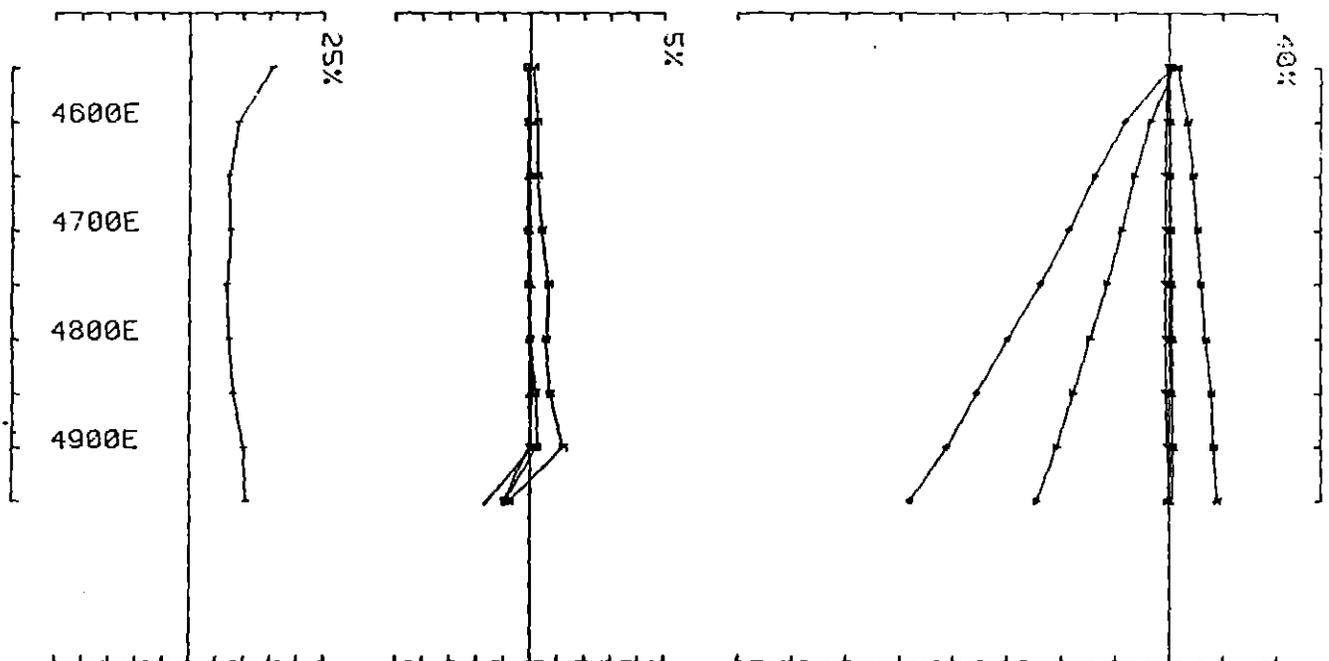




UTEM SURVEY at PIEMAN for B H P
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 loop no 3 line 20800N component Hz secondary field Ch 1 contin. norm.



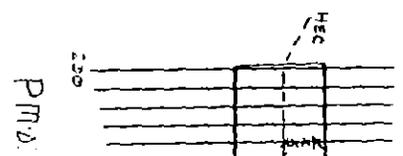
093

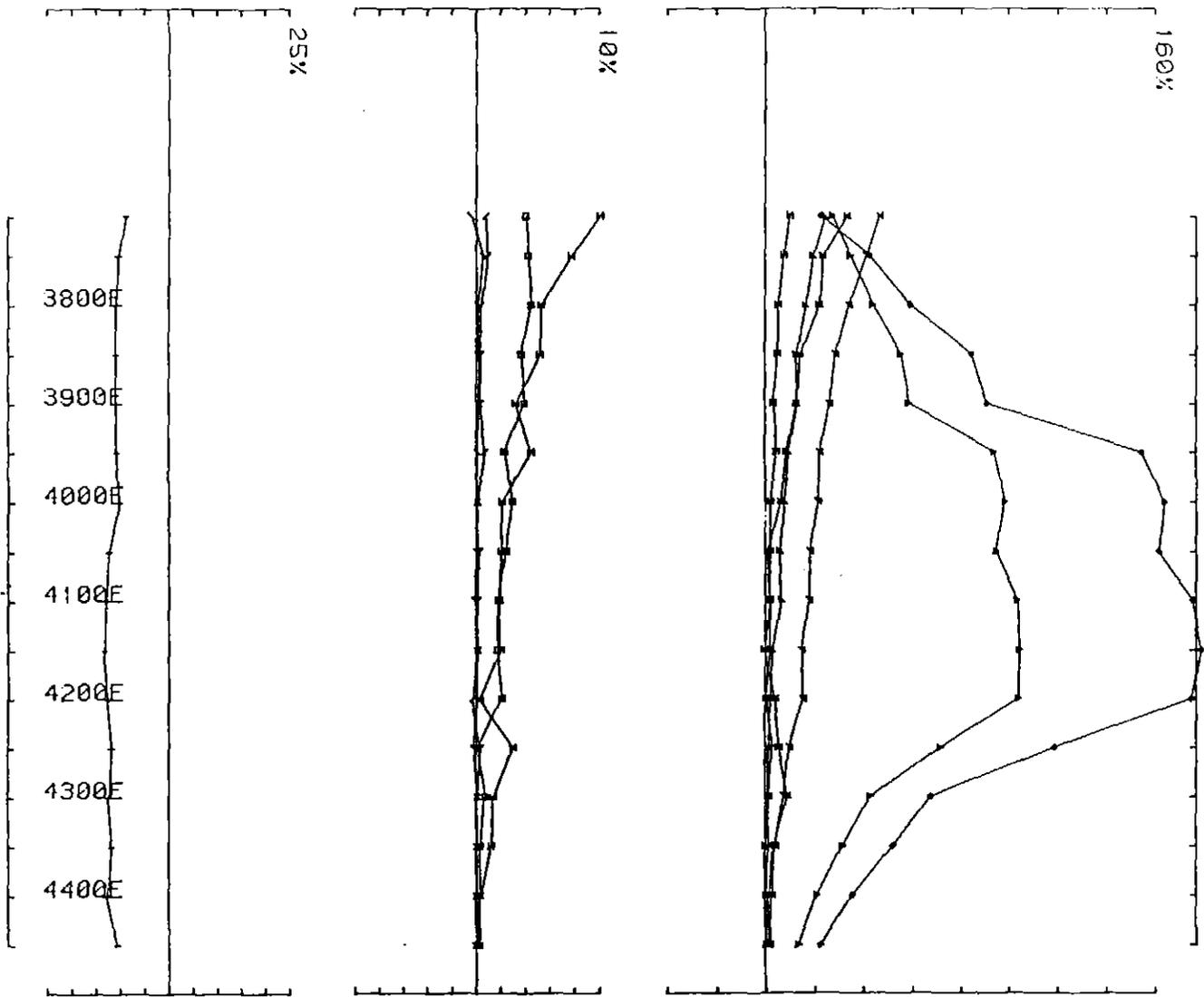


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO Job 8723 base freq (hz) 26.230

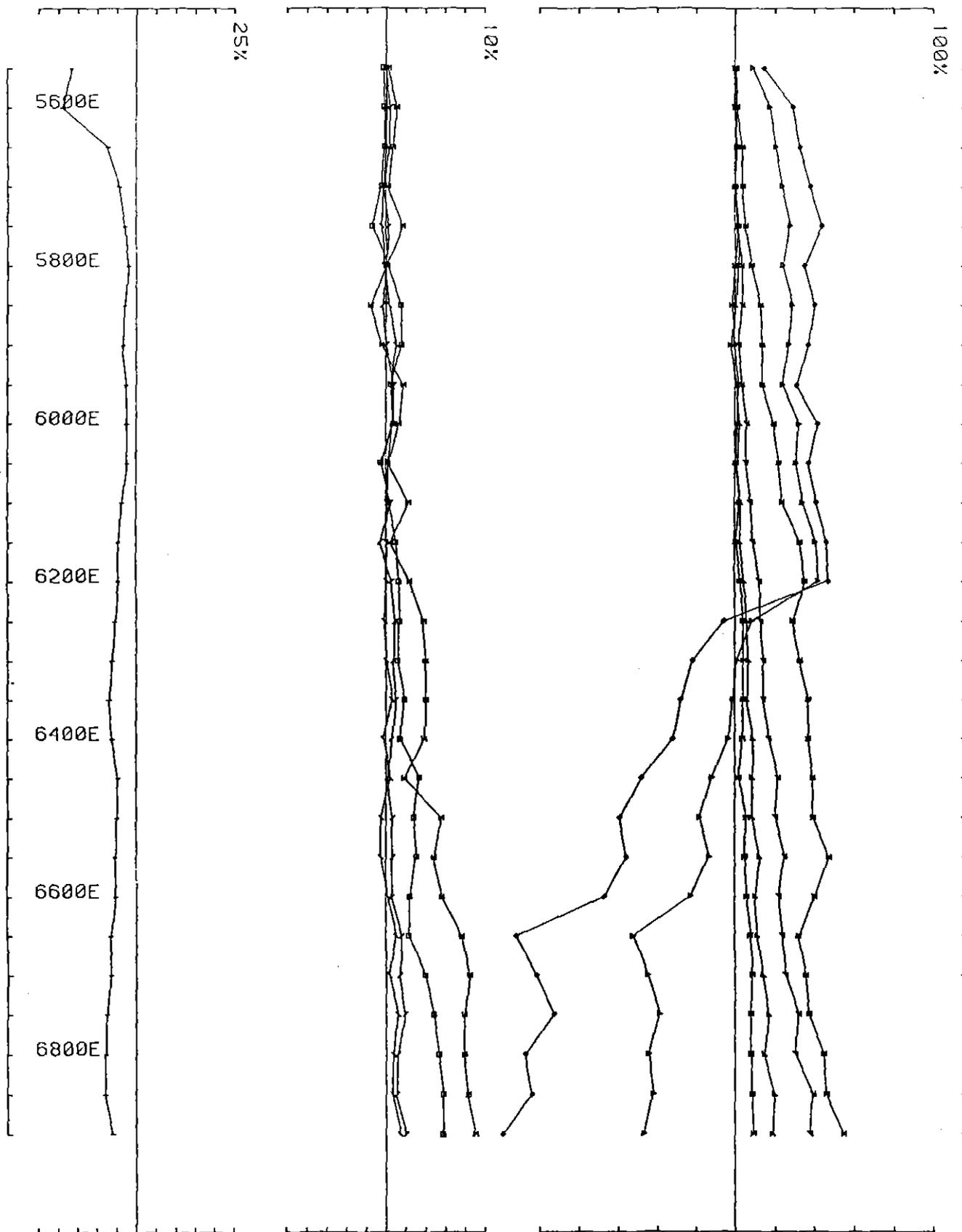
loop no 3 line 20800N component HZ secondary field Ch 1 contin norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM P0 job 8723 base freq (hz) 26.230
 loop no 3 line 20800N component Hz secondary field Ch 1 contin. norm.

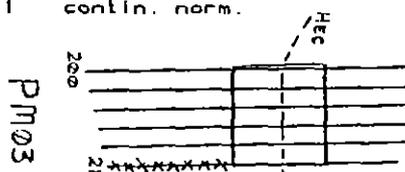


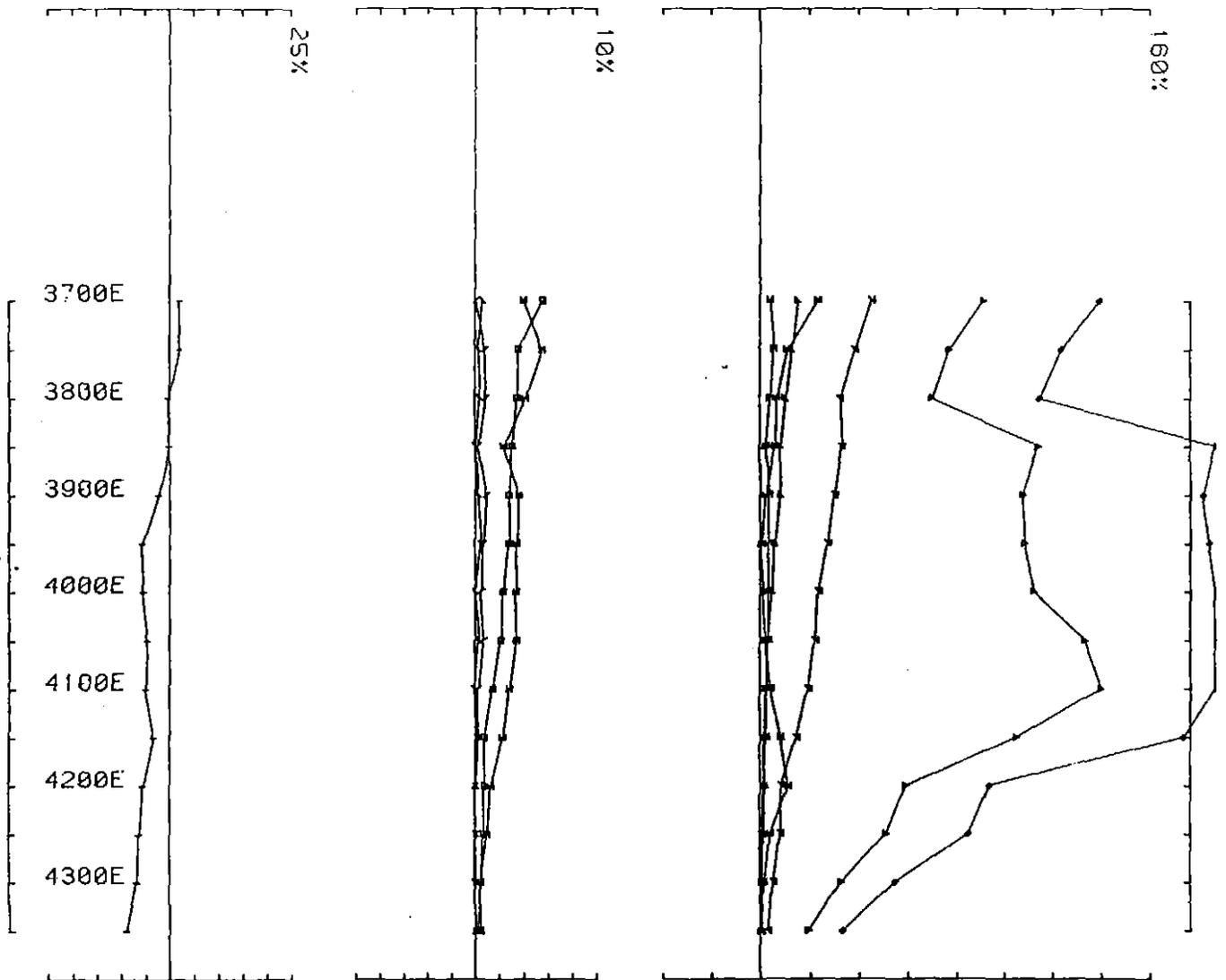


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

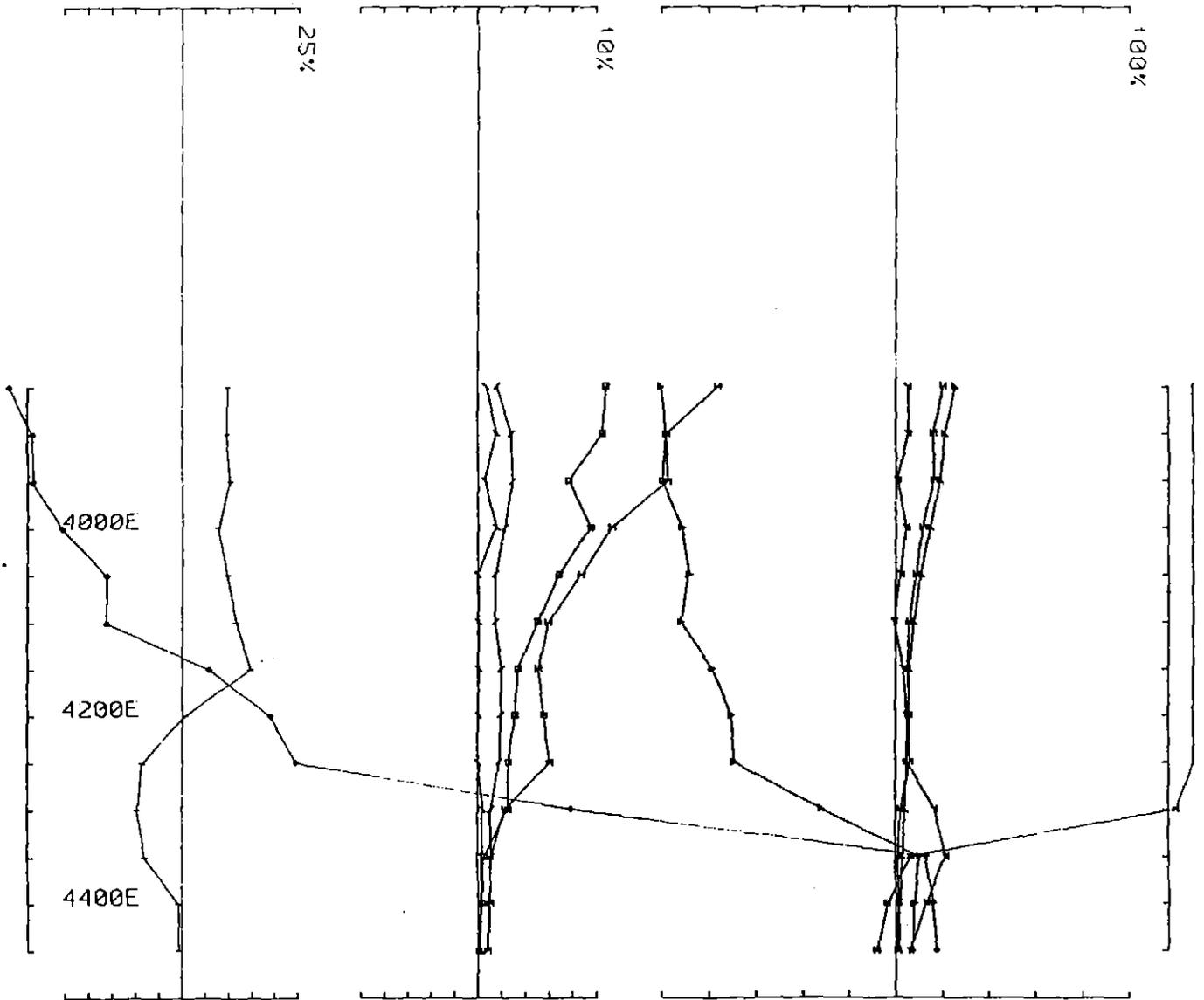
loop no 3 line 21000N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
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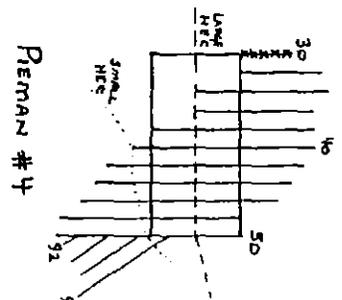




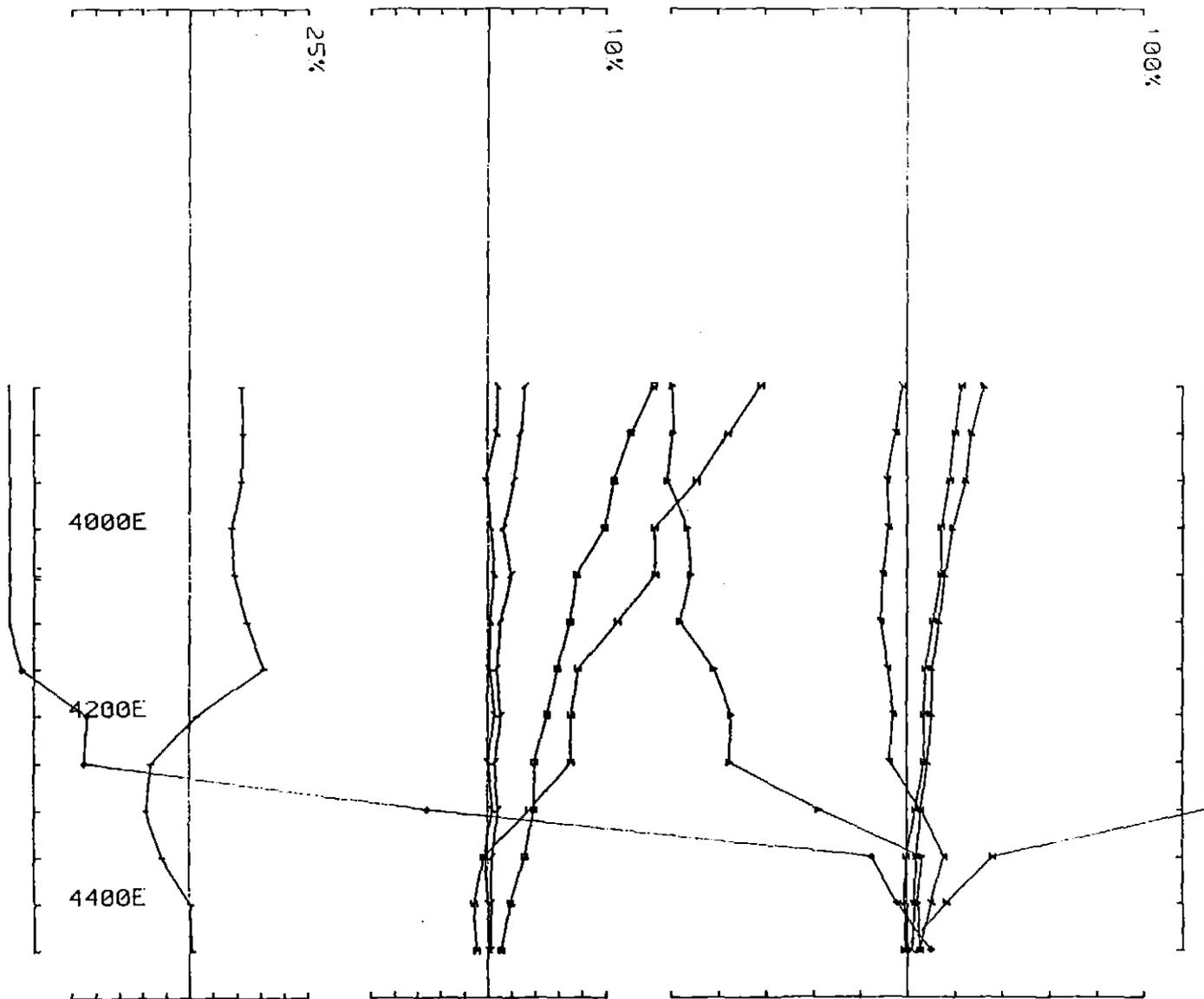
UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230

loop no 4 line 3000N component Hz secondary field Ch 1 contin. norm.



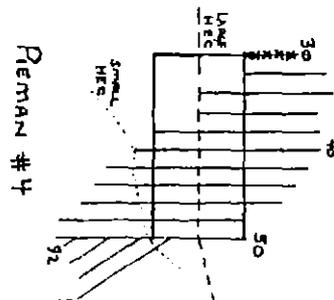
098



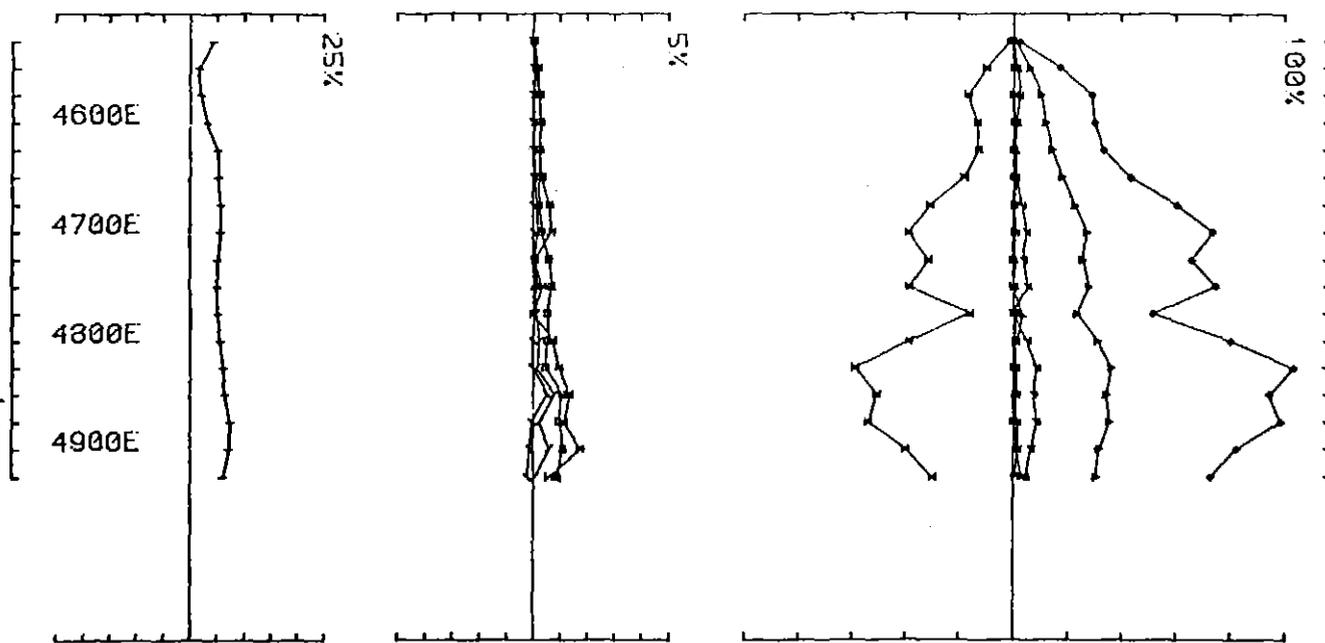
UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230 October 13

loop no 314 line 3000N component Hz secondary field Ch 1 contin. norm.



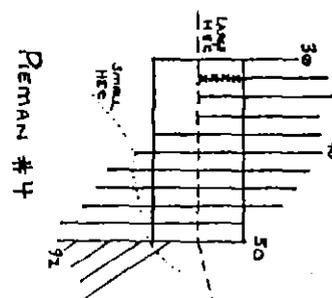
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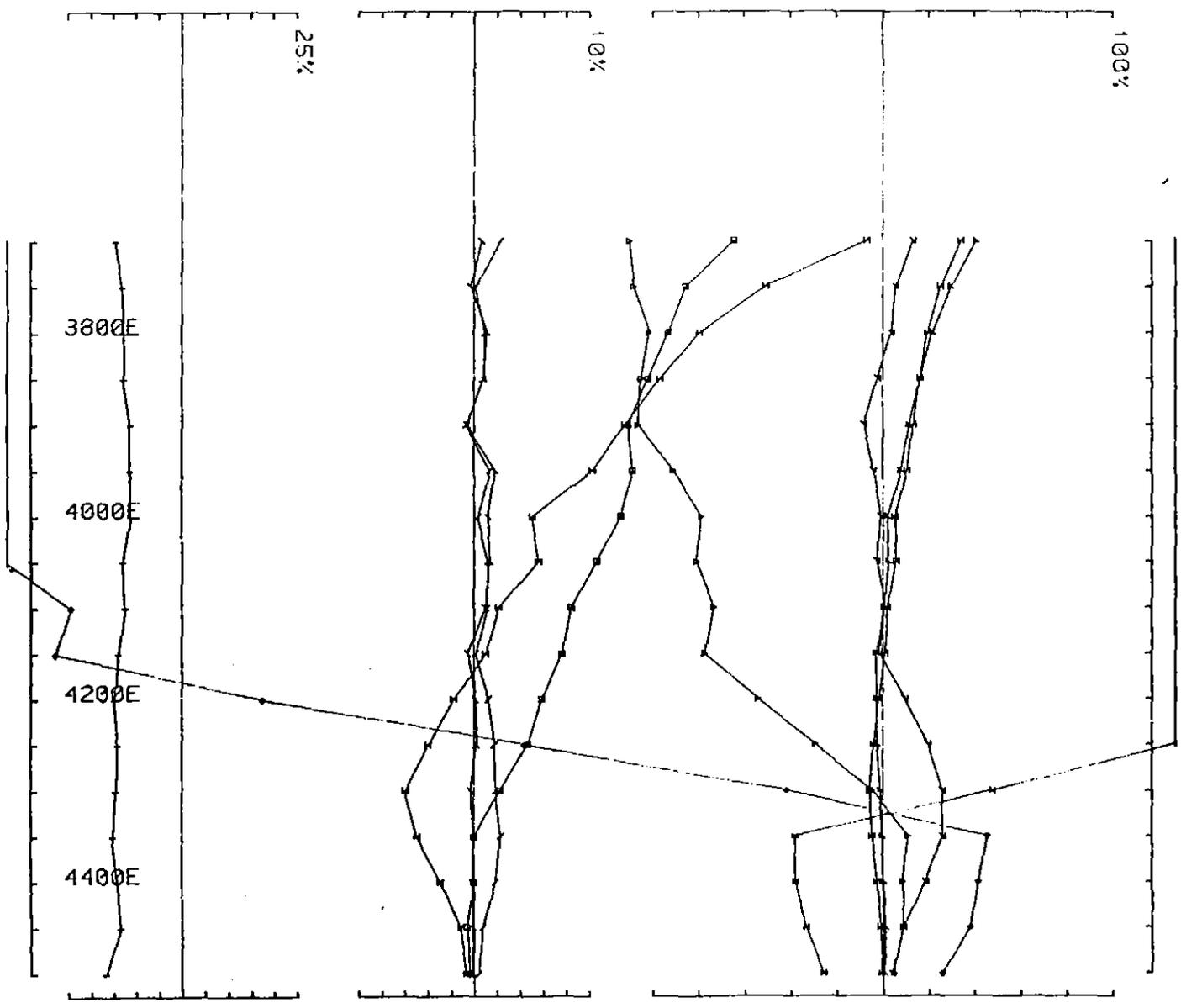


UTEM SURVEY at PIEMAN for B H P

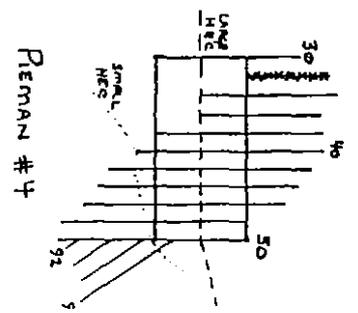
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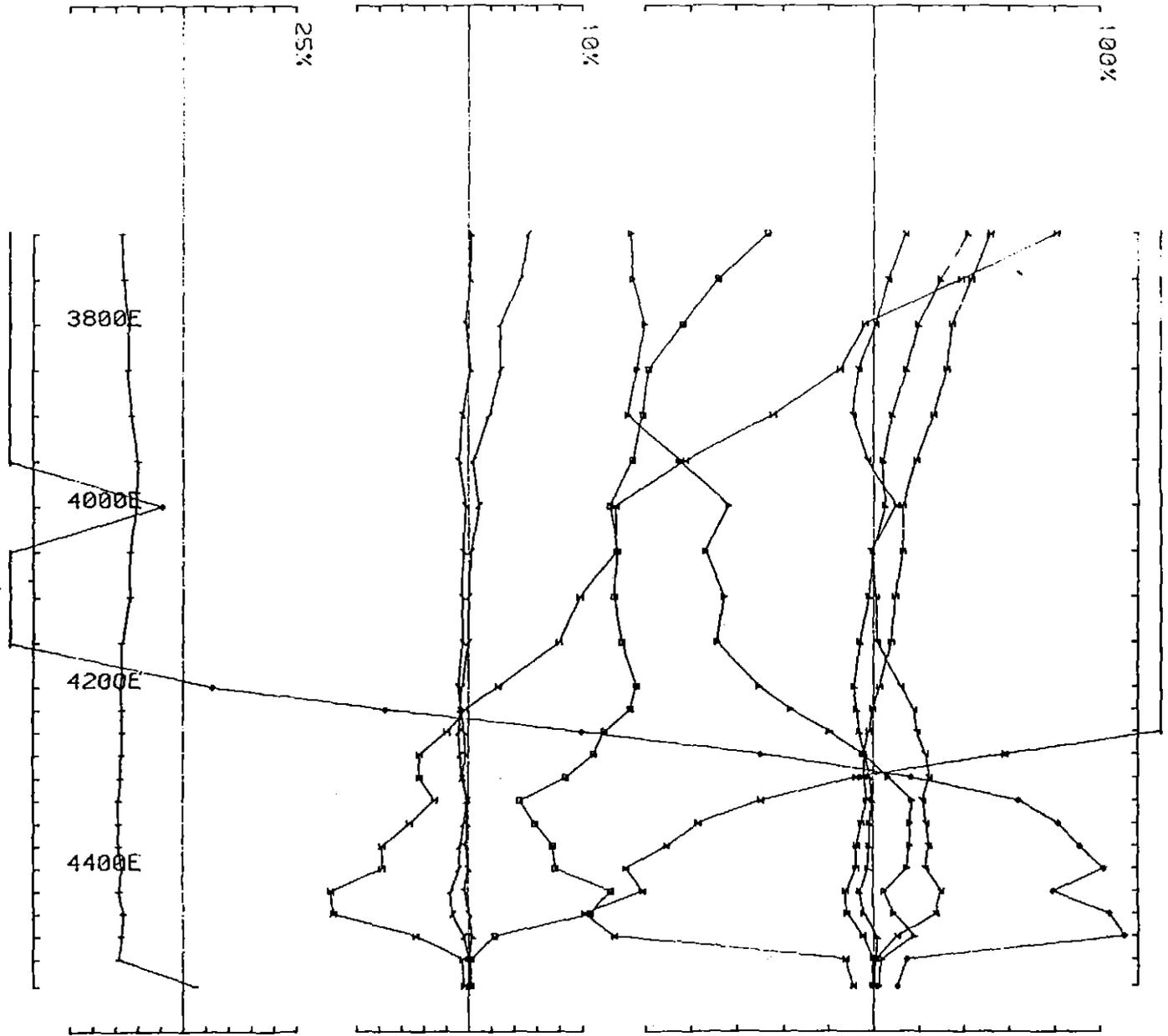
loop no 4 line 3200N component Hz secondary field Ch 1 contin. norm.



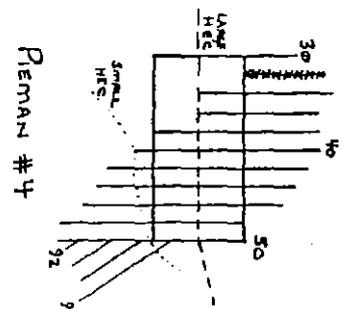


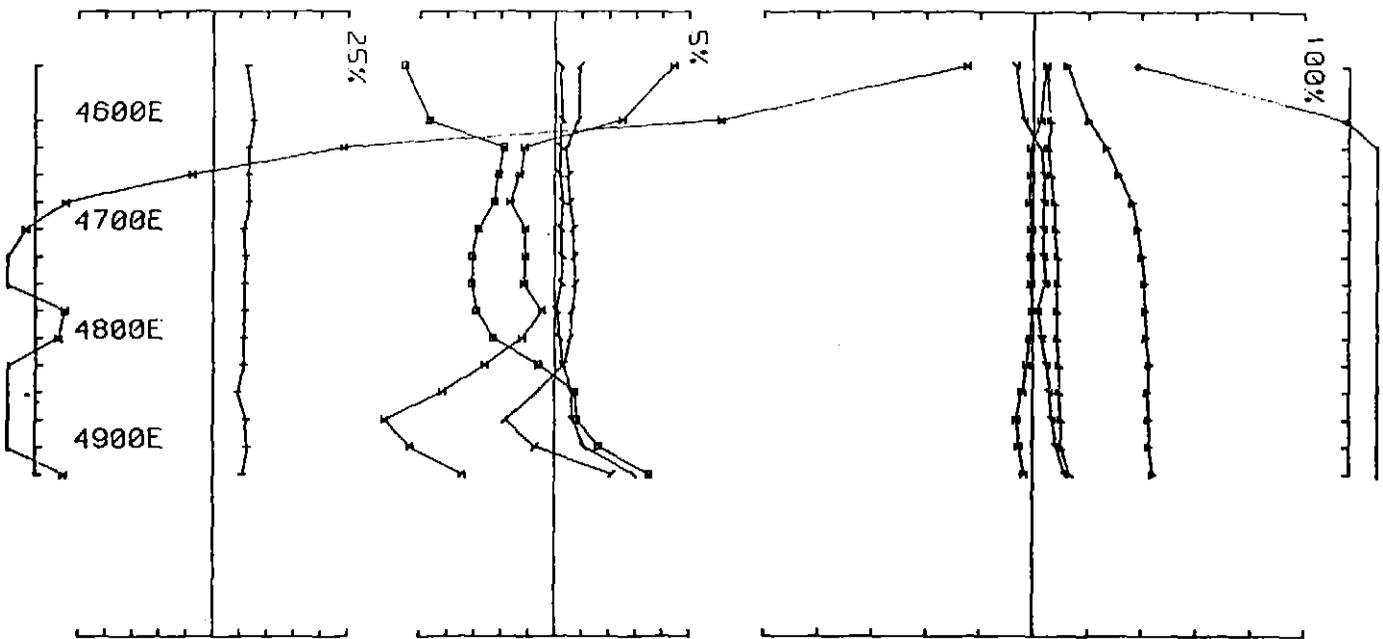
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 3200N component Hz secondary field Ch 1 contin. norm





UTEM SURVEY at PIEMAN for B H P
conducted by HU PO DL job 8723 base freq (hz) 26.230 ** October 13
loop no 314 line 3200N component Hz secondary field Ch 1 contin. norm.

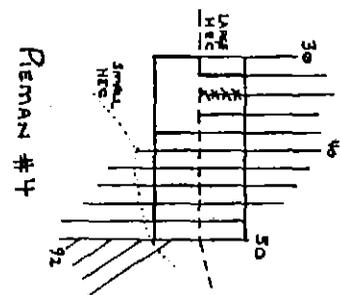


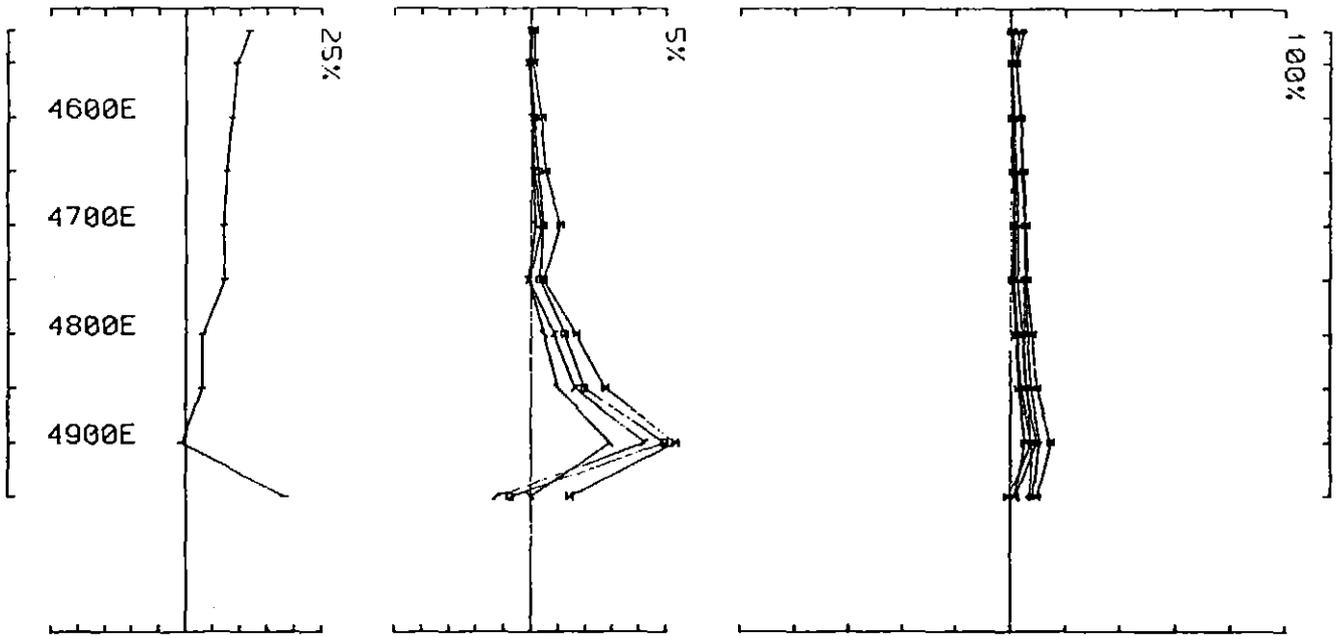


UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230 October 13

loop no 4 line 3400N component Hz secondary field Ch 1 contin. norm.

