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Rio Tinto Exploration India Limited

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A member of the Rio Tinto Group

Final Relinquishment Report for Exploration of the Nuapada Reconnaissance Permit (RP 50) Orissa, India

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SUMMARY

This is the Final Relinquishment report on the exploration for diamond and other mineral commodities carried out on the Nuapada Reconnaissance Permit (Nuapada RP), executed on 29/04/2005, for the period 29/04/2005 to 28/04/08, in compliance of Section 16 of the Mineral Concessions Rules, 1961.

As per the requirements of the MMRD Act and as per a letter addressed to the DMG Orissa dated 27th April 2007, about 50% of the permit was relinquished relinquished with only 392 km^2 of the original 798 km^2 permit area was retained for the 3rd year of exploration. (Refer to plan NDbg0799).

Exploration completed including over 171 heavy mineral gravel samples and 54 –80# stream sediment geochemical samples and 2557 soil samples collected at a nominal spacing of one sample per 7 to 25 square kilometres providing for regional coverage over 798km2 of the permit area. To facilitate the exploration over the Reconnaissance Permit (RP), airborne geophysical data were purchased from the Orissa State Government. This survey was flown by World Geoscience in the early 1990's at a nominal line spacing of 250m at a mean terrain clearance of 80m. Airborne geophysical data included total field and reduced-to-pole (RTP) magnetics which was interpreted in house to identify areas of interest which could be attributed to any kimberlite intrusive signature. RTEI also conducted 2542 line km of ground geophysical surveys.

20200 heavy mineral grains recovered from the gravel samples were subsequently analysed for major oxide elements by manual and automated scanning electron microprobe. Mineral chemistries of the indicators identified a few anomalous catchment areas with probable deep mantle sources, where as majority of the area returned indeterminate or crustal chemistries. The anomalous catchments were then followed up by prospecting, soil sampling and ground magnetic survey. While a few dyke like lamproitic/kimberlitic bodies and floats were discovered by prospecting, geophysical survey also identified a few concealed targets which were tested by drilling. A total of 9 lamproitic/kimberlitic bodies and dykes were discovered at the end of exploration. All are found to be intrusive into the Bundeli granitoids in the Bastar craton.

Caustic fusion results from these kimberlites/lamproites returned very few micro-diamonds.

INTRODUCTION

This is the final relinquishment report which incorporates all exploration activities carried out by RTEI in the Nuapada RP during the period of 29th April 2005 to 28th April 2008.

Summaries of exploration activities during this period are detailed in table 1. This report compliments previous biannual report including:

- ACC Rio Tinto Exploration Limited (October 2005); 1st Bi-annual Progress Report for Exploration of the Nuapada Reconnaissance Permits For the period 29/04/2005 to 29/10/2005.
- Rio Tinto Exploration India Limited (April 2006); 2nd Bi-annual Progress Report for Exploration of the Nuapada Reconnaissance Permits For the period 29/10/2005 to 29/04/2006.
- Rio Tinto Exploration India Limited (October 2006); 3rd Bi-annual Progress Report for Exploration of the Nuapada Reconnaissance Permits For the period 29/04/2006 to 29/10/2006.
- Rio Tinto Exploration India Limited (April 2007); 4th Bi-annual and Part Relinquishment Report for Exploration of the Nuapada Reconnaissance Permits For the period 29/10/2006 to 29/04/2007.
- Rio Tinto Exploration India Limited (October 2007); 5th Bi-annual Progress Report for Exploration of the Nuapada Reconnaissance Permits For the period 29/04/2007 to 29/10/2007.

The above reports have been submitted with the relevant government institutions and are further archived with Rio Tinto in Bangalore.

