

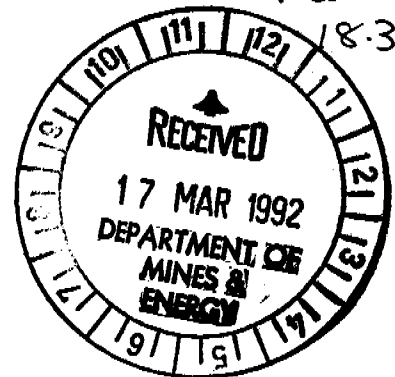
CR 97/206

**ANNUAL REPORT**

**EXPLORATION LICENCE No 7313**

**22 February 1991 - 21 February 1992**

1:250 000 - MOUNT YOUNG (SD53-15)  
1:100 000 - ROSIE CREEK (6167)



Compiled: R D Sowerby  
March 1992

## SUMMARY

Exploration Licence 7313, covering an area of 220 sq km is located in the Rosie Creek locality, 60 km north of Borroloola. The licence was granted to Peko Wallsend Operations Ltd on 22 February 1991 for a period of six years with the intention to explore for stratiform base metal deposits.

Exploration during the first tenure year has concentrated on the compilation of all relevant existing data. The aim of this work was to evaluate exploration techniques employed previously in the area and to produce structural interpretations of the Proterozoic geology underlying Cretaceous cover. Interpretive work using processed images of NTGS tape data has centred on defining structurally controlled sub-basins.

Field work has been restricted to helicopter reconnaissance of the licence area and familiarisation with the stratigraphy in other areas where outcrop is present.

Exploration expenditure for the first tenure year totalled \$41 548.

As a result of compilation work carried out in the first tenure year, an area in the south west corner of EL7313 has been targeted for reconnaissance ground Sirotem surveys to be accompanied by five percussion holes for stratigraphic control. Depending on the results of these activities, an airborne EM survey and more extensive drilling may be contemplated. An exploration expenditure of \$28 700 is proposed for the second tenure year.

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NMY 001 138      Project Location Diagram

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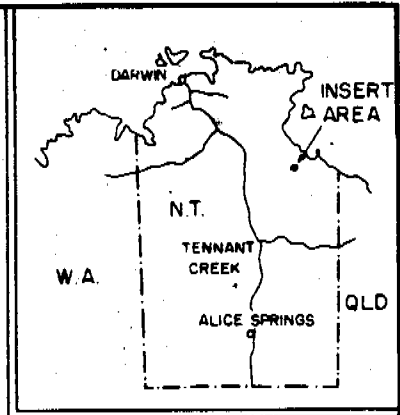
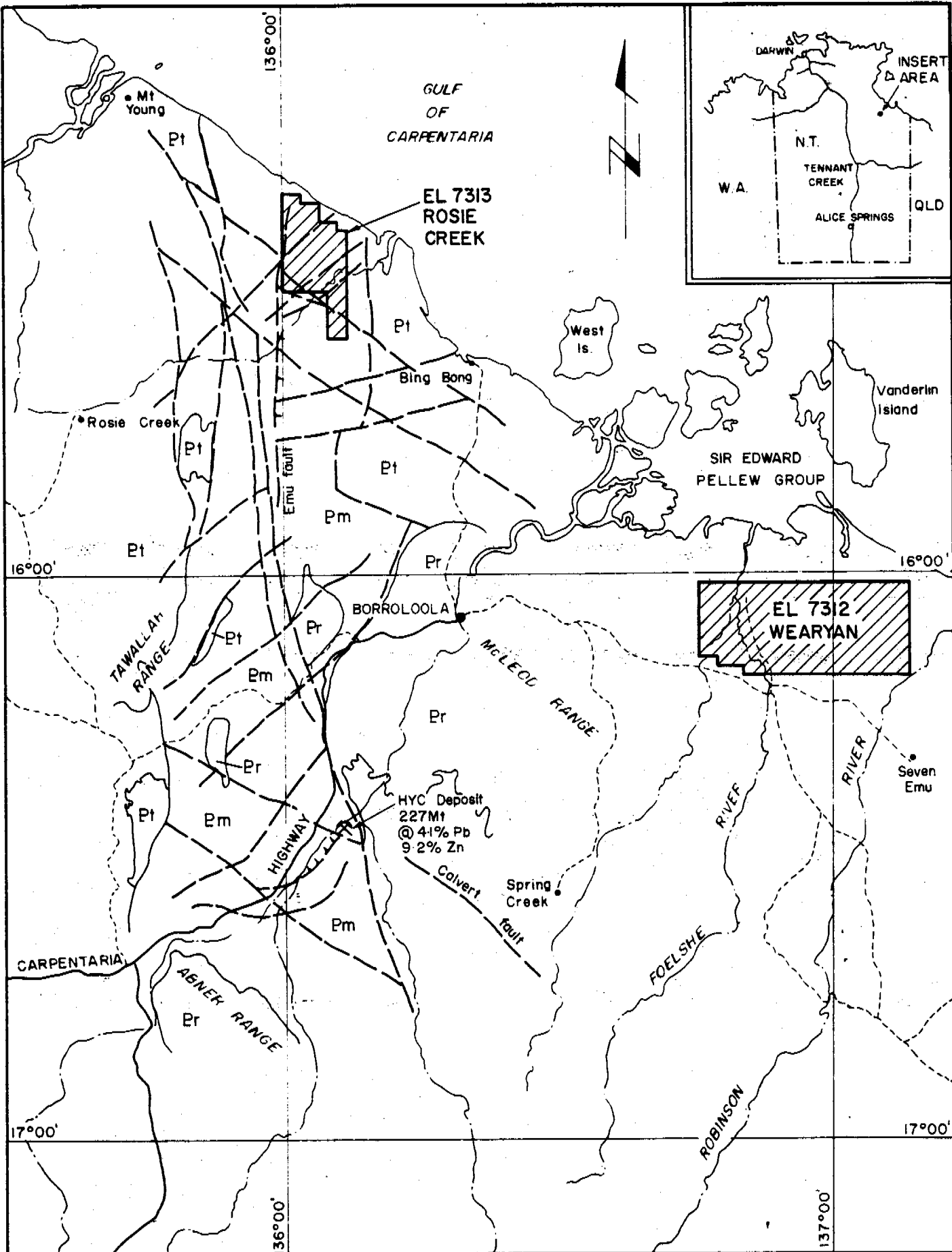
Appendix 1      Batten Trough - Image Processed geophysical  
Data

