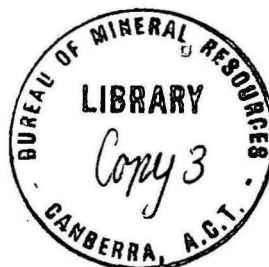


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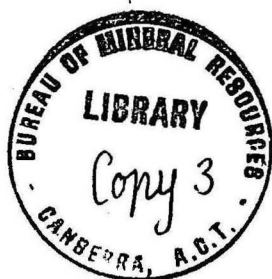
ACACIA AREA SELF-POTENTIAL SURVEY,
NORTHERN TERRITORY 1968

by

J.E.F. Gardener

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SUMMARY

Self-potential surveys were made over the major geochemical anomalies found in the 1967 reconnaissance survey in the Acacia area. One self-potential anomaly was found about 90m west of the L2 geochemical anomaly, but no definite correlation was found between the self-potential and geochemical anomalies.

1. INTRODUCTION

Reconnaissance geological, geochemical, and geophysical surveys were made in the Acacia area (Pl. 1) in 1967. Slingram and surface radiometric methods were used in the geophysical surveys, but the results did not warrant further investigation with these methods (Duckworth, 1968, p. 2). Many geochemical anomalies were found (Semple, 1968) and these were followed by further geochemical work in 1968. In addition, self-potential (S-P) surveys were made on the 1967 geochemical anomalies; this Record describes the 1968 S-P results.

2. GEOLOGY

The geological succession comprises (Semple, 1968, p. 2-3) a series of Lower Proterozoic sediments in part covered by Cainozoic ferruginous detritus. Semple recorded the following units, in order of increasing age:

- Superficial deposits
- Acacia Gap Tongue
- Golden Dyke Formation
- Coomalie Dolomite
- Crater Formation

These are the same units that are found in the Rum Jungle East area, and have been described by Dodson & Shatwell (1965). In the Acacia area, they have been displaced 6½ km northeast from the Rum Jungle East area by Giants Reef Fault, and have been folded on a north-trending axes.

3. RESULTS

S-P surveys were made over the main geochemical anomalies found by Semple (1968) in 1967 (L1, L2, L3, L4, Z1, C1, C2 and C01). The S-P profiles are shown in Plates 2 and 3 with selected geochemical profiles. The full base metal geochemical results are given in the Appendix.

Follow-up geochemical work in 1968 (Crohn, Prichard, & Gardener, 1968) showed: L1 is a strong lead anomaly with associated moderate anomalous zinc values; C2 is a weak copper anomaly; L2 is a moderate

lead anomaly; L3 and L4 are weak lead anomalies; and Z1 has scattered zinc values, some quite high. No geochemical follow-up work was done on C1 and Co1; the 1967 results showed that C1 is a weak copper anomaly and Co1 a weak cobalt anomaly. The L1, L2, and C2 anomalies on the western edge of the Acacia area may represent a single linear feature mineralized over a length of more than 2,100 m (Crohn et al. 1968). Three diamond drill holes were sited to test anomaly L1 (Prichard & Gardener, 1969). DDH 68-8 at 24N, 1E was drilled to 180 m, and DDH 68-9 at 16N, 1E was drilled to 185 m. DDH 69-3 was collared at 30N,00 to test the central part of the anomaly, but was abandoned because of bad ground before reaching target. No significant mineralization or lode structure could be recognized in any of the core. Spectro-scan of scraped core showed lead and zinc values comparable with auger sample values from 100 m to 130 m in DDH 68-8 and from 160 m to 170 m in DDH 68-9.

The S-P profiles on the L1, L2, and C2 anomalies are on Plate 2. The anomalies are all in shale of the Golden Dyke Formation. The S-P profiles on 22N, 24N, and 26N are irregular, with no features that can be considered anomalies; no correlation exists between the lead geochemical profiles shown and the S-P profiles. Drilling results on 24N (DDH 68-8) are also shown on Plate 2. If the zone of anomalous lead values between 100 m and 130 m is continuous with the surface lead anomaly, the anomalous zone dips steeply west, but no recognizable correlation exists between this inferred mineralized zone and the S-P results.