Name (District)	Granted RP Area km^2	Date of Execution	Heavy Mineral Samples	Heavy Mineral grains recovered	Geochemical Samples	Geophysics (line kms)	Drilling (meters)
Nuapada RP	Granted798 Retained 392	29 April 2005	171	20200	54 stream sediments 2557 Soil	G-Mag -2510 EM survey – 32.2	1181

Table 1: Summary of exploration completed by RTEI in the Nuapada RP

1 GEOMORPHOLOGY

The area exhibits diverse topography. It can be divided into

a) The pediplained rolling granite gneiss country with the elevation varying between 280 – 300 m, which covers most of the tenement.
b) Mounds of granite gneiss, occurring at times as tors/pediment rising between 450 – 640 m over the pediplains.
c) The southwestern margin shows tableland topography of the Chattisgarh sediments with elevation varying from 500 to 970m.

The drainage is regionally NE flowing and is controlled by the Jonk River, a main tributary to the Mahanadi River. Jonk flows along the western boundary of the main block of the tenement.

2 REGIONAL GEOLOGY

The regional geology of the area has been established by the systematic geological mapping carried out by the Geological Survey of India. Our source of information includes the 250,000 scale published geological maps by the GSI and discussion with GSI geologists. The Archean-Palaeoproterozoic Bundeli Granitoids batholith (also called Dongargarh Granitoid elsewhere in the Bastar Craton) occurs in the western part of the area. The granitoid intrude into Archean Baya Gniessic Complex (also known as Bengpal Gneissic Complex elsewhere in the Bastar Craton), enclaves of which are found within the batholith. The granitoids show magmatic fabrics including plagioclase phenocryst alignment, magmatic flow orientation, K-feldspar megacrysts and occasional rapakivi texture. Incipient gneissic fabric with weak development of steeply dipping N-S trending S-plane is characteristically present. Major ductile and brittle shear zones along N-S planes are also observed. Multiple phases of Proterozoic dolerite dykes swarms have intruded within the crystallines of Bastar Craton.

The subhorizontally disposed, mildly deformed sediments of Chattisgarh Supergroup were deposited in a number of isolated basins in the Meso- to Neoproterozoic times. The sediments are multiple cycles of sandstone, shale and limestones lying unconformably over the Archaean-Paleoproterozoic rocks of Bastar Craton. These sediments are represented by the formations of Khariar basin in and contiguous RP area.

3 RESULTS OF EXPLORATION

3.1 Collation of Available Database

RTEI has procured all the available 250,000 scale geological maps of the RP area from the Geological Survey of India (GSI) and topographic maps from the Survey of India (SOI). Other available and published geological, geophysical and land information data from GSI and other agencies were also collated. Some of the data have been appropriately geo referenced and stored in the digital format for incorporation into a GIS database of the area. Other data purchased and processed include the Landsat TM data, IRS digital data and airborne magnetic survey data (from DGM, Orissa). In-house interpretation of these datasets and images for geology, structure and regolith terrain mapping have helped in planning the exploration.

3.2 Geology

Geological traversing in combination with other exploration activities has found the regional 1:250,000 geological mapping of the GSI to be accurate and sufficient for the interpretation of most of the regional and prospect datasets. A compilation geological plan has been presented in NDbg0800.

The RP area comprises of geological formations ranging from Archaean to Proterozoic. Stratigraphically the area can be classified into oldest Baya gneiss (basement), undifferentiated granitoids of Bastar craton, Eastern Ghats Mobile Belt and rocks of Chattisgarh Supergroup.

