



Rio Tinto Exploration Pty. Limited

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A member of the Rio Tinto Group

Combined Annual Report (Cato Project)
For the Period 14 October 2008 to 13 October 2009
EL 4170 Cato Plateau & EL 4171 Cato River
Gove Special SD 5304
Northern Territory

Exploration Report No. 28595

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No.	Title	File Name
1	BHPB Report on manganese exploration	Various
2	CatoEast Drill hole data	Catoeast_2009_A_drillcollars.txt Catoeast_2009_A_lithology.txt Catoeast_2009_A_downholegeochem.txt

LIST OF PLANS

Plan No.	Title	Scale
pAI07_011	Tenement Location Plan	1:250 000
WAp46452	Location of Cato Plateau on Digital Terrain Model Image	1:150 000
pAI09_009	Vacuum drill hole locations	1:10 000
pAI09_010	Vacuum drilling showing holes with high Al ₂ O ₃	1:25 000
pAI09_011	Location of rock samples	1:10,000

1. SUMMARY

Exploration Licence (EL) 4170 Cato Plateau and EL4171 Cato River were applied for by BHP Minerals Pty Ltd (BHP) on 3 October 1982. EL4170 was granted on 14 October 2004, EL4171 was granted on 12 September 2005. Rio Tinto Exploration Pty Limited (RTX) signed an agreement with BHP on 27 March 2000 whereby RTX took over management and ownership of the tenements. An amendment to this agreement was signed on 21 December 2007 which gave Rio the rights to explore and mine for bauxite and BHPB the equivalent rights to manganese. The original EL4170 tenement application covered an area of 593.5km² of which only 57.0km² was granted. The remainder of the area was split off into a new application, EL24389 and put into moratorium. The original EL4171 tenement application covered an area of 846.0km² of which 598.2km² was granted with the remaining areas split off into new applications (ELA24829 and 24830). The tenements are located 30km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA). Combined reporting of EL4171 and EL4170 was granted on 3 August 2007, and called the 'Cato Project'. The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is considered prospective for bauxite and manganese.

This combined annual report describes the exploration completed during the fifth tenure year of EL4170 and the fourth tenure year of EL4171.

Exploration was conducted by both Rio Tinto for bauxite and BHPB for manganese. The simultaneous activities form part of the amended 2007 agreement. By far the most activities conducted during the year were by BHPB focussed on manganese. The details of this work including raw data and recommendations are in the report by BHPB in appendix 1.

The Cato Project covers a spur of the Cato Plateau, which is a known area of bauxite of similar style to the nearby world class Gove deposit. It also covers extensions of subtle, coastal plateaus and a small isolated plateau. The area is also prospective for manganese.

Exploration for bauxite was limited during the year to the completion of the drilling on the Cato East Plateau (EL4170) and collection of 20 rock samples within EL4171.

A total of 310.5 metres in 52 vacuum drill holes were conducted on the Cato East plateau. These holes targeted pisolitic bauxite on a remnant outlier of the main Cato Plateau. The results of the drilling confirmed the presence of bauxite however all holes were high silica (>15% SiO₂). Assay results for the rock samples collected on EL4171 have not been received to date

Manganese work by BHPB included a small EM survey and drilling of 21 RC holes.

2. CONCLUSIONS AND RECOMMENDATIONS

- The Cato East Plateau is of limited area (approx. 2.9km²) and is covered by pisolitic bauxite of similar origin to the Cato and Gove plateaus.
- The drilling of the Cato East Plateau showed the bauxite profile to be approximately 3 metres thick forming on sediments of the Yirrkala.Fm.

- The bauxite of the Cato East plateau has a grade typically of 42% Al₂O₃ , 21% SiO₂ and 12% Fe₂O₃ and 22%LOI.
- The total tonnage potential of material over 40% Al₂O₃ on the Cato East Plateau is approximately 5 million tonnes.
- The Cato East plateau area should be retained and consideration given to conducting tests for potential to upgrade the material by sieving.
- Conclusions and recommendations for the manganese exploration are contained in the BHPB report located in Appendix 1

3. INTRODUCTION

Exploration Licence (EL) 4170 Cato Plateau and EL4171 Cato River were applied for by BHP Minerals Pty Ltd (BHP) on 3 October 1982. EL4170 was granted on 14 October 2004, EL4171 was granted on 12 September 2005. Rio Tinto Exploration Pty Limited (RTX) signed an agreement with BHP on 27 March 2000 whereby RTX took over management and ownership of the tenements. An amendment to this agreement was signed on 21 December 2007 which gave Rio the rights to explore and mine for bauxite and BHPB the equivalent rights to manganese. The original EL4170 tenement application covered an area of 593.5km² of which only 57.0km² was granted. The remainder of the area was split off into a new application, EL24389 and put into moratorium. The original EL4171 tenement application covered an area of 846.0km² of which 598.2km² was granted with the remaining areas split off into new applications (ELA24829 and 24830) The tenements are located 30km west of Nhulunbuy, east Arnhem Land and consequently are processed under the Aboriginal Land Rights Act 1975 (ALRA). Combined reporting of EL4171 and EL4170 was granted on 3 August 2007, and called the 'Cato Project'. The Cato Project forms part of the larger contiguous tenement package in east Arnhem Land, which is considered prospective for bauxite and manganese.

