C.R. 764

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MINATOME AUSTRALIA PTY. LIMITED

CONFIDENTIAL

SIX MONTHLY REPORT TO QUEENSLAND MINES DEPARTMENT
AUTHORITY TO PROSPECT 1764M
BROKEN RIVER
MAY - NOVEMBER 1979

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I. INTRODUCTION

This report covers operations within Authority to Prospect 1764M from 16th May 1979 to 15th November, 1979. This Authority was granted to Urangesellschaft Australia Pty. Limited for a term of two years, commencing 16th May 1977. It was renewed for a further 12 months to 15th May 1980. During the period Urangesellschaft entered into a joint venture with Minatome Australia Pty. Limited, Minatome being operator for the joint-venture.

II. WORK UNDERTAKEN

2.1. KENNEDY PROSPECT

The prospect was discovered during the 1978 field season. It is situated in Authority to Prospect 1764M, near the north-west margin of the Bundock Basin.

The systematic work of the year consisted of:

- The establishment of a grid 40 x 40m, direction N60°E over an area 1200 m lengthwise and 200m widthwise, carried out by a contracted surveyor team.
- Detailed geological mapping at a scale 1:1,000 (Plate 2).
- Detailed radiometry at 10 x 10m spacing (Plates 3,4 and 5).
- Geophysical tests comprising emanometry, VLF, magnetometry (Plate 6).
- 650m of airtrack drilling.
- 533m of deep percussion drilling.

2.1.1 Geology

The prospect is confined to an isolated outcrop of sediments, belonging to the MR3 unit which are flanked by basalt on one side and metamorphics on the other. Stratigraphically, the prospect is located at the beginning of the MR3 unit with some MR2 sediments outcropping on the south-east side of the anomalous zone.

The following sub-units were defined in the area:

- The upper part of MR2 composed of micaceous siltstone, silty sandstone and medium grained arkosic and lithic sandstone.
- The lower part of MR3 subdivided as follows:
  - 120m of coarse pebbly sandstone with conglomerate levels and lenses of red micaceous siltstone. The siltstone contains plant fossils. In hand-specimen, the sandstone is grey pinkish (haematitic staining), coarse grained, clayey, subangular and contains lithic fragments (some volcanic) and epidote.
  - 15m of tuff and tuffaceous siltstone and sandstone.
  - 70m of medium grained ferruginous lithic sandstone with minor siltstone interbeds.

The general strike is N 60°E in the north-east, turning to N30°E in the south-west; the dips are vary between 65° - 85°.

- Faulting

The Burdekin River N50°E fault zone is dipping vertically and separates the Prospect from the Georgetown Craton. This is a major structure forming the north-west boundary of the Bundock Basin. It is displaced by north-south trending cross-faults.

There are many north-south trending cross-faults, most with a small (few metres) horizontal displacement. The most important one, located in the valley between the two hilly outcrops composing the prospect, seems to have a horizontal displacement of 60 - 80 m.

Shear zones of N50°E and N60°E affect the lower part of the coarse sandstone. The zones are a few metres wide, formed of cataclastic rock. The shears are near vertical, slightly dipping to the south-east.

2.1.2 Radiometry

A ground radiometric survey was carried out over the gridded area with a spacing of 10 x 10m (Plate No. 4).

The background of the MR2 unit is 75 to 95 cps, in the lower conglomeratic unit of MR3 it is 100 - 120 cps, 110 - 135 cps for the tuffaceous subunit and 80 - 100 cps for the upper ferruginous part.

The radiometric contour map (plate No 5) shows that high radioactivity is dispersed but clearly follows the strata. Two anomalous horizons can be recognised, both in the conglomeratic horizon of MR3.

The lower anomalous horizon is about 35 m above MR2 and extending over 160m discontinuously (grid reference 460N, 720N).

The upper horizon is 45m above the former, and extending over 560m (grid reference 480N to 1040N).

There are also a few spots of high activity located in the ferruginous sandstone in the south-west.

The radiometric highs are located near silt pellets and ferruginous (haematitic) spots. In the laboratory analysis of radioactive samples uranium minerals were located in small fractures and the identified uranium minerals are sabugalite and uraninite.

2.1.3 Geophysical tests

Several geophysical methods were used to test the zone covered by alluvion between the two anomalous hills, the survey was conducted by R. Harvey. The results generally confirm the geological observations:

- Emanometry

The survey was made by a Scintrex ETR-1 emanometer. The readings were between 2 to 14 emans which are considered as low background values.

- VLF/EM

Four profiles at 40 m interval, using N.D.T. (Japan) as preferred transmitter, were recorded. A strong conductor trending 345° through grid 40 E, 330N, represents the inferred fault (see geological map) beneath the alluvial cover.