Baya Gneissic Complex: These are parts of Bastar Craton and are oldest known rocks (age 3.5 billion years) in the area, which are mainly exposed towards north and north-western part of the RP. Also known as Bengpal Gneissic Complex elsewhere in the Bastar Craton. Enclaves of Baya Gneisses are found within the Bundeli batholith in the RP area. The gneissic complex varies from tonalitic to granodioritic in composition with restites predominantly of amphibolite, metaultramafite and banded hematite quartzite, fibrolite quartzite, fuchsite quartzite, mica schist etc. These gneisses are traversed by aplites, leucogranite and pegmatites. The preserved structure of earlier deformation phase higher metamorphic grade separates it from the Sonakhan schist belt. (Das 1990)

Undifferentiated granitoids: Bastar Craton is a greenstone-granite province where greenstone components occur as enclaves within oldest dated tonalite gneiss (3.5 to 3.0 Ga, Rb-Sr and Pb-Pb) (M Hussain 2004), and younger greenstone belts intruded by batholithic granites dated between 2.6 and 2.4 Ga (Rb-Sr and Pb-Pb) (Sarkar 1989). The Archean-Palaeoproterozoic Bundeli Granitoids batholith (known as Dongargarh Granitoid elsewhere in the Bastar Craton) occurs in the western part of the area. The granitoid intrude into Archaean Baya Gneissic Complex (also known as Bengpal Gneissic Complex elsewhere in the Bastar Craton), enclaves of which are found within the batholith. Coarse-grained porphyritic granite, biotite granodiorite, quartz rich leucocratic granite metasomatic granite and granophyres are the major rock types in the RP area.

Eastern Ghats: The Eastern Ghats Mobile belt occupies the south-eastern part of the RP. The granite-greenstone belts of the Singhbhum-Orissa Craton bound this granulite belt to the north and Bastar craton to the west. The western extents of the Eastern Ghats Mobile Belt characterised by 2-pyroxene granulites, khondalites, leptynites, enderbites and charnockites, occurs in the eastern part of the tenement. The contact with the Bastar Craton is somewhat irregular and gradational, however is considered to be a thrust contact with the EGMB thrusted over the Bastar Craton.

Khondalite suites of rocks are the major components found along the western contact; however mafic-ultramafic complexes, series of alkaline rocks and massif anorthosites also form part of the Eastern Ghat orogeny. The shear zone is characterised by mylonitic foliation and stretching lineation. (Bhattacharya et al 2005).

Proterozoic Rocks Of Chattisgarh Supergroup: Platformal sediments of the Chattisgarh Supergroup occupy the SW part of the area. These sub-horizontally disposed, mildly deformed sediments were deposited in a number of isolated basins in the Meso- to Neoproterozoic times. The sediments are multiple cycles of sandstone, shale and limestones lying unconformably over the Archaean-Palaeo-Proterozoic rocks of Bastar Craton. In the Nuapada RP,

the platformal basin is known as Khariar Basin. As such the Khariar Basin does not expose any intrusive activity within the sediments, however kimberlites of South-eastern Raipur (or Mainpur) and Kimberlitic Field in bordering Chhattisgarh exhibit xenoliths of Khariar sediments.

Intrusive, in general: According to Mukhpadhyay et al, 2004, 13 types of dykes have been reported in this area, which include dolerite, gabbro, harzburgite, lherzolite, rhyolite porphyry, analcime syenite, quartz syenite, trachyte, micro monzonite, micro monzosyenite (Nanda et al 2000) and olivine basalt dyke at Parkom. These dykes exhibit various width and length varying from 20m and 2.5 km and represent N-S to NNE- SSW trend.

Darrimunda Intrusives: These have been mostly discovered by GSI. 8 dykes trending NS; NNE-SSW in this cluster varies from 25-200m in width and 2-10m in length. These macrocrystic rocks are composed mainly of pseudomorphs of olivine macrocrysts and completely chloritised phlogopite with rutile apatite and RE phosphate as accessories, quartz, chlorite as secondary and pyrite, magnetite as traces.

Amlidadar Intrusives: These macrocrystic rocks have also been discovered by the GSI. The Amlidadar intrusives have pseudomorphs of olivine macrocrysts and phlogopite, diopside as groundmass, aegerine ilmenite occurs as minor phases, quartz and calcite as secondary mineral.

3.3 Reconnaissance Heavy Mineral (Gravel) Sampling

A total of 171 gravel samples have been collected from active drainages with catchments ranging from 5 to 25km^2 area.

