

E.L. 2 / 70

Mackintosh River

AMG REFERENCE POINTS ADDED

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MICROFILMED

Cominco Exploration Pty. Ltd./ Greenhill Road, Wayville, S.A. 5024 Australia/Tel. 72-1103
(Incorporated in New South Wales)

Telex AA 82843
Telegrams Cominco Adelaide

74-1020

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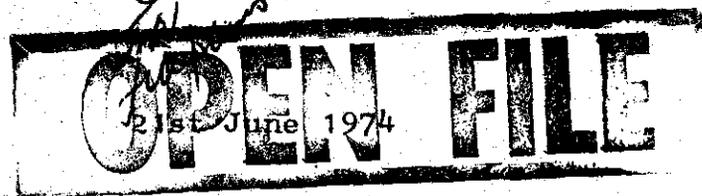
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|----------|---------------|------|-----------|
| D of M | A.O. | CC&M | D.S.M.E. |
| RECEIVED | 26 JUN 1974 | | Registrar |
| ANSWERED | DEPT OF MINES | | E & IL |
| REF. No. | 4012/74 | | |



The Director,
Department of Mines,
G.P.O. Box 124B,
HOBART, TAS., 7001

Cominco Exploration Pty Ltd,
C/o Post Office,
LUINA, TAS., 7321



E.L. 2/70 Mackintosh River

Dear Sir,

During the year we have attempted to examine most of those airborne EM anomalies recommended for follow-up by McPhar Geophysics. Geological mapping, surface geochemistry and ground VHEM programmes were conducted and, at anomaly number 8 in the Que River area, Mackintosh West Block, led to a drilling programme. Significant base metal mineralisation has been encountered and drilling is continuing.

Details of work are summarised below.

Mackintosh East Block

Anomaly 9. 500 metre baseline, 6 x 500m cross lines, pegs at 50m intervals.

1100 metres HEM and 1200 metres ground magnetics. The geophysical data is indicative of Tertiary basalt, with a flat lying conductor interpreted as swamp or ground water beneath the basalt. The latter occurs as a small disc lying in the bottom of a valley flanked by steeply dipping Cambrian tuffs.

Anomaly 10. 800 metre baseline, 9 x 400m cross lines.

1850m HEM, 2400 metres ground magnetics. The data is indicative of Tertiary basalt. No other rocks are exposed.

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Anomaly 12. 700 metre baseline, 8 x 400m cross lines.
3200 metres ground magnetics.

This anomaly is located 'upstream' of anomaly 9 and is due to a similar cause.

Anomaly 11. Two contiguous grids total 29.4 Km.

Wide spaced HEM (2500m) and VEM broadside/set-up (700m) served to indicate the continuity of this major airborne response. Mapping demonstrated the presence of Precambrian metamorphosed carbonaceous shales (phyllites).

Reconnaissance soil sampling of 'A' horizon material (above bedrock) at 25m intervals on selected lines provided three lead values of possible interest, - 1400ppm, 300ppm and 200ppm against a background of less than 20ppm.

Paringa Grid

Two aeriaily major soil anomalies were examined by 1249m (4100ft) of HEM and soil sampling. Check mapping suggested that the Paringa anomaly was associated with a cherty band in acid tuffs. An oblique but relatively strong (best 1800ppm lead with good support and 260ppm zinc with good support) soil anomaly was defined within the Paringa anomaly by 50ft spaced sampling of 'C' horizon material. No EM response was obtained and IP is under consideration prior to drilling. Access for a light weight rig capable of 150ft' holes has been prepared.

A recorded galena occurrence was noted to be in the form of quartz veining in the Precambrian phyllites. A Precambrian age is not necessarily assumed.

Mackintosh West Block

Anomaly 1. Two 400m lines 150m apart were pegged and both surveyed by HEM and ground magnetics.

Mapping revealed shales, silts and sedimentary breccias associated with dacitic to andesitic crystal tuffs, largely masked by Tertiary basalt.

A poor EM conductor with no out of phase component was located. Magnetics defined the basalt.

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Soil geochemistry is proposed before abandonment of interest in this specific locality. The geological environment is attractive.

Anomaly 3. Although not recommended for follow-up by McPhar, the proximity of this anomaly to access routes permitted ready geophysical assessment. It was concluded that a weak horizontal conductor could be interpreted from the ground reconnaissance line. This anomaly was considered to be due to swamp conditions. The airborne interpretation shows this anomaly contiguous with a (separate?) EM source probably related to the basalt scarp.

Anomaly 4. Very difficult terrain prevented reconnaissance in early 1973. A 1000m access line and two oblique lines of 400m each were surveyed with HEM. No anomalous responses were obtained. Tracking film is to be re-examined to check the location of the airborne response. A weak magnetic anomaly has been interpreted to represent a stratigraphic unit passing in close proximity to this anomaly and to anomaly 8. Anomalous zinc values are known from stream sediment samples. Local mapping is required.

Anomaly 8. With a strong albeit apparently single line air EM response supported by anomalous stream sediment values, this anomaly was considered to have good potential. A 600 by 400 metre grid with pegs on 50m squares was established in horizontal and myrtle forest. 2400 metres HEM, 3300 metres set-up VEM and 5200 metres ground magnetics were completed and one conductor of 200 metres and a second conductor of 50 metres were defined. HF conductivity thickness products were 7.2 mhos on two lines, 1.8 mhos on two and less than 1 mho on two lines. Supporting LF σ_s values occur. Applied potential surveys with the current electrode in drill hole QR1 confirmed the major conductor. Preliminary soil sampling of both A and C horizon soils was undertaken at 50 metre intervals. Follow-up work at 10 metre intervals is complete within most anomalous areas, but requires extension. One metre sampling was completed recently on one line. C horizon anom-

alies typically in excess of 2000ppm lead, 400ppm copper, 400ppm zinc and 10% iron are shown on the attached plans. Hand pitting encountered massive pyrite in sericitic tuffs with up to 6000ppm copper and in excess of 5% zinc, 1.2 metres below surface.

A fourteen hole drilling programme is now under-way. With five holes complete, base metal mineralisation has been observed in all. Summary assays available to date, (and not necessarily indicative of all mineralisation in the holes) are as follows:-

| QR1 (163.35m) | IW(metres) | % Cu | % Pb | % Zn | Ag g/mT | Au g/mT |
|------------------|------------|------|------|------|------------|------------|
| 107.88 to 112.37 | 4.49 | 0.21 | 0.24 | 1.34 | - | - |
| 112.37 to 121.20 | 8.83 | 2.63 | 6.07 | 7.39 | 122.94 | 3.32** |
| 121.20 to 123.81 | 2.61 | 0.31 | 1.71 | 7.34 | - | - |
| 123.81 to 135.92 | 12.11 | 0.09 | 0.80 | 2.42 | - | - |
| 150.92 to 154.92 | 4.00 | 0.04 | 0.64 | 2.66 | - | - |

** by fire assay (all others by AAS)

| QR2 (309.20m) | IW(metres) | % Cu | % Pb | % Zn | Ag g/mT | Au g/mT |
|-----------------|------------|------|-------|-------|------------|------------|
| 78.38 to 83.19 | 4.81 | 0.29 | 11.00 | 17.68 | 299.71 | 5.07 |
| 93.23 to 99.12 | 5.89 | 0.06 | 1.32 | 2.40 | - | - |
| 99.12 to 100.69 | 1.57 | 0.14 | 4.41 | 7.55 | - | - |

This mineralisation (in QR2) represents a separate zone. Mineralisation tentatively correlated with QR1 occurs sporadically between 282 and 284 metres.

Appropriate check assays have been conducted.

The mineralisation occurs as both massive banded sulphides and as stringer ore. Mapping and core logging has revealed a complex volcanic suite of vesicular and pumiceous dacites(?), lithic tuffs and tuff agglomerates with some sediments. Sericitisation is widespread. Regional mapping, whole rock silicate analyses, norm calculations and thin section study indicates an andesitic to dacitic suite of volcanics. QR1 and QR2 have been sampled in detail for petrological study, and typing of logs awaits any consequent corrections. It is of interest to note that this area is devoid of prospectors pits despite old workings being less than 1 Km to the north, (see Henderson, Q.J., 1938, Unpub. Rept. Mines Dept. Tas.)

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Proposed Work.

Airborne EM has been demonstrated to be a successful technique but not, as indicated by the upper intersection in QR2, an exhaustive one. Negotiations are in progress to confirm an improved airborne EM/magnetics programme for late 1974 with 150 to 200 metre line spacing over a substantial area. In addition to extended geological and geochemical work throughout the property, stream geochemistry has already indicated a strike length of 3Km centred on anomaly 8 which requires detailed examination.

Preparation of formal drafts of fact data for all anomalies examined is in progress. These will be presented at a later date.

Expenditure

| | |
|----------------|-----------------|
| Geology | 13,747 |
| Geophysics | 8,013 |
| Geochemistry | 9,511 |
| Survey | 16,325 |
| Drilling | 21,567 |
| Road works | 717 |
| Tenure (legal) | 428 |
| | <u>\$70,308</u> |

Not yet included in the financial statement are incurred expenses of approximately \$30,000 for road works and \$25,000 for 4 of 5 drill holes completed; with nine holes of the current programme to be commenced.

We request that our licence 2/70 be renewed.

Yours faithfully,
Cominco Exploration Pty Ltd
per

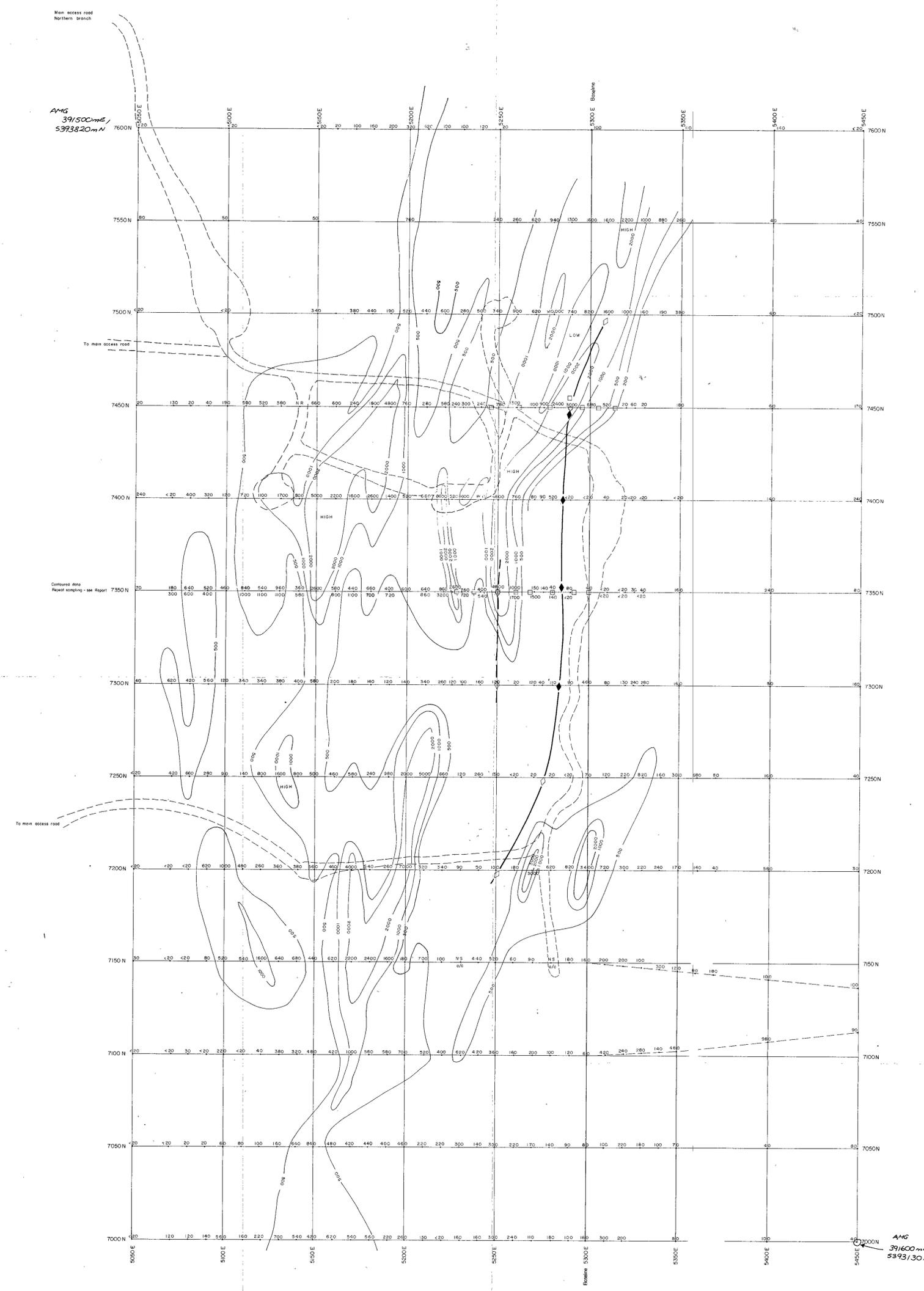
E. Hugh Skey
Geologist

SUBMITTED AND RECOMMENDED
 AT \$ 262-00
 UNTIL 30 7/2-74
 Director of Mines

APPROVED
 MINISTER FOR MINES
 DATE / /

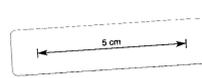
ATTACHMENTS

| | | |
|--------|---|------------|
| DT32 | Dundas Trough Regional Programme CEPL Fact Mapping | 1 : 50 000 |
| MAC22 | Geochemistry 'C' Horizon Lead values (ppm) | 1 : 1 000 |
| MAC21 | Geochemistry 'C' Horizon Copper values (ppm) | 1 : 1 000 |
| MAC17 | Geochemistry 'C' Horizon Zinc values (ppm) | 1 : 1 000 |
| MAC17B | Geochemistry 'C' Horizon Zinc values (ppm) Alternative Trends | 1 : 1 000 |
| MAC19 | Geochemistry 'C' Horizon Iron values (%) | 1 : 1 000 |
| QR1 | Location of Drill Holes | 1 : 1 000 |
| MAC24 | Anomaly 4 - HEM Traverses | |
| MAC34 | Anomaly 1 - Geophysics | |
| MAC35 | "Back Peak" Area - Soil Geochemistry & Geology | 1 : 25 000 |
| MAC36 | Old Paringa Grid - Geophysics - Horizontal EM | 1 : 1 524 |
| MAC37 | Paringa Grid - 'C' Horizon Soils | 1 : 5 000 |
| MAC38 | Anomaly II - Soil Geochemistry & EM | |
| MAC39 | Anomaly 9 - Geophysics | 1 : 2 500 |
| MAC40 | Anomaly 12 - Geophysics (Ground Magnetics) | 1 : 2 500 |
| MAC41 | Anomaly 10 - Geophysics | 1 : 2 500 |



