

Exploration Enterprises India Pvt. Ltd.

DE BEERS
A DIAMOND IS FOREVER

STRICTLY CONFIDENTIAL

Exploration Enterprises India Pvt. Ltd. amalgamated
with De Beers.

To,

1. The Controller General
Indian Bureau of Mines,
2nd Floor, Indira Bhawan,
Civil Lines
NAGPUR - 440 001

2. The Controller of Mines
Indian Bureau of Mines,
6th Floor, Block D
Indira Bhawan, Civil Lines
Nagpur - 440001.

3. The Regional Controller of Mines
I.B.M Scheme No. 11,
IBM Colony,
Kamla Nehru Nagar,
Jabalpur - 482002

4. Director (Mines)
Directorate of Geology and Mining
Government of Uttar Pradesh
Lucknow, Uttar Pradesh

UP-02

**Sub: CLOSURE OF RECONNAISSANCE OPERATIONS CARRIED OUT DURING
DURING 15th February 05 to 15th July 06**

(Under Rule 7 (1)(viii) and 7 (1) (vii) of MCR, 1960 and rule 3E of MCDR 1988)
Ref: Reconnaissance permits for an area of 963.585 sq km in Lalitpur District of Uttar
Pradesh, --
Reconnaissance Permit 2008/77-5-2001-5(9)/2000 Uttar Pradesh

Dear Sir,

Please find enclosed herewith the **Closure** of reconnaissance operations for the period of
DURING 15th February 05 to 15th July 06 over the above Reconnaissance Permit re-
quired under Rule 7(1) (VII) of the Mineral Concession Rules, 1960.

The above mentioned RP was executed at Lucknow on 15th February 2005, subsequently
the Honorable Bombay High Court, vide its orders dated January 13, 2006 read with Janu-
ary 27, 2006 has sanctioned the Scheme of Amalgamation of Exploration Enterprise India
Private Limited (our erstwhile wholly owned subsidiary) with De Beers India Private Lim-
ited. This has been intimated to the Director of DMG Lucknow.

As you are aware that prospecting agencies are working in a competitive environment, we
request that the contents of the report be kept **confidential under Rule 7(1) (viii), MCR,**
1960.

Yours faithfully,

Place :Bangalore
Date : 28/3/06

Signature : 
Name in full : M. D. Lynn
Designation : Regional Exploration Manager
De Beers India Private Limited



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**Closing Report on Reconnaissance Permit
2008/77-5-2001-5(9)/2000 Uttar Pradesh**

Report for the period
15/02/05 to 13/07/06

1. Reconnaissance Permit (RP) Status

The RP is 963.585 km² in extent and was executed at Lucknow on 15th February 2005 (Map 1). As per rule 7(i) (a) of MCR 1960, it is scheduled to be reduced by 50% on or before 14th February 2007. On 13th July 2006 the full extent of 963.585 km² was relinquished. This report summarizes the exploration work carried out in the permit area for the entire period.

2. Geology and Geomorphology

The RP is underlain by the Bundelkhand Granite Gneiss Complex (BGGC) of the Bundelkhand Craton (Map-2).

The Bundelkhand craton, covering an area of about 26,000 sq. km, represents the northern most part of the Indian shield and lies north of the Narmada-Son Lineament, an important tectonic divide separating the N-S Dharwarian trend from the SW-NE Aravalli trend and the E-W Bundelkhand trend.

The BGGC is a highly deformed Archaean granite-greenstone terrain with macro-enclaves of the relicts of ~ 3.5 Ga tonalitic gneisses, ultramafics, amphibolites, fuchsite quartzite, banded iron formations, schists, marbles and calc-silicate rocks. These occur in a composite mosaic of granitic rocks ranging in age to 2.2 Ga. Porphyritic, coarse-to-medium grained, homogeneous and fine-grained, textural variants of granite constitute the Bundelkhand Granite Complex. Geochemical studies carried out by earlier workers show that the Bundelkhand granite is an I-type, metaluminous to weakly peraluminous, calc-alkaline granite.