Each gravel sample comprised approximately 20kg to 30kg of –1mm sand collected by hand from heavy mineral concentration zones within the active stream sediment bed load. All samples are processed at the company's specialist processing facilities by dense media separation, magnetic and heavy liquid techniques with mineral concentrates manually observed for any potential kimberlitic indicators.

The following table gives an analysis of observation and major oxide SEM mineral chemistries (table 2) of kimberlitic indicator minerals in the gravel samples collected from the RP area.

Detailed SEM major oxide results for all heavy mineral indicators are listed appendix 4.

Table 2: Summary of kimberlitic indicator minerals and positive samples based on major element oxide SEM data from regional gravel samples.

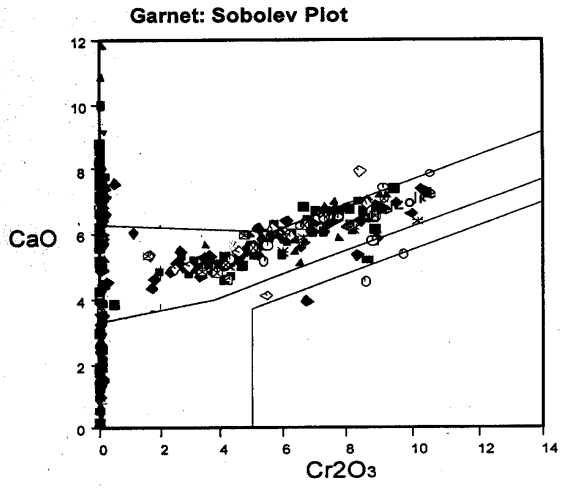
	Pyrope	Mantle Chromite	Picro Ilmenite	Chrome Diopside
No of grains	0	6956	0	0
Maximum grain count	0	1120	0	0
No of positive samples	0	70	0	0
% of positive samples	0%	41%	0%	0%

3.3.1 Heavy Mineral Sample Diamond Results

2 micro diamonds were identified on caustic fusion of heavy mineral concentrates and 1 microdiamond was identified on caustic fusion of a kimberlitic intrusive.

3.3.2 Heavy Mineral Sample Garnet Results

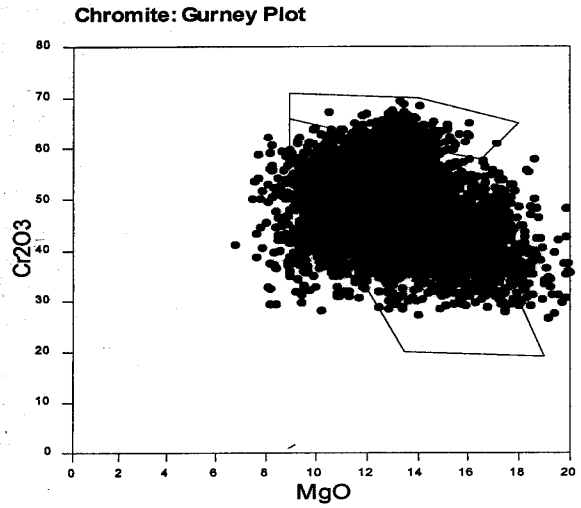
All garnet grains recovered from heavy mineral sampling tested by SEM probe returned no kimberlitic pyropes in any of the samples. However, surface sampling for indicator minerals over geophysical targets/lamproites returned few lherzolitic pyropes (refer plot below).