VERTICAL LOOP E.M. (Set up method)
Conductors shown thus -

- ◇ Weak conductor
- ◆ Strong conductor



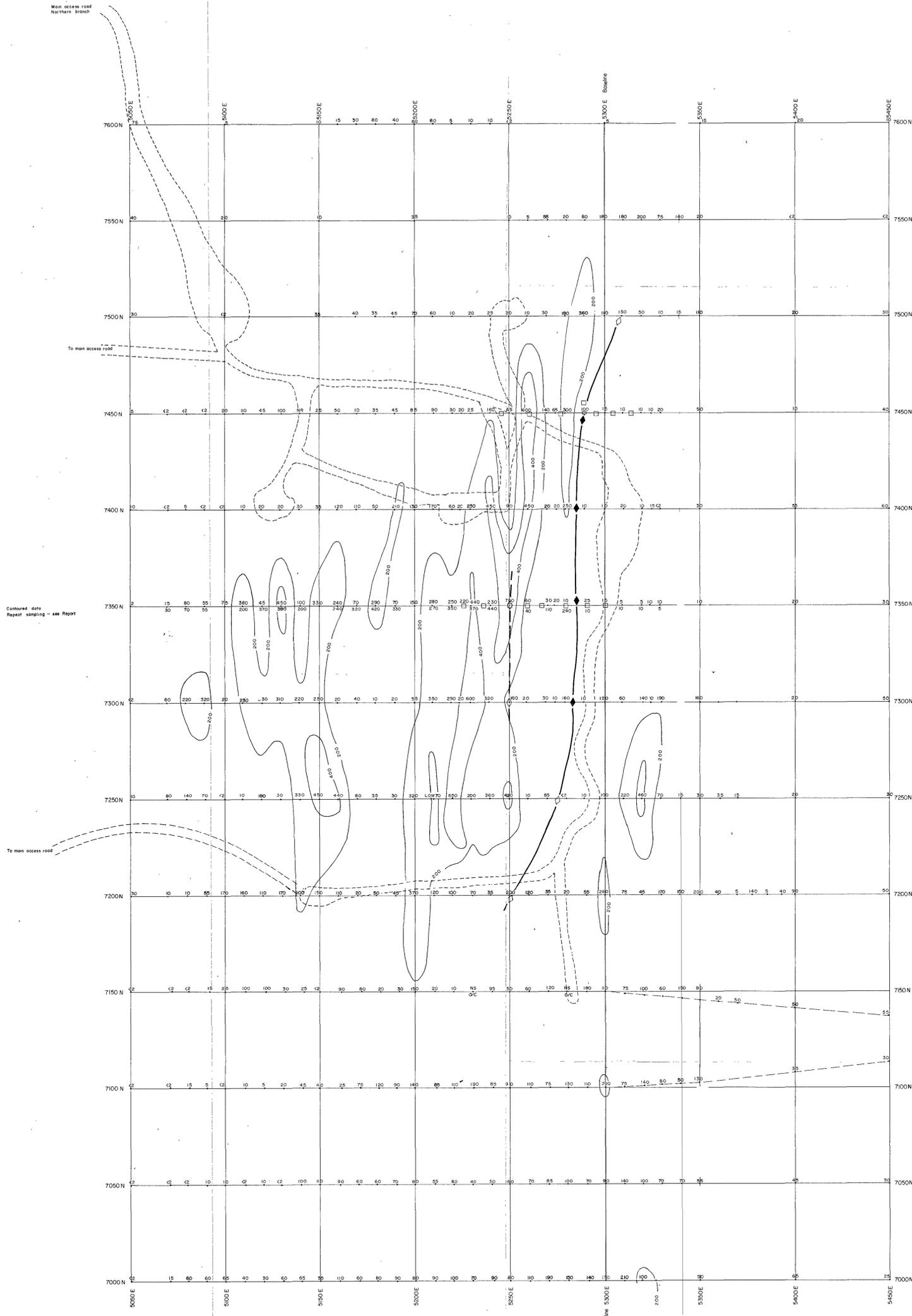
AMS REFERENCE POINTS ADDED

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| Drawn by | E.H.K. | Checked by | E.H.K. |
| Location | 5393/544 | Scale | 1:1000 |
| Date | April 1978 | Page | Map 22 |

590009 714-1020

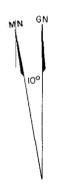
COMINCO EXPLORATION PTY LTD

NORTH WEST TASMANIA
MACKINTOSH EL. 2/70 (West) - QUE RIVER (Anomaly 8)
Geochemistry - C Horizon Soils
LEAD (ppm) 005



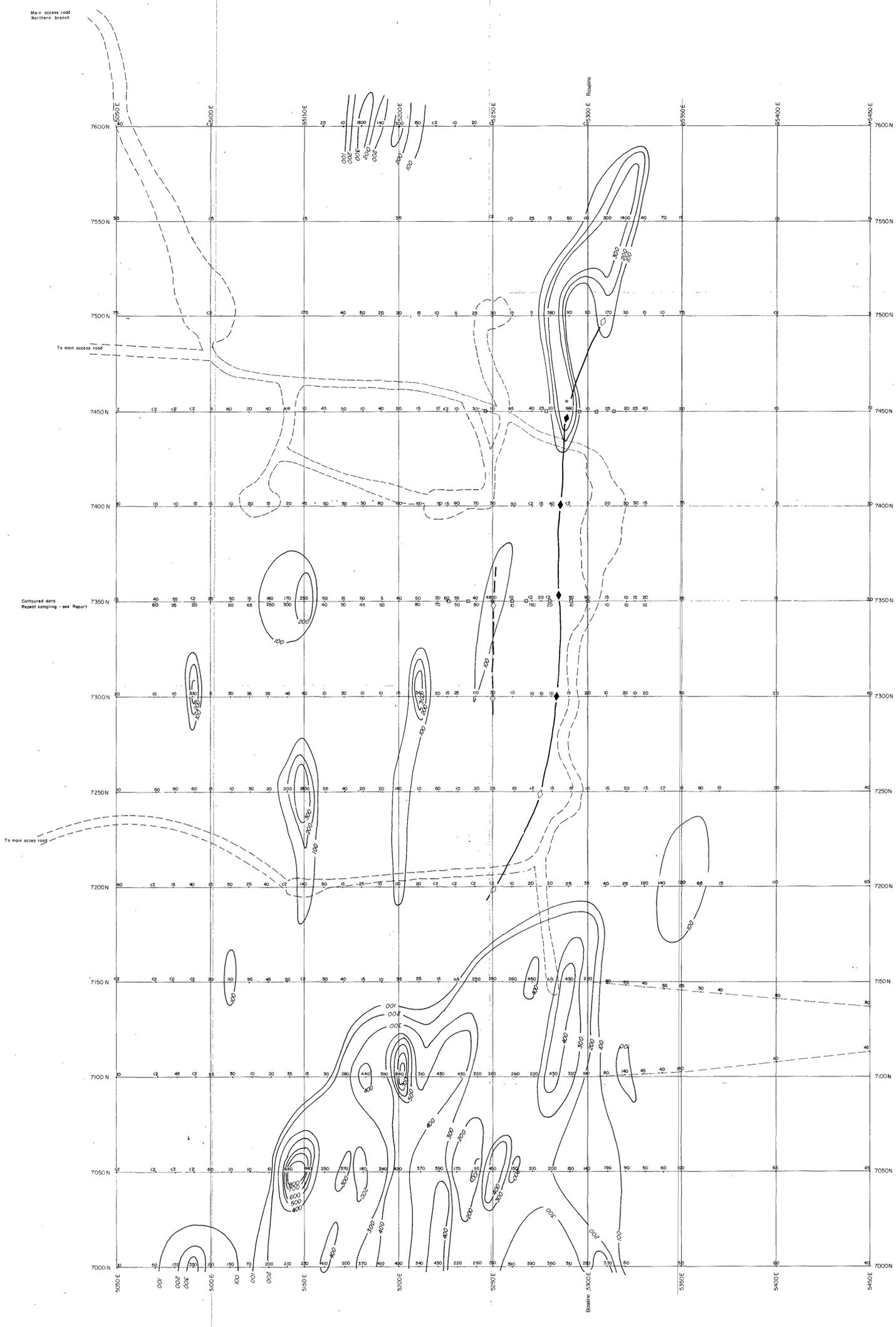
VERTICAL LOOP E M (Set up method)
 Conductors shown thus

◇ Weak conductor
 ◆ Strong conductor



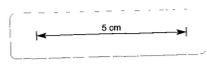
Analyses M15 M16 M17 M18 M19 M20 M21 M22 M23 M24 M25 M26 M27 M28 M29 M30 M31 M32 M33 M34 M35 M36 M37 M38 M39 M40 M41 M42 M43 M44 M45 M46 M47 M48 M49 M50 M51 M52 M53 M54 M55 M56 M57 M58 M59 M60 M61 M62 M63 M64 M65 M66 M67 M68 M69 M70 M71 M72 M73 M74 M75 M76 M77 M78 M79 M80 M81 M82 M83 M84 M85 M86 M87 M88 M89 M90 M91 M92 M93 M94 M95 M96 M97 M98 M99 M100

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| COMINCO EXPLORATION PTY LTD | | | |
| Drawn by | Checked by | Date | |
| Location Code | Scale | Printed | |
| MACKINTOSH E.L. 2770 (West) - QUE RIVER (Arampy 8) | | | |
| Geochemistry - C Horizon Soils | | | |
| COPPER (ppm) | | | |
| 004 | | | |



VERTICAL LOOP E.M. (Set up method)
 Conductors shown thus

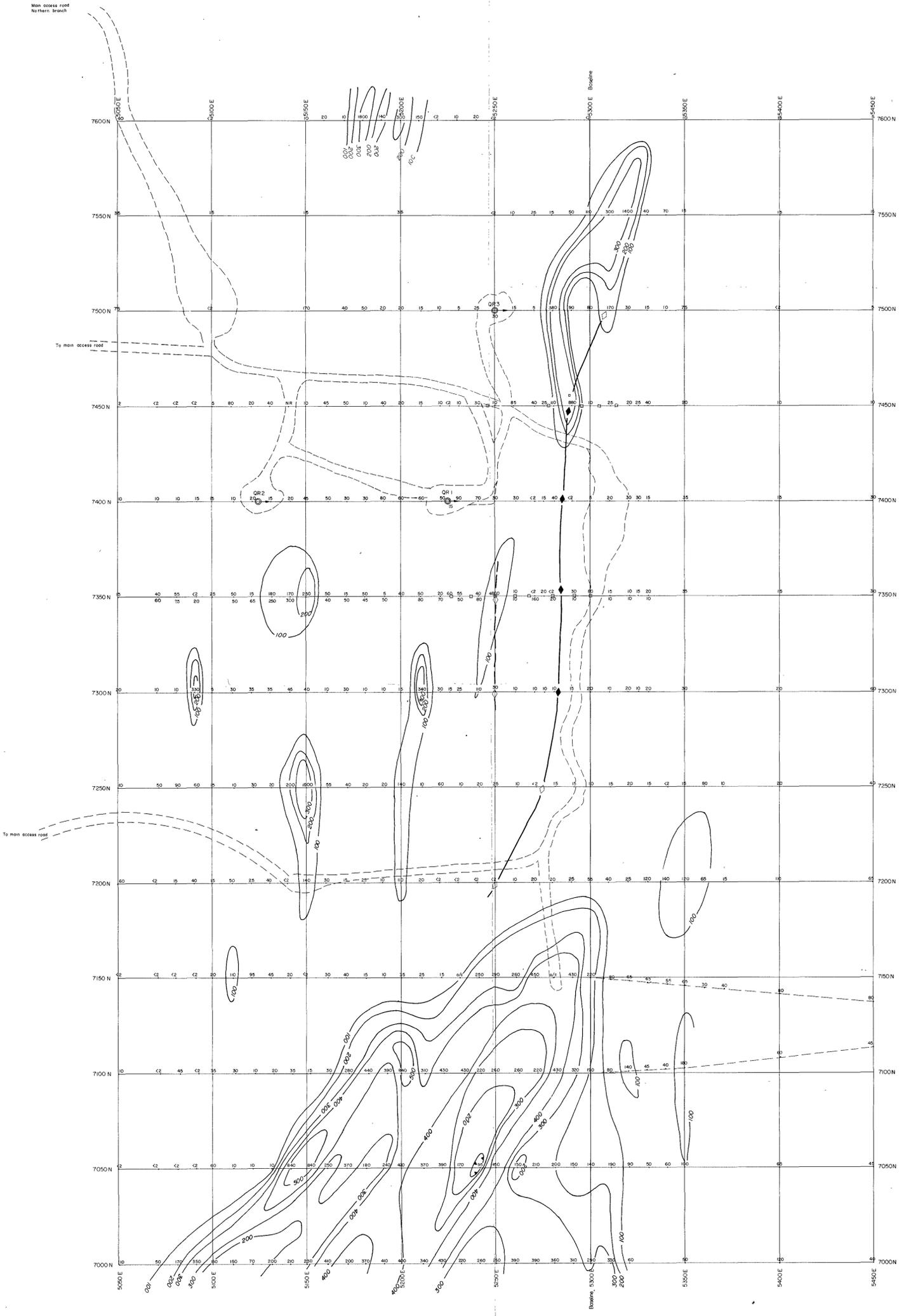
◇ Weak conductor
 ◆ Strong conductor



Analysis MTS. Map was not used. See report for details. 1/4" = 0.575 miles.