The S-P profiles on 46N, 48N, 50N, and 72N are smoother than on 22N, 24N, and 26N. The low values centred near 5E suggest a regional gradient; no correlation exists between the S-P and geochemical profiles. The S-P profiles on 94N and 98N show a distinctly narrow anomaly. A comparison with the geochemical results shows that the S-P anomaly is west of the geochemical anomaly, and that the S-P anomaly strikes a few degrees west of north, as the geochemical anomaly strikes north. No definite correlation is evident between the anomalies. The Slingram results here (Duckworth, 1968) are smooth, probably owing to deep weathering similar to the weathering found in DDH's 68-8 and 69-3 farther south. The whole area (46N to 98N) consists of shale of the Golden Dyke Formation.

S-P profiles on anomalies C1, Co1, L3, L4, and Z1 together with selected geochemical profiles are on Plate 3; no S-P anomalies were found. Traverses 96N, 24N, and 336N are in shale of the Golden Dyke Formation with amphibolite bands (Pl. 2 and 3). Traverse 264N is in shale and schist of the Golden Dyke Formation and Coomalie Dolomite. There

is no correlation between the geology and the S-P profiles or between the illustrated geochemical profiles and the S-P profiles.

4. CONCLUSIONS

The results of the S-P survey over the geochemical anomalies in the Acacia Area showed no recognizable correlation with the geochemical results or with the known geology. No significant S-P feature was found over the zone of anomalous lead values intersected in the diamond drilling of the L1 geochemical anomaly.

The only distinct S-P anomaly recorded was some 90 m west of the L2 geochemical anomaly, but the two do not appear to be related.

5. REFERENCES

- CROHN, P.W., PRICHARD, C.E., and GARDENER, J.E.F., 1968 - Summary of B.M.R. exploration Rum Jungle area 1968. Bur. Miner. Resour. Aust. Rec. 1968/102 (unpubl.).
- DODSON, R.G., and SHATWELL, D.O., 1965 - Geochemical and radiometric survey, Rum Jungle, Northern Territory, 1964. Ibid., 1965/254.
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- PRICHARD, C.E., and GARDENER, J.E.F., 1969 - Summary of B.M.R. exploration Rum Jungle area, 1969. Ibid., 1969/141.
- SEMPLE, D.G., 1968 - Geochemical and radiometric investigations, Acacia area, Northern Territory, 1967. Ibid., 1968/8.