3.3.3 Heavy Mineral Sample Chromite Results

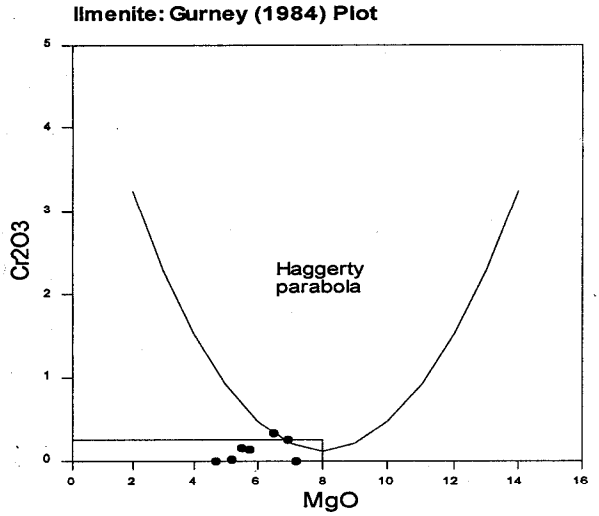
Mineral chemistries of probed chromite grains are predominantly consistent with a shallow magmatic paragenesis, with one fractionated trend centred on approximately 40-60% Cr_2O_3. The population exhibit

variable MgO of 0-20% with the higher MgO varieties overlapping into the fields of mantle-sourced chromites.



3.3.4 Heavy Mineral Sample Ilmenite Results

Probing of ilmenite grains in samples did not identify any kimberlitic Picro ilmenite.



3.3.5 Heavy Mineral Sample Chrome Diopside Results

No chrome Diopside was identified from the observation of heavy mineral concentrates.

3.4 Geochemical Exploration:

43 stream sediments and 2311 soil samples of ~150gm each sieved to -80# size has been collected from different soil horizons from streams and over the airborne and ground-geophysical targets that had been generated by geophysical survey. These samples were analysed for lithophile, chalcophile and kimberlitic compatible and incompatible elements. Samples were analysed for a total of 38 elements by total acid digest and ICP-OES and ICP-MS (*=ICP-MS) techniques. Elements analysed and detection limits are as follows: Ag* (0.1 ppm), Al (10 ppm), As* (0.5 ppm), Ba (10 ppm), Bi* (0.1 ppm), Ca (10 ppm), Cd* (0.1 ppm), Ce (0.5 ppm), Co (2 ppm), Cr (2 ppm), Cs (0.1 ppm), Cu (2 ppm), Fe (100 ppm), Ga (0.1 ppm), K (10 ppm), In (0.05 ppm), La (0.5 ppm), Mg (10 ppm), Mn (5 ppm), Mo* (0.1 ppm), Na (10 ppm), Nb* (0.1 ppm), Ni (2 ppm), P (5 ppm), Pb* (0.5 ppm), Rb (0.1 ppm), Sb* (0.5 ppm), Se (0.5 ppm), Sr (2 ppm), Te (0.2 ppm), Ta (0.2 ppm), Ti (10 ppm), Tl (0.1 ppm), V (2 ppm), W* (0.1 ppm), Y (0.05 ppm), Zn (2 ppm), Zr (10 ppm). Complete assay results are listed in Appendix 2.

3.4.1 Stream Sediment Geochemical Results

54 Stream sediment samples were collected within anomalous catchments, from the first and second order streams. No base metal anomalism is defined in the area. The analysis of stream sediment samples appears to be concurrent with the regional geology. Summary statistics of the stream sediment samples are listed in the table 3 and sample locations are given in Plan NDbg0801

3.4.2 Soil Geochemical Results

2557 soil samples over various airborne and ground geophysical targets were collected. The analysis of soil samples collected over the targets revealed some anomalous area while others appear to be concurrent with the regional geology. Summary statistics of the soil samples are listed in the table 4 and sample locations are given in Plan NDbg0802.

3.5 Ground Magnetics:

2510 line kms of ground magnetic survey had been carried out in the RP area (refer map Ndbg0804).

3.6 E-M survey:

32.2 line kms of EM survey was carried out in the RP area.

