

DE BEERS
A DIAMOND IS FOREVER

KAR-01

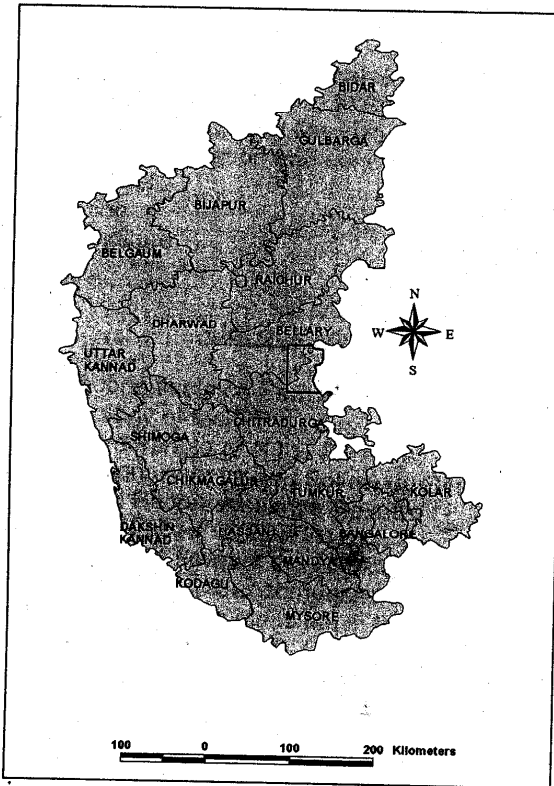
CLOSING REPORT FOR RECONNAISSANCE PERMIT NO 7

(C1 48 MM 2000)

STATE OF KARNATAKA

7th May 2001 to 6th May 2004

Karnataka
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**Closing Report on Reconnaissance Permit
No. 7 (C1 48 MM 2000) Karnataka**

**Report for the period
7/05/01 to 6/05/04**

1. Reconnaissance permit Status

The Reconnaissance Permit (1966.22 km²) lies in the Districts of Bellary and Chitradurga and was executed at Bangalore on 7th May 2001. As per the rule 7 (1)(i)a of MCR 1960 on the 7th May of 2003, a total of 983 km² was relinquished and on 20th October 2003 another 955.22 km² has been relinquished. As per the conditions of RP, the tenure of the remaining permit area (28 km²) expired on the 6th May of 2004(Map 1).

2. Geology and geomorphology

Almost the entire RP is underlain by the Peninsular Gneisses which range in age from 3400 to 2500 m.y. and form part of the West Dharwar Craton (Map 2). The formation of these rocks occurred in 3 stages with influx of granitic material being recognized before 3.3 b.y., at 3.0 b.y. and the youngest at 2.6 b.y., the latest being associated with amphibolite facies metamorphism culminating in the formation of granulites.

The older gneisses (Older Gneiss Complex) are mainly composed of amphibolite facies gneisses of tonalitic-trondhjemitic-granodioritic (TTG) composition and contain enclaves of ancient supercrustals of volcanosedimentary origin. In some places, the Gneisses are unconformably overlain by Dharwar type schist belts. Steep dipping faults and ductile shear zones dissect the complex in many areas.

The Younger Gneiss Complex (YGC) is confined to a wide belt of gneisses surrounding the archean nucleus and is mainly granodioritic and granitic in composition. Enclosed within these rocks are narrow Kolar type schist belts which are largely basaltic in composition and are characterized by gold mineralization.

A swarm of E-W trending mafic dykes intruded these rocks around 2.0 to 1.5 b.y. ago.

The majority of the RP lies within the Chinna Hagarur drainage basin. The area is generally flat lying with the exception of large granite domes (Map 3).