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| | | |
|----------------------------------|-------------------------|--|
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| Drawn by: E.L.S. 2/73 | Checked by: E.L.S. 2/73 | |
| NORTH WEST TASMANIA | | MACKINTOSH EL. 2/70 (West) - QUE RIVER (Anomaly 8) |
| Geochimistry - 'C' Horizon Soils | | |
| ZINC (ppm) | | |
| Location code: K85/644 | Date: April 1974 | Page: 7 of 7 |



VERTICAL LOOP E M (Set up method)
 Conductors shown thus

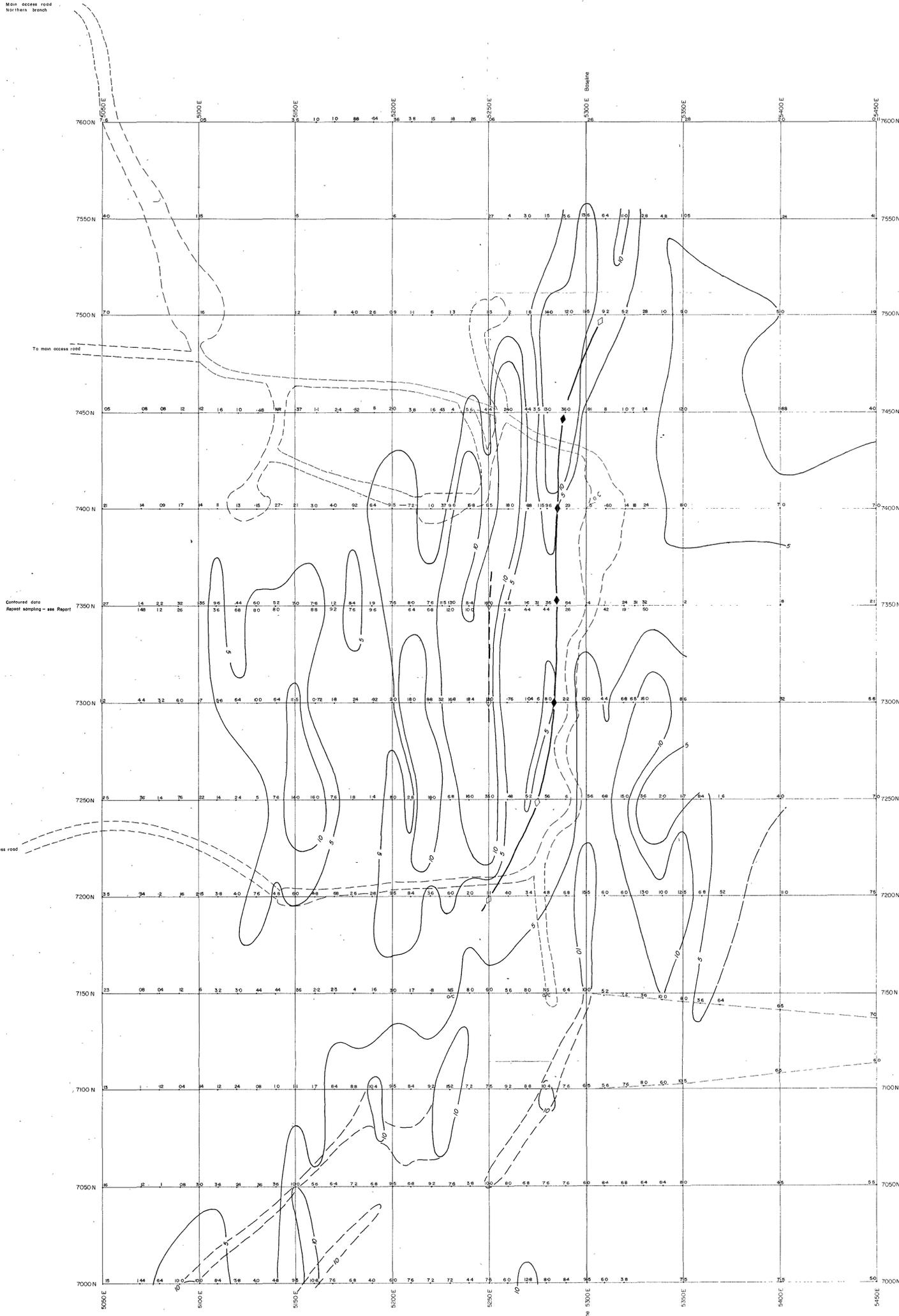
◇ Weak conductor
 ◆ Strong conductor



Analysis: HFS Hit some HCT but reflections in NW oblige / low 0.250 sample

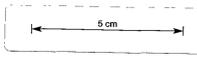


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| 590012 | | 74-1020 | |
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| Checked by: | | MAGNITOSH E.L.2/70 (West) - QUE RIVER (Anomaly B) | |
| | | Geodermistry - C' Horizon Soils | |
| | | ZINC - Alternative trends | |
| Location code: K59/6/4 | Scale: 1:1000 | Date: April 1972 | Print: M.C. 17B |



VERTICAL LOOP EM (Set up method)
 Conductors shown thus
 ◊ Weak conductor
 ◆ Strong conductor

--- Possible alternative trends, compare with Zinc Plate 17B

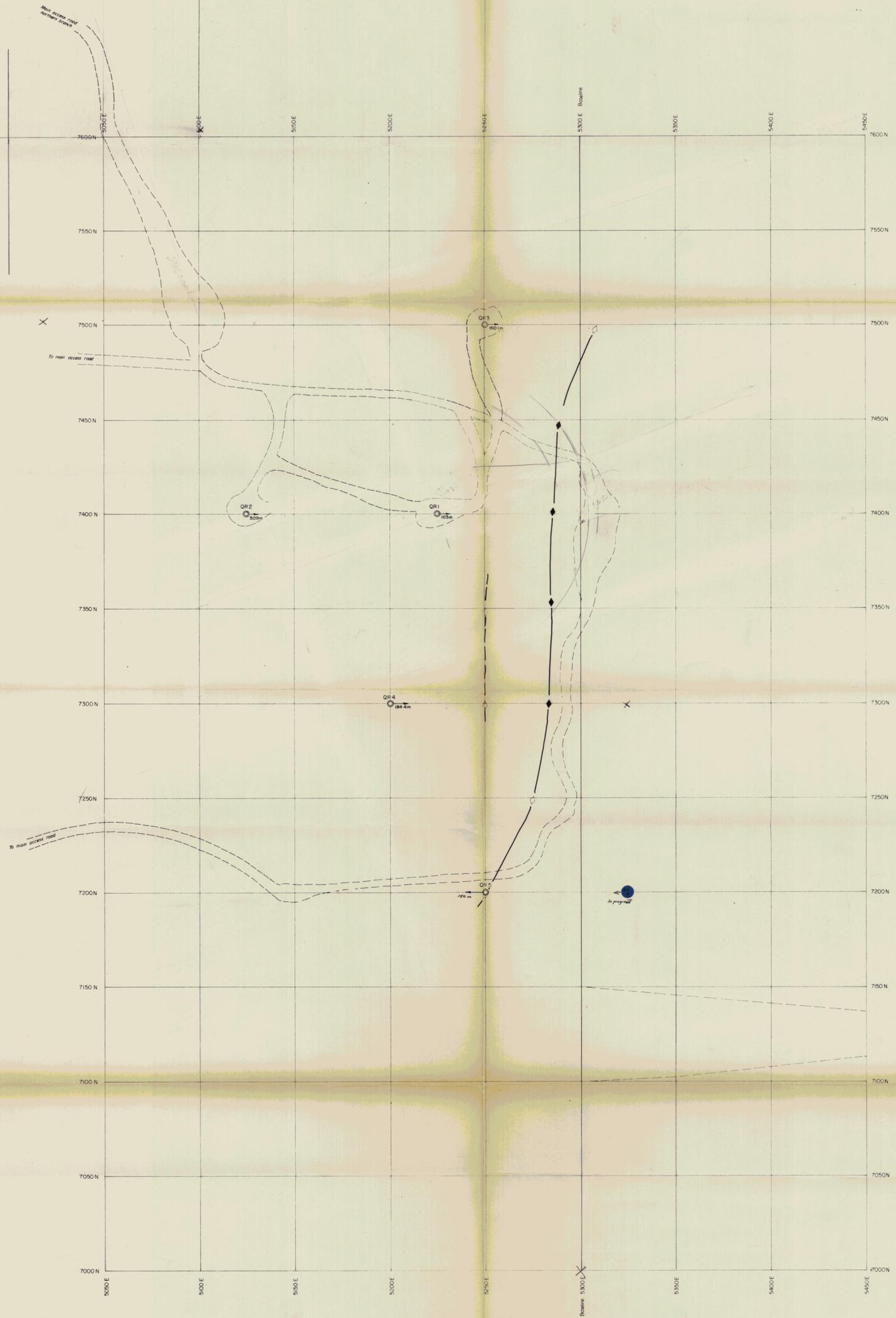


59013
 Analysis M45 site between NCT lines, NCT/1003
 a new phase, 1 km 0.25S strike

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Owned by ELIAC AS
 Checked by
 Titled by
 NORTH WEST TASMANIA
 MACKINTOSH EL.270 (West) - QUE RIVER (Anomaly 8)
 Geochronology - C Horizon Soils
 IRON (percent)
 003

Location code: N35/614
 Scale: 1:1000
 Date: April 1974
 Page: Mac 19



VERTICAL LOOP E.M. (Set up method)
 Conductors shown thus:
 ◇ Weak conductor
 ◆ Strong conductor
 QR2
 ○ 200m Diamond drill hole with total length (metres)



590014

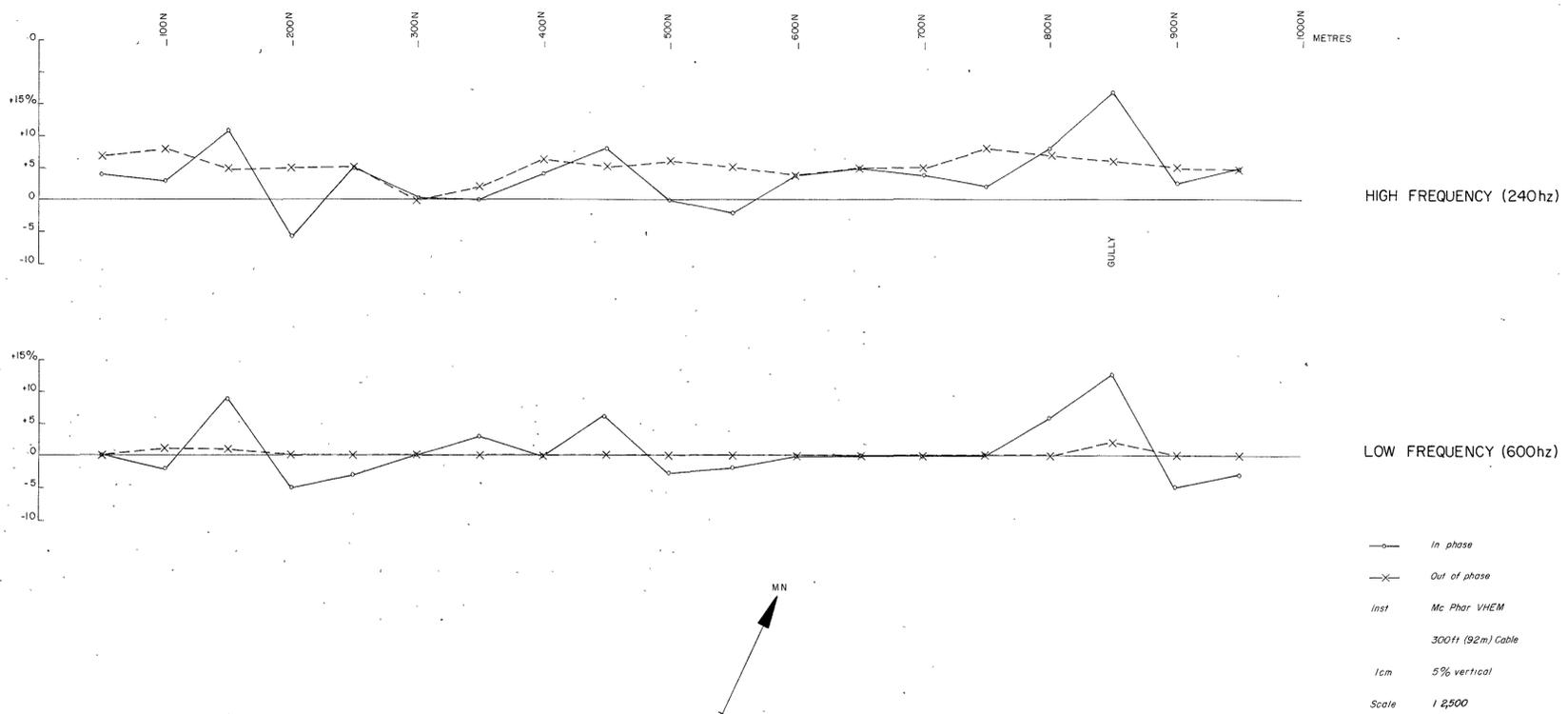
COMINCO EXPLORATION PTY LTD 74-1020

Drawn by: RLV
 Checked by: RLV
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MACKINTOSH E.L. 2/70 (West) - QUE RIVER (Anomaly B)
 NORTH WEST TASMANIA
 LOCATION OF DRILL HOLES 006