Appendix 2      Regional Geology Map - (1:250 000 Mt Young)

1. INTRODUCTION

Exploration Licence 7313 located in the Rosie Creek locality, approximately 60 km north of Borroloola, was granted to Peko Wallsend Operations Ltd on 22 February 1991. The area granted takes up 68 graticular blocks covering 220 sq km on the Rosie Creek 6167 and Bing Bong 6166 1:100 000 sheets (see drawing NMY 001 138).

Exploration Licence 7313 was acquired to explore for stratiform base metal deposits. This is the first annual report and details work completed by Geopeko up to 21 February 1992.



| LEGEND |                |
|--------|----------------|
| Cz     | Cainozoic      |
| E      | Cambrian       |
| Pr     | Roper group    |
| Pm     | McArthur group |
| Pt     | Tawallah group |
|        | Road           |
|        | Track          |
|        | River          |

|                   |   |                      |
|-------------------|---|----------------------|
| <br><b>DARWIN</b> | <b>GEOPEKO</b><br>A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.<br>A.C.N. 000 081 434 |                      |
|                   | Scale 1:1000 000<br>  |                      |
| Geo R D S         | Map Ref.  | SD 53-15 MOUNT YOUNG |
| Drawn K.S.J.      | <b>PROJECT LOCATION DIAGRAM</b>   |                      |
| Checked R.J.L.    |   |                      |
| Date MARCH '91    | MCARTHUR RIVER  | Dwg. No NMY 001 138  |

## 2.0 REGIONAL GEOLOGY

Exploration Licence 7313 lies in the central portion of the McArthur Basin within the interpreted northern extension of the Batten Trough.

The McArthur Basin consists of Middle Proterozoic unmetamorphosed sediments and minor volcanics. Three major groups are recognised within the basin. The basal Tawallah Group consisting predominantly of quartz arenite and basic volcanics is overlain by the McArthur Group, a dominated by carbonates and lesser fine grained clastic sediments.

The Carpentarian McArthur Group is overlain by the Adelaidean Roper Group consisting mainly of arenites and lutites.