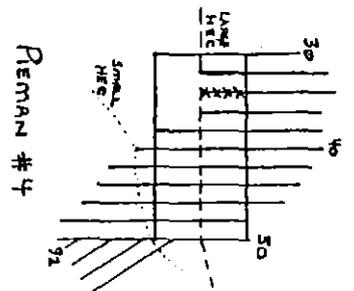


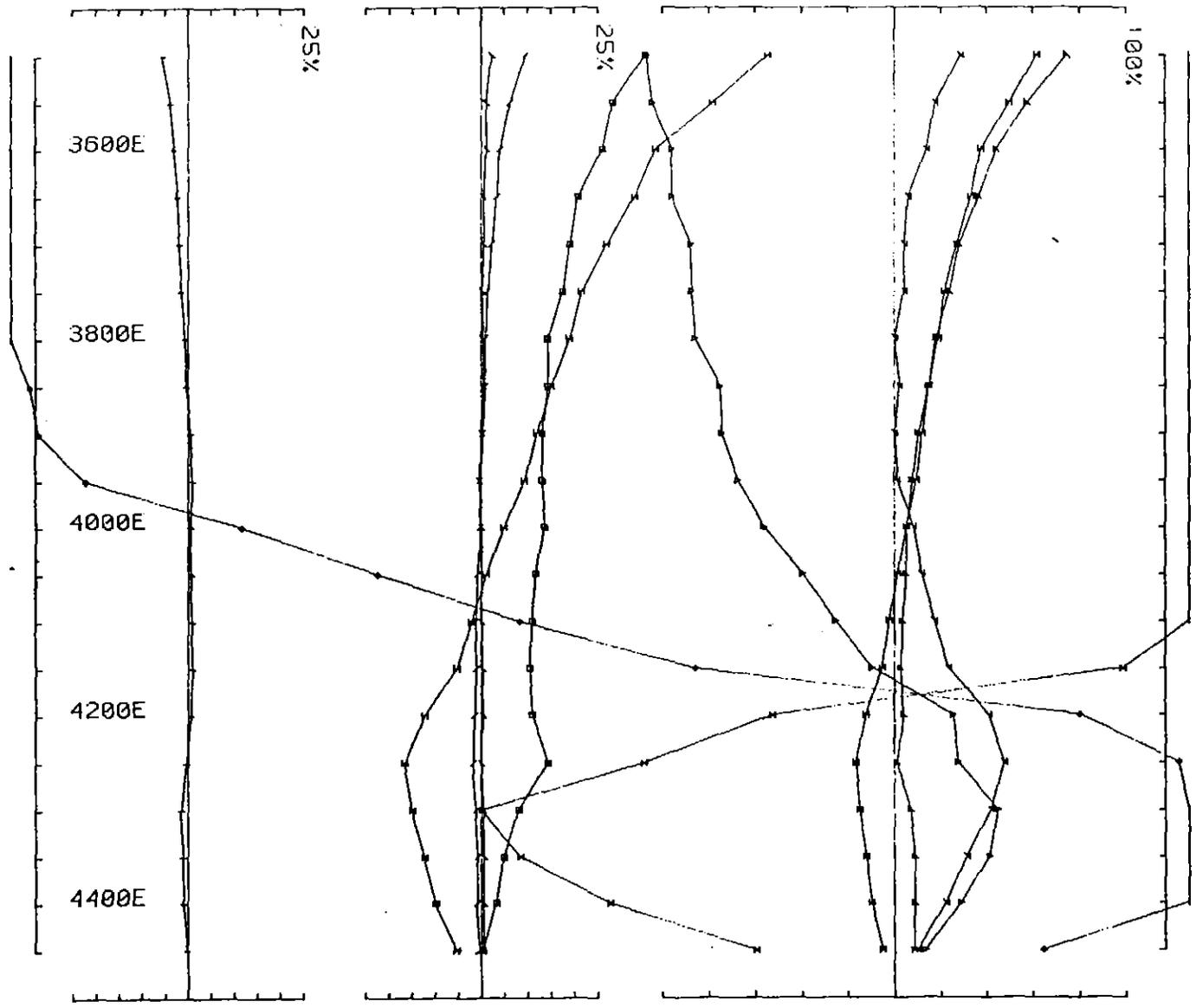


UTEM SURVEY at PIEMAN for B H P

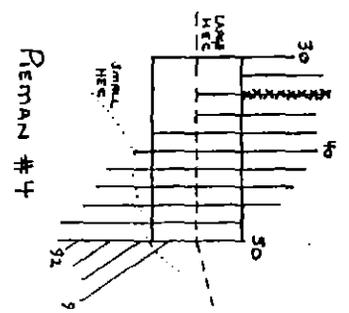
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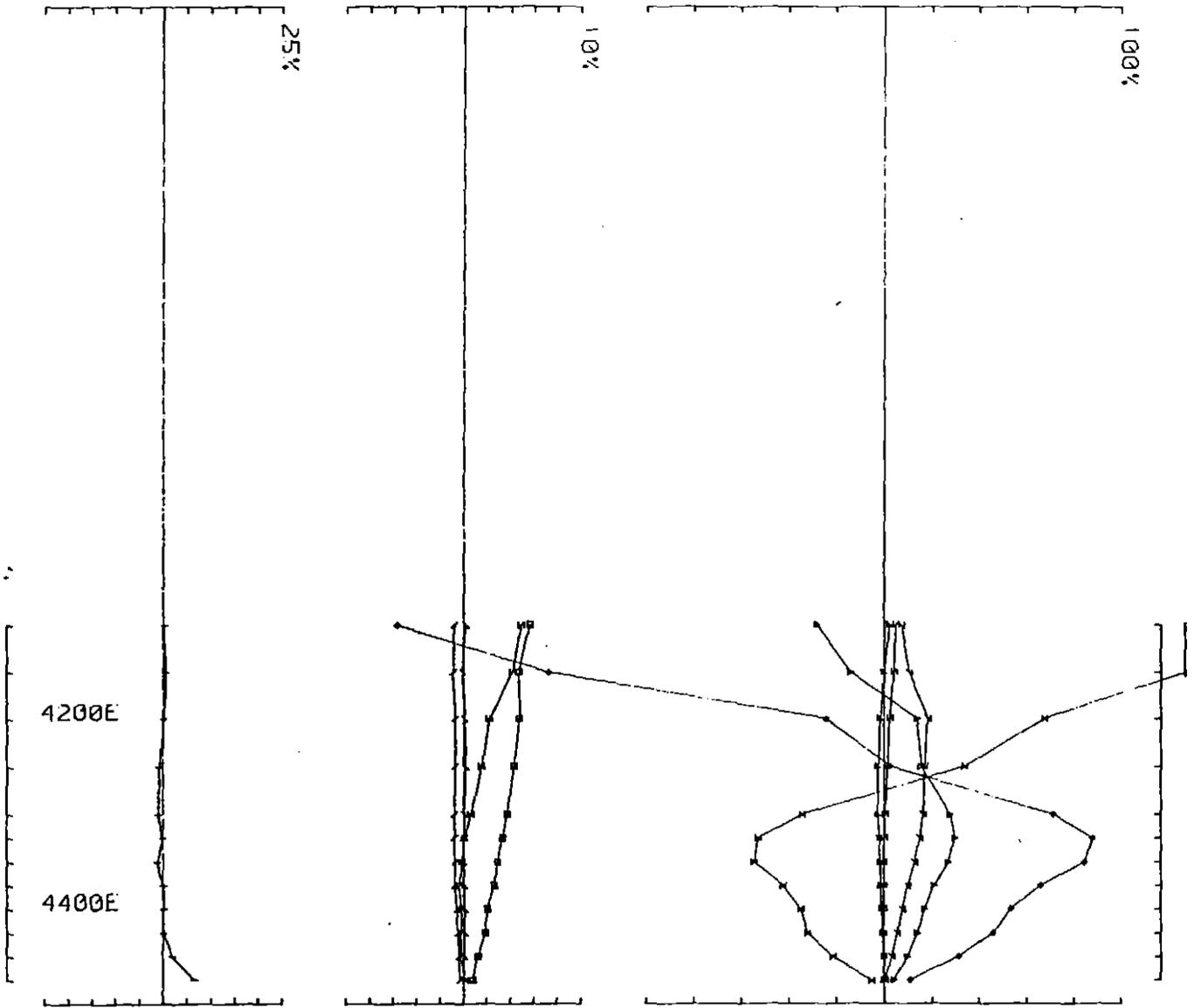
loop no 424 line 3400N component HZ secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230 ** 25% CENTRE AXIS **
 loop no 4 line 3400N component Hz secondary field Ch 1 contin. norm.

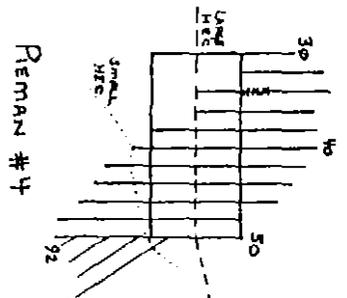


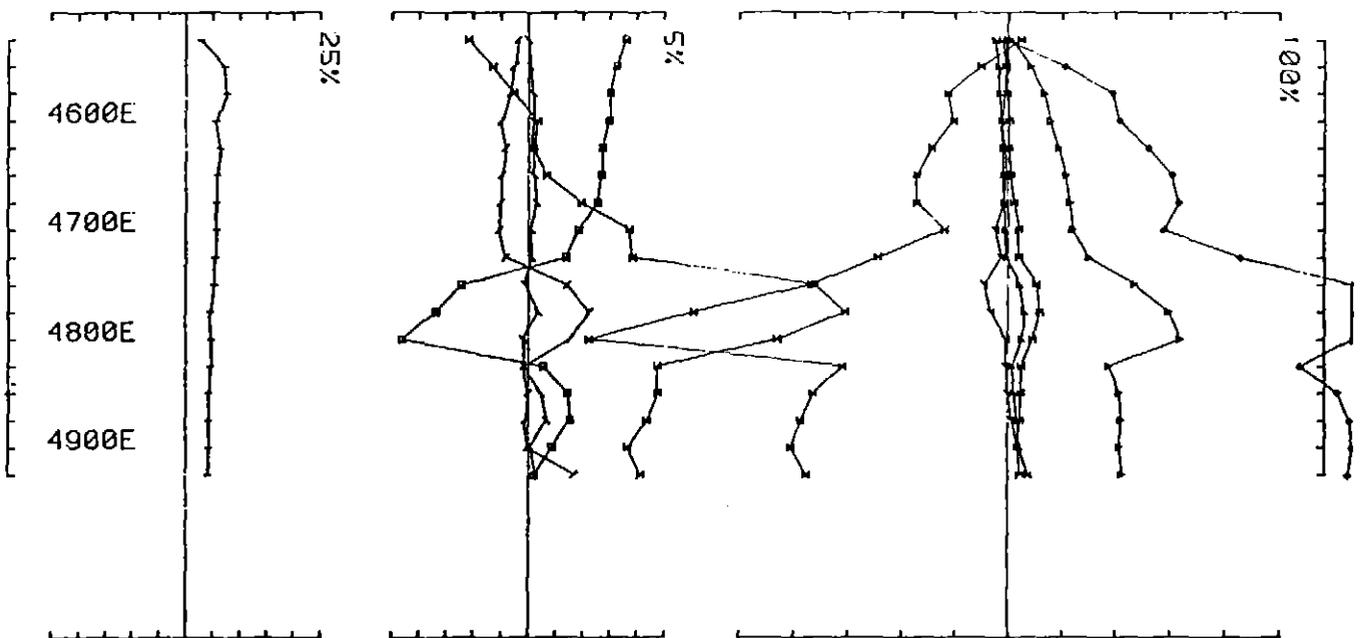


UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230 ** October 18

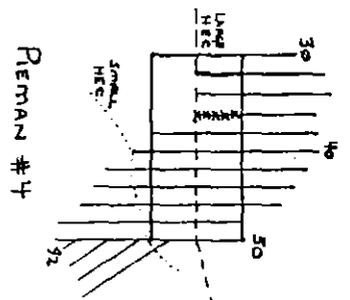
loop no 314 line 3400N component Hz secondary field Ch 1 contin. norm

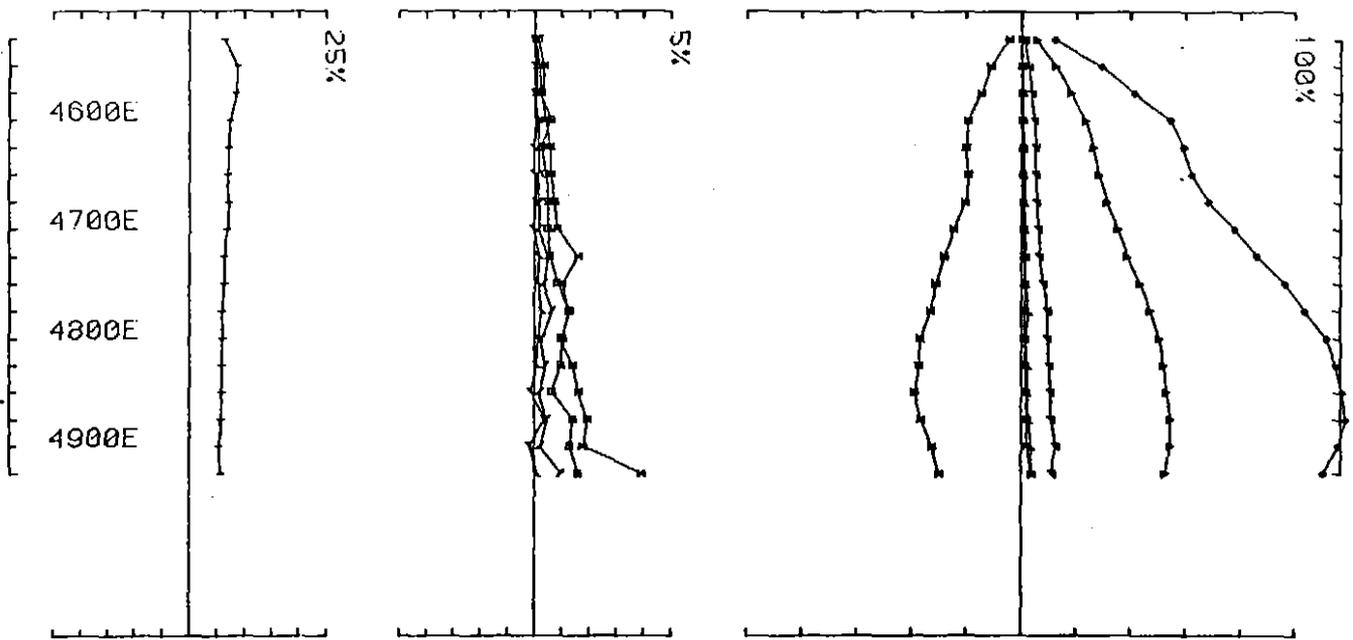




UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230 October 16
loop no 4 line 3600N component Hz secondary field Ch 1 contin. norm.

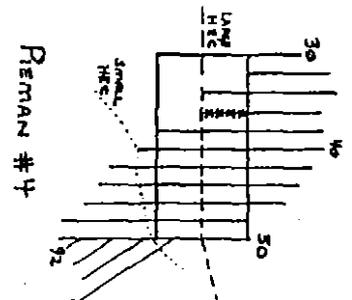


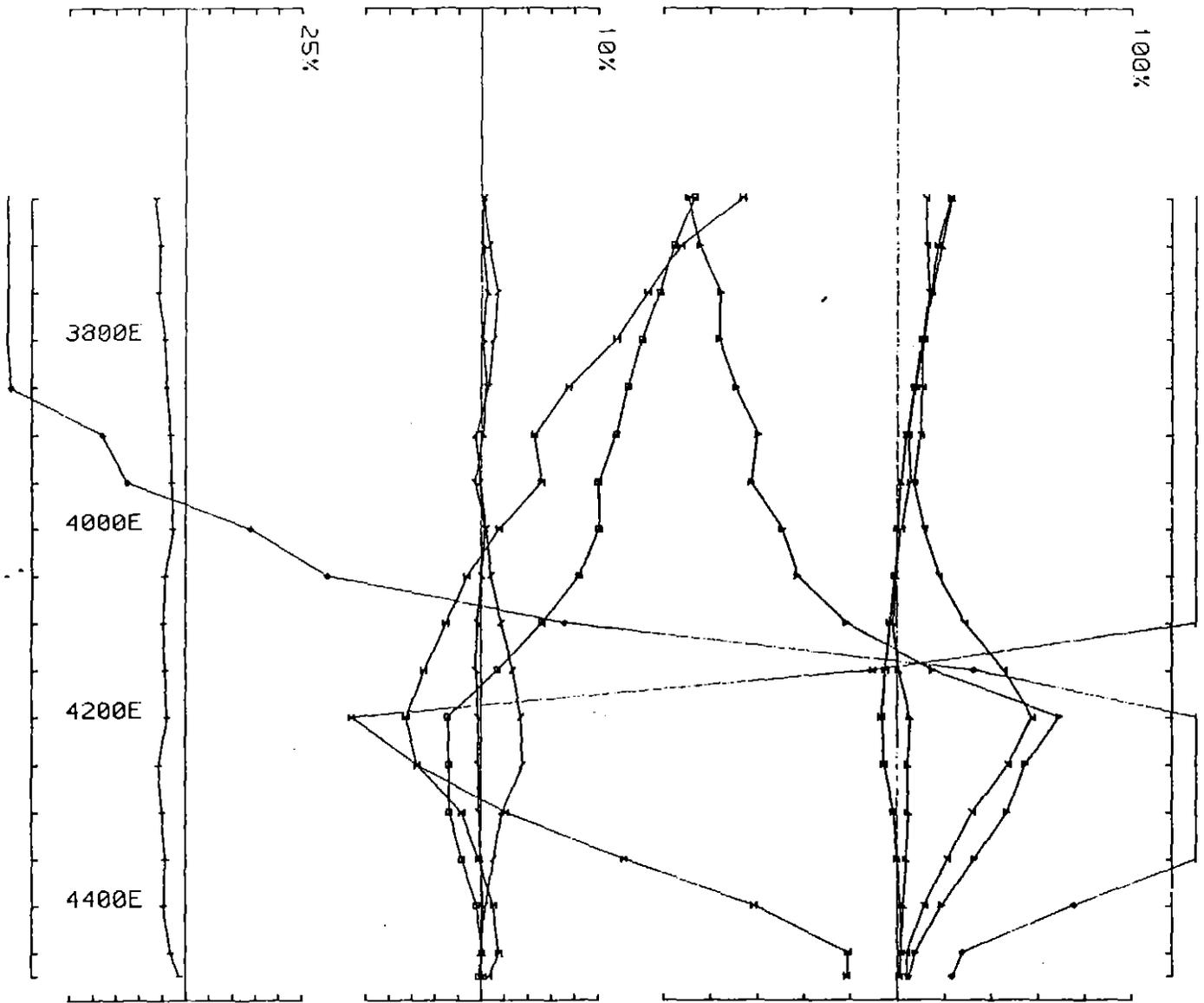


UTEM SURVEY at PIEMAN for B H P

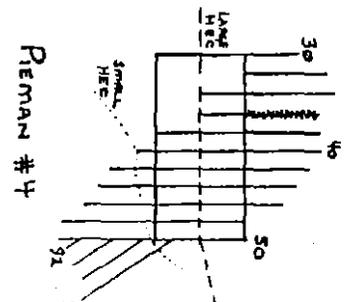
conducted by HU PO DL job 8723 base freq (hz) 26.230

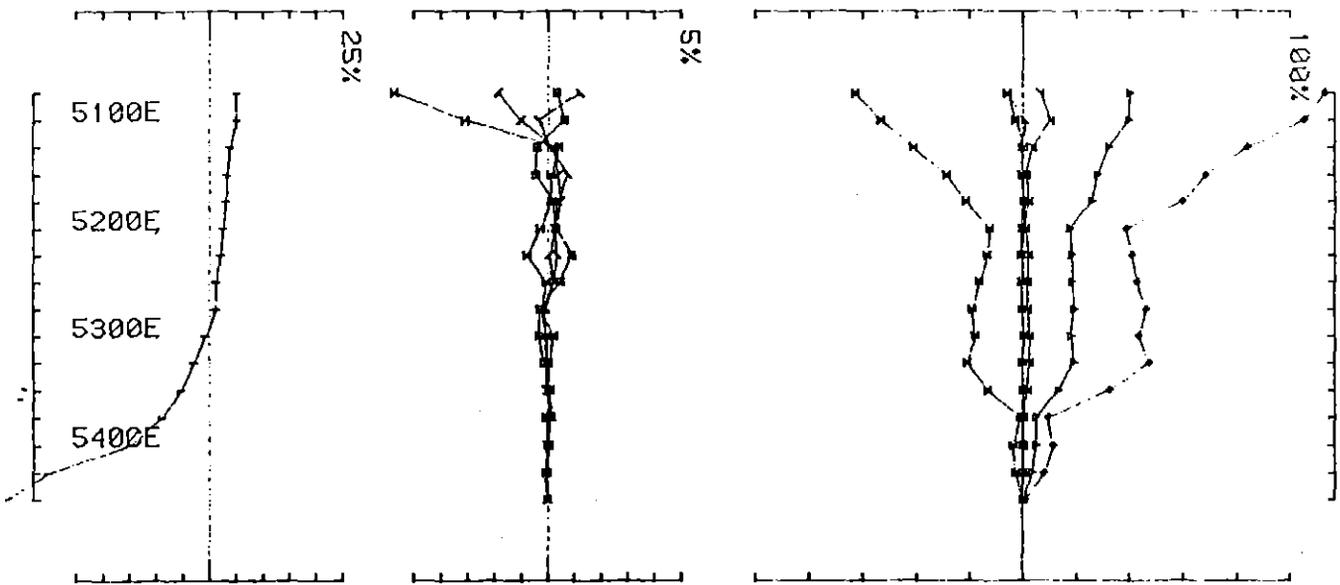
loop no 4 line 3600N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 3600N component Hz secondary field Ch 1 contin. norm.

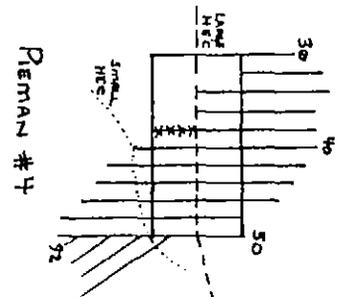


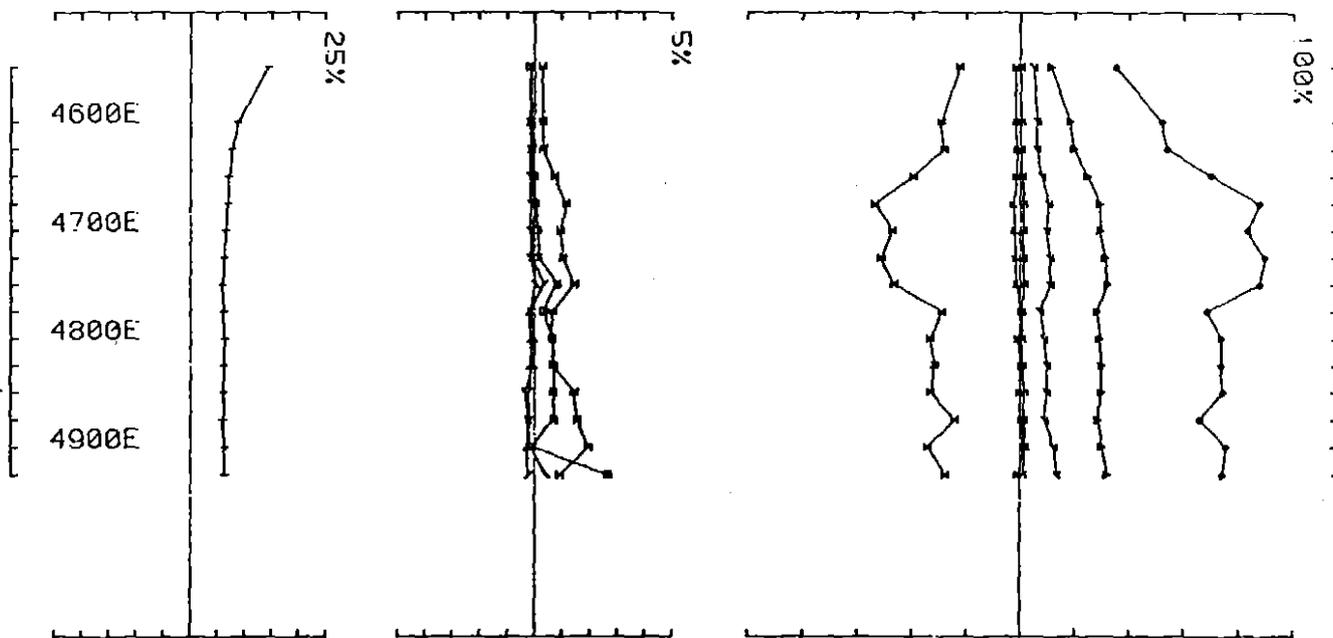


UTEM SURVEY at PIEMAN for B H P

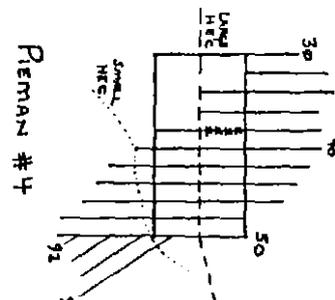
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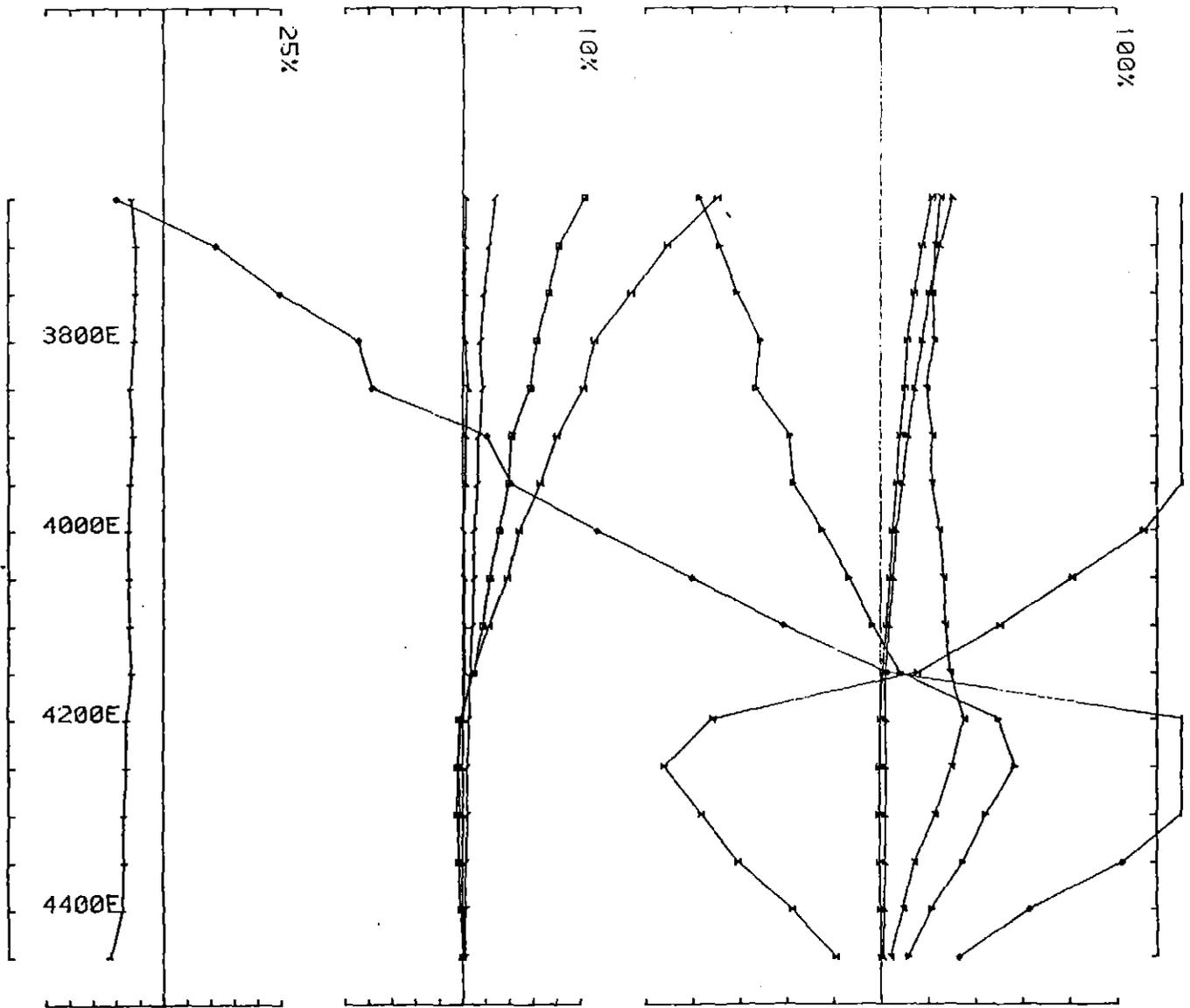
loop no 504 line 3800N component Hz secondary field Ch 1 contin. norm.



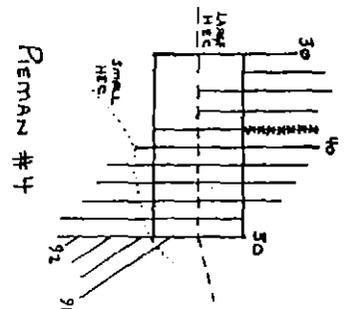


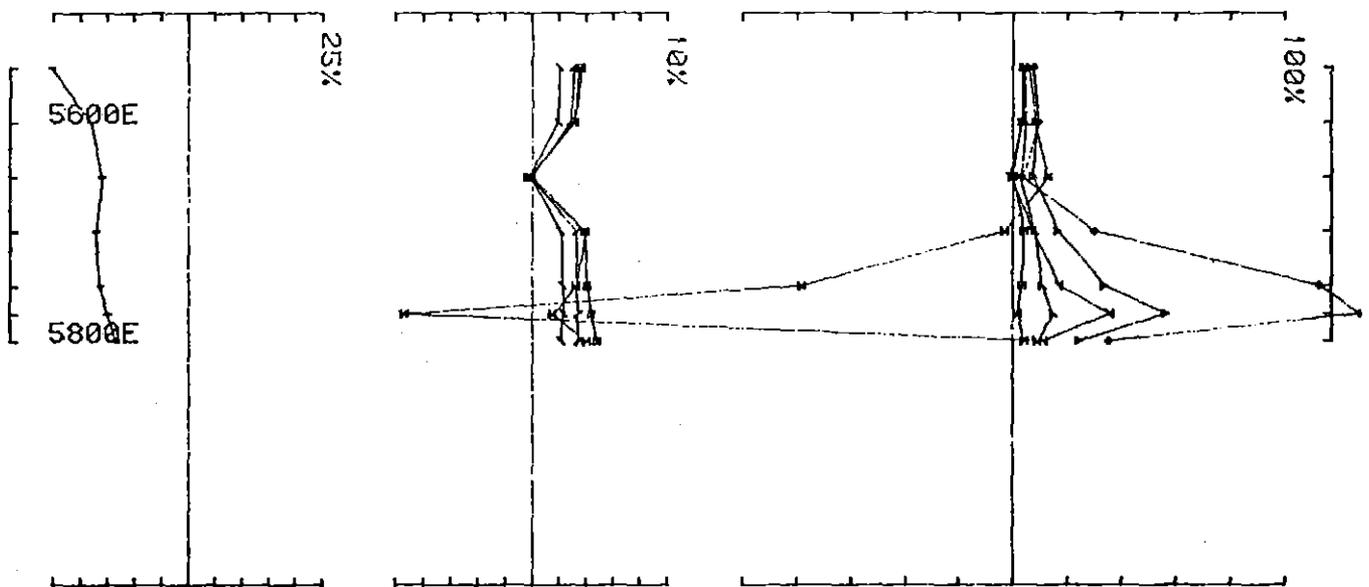
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 3800N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 3800N component Hz secondary field Ch 1 contin. norm.

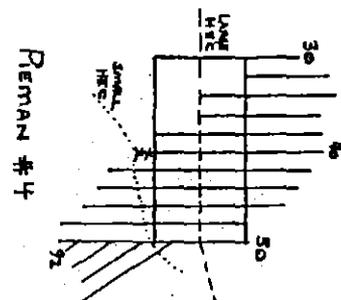


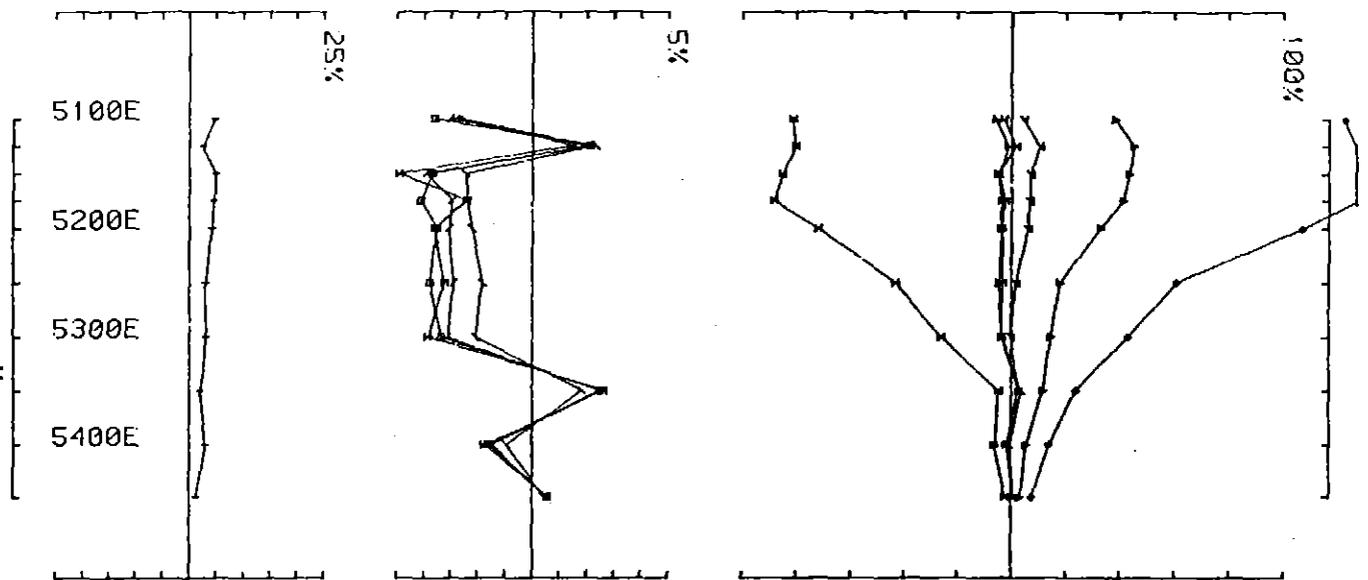


UTEM SURVEY at PIEMAN for B H P

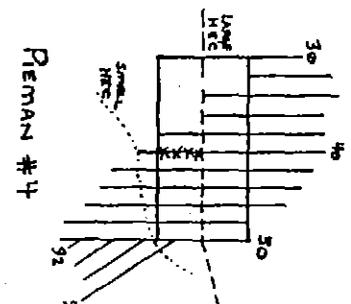
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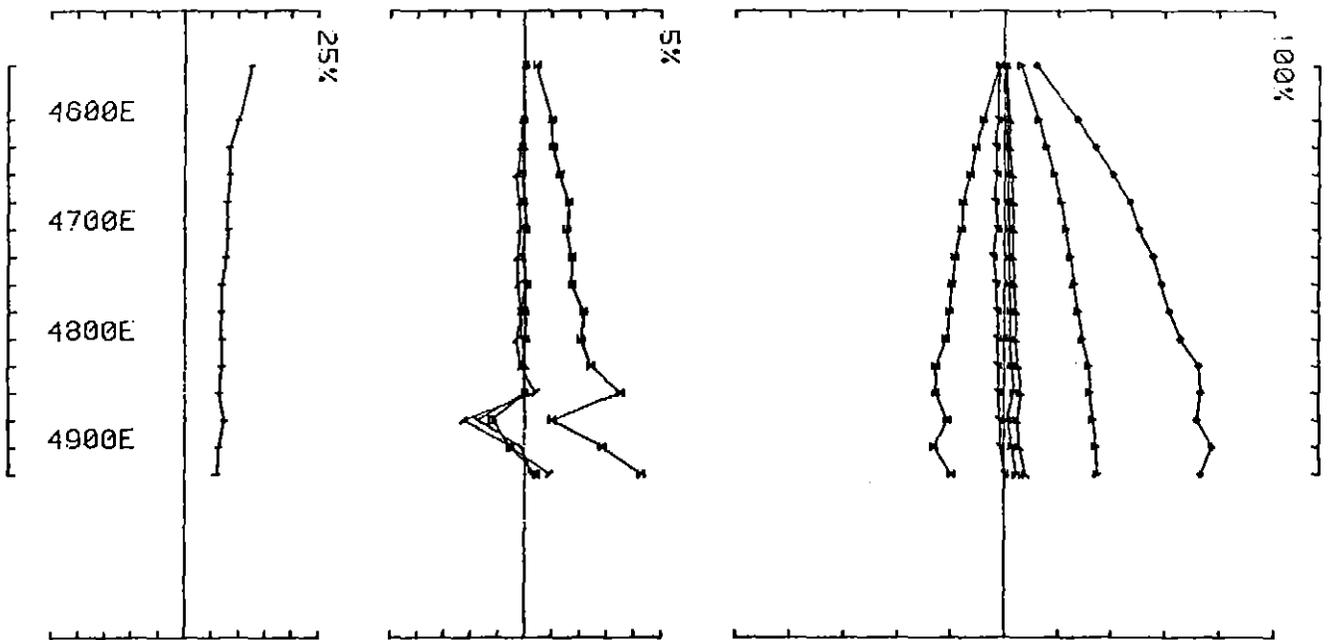
loop no 604 line 4000N component Hz secondary field Ch 1 contin. norm.