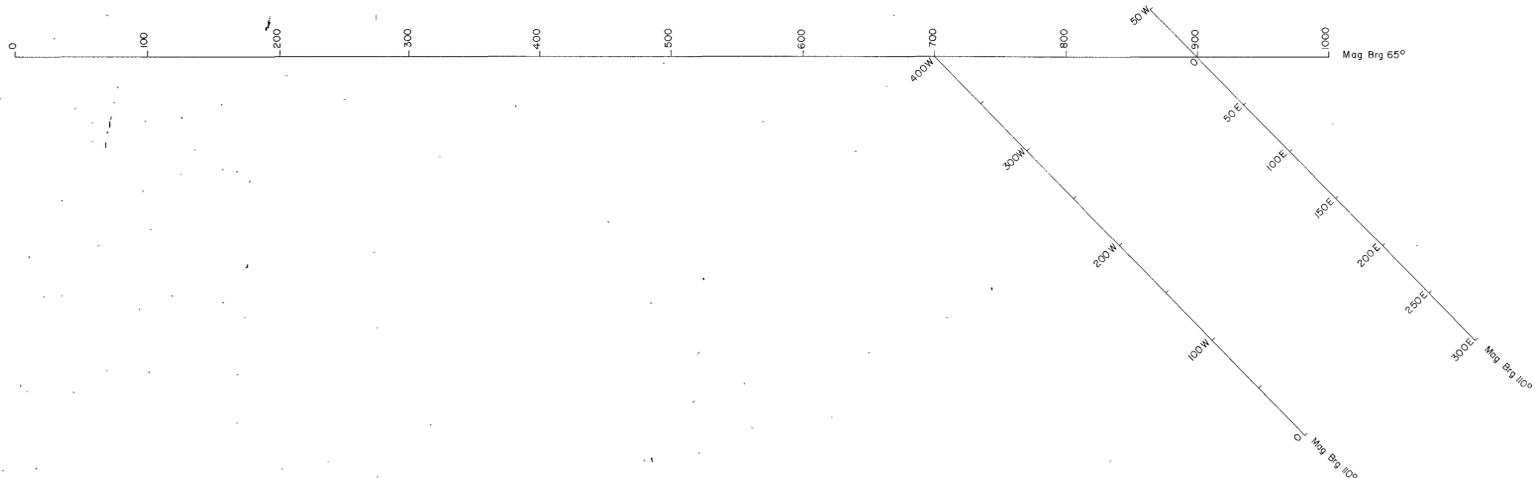
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MAIN ACCESS TRAVERSE MAGNETIC BEARING 65°

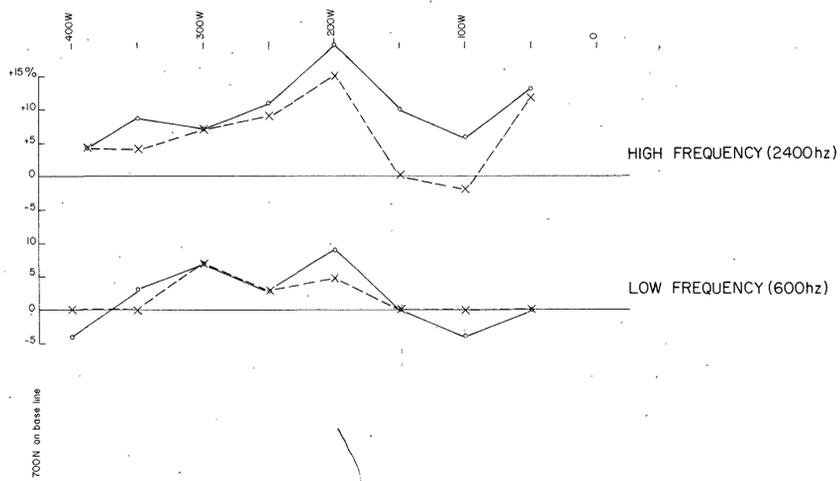


LOCATION PLAN

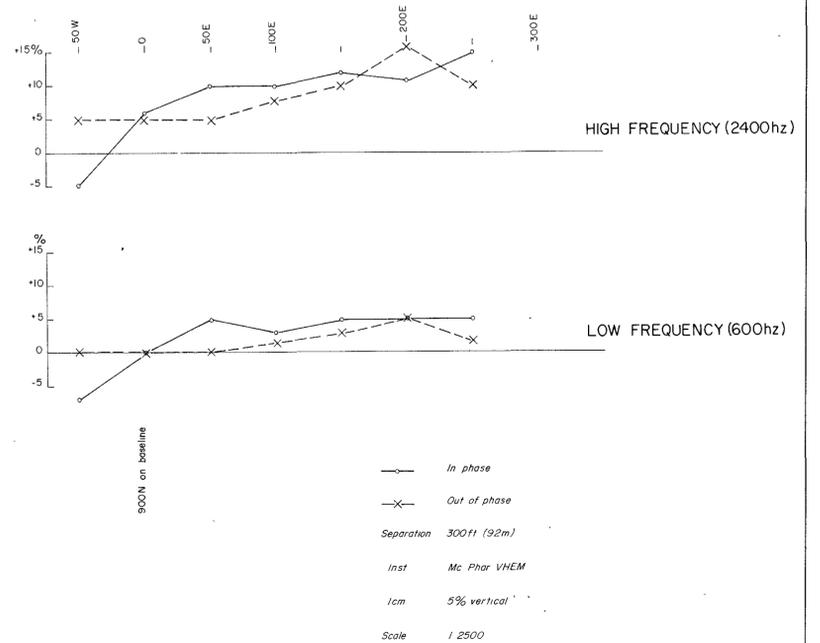
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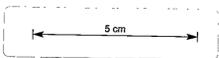
CROSS LINE FROM 700N ON MAIN ACCESS TRAVERSE BEARING 110°



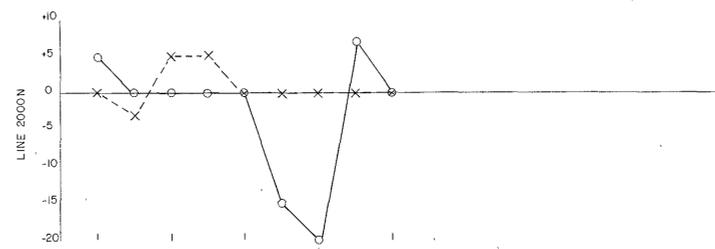
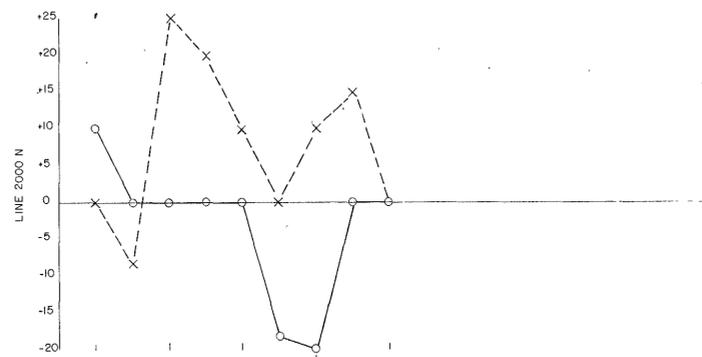
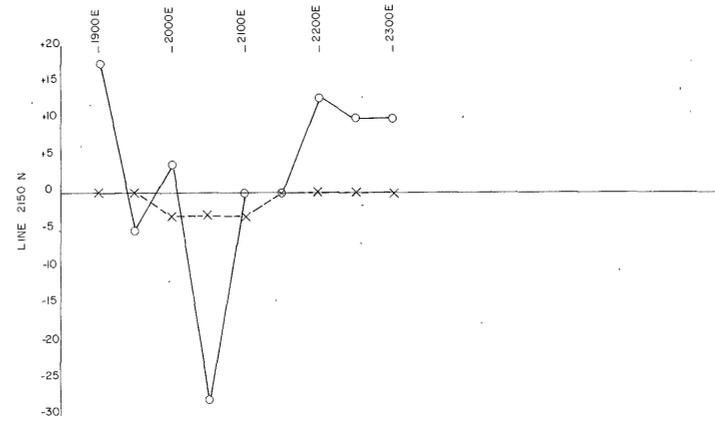
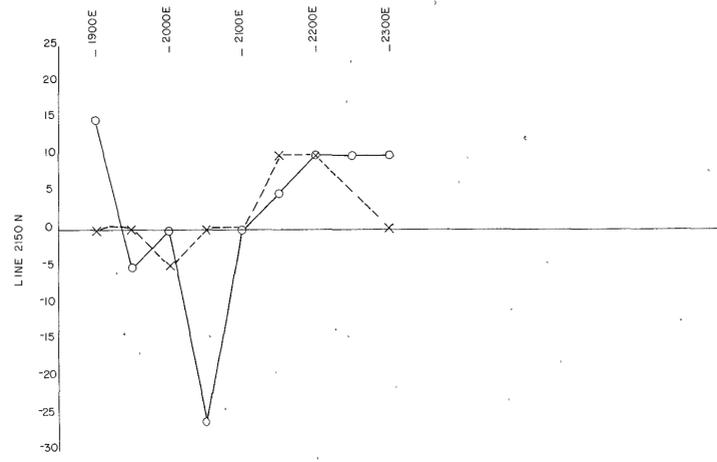
CROSS LINE FROM 900N ON MAIN ACCESS TRAVERSE BEARING 110°



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| Revised by: P.F. | DATE: 2/70 | DATE: 2/70 | DATE: 2/70 |
| COMINCO EXPLORATION PTY. LTD. | | | |
| NORTH WEST TASMANIA | | | |
| MACKINTOSH WEST - EL 2/70 | | | |
| ANOMALY 4 | | | |
| HEM TRAVERSES | | | |
| 74-1020 | | | |
| 590015 | | | |
| 016 | | | |



HORIZONTAL LOOP EM.

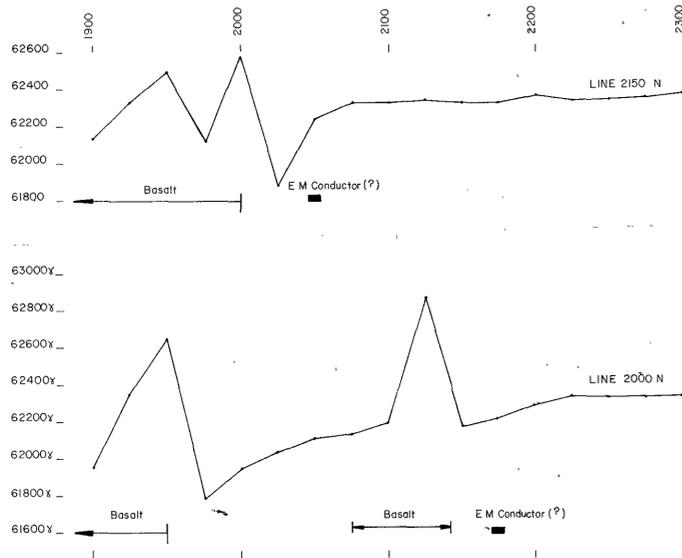


HIGH FREQUENCY (2400hz)

LOW FREQUENCY (600hz)

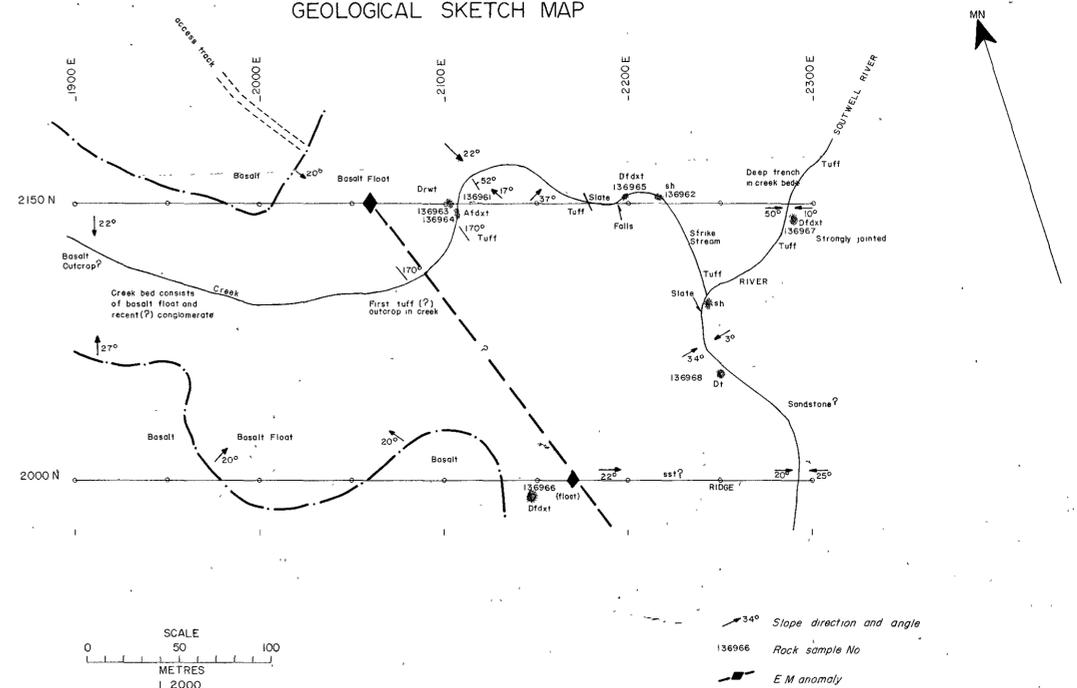
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 × Out phase
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 Vertical 1cm=5%
 Inst Mc Phar Vhem
 Separation 92m (300ft)

GROUND MAGNETICS



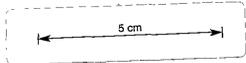
Scale 1:2500 Horizontal
 1cm=200% Vertical
 Inst GP 70 Mc Phar Proton
 Procession Magnetometer

