Fourth Annual and Final Surrender Report
For the Period 20 April 2012 to 10 March 2016
EL 23287 Blue Mud Bay 2 –
SD5307 Blue Mud Bay
Northern Territory

RTX Report No. 30327

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Rio Tinto Aluminium Limited
# BIBLIOGRAPHIC DATA SHEET

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<td>TENEMENT NUMBER/S:</td>
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<td>TENEMENT OPERATOR:</td>
<td>Rio Tinto Exploration Pty Limited</td>
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<td>TENEMENT HOLDER:</td>
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<td>20 April 2012 – 10 March 2016</td>
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<td>1:250,000 MAP SHEET:</td>
<td>Blue Mud Bay SD53-07</td>
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<td>Blane 6171</td>
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<td>Bauxite</td>
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1 SUMMARY

This is the Fourth annual and Final Surrender report for EL 23287 (Blue Mud Bay 2).

Exploration Licence EL 23287 (Blue Mud Bay 2) was granted on 20/04/2012 to Rio Tinto Aluminium Limited. This tenement was originally part of application ELA 1163 (Blue Mud Bay) and was split out as an application in its own right on the 27/06/2001 following the granting of a reconnaissance exploration permit by the Northern Land Council (NLC) under instructions from the traditional landowners in October 1998. EL 23287 was granted over an area of 107.1 km² (32 blocks) which is approximately 15% of the original application (ELA 1163).

A first relinquishment of 13 sub blocks was completed on the 2 October 2014.

Rio Tinto Exploration Pty Limited (RTX) has an agreement with Rio Tinto Aluminium Ltd whereby RTX manages and explores the licence areas. The main target mineral is bauxite.

The tenement is located approximately 120 km southwest of Nhulunbuy in north-east Arnhem Land and is processed under the Aboriginal Land Rights Act 1975 (ALRA).

Exploration conducted during the period 20 April 2015 to 10 March 2016 is the only field work conducted within the licence. This work which was completed in October 2015 included:

- Approximately 6km of mapping traverses
- 2 rock samples
- 4 hand auger holes with 6 samples collected.

The results show that there is a small area of preserved lateritic land surface however the material is very silica and iron rich with no evidence of bauxite being formed.

The results from the mapping and sampling are sufficient to downgrade the potential of this licence to contain any bauxite and hence it has been surrendered in full.
2 INTRODUCTION

Exploration Licence EL 23287 (Blue Mud Bay 2) was granted on 20/04/2012 to Rio Tinto Aluminium Limited. This tenement was originally part of application ELA 1163 (Blue Mud Bay) and was split out as an application in its own right on the 27/6/2001 following the granting of a reconnaissance exploration permit by the Northern Land Council (NLC) under instructions from the traditional landowners in October 1998.

EL 23287 was granted over an area of 107.1 km$^2$ (32 blocks) which represents approximately 15% of the original application (ELA 1163). A first relinquishment on 2 October 2014 reduced the remaining held licence to 19 sub blocks. The licence has subsequently been surrendered in full effective of 10 March 2016.

A Work Programme Meeting was held with the traditional owners on 10 July 2012. This consultation approved the exploration as presented, however this work was subsequently deferred. Another Work Programme Meeting to review the previous plan and re-endorse the work was held at Gan Gan on the 1st of October 2015.

3 TENURE STATUS

Exploration Licence EL 23287 (Blue Mud Bay 2) was granted on 20/04/2012 to Rio Tinto Aluminium Limited. It lies within Arnhem which is subject to the *Aboriginal Land Rights Act 1975* (ALRA). Tenement details are listed in Table 1 below.

<table>
<thead>
<tr>
<th>Tenement No.</th>
<th>Tenement Name</th>
<th>Ownership</th>
<th>Grant Date</th>
<th>Surrender Date</th>
<th>Area Granted (blocks)</th>
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<td>EL23287</td>
<td>Blue Mud Bay 2</td>
<td>Rio Tinto Aluminium Limited</td>
<td>20/04/2012</td>
<td>10/03/2016</td>
<td>32</td>
<td>19</td>
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4 LOCATION AND ACCESS

EL 23287 is approximately 16km east of the community of Gan Gan and 120km southwest of Nhulunbuy in northeast Arnhem Land, Northern Territory. Access is via the Central Arnhem Highway. Permits from the NLC are required to access this area.

Figure 1 Location of EL 23287 – Blue Mud Bay 2
5 GEOLOGY

The geology of the area consists mostly of poorly outcropping lateritised weathering surfaces and recent alluvial cover in low flat valleys. Basement rocks which crop out to the west near Gan Gan are Proterozoic sediments (sandstones) of the Parsons Range Group. Laterite occurs in patches which is interpreted to be formed on Cretaceous formations that are potentially equivalent to those on which the Gove bauxite deposit is formed.