The McArthur Group is considered prospective for stratiform base metal deposits as it hosts the HYC deposit south of Borroloola and is a time equivalent of the Mt Isa lead-zinc deposits.

McArthur River Group sediments are interpreted as being deposited in shallow marine and sabkha depositional environments.

The Licence area is interpreted to be within the northern extension of the Batten Trough which is interpreted as a graben structure. Major north trending faulting is present along the Batten Trough, in particular, the Emu Fault system which is interpreted as a strike slip fault system.

### 3.0 PREVIOUS EXPLORATION

The area covered by EL 7313 has not been covered by any substantial exploration other than regional geophysical surveys carried out by the BMR and the NTGS. Areas directly to the south and west, however, have been actively explored during the past decade.

Extensive geophysical and stratigraphic drilling programs were conducted during the 1980's chiefly by Shell and B.H.P. Minerals in the Waramana Creek locality directly to the South West of EL 7313. This work is summarised in Table 1.

TABLE 1.

| YEAR | WORK   | COMPANY        |
|------|--|----------------|
| 1979 | Reconnaissance mapping I.P. and resistivity surveys.                           | A.O. Australia |
| 1980 | Gravity surveys, airphoto interp. and ground mapping                           | " "            |
| 1980 | Extensive RAB drilling Cretaceous/Prot. unconformity. Target commodity was Mn. | BHP            |
| 1983 | Percussion and diamond drilling  | Shell          |
| 1984 | Gravity, magnetics, EM-37, geologic mapping, diamond and percussion drilling.  | BHP            |
| 1986 | Diamond drilling   | BHP            |

Magnetic and gravity surveys conducted by these companies, when used with stratigraphic drilling information, proved to be useful in determining geology and structure underneath Cretaceous cover.

The EM-37 surveys carried out by BHP were successful in identifying pyritic black shale horizons down to depths of 300 metres. Subsequent diamond drilling by BHP during the mid 1980's intersected moderately anomalous base metal concentrations, however were not considered sufficient to justify further drilling.

#### 4.0 EXPLORATION DURING FIRST TENURE YEAR

##### 4.1 DATA COMPILATION

Due to the complete lack of outcrop on EL 7313 and the amount of work conducted to the south by previous explorers, it was considered that extra emphasis be placed on collating and analysing previous exploration in the region during the first year.

This involved purchasing tape data of magnetic surveys compiled by the NTGS covering the Batten Trough region. Image processing of this data was carried out in-house at Geopeko's Brisbane office. Hard copies of selected images are provided in Appendix 1.

Open file data relevant to the majority of the Batten Trough has been studied or copied to be incorporated onto a standard base and overlay system.

All previous geophysical surveys, in particular EM and INPUT surveys have been assessed for their effectiveness by Geopeko geophysicists. Initial analysis indicates that ground EM techniques are capable of detecting Barney Creek Formation down to depths of 200 m in this area.

##### 4.2 GEOLOGICAL INTERPRETATION

From all available data, a broad geologic interpretation of the Rosie Creek area has been completed. Emphasis has been placed on the location of faulting and sub-crop of Barney Creek Formation. Faulting is apparent at orientations of approx 020, 300 and 070 and is particularly well developed in the south-west corner of EL 7313.

This area is considered to be prospective due to the presence of these fault sets as well as the interpreted presence of a thickening development of Barney Creek Formation. A 1:250 000 scale schematic interpretation is provided in the Appendix 2. Future targeting will involve identifying conjugate fault sets related to north trending strike slip faulting which may control sub-basin deposition of Barney Creek Formation.



#### 4.3 FIELD INVESTIGATIONS

Field work has been limited to helicopter reconnaissance and familiarisation with the stratigraphy of the region in areas of better outcrop. Access to an area where a Sirotem survey is planned was assessed. This survey will be delayed until the 1992 dry season.

As expected, no outcrop of McArthur river Group sediments were located on EL 7313.