GEOLOGICAL SKETCH MAP



34° Slope direction and angle
 136966 Rock sample No
 E.M. anomaly

Refer to DT 32 for geological legend



590016

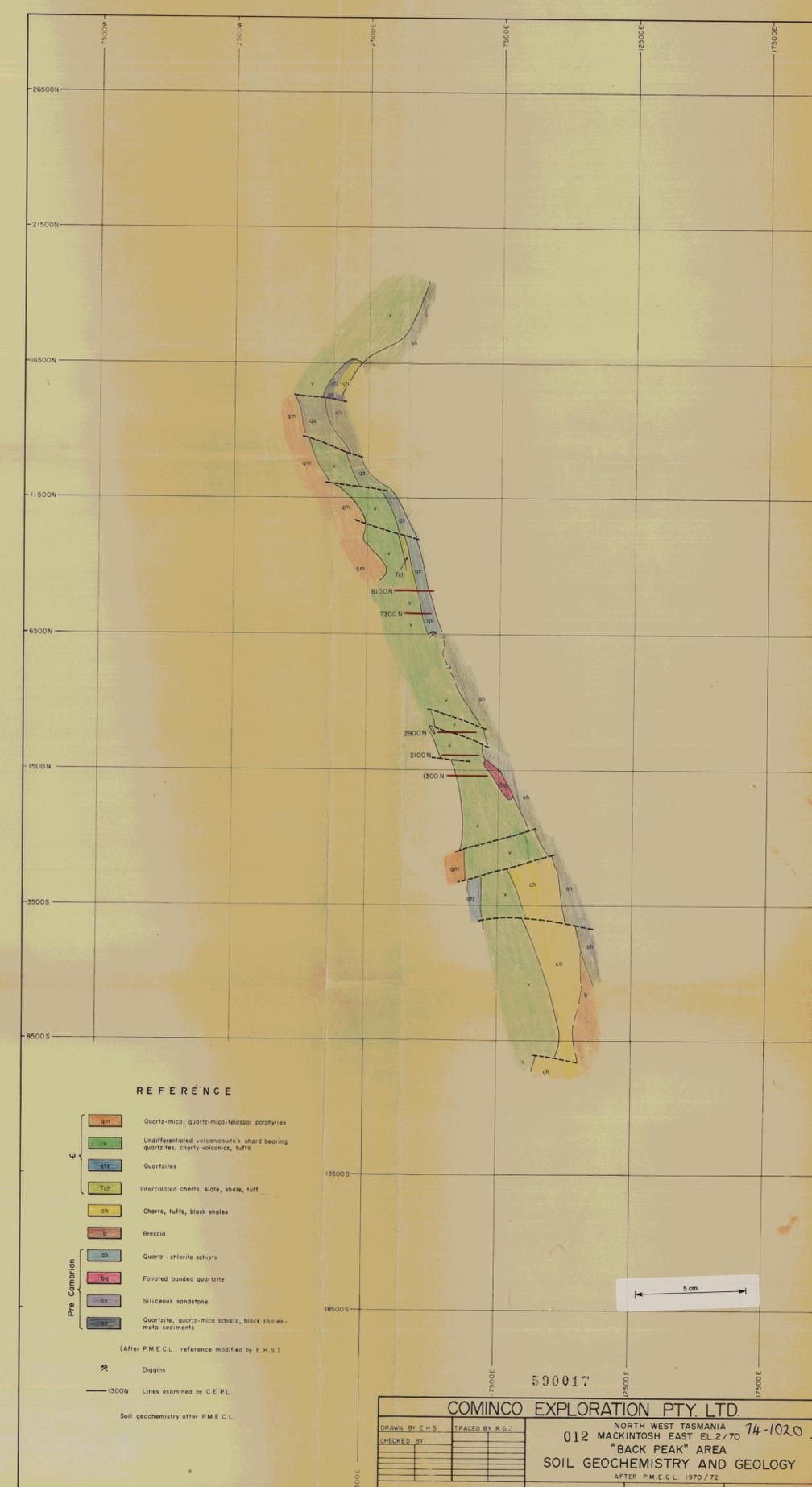
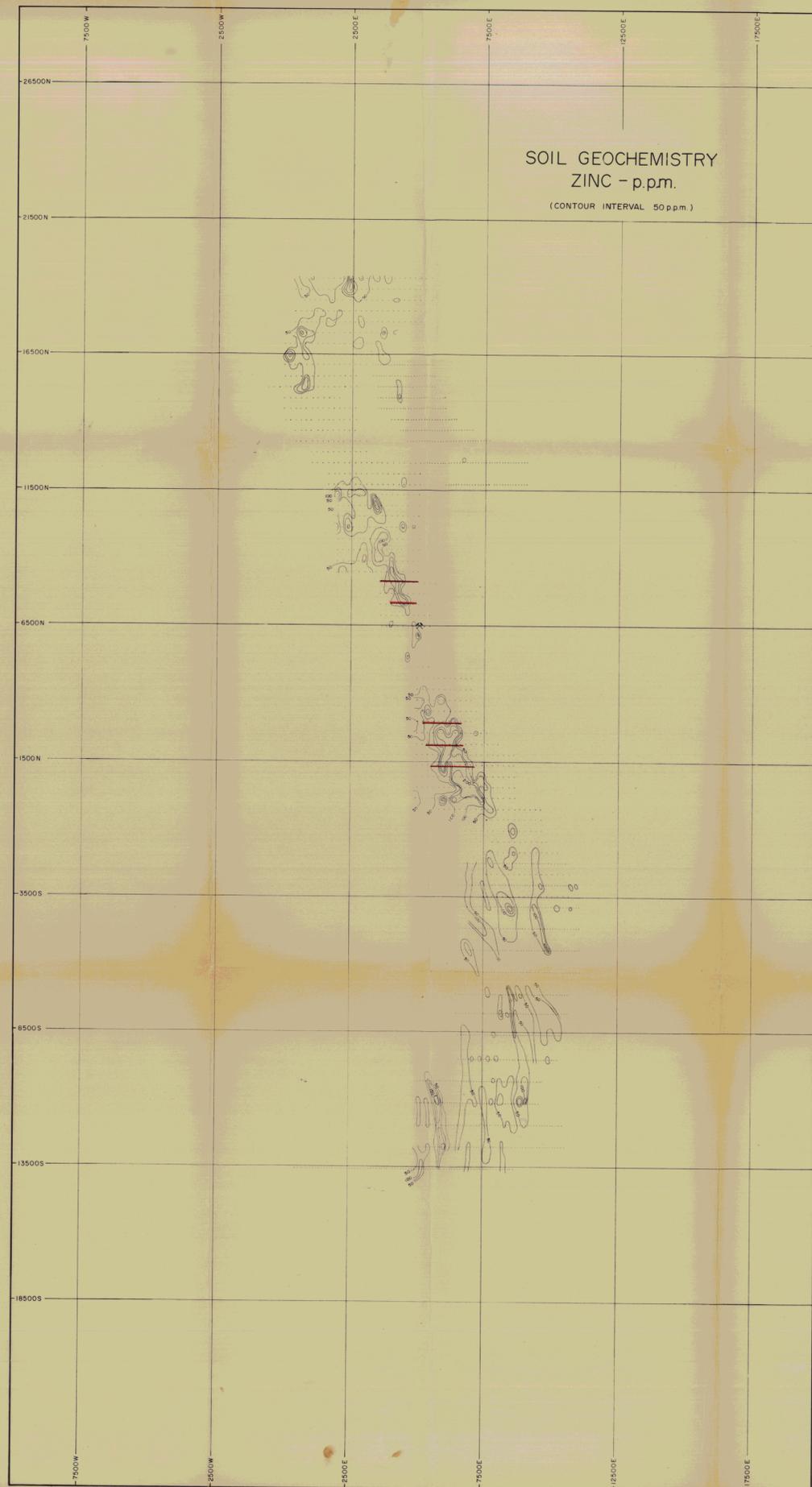
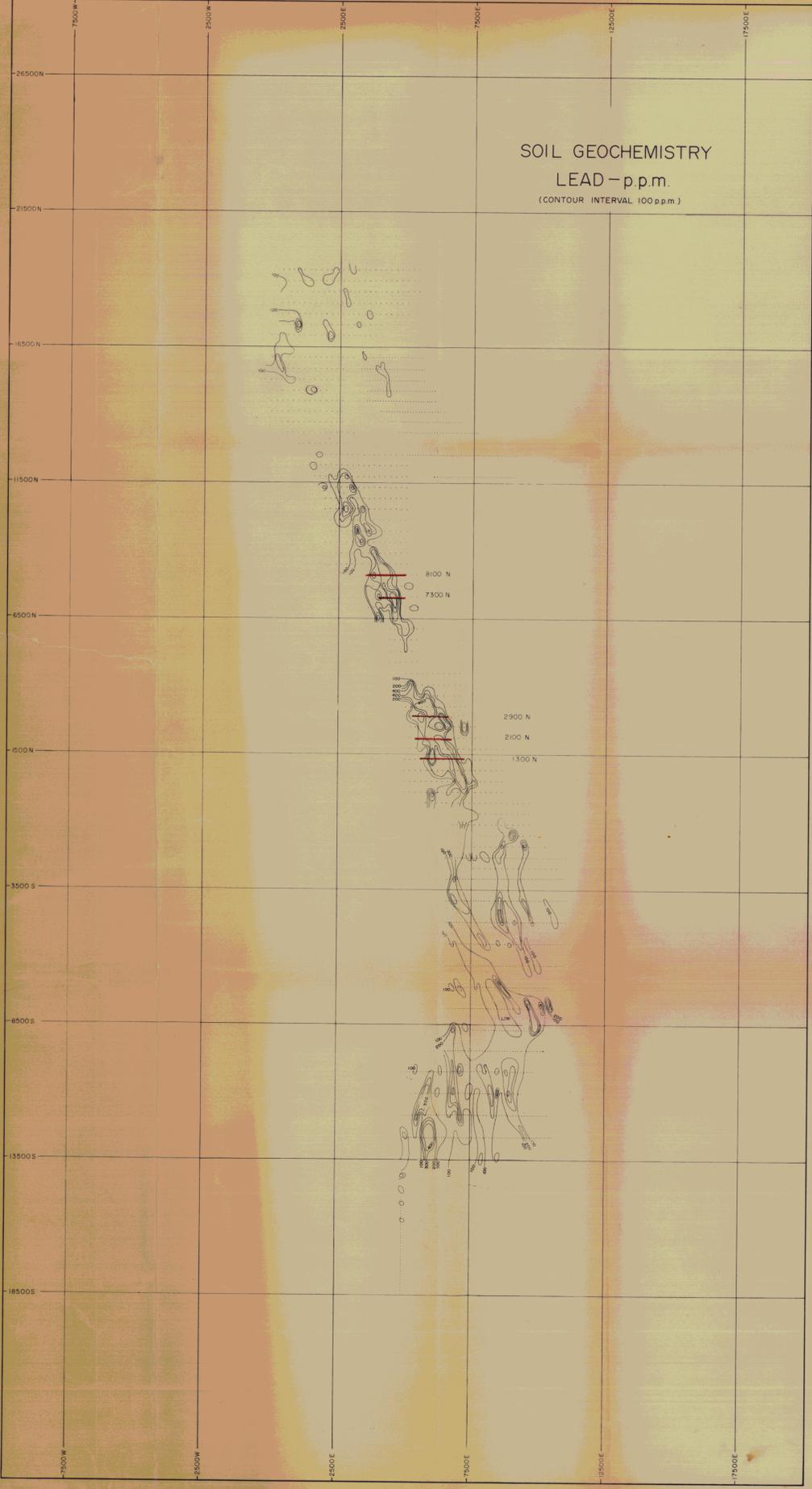
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COMINCO EXPLORATION PTY. LTD.