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3. Activity during the reporting period (7th May 2001 to 6th May 2004)

Based on the initial geological analysis of the terrain it was decided that regional stream sampling would be the most appropriate exploration technique to screen the reconnaissance permit area for diamondiferous kimberlites. Reconnaissance stream samples were collected from suitable trap sites. In addition, an Airborne Multispectral scanner survey (AMS) was flown over the RP area and the anomalies identified were followed up. Helicopter-borne geophysical magnetic and Frequency Domain EM survey has been carried out over of the RP and ground follow up surveys were also conducted.

3.1 Reconnaissance Stream Sediment Sampling

The permit area has been scrutinized with 324 reconnaissance stream sediments samples.

Stream samples comprise 150 litres of unscreened material, collected from natural heavy mineral trap sites and field screened to -2.0mm. Sample localities are shown in Map 4 and sample details are recorded in Table 1.

The samples were processed at De Beers heavy mineral treatment plant in Bangalore, and the concentrates were consigned to De Beers laboratory facilities in Australia for further processing and sorting. Kimberlitic indicator minerals recovered (garnet, spinel, clinopyroxene and ilmenite) were microprobed at the University of Melbourne.

3.2 Results of Reconnaissance Sampling

Results have been received for all the samples (Map 5) of which 220 samples were positive with respect to the kimberlite indicator minerals. A total of 1 garnet, 28 ilmenites, 1 clinopyroxene and 3011 spinels were recovered from the sample concentrates (Table 2).

3.3 Follow-up Sampling

A total of 124 Follow up loam samples were collected in areas of favorable reconnaissance sampling results. The samples comprise 30 litres of material brushed or scraped from surface.

Sample localities are shown in Map 4 and sample details are recorded in Table 3.

The samples were processed at De Beers heavy mineral treatment plant in Bangalore, and the concentrates were consigned to De Beers laboratory facilities in Australia for further processing and sorting. Kimberlitic indicator minerals recovered (garnet, spinel, clinopyroxene and ilmenite) were microprobed at the University of Melbourne.

3.4 Results of Follow-up Sampling

Results have been received for all the samples (Map 6) of which 11 samples were positive with respect to the kimberlite indicator minerals. A total of only 18 spinels were recovered



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from the sample concentrates (Table 4). No clinopyroxenes, garnets or ilmenites were recovered.

3.5 Mineral chemistry

Mineral Chemistry data of the indicator minerals recovered is shown in Figures 1-8.

3.6 Airborne Multispectral Scanner (AMS) Survey

An airborne survey utilizing De Beers proprietary hyperspectral scanner technology was completed during April 2002. The system works by measuring reflectance of narrow wavelength bands of sunlight reflected from the Earth's surface. Different minerals (as well as other materials) absorb different wavelengths of light to varying degrees. The AMS system is sensitive enough to actually distinguish some specific types of minerals by the absorption of certain wavelengths of light detected. In the search for kimberlites, the system is configured to look for the presence of magnesium-rich clay minerals, derived from the weathering of ultramafic rocks.

The AMS equipment was fitted into a P68C (registration VT-TAH) aircraft chartered from Taneja Aerospace and Aviation Limited, 1010, 10th Floor, Prestige Meridian - 1, 29 M.G Road, Bangalore 560 001. The surveying was conducted from an altitude of 9,500 ft (2,896 m) along flight lines 2 km apart (Map 7).

A total of 191 anomalies were selected as areas comprising Mg-rich clays with the potential to be kimberlites (Map 9, Table 5). Follow up of the survey involved field visits to anomalies and identification of the causative lithological units (Table 6). Small samples were collected for PIMA (Portable Infra-Red Mineral Analyser) analysis to confirm that the lithology identified on the ground corresponded to the anomalous Mg-rich absorption feature identified by the aerial survey. PIMA analysis was carried out in Bangalore. No kimberlites were discovered from this survey. A false colour composite image of the RP is shown in Map 8.

Detail sheets of AMS anomalies followed up are attached as Appendix 1.

3.7 Airborne Geophysical Survey

A helicopter borne magnetic and Frequency Domain EM survey was carried out in a part of the RP area (Map 10). The results were processed and interpreted. Based on the response, one anomaly was identified (Map 11 & 12) and followed up with ground Geophysical surveys.