The Vindhyan basin is the largest sedimentary basin of the continental part of the Indian plate. It is spread over an area of more than 100,000 sq. km out of which 60,000 sq. km is exposed and the remaining 40,000 sq. km area is hidden below the Deccan Continental Flood Basalts (DCFB) and the Indo-gangetic alluvium. Exposures of the Vindhyan Supergroup are seen up to Sasram in the east, where its extension is covered by alluvium. The western part of the basin is in faulted contact with the Aravalli Mountain Belt near Chittorgarh. Dholpur is the last exposure of Vindhyan in the north beyond which the Vindhyan sediments are covered by alluvium.



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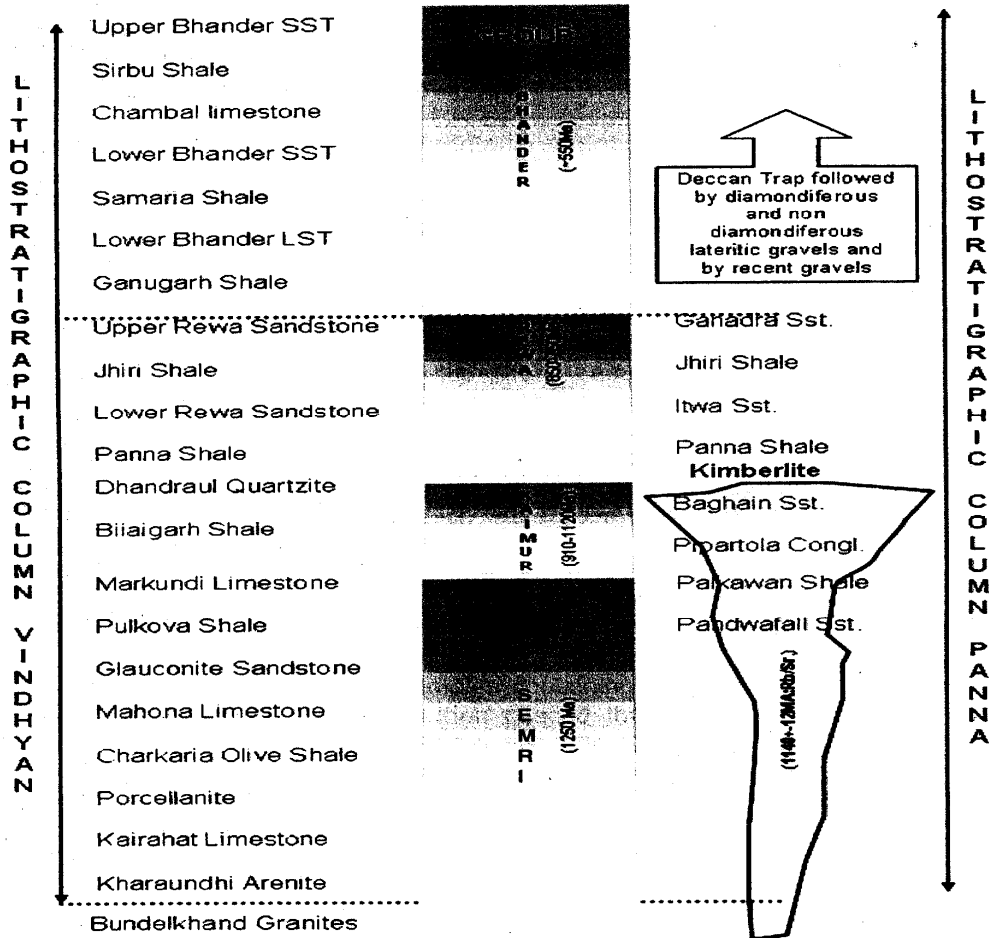
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The basin is a sickle shaped synclorium, separated towards the Northwest from the Aravallis by the Great Boundary Fault, trending roughly NE-SW and in South is bounded by the Son-Narmada lineament.