APPENDIX

GEOCHEMICAL DATA

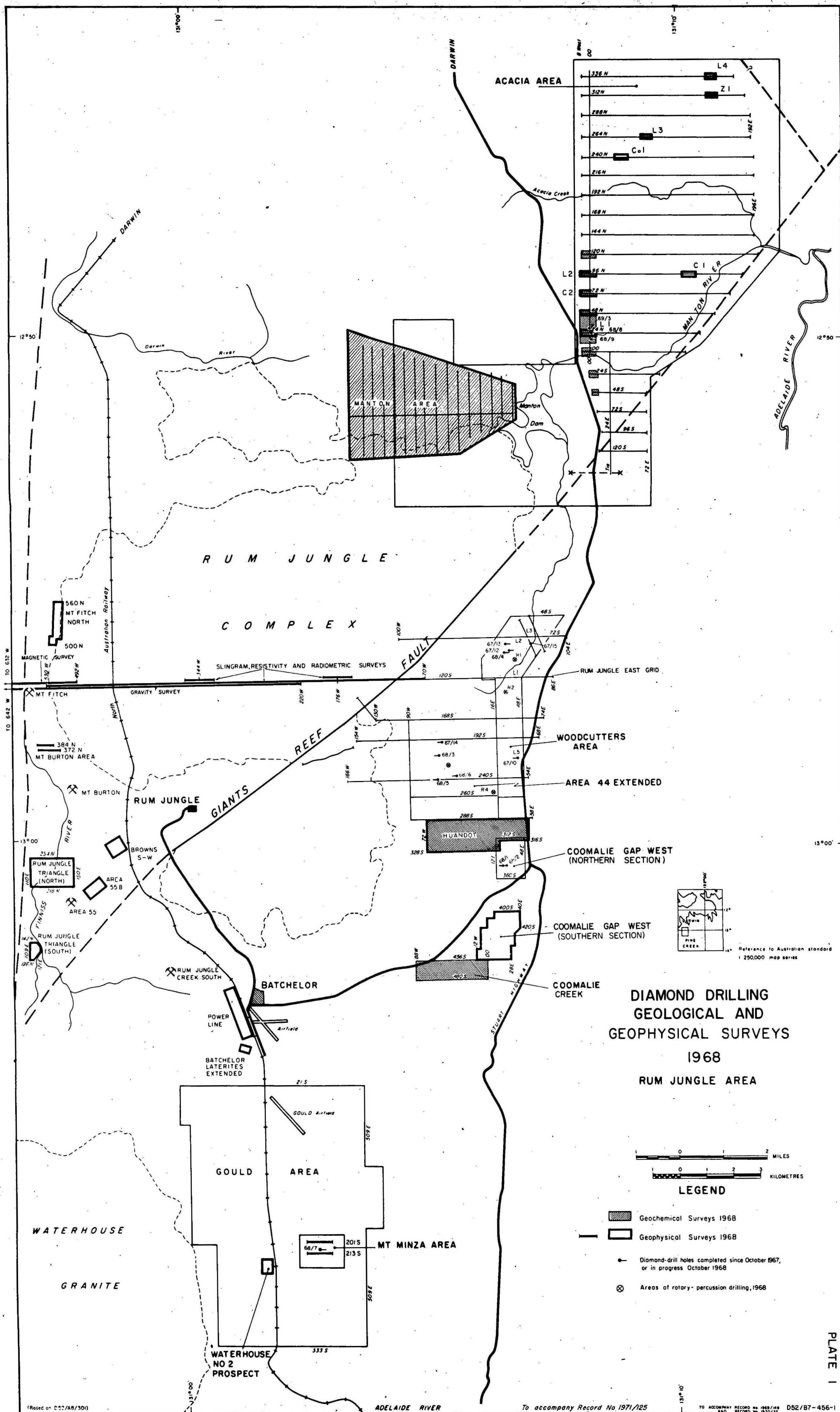
Samples were analysed at Australian Mineral Development Laboratories by atomic absorption spectrophotometer; results are in parts per million.

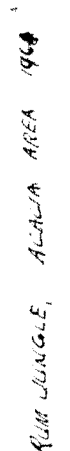
Co-ordinate Position	Copper	Lead	Zinc	Co-ordinate Position	Copper	Lead	Zinc	Cobalt	Nickel
22N 6W	20	25	20	72N 8W	35	30	50		
4W	60	20	90	6W	35	55	60		
2W	50	65	40	4W	60	30	20		
0	70	220	210	2W	70	35	30		
2E	35	50	340	1W	110	10	100		
3E	40	20	210	0	150	20	160		
4E	50	550	360	1E	250	20	230		
6E	40	20	65	4E	120	10	260		
8E	40	20	50	6E	130	10	100		
10E	55	20	45	8E	70	15	50		
12E	70	25	20	94N 8W	130	45	170		
14E	20	20	5	6W	75	110	20		
16E	30	65	25	5W	35	940	410		
24N 6W	20	20	10	4W	35	140	30		
4W	40	40	40	3W	40	55	30		
2W	150	15	280	2W	25	25	60		
0	60	30	160	0E	110	25	40		
2E	60	40	170	2E	45	15	60		
3E	35	30	220	4E	35	25	20		
4E	60	2700	670	6E	25	30	45		
5E	15	55	60	96N 8W	85	5	150		
6E	20	35	20	6W	75	55	80		
8E	20	30	25	5W	30	90	35		
10E	90	30	180	4W	30	170	40		