5.0 EXPLORATION EXPENDITURE

Total expenditure on EL 7313 to the period ending 29/2/92, being the closest cost period for which Geopeko maintain expenditure statements, was \$41 548 as detailed below:

| Category                 | Expenditure (\$) |
|--------------------------|------------------|
| Salaries                 | 14347            |
| Wages                    | 1770             |
| Tenement Expenses        | 1530             |
| Base Support Costs       | 8534             |
| Vehicles                 | 1527             |
| Travel and Accommodation | 669              |
| Field Supplies           | 508              |
| Other Costs              | 867              |
| Maps                     | 4221             |
| Geophysical Data         | 2740             |
| Management Costs         | 4835             |
| <b>TOTAL</b>             | <b>41548</b>     |

The covenant for the corresponding first year of tenure was \$20 000.

## 6.0 CONCLUSIONS

The following conclusions were made after the first tenure year:

- No outcrop of McArthur Group sediments is evident within EL 7313.
- Depth of cover to McArthur Group sediments is anticipated to be of the order of 50 metres.
- Interpretation of previous exploration data suggests EL 7313 is within the thickened sequences of the Batten Trough.
- Image Processing of NTGS magnetic data and collation of BHP geophysical data suggests a favourable structural environment is present in the south west corner of EL 7313.
