CR 73/119

FINAL REPORT ON E.L. 518
MT. SOLITAIRE, N.T.
BY: C.R.A. EXPLORATION PTY. LTD
C.R.A. EXPLORATION PTY. LIMITED

E.L. 518, MT. SOLITAIRE N.T.
FINAL REPORT

Authors : F. E. Hughes and
          K. N. O'Sullivan

Date : June, 1973.

Submitted to : D. H. Mackenzie
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1. SUMMARY

Investigations continued in the search for uranium in the area, but the results are not encouraging, and it is proposed to surrender the Exploration Licence before the expiry date.

2. INTRODUCTION

As part of a programme for the search for sedimentary uranium in the area, Exploration Licence No. 518, of 110 square miles (285 km²) was applied for, and granted to the company for 12 months from 2nd August, 1972 (see Plan No. N.T.1126). Work carried out in the area included:

- Geological mapping in the search for sedimentary units that may be favourable for the accumulation of uranium.
- Review of data related to sedimentation in the area, including that collected during water boring operations.
- Gamma logging of all open water bores.

3. GEOLOGY

The area lies on the southern margin of Burt Plain, and is bounded on the south by undifferentiated Precambrian gneissic rocks of the Arunta Complex.

The basin sediments have been described from the 16 mile Government Bore (Hossefeld, 1954) where the sedimentary succession consists mainly of clays, sands and subordinate grits. Lignitic units occurred in this hole, similar to those recently intersected in drilling in the Tea Tree area, which have been dated as Middle Miocene (O'Sullivan, 1973) and elsewhere in the area (Evans and Nicholas, 1970). These sediments are also correlated on lithological grounds with those which have been found in the Alice Springs Farm area, which contain Tertiary Spores (Quinlan and Forman, 1968).

To the northwest of the area of the E.L. are remnants of an early Tertiary laterite, which is overlain in part by outcrops of unnamed Tertiary units consisting of sandstone, conglomerate and siltstone.
The bulk of the area of the E.L. is covered by Quaternary red soil and alluvium, and the lower slopes of Mt. Solitaire are obscured by Quaternary scree and colluvium.

Crystalline basement occurs at 190 m in the 16 Mile Government Bore, and refraction seismic investigations in the area (Kirton, 1972) shows that basin sediments extend deeper than this in places.

4. URANIUM IN GROUNDWATER

The uranium content of water from bores in the area is given below:

<table>
<thead>
<tr>
<th>Bore</th>
<th>U (ppm)</th>
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<tr>
<td>16 Mile Bore</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bendy Bore</td>
<td>0.006</td>
</tr>
<tr>
<td>Corkwood Bore</td>
<td>0.006</td>
</tr>
<tr>
<td>Bulldust Bore</td>
<td>0.037</td>
</tr>
<tr>
<td>Kunoth Bore</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Of these the water from Bulldust Bore is anomalous in uranium content, but values consistently higher than this are known from similar environments in other parts of Central Australia (Hughes and O'Sullivan, 1972).

5. GAMMA LOGGING OF WATER BORES

Gamma logs were run in all open water bores in the area of the E.L., using a Widco Portalogger, and the traces of these are reproduced in the Appendix. The gamma response from the cased operating bores, being recorded inside the pump column, is correspondingly suppressed. No gamma anomalies were recorded, and the results generally lie in the range 0.005 - 0.015 mR/hour, reflecting changes in lithology.

6. GEOLOGICAL MAPPING

Geological mapping was carried out over the area at air-photo scale of 1:80 000 (see Plan No. N.T.1227). No new units were observed in outcrop, and the mapping failed to reveal the presence of calcrete or related units that may be favourable to the occurrence of uranium.
7. CONCLUSIONS

The results of investigations for the occurrence of uranium in the basin sediments covered by E.L. 518 are not encouraging, and it is proposed that the E.L. be surrendered.

FEH:RII

F. E. Hughes

KEYWORDS
Uranium, duricrust, sediments-undiff., facies-continental, basin-cloud, Tertiary, geochem-water, geophys-rad.

Locality: Hermannsburg SF53/13 1:250 000 map sheet

REFERENCES


Hughes, F.E. and O'Sullivan, K.N. 1972  Uranium Investigations, Tea Tree area, Napperby, N.T. C.R.A.E. Report 20/7/72 (unpub.)


**LIST OF PLANS**

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<th>Scale</th>
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<td>N.T. 1226</td>
<td>E.L. 518, Mt. Solitaire, N.T. Locality Plan</td>
<td>1:1 000 000</td>
</tr>
<tr>
<td>N.T. 1227</td>
<td>E.L. 518, Mt. Solitaire, N.T. Locality Plan</td>
<td>1:100 000</td>
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Appendix - Gamma Logs of Water Bores
23rd May, 1973

The Director,
Mines Branch,
Department of the Northern Territory,
DARWIN N.T. 5790

Dear Sir,

E.L. 518 - Mt. Solitaire, N.T.
Report for the Quarter Ending 1st May, 1973

Results of work undertaken on other areas of the Burt Plain have downgraded the prospect of finding uranium in this area. The E.L. was relinquished on 28th April, 1973.

A final report is in preparation.

There was no expenditure for the period.

Yours faithfully,

[Signature]

for D. S. Carruthers,
General Manager

S.C.
24th November, 1972.

The Director,
Mines Branch,
Northern Territory Administration,
P.O. Box 231,
DARWIN,  N.T.  5794

Dear Sir,

E.L. 518 - Mt. Solitaire, N.T.
Report for Quarter Ending 31st November, 1972

A number of gamma logs were run in water bores in the area.
Expenditure for the period amounted to $3.

Yours faithfully,

[Signature]

MF: jm  for: D. S. Carruthers
           General Manager