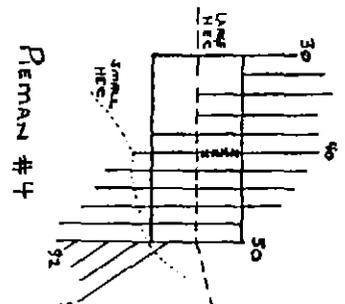


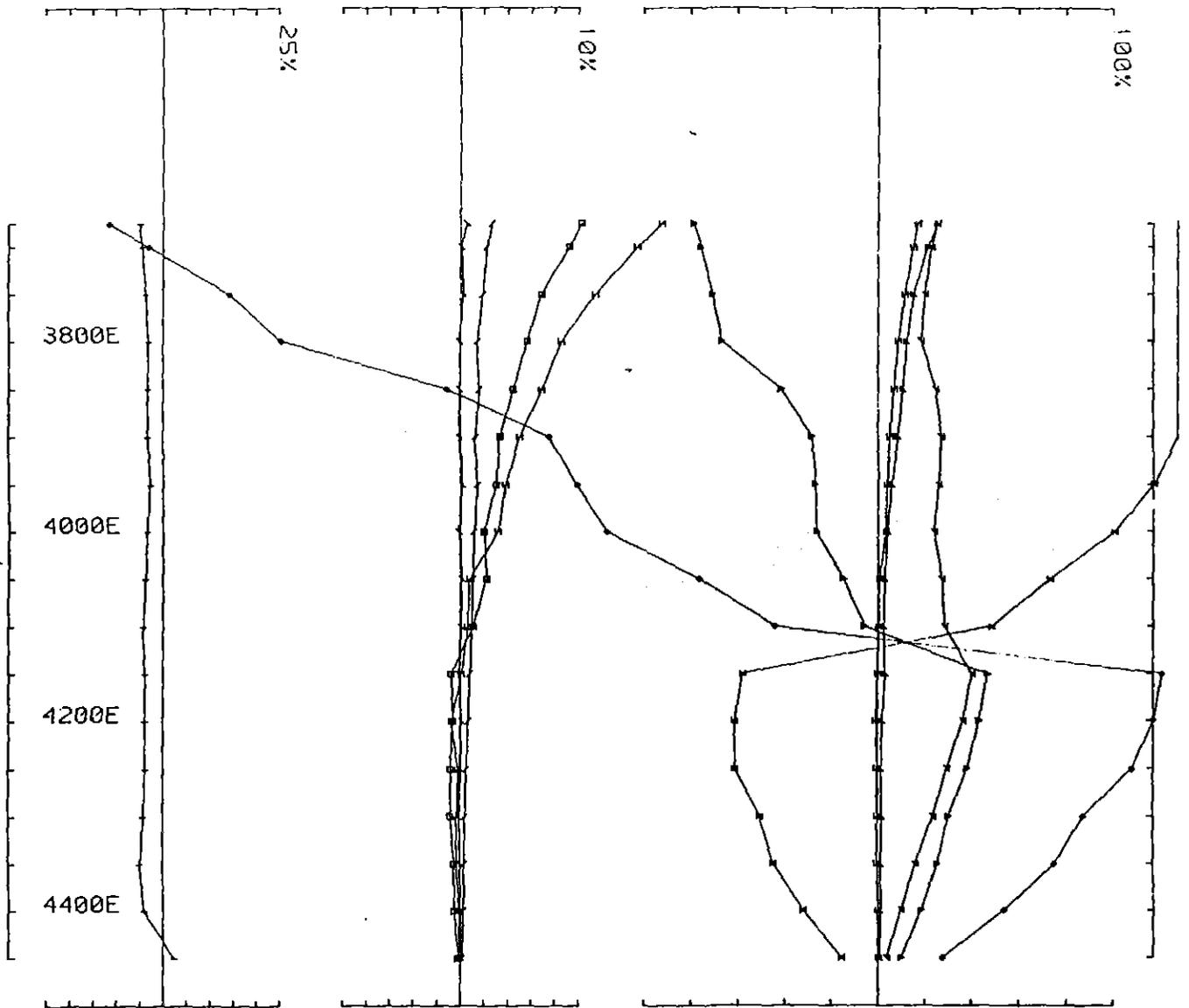
UTEM SURVEY at PIEMAN for B H P
conducted by HU PO DL job 8723 base freq (hz) 26.230
loop no 504 line 4000N component HZ secondary field Ch 1 contin. norm.



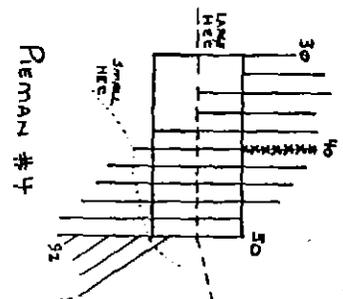


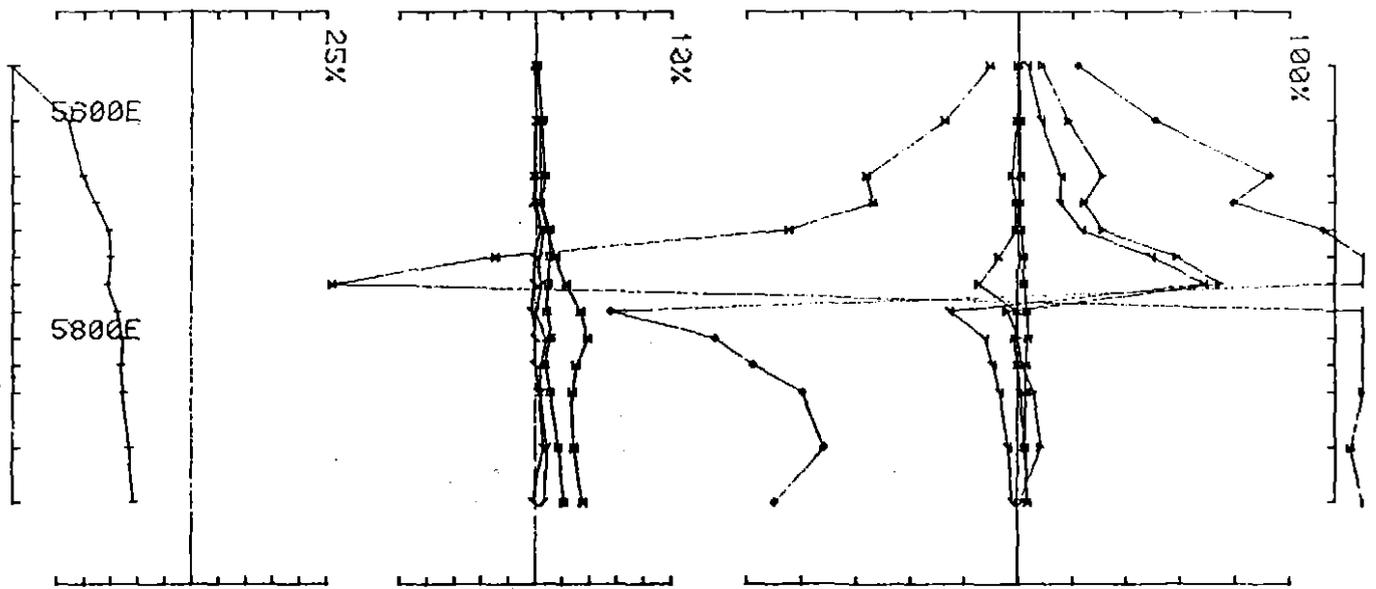
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 loop no 4 line 4000N component Hz secondary field Ch 1 contin. norm.



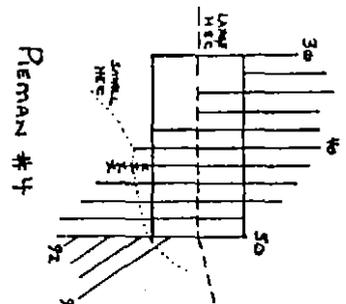


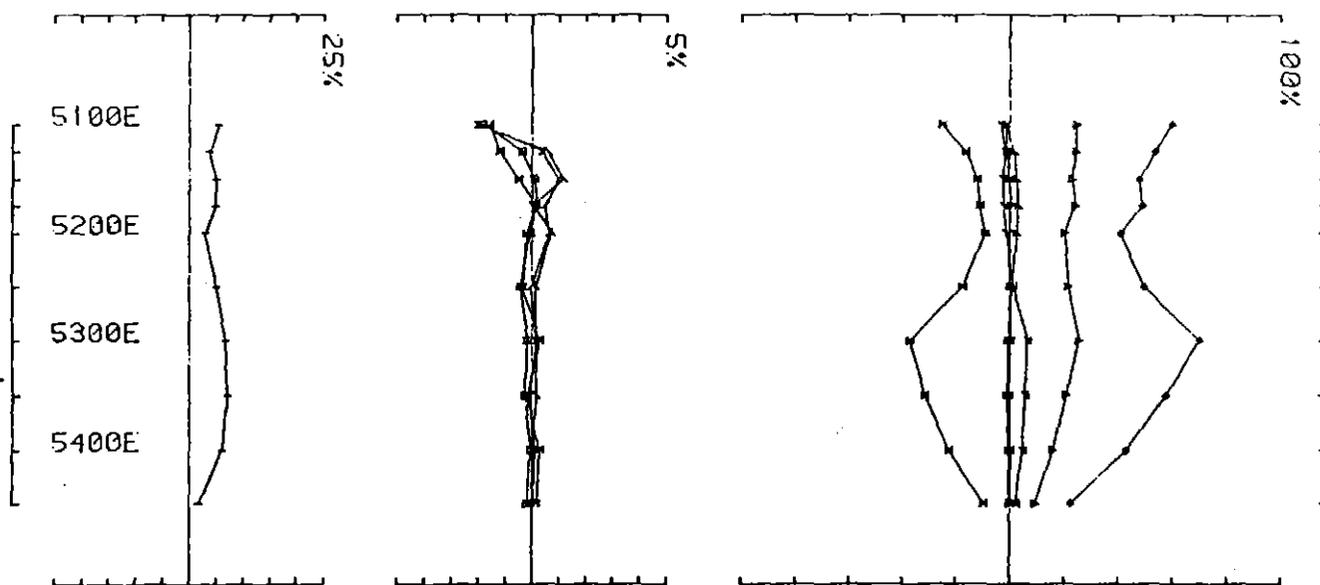
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 4000N component Hz secondary field Ch 1 contin norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL Job 8723 base freq (hz) 26.230
 loop no 604 line 4200N component Hz secondary field Ch 1 contin. norm.

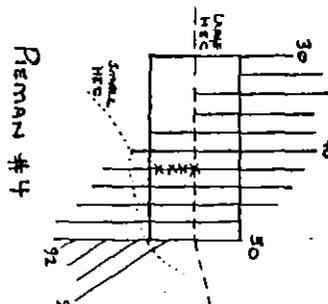


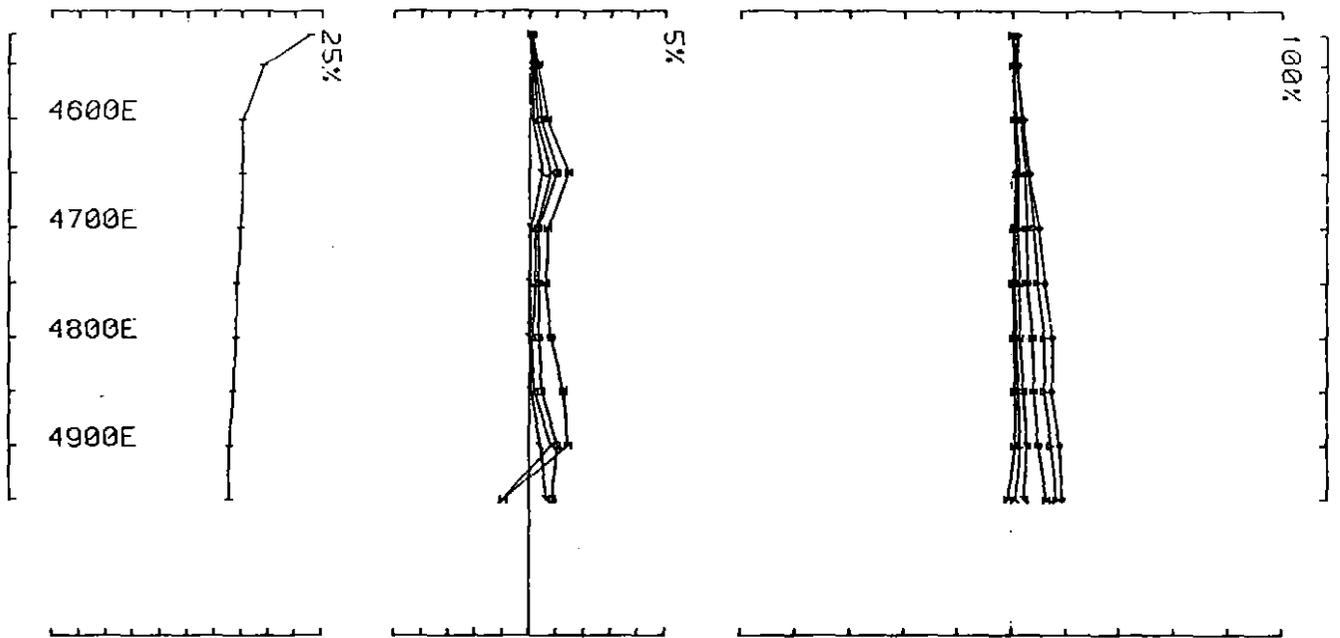


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conducted by HU PO DL job 8723 base freq (hz) 26.230

loop no 504 line 4200N component Hz secondary field Ch 1 contin. norm.

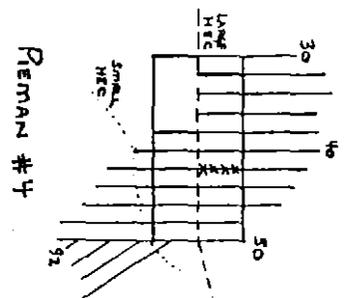


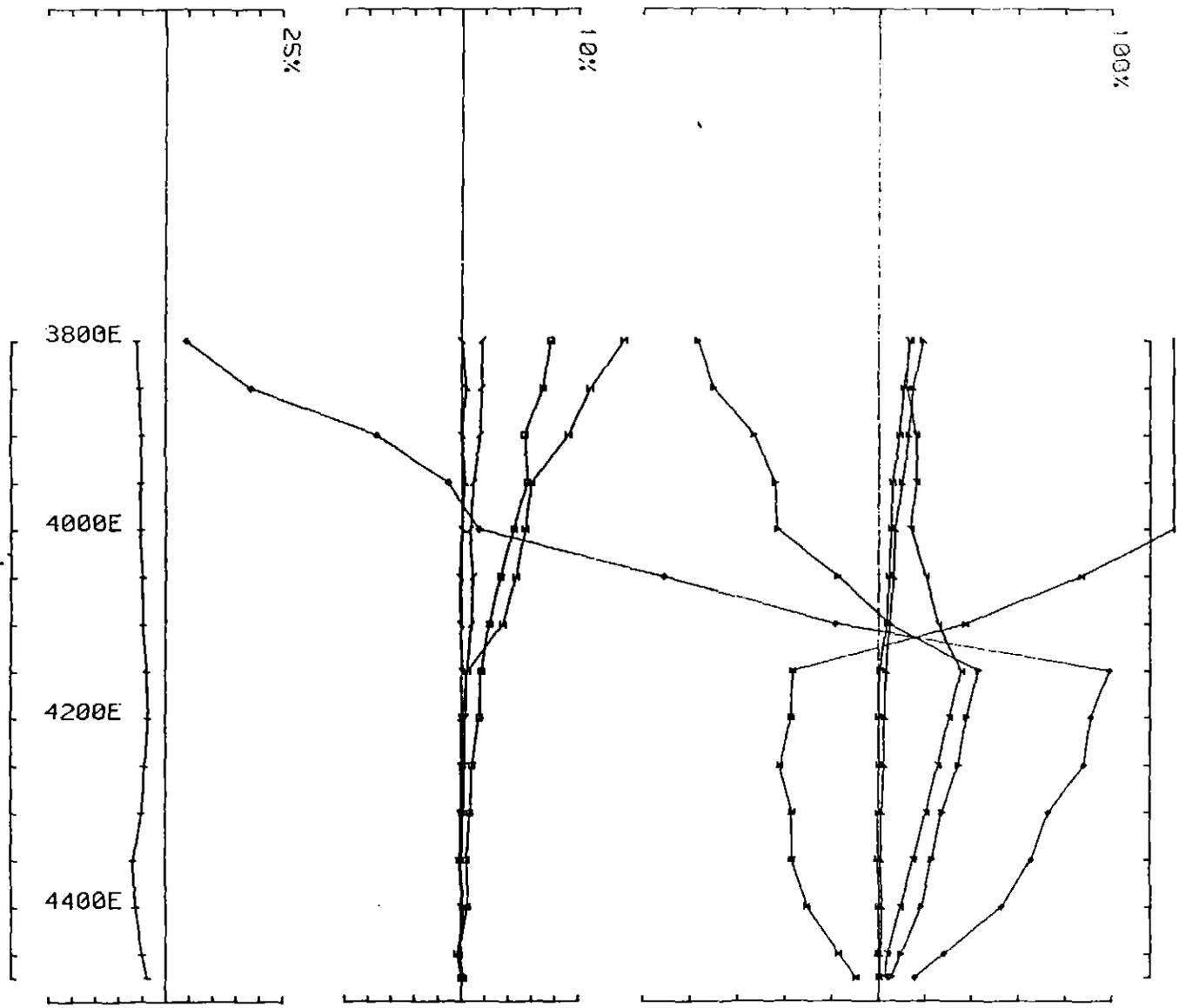


UTEM SURVEY at PIEMAN for B H P

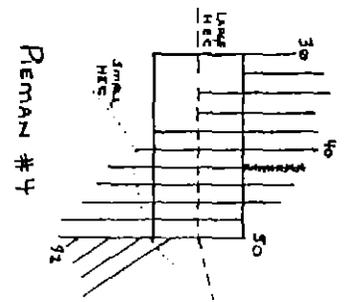
conducted by HU PO DL job 8723 base freq (hz) 26.230

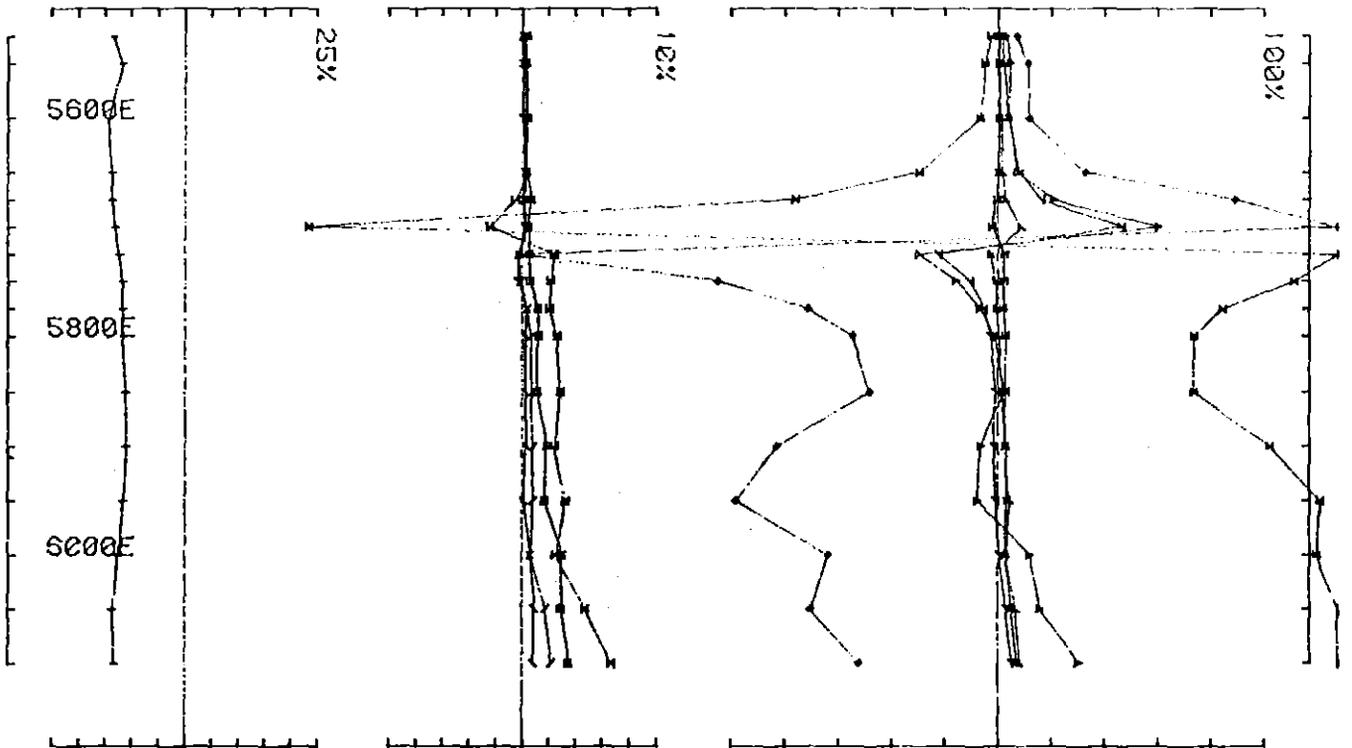
loop no 404 line 4200N component Hz secondary field Ch 1 contin. norm.



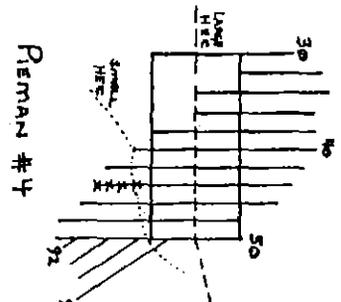


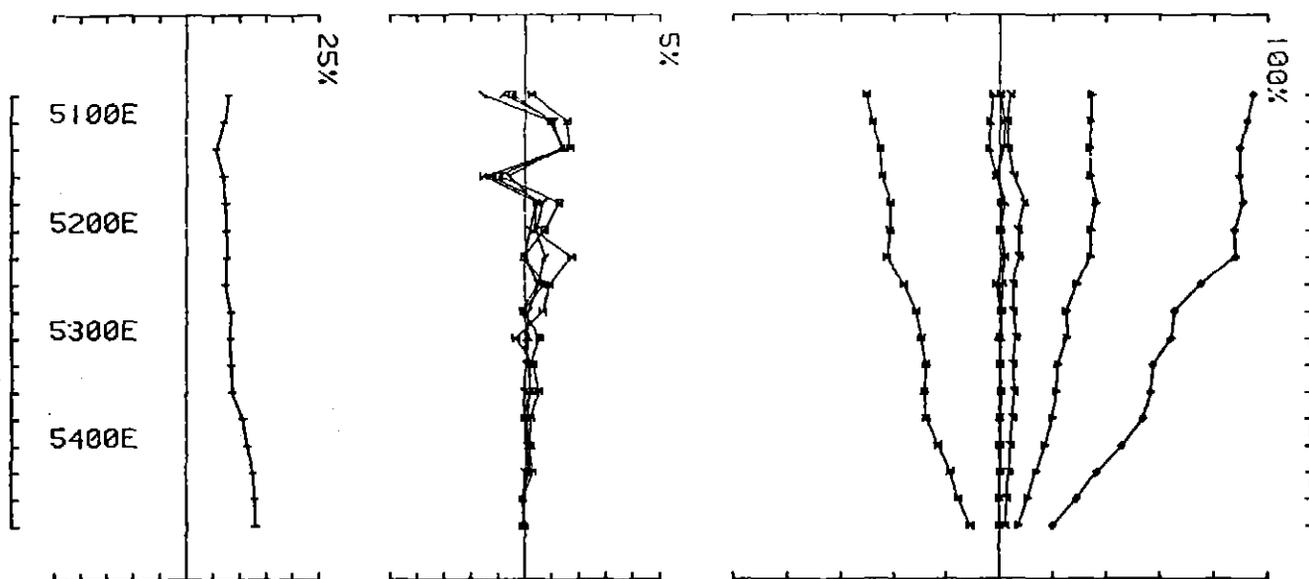
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 4200N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
conducted by HU PO DL job 8723 base freq (hz) 26.230
loop no 604 line 4400N component Hz secondary field Ch 1 contin. norm.

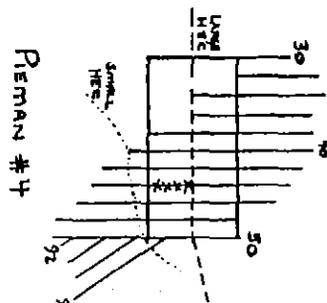


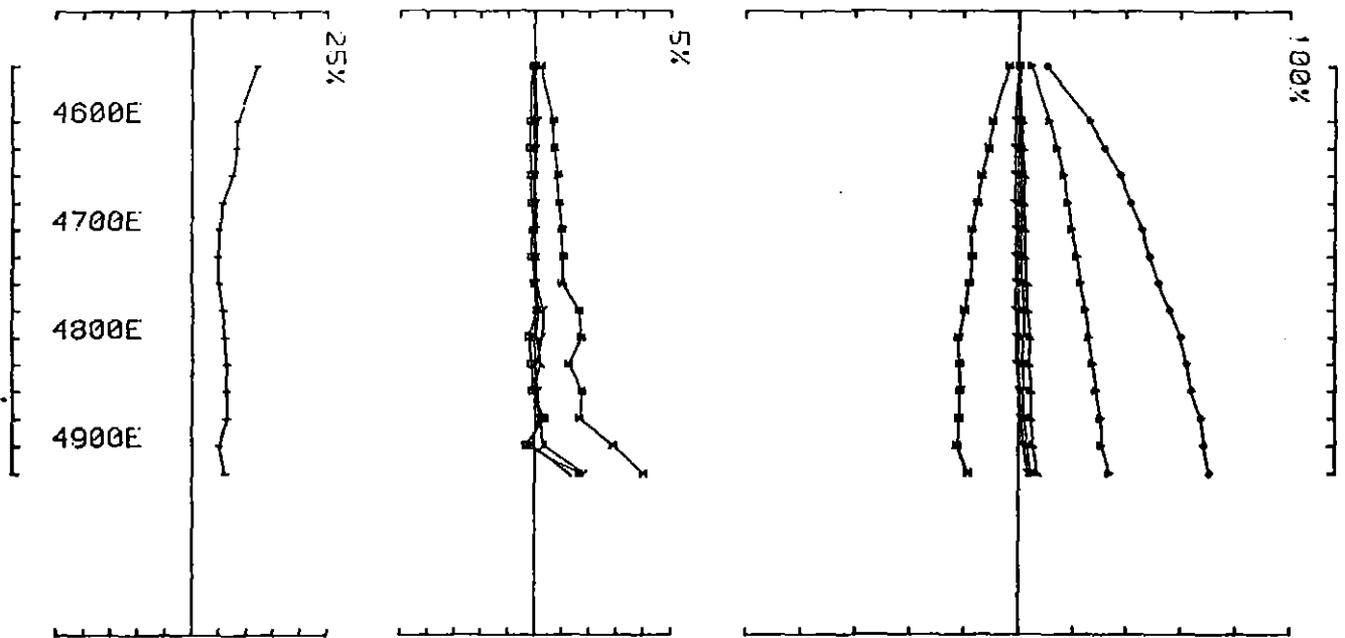


UTEM SURVEY at PIEMAN for B H P

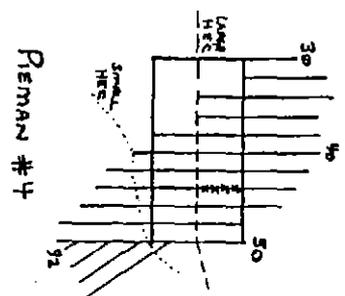
conducted by HU PO DL job 8723 base freq (hz) 26.230

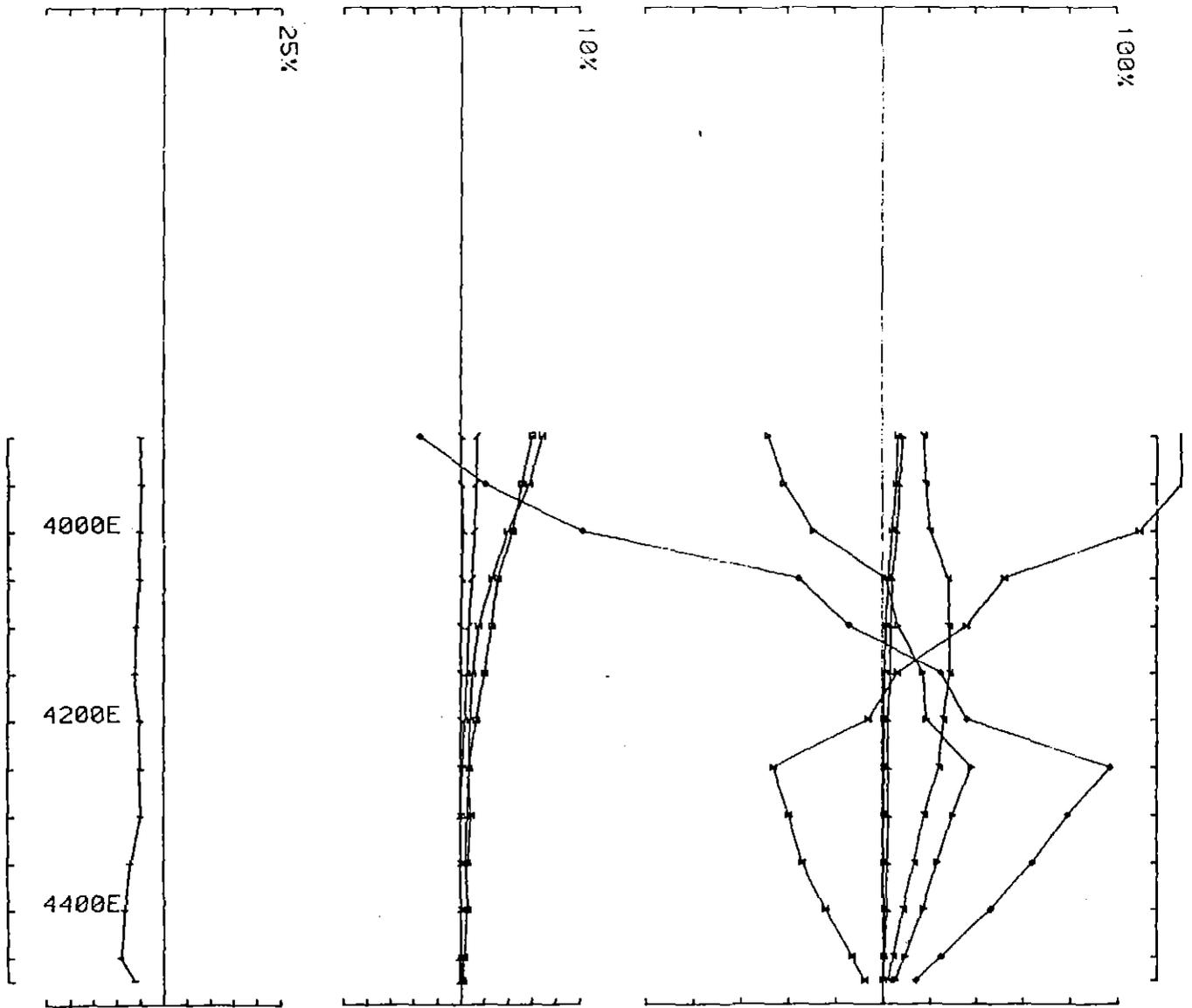
loop no 504 line 4400N component Hz secondary field Ch 1 contin. norm.



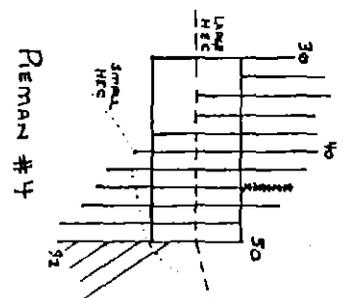


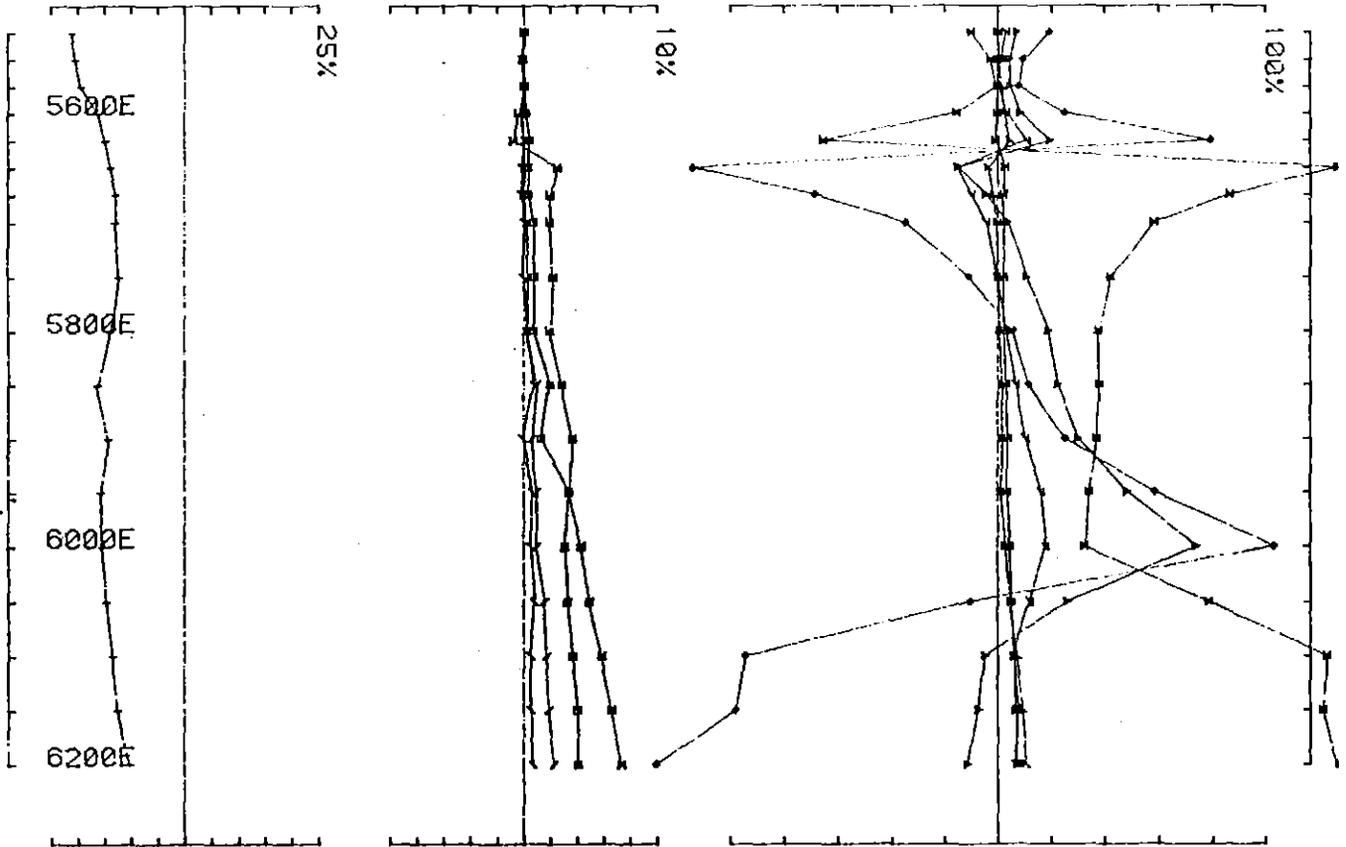
UTEM SURVEY at PIEMAN for B H P
conducted by HU PO DL job 8723 base freq (hz) 26.230
loop no 404 line 4400N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 4400N component Hz secondary field Ch 1 contin. norm.

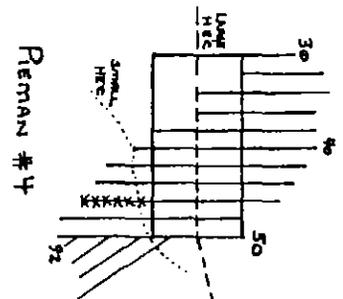


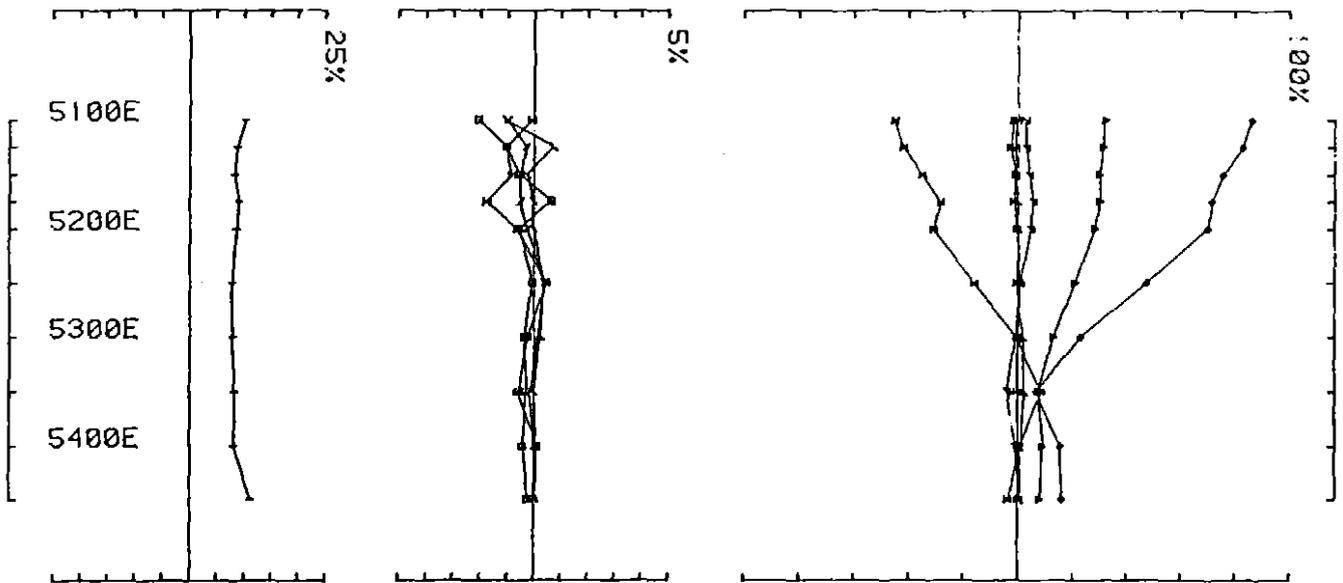


UTEM SURVEY at PIEMAN for B H P

conducted by HU PO DL job 8723 base freq (hz) 26.230

loop no 604 line 4600N component Hz secondary field Ch 1 contin. norm.

