C.R.A. EXPLORATION PTY. LIMITED

NOTES ON A VISIT TO AREA 'J', SEPTEMBER, 1972

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CONTENTS

1. SUMMARY

Several localities in Area J are evaluated in an attempt to plan future investigations. Most consideration is given to radiometric anomalies. It is concluded that the results of previous work in the area are inconsistent and that a systematic approach - repeating earlier work if necessary - is required to test all anomalies.

2. INTRODUCTION

On September 20th, 1972 a visit to Area J, Rum Jungle, was made by R.Y. Black, R. Klaric, D.H. Mackenzie and C. Harrowell in order to consider at first hand the potential of the area.

3. KNOWN PROSPECTS

3.1 Waterhouse No. 2 Uranium Prospect

Waterhouse No. 2 Uranium Prospect is discussed in a separate memorandum.

3.2 Waterhouse No. 4 Uranium Prospect

This prospect, detected in 1952 by airborne scintillometer lies just west of the point where the track from Gould Airfield to Stapleton crosses the North Australian Railway. It was subjected to radiometric gridding which showed an area of 1200' x 600' showing 2 x background. Some small areas within this reached 4 x background. Laterite was believed to cause the increased radioactivity and the prospect was downgraded. Subsequently, 2 E.M. traverses revealed no anomalies. These limited results compared very unfavourably with those obtained at the Waterhouse No. 2 prospect and so no further work was conducted over the area.

In the course of C.R.A.E.'s airborne radiometric survey several anomalies were detected in the vicinity of the No. 4 prospect. Since they appeared to coincide with anomalies earlier detected, investigated and dismissed by the B.M.R., no ground follow-up work was undertaken by C.R.A.E.

In the absence, however, of detailed knowledge of these anomalies it was considered during the recent visit that they should be located and investigated in an attempt to gain a fuller understanding of radiometric occurrences in the local environment.

4. AIRBORNE RADIOMETRIC ANOMALIES DETECTED IN 1971

4.1 Anomaly 57

Anomaly 57 has been gridded radiometrically and mapped geologically. One chip sample assayed 815 ppm Uranium. This sample came from the southeastern portion of the area gridded. It is therefore intended to extend the grid further south and east. Since exposure is very limited around the anomaly it was considered that a programme of trenching could be of more value than soil sampling.

4.2 Anomaly 59

Anomaly 59 was investigated in January 1972 and was considered to be caused by a small area of tuffaceous quartz greywacke of the Holtenius Formation which gave readings of 140 cps against a local background of 70 - 80 cps. However, in the course of geological mapping, a horizon of hematite-quartzite breccia was found in shales a little further to the east. Since H.Q.B. is known to be associated with radiometric anomalies elsewhere, the possibility should be tested that this H.Q.B., and not the greywacke, is the cause of the airborne anomaly.

4.3 Anomaly 60

Anomaly 60 remains to be gridded radiometrically although pegs have already been inserted. Appropriate geochemical sampling should follow the radiometric work.

4.4 Anomaly 73

Anomaly 73 has been gridded radiometrically and appears to be simply a "spot" anomaly registering 300 cps. A chip sample from this point assayed 32 ppm uranium and 55 ppm thorium. A brief soil sampling programme is planned but the results of the radiometric work are not encouraging. A plan of the radiometric results is attached.

4.5 The Reliability of Aerial Scintillometry as a Prospecting Tool

In the report on the Airborne Radiometric Survey, Area J (C. Marmont and A.R.B. Doe, 3rd May, 1972), it was reported that anomaly 50-W could be attributed to [illegible] and that Waterhouse No. 2 Uranium Prospect was not detected. In view of the significant surface concentration of radioactivity at the prospect, doubts were raised concerning the reliability of airborne scintillometry. However, re-examination of recorder charts and plans has shown that anomaly 50-W is in fact located over Waterhouse No. 2 Uranium Prospect, the previous misinterpretation being due to an error in transcription of data.

The Waterhouse No. 1 Prospect does not show anomalous radioactivity according to the records from this programme, and it is understood that its expression on the ground is not as extensive as Waterhouse No. 2.

5. GEOCHEMICAL RESULTS

From geological mapping in Area J it appears that the elevated geochemical values for Cu, Ni, Pb and Zn in drainage samples can be almost entirely related to the same general horizon within the Golden Dyke Formation. This horizon lies below the "H.Q.B." and above the Acacia Gap Tongue of the Masson Formation. This belt of rocks is composed essentially of banded red and green carbonaceous siltstones and "amphibolites", and is approximately 2300' thick. The association of elevated base metal values with amphibolites in the Rum Jungle District has been noted before (Patterson, G.W., June, 1961, N.T. 210/1). None of the results obtained during the drainage sampling programme is outstanding but we are awaiting assays of chip samples of shale and amphibolite from the "anomalous" region. One problem still outstanding in this area is the origin of the amphibolite. Petrographic results from recent sampling suggests that for many, a sedimentary origin is quite likely. However, some highly altered "amphibolites" do have an igneous texture and only stratigraphic drilling is likely to clarify the picture.

In the course of geological mapping, siltstones of the Burrell Creek Formation were observed at the site of the airborne radiometric anomaly 42-11. Only float of siliceous black shale was observed. (A sample of such rock from this location was assayed previously and gave 1500 ppm Zinc).

It now seems likely that this float was derived from outcrops which lie approximately 1.5 miles to the northwest. The assay results from a sample of this material are not yet to hand.

6. MT. MINZA MAGNETIC ANOMALY

One item still outstanding which was not discussed recently is the question of the magnetic anomaly occurring north of Mt. Minza.