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3.8 Ground Geophysical Surveys

3.8.1 Ground Magnetic Survey

One magnetic anomaly has been followed up with ground magnetic survey using Geometrics G856 Proton precision magnetometers (Table 6 and Maps 11 & 12) with line spacing 50m and station spacing 12.5.

A total of 5.5 line kilometers of ground magnetics has been completed.

Detail sheet of GM anomaly followed up is attached as Appendix 2.

3.9. Interpretation

Based on the results received for various techniques used in the exploration of this RP, it has been concluded that the potential for discovering a diamondiferous kimberlite in the RP area with the present level of knowledge is low. As a result, De Beers India Surveys Pvt. Ltd. has decided to relinquish the RP area in total to explore for more prospective areas of the state.

4. Personnel

Name	Designation	Education
Dr. Sojen Joy	Section Geologist	PhD Geology
Tarun Rautela	Staff Geologist	M.Sc. Tech-Applied Geology
M.P. Unnikrishnan	Geologist	M.Sc. Tech-Applied Geology
Chandan Kumar	Geologist	M.Sc. Tech-Applied Geology
Anuradha Sarangi	Geologist(in contract)	M.Sc. Tech-Applied Geology
Prashant Laharia	Geologist(in contract)	M.Sc. Tech-Applied Geology
Binoy Verghese	Kimberlitic Mineral Analyst	M.Sc Geology
Shiva Sankar P.V.	Kimberlitic Mineral Analyst	M.Sc Geology
Manjunath	Kimberlitic Mineral Analyst	M.Sc Geology
K.Aravind	Financial controller	Chartered Accountant
Archana Sehgal	Office Manager	MBA Marketing
Ashish Bhat	User Support Officer	Dip. In E&C.,H/W & N/W
A.Chenniah	Field Driver	IX Std.
G.Oblesh	Field Driver	V Std.
G.Padmanabham	Field Driver	VI Std.
R.P.Raj	Office Driver	IX Std.
S.Chandrashekhar	Treatment Plant Operator	B.A.
K.Ekambaram	Treatment Plant Operator	X Std.
R.Lognathan	Treatment Plant Operator	X Std.
Girish Menon	Advisor-Security and Liaison	B.A.
Runa Agarwal	HRBP	MBA
Meena Raj	Receptionist	B.A.



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Raj Kumar	Office Assistant	XII Std.
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Labour

Labourers were employed on a daily basis from local towns and villages to help with the field work.

5. Training

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 to date.

All staff including geologists and field drivers received first aid and safety training, including fire fighting. All staff also receives ongoing education in HIV/AIDS awareness and other wellness issues.

Geologists received training in field navigation, sample site selection, sample collection, labeling and recording of sample data. They have also received training in undertaking of ground magnetic surveys. Quality control and further on the job training is ongoing.

Geologists received training in basic kimberlite geology and field identification during the period 11th-12th June 2001.

Geologists received training on Arcview GIS software during the period 25th to 27th July 2001. Geologists received further training on Arcview GIS software during the period 3rd to 4th December 2001.

Mr Tarun Rautela was sent to South Africa for a two-week period in June 2003 to visit De Beers's mines and exploration facilities.

All skilled staff attended a management training programme run by Deloitte's Haskins and Sells in Bangalore.

All Geologists have attended training in Geosoft for the geophysical data interpretation in August 2003.

All geologists attended a Microsoft access training programme in January 2004

All staff attended a seminar on the HIV-AIDS awareness on second week of April 2004.



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6. Expenditure

Total cumulative expenditure of Rs 15,006,571.78 has been incurred for the RP to date.
The expenditure was incurred as follows:

Capital expenditure: Rs 1,580,971.67

Revenue Expenditure: Rs 13,425,600.10



M.D. Lynn
Regional Exploration Manager
De Beers India Pvt.Ltd.
(Formerly known as De Beers India surveys Pvt.Ltd.)
Bangalore, June 2002



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