- Analysis of previous EM surveys in the area indicates that reconnaissance ground EM surveys are viable in locating sub-crop of Barney Creek Formation.

## 7.0 PROPOSED WORK PROGRAM AND EXPENDITURE

The following work program is proposed for the period 22/1/92 to 21/1/93:

- 3 x 5km E-W Sirotem traverses in the south eastern corner of EL 7313.
- 3 to 5, 100 metre percussion holes to determine stratigraphy and to provide a reference to the Sirotem survey.
- interpret results from this work to evaluate viability of an airborne EM survey.

Depending on results from initial Sirotem and drilling programs, more extensive drilling may be carried out towards the latter half of the second tenure year.

The proposed expenditure for the second year is as follows:

**TABLE 2  
PROPOSED EXPENDITURE**

| Category                    | Expenditure   |
|-----------------------------|---------------|
| Salaries and Wages          | 10,000        |
| Field Supplies              | 2,000         |
| Vehicles                    | 2,000         |
| Drilling                    | 10,000        |
| Analytical Costs            | 2,000         |
| Geophysical Instrument Hire | 2,000         |
| Tenement Expenses           | 700           |
|                             |               |
| <b>TOTAL</b>                | <b>28,700</b> |

8.0 REFERENCES

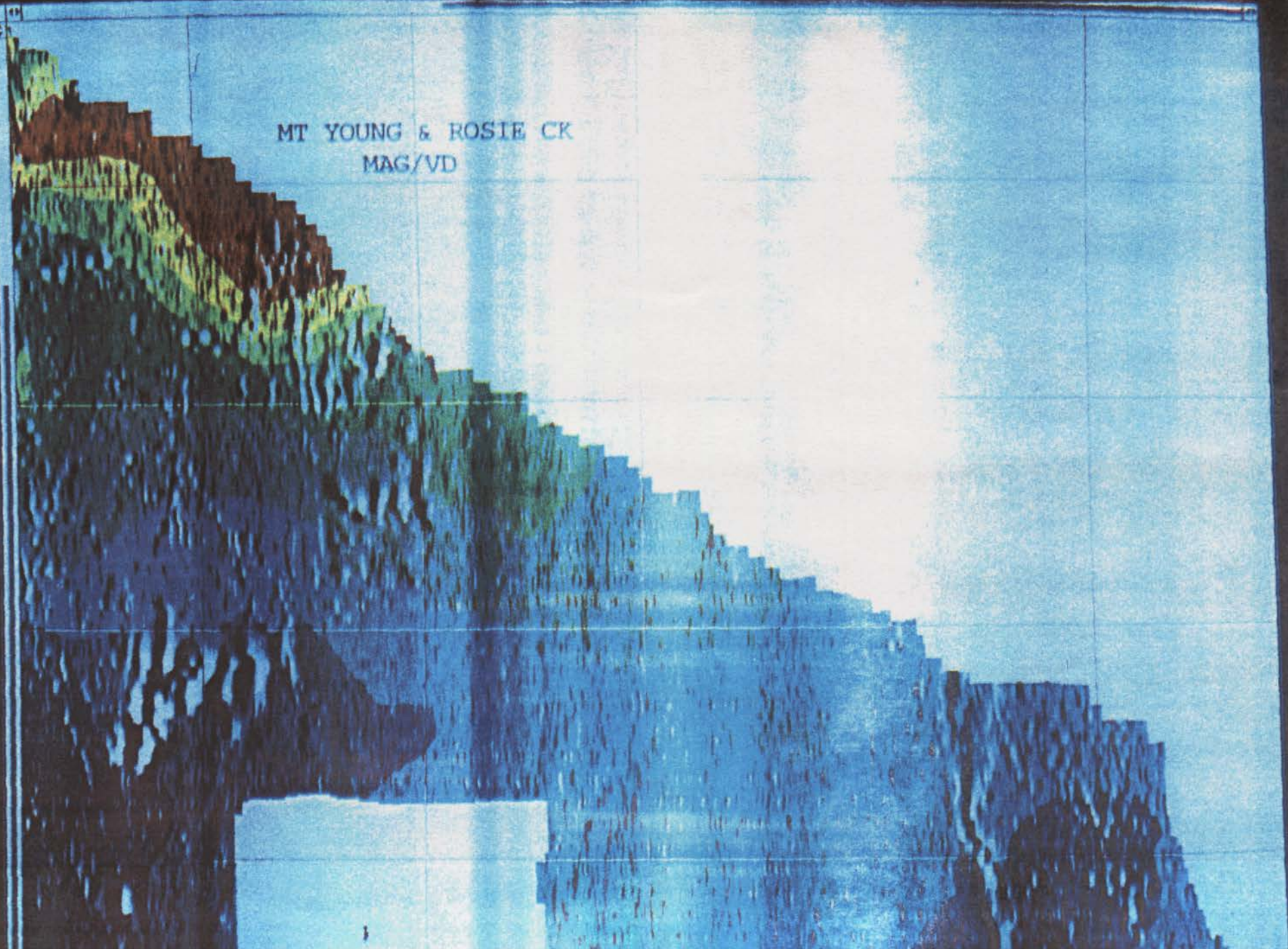
PIETSCH B A, WYCHES S, RAWLINGS D J, CREASER P M and FINDHAMMER T L R, 1991 - 1:100 000 Geological Map Series, Explanatory Notes, McArthur River Region, Northern Territory Department of Mines and Energy, N.T.G.S.