The Vindhyan are represented by a sequence of sandstone, shale and limestone. They have been divided into the Semri, Kaimur, Rewa and Bhandar groups.

Lithostratigraphy of the Vindhyan Supergroup



The general geomorphology of the RP area is well drained with moderate to gentle slope, area also shows typical spheroidal weathering of the granite batholiths (Map 3 and 4).



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3. Activity during the period from 15th February 05 to 13th July 06

The entire area has been investigated with 214 reconnaissance samples (an average sample density of 1 sample per 4 km²). Soil geochemical samples and kimberlite indicator mineral results for all the samples have been received and interpreted.

3.1 Reconnaissance Sampling

Reconnaissance stream and loam sampling was completed with a total of 212 stream and 2 soil samples being collected with an average sample density of 1 sample per 4 km². All the samples have been processed, analysed and results received (Map 5 and Table 1).

Stream samples comprise 75 litres of material screened through 10 mm mesh from a natural heavy mineral trap sites. This - 10 mm fraction material is further screened to 2 mm. Loam samples comprise 30 litres of - 10mm material and for further processing all the samples were transported to the De Beers India Sample Treatment Centre in Peenya (PSTC), Bangalore.

All samples received from the field passed through a series of treatment processes at Peenya Sample Treatment Center (PSTC). The raw sample collected from the field was wet screened to two different fractions for the different analysis; like Indicator mineral identification (-1 to +0.3mm fraction) and Geochemical analysis (-0.3mm fraction).

A) Fraction size -1 to +0.3 mm, where the sample weight was reduced by up to 80%. The screened fraction from wet screening was then sent to a dense media separator to reduce sample weight by ~95% which was followed by acidization where samples were boiled with 20% sulphuric acid and 80% water for one hour to remove the surface coatings of the concentrate making mineral identification possible.

After acidization, the samples were sent for ultrasonic cleaning, to get a clean concentrate which was sent for either low or high intensity magnetic separation based on the nature of the sample. Large samples containing a significant proportion of minerals denser than 2.95 gm/mL were then passed through lithium hetero- polytungstates mixed with water at a density of 3.1 gm/cc. The sinks and floats are separated and the sink portion dried and sent to Bangalore Mineralogical Laboratory (BML) to recover kimberlitic indicator minerals.

The concentrate received from PSTC was subjected to microscopic examination at BML to recover kimberlitic indicator minerals. Suspected kimberlitic grains were then sent to De Beers Heavy Mineral Laboratory in Melbourne for detailed classification and then on to De Beers Geoscience Lab in South Africa for electron micro-probe analysis.



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B) Fraction size -0.3mm, received from the wet screening was sent for the soil geochemical analysis to Shiva Analytical Laboratory in Bangalore, India and the following analytical methods are applied for the different elements:

- Mixed Acid Digestion with ICP-OES Finish method is applied for the Al, Ba, Ca, Co, Cr, Cu, Fe, Ga, K, Mg, Mn, Na, Ni, P, Pb, Sr, Ti, V, W, Zn, Tl elements
- Mixed Acid Digestion with ICP-MS Finish method is applied for the Be, Bi, Cd, La, Mo, Nb, Se elements.
- Aqua Regia Digestion with ICP-OES Finish method is applied for the Ag, As, S, Sb elements.

3.2 Reconnaissance Sampling Results

A total of 41 samples were analyzed for soil geochemistry. The samples were selected based on structures and geological analysis of the area.

Soil geochemical samples were analyzed at Shiva Lab, Bangalore and following analytical methods are applied for the different elements:

- Mixed Acid Digestion with ICP-OES Finish method is applied for the Al, Ba, Ca, Co, Cr, Cu, Fe, Ga, K, Mg, Mn, Na, Ni, P, Pb, Sr, Ti, V, W, Zn, Tl elements
- Mixed Acid Digestion with ICP-MS Finish method is applied for the Be, Bi, Cd, La, Mo, Nb, Se elements.
- Aqua Regia Digestion with ICP-OES Finish method is applied for the Ag, As, S, Sb elements.