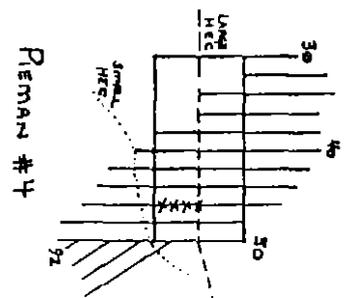


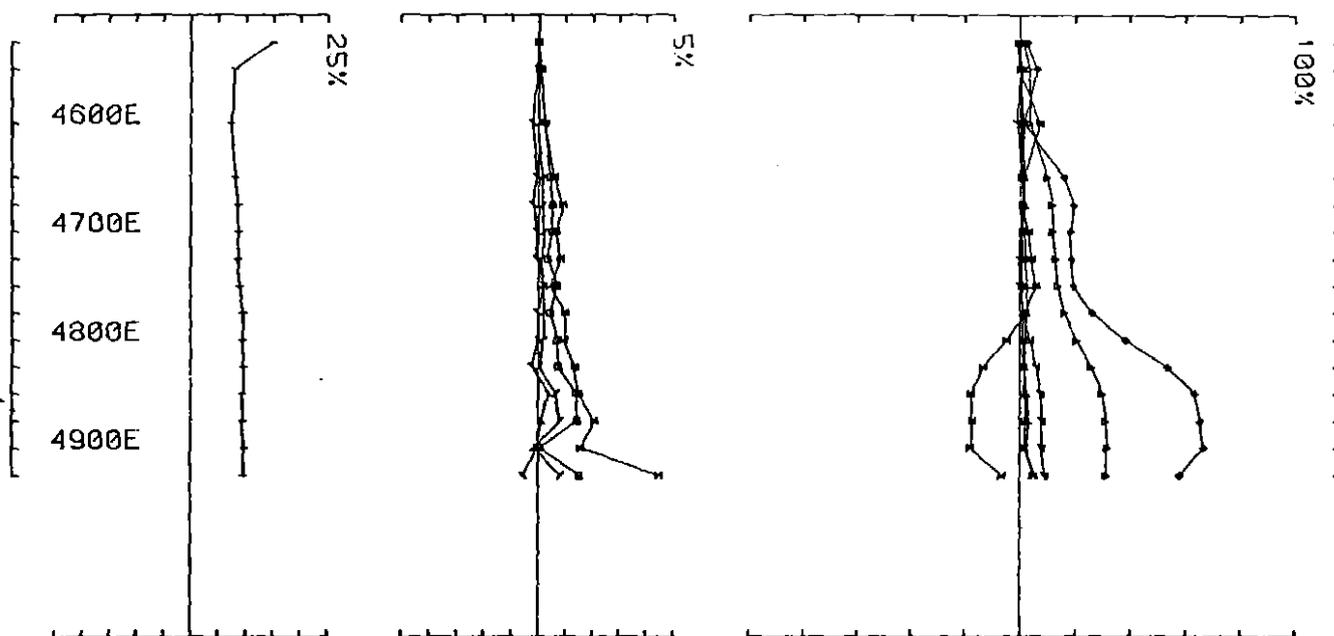


UTEM SURVEY at PIEMAN for B H P

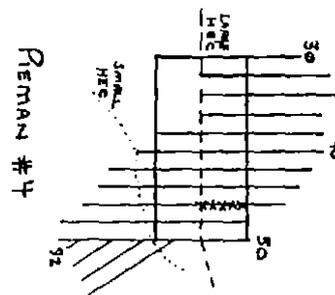
conducted by HU PO DL job 8723 base freq (hz) 26.230

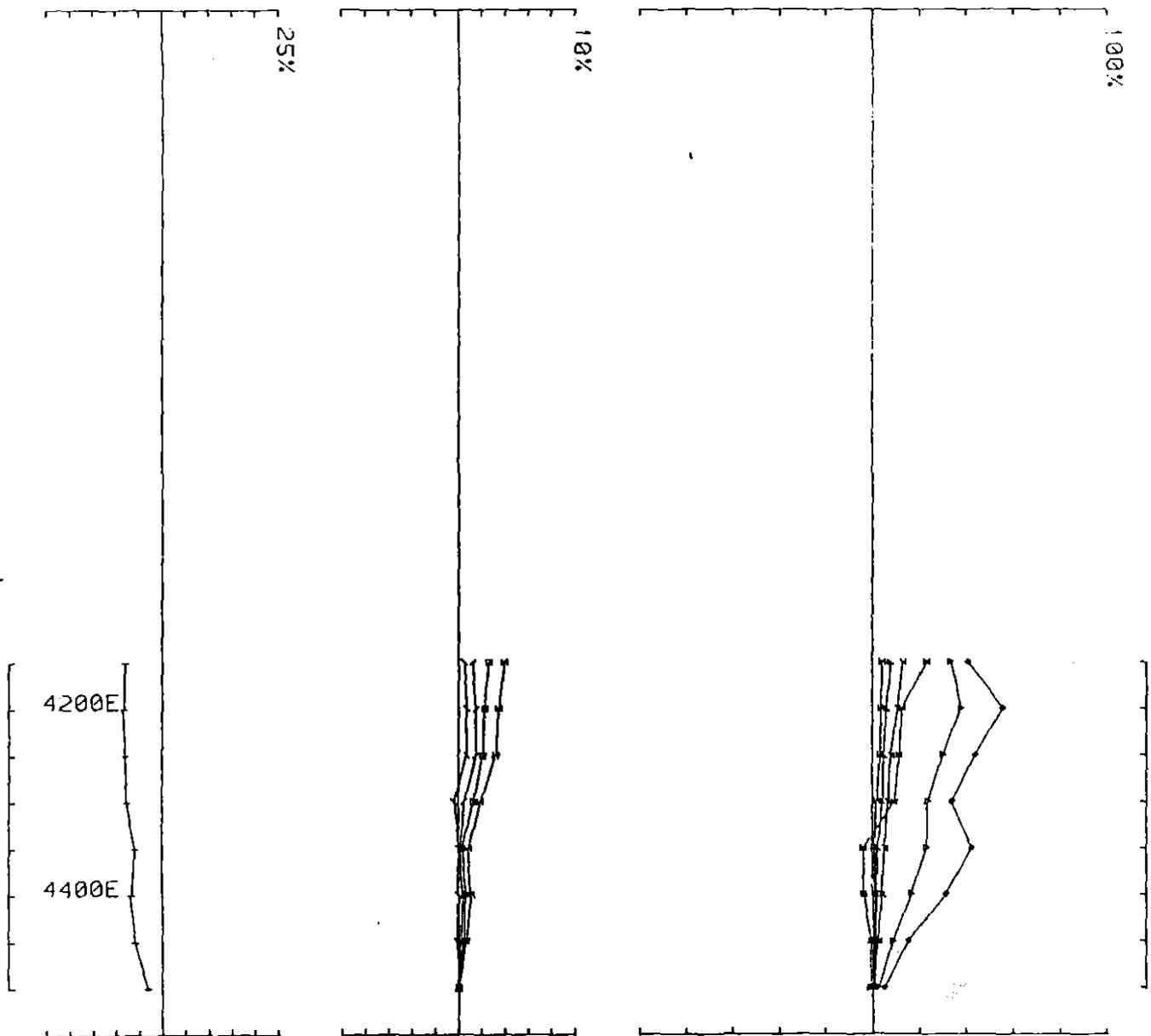
loop no 504 line 4600N component Hz secondary field Ch 1 contin. norm.



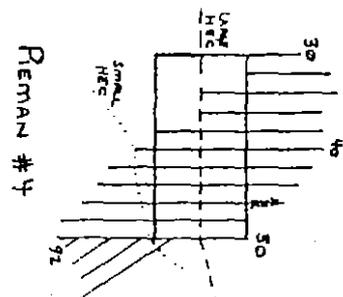


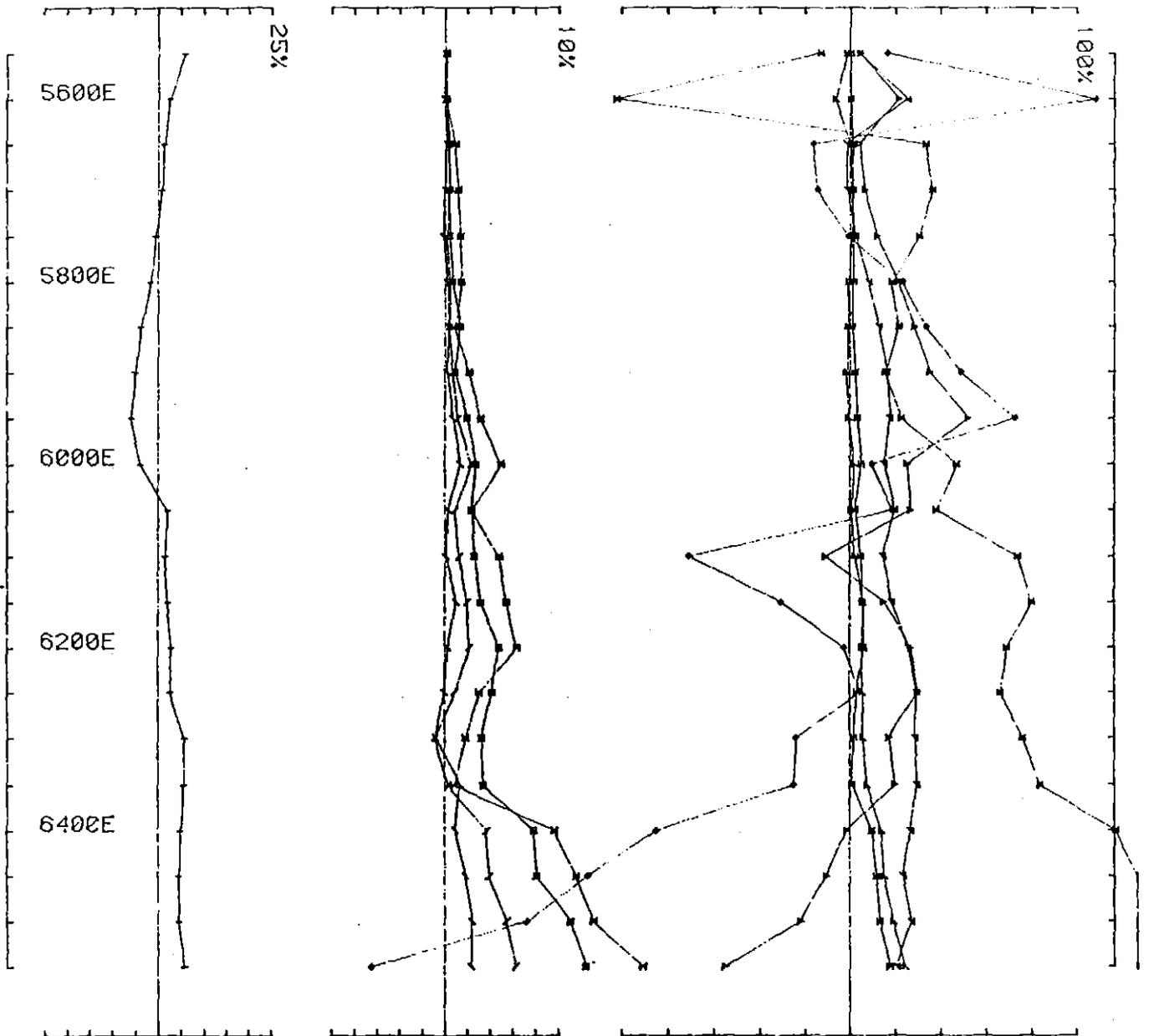
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 4600N component Hz secondary field Ch 1 contin norm.



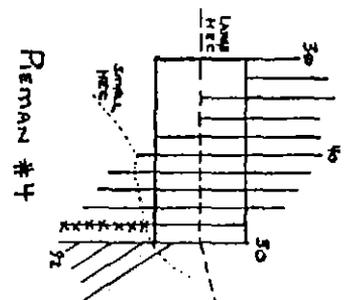


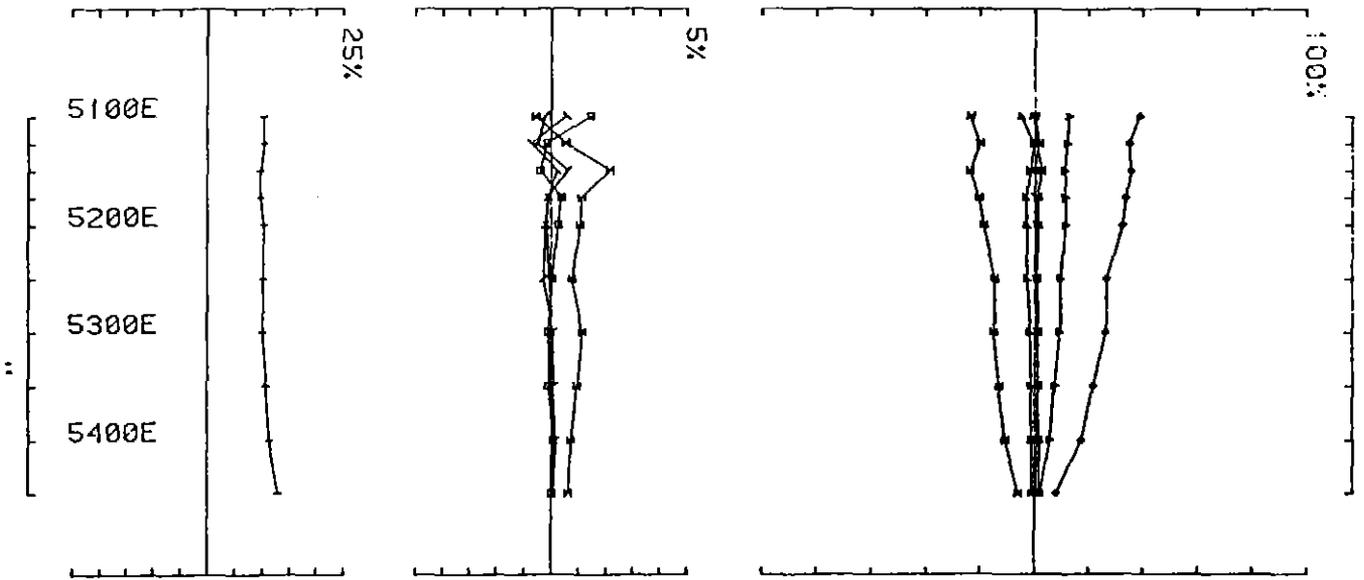
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 4 line 4600N component Hz secondary field Ch 1 contin. norm.



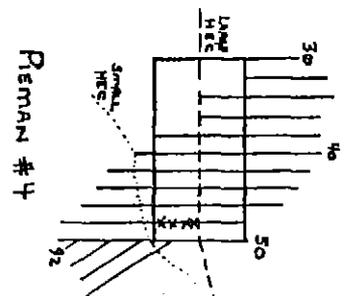


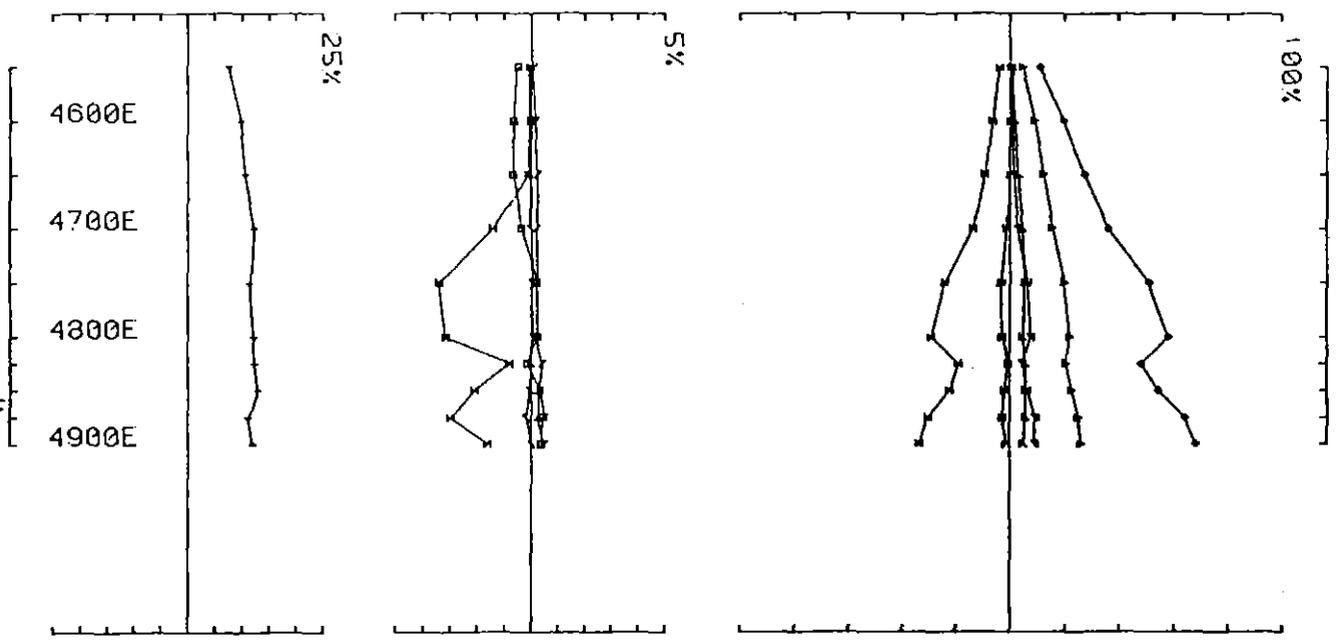
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL Job 8723 base freq (hz) 26.230
 loop no 504 line 4800N component Hz secondary field Ch 1 contin. norm.



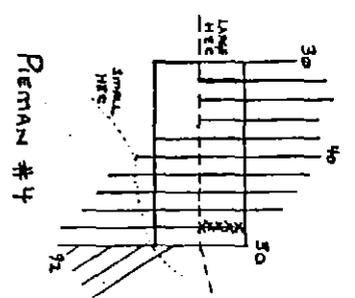


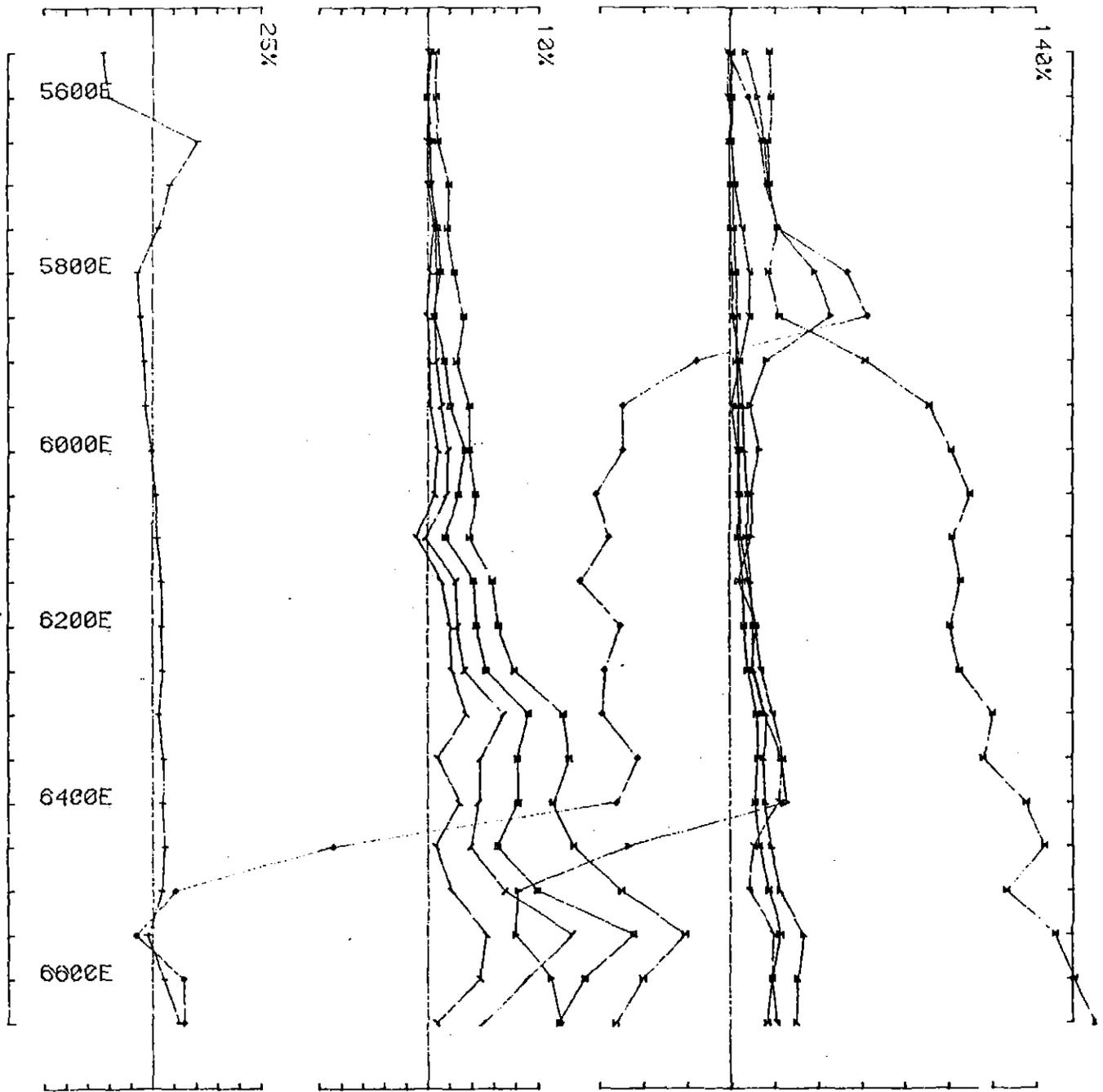
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 504 line 4800N component Hz secondary field Ch 1 contin. norm.



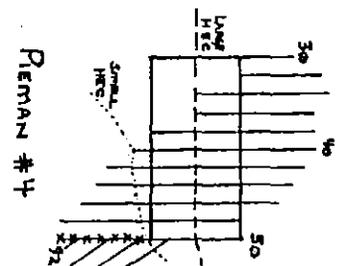


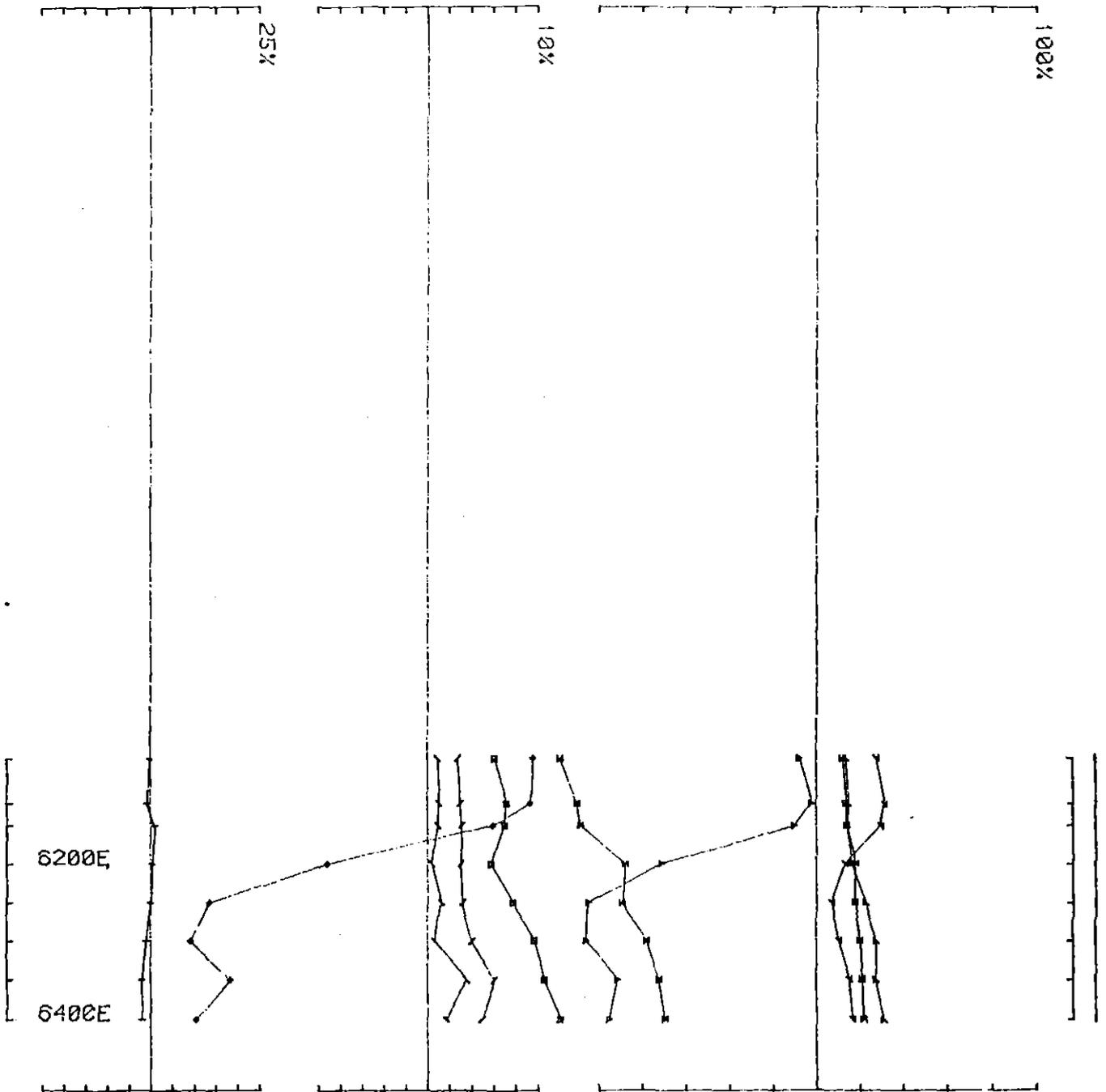
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26 230
 loop no 4 line 4800N component Hz secondary field Ch 1 contin norm.



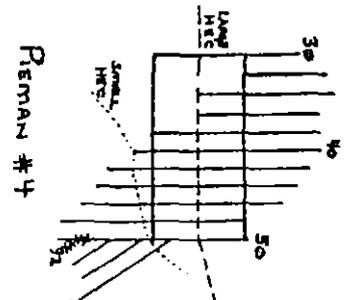


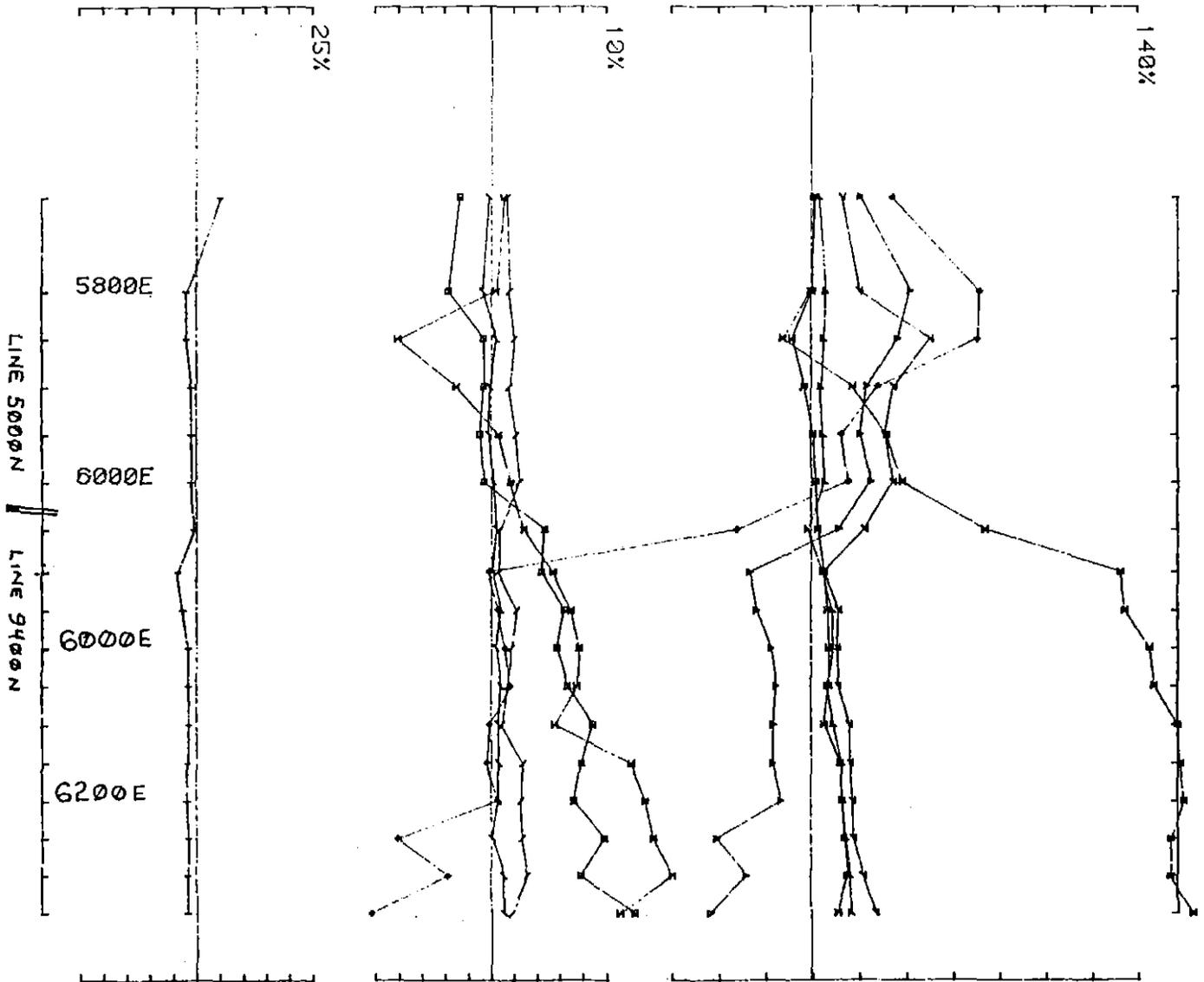
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL Job 8723 base freq (hz) 26.230
 loop no 504 line 5000N component HZ secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 604 line 9200N component Hz secondary field Ch 1 contin. norm.

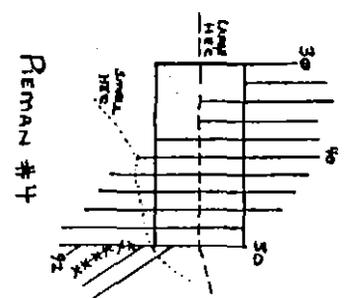


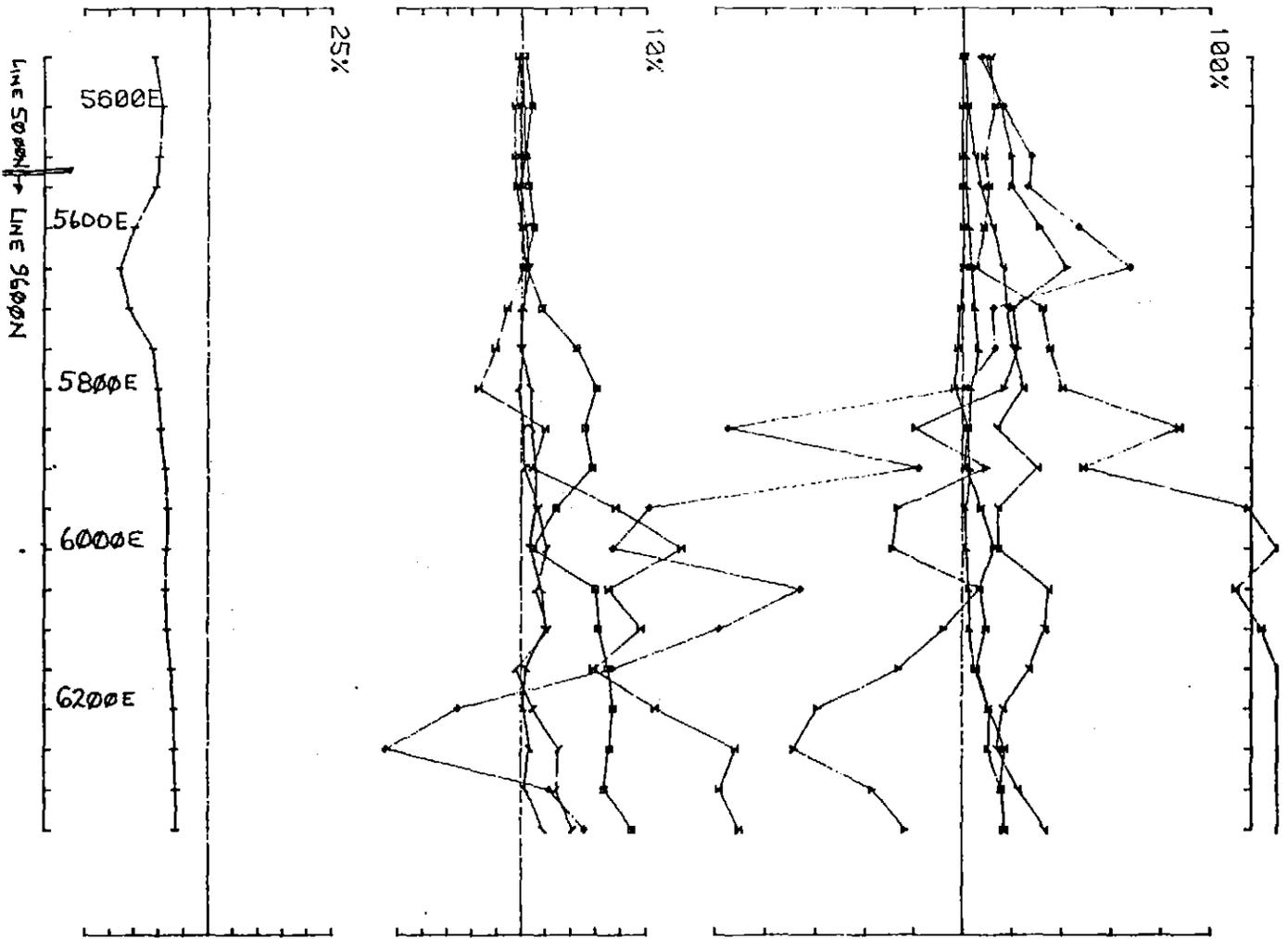


UTEM SURVEY at PIEMAN for B H P

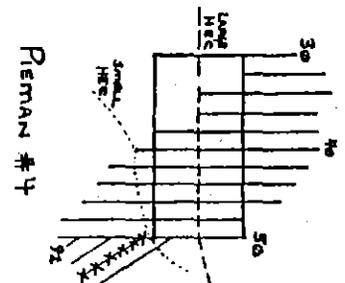
conducted by HU PO DL Job 8723 base freq (hz) 28.230

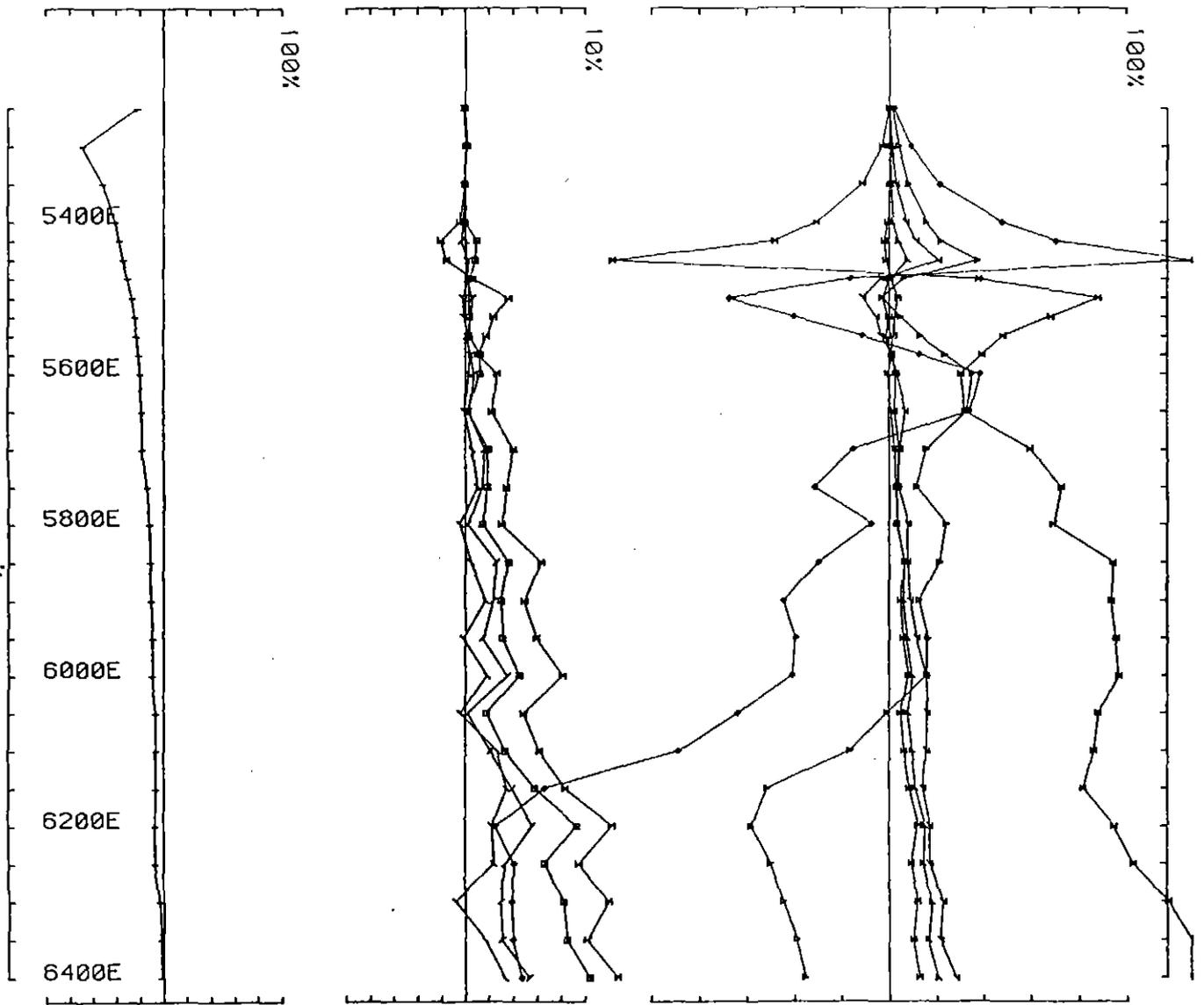
loop no 504 line 9400N component Hz secondary field Ch 1 contin. norm.



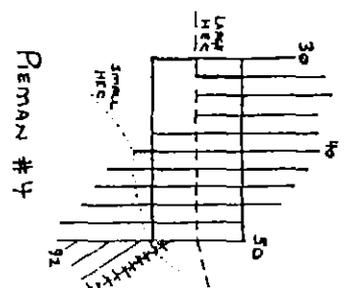


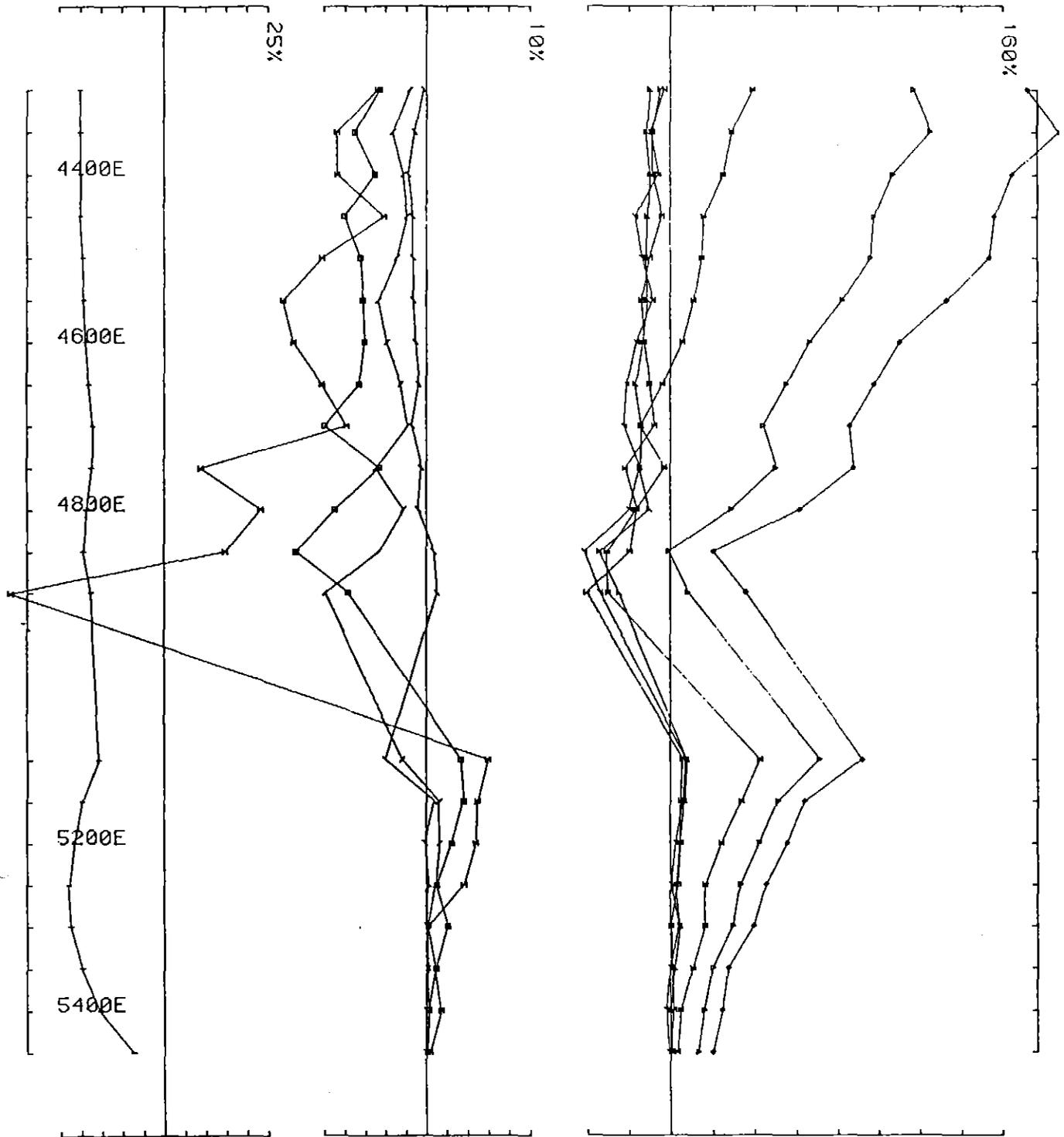
UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL job 8723 base freq (hz) 26.230
 loop no 604 line 9600N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PO DL Job 8723 base freq (hz) 26.230
 loop no 604 line 9800N component Hz secondary field Ch 1 contin. norm.

