El 9318 Branch Creek

Fourth Annual Report
for the Period Ending 4th November 1999

Calvert Hills SE5308
Northern Territory, Australia

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Accepted by: ______________

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Exploration Report No. 23844
ABSTRACT

Exploration License 9318 Branch Creek was granted to Rio Tinto Exploration Pty Limited (formerly CRA Exploration Pty Limited) on the 5th of November 1995 for a period of 6 years. The current tenement covers an area of 157 sq. kms (48 sub-blocks) and is located adjacent to the Northern Territory/Queensland border, approximately 35 km south of Wollogorang Station.

The license area is considered prospective for U- (Au) mineralisation similar to identified U resources at Westmoreland, Qld. Proximity to the major northwest trending Calvert Fault also raises the potential for diamond bearing kimberlitic diatremes within the EL.

No exploration activities were conducted during the fourth year of tenure. Infill and follow-up gravel sampling proposed for 1999 has been deferred until access to the aboriginal freehold land immediately abutting the southern boundary of Branch Creek is available.
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<td>Ntd 6650</td>
<td>EL 9318 Branch Creek Location Plan</td>
<td>1:250,000</td>
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1. CONCLUSIONS AND RECOMMENDATIONS

The potential for primary diamond bearing bodies to be located within Branch Creek EL remains high. Infill and follow-up gravel sampling proposed for 1999 has been deferred until access to the aboriginal freehold land immediately abutting the southern boundary of Branch Creek is available.

2. INTRODUCTION

EL 9318 Branch Creek was granted to CRA Exploration Pty Limited (now Rio Tinto Exploration Pty Limited - RTE) on the 5th of November 1995 for 6 years. Tenement reductions have taken place in 1997 (96 sub-blocks: 50 %) and 1998 (48 sub-blocks: 50%).

The current tenement covers an area of 157 km$^2$ (48 sub-blocks) and is located adjacent to the Northern Territory/Queensland border, 35km south of Wollogorang Station (refer Ntd 6650).

The license area is considered prospective for U-(Au) mineralisation, particularly at the Seigal Volcanics-Westmoreland Conglomerate contact and along major east west trending faults and for diamondiferous diatremes.

This report details all activities completed by RTE within EL 9318 Branch Creek during the fourth year of tenure.

3. GEOLOGY

Branch Creek EL covers a sequence of Middle Proterozoic sediments and volcanics (Tawallah Group) of the McArthur Basin sequence which flank the northern margin of the Early Proterozoic Murphy Metamorphic Inlier. A detailed description of the regional geology and metallogeny can be found in Ahmad and Wygralak (1989). The stratigraphic succession is summarized in Table 1 and is outlined below (after Pietsch et al 1994).

The Murphy Metamorphics are a sequence of isoclinally folded and greenschist facies metasediments which are conformably overlain by felsic volcanic/pyroclastic sequence (Cliffdale Volcanics), both of which are intruded by granite/adamellite of the Nicholson Granite Complex. The Cliffdale Volcanics are restricted to the south-eastern portion of the EL.

The igneous and metamorphic complexes of the Murphy Inlier are overlain with angular unconformity and disconformity by the Tawallah Group, the basal part of the McArthur Basin sequence.

The Westmoreland Conglomerate is the oldest unit of the Tawallah Group and
consists of a thick sequence (up to 1800m) of fluviatile arkosic conglomerate and quartz arenite. Permeable lithofacies within the Westmoreland Conglomerate host uranium mineralisation. The unit forms northwest trending dip slopes in the southern portion of the EL where it is largely confined to northwest trending fault zones.

The Seigal Volcanics outcrop throughout the majority of the licence area forming a northeast trending belt of tholliitic basic lavas with minor tuff interbeds which conformably overlie the Westmoreland Conglomerate. A thin (up to 20m) arenaceous and conglomeratic sequence called the Carolina Sandstone Member occurs as lenses within the Seigal Volcanics.

The McDermott Formation conformably overlies the Seigal Volcanics in the northwestern portion of the EL and is characterised by alternating beds of shallow-water marine arenites, shale and dolostone.

The McDermott Formation is conformably overlain by the Sly Creek Sandstone sequence which grades upwards into the glauconitic sandstones of the Aquarium Formation.

The entire Proterozoic sequence has undergone gentle flexuring and fault reactivation. The Phanerozoic records minor Cambrian and Cretaceous marine transgressions during which thin veneers of sediment were deposited.

Cretaceous siltstones and sandstones of the Mullaman Beds are scattered across the western and southern portions of the EL. Tertiary and Quaternary aged soil, sand and ferruginous detritus cover areas in the northern and western portion of the EL.

The Calvert Fault is a major northwest-trending wrench fault occurring in the south west corner of the EL.

### Table 1: Stratigraphy of EL 9318 - Branch Creek

<table>
<thead>
<tr>
<th>Cretaceous</th>
<th>Mullaman Beds</th>
<th>Siltstone, sandstone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Proterozoic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tawallah Group</td>
<td>Aquarium Formation</td>
<td>Glauconitic sandstone, shale and dolomite</td>
</tr>
<tr>
<td></td>
<td>Sly Creek Sandstone</td>
<td>Quartz arenite, conglomerate interbeds</td>
</tr>
<tr>
<td></td>
<td>McDermotts Formation</td>
<td>Arenite, dolostone, siltstone and chert</td>
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<tr>
<td></td>
<td>Seigal Volcanics</td>
<td>Basic lavas; sandstone and siltstone interbeds</td>
</tr>
<tr>
<td></td>
<td>Westmoreland Conglomerate</td>
<td>Quartz - feldspathic sandstone; conglomerate</td>
</tr>
<tr>
<td>Lower Proterozoic</td>
<td>Murphy Metamorphic Inlier</td>
<td>Clifdale Volcanics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nicholson Granite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dacite; rhyodacite and rhyolite</td>
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<tr>
<td></td>
<td></td>
<td>Coarse-grained porphyritic biotite granite</td>
</tr>
</tbody>
</table>
4. **PREVIOUS WORK**


5. **RESULTS OF EXPLORATION 05/11/97 TO 04/11/98**

Throughout the fourth year of tenure Rio Tinto continued negotiation for access to aboriginal freehold land immediately abutting the southern boundary of Branch Creek.

The proposed program for year four of tenure was not completed as planned due to the requirement to obtain access to the land immediately abutting the southern boundary of Branch Creek, to determine potential target areas.

It is anticipated that title over the aboriginal freehold will be granted in the next 12 months. Therefore, the planned program will be completed in the fifth year of tenure.

6. **REFERENCES**

Ahmad M. & Wygralak A.S., 1989. 1:250 000 metallogenetic map series explanatory notes and mineral deposit data sheets Calvert Hills SE53-8 NTDME/NTGS pub. NT Govt printer


7. **LOCATION**

Calvert Hills SE53-08 1:250,000
8. **KEYWORDS**

Diamonds, Uranium, Gold, Calvert Hills, Helicopter Spectrometry, Murphy Inlier, Proterozoic, McArthur Basin

9. **DESCRIPTOR**