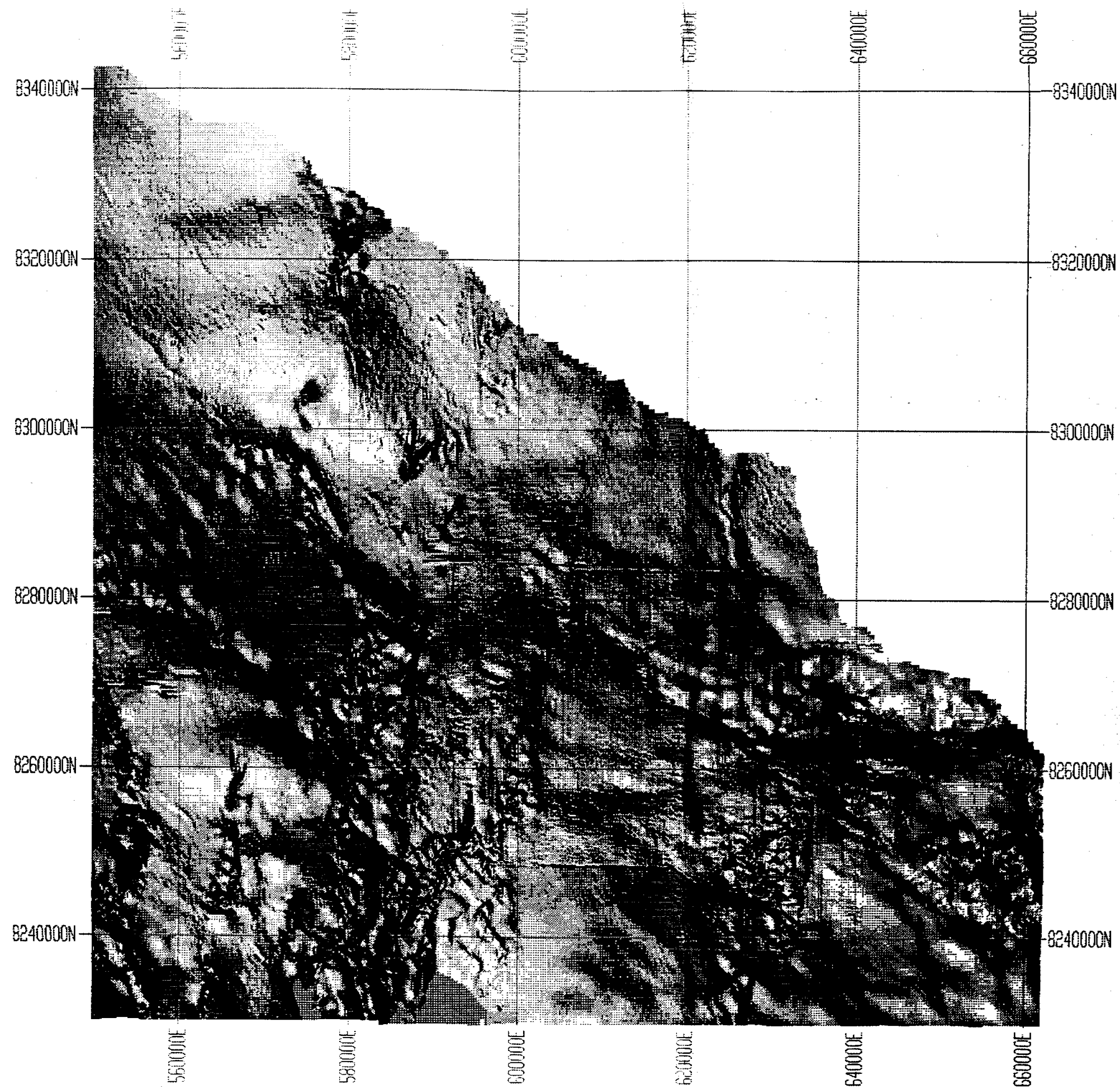
MUIR M D, 1983 - Depositional Environments of Host Rocks to Northern Australian Lead-Zinc Deposits, with Special Reference to McArthur River, In "Short Course in Sediment Hosted Stratiform Lead-Zinc Deposits" 141-174. Mineralogic Society of Canada