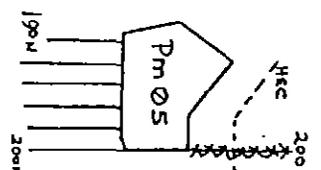


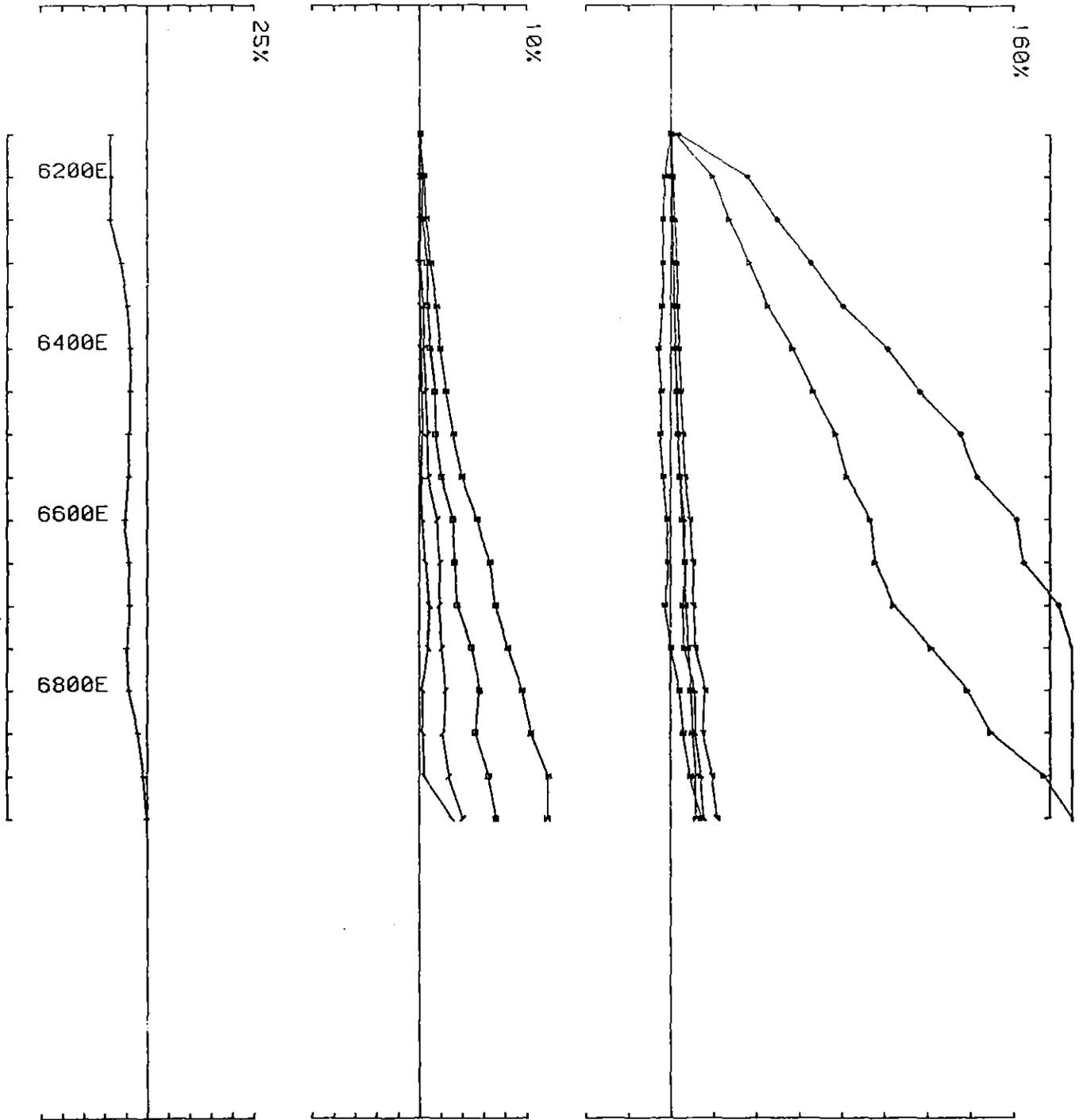


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 5 line 2000N component Hz secondary field Ch 1 contin. norm.

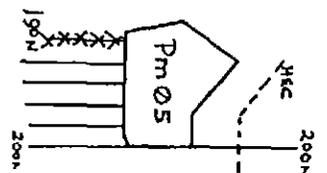


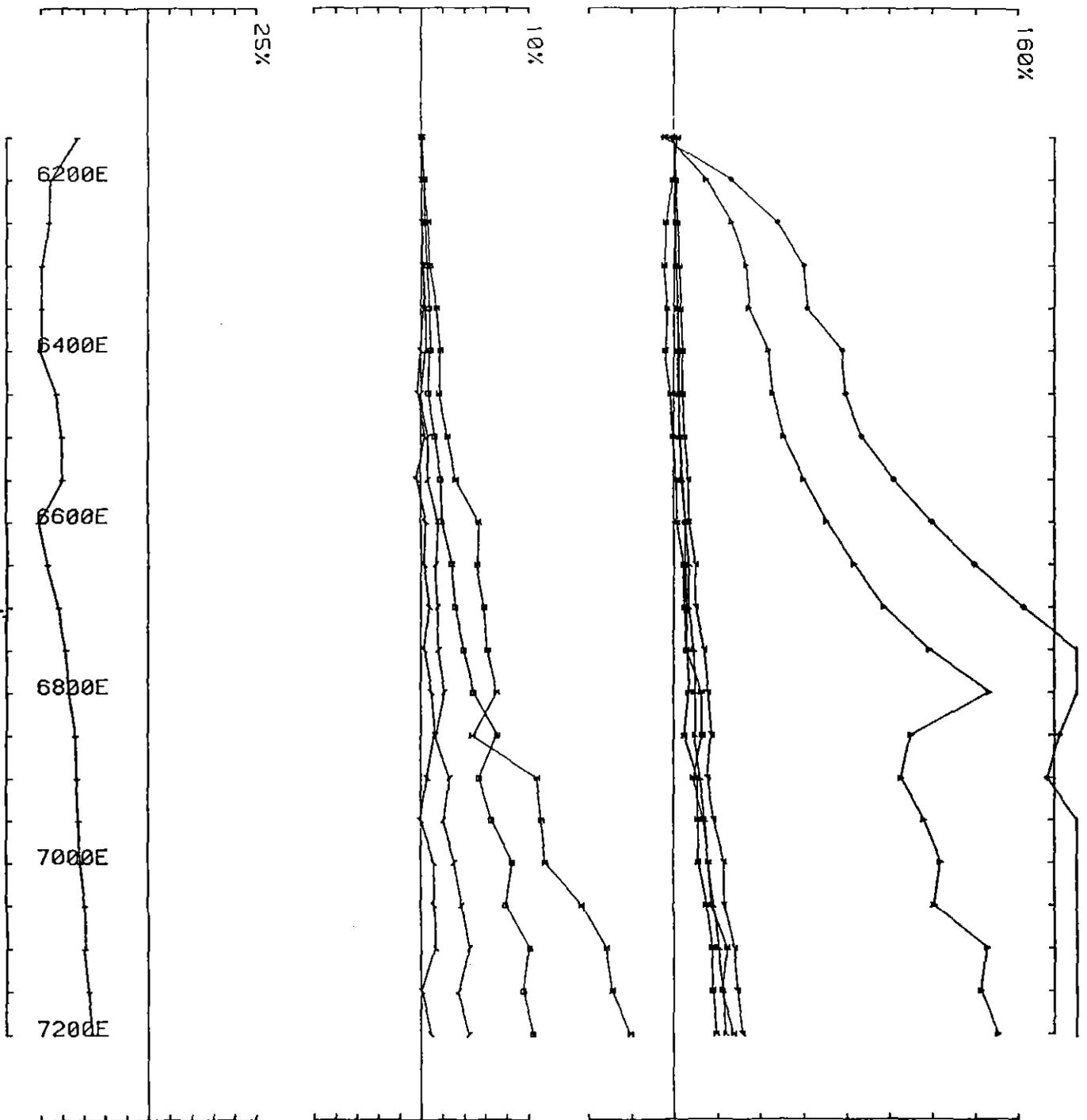


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 5 line 19000N component Hz secondary field Ch 1 contin. norm.

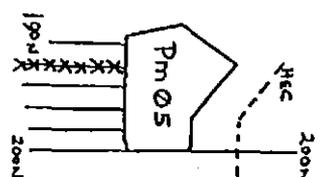


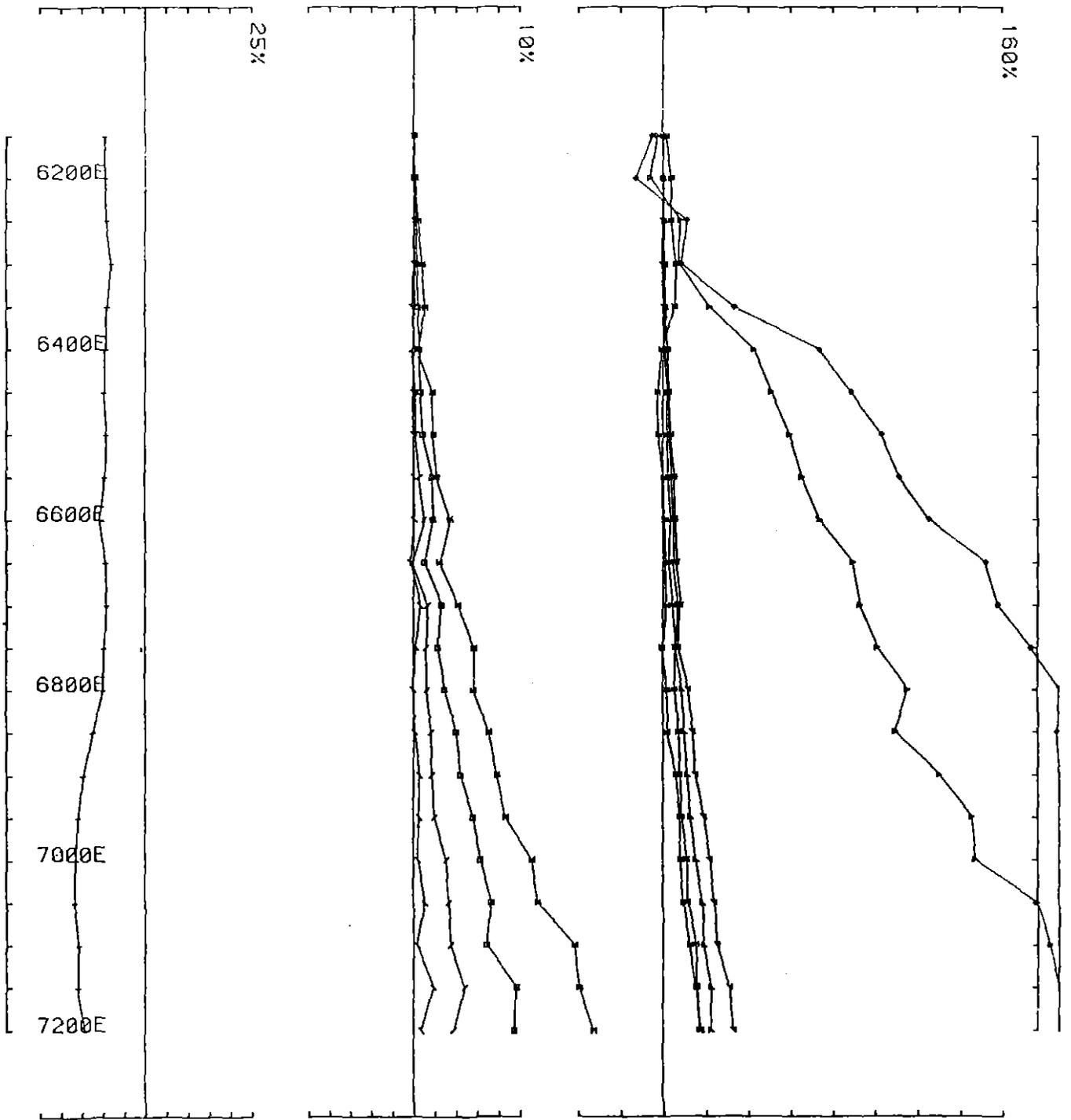


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 5 line 19200N component Hz secondary field Ch 1 contin. norm.

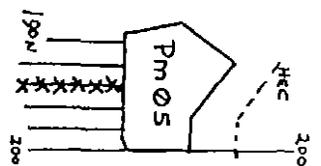


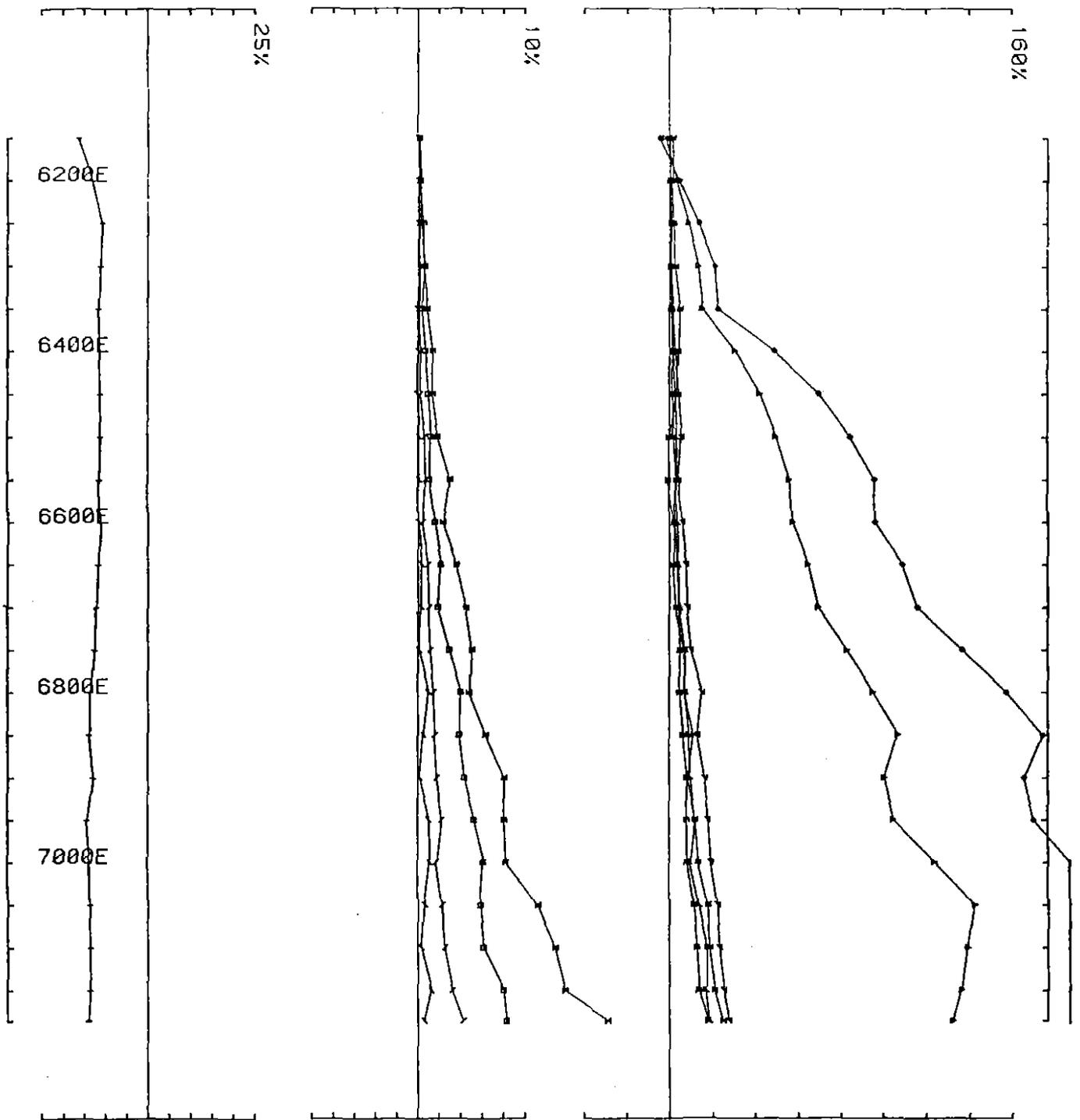


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 5 line 19400N component Hz secondary field Ch 1 contin. norm.

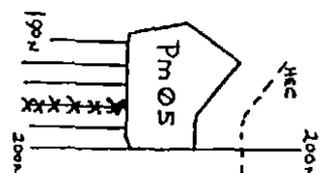


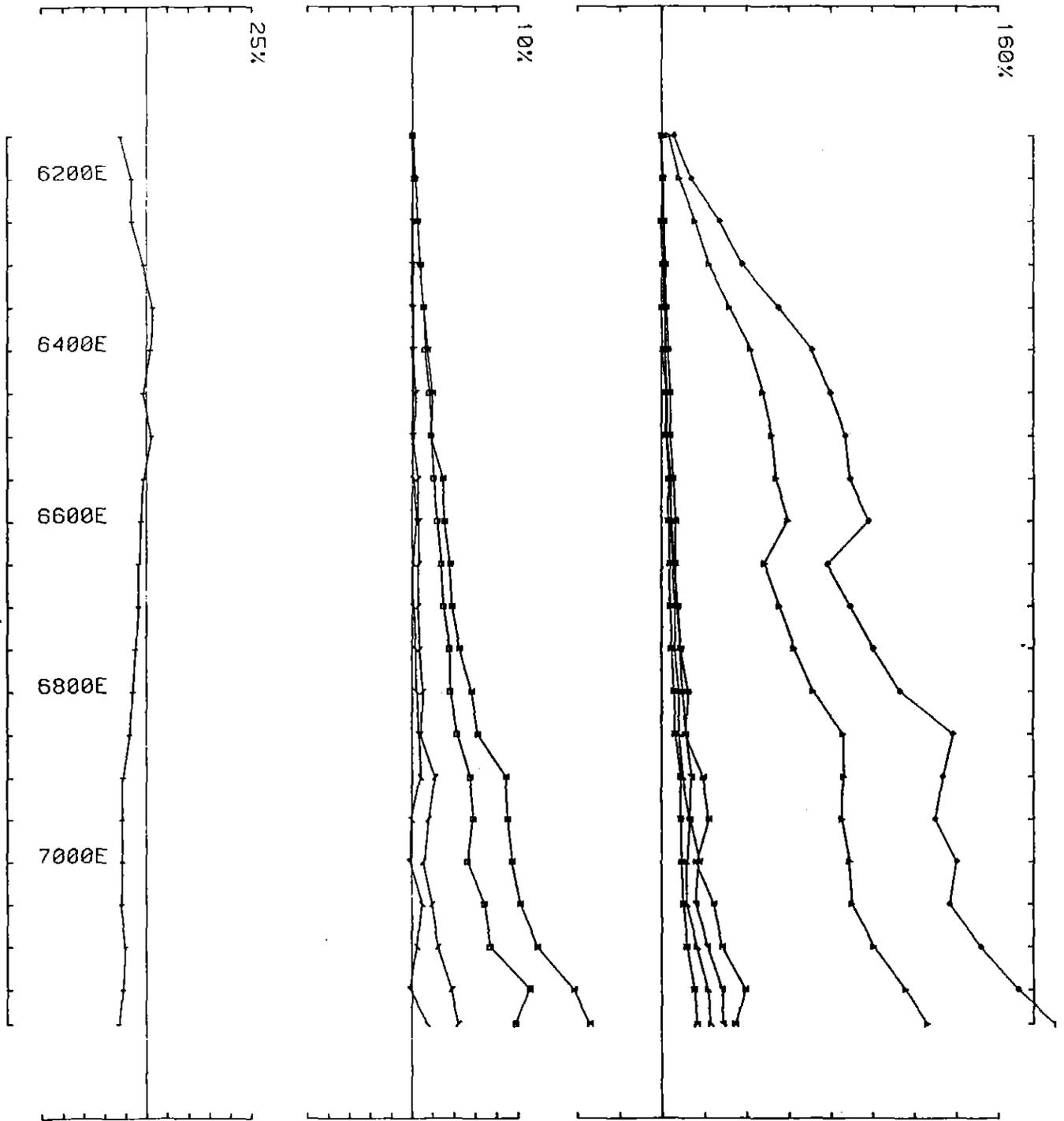


UTEM SURVEY at PIEMAN for B H P

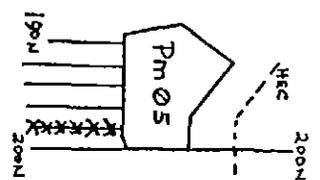
conducted by HU PM PO job 8723 base freq (hz) 26.230

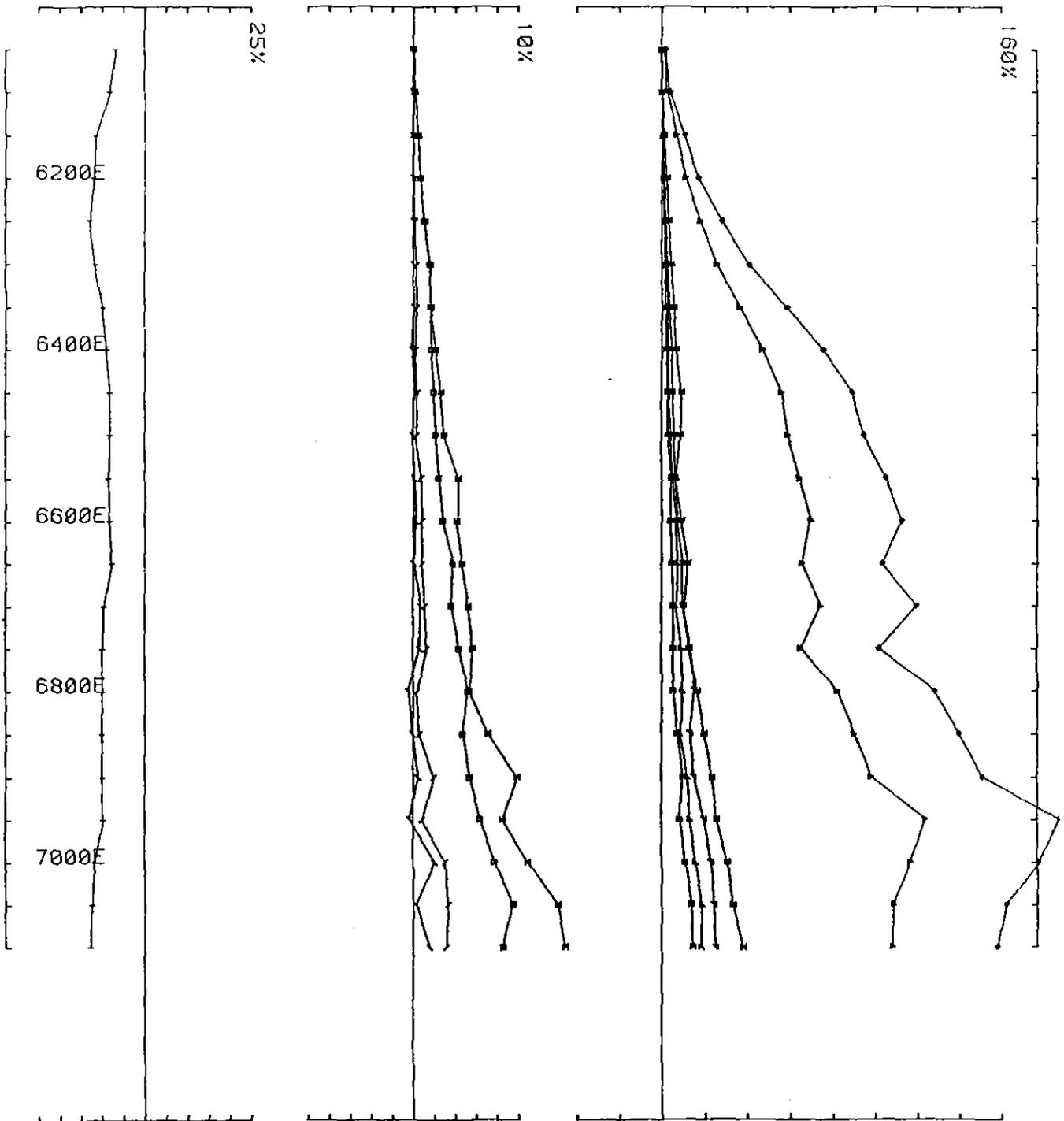
loop no 5 line 19600N component Hz secondary field Ch 1 contin. norm.





UTEM SURVEY at PIEMAN for B H P
 conducted by HU PM PQ job 8723 base freq (hz) 26.230
 loop no 5 line 19800N component Hz secondary field Ch 1 contin. norm.

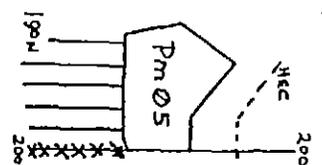


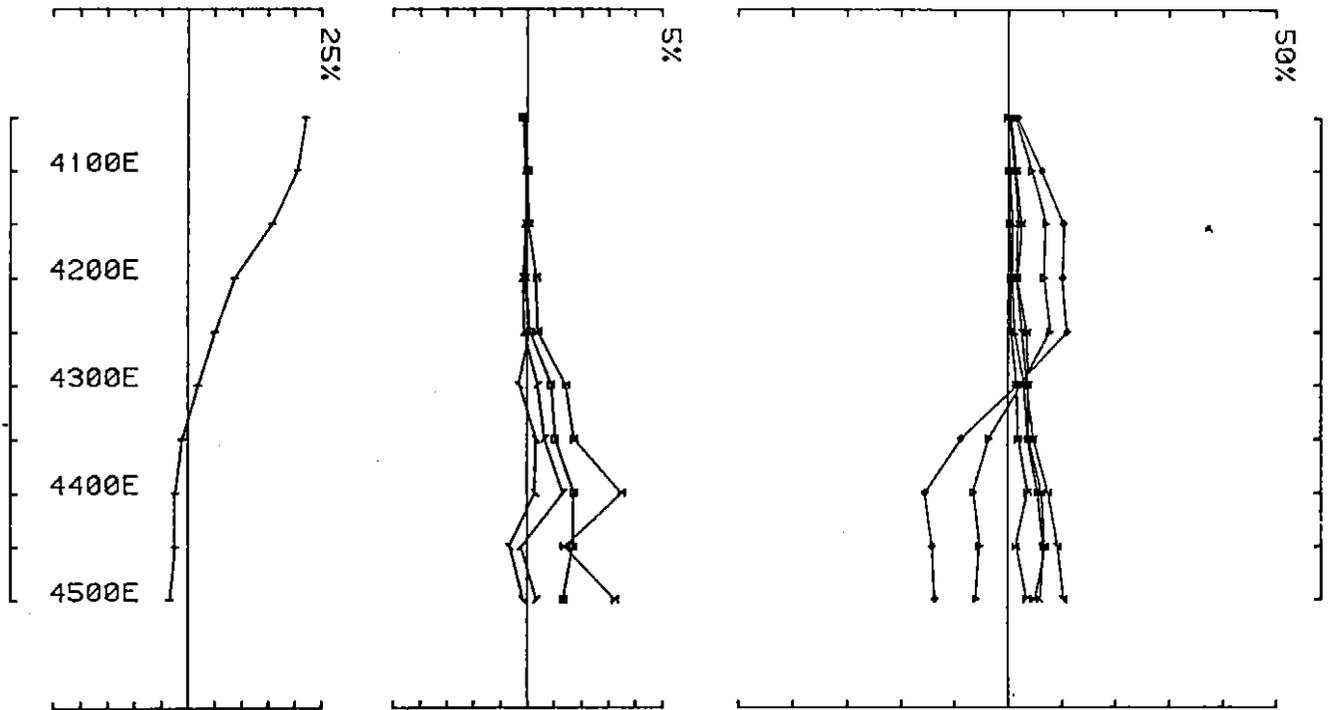


UTEM SURVEY at PIEMAN for B H P

conducted by HU PM PO job 8723 base freq (hz) 26.230

loop no 5 line 20000N component Hz secondary field Ch 1 contin. norm.

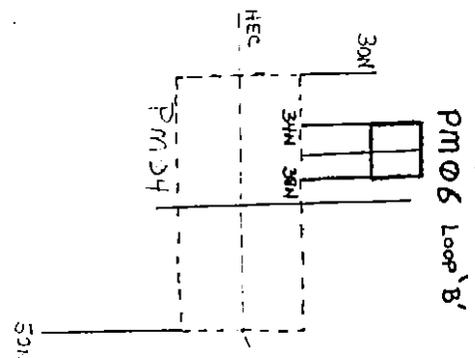


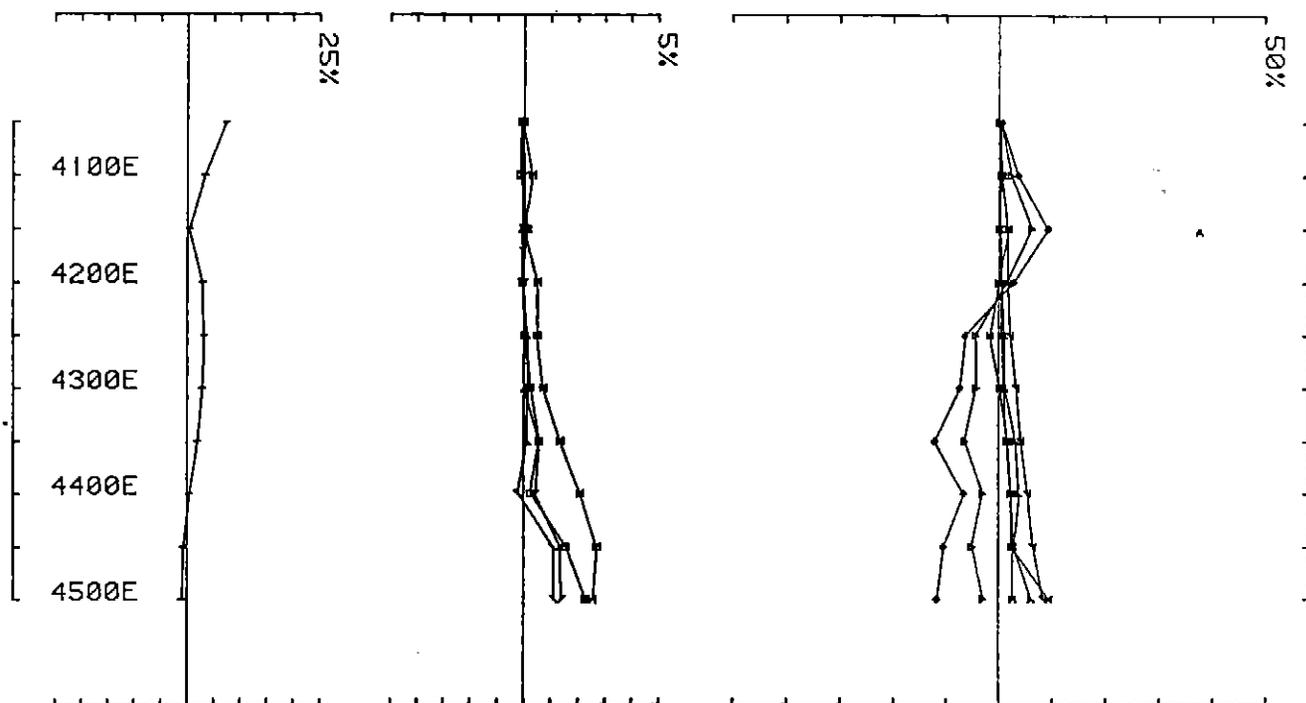


UTEM SURVEY at PIEMAN for B H P

conducted by HU P0 job 8723 base freq (hz) 26.230 ** SCALES **

loop no 6 line 3400N component Hz secondary field Ch 1 contin. norm.

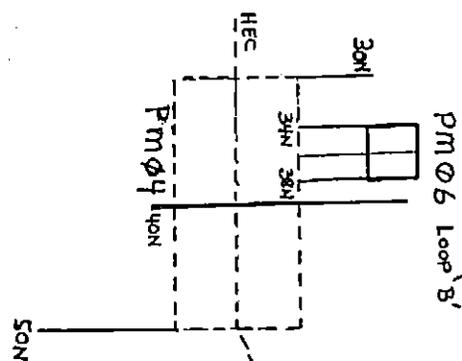




UTEM SURVEY at PIEMAN for B H P

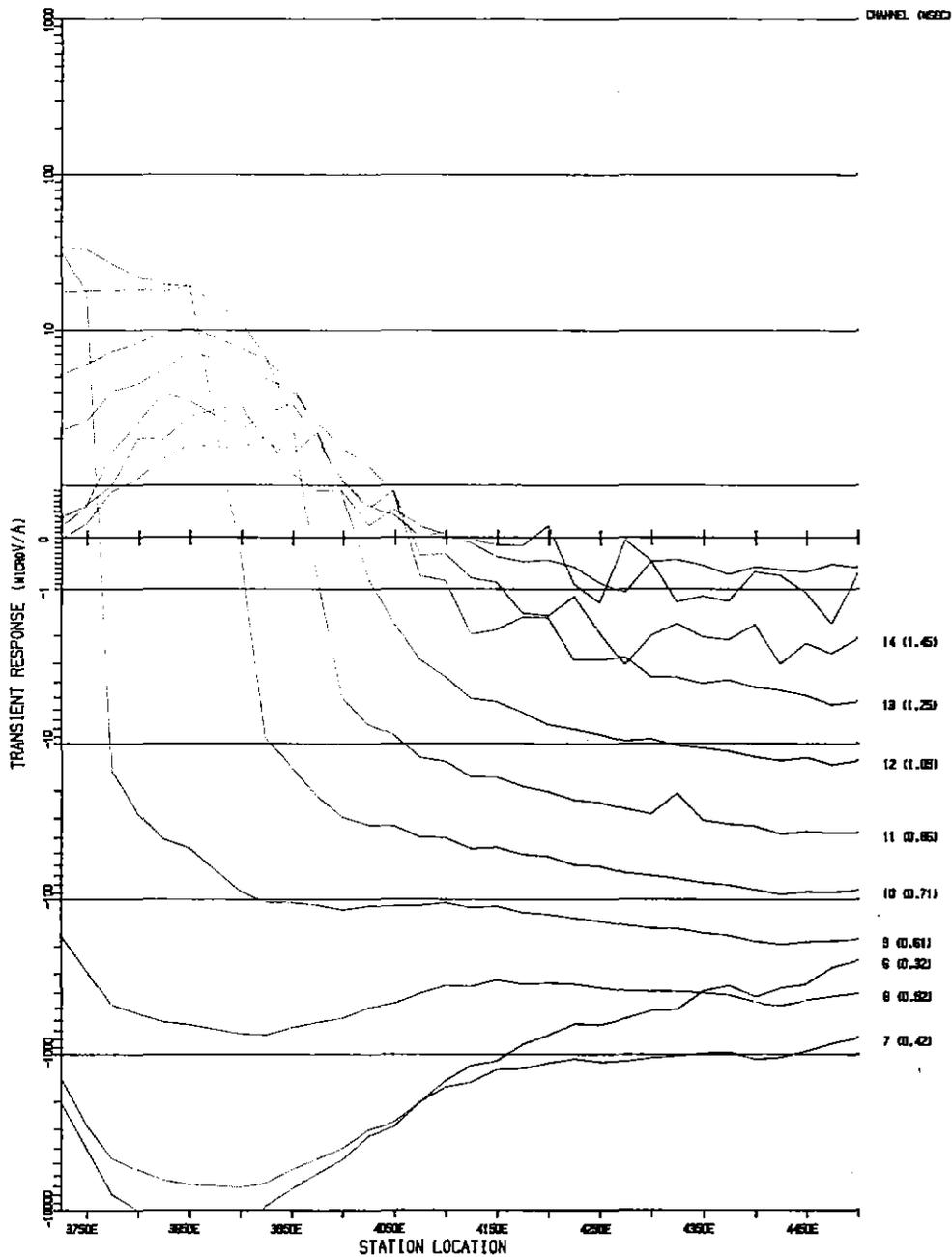
conducted by HU P0 Job 8723 base freq (hz) 26.230 ** SCALES **

loop no 6 line 3800N component Hz secondary field Ch 1 contin. norm.