Tenement details are included in Table 1 below. The tenement is located on Plan pAI07_011.

Table 1: Tenement Details

Tenement No.	Tenement Name	Owner /ship	Application Date	Grant Date	Blocks Applied	Blocks Granted
EL4170	Cato Plateau	RTX	3/12/1982	14/10/2004	182	29
EL4171	Cato River	RTX	3/12/1982	12/09/2005	264	208

4. PREVIOUS EXPLORATION

Previous exploration over this area is described in Report 13 of the Northern Territory Geological Survey (Ferenczi, 2001).

New Guinea Resources drilled 19 auger holes in the northern end of the Cato Plateau and concluded that most of the bauxite had been eroded off. In 1966 BHP drilled 89 auger holes for a total of 778m into the Cato Plateau to test the area for bauxite. Of these, only six holes are located within EL4170. The BHP data (Chestnut et al., 1966) shows that there is patchy bauxite

within the plateau however the silica values are generally high and the recoverable (ABEA) alumina is low. No further work has been conducted in the area since the late 1960's.

RTX completed a series of auger holes (10 holes) in late 2004 to try and replicate the original BHP data (Hartshorn, 2005). Drilling in 2007 focused on the western edge of the Cato plateau and subtle elevated areas in the southwest of EL 4171 (Pankhurst and Hartshorn, 2007).

Table 2: Previous Exploration Summary

Year	Company	Tenement	Exploration Completed
1955	New Guinea Resources Prospecting Ltd	?	19 auger holes
1966	BHP Ltd	PA 1138	Bauxite exploration including the Cato Plateau area. 89 auger holes of which 6 are within the granted EL 4170 area.
2004	RTX	EL 4170	Auger drilling of small part of the Cato Plateau.
2007	RTX	EL 4171	Aircore drilling of the western edge of Cato plateau

5. GEOMORPHOLOGY

The Cato Project lays within the Arafura Fall physiographic sub division between the western shore of Melville Bay, and the eastern shore of Arnhem Bay (Rawlings et al., 1997). Most of the granted tenement is low lying (<50m elevation) and includes the Cato River, and tributaries of the Cato and Giddy Rivers. A spur of the Cato Plateau extends 4km across the centre of EL4170, and another spur extends 3km into EL4171 from the east. A small isolated plateau has steep breakaways and a flat top at an elevation of approximately 100m. In the south west of EL4171 two spurs of a subtle, coastal plateau extend northwards.

6. GEOLOGY

The geology of the project area consists of Cretaceous sedimentary units (Yirrkala Fm) and younger Quaternary gravels and silts (Rawlings et al., 1997). The Yirrkala Fm consists of poorly sorted siltstone-sandstone units, which have a generally flat dip. This formation has undergone intense weathering to produce a lateritised land surface that in places is bauxitic. The laterite forms a flat topped plateau that has sharp breakaways at its margin.

Manganese of a similar style to Groote may occur on the Cretaceous unconformity.

The basement to the Cretaceous in the project area is either the Palaeoproterozoic Bradshaw Complex or similar age granite.

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.

Digital terrain data has been acquired and processed to assess areas for plateaus that may be prospective for bauxite. The Cato Plateau is clearly defined as a gently south-westerly dipping flat surface of approximately 100km² in area (Plan WAp46452). Less than 10km² of the Cato Plateau lies within the granted exploration licences of the Cato Project.

A small isolated eroded remnant of the Cato plateau was recognised in the north of EL 4170. This small plateau area covers about 3km² and is the focus of the 2008-9 bauxite work programme.

BHPB conducted an airborne EM survey (Fugro 25Hz TEMPEST) over a part of EL 4171 to explore for conductive manganese bodies. This survey covered 115km² with a total of 654 line kilometres. The details of the survey and data are included in the BHPB report within appendix 1.

8. EXPLORATION COMPLETED DURING REPORTING PERIOD

Exploration completed during the reporting year consisted of bauxite work by Rio Tinto for bauxite and BHPB for manganese. The bauxite work included :

- Vacuum drilling 52 holes for a total of 310.5m.
- Assaying drill hole samples by XRF on 0.5m intervals for a total of 697 assays including duplicates and standards.
- Collection of 20 rock samples within EL 4171.

The manganese work is described in appendix 1 and included;

- EM Survey over 115km² for 654 line kilometers
- Drilling of 21 RC holes for a total of 954m.