APPENDIX 1

Batten Trough - Image Processed geophysical  
Data

MT YOUNG & ROSIE CK  
MAG/VD



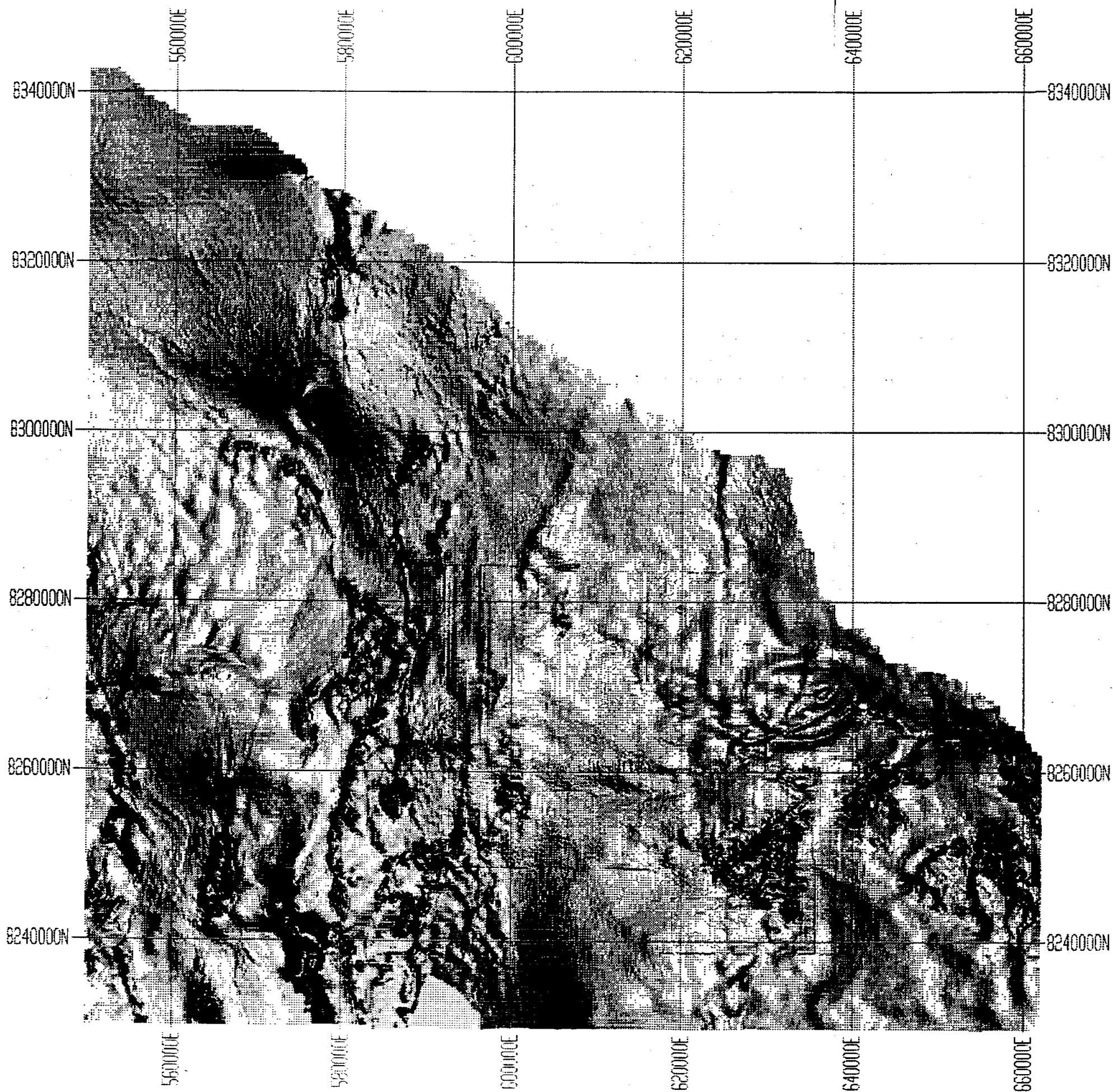


N.T.G.S. Batten Trough survey

Magnetics

1:500 000 Grey Scale Image - NW sun angle





N.T.G.S. Batten Trough survey

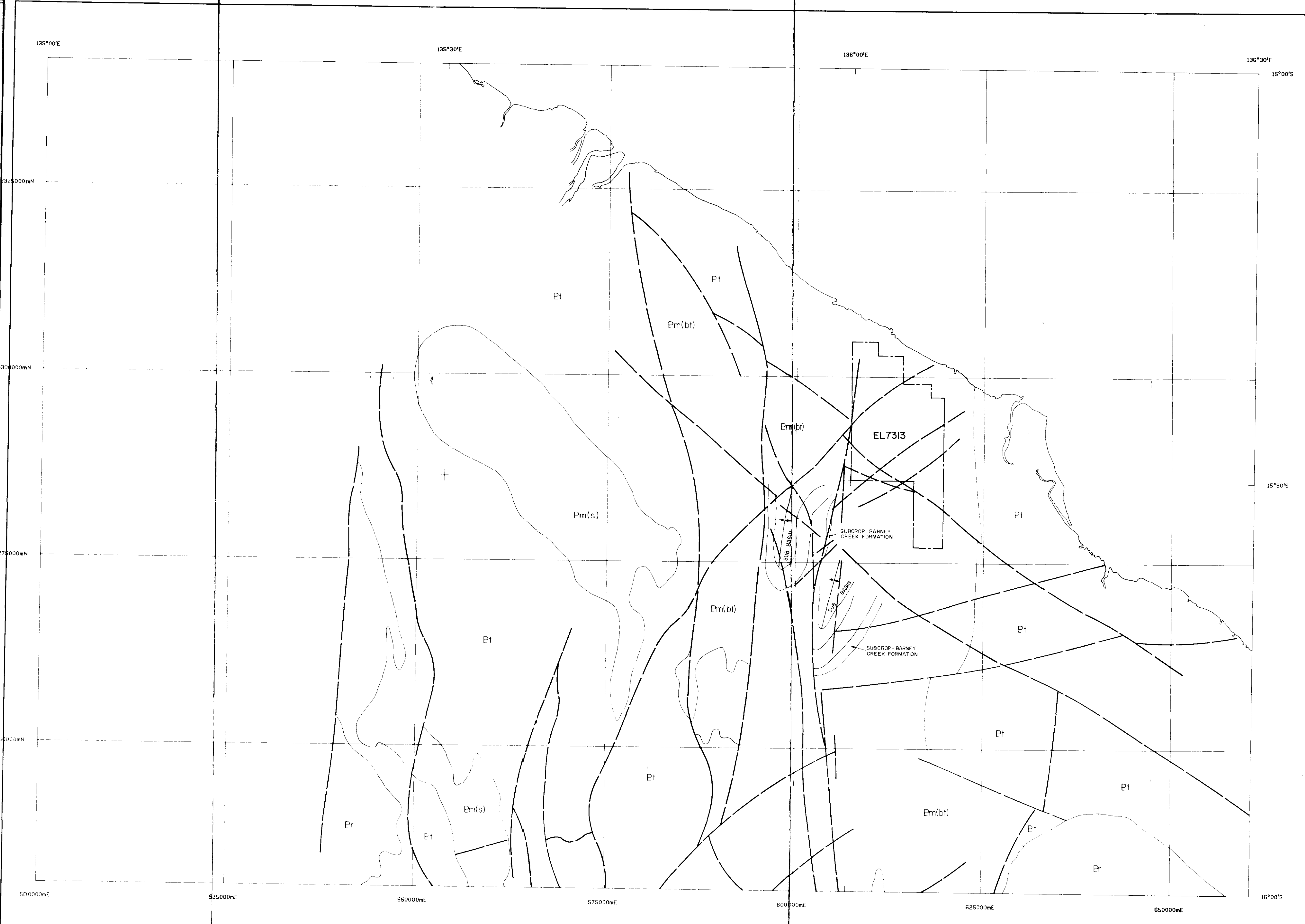
Magnetics

1:500 000 Grey Scale Image - E sun angle

10

APPENDIX 2

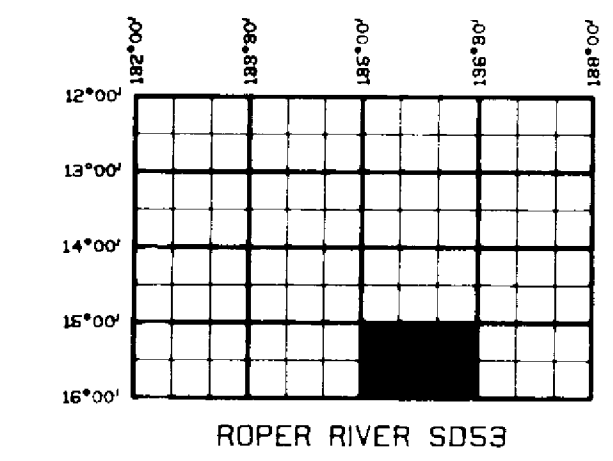
Regional Geology Map - (1:250 000 Mt Young)



CR92/208

- LEGEND
- Et ROPER GROUP
  - Em(s) MCARTHUR GROUP SHELF SEDIMENTS
  - Em(bt) MCARTHUR GROUP BATAN TROUGH SEDIMENTS
  - Pr TAWALLAH GROUP

LOCATION DIAGRAM



INDEX TO ADJOINING MAPS

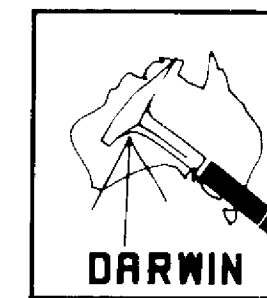
|         |         |         |
|---------|---------|---------|
| SD53 10 | SD53 11 | SD53 12 |
| SD53 14 | SD53 15 | SD53 16 |
| SE53 2  | SE53 3  | SE53 4  |



ROPER RIVER SDS3

GRID NORTH  
TRUE NORTH  
MAGNETIC NORTH

NORTH POLE RELATIONSHIPS ARE SHOWN FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1990.  
GRID/MAGNETIC ANGLE 4°25'00"  
GRID CONVERGENCE 0°25'00"  
SECULAR VARIATION 0°01' east per year



**GEOPEKO**  
A DIVISION OF  
PEKO EXPLORATION LTD.  
A.C.N. 000 862 550

Scale 1:250 000  
AUSTRIAN MAP GRID Map Centre Scale Factor 0.99968

Map Ref **MOUNT YOUNG**

Geo  
Drawn K S J  
Checked  
Date JAN 1992

**REGIONAL GEOLOGY,**

Dwg. No