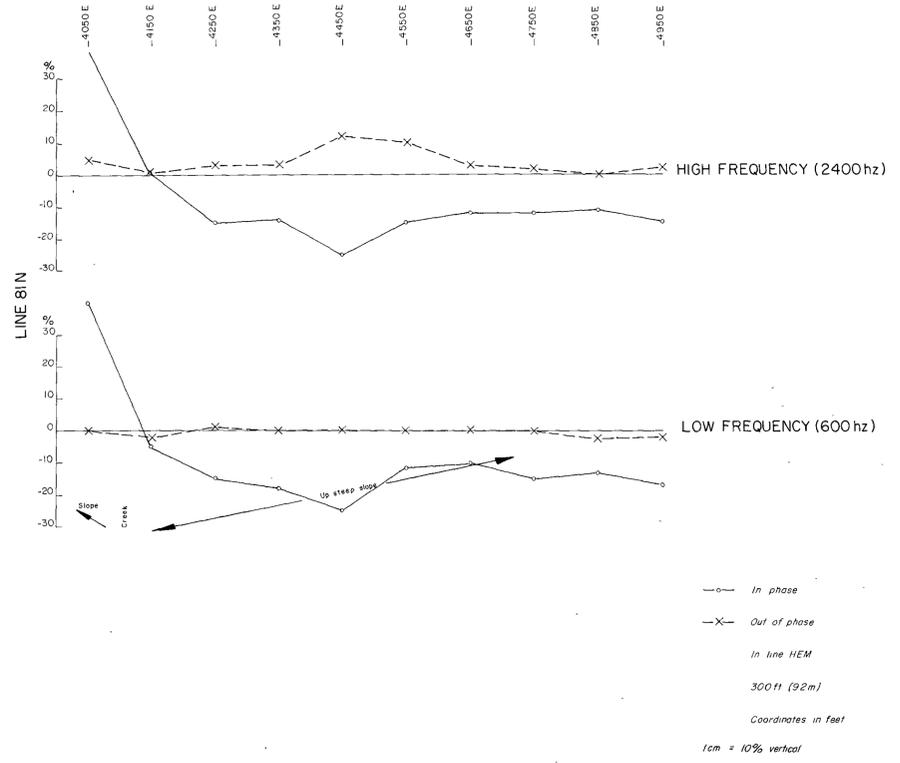
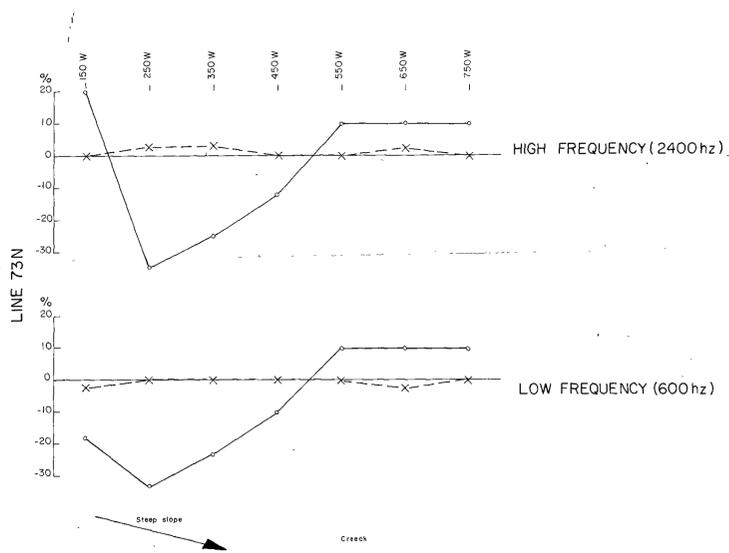
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NORTH WEST TASMANIA
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 ANOMALY I
 GEOPHYSICS

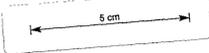
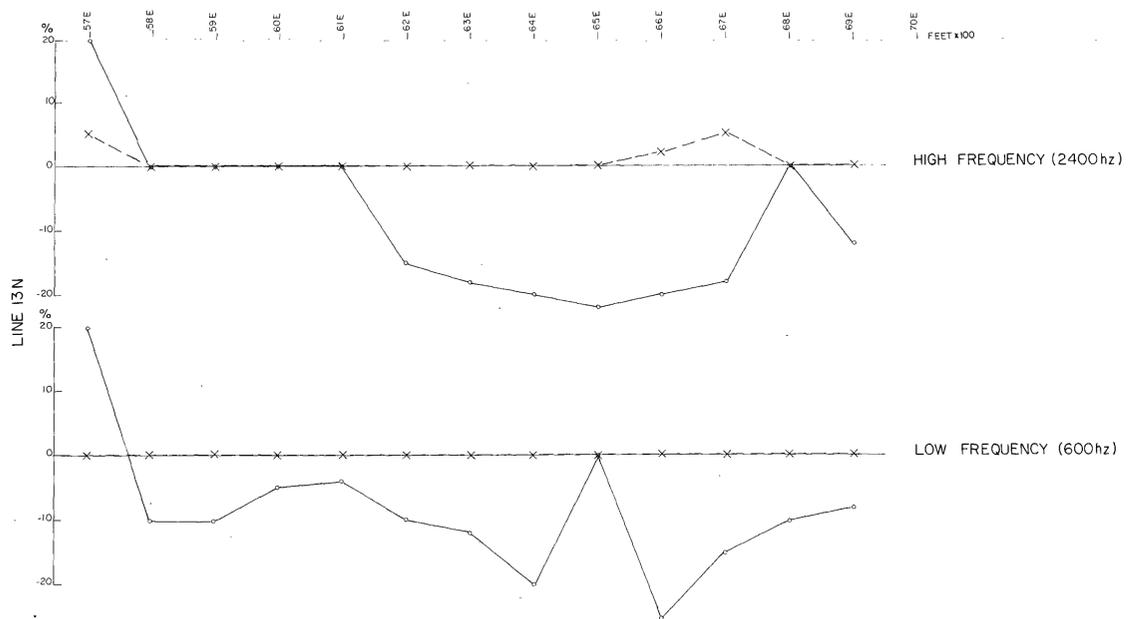
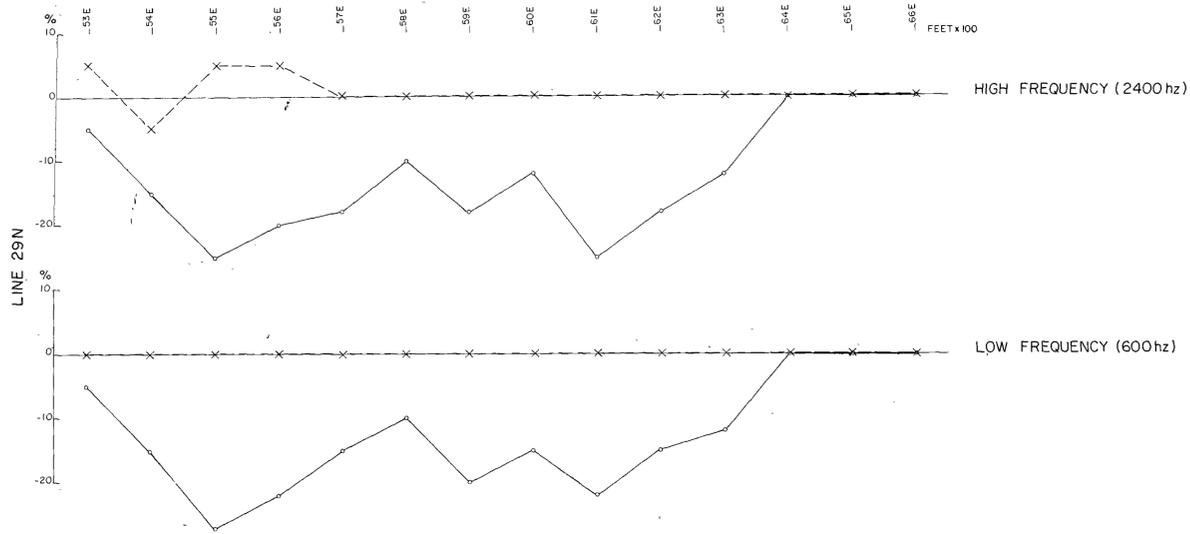
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MACKINTOSH OLD PARINGA GRID



MACKINTOSH EAST PARINGA SOIL GRID

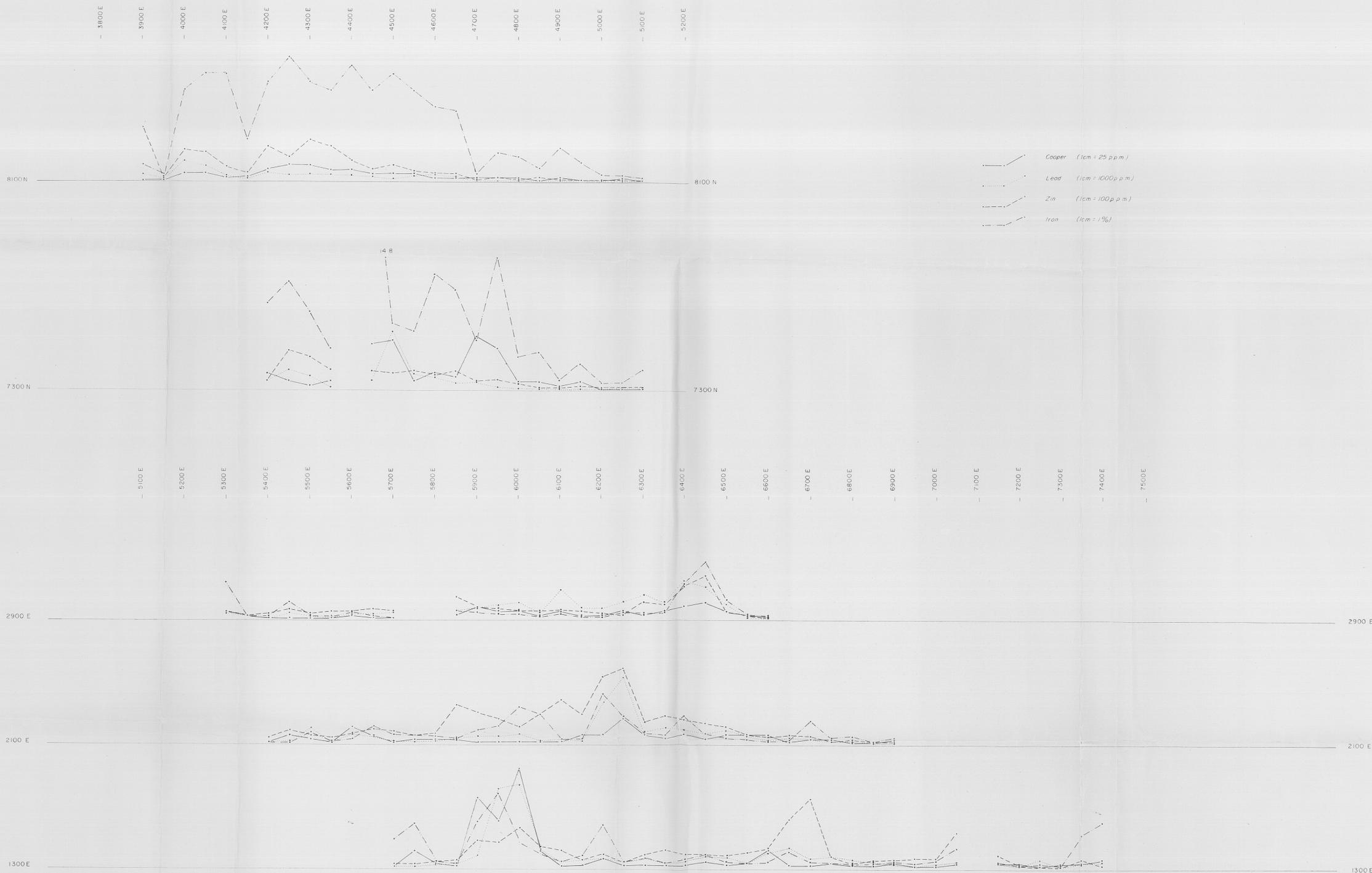


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|--------------------------|---------------------|---------------------|
| DESIGNED BY: E.M.S. | DRAWN BY: E.M.S. | FRACED BY: J.P.T. |
| CHECKED BY: J.P.T. | REVISION BY: J.P.T. | REVISION BY: J.P.T. |
| DATE: 15/5/74 | DATE: 15/5/74 | DATE: 15/5/74 |
| Location code: K 55/6/74 | Scale: 1:500 | Date: May 1974 |

COMINCO EXPLORATION PTY LTD

590018 714-020

NORTH WEST TASMANIA
MACKINTOSH EAST EL 2/70 013
GEOPHYSICS - HORIZONTAL E.M.



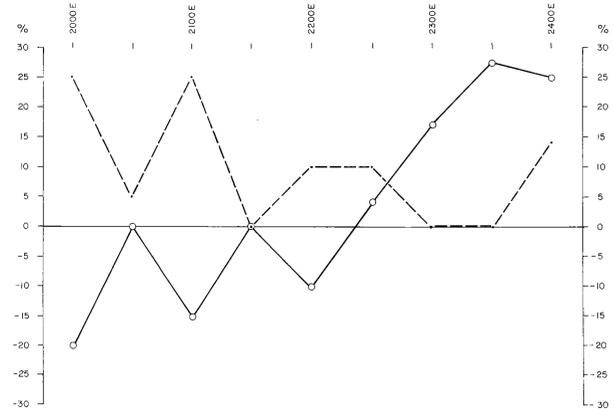
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74-1020

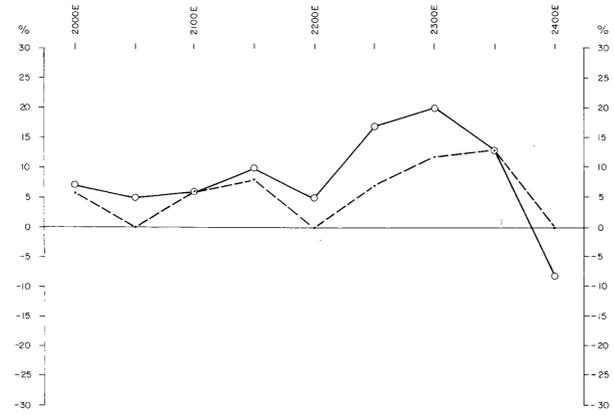
COMINCO EXPLORATION PTY. LTD.

| | | | | |
|--------------------------|---------|-----------------|------|--|
| DRAWN BY H L F | | TRACED BY P F F | | MACKINTOSH EAST EL 2/70 PARINGA GRID 014 C HORIZON SOILS |
| CHECKED BY | REVISOR | REVISOR | DATE | |
| REVISOR | DATE | REVISOR | DATE | |
| | | | | |
| | | | | |
| Location code: K 55/6/44 | | Scale: 1 5000 | | Date: June 1974 |
| | | | | Plate: Mac 37 |

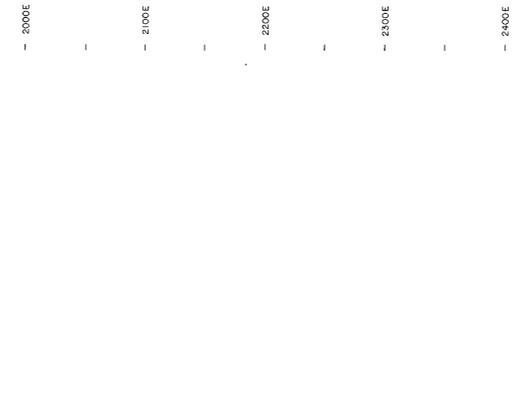
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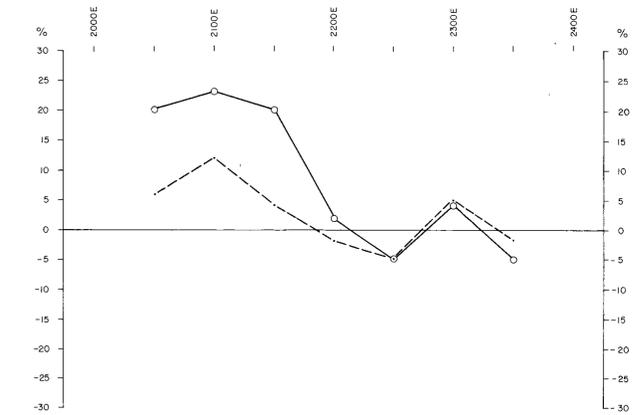
LINE 1200N