Co-ordinate Position	Copper	Lead	Zinc	Co-ordinate Position	Copper	Lead	Zinc	Cobalt	Nickel
12E	5	10	5	3W	45	20	140		
14E	60	30	50	2W	30	85	60		
16E	30	50	10	0	55	85	45		
26N 6W	40	25	40	2E	85	20	200		
4W	30	30	90	4E	50	15	25		
2W	20	15	20	6E	45	25	15		
0	55	55	210	98N 8W	80	25	60		
2E	30	20	100	6W	85	220	140		
3E	60	30	180	5W	60	300	90		
4E	30	460	390	4W	70	45	110		
5E	15	120	30	3W	50	30	60		
6E	5	30	10	2W	55	150	150		
8E	40	55	70	0	50	25	50		
10E	50	60	25	2E	90	25	40		
12E	35	60	200	4E	75	5	40		
14E	50	230	450	6E	40	25	20		
16E	90	55	390	96N 128E	35	15	10		
46N 8W	40	40	35	132E	40	20	35		
6W	40	20	260	136E	50	35	25		
4W	150	20	170	140E	320	10	195		
2W	50	20	190	144E	30	20	40		
1.5W	40	15	230	149E	20	15	30		
1W	30	25	10	152E	20	15	25		
0.5W	110	1600	720	240N 40E	90	15	30	10	25
0	50	350	380	44E	60	25	55	30	55
0.5E	20	25	90	48E	220	10	150	420	165
1E	35	560	450	52E	55	25	65	35	65
1.5E	70	15	60	56E	60	90	110	85	115