4 DIAMOND DRILLING

Core drilling for target testing had been carried out in the RP as a part of exploration program. A tractor mounted drill had been supplied by Soil Tech Pvt. Ltd; which is capable of drilling shallow holes (~50m HQ, 150m NQ). 1181 meters of drilling was done to test various airborne, ground geophysical and geochemical anomalies within the RP area. 2 outcropping Kimberlites/lamproites were also tested. (Drill hole details and Kimberlite/lamproite locations are given in appendix 5)

5 KIMBERLITE/LAMPROITE

Primary indicator mineral sampling, identified the anomalous catchments with abundant kimberlitic indicators mainly chromite. Further samples were collected in the upstream side of the anomalous catchments which narrowed down the area of interest. These catchments were then followed up by ground magnetic survey, soil geochemical sampling, geological mapping and drilling. The process led to the discovery of 9 lamproitic/kimberlitic bodies which occurs mostly as small dykes intruded into the granite-gneiss. Samples were sent to the laboratory for analysis for presence of micro diamonds. One diamond was recovered from one of the kimberlites.

6 RECOMMENDATIONS / PROPOSED EXPLORATION

The reconnaissance programme has identified certain prospective areas within the RP area in terms of possibility of occurrences of Kimberlite/lamproite rocks. This warrants a more detailed exploration and prospecting. 4 PL applications totalling 95 km^2 are proposed at the end of the RP tenure for further studies.

Applied for PL

7 HEALTH, SAFETY, COMMUNITY RELATIONS AND ENVIRONMENT

Rio Tinto recognizes that excellence in managing health, safety, environment and community responsibilities is essential to long-term success. Through effective management practices the Group aims to ensure the health and safety of its employees, to minimise any adverse impacts its activities may have on the environment and to establish mutually beneficial relationship with local community.

7.1 Health and Safety

Rio Tinto Group policies on Health and Safety are designed to minimise the risk of injury or occupation illnesses. A minimum management requirement at all of the company-managed operations is to ensure full compliance with the Rio Tinto Standards. The goal is for zero work related injuries or occupation illnesses. Minimum prerequisites require that all work activities be based on risk assessments ensuring that effective controls and safe work procedures exist for all hazardous activities. Further the standards require a system for ensuring that employees are trained, equipped and where applicable, certified to carry out their work according to the applicable safe work procedures, and that their competence has been tested. Personal protective equipment of international standards has been issued to each of the employees relevant to their conditions of working. All drivers employed are specially trained in 4WD driving and safety by international driving consultants. All field staffs are also trained in advanced first aid by international trainers. Rio Tinto organises periodic refresher courses of these training programme maintain the standards.

7.2 Environmental

Rio Tinto's Environmental Policy aims to prevent or otherwise minimise, mitigate and rehabilitate any effects that the group's operations have on the environment. The internal environmental systems adapted by Rio Tinto has been accredited with ISO 14001 certification. Although exploration activities in reconnaissance permits are essentially non-invasive to the environment, the same rigor and level of compliance to the standards, systems and procedures is followed.

For all the Orissa RP's an Environmental Management Plan has been devised prior to the initiation of field activities. This plan will be constantly updated as the program develops. The plan evaluated potential environmental impacts associated with the activities and provided procedures to prevent or minimize impacts. In case where an impact was unavoidable or accidental, appropriate rehabilitation procedures are in place. Relevant exploration personnel including those of contractors are inducted and trained in these procedures. Control systems include incident reporting and annual environmental reporting to first-line management and corporate audits.

7.3 Community Relations

There are more than 250 villages within the RP areas with a total population estimated to be over 200,000. Agriculture is the main occupation for over 90% of the population. Industrial activity is mainly agrarian. Agriculture is mostly two crops restricted to the monsoon season with less than 10% under irrigation.

During the term of the exploration specific community relation policies are undertaken which includes distribution of community briefing sheets, employment of local people for work, relationships with preferred local suppliers/services, continuous consultation with stakeholders and

development of internal system of recording, reporting and monitoring of community activities.

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