LINE 1100N

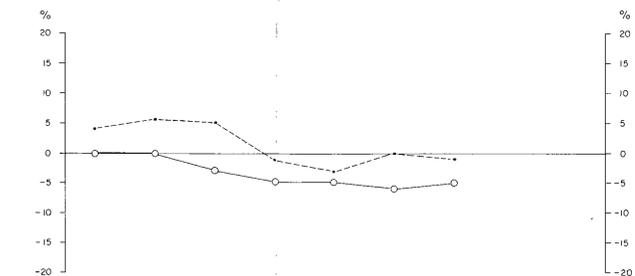
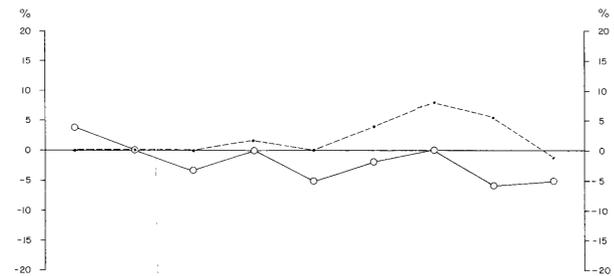
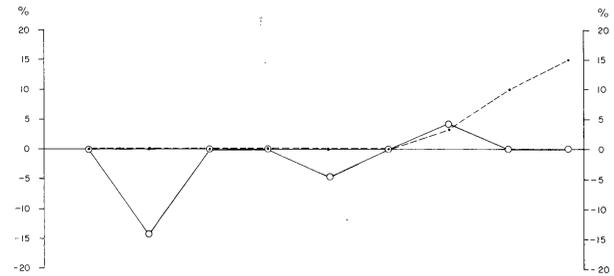


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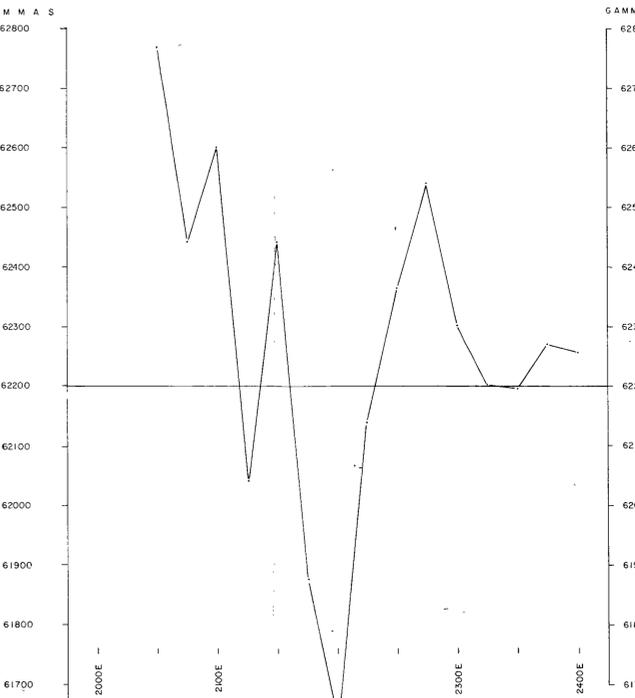
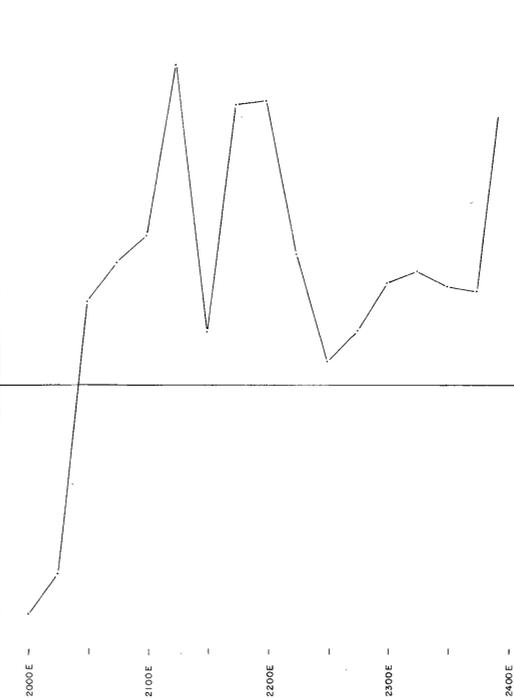
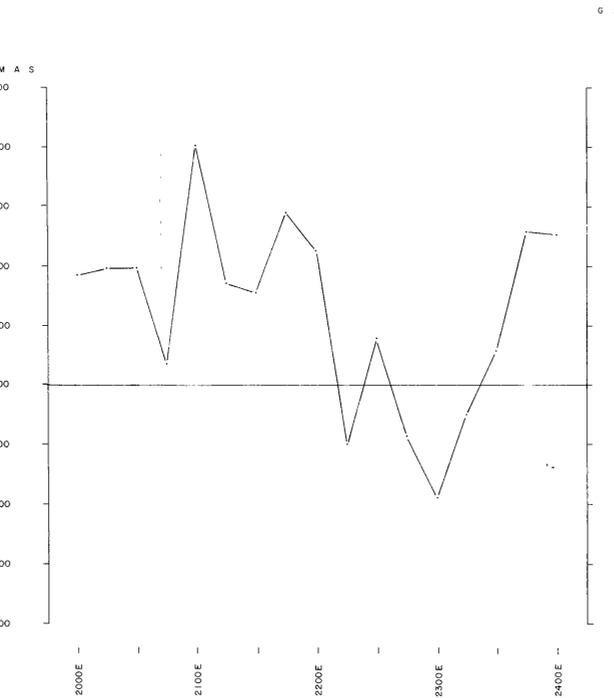
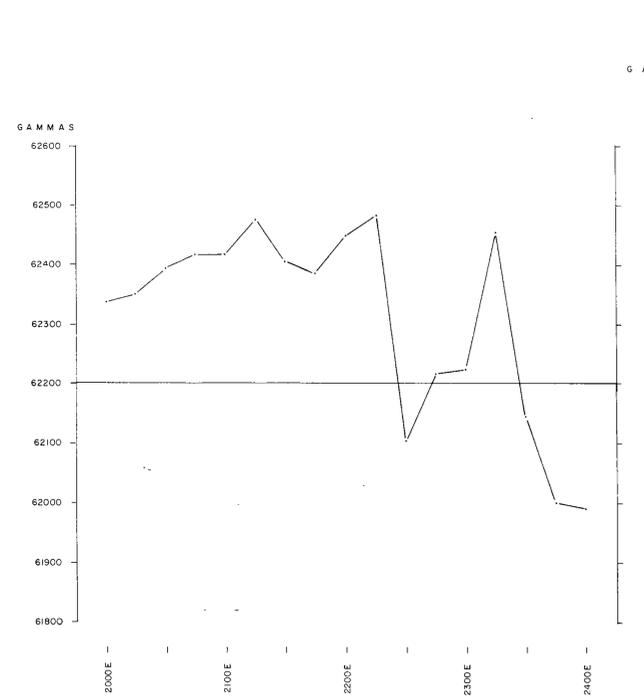
HORIZONTAL LOOP
E.M. PROFILES
HIGH FREQUENCY (2400Hz)

IN PHASE —○—
OUT OF PHASE - - -
HORIZONTAL SCALE 1:2500
VERTICAL SCALE 1cm=5%
SEPARATION 92m (300ft)
INSTRUMENT McPHAR VHEM



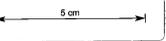
HORIZONTAL LOOP
E.M. PROFILES
LOW FREQUENCY (600Hz)

IN PHASE —○—
OUT OF PHASE - - -
HORIZONTAL SCALE 1:2500
VERTICAL SCALE 1cm=5%
SEPARATION 92m (300ft)
INSTRUMENT McPHAR VHEM



GROUND MAGNETIC
PROFILES

HORIZONTAL SCALE 1:2500
VERTICAL SCALE 1cm=50GAMMAS
INSTRUMENT McPHAR GP-70
PROTON PRECESSION MAGNETOMETER



LINE 1400N

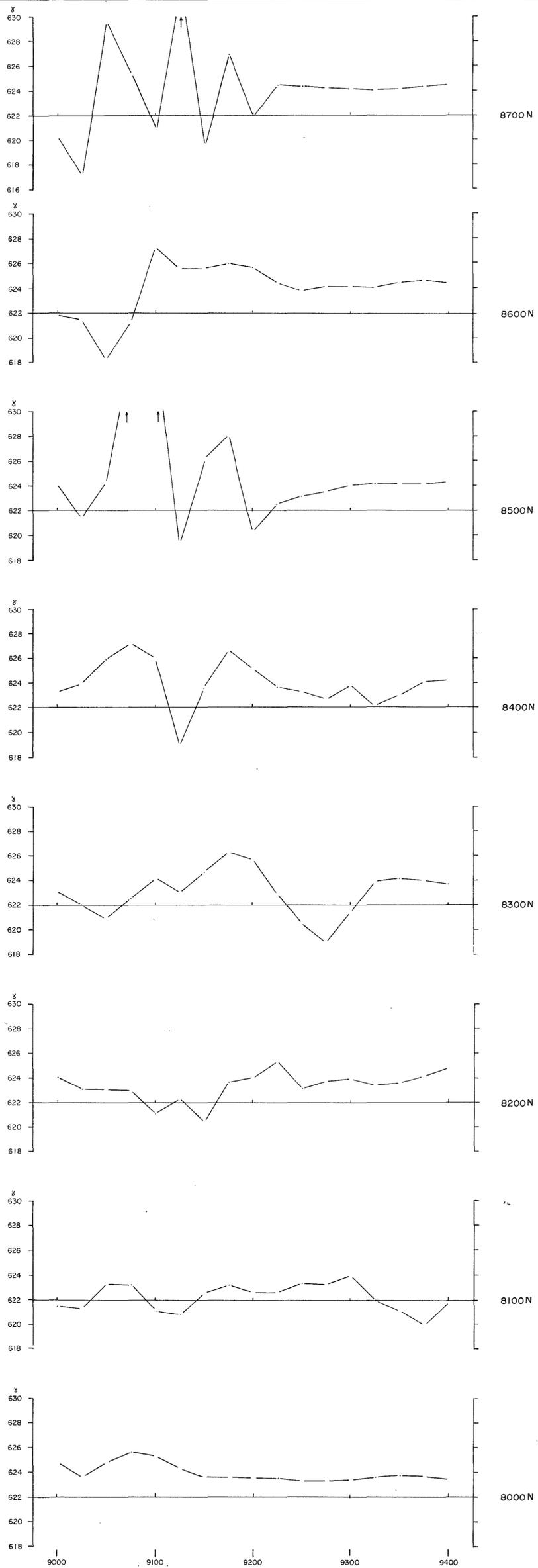
LINE 1200N

LINE 1100N

LINE 1000

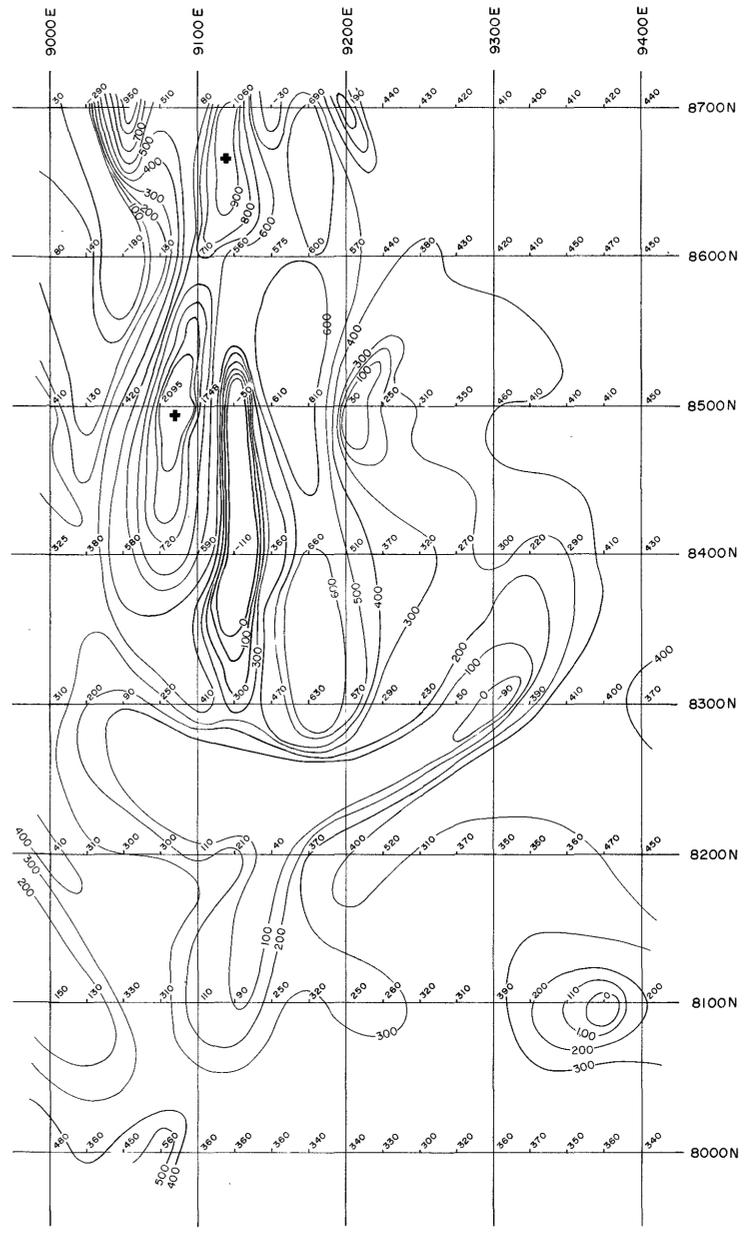
590021 74-1020
COMINCO EXPLORATION PTY. LTD.