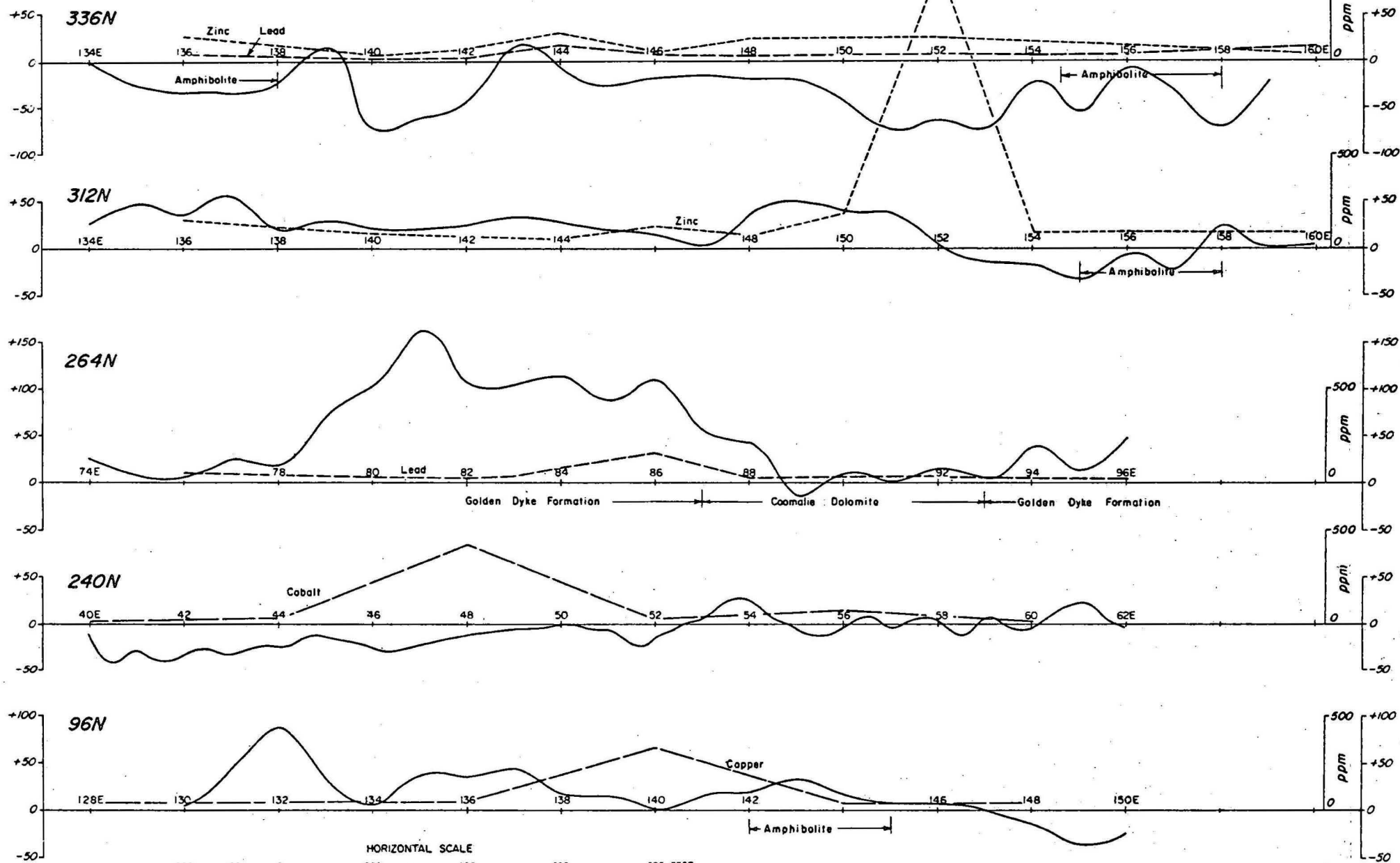
Co-ordinate Position	Copper	Lead	Zinc	Co-ordinate Position	Copper	Lead	Zinc	Cobalt	Nickel
2E	60	10	45	60E	65	30	40	15	65
2.5E	70	25	60	264N 76E	40	50	25		
3E	100	35	100	80E	60	30	90		
4E	40	45	10	82E	30	25	30		
6E	35	65	25	83E	40	30	35		
8E	40	85	25	84E	310	90	170		
10E	60	50	35	86E	40	160	90		
48N 8W	25	40	20	88E	50	35	80		
6W	25	30	20	92E	50	40	20		
4W	20	30	15	96E	75	25	50		
2W	30	30	35	312N 136E	175	25	150		
1.5W	55	25	140	140E	40	25	70		
1W	110	2000	380	144E	30	10	50		
0.5W	45	55	160	146E	190	10	110		
0	45	290	300	148E	180	40	60		
0.5E	40	25	160	150E	230	80	180		
1E	35	50	20	152E	40	30	1500		
1.5E	60	45	20	154E	90	15	75		
2E	80	35	60	156E	80	25	80		
2.5E	40	15	30	160E	120	30	80		
3E	60	25	120	336N 136E	230	30	140		
4E	80	20	20	140E	15	10	35		
6E	35	70	30	142E	55	10	70		
8E	60	25	55	144E	55	90	150		
10E	30	60	50	146E	70	40	50		
50N 8W	30	55	25	148N	150	30	110		
6W	35	60	15	152E	200	30	120		
4W	35	65	35	156E	75	25	70		

Co-ordinate Position	Copper	Lead	Zinc	Co-ordinate Position	Copper	Lead	Zinc	Cobalt	Nickel
2W	50	30	140	160E	140	70	25		
1.5W	50	30	290						
1W	40	35	170						
0.5W	50	85	200						
0	30	40	10						
0.5E	40	45	60						
1E	40	45	30						
1.5E	75	25	60						
2E	50	40	20						
2.5E	60	25	35						
3E	55	25	20						
4E	60	65	30						
6E	60	40	45						
8E	20	25	20						
10E	35	60	15						





ACACIA AREA, NT
SELF-POTENTIAL PROFILES
AND GEOCHEMICAL AND
DIAMOND DRILLING RESULTS
D52 / B7-505



Geology: Golden Dyke Formation
throughout except traverse
264N

To accompany Record No 1371/125

ACACIA AREA, NT SELF-POTENTIAL PROFILES AND GEOCHEMICAL RESULTS

052/B7-504