8.1 Bauxite Drilling

Bauxite drill Targets tested during this period

The 2008-9 field programme was focused testing a small outlier of the Cato Plateau name Cato east (see plan pAl09_009). This target is limited in size (approximately 2.9km²) and therefore only has limited tonnage potential.

Drilling techniques and assaying

Drilling of the Cato East target was conducted using the vacuum drill owned and operated by Yearlong drilling based in Perth, WA. This company was conducting resource drilling at Gove during 2008 and the same techniques were applied to the Cato East target. The vacuum drill has the advantage of being mounted on a 4WD tractor and therefore has the ability to operate with minimal disturbance.

Drilling was conducted on traverses across the plateau at a spacing of approximately 100m between holes.

Sampling was conducted on 0.5 metres intervals with field duplicates every 20 samples and an RTX standard inserted every 50 samples. Samples were sent to ultratrace laboratories in Perth for analysis by XRF for their standard bauxite suite.

Results

The results from the vacuum drilling show that the bauxite is pisolitic in texture however it is very high in silica. A total of 25 out of 52 holes returned alumina grades of greater than 40% over more than 1 metre thickness, these holes are shown on plan pAI09_010. The profile typically consists of approximately 0.5m of soil, 2-3m of poorly cemented pisolitic bauxite and then clay rich mottled saprolite. The assay results show that the bauxite is still high in clay and not as well developed as at Gove. The typical ferruginous ironstone at the base of the profile seen at Gove is not well developed at this prospect.

Table 3: Best two Results from Vacuum Drilling Programme

Hole ID	Depth from (m)	Depth to (m)	Interval (m)	Al ₂ O ₃ (av. %)	LOI (av. %)	SiO ₂ (av. %)	Fe ₂ O ₃ (av. %)
VM08CE037	0.5	3.0	2.5	45.6	22.4	16.3	12.5
VM08CE026	0.5	3.0	2.5	44.0	20.6	21.4	11.0

(Cut Off 1 metre @ 40% Al₂O₃)

Discussion of results and implications for future exploration

The Cato East plateau is a small outlier of high silica low grade bauxite of a similar type to that developed at Gove. The results show that there is no low silica crude ore within the plateau. The potential for sieving and washing to lower the silica and upgrade the alumina was not investigated. Sieving may upgrade the material however the fairly soft nature of the drilled material would suggest this may not work particularly well. There is a limited total potential of approximately 5mt of crude bauxite at 40% Al₂O₃. This is interpreted from the area of positive drill holes and a thickness of 3 metres. This limited total potential tonnage means that any washed product would be less and hence the potential of the Cato East plateau is limited.

8.2 Grab Sampling

A total of 20 grab samples were collected from a target area within EL4171. These samples were collected along the Mata Mata access road and were focused on an area with an elevated thorium response over suspected Yirkkala sediments.

The samples were sent for analysis at Ultratrace in Perth with the results pending.

9. ENVIRONMENT

Rio Tinto exploration conducted their drilling under a separate EA (Environmental Authorisation) to the work conducted by BHPB. All tracks used by RTX were rehabilitated and an

environmental audit conducted by the Northern Land Council. The BHPB work is described in their report in appendix 1.

10. EXPLORATION EXPENDITURE

The exploration expenditure details attributed to the project by RTX for the fifth year of exploration are contained in the Northern Territory Exploration Expenditure for Mineral Tenement accompanying this report.

11. PROPOSED EXPLORATION

Proposed expenditure for the next year will be \$50,000 comprising:

- Meetings with Traditional owners and clearance surveys
- Possible in fill vacuum drilling for bauxite
- Manganese exploration that will be reported by BHPB as part of the simultaneous exploration activities.

REFERENCES

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- Rawlings, D.J., 1997, 1:250 000 Geological Map. Explanatory Notes. Arnhem Bay Gove SD5303-04, Northern Territory Geological Survey.
- Pankhurst M., Hartshorn G., 2007, Combined Annual Report For Period Ending 13 October , 2007, EL 4170 Cato Plateau, Gove SD5304, Northern Territory. RTX Report Number 28208.

LOCALITY

Gove

SD 5304

1:250 000

LIST OF DPO'S

DPO	No. Sample	Sample Range	Laboratory
204654	661	6782451 - 678295 6787901 – 6787961 6788851 – 6788950	Ultratrace – Perth
204659	20	10043861 - 10043880	Ultratrace - Perth

DESCRIPTOR

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KEYWORDS

Gove, bauxite, vacuum drilling, grab samples, manganese, Cretaceous, BHP Billiton.

APPENDIX 1

BHP Billiton Manganese exploration report including:

raw data files

verification report

APPENDIX 2

Vacuum Drilling Results

Catoeast_2009_A_01_drillcollars.txt

Catoeast_2009_A_02_lithology.txt

Catoeast_2009_A_03_downholegeochem.txt