- Magnetometry (Plate 6)

Four zones of different activity were defined by the survey:

- The first zone of low homogeneous activity corresponds to the coarse conglomeratic unit of MR3.
- The second zone of higher activity to the north-west correlates with the basement metamorphics.
- The third zone, between the former two, corresponds to the finer ferruginous sandstone and tuff. The discontinuity in the magnetic pattern, indicates several cross-faults.
- The fourth zone of high activity corresponds to the major cross-fault. The displacement along this fault is estimated to be 60 - 80m. The very high magnetism is due to Tertiary basalt under the alluvium. The Tertiary basalt filled the valley which followed the fault zone.

2.1.4 Drilling

- Air Track

The total of 650 metres was drilled composed of 13 holes of 50 m each. The aim of the programme was to verify if the surface mineralisation continues down dip. The holes were located so that they intercept the eventual mineralisation in between 15 to 20m deep at the vertical.

The holes KEN A1, 2 and 3 were located in the south-western hill and drilled through the ferrugineous subunit. All the holes show very low increase of radioactivity, the maximum being about 3 times background, these increases corresponding to small fractures. Geochemical analysis results show only 10 to 18 ppm uranium.

The ten other holes were located in the conglomeratic subunit and all giving negative results. Only a few small increases of radioactivity were obtained, the maximum being about 3 times background. Geochemical analysis results show only 10 - 26 ppm uranium.

- Deep Percussion

The original plan was to drill four holes, each about 200m,

- The first, KEN P-15 was intended to drill through the major transverse fault at the junction with the favourable horizon.
- The second hole, KEN P-16 was aimed to verify if the shear zones could be a trap for uranium mineralisation.

- The third hole was planned to go through the Burdekin N50°E fault zone and investigate the influence of this on the mineralisation.

- The fourth hole was planned to start from the tuffaceous horizon into the conglomeratic unit and verify the stratiform control possibility of mineralisation.

- The last two holes would also have given a more complete stratigraphic section.

Due to technical difficulties, only the two first holes were completed as planned; the third hole KEN P-17 stopped at 142m still in the basement, and the last hole was not drilled.

- Drill Hole No. KEN P-15

This hole reached the target; there is no mineralisation associated with the fault. It confirms the presence of the tertiary basalt under the alluvium cover. The drillhole intersected the MR2 unit between 19 and 58 m, then the lower part of MR3 at 80m where it reaches the fault zone and goes into the ferruginous subunit of MR3 (see D6 form).

- Drill Hole No. KEN P-16

This hole reached the target but no mineralisation was found. It went through the MR2 unit the first 30m, then into the conglomeratic unit of MR3. It intercepted the second shear zone at 92 m but the first one is not shown on the lithological log. (See D6 form).

- Drill Hole No. KEN, P-17

This hole did not reach the target and stayed in the basement metamorphics. There was no mineralisation in the hole. It is probable that the hole is deviated along the fault from 114 m, where the brecciated zone is reached.

2.1.5 Conclusions

The Burdekin N50°N does not play apparently any role in the mineralisation.

The transverse faults and the shear zones are equally sterile.

A stratiform control to the mineralisation seems to be the only alternative but is very improbable in this open system. Moreover, the air-track drilling shows that the surface mineralisation does not continue down dip. At the very best, only spotty mineralisation can be expected. 1978 rock sample analyses show a very strong positive correlation between U and P_2O_5 and CaF_2, indicating that probably all uranium minerals are secondary phosphate compounds.

To summarise, the odds of finding any economic mineralisation are very low and consequently no further work is recommended.

III. ADMINISTRATION

3.1 PERSONNEL

S. Meyer	Project Manager
J. Foster	Deputy Project Manager
D. Benko	Geologist (Senior)
J. P. Bout	Geologist (Senior)
P. Szabo	Technician
R. Gilles	Technician
M. Dunn	Geologist (Junior)
S. Parker	Geologist (Junior)
B. McKay	Geologist (Junior)
A. Webb	Geologist (Junior)
C. Bentley	Geologist (Junior)
G. Meunier	Geotechnician
D. Bennett	Geologist Assistant
E. Frost	Geologist Assistant
M. Flynn	Draughtsman
M. Hague	Camp Manager
A. Kostyk	Cook

3.2 EXPENDITURE

Purchases	$ 4,373.
Personnel	24,486.
Supplies and Services	1,481.
Transport and Accommodation	8,248.
Administrative Expenses	1,238.
Depreciation	3,873.
General Administration	6,435.
Contract Services	22,786.
TOTAL	$ 72,920.