APPENDIX 2

Sirottem Profiles



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (HYR) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM 11 5/M 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P McSKIMMING

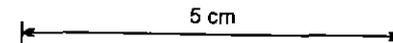
PLOT SPECIFICATIONS

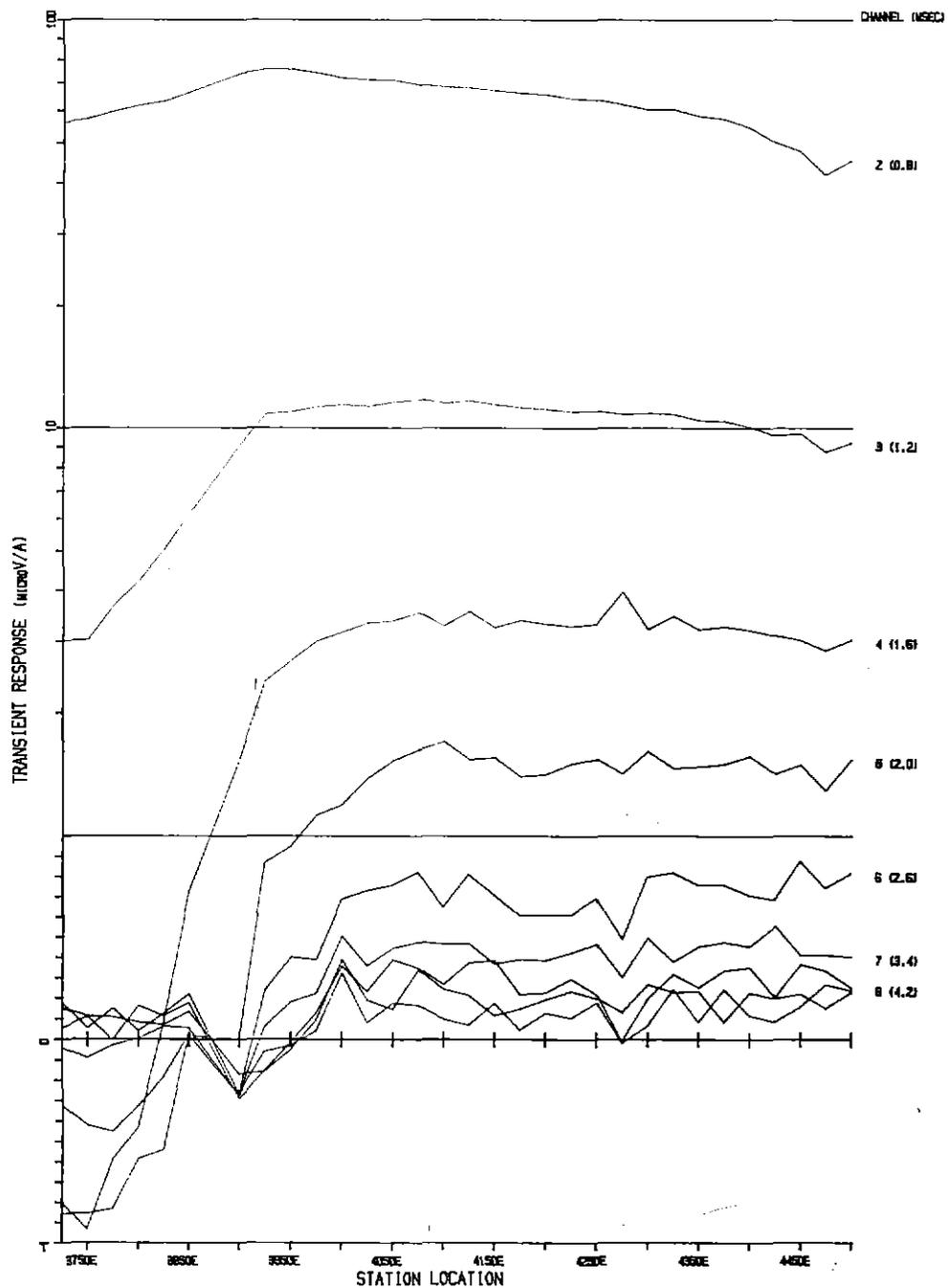
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N X WEST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

DATA ACQUISITION : MCKINNON GEOPHYSICS P/L

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (TRD) SURVEY
 READING INT. : 60 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/M 1236
 CURRENT : 8.4 AMPS
 OPERATOR : P MCKINNON

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 8CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

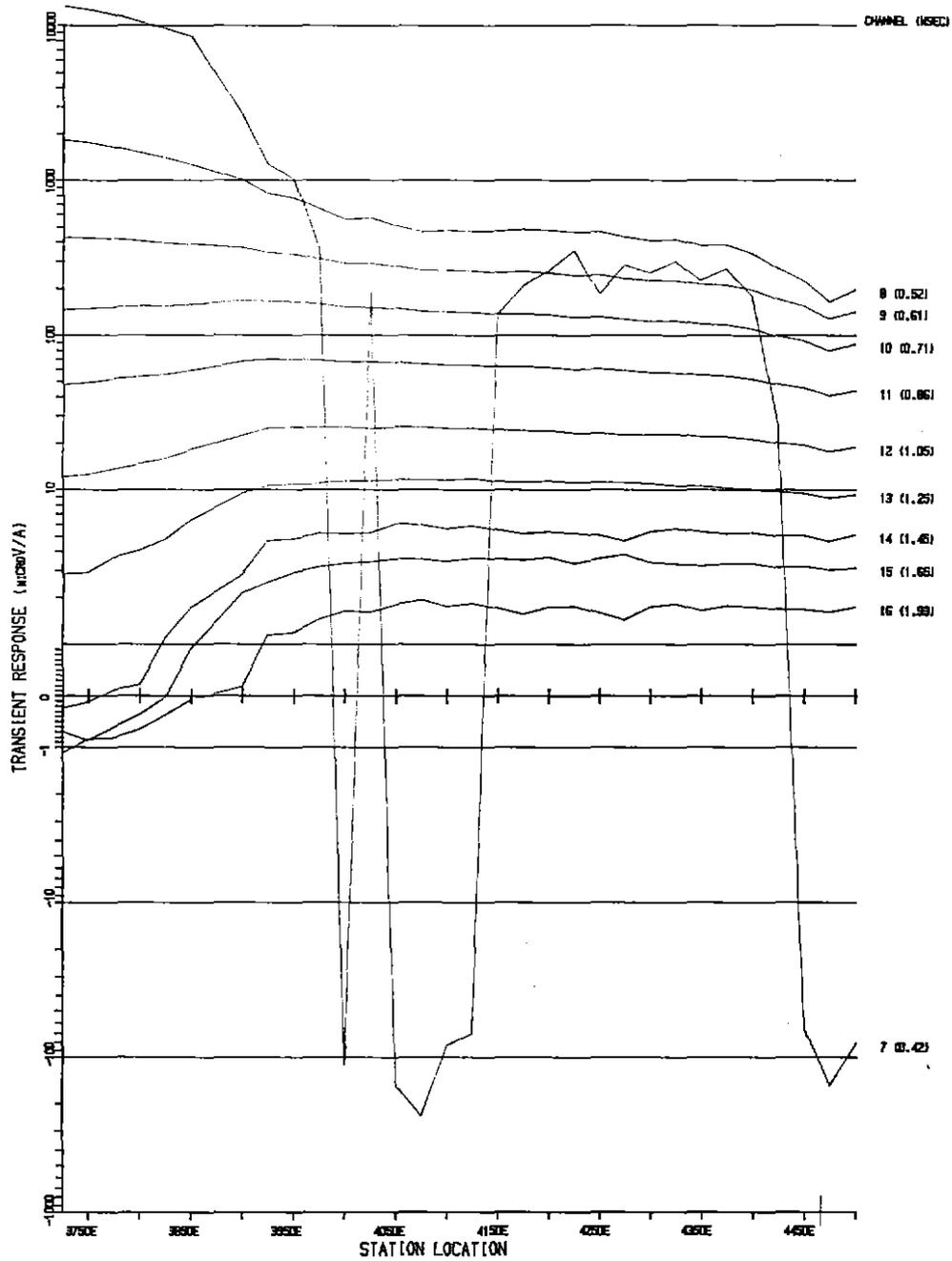
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N Z WEST LOOP

SCALE - 1:5000

127

776148

5 cm



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1968
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (TRVD) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/M 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. HESKETHING

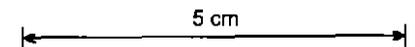
PLOT SPECIFICATIONS

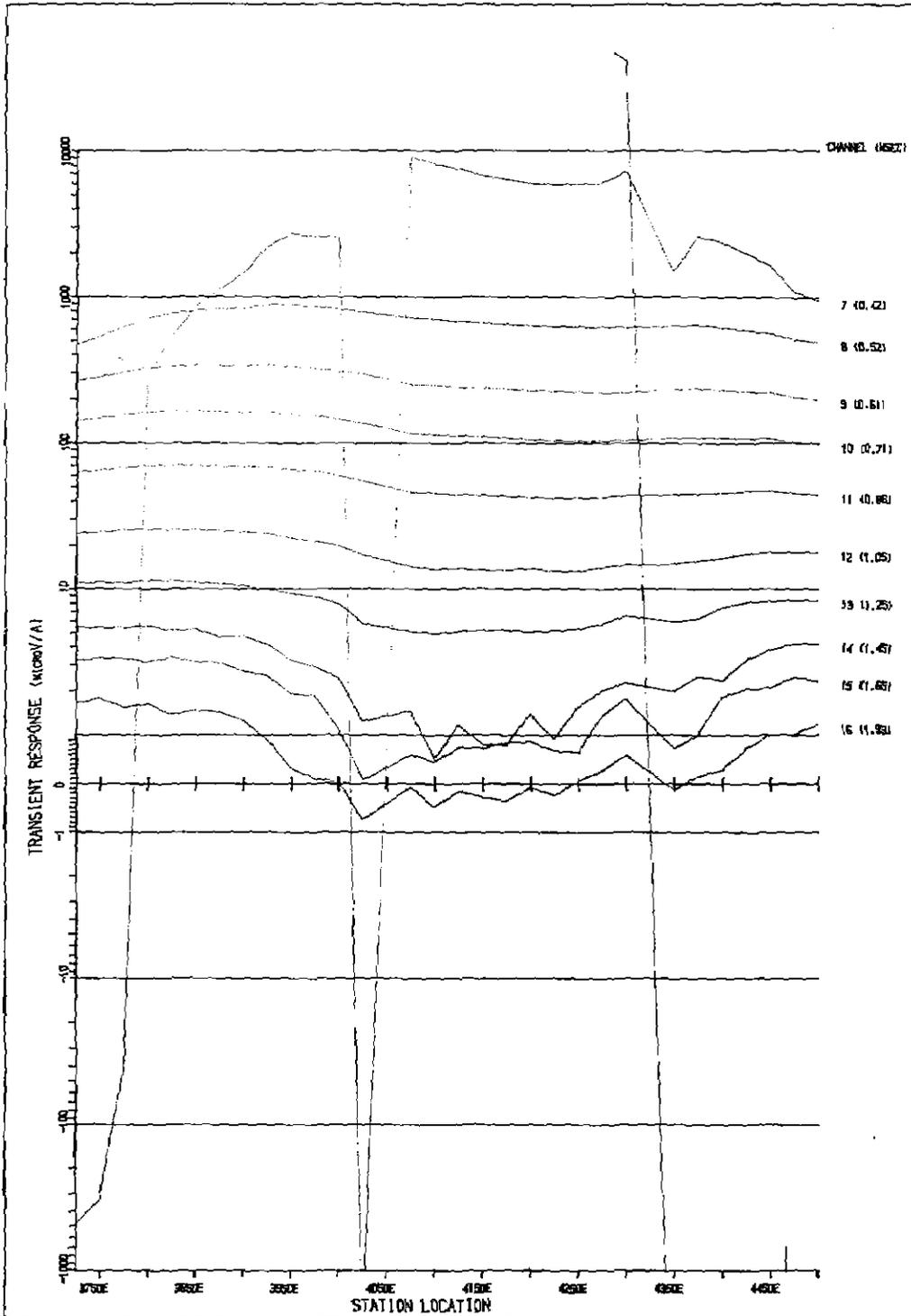
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N Z WEST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1986
 CONFIGURATION : 600N SQUARE TRANSMITTER LOOP,
 TURN MODE (19V) SURVEY
 READING INT. : 50 METRES
 NO. OF STAKES : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1.5/M 1236)
 CURRENT : 9.4 AMPS
 OPERATOR : P. MCKENLUNG

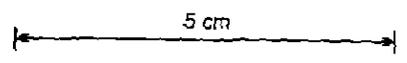
PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M PER DECADE
 LINEAR BETWEEN -1 AND 1

BHP EXPLORATION

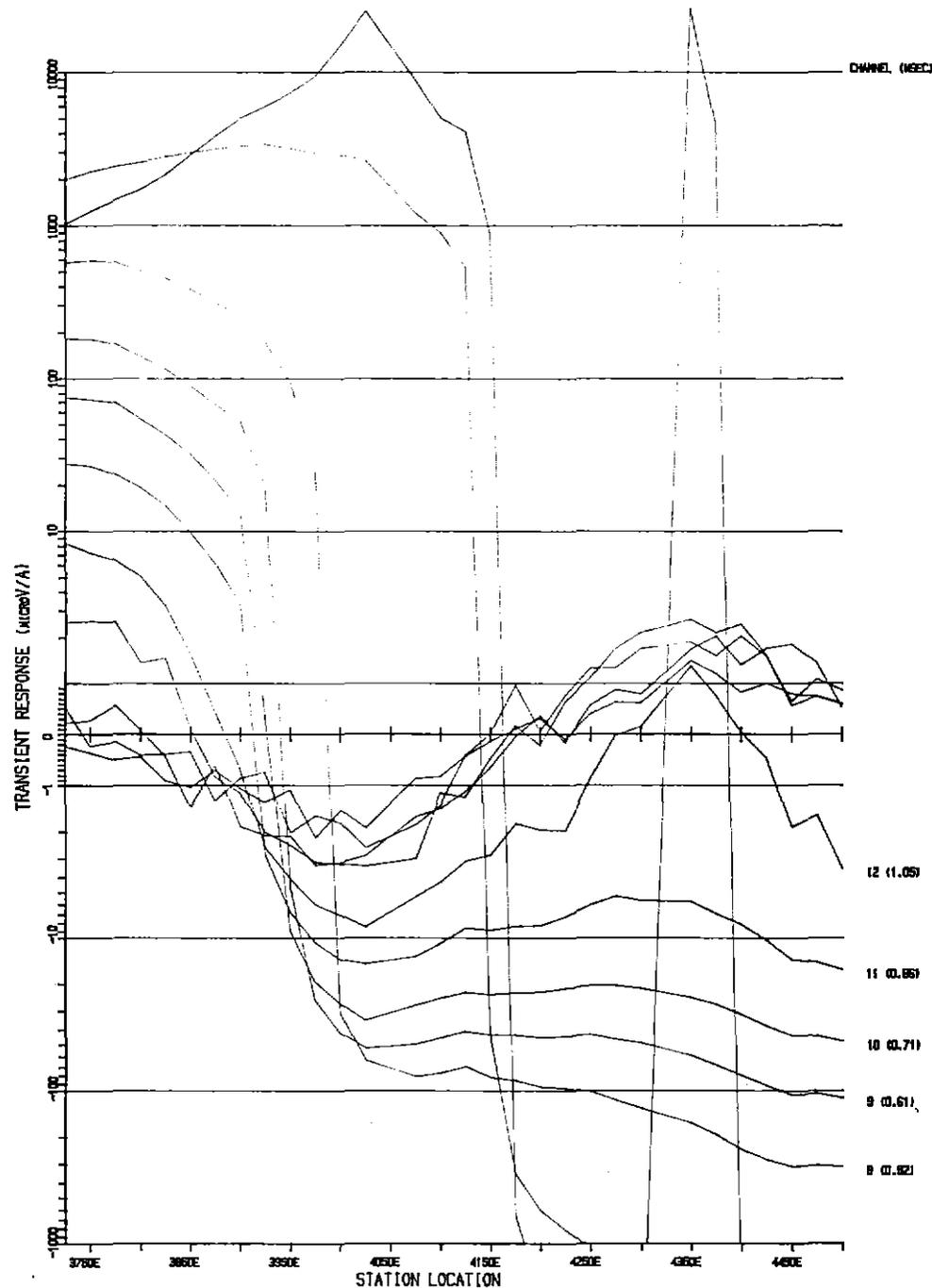
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N Z EAST LOOP

SCALE - 1:1000



129

776150



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURK MODE (RYD) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. MCKIMMING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 3CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

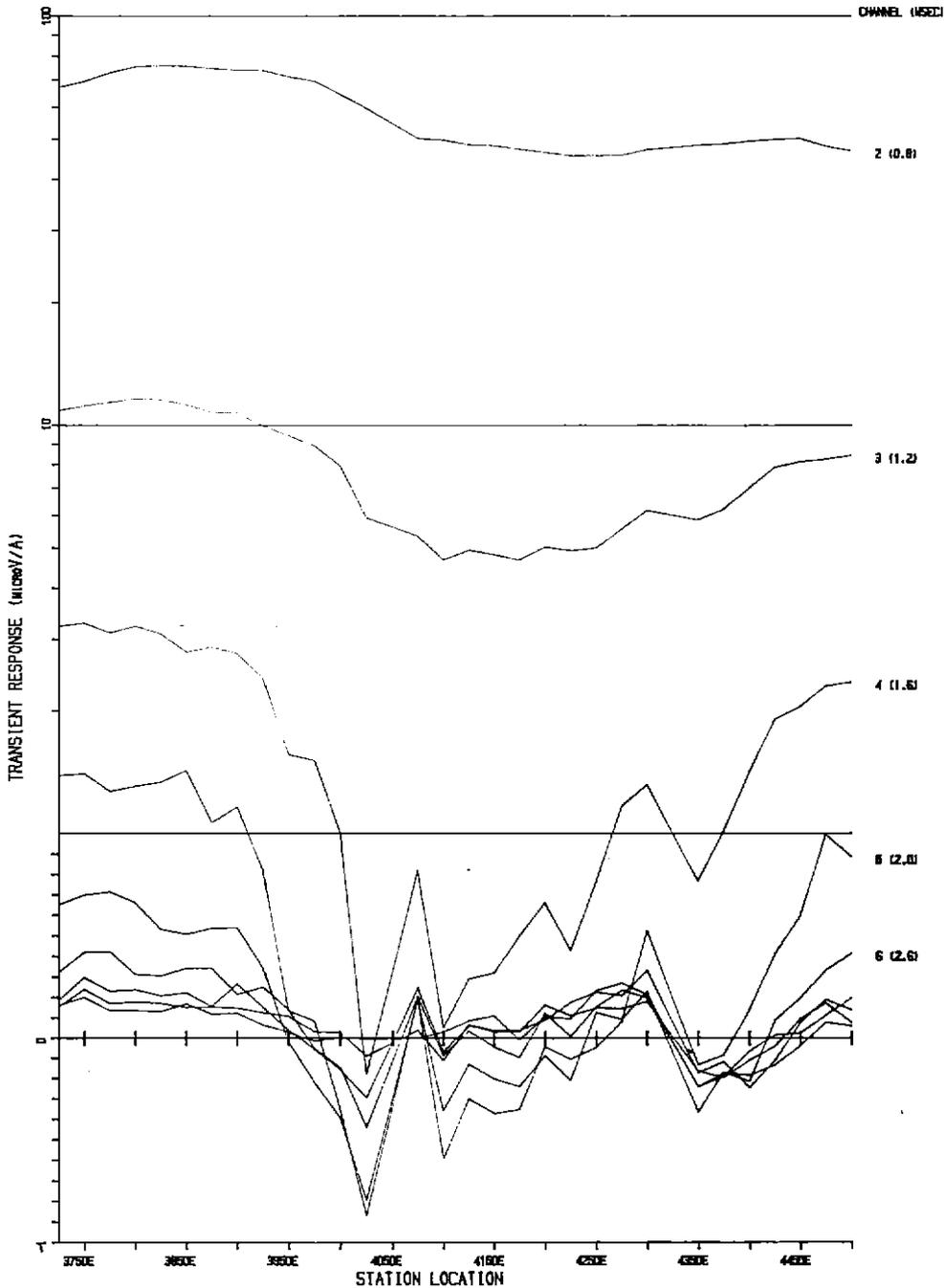
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N X EAST LOOP

SCALE - 1:5000

5 cm

150

776151



SURVEY SPECIFICATIONS

DATA ACQUISITION : MACKINNON GEOPHYSICS P/L

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TORAM NODE (RPM) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/W 1236
 CURRENT : 0.4 AMPS
 OPERATOR : P MACKINNON

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 8CM PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

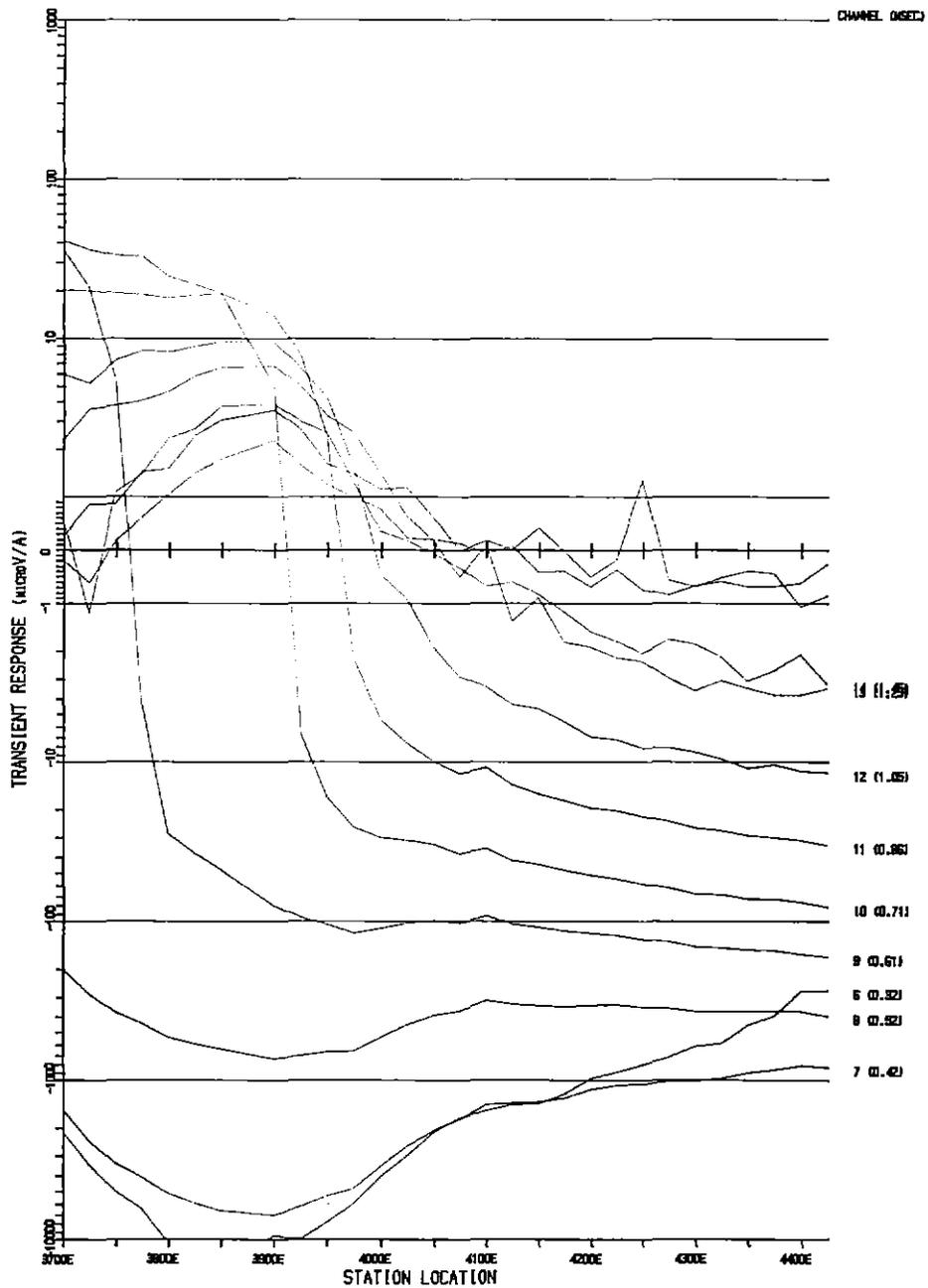
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6900N Z EAST LOOP

SCALE - 1:5000

5 cm

151

776152



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAM MODE (HYD) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1 S/M 1236)
 CURRENT : 9.4 AMPS
 OPERATOR : P McSKIMMING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

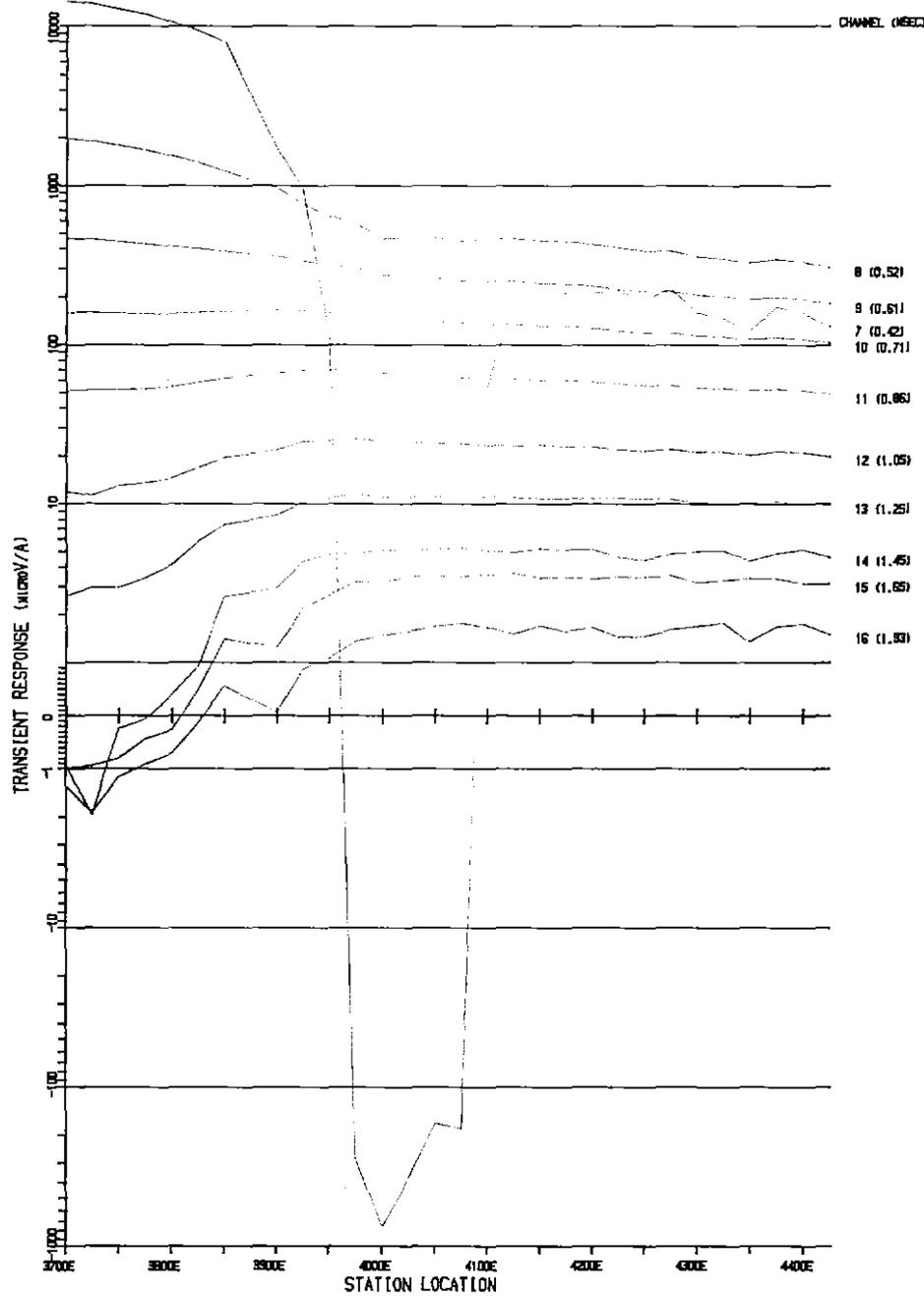
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N X WEST LOOP

SCALE - 1:5000

5 cm

152

776153



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600V SQUARE TRANSMITTER LOOP,
 TURAM MODE (RYU) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM 11 S/M 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. MCKINNON

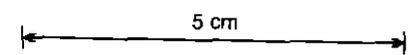
PLOT SPECIFICATIONS

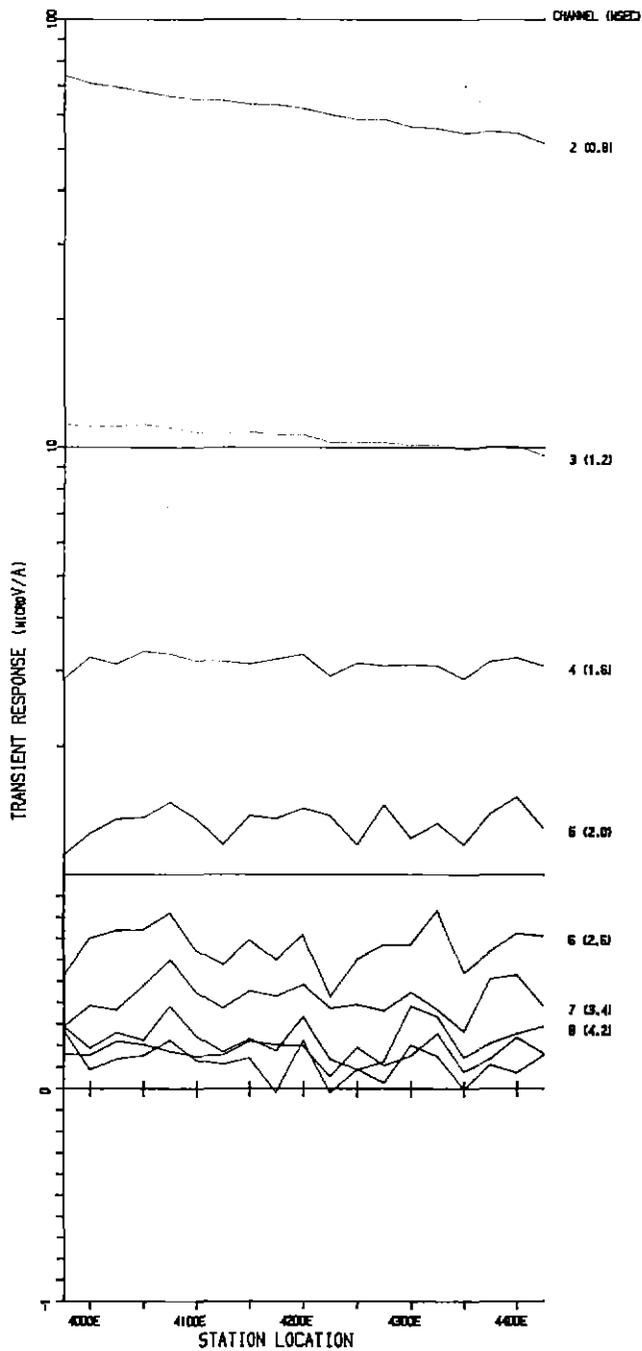
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 3CH. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N Z WEST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

DATA ACQUISITION : MACKINING GEOPHYSICS P/L

SURVEY DATE : MARCH 1988
 CONFIGURATION : 60M SQUARE TRANSMITTER LOOP,
 TURN MODE (HYD SURVEY)
 READING INT. : 60 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM 11 S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P MACKINING

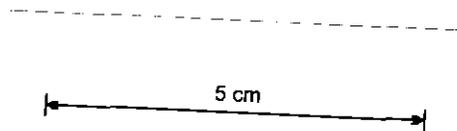
PLOT SPECIFICATIONS

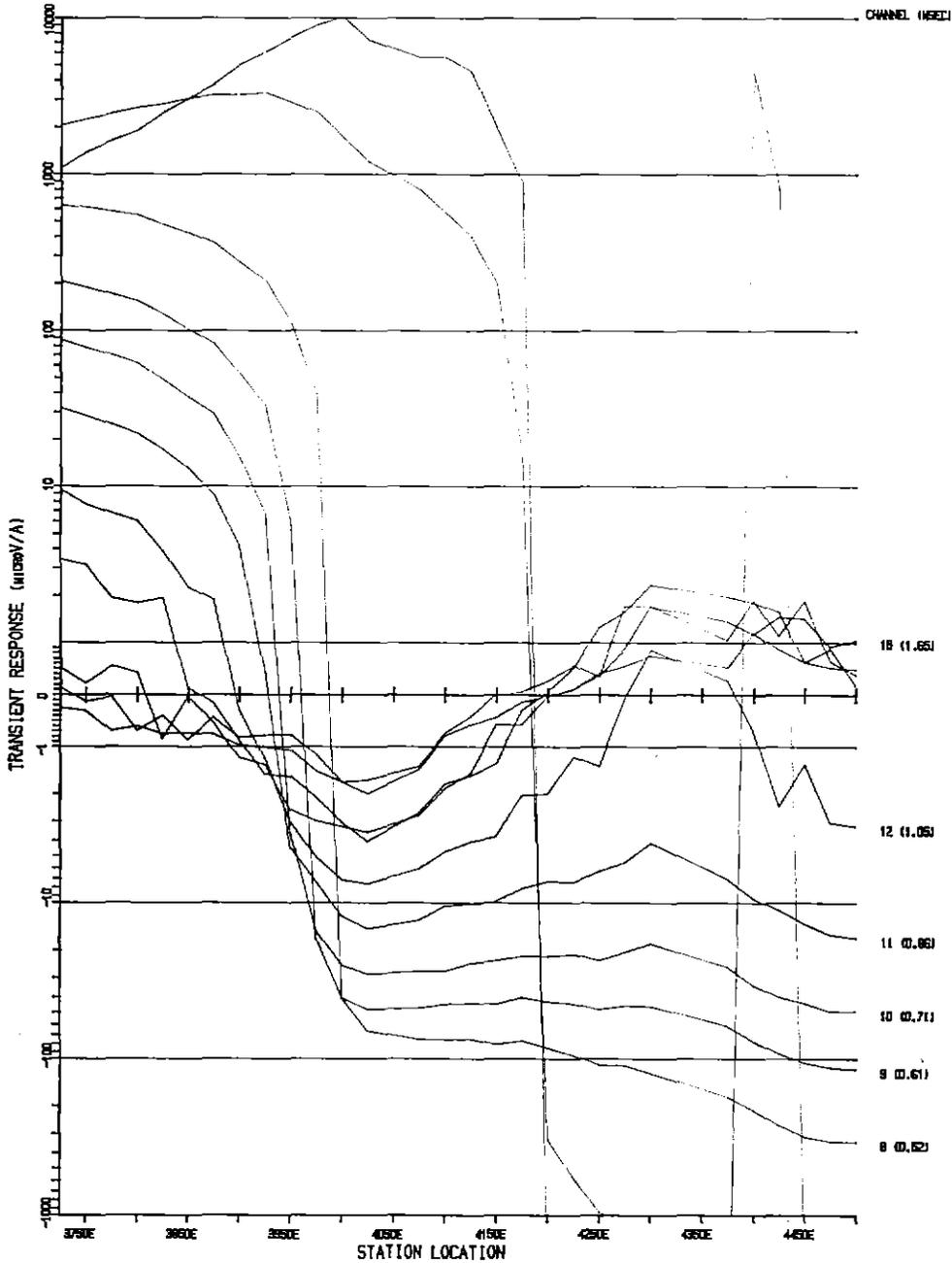
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 DEC. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N Z WEST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1980
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (DVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 20-40
 TRANSMITTER : MED/LIN POWER
 RECEIVER : SIROTEM 11 S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. WASKINGANG

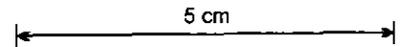
PLOT SPECIFICATIONS

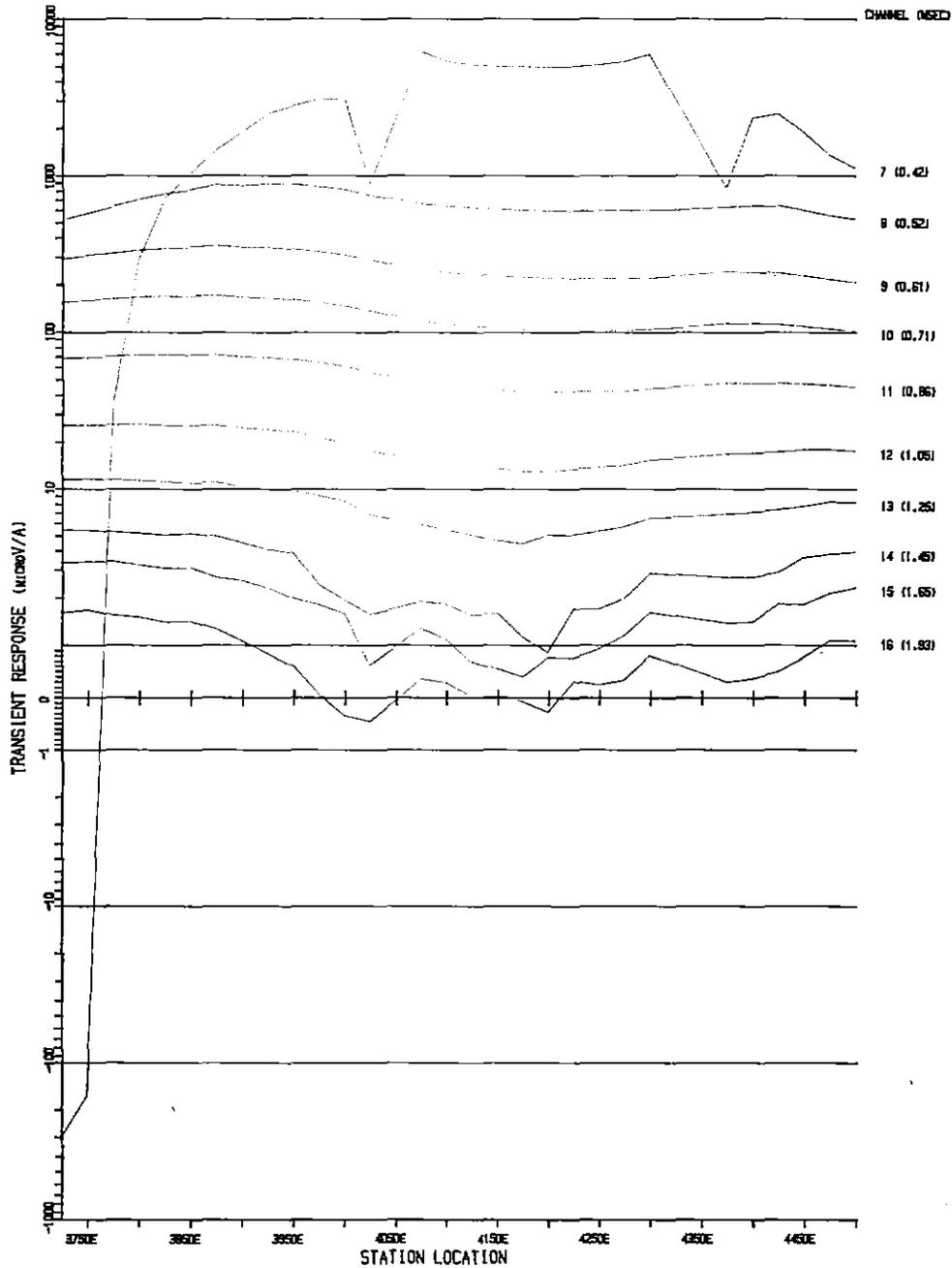
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 2CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N X EAST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURN MODE (RVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. MCKINNAM

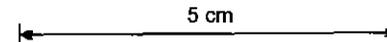
PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

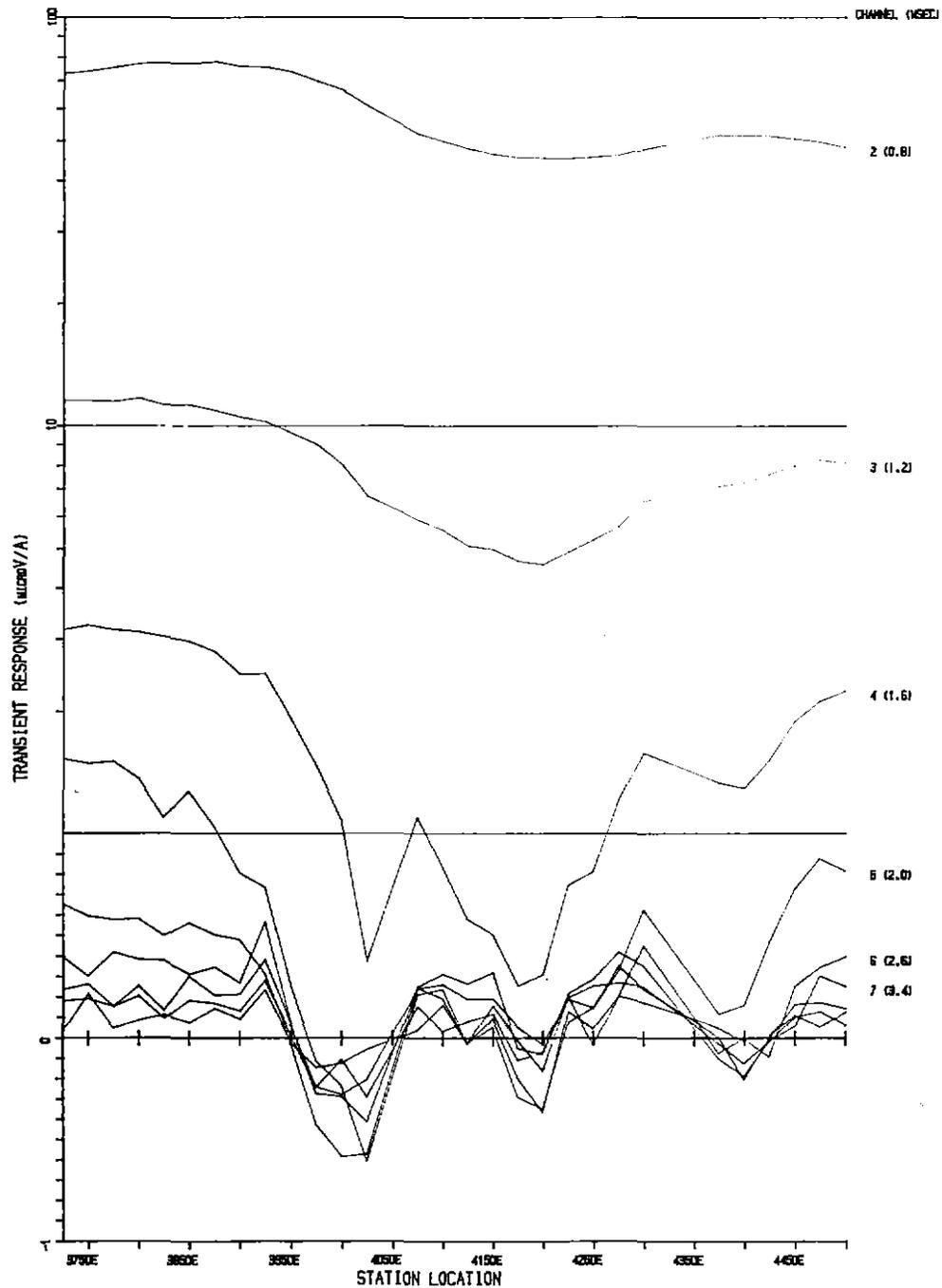
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N Z EAST LOOP