Figure 2 Left image geology (from 1:250,000 Blue Mud Bay SD5307 sheet). Right image is the same area showing the digital terrain model. (Black outline is EL 23287 as granted)
During the Tertiary period, the region underwent extensive lateritisation resulting in bauxite development such as that seen at Gove. While several occurrences of bauxite have been recorded in the east Arnhem area, further large economic deposits outside of the Gove mine site have not been discovered.

6 GEOMORPHOLOGY

The area consists of a low flat surface (~45m RL) that grades into drainage channels leading to low-swamp areas (~0m RL) in the south-eastern corner of the tenement. There are several small isolated hills and ridges which consist of laterite (see figure 2 for the digital terrain model).

Figure 3  Left image  Lansat TM band 742. Right image is the same area showing the radiometric thorium response as a grey scale image
7 GEOPHYSICS

The project area is covered by a regional scale aeromagnetic survey flown for the NTGS in 1990-92 (Rawlings et al., 1997). The radiometric data can be used to help distinguish the laterite-covered areas from those of both basement and Quaternary sand cover. This method however does not readily distinguish between bauxitic and non-bauxitic laterite.

Digital terrain data has been acquired and processed to assess areas for plateaus that may be prospective for bauxite. The Blue Mud Bay license contains slightly elevated areas that are interpreted as a remnant lateritic surface, which is the main target area. Although these areas are too small to represent a significant target for bauxite, they may help in understanding the broader regional potential.

8 PREVIOUS EXPLORATION

There have been two periods of exploration in this area. The first was part of the 1960’s BHP work which was focused on exploring for manganese and bauxite. The second period was by RTX under a reconnaissance permit from the NLC. No significant mineral occurrences have been located.

Table 2: Previous Exploration Summary

<table>
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<tr>
<th>Year</th>
<th>Company</th>
<th>Tenement</th>
<th>Exploration Completed</th>
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<td>1998</td>
<td>RTX</td>
<td>ELA 1163</td>
<td>Stream sampling and rock sampling</td>
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9 EXPLORATION ACTIVITIES DURING THE REPORTING PERIOD

The work programme completed in October 2015 included mapping traverses, rock sampling and hand auger sampling on elevated areas that were interpreted as remnant preserved laterite on Cretaceous sediments.

A total of two surface rock samples, six soil auger samples and approximately six line km of mapping were completed (see figure 4). The work was targeted at higher, elevated areas which were interpreted to have remnant laterite preserved.

The results showed the highest auger soil sample assay to have only 22% Al₂O₃ with high 35% SiO₂. The rocks samples had very low Al₂O₃ (10%), high Fe₂O₃ (47%) and silica (36%). The assay results confirm the observations that the laterite that is preserved and is developed on a quartz rich gritstone and sandstone (see figure 8) which had low original alumina.
The mapping and sampling confirmed that the geological interpretation of preserved laterite (interpreted from landforms and radiometrics) was correct but the underlying Cretaceous sediments are not aluminous and hence bauxite did not form.

Figure 4 Location of sampling (rock and auger) and mapping shown on the 1:250,000 base map with the elevation model used to show the higher ground
**Figure 5** Location of sampling (rock and auger) and mapping at the northern end of the license shown on the 1:250,000 base map with the elevation model used to show the higher ground. Note the brown line (lateritised sandstone and grit stone) is restricted to the flat topped elevated ground.
Figure 6 Photo showing the auger that was used to investigate the sub surface geology. This location is at sample number 10249152

Auger sample piles (sample numbers 10249153 and 10249154)

Example of the sample material from the auger (sample number 10249154. Depth of sample is 2m. Note the white clay material indicating the base of the laterite

Figure 7 Photo showing the auger sample piles and the material in detail
Example of the general landscape on the flat topped laterite surface.  

Ferruginised (lateritised) rock sample from the northern end of the licence. Sample number 10249157

**Figure 8** Photos showing the landscape on the lateritised plateau and the example of ferruginised quartz rich gritstone.

**10 FUTURE WORK**

This license has been surrendered in full.
11 REFERENCES


Hartshorn, G., 2013 First Annual Report For the Period 19 April 2013 to 18 April 2014 EL 23287 Blue Mud Bay 2 – SD5307 Arnhem Bay Northern Territory RTX Report No. 29469


LOCALITY

Blue Mud Bay SD5307 1:250 000
Appendix 1

Data files for the geochemical surface samples