Gold (Au) and Silver (Ag) values are minimal (below the detection limit) in the analyzed samples of the RP area (Map 6, 7 and Table 2).

Copper (Cu) value varies 3 ppm to 30 ppm (with a detection limit of 5ppm) in the analyzed samples of the RP area (Map 8 and Table 2).

Lead (Pb) value varies 5 ppm to 38 ppm (with a detection limit of 3ppm) in the analyzed samples of the RP area (Map 9 and Table 2).

Zinc (Zn) value is reported competitively higher than other elements and also varies 13 ppm to 64 ppm (with a detection limit of 5ppm) in the analyzed samples of the RP area (Map 10 and Table 2).



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A total of 86 samples were also reported positive with respect to possible kimberlitic indicator minerals. A total of 2899 spinels and 2 clinopyroxenes and 2 ilmenites were reported. No garnet was recovered (Map 11 and Table 3).

3.3 Mineral Chemistry

Mineral Chemistry plots are shown in Figures 1 – 8. Note that additional grains were probed, so totals reported as visual recovery and numbers of grains probed do not necessarily correspond.

The spinel chemistry is of low interest and most of the spinel probably derives from unrelated ultramafic rocks. The clinopyroxenes and ilmenites are non-kimberlitic.

4. Interpretation

Based on reconnaissance sampling, structural analysis and ASTER image interpretation (Map-4), it has been concluded that Gold, Silver, Copper, Lead and Zinc values are not anomalous (below the detection limits) and there is low potential for base metals in the RP area.

With regards to kimberlitic indicator minerals, only low interest spinels were reported from the reconnaissance samples, suggest probably derives from unrelated ultramafic rocks and do not show any signature of kimberlitic rocks in the RP area.



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5. Personnel

De Beers maintains high operating standards including safety and environmental awareness. To this end, training is an integral part of career development with the organization. The following is a short summary of training completed during reporting period.

Earth Scientists attended a programme on XSIMS database management.

Earth Scientists also attended a programme on Data mine solutions which will enable them to effectively organize data from drilling programmes.

GIS Manager attended a conference on G.I.S data standard and interoperability at map India 2006 conference, New Delhi, India.

Earth Scientist completed a sort time assignment for drilling and petrology training in Canada and South Africa.

Name	Designation	Education
Tarun Rautela	Senior Geologist	M.Sc. Tech – Applied Geology
Gargi Mishra	Staff Geologist	M.Sc. – Applied Geology
K.V.Praveen Kumar	GIS Manager	M.Tech-Remote Sensing
Sukhbinder Sharma	Geologist (on contract)	M.Sc Geology
Rekha K.R.	Kimberlitic Mineral Analyst	M.Sc Geology
Shobha N.	Kimberlitic Mineral Analyst	M.Sc. Geology
Sanjay Deogiri	ICT Manager	B.Sc. Electronics, MCSE
Girish Menon	Security Adviser	Graduate
Gajanana Naik	Treatment Plant Supervisor	Graduate
Venu Kumar	Field Driver	Grade 12
B Srinivas	Field Driver	Grade 10
B S Dinesh	Field Driver	Grade 10

6. Expenditure

Total expenditure of Rs.5, 014,305 has been incurred for the Reconnaissance Permit to date. The expenditure was incurred as follows:

Capital expenditure: Rs.8, 262

Revenue expenditure: Rs.5, 006,043



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7. References

Detailed Information on Diamond in Madhya Pradesh (India) by Geological Survey of India (1994 report).
GEOLOGY AND EVOLUTION OF THE INDIAN PLATE by S.M. Naqvi.
Recent Advances in VINDHYAN GEOLOGY by Geological Society of India.



Tarun Rautela
Project Manager
De Beers India Private Limited



M.D. Lynn
Regional Exploration Manager
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