SCALE - 1:5000



156

776157



SURVEY SPECIFICATIONS

DATA ACQUISITION : MCKINNON GEOPHYSICS P/L

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAL MODE (RVU SURVEY)
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/M 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P MCKINNON

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 8CM. PER DECADE
 LINEAR BETWEEN -1 AND 11

BHP EXPLORATION

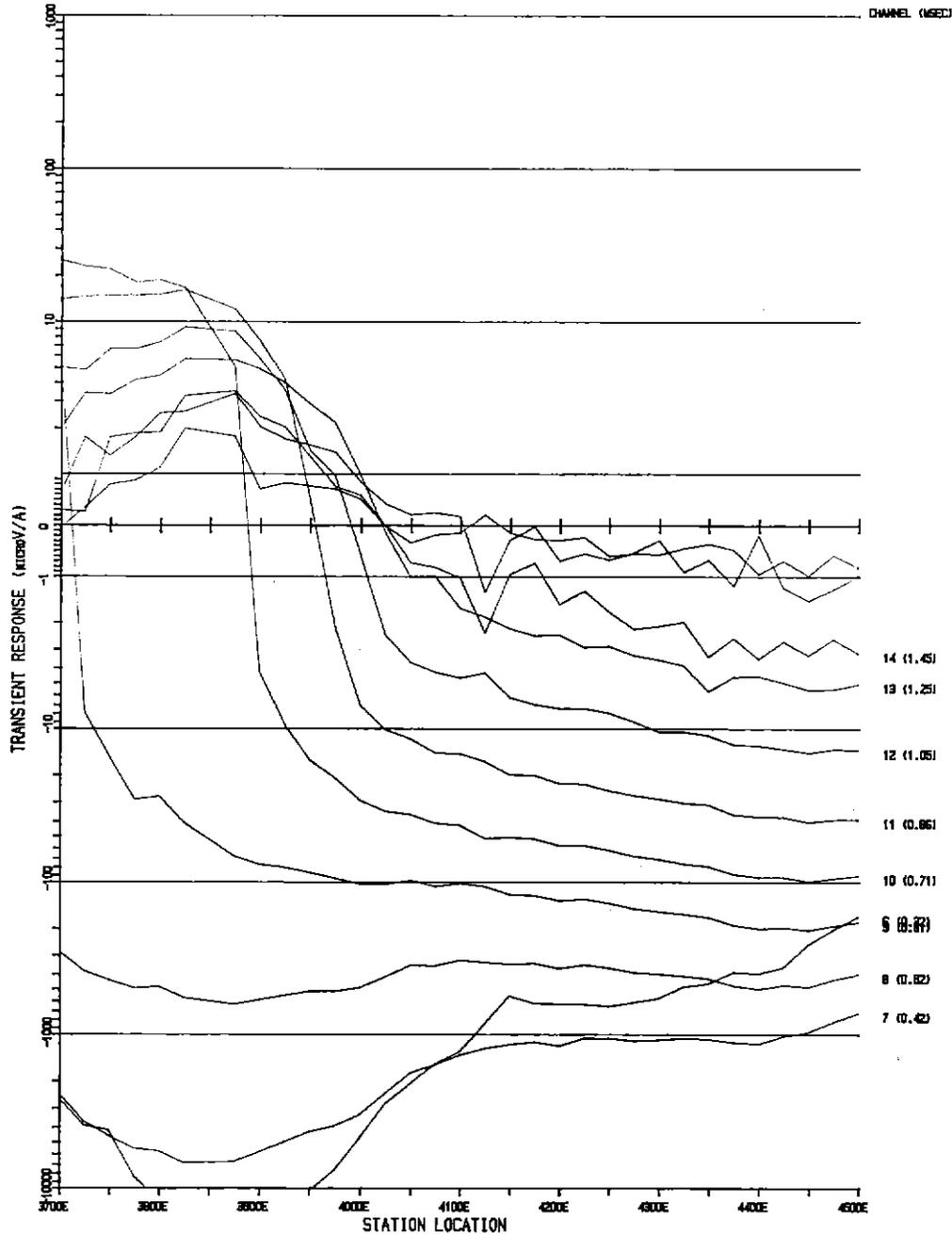
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 6800N Z EAST LOOP

SCALE - 1:5000

157

776158

5 cm



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1968
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAM MODE (NVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 8.4 AMPS
 OPERATOR : P. MCKINLAY

PLOT SPECIFICATIONS

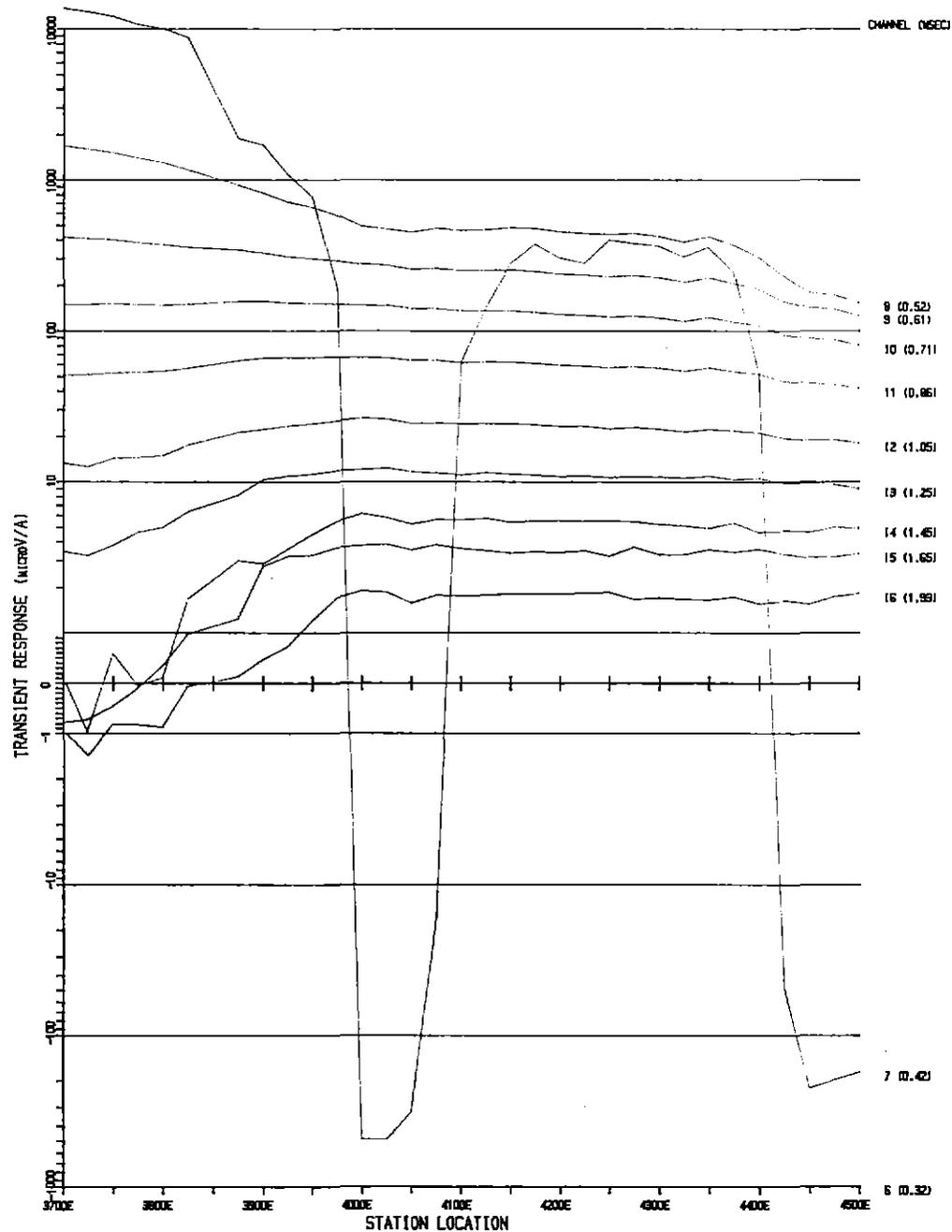
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 3CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000N X WEST LOOP

SCALE - 1:5000

5 cm



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (RVB) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM LI S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P. WSKIMMING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 3CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

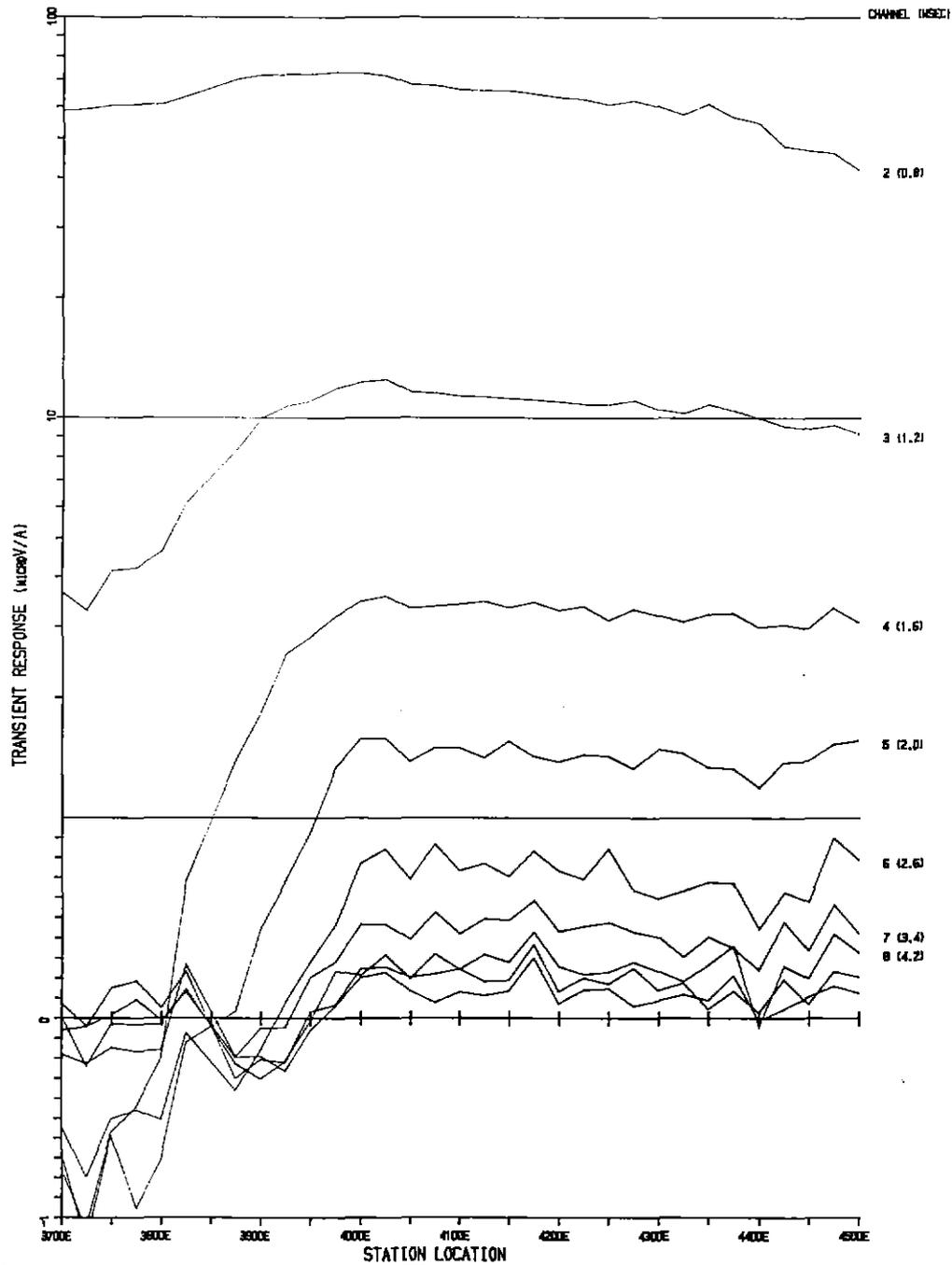
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000N Z WEST LOOP

SCALE - 1:5000

153

776160

5 cm



SURVEY SPECIFICATIONS

DATA ACQUISITION : MACKINNING GEOPHYSICS P/L

SURVEY DATE : MARCH 1968
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAN MODE (VVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1) S/A 1236
 CURRENT : 8.4 AMPS
 OPERATOR : P MACKINNING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 8CM. PER DECADE
 LINEAR BETWEEN -1 AND +1

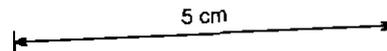
BHP EXPLORATION

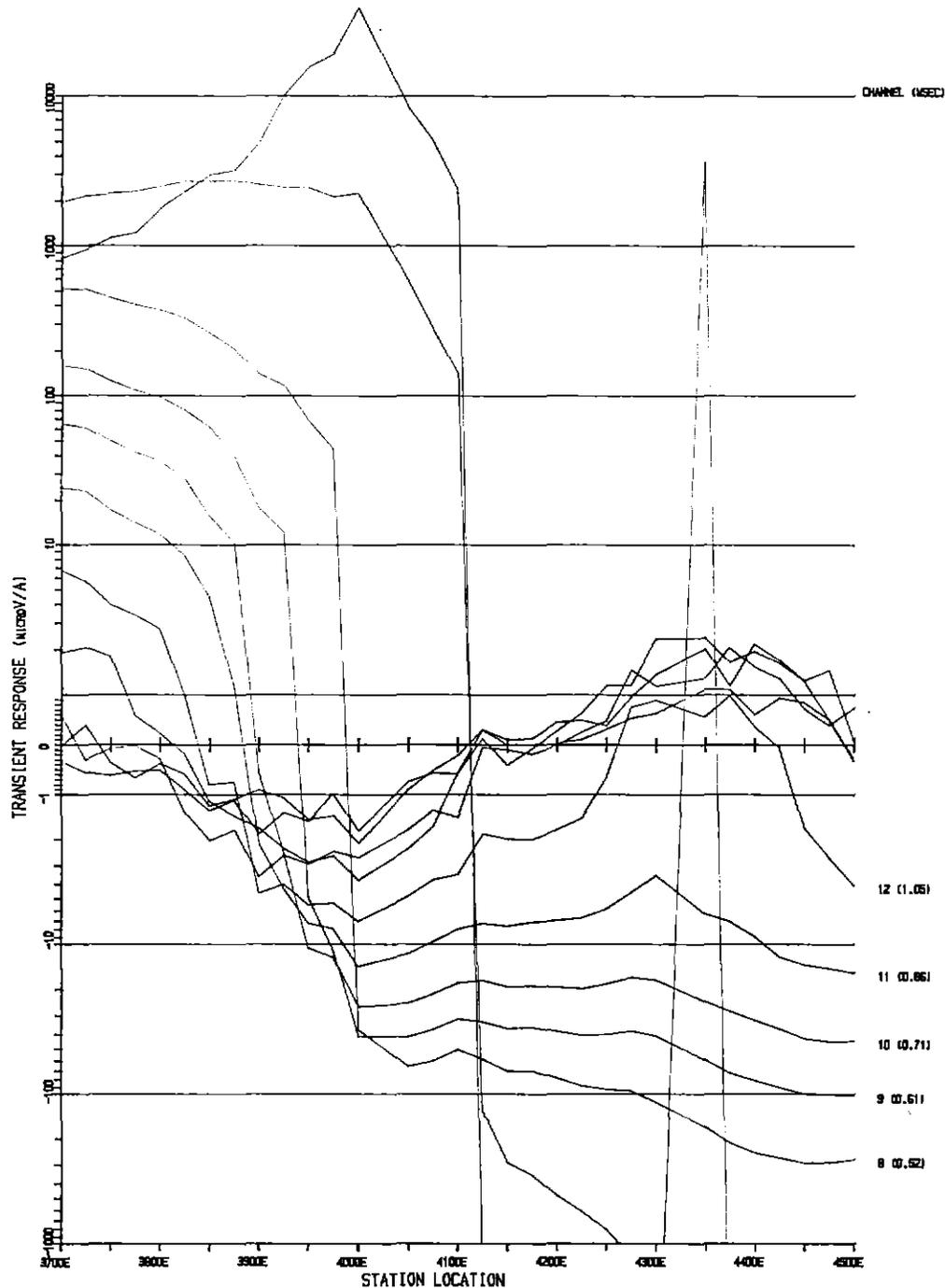
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000N Z WEST LOOP

SCALE - 1:5000

100

776161





SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1988
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURAM MODE (RVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P WESKUMMING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30X PER DECADE
 LINEAR BETWEEN -1 AND +1

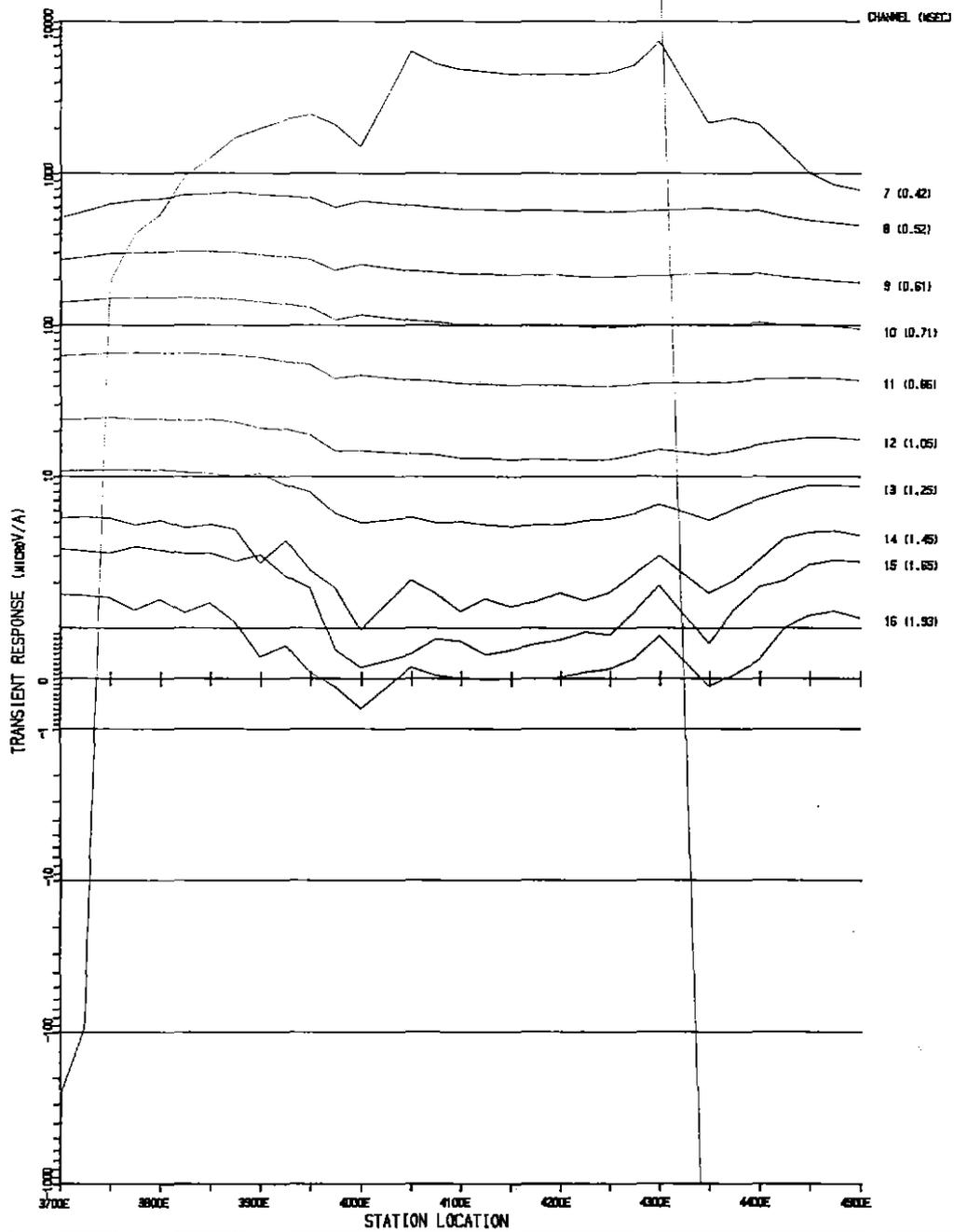
BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000 X EAST LOOP

SCALE - 1:5000

5 cm

776162



SURVEY SPECIFICATIONS

SURVEY DATE : MARCH 1968
 CONFIGURATION : 600M SQUARE TRANSMITTER LOOP,
 TURK MODE (RVR) SURVEY
 READING (HT) : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1 S/W 1236)
 CURRENT : 9.4 AMPS
 OPERATOR : P. MCKENNAING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

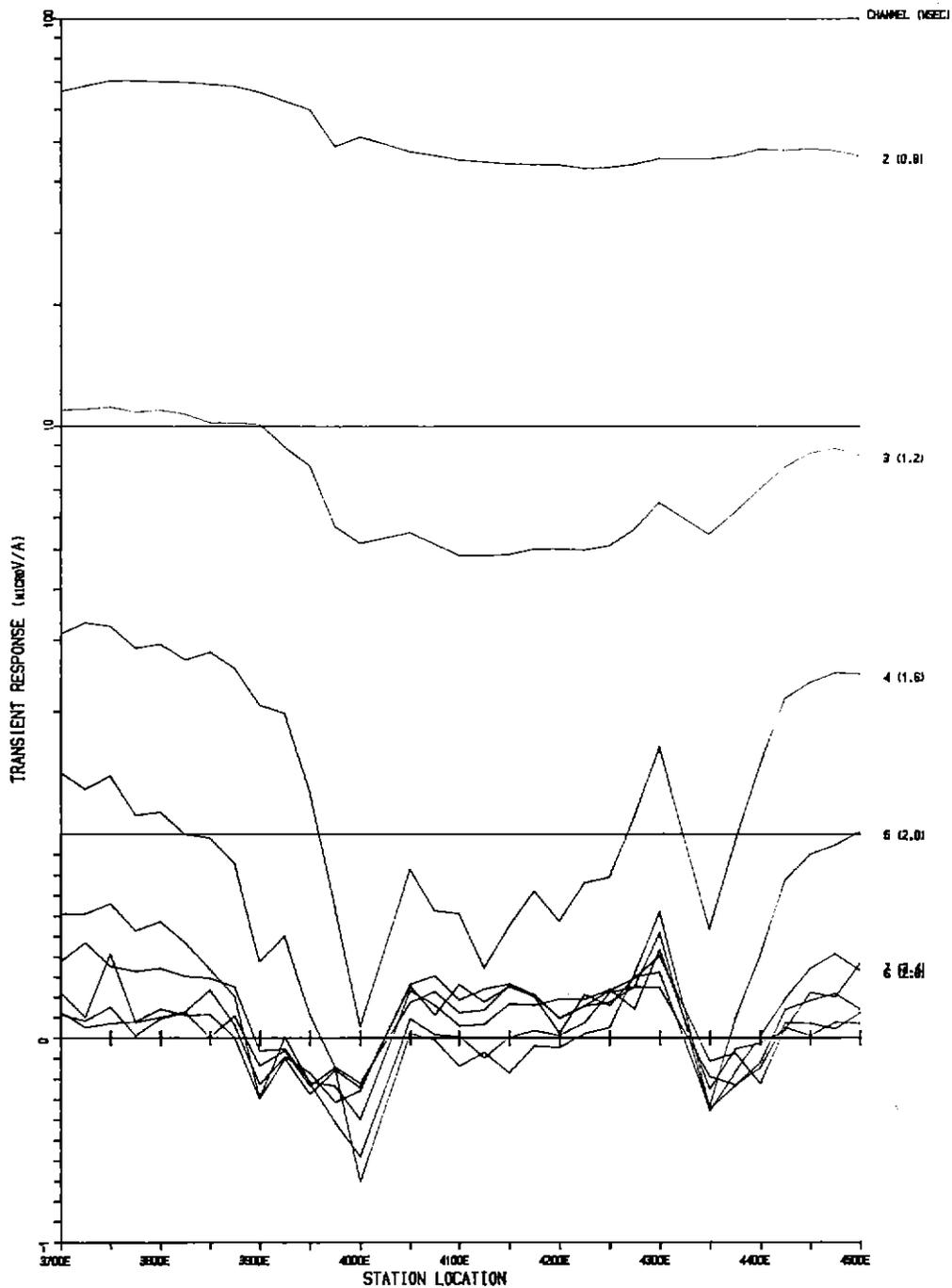
TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000N Z EAST LOOP

SCALE - 1:5000

5 cm

162

776163



SURVEY SPECIFICATIONS

DATA ACQUISITION : MCKINNON GEOPHYSICS P/L

SURVEY DATE : MARCH 1988
 CONFIGURATION : BOOM SQUARE TRANSMITTER LOOP,
 TORAM NODE (VVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM J1 S/N 1236
 CURRENT : 9.4 AMPS
 OPERATOR : P MCKINNON

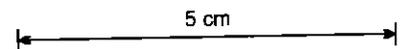
PLOT SPECIFICATIONS

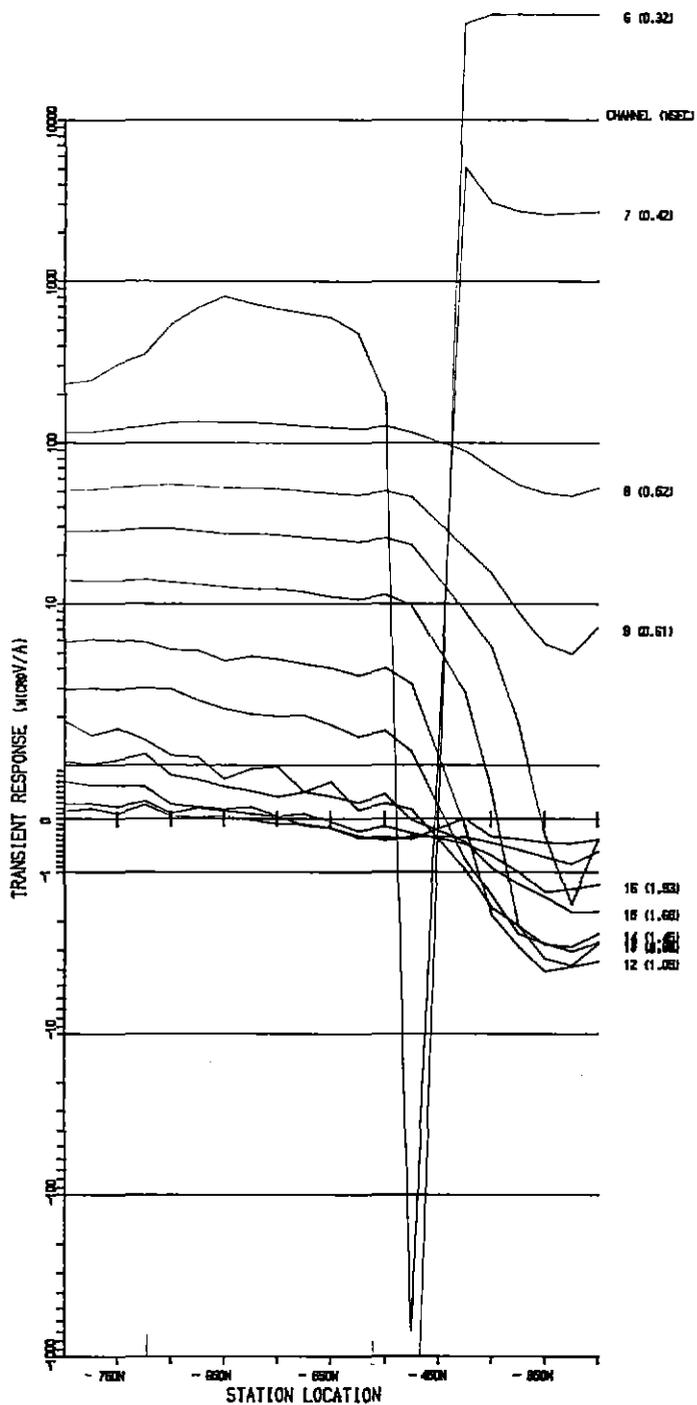
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 BOX PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 SHALE BASIN
 SIROTEM PROFILE
 LINE 7000N Z EAST LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE (RVU) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MACKENNA

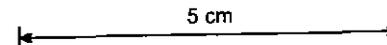
PLOT SPECIFICATIONS

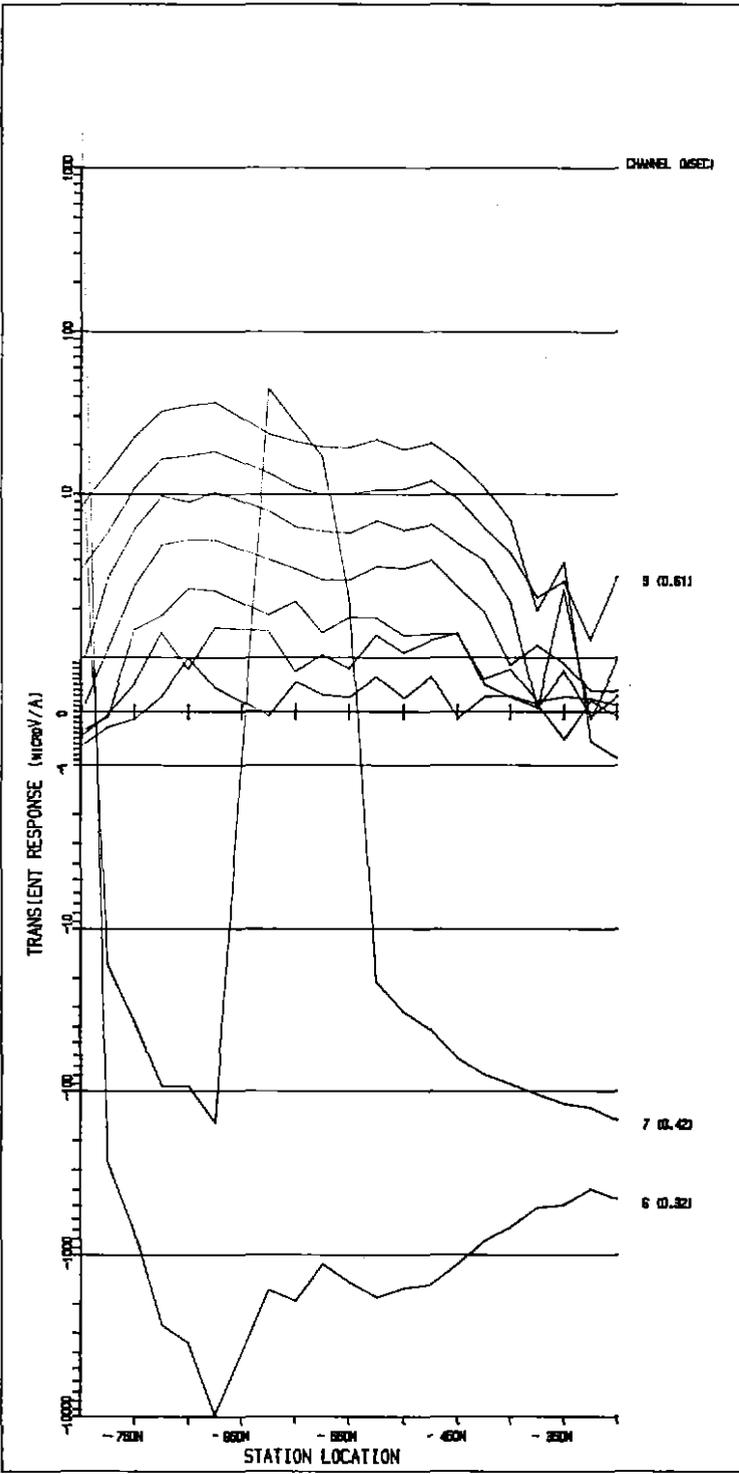
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 2CM. PER DECADE
 LINEAR BETWEEN -1 AND #1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2650E Z NORTH LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAM MODE (V/F) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

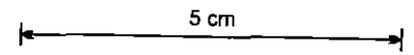
PLOT SPECIFICATIONS

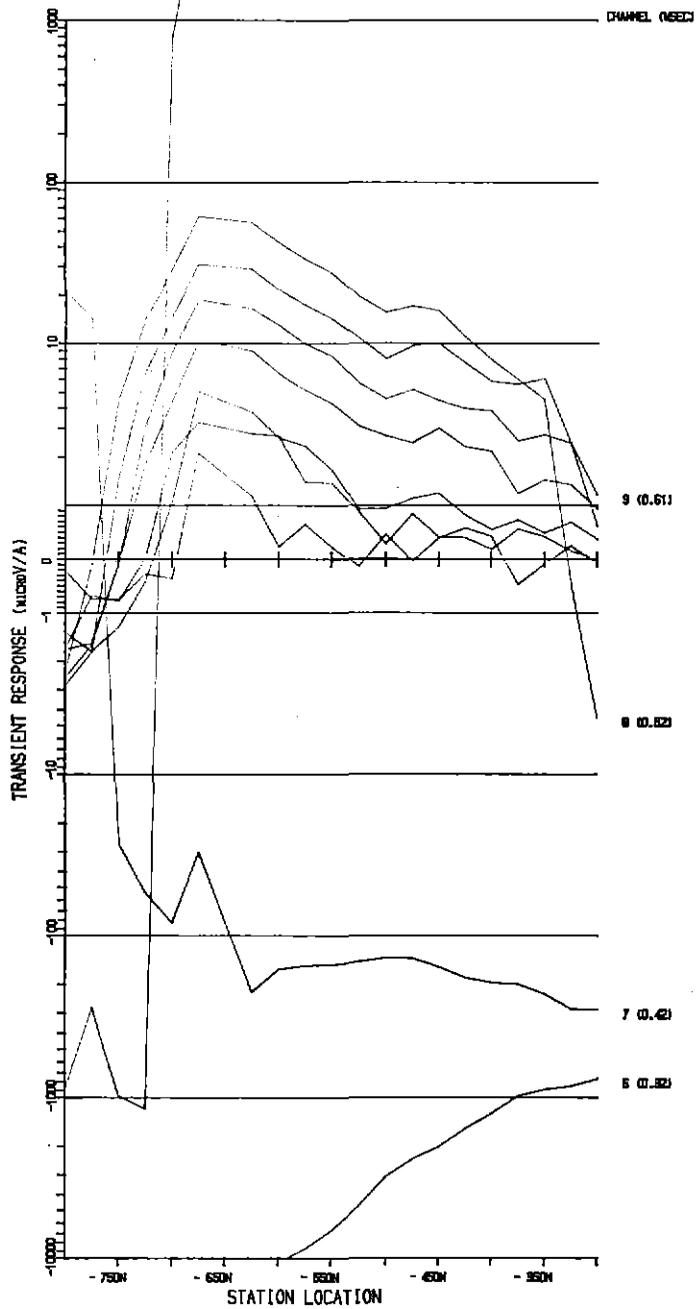
HORIZONTAL SCALE - 1:8000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2750E X SOUTH LOOP

SCALE - 1:8000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1968
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURN MODE (RWD) SURVEY
 READING INT. : 60 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II 5/M 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P MASKIMING

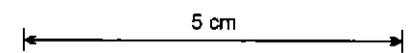
PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:8000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

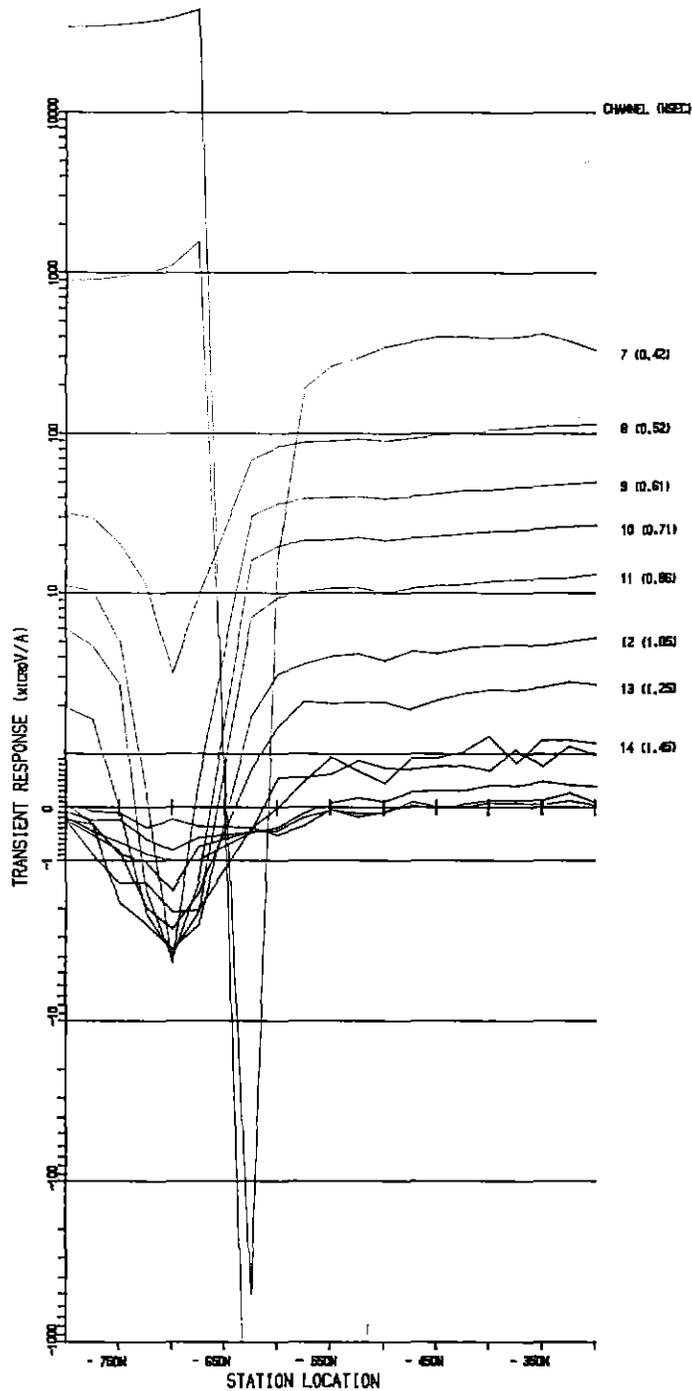
TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2650E X SOUTH LOOP

SCALE - 1:8000



106

776167



SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1968
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAM MODE (RVR) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1 5/8 1206)
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