| | | | | | |
|------------------------|------|-----------------|------|--|--------------|
| DRAWN BY | | TRACED BY R G Z | | NORTH WEST TASMANIA MACKINTOSH EAST E L 2/70 ANOMALY 9 GEOPHYSICS | 009 |
| CHECKED BY | DATE | REVISOR BY | DATE | | |
| | | | | | |
| | | | | | |
| Location code K55/6/44 | | Scale 1:2500 | | Date JUNE 1974 | Plate No. 39 |

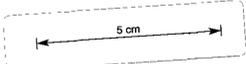


GROUND MAGNETIC PROFILES

HORIZONTAL SCALE 1 2500
 VERTICAL SCALE 1cm = 200 γ
 INSTRUMENT McPHAR G P-70
 PROTON PRECESSION MAGNETOMETER



RELATIVE TOTAL MAGNETIC FIELD CONTOURS
 CONTOUR INTERVAL 100 GAMMAS
 (FOR ABSOLUTE VALUES ADD 6200 GAMMAS)

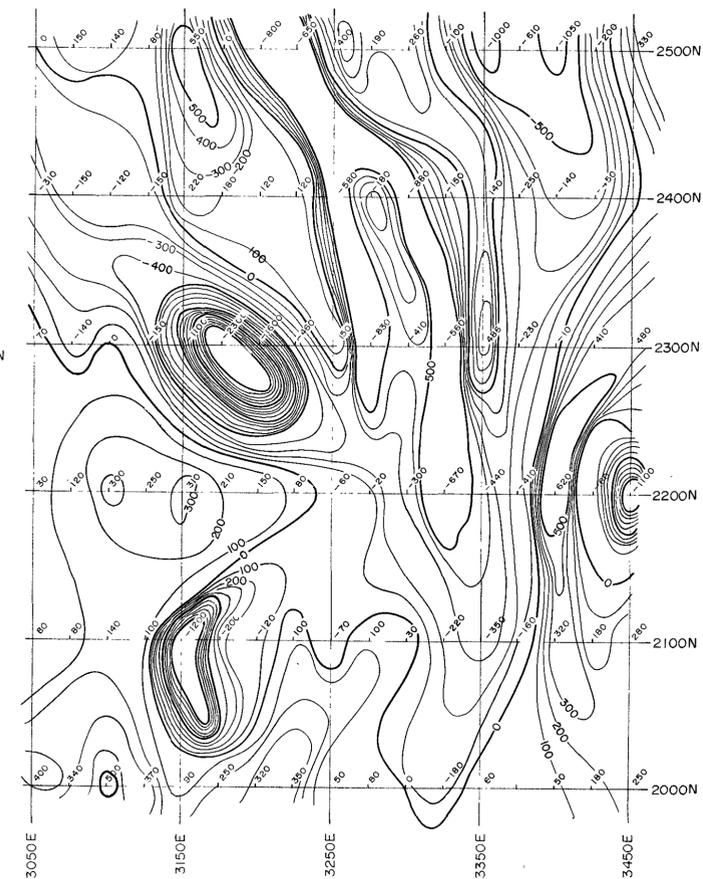
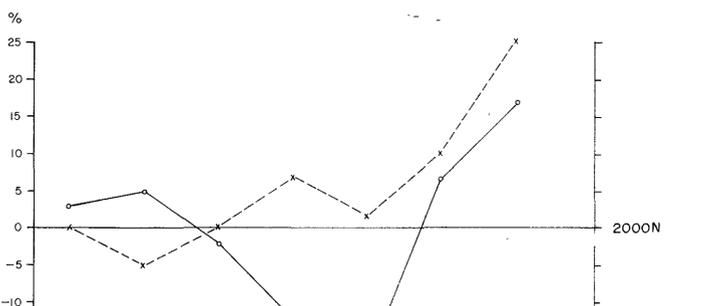
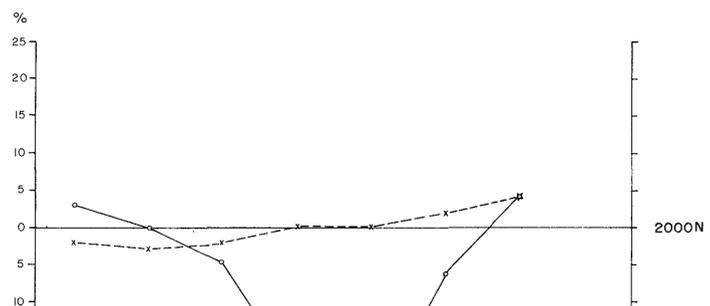
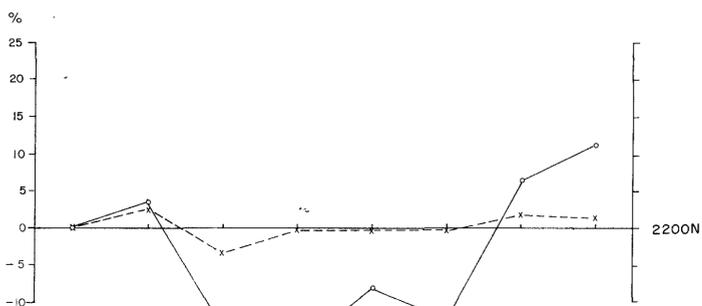
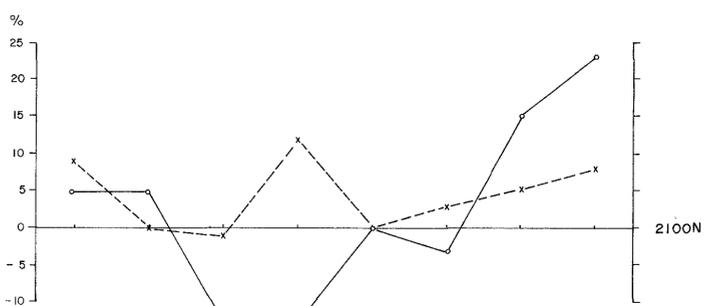
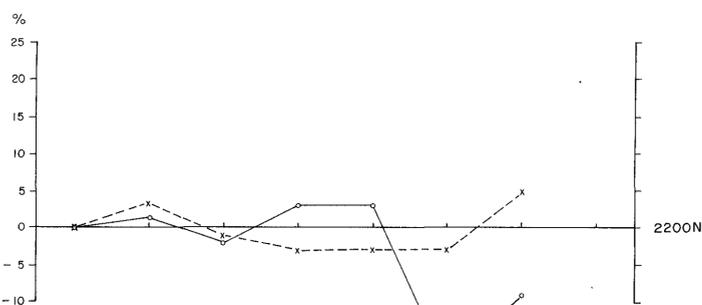
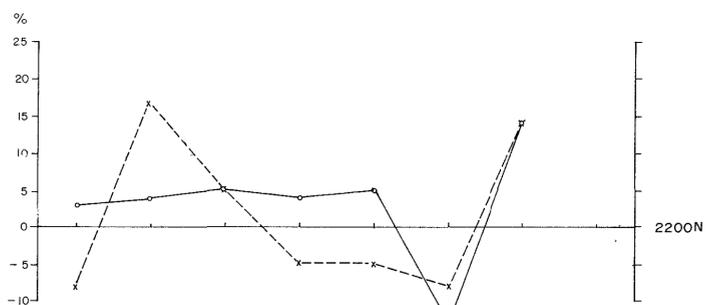
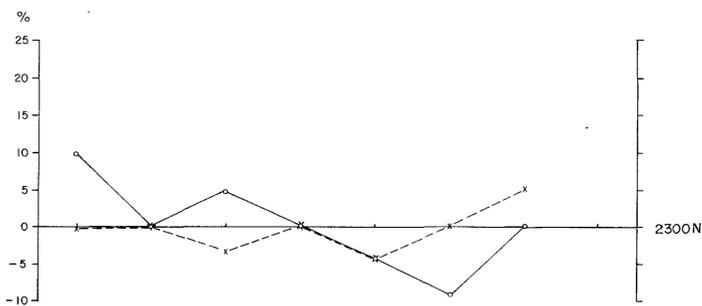
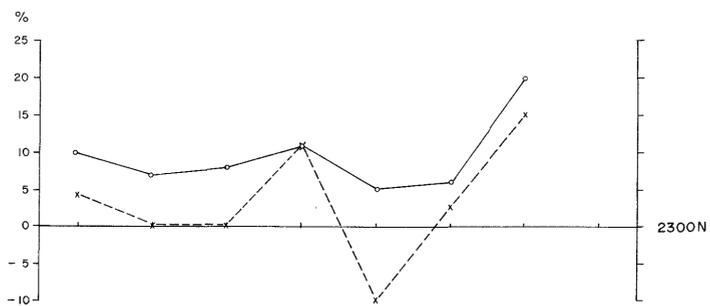
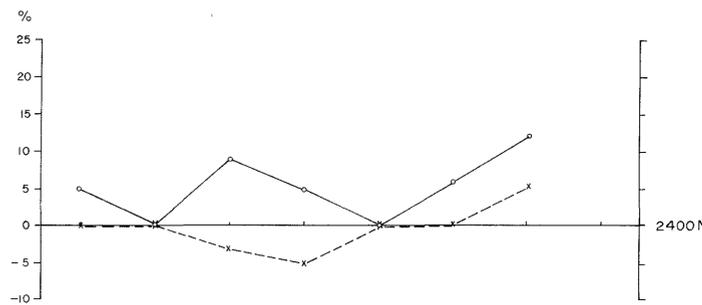
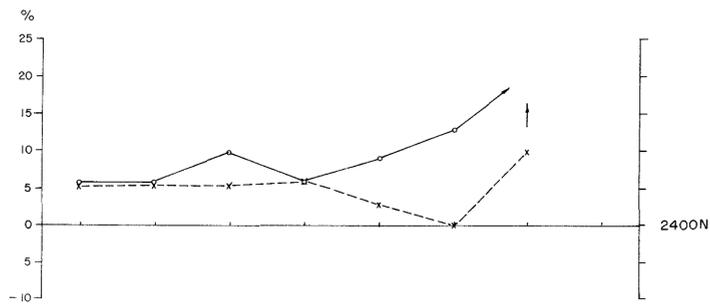
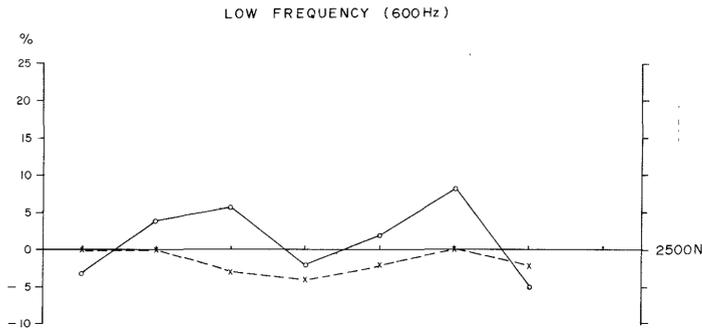
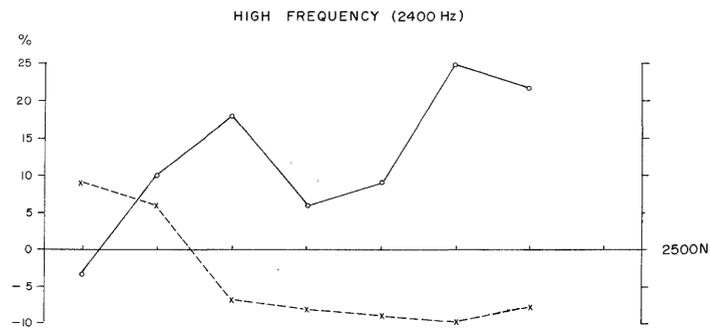


590022 74-1020

COMINCO EXPLORATION PTY. LTD.

| | | |
|-----------------|------------------|---|
| DRAWN BY E.H.S. | TRACED BY R.G.Z. | NORTH WEST TASMANIA MACKINTOSH EAST EL 2/70 010 ANOMALY 12 GEOPHYSICS (GROUND MAGNETICS) |
| CHECKED BY | REVISOR BY | |
| REVISOR BY | DATE | |
| DATE | | |

Location code K55/6/44 Scale 1 2500 Date May 1974 Plate Mac 40

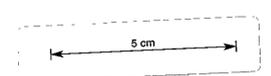


(ΔZ) MAGNETIC CONTOURS
CONTOUR INTERVAL 100 GAMMAS

SCALE 1 2500

INSTRUMENT McPHAR G P - 70
PROTON PRECESSION MAGNETOMETER

IN PHASE —○—
OUT OF PHASE - - - x - - -
HORIZONTAL SCALE 1 2500
VERTICAL SCALE 1 cm = 5%
SEPARATION 92m (300 ft)
INSTRUMENT McPHAR VHEM



HORIZONTAL LOOP E.M. PROFILES

590023 74-1020

| | | | |
|--|--------------|---------------|--------------|
| COMINCO EXPLORATION PTY. LTD. | | | |
| DRAWN BY EHS | | TRACED BY RGZ | |
| CHECKED BY | DATE | REVISED BY | DATE |
| | | | |
| NORTH WEST TASMANIA MACKINTOSH EAST EL 2/70 ANOMALY 10 GEOPHYSICS 011 | | | |
| Location code K55/6/44 | Scale 1 2500 | Date May 1974 | Plate Mac 41 |