Tony Doe's magnetic survey confirmed the results of the B.M.R. survey in 1966 (Farrow 1967/97) and a maximum reading of 10,000 gammas was recorded.

Auger soil sampling was conducted by the B.M.R. in 1965-66. Reconnaissance work (sampling on a 2400' x 400' grid) revealed copper and nickel anomalies but low lead values. Therefore, during the follow-up programme (sampling on a 400' x 200' grid) only copper, nickel and cobalt were assayed for and the holes probed radiometrically. Values of 1100 ppm nickel and 800 ppm copper were obtained over amphibolites with adjacent tremolite siltstone and black shale lying just below the H.Q.B. horizon. Radiometric results indicated no anomalous radioactivity.

Electromagnetic studies returned no anomalous results.

The results of investigations over this area are not exciting. No mineralisation has been observed (much of the area is under soil cover) and geochemical results, though not comprehensive, show only small copper and nickel anomalies. Radiometric and geophysical results are negative and there remains only the magnetic anomaly holding our interest.

Deep drilling designed to determine the source of the magnetic anomaly is probably unjustifiable. The only other course of action, short of abandoning the anomaly, would appear to be a brief programme of geochemical sampling using an auger drill. This should take the form of two or three traverses across the magnetic anomaly with closely spaced sampling intervals. If positive results are returned, the programme can be extended with a view to selecting a site for deep testing of the anomaly. If negative, then no further work would be justified.

Doe estimated depths of 500' and 250' to the upper surfaces of the magnetic bodies.

A plan of the area is attached.

7. RECOMMENDATIONS

The following programme is recommended for execution in the order listed:-

1. Radiometric gridding of anomaly 60.
2. Checking of anomaly 59.
3. Extension of radiometric grid on anomaly 57.
4. Location and assessment of anomalies around Waterhouse No. 4 Uranium Prospect.
5. Costeaning; anomaly 57, plus appropriate sampling of anomalies 60, 73 and possibly 59 and the Waterhouse No. 4 area.
6. Radiometric Gridding of Waterhouse No. 2 prospect.
7. Auger drilling and concomitant probing at Waterhouse No. 2 prospect - selection of traverses possibly dependent upon radiometric results.
8. Auger drilling of Mt. Minza magnetic anomaly.

Depending upon findings at the Waterhouse No. 4 prospect, items 1 - 4 should take no more than one week to complete. The main consideration then becomes the fact that anomalies 57, 59 and 73 are not readily accessible during the wet season and accordingly have been given priority over the Waterhouse prospects and Anomaly 60.

The Mt. Minza anomaly could also be difficult to reach during the wet season but is rated lowly.

C. Marmont

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REFERENCES

Doe, A.R.D.	11th February, 1971	Ground Magnetometer Survey in Mt. Minza Area, N.T. Conzinc Riotinto of Australia Pty. Ltd. Comp. Rep.
Marmont, C.	19th July, 1972.	Report on Exploration on PA 2483 (Area J) Rum Jungle, N.T. for the Period 1/6/71 - 31/5/72. Ibid.
Marmont, C.	3rd October, 1972.	Waterhouse No. 2 Uranium/Copper Prospect, Area J, Rum Jungle. A Synopsis of Previous Investigations. Ibid.

KEYWORDS

Copper, uranium, geochem.-drainage, geochem.-soil, geophys-mag, geophys.-rad.

Locality: Pine Creek SD52-8 1:250,000 Geological Map Sheet.

Batchelor Sheet 54, Zone 4 1:63,360 Geological Map sheet.

LIST OF PLANS

No.	Title	Scale
NTd 152	Mt. Minza Magnetic Anomaly: Compilation of Previous Work.	1:4,800

T.E.P. Mine Grid Co-ordinates

145S 149S 153S 157S 161S 165S 169S 173S 177S 181S 185S 189S

484E 488E 492E 496E 500E 504E 508E

HQB

Quartzite

T.S.

Amphibolite

Tremolitic Siltstone

Black Shale

Amphib.

B.I.F.

Fault

1200 ppm Ni

0·02 (c)

0·015 (a/b)

0·015 (a/b)

400 0 400 800 1200 feet

100 0 100 200 300 metres

GEOLOGY

- Quartzite (Silicified Shale)
- Hematite Quartz Breccia
- Banded Ironstone Formation
- Tremolitic Siltstone
- Amphibolite
- Black Shale

GEOCHEMICAL RESULTS

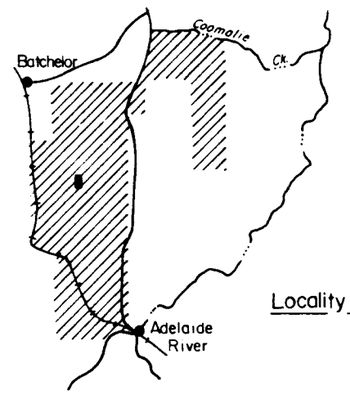
200 — — Copper
200 —·—·— Nickel
200 · · · · · · Cobalt
} Soil Sample Values in p.p.m.

RADIOMETRIC RESULTS

0·015 — - — Radiometric Contour Value in mR/hr and Soil Horizon Cited

MAGNETIC RESULTS

1000 ——— Magnetic Contour Value in Gammas



Locality Plan

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MT MINZA MAGNETIC ANOMALY

COMPILATION OF PREVIOUS WORK

After Farrow, Semple (B.M.R. Records 1967/97, 1967/41)
Doe (C.R.A.E., 1970 NTIII)

Drawn OCTOBER '72	Scale 1:4,800	Plan N° NTd 152

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