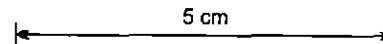
PLOT SPECIFICATIONS

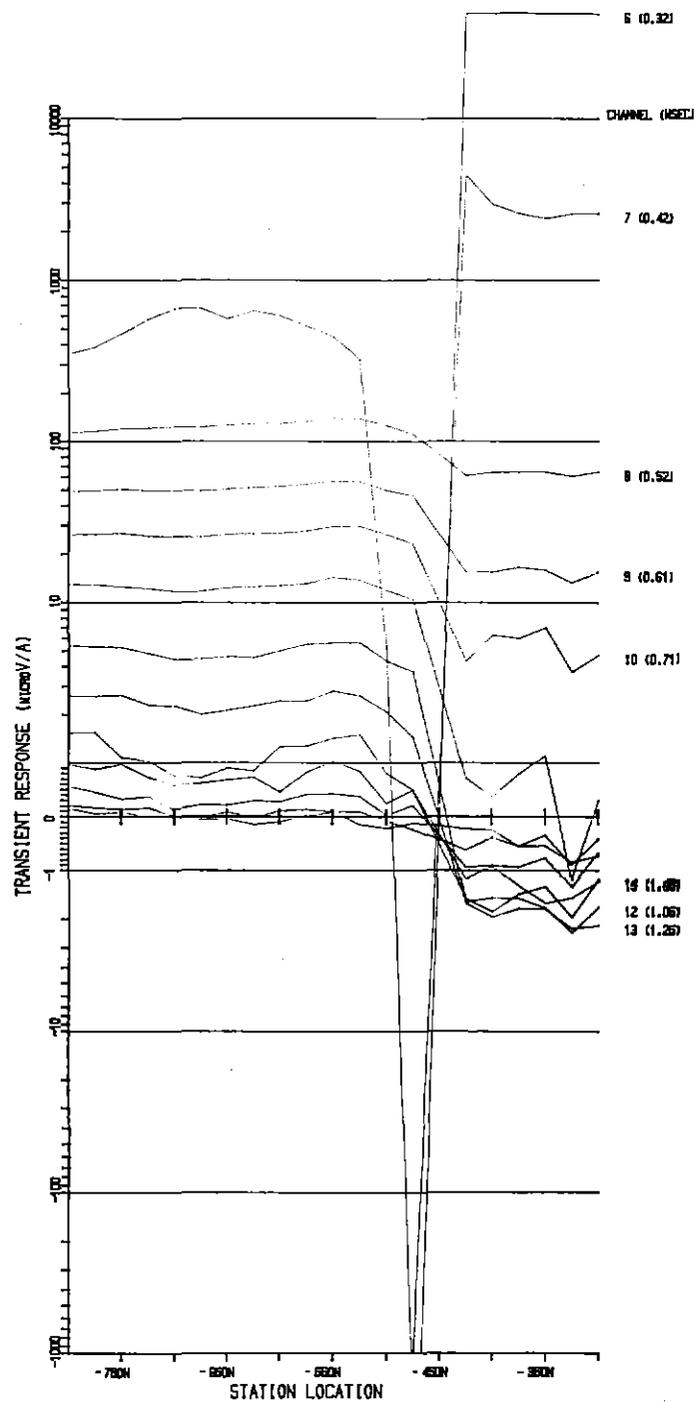
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M PER DECADE
 LINEAR BETWEEN -1 AND #1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2650E Z SOUTH LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1980
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE GYRO SURVEY
 READING INT. : 60 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II 5/4 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P MCKUNNING

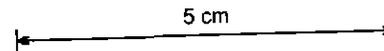
PLOT SPECIFICATIONS

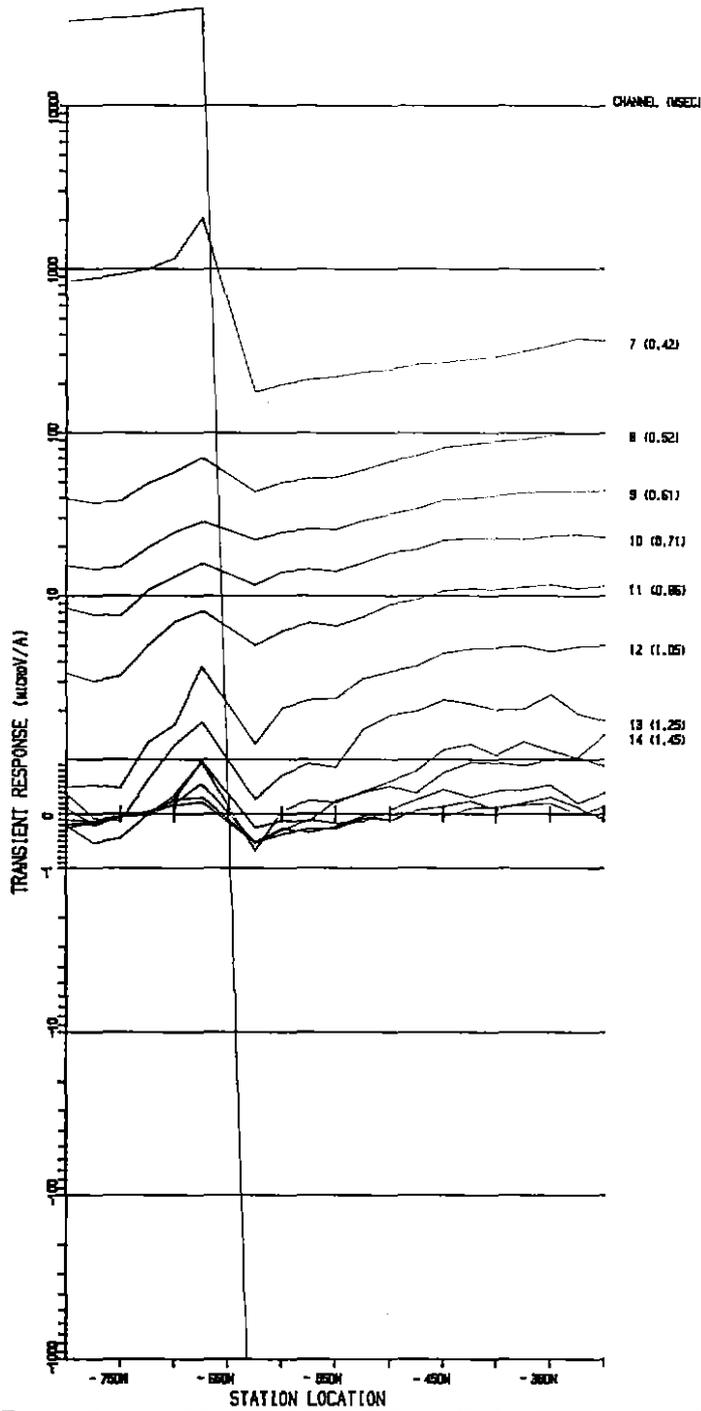
HORIZONTAL SCALE - 1:8000
 VERTICAL SCALE - LOGARITHMIC
 20M PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2750E Z NORTH LOOP

SCALE - 1:8000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAM MODE (MVI) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P WSKINLING

PLOT SPECIFICATIONS

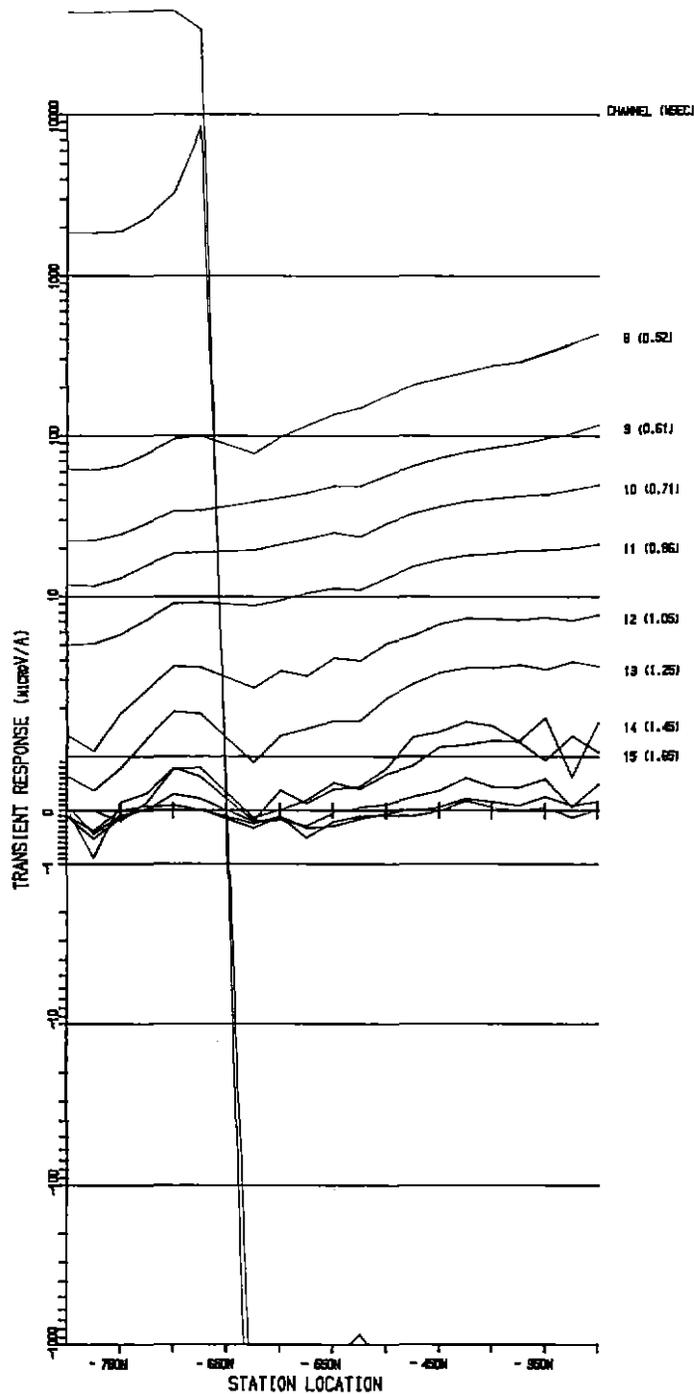
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 3CM PER DECADE
 LINEAR BETWEEN -1 AND 11

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2750E Z SOUTH LOOP

SCALE - 1:5000

5 cm



SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE (TVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM (1 SW 1.236)
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKILMINING

PLOT SPECIFICATIONS

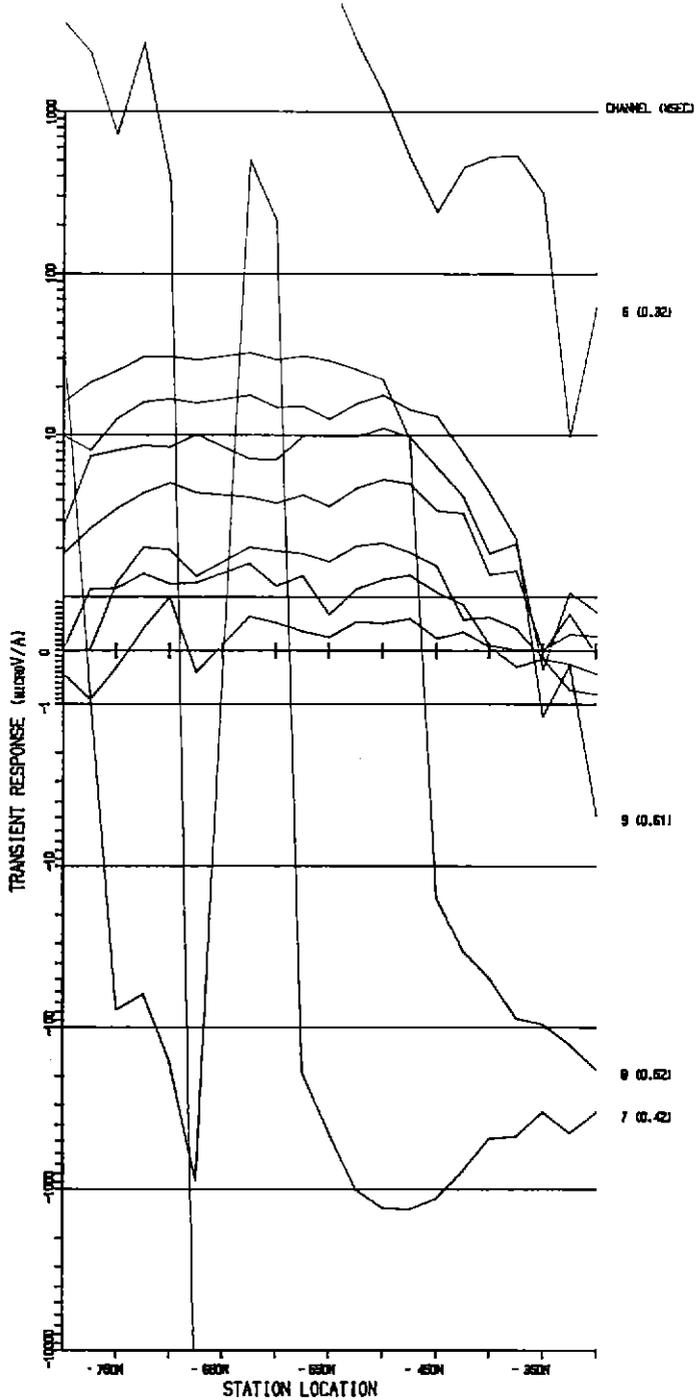
HORIZONTAL SCALE - 1:8000
 VERTICAL SCALE - LOGARITHMIC
 SGNL. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2850E Z SOUTH LOOP

SCALE - 1:8000

5 cm



SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE (RVR) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

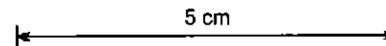
PLOT SPECIFICATIONS

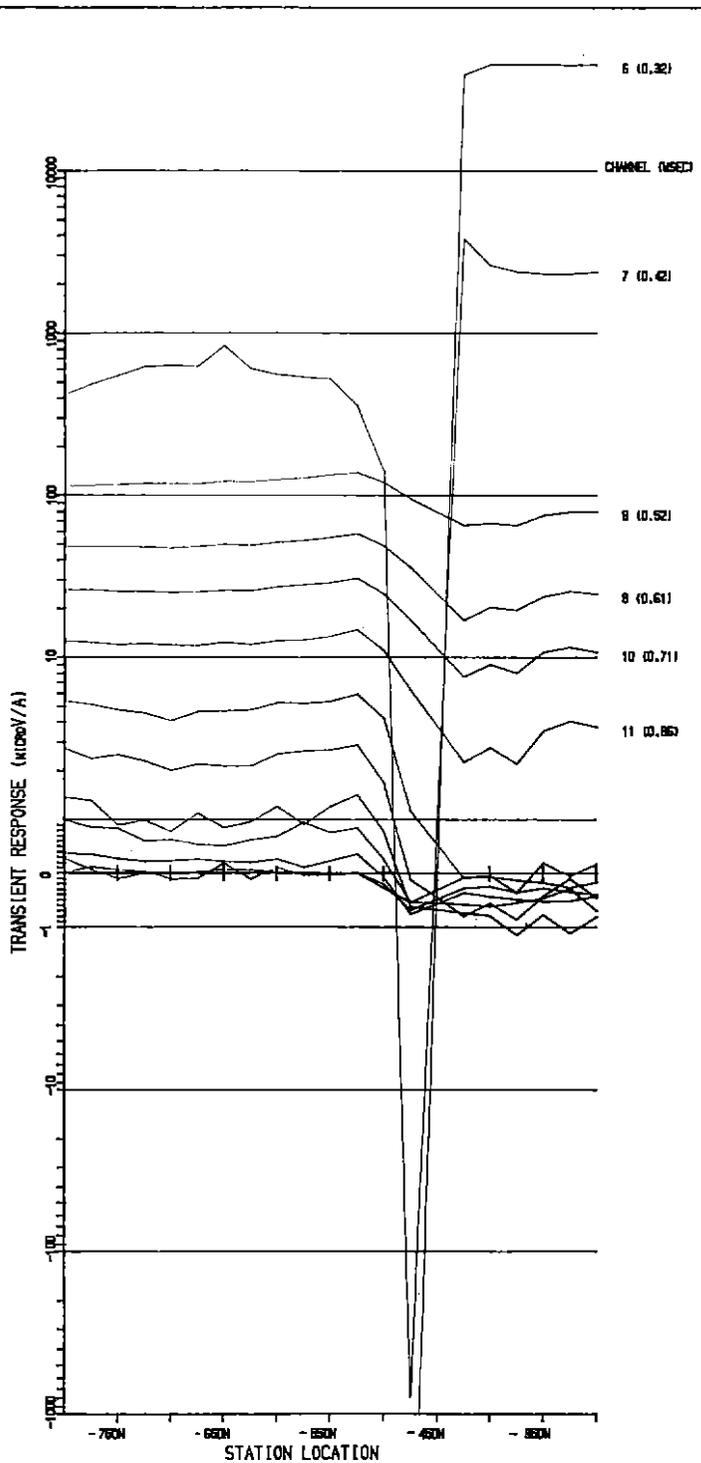
HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2850E X SOUTH LOOP

SCALE - 1:5000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1969
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE (RVG) SURVEY
 READING INT. : 60 METRES
 NO. OF STACKS : 1024
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

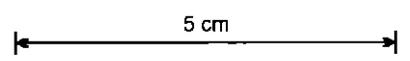
PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M. PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

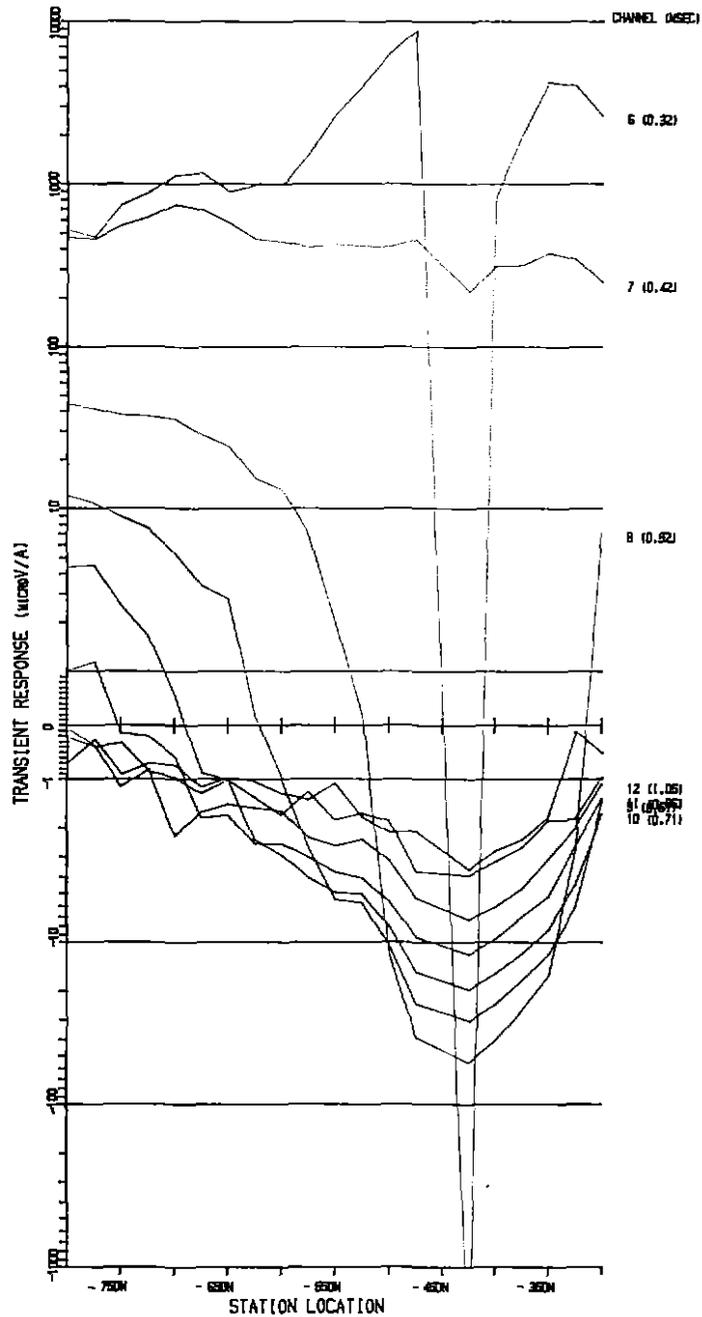
TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2850E Z NORTH LOOP

SCALE - 1:5000



172

776173



SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURN MODE (VVR) SURVEY
 READING INT. : 80 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : 51807EN (1.5/M 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKENNA/ING

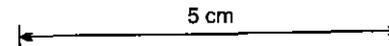
PLOT SPECIFICATIONS

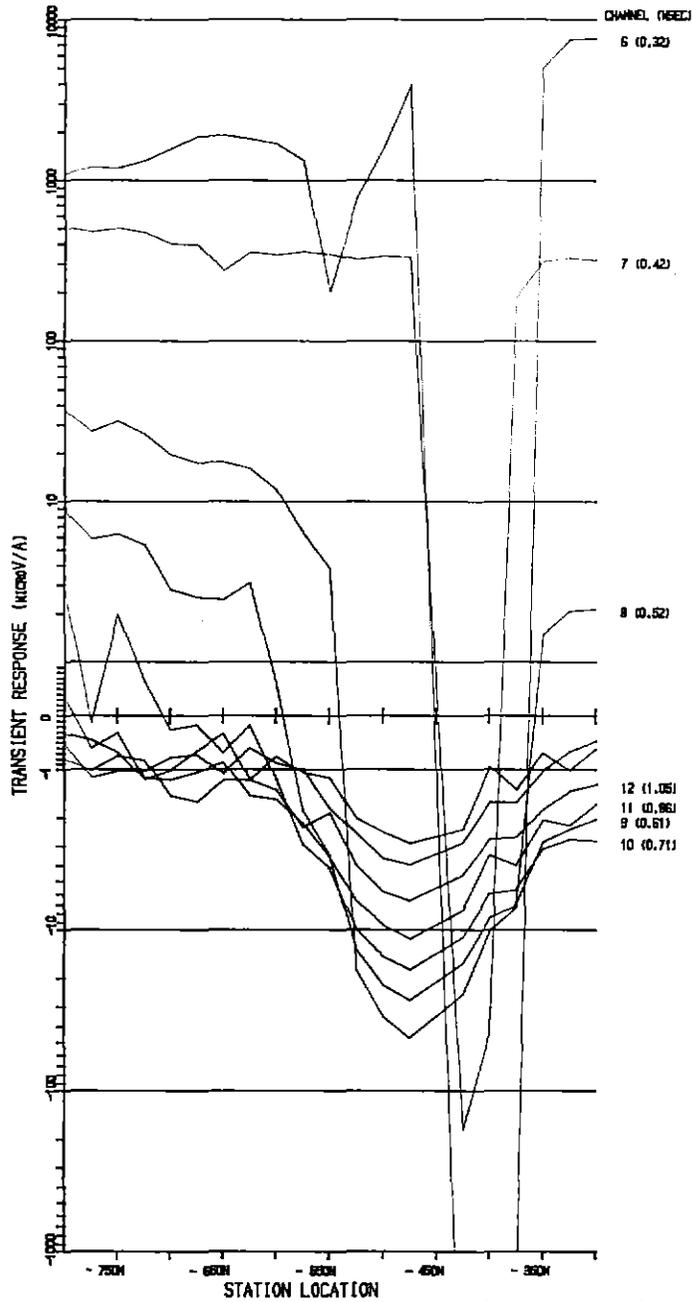
HORIZONTAL SCALE - 1:8000
 VERTICAL SCALE - LOGARITHMIC
 30% PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2650E X NORTH LOOP

SCALE - 1:8000





SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAM MODE (1RV2) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM 11 S/M 1236
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M PER DECADE
 LINEAR BETWEEN -1 AND 11

BHP EXPLORATION

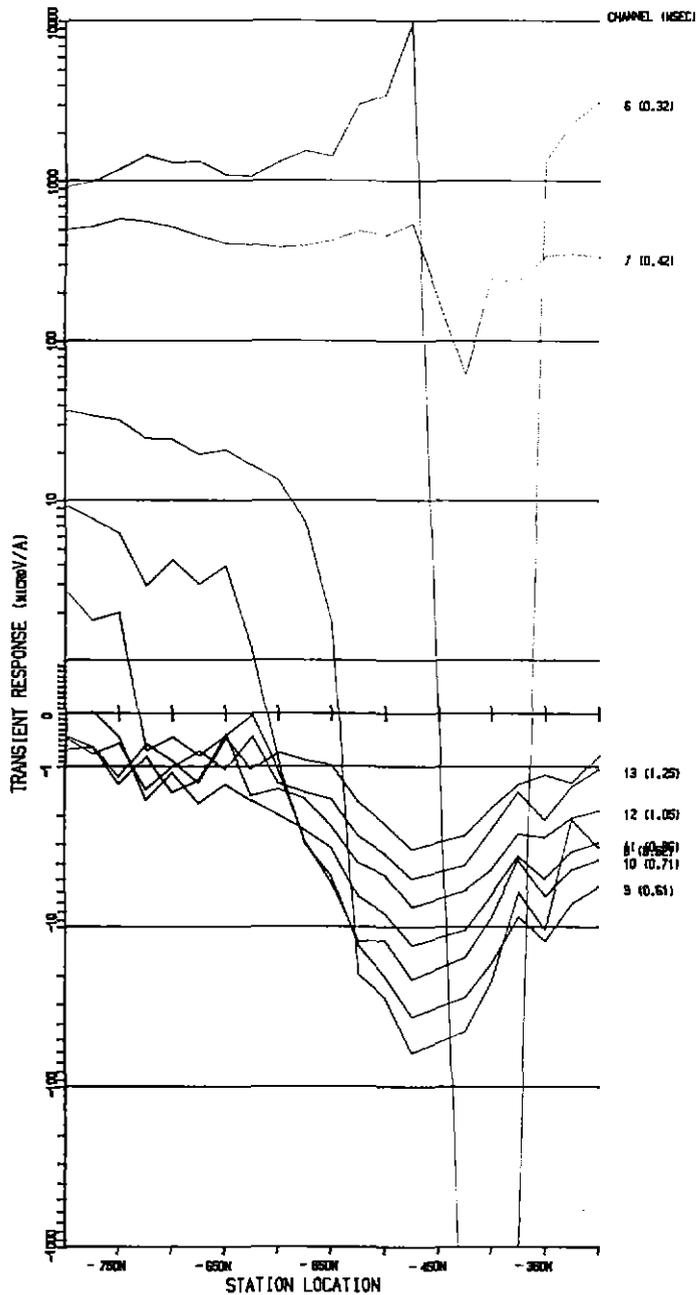
TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2850E X NORTH LOOP

SCALE - 1:5000

5 cm

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776175



SURVEY SPECIFICATIONS

SURVEY DATE : FEB 1988
 CONFIGURATION : 400M SQUARE TRANSMITTER LOOP,
 TURAN MODE (RVR) SURVEY
 READING INT. : 50 METRES
 NO. OF STACKS : 2048
 TRANSMITTER : MEDIUM POWER
 RECEIVER : SIROTEM II S/N 1296
 CURRENT : 11.0 AMPS
 OPERATOR : P. MCKIMMING

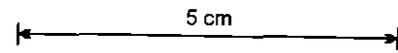
PLOT SPECIFICATIONS

HORIZONTAL SCALE - 1:5000
 VERTICAL SCALE - LOGARITHMIC
 30M PER DECADE
 LINEAR BETWEEN -1 AND +1

BHP EXPLORATION

TASMANIA
 EAST CHESTER
 SIROTEM PROFILE
 LINE 2750E X NORTH LOOP

SCALE - 1:5000



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776176

APPENDIX 3

Rock chip and stream sediment assay data

GEOCHEMICAL ROCK SAMPLING LEDGER

Page No. 1

TENEMENT EL 5/63AREA/PROSPECT CHESTER PINNACLES SAMPLE No'sGEOLOGIST J.G. Purvis DATE Feb 1988PLAN REFERENCE SAMPLE DESPATCH ORDER N° 11170ANALYSED BY ANALABS BURNIE

Sample No.	LOCAL GRID	Metal Content in ppm.						Geological observations
		Pb	Zn	Cu	Ag	Au	As	
<u>EAST CHESTER - UTEM ANOMALY 'B'</u>								
4409	2750W/350S	780	2000	20	2.0	<0.008	11	Sp: Weath basaltic andesite with MnOx fractures.
4410	2750W/500S	545	1550	25	<0.5	<0.008	13	Sub Sp: Basaltic andesite with trace cp, gn sp.
4411	2750W/510S	35	165	60	1.0	0.011	13	Sp: Basaltic andesite with limonite after sulphides.
4412	2750W/575S	15	45	10	<0.5	<0.008	2	Float: Dacitic vhc (lava?) with qtz ± limonite veins.
<u>SHALE BASIN - UTEM ANOMALY 'A'</u>								
4420	6800N/4060E	90	135	35	2.5	<0.008	57	Float: Black shale with minor pyrite.
4422	7000N/4200E	85	180	25	<0.5	<0.008	18	Float: Grey siltstone with minor dissem py.
<u>STREAM SEDIMENT SAMPLES:</u>								
4419	6800N/4060E	25	10	<5	0.5	<0.008	8	Fine gravel under active transport. No trap.
4421	7000N/4200E	95	70	<5	0.5	<0.008	18	Gravel under transport. Rock bottom trap.

APPENDIX 4

Sulfur and Lead isotopic data

Sulphur Isotope Analyses

Sample	Sulphide	$\delta^{34}\text{S}$	Comments
8709Z	sphalerite	10.8	
	chalcopyrite	10.9	
8710Z	sphalerite	11.1	
	chalcopyrite	11.6	
8711Z	chalcopyrite	10.8	
	pyrite	11.1	
8712Z	pyrite	11.1	
8713Z	sphalerite	11.3	
	pyrite	10.4	
	chalcopyrite	10.3	
8714Z	sphalerite	11.2	
	chalcopyrite	11.2	
8715Z	chalcopyrite	11.3	
	pyrite	11.5	
8716Z	sphalerite	11.2	
	chalcopyrite	11.2	
	pyrite	11.7	
8718Z	sphalerite	16.8	
8719Z	sphalerite	10.0	
	chalcopyrite	9.0	
8720Z	sphalerite	9.8	
8721Z	pyrite (1)	12.9	host rock
	sphalerite	12.0	vein
8722Z	sphalerite	9.6	
8723Z	sphalerite	-12.5	
		-11.8	
8724Z	pyrite	-4.2	
8725Z	pyrite	-1.2	
8726Z	pyrite	0.1	
8727Z	pyrite	-2.9	
8728Z	pyrite	-12.3	
8729Z	pyrite	-4.3	
8730Z	pyrite	-5.2	
8731Z	pyrite	-5.0	
8732Z	sphalerite	-3.1	
8733Z	galena	-2.5	NOT galena, probably sphalerite
	sphalerite	-3.4	
8734Z	pyrite	-2.4	
8735Z	sphalerite	1.9	

Sulphides were combusted with Cu_2O at 900°C to extract SO_2 for isotopic analysis using an MM602E mass spectrometer.

SULFUR ISOTOPE SAMPLES

SAMPLE NUMBER	FIELD DESCRIPTION	MINERALS TO BE SEPARATED
8709 Z	Pinnacles EAF9 167.70 Relatively coarse sphalerite-galena-chalcopyrite-pyrite vein cutting finer grained massive sulfide	<u>Vein</u> sphalerite, galena, chalcopyrite
8710 Z	Pinnacles EAF9 170.40 Fine grained to medium grained massive sphalerite-pyrite-galena-chalcopyrite	Sphalerite, galena, pyrite, chalcopyrite
8711 Z	Pinnacles EAF9 174.90 Fine grained pyrite-chalcopyrite vein cutting medium grained pyrite-sericite-chlorite andesite	The fine grained pyrite and chalcopyrite <u>vein</u> material
8712 Z	Pinnacles EAF9 178.80 Disseminated fine to medium grained pyrite in sericitized andesite	Pyrite
8713 Z	Pinnacles EAF9 193.20 Medium grained sphalerite-galena-pyrite+chalcopyrite vein cutting moderately pyritic sericitized andesite	<u>Vein</u> sphalerite, galena, pyrite
8714 Z	Pinnacles EAF10 98.80 Massive fine to medium grained sphalerite-galena-chalcopyrite-pyrite	Sphalerite, galena, chalcopyrite, pyrite
8715 Z	Pinnacles EAF10 106.30 Medium grained pyrite-chalcopyrite veining cutting silicified volcanics with disseminated pyrite	<u>Vein</u> pyrite, chalcopyrite
8716 Z	Pinnacles EAF10 113.00 Medium to fine grained sphalerite-pyrite-chalcopyrite+galena veining in silicified volcanics	Sphalerite, chalcopyrite, pyrite, galena

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SAMPLE NUMBER	FIELD DESCRIPTION	MINERALS TO BE SEPARATED
8717 Z	Thomas' Tunnel, Pinnacles. Barite with galena, chalcopyrite segregations	Barite, galena, chalcopyrite
8718 Z	Costean 16, Pinnacles. Layered barite-galena-sphalerite+pyrite	Barite, galena, sphalerite
8719 Z	McGuinness' Shaft, Pinnacles. Veining and dissemination of chalcopyrite, pyrite, sphalerite, galena in silicified volcanic host	Chalcopyrite, pyrite, sphalerite, galena
8720 Z	Pinnacles, Southern Trench area EAF18 43.60 Red brown sphalerite-pyrite-galena-chalcopyrite veining in sercite-silica altered dacitic lapilli tuff.	Sphalerite, pyrite, galena, chalcopyrite
8721 Z	Pinnacles EAF14 254.50 Sphalerite-galena-chalcopyrite ± pyrite vein cutting sericite-silica altered dacitic lapilli tuff with disseminated fine grained pyrite.	<ol style="list-style-type: none"> 1. Vein sphalerite, galena chalcopyrite 2. Pyrite, disseminated in host rock.
8722 Z	Pinnacles, Southern Trench 3 Massive pyrite-sphalerite-galena-chalcopyrite.	Pyrite, sphalerite, galena,
8723 Z	East Chester EAB1 283 Red brown sphalerite veinlets and segregations in andesite	Sphalerite
8724 Z	Hollway Pyrite. Prominent silica-sericite-pyrite (25%) andesite, trace fuchsite	Pyrite
8725 Z	Hollway Pyrite Chlorite-sericite altered andesite with pyrite veining and dissemination (V fine grained to 3%)	Pyrite

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SAMPLE NUMBER	FIELD DESCRIPTION	MINERALS TO BE SEPARATED
8726 Z	Hollway Pyrite Coarse pyrite veining in chlorite-sericite altered andesite	Pyrite
8727 Z	Hollway Pyrite Fine grained disseminated pyrite to 5% in sericite-chlorite altered andesite	Pyrite
8728 Z	Chester Area CP6 41.90 Pyrite veining and dissemination in sericite-silica altered dacite (5 - 8% pyrite)	Pyrite
8729 Z	Chester Area CP6 151.00 Prominent silica-sericite-pyrite altered dacite with 10% pyrite as dissemination and segregation	Pyrite
8730 Z	Chester Area CP3 223.50 Prominent sericite-silica-pyrite altered dacite (12% pyrite)	Pyrite
8731 Z	Chester Area. Mt Kershaw trig station. Prominent silica-sericite-pyrite altered dacite (25-20% pyrite)	Pyrite
8732 Z	Chester Area CP3 518.20 Coarse sphalerite-galena-pyrite-quartz vein cutting dacite	Sphalerite, galena, pyrite
8733 Z	Chester Area CP5 105.16 Galena-sphalerite-quartz-carbonate vein in dacite	Galena, sphalerite
8734 Z	Chester Area CP18 31.40 Pyrite-chlorite-carbonate-quartz+sphalerite vein cutting dacite	Pyrite
8735 Z	Chester Area CP18 56.00 Sphalerite-galena-chlorite-quartz-carbonate vein	Sphalerite, galena

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COMSTAFF J.V. AREA
Lead Isotope Data

<u>Sample</u>	<u>Location</u>	<u>Depth</u>	<u>206/204</u>	<u>207/204</u>	<u>208/204</u>	
CHESTER						
ACE 2188	PIT		18.3950	15.622	38.245	
ACE 2189	PIT		18.3370	15.608	38.141	
ACE 2190	PIT		18.6990	15.610	38.753	
ACE 2191	PIT		18.5590	15.620	38.430	
ACE 2210A	DDH CP3	516.9	18.2660	15.603	38.044	
ACE 2210B	DDH CP3	516.9	18.2680	15.606	38.053	
ACE 2494	DDH CP11	105.16	18.0775	15.581	37.854	
ACE 2495	DDH CP5	105.16	18.3217	15.605	38.109	
ACE 2496	DDH CP18	57.4	18.2984	15.607	38.082	
Pinnacles						
ACE 2192	LEOS FIND		18.3480	15.592	38.170	
ACE 2193	COSTEAN 2A		18.3280	15.590	38.124	
ACE 2194	NR DDH EAF5		18.3560	15.598	38.164	
ACE 2195A	BROWNS TUNNEL		18.3370	15.585	38.109	
ACE 2195B	BROWNS TUNNEL		18.3490	15.598	38.143	
ACE 2196	BROWNS TUNNEL		18.3230	15.605	38.123	
ACE 2197	THOMAS TUNNEL		18.2760	15.609	38.068	
ACE 2198	COSTEAN 16		18.2630	15.594	38.041	
ACE 2199	SOUTHERN TRENCHES		18.3170	15.596	38.115	
ACE 2203	DDH EAF9	171.0	18.3330	15.597	38.125	
ACE 2204	DDH EAF9	177.55	18.3210	15.599	38.119	
ACE 2205	DDH EAF9	181.75	18.3310	15.590	38.105	
ACE 2206	DDH EAF9	186.75	18.3460	15.599	38.140	
ACE 2207	DDH EAF9	194.4	18.3680	15.603	38.167	
ACE 2208	DDH EAF9	199.75	18.3630	15.591	38.139	
ACE 2209	DDH EAF9	205.1	18.4240	15.619	38.268	
ACE 2211	DDH EAF10	100	18.3610	15.603	38.191	
ACE 2246	DDH EAF3	37.0	18.3200	15.600	38.125	
Shale Basin						
ACE 2500			18.3862	15.608	38.189	
ACE 2501			18.4552	15.613	38.292	
ACE 2502			18.3309	15.598	38.117	
Auger Samples						
			<u>Geochem No</u>			
ACE 2509	ROSEBERY FAULT		8992Z	18.4768	15.619	38.303
ACE 2510	ROSEBERY FAULT		8996Z	18.5055	15.613	38.339
ACE 2511	CHESTER/MT KERSHAW		9023Z	18.3099	15.605	38.082
ACE 2512	CHESTER/MT KERSHAW		9027Z	18.4611	15.615	38.302
ACE 2513	HOLLWAY PYRITE		9085Z	18.3445	15.599	38.125
ACE 2514	HOLLWAY PYRITE		9115Z	18.3605	15.589	38.140
ACE 2515	CHESTER/MT KERSHAW		9200Z	18.3649	15.607	38.151
ACE 2516	CHESTER/MT KERSHAW		9224Z	18.3457	15.597	38.124
ACE 2517	ROSEBERY FAULT		9242Z	18.4432	15.625	38.281
ACE 2518	HOLLWAY PYRITE		9322Z	18.4520	15.611	38.278
ACE 2519	HOLLWAY PYRITE		9333Z	18.4625	15.623	38.304
ACE 2520	CHESTER/MT KERSHAW		9439Z	18.2892	15.598	38.072
ACE 2521	CHESTER/MT KERSHAW		9412Z	18.3596	15.604	38.166
ACE 2522	CHESTER/MT KERSHAW		9499Z	18.3389	15.608	38.139
ACE 2523	HOLLWAY PYRITE		9611Z	18.3852	15.606	38.206
ACE 2524	HOLLWAY PYRITE		9636Z	18.4591	15.604	38.284
ACE 2525A	HOLLWAY PYRITE		9674Z	18.4273	15.617	38.261
ACE 2525B	HOLLWAY PYRITE		9674Z	18.4215	15.617	38.271

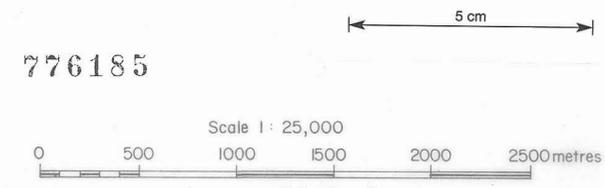
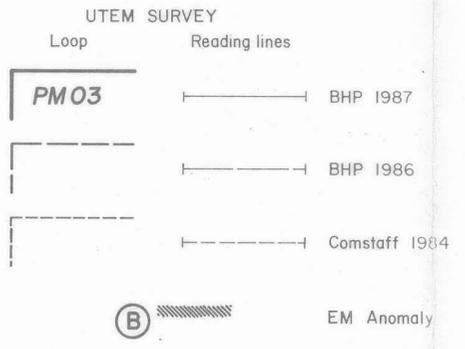


FIG. 3

BHP - UTAH MINERALS INTERNATIONAL
Asia Pacific Division - Exploration Department

E.L.5/63 (AREA 4) COMSTAFF J.V., TAS.
**GRID LAYOUT, UTEM LOOPS AND
EM ANOMALIES** 88-2815

Prepared: D.Windrim/T.Kerr	Date: 6-6-88	Centre: MELBOURNE
Drawn: A.R.Veale	Project No.: B56	Drawing No.: A2-1651
Checked:		