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EL 1879 DONKEY CREEK, N.T.

ANNUAL REPORT

PERIOD ENDING 19TH OCTOBER, 1981

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APPENDIX 1 Ground Magnetometer Survey Profiles

APPENDIX 2 Interpretation of Ground Magnetometer survey
1. SUMMARY

During the third year of tenure of EL1879 reprocessing of data from an earlier aeromagnetic survey was completed and a ground magnetometer survey was carried out to enable the siting of a drill hole to test the source of a response beneath the Central Mt Stuart Beds west of the Home of Bullion mine.

2. CONCLUSIONS

The source of the magnetic response investigated is complex and probably north dipping at a depth of 120-150m.

3. INTRODUCTION

Previous work by CRA Exploration Pty Limited on Donkey Creek EL1879 included a detailed airborne magnetic and radiometric survey, and the subsequent investigation of the radiometric responses detected (Snelling, 1979) and a drainage geochemistry survey (Fraser, 1980). No significant radiometric or geochemical responses were detected. During the third year of tenure of the exploration licence, the aeromagnetic data was reprocessed and a ground magnetometer
survey completed over a response to the west of the Home of Bullion mine.

4. TITLE

EL1879 was renewed for an area of 80.10 square miles (223.01km²) on 19/10/81 for a further period of 12 months (Plan No. NTd 1534).

5. AEROMAGNETIC SURVEY

The maps produced from the airbourne geophysical survey of 1979 were included in an earlier report (Snelling, 1979). The standard of presentation of the magnetic contours, and the levelling of the data, were subsequently considered to be unacceptable, and the data has been recompiled by a different processing bureau at the airbourne contractor's expense. The resultant maps were used to produce a composite reduction at a scale of 1:100 000 (Plan No. NTa318).

6. GROUND MAGNETOMETER SURVEY

Following an earlier recommendation (Frazer, 1980) a ground magnetometer survey was carried out over a response approximately 5km to the west of the Home of Bullion mine. From a point accurately identified on the flight path recovery photographs of the earlier airbourne survey, a baseline designated 5 000mE was chained, pegged and permatagged at 50m intervals by backsighting on a bearing of 090° magnetic from 3800mE to 5800mE. 19.0km of traverse lines were established 200m apart by topofil distance measurement and compass with flagging every 50m and permatagged pegs at 200m intervals from 4600mN to 5400mN. Ground
magnetometer measurements were taken at an interval of 10m and the data corrected for diurnal variations by repeated base station readings at regular intervals and reference to a tie line along 5000mN. The approximate location of the grid with respect to the aeromagnetic contours is shown in Appendix 1 together with profiles of the corrected magnetic data which were used to compile a contour map (Plan No. NTA334). The high frequency "noise" seen on the profiles in the south west part of the grid was removed by hand smoothing. It probably relates to the development of iron rich weathering products on top of the Mt Stuart Beds.

7. **INTERPRETATION OF THE MAGNETIC DATA**

The interpretation of the aeromagnetic data was discussed Fraser (1980). The ground survey data shows that the source is complex, and shallowest at its eastern end. Although only an approximation, a two dimensional dyke model was used to interpret the data in this area. From the results (Appendix 2) the source is north dipping at a depth between 120 and 150m, and has a finite depth extent. A subsidiary source, perhaps shallower, occurs to the south of the main response between 4600mE and 4900mE.

The above interpretation should be refined before any drilling is undertaken. The sources both lie beneath a scarp of the Central Mt Stuart Beds in an area of considerable relief. It would therefore
be desirable to produce a topographic map of the grid area before siting drill holes. If the topographic levelling is carried out, a gravity survey utilizing the same height information would produce an additional set of data to aid the interpretation.

8. ACCESS

After the completion of the ground magnetometer survey, access was graded from the road between Barrow Creek and the Home of Bullion mine. Due to the steep and rocky terrain, no drill sites were prepared, as these will require heavier machinery.
9. REFERENCES


10. KEYWORDS

Airborne, geophys-mag.

11. LOCALITY

Barrow Creek SF53-6

12. LIST OF PLANS

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<th>Plan No.</th>
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<tr>
<td>NTD 1534</td>
<td>Partial Relinquishment EL1879 Donkey Creek, NT</td>
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APPENDIX 1

GROUND MAGNETOMETER SURVEY PROFILES
APPENDIX 2

INTERPRETATION OF GROUND MAGNETOMETER SURVEY
DONKEY CREEK  5000 mE

CENTRE = 4800 mN
DEPTH = 100 m
DEPTH EXTENT = 500 m
DIP = 70 deg N
WIDTH = 10 m
SUSCEPT = .03 CGS

CENTRE = 5050 mN
DEPTH = 150 m
DEPTH EXTENT = 500 m
DIP = 70 deg N
WIDTH = 50 m
SUSCEPT = .03 CGS
DONKEY CREEK  5200 mE
Surr. = .025 CGS

CENTRE = 5220 mN
DEPTH = 140 m
DEPTH EXTENT = 400 m
DIP = 70 DEG N
WIDTH = 50 m
Area = 80.10 sq. miles
223.01 sq. kms.

PARTIAL RELINQUISHMENT
EL 1879
DONKEY CK. N.T.
Magnetometer sensor height was 3.0m and the station spacing was 10m
5000 mN is approx 407600 mE
5000 mN = 761820 mN
Levelling was by a tie line run along 5000 mN
A constant of 52000 has been removed from contour values shown.

Contour Interval = 50 mT

C.R.A. EXPLORATION PTY LIMITED
CONTOURS OF
TOTAL MAGNETIC INTENSITY
DONKEY CREEK EL 1879
Reference: BARROW CREEK SF 53-6
Geologed: GPJ Scale: 1:10 000 Report No: 11017
Drawn: BKB Date: JUNE 1981 Plan No: NTa 374