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KAR-33

To,

<p>1. The Controller General, Attn.: Superintending Mineral Economist (Statistics) Indian Bureau of Mines, Indira Bhawan, Civil Lines NAGPUR - 440 001 Ph No: 0712-2561267</p>	<p>2. The Controller of Mines (South) Indian Bureau of Mines, 29 Industrial Suburb II nd stage, Tumkur Road Yashwantpuram Bangalore- 560022 Ph No: 080-2337 1027</p>
<p>3. The Regional Controller of Mines Indian Bureau of Mines, Indira Bhawan, Civil Lines NAGPUR - 440 001 Ph No: 0712-2561267</p>	<p>4. The Director Mines and Geology Dept. of Mines and Geology Government of Karnataka, No.49, Khanija Bhavan, Race course Road, Bangalore - 560001 Ph No: 080 - 22384134</p>
<p>5. The Director General, Geological Survey of India 27 Jawaharlal Nehru road, Kolkata 700016 Ph No:: 91-33-22861641/65/73/72</p>	

Sub: CLOSING REPORT OF RECONNAISSANCE OPERATIONS CARRIED OUT DURING March 1st 2006 TO 26th February 2008
(Under Rule 7 (1) (vii) of MCR, 1960)

Ref: Reconnaissance permits for an area of 1547.97 sq. km in Davangere and Chitradurga districts of Karnataka (RP# 35).

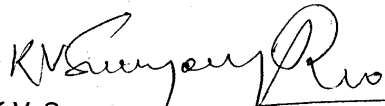
Dear Sir,

Please find enclosed herewith the Closing Report of Reconnaissance Operations carried out during the period 01/03/2006 to 26/02/2008 over the above Reconnaissance Permit required under Rule 7(1) (VII) of the Mineral Concession Rules, 1960.

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.**

Please acknowledge the receipt of the report.

Place: Bangalore
Date: 10/4/08

Yours faithfully, 
Signature:
Name in full: K.V. Suryanarayana Rao
Designation: Technical Specialist-Geology
De Beers India Pvt.Ltd.



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**Closing Report on Reconnaissance Permit
#35 Karnataka**

Report for the period
01/03/2006 to 26/02/2008

1. Reconnaissance Permit (RP) Status

The RP area covers an area of 1547.97 Sq. km, in part of Davangere and Chitradurga districts (Map 1), and was executed on 28 February 2006 at Bangalore. As per rule 7(i) (a) of MCR 1960, it is scheduled to be reduced by 50% on or before 27 February 2008, but relinquished the total area of 1547.5 sq km due to poor sample results.

This report summarizes the exploration work carried out in the permit area during the reporting period.

2. Geology and Geomorphology

The Geology of the Dharwar Craton is discussed in detail by Radhakrishna and Vaidyanathan (1997) and Balasubrahmanyam (2006) and the main Geological units exposed within the RP area are summarized in (Map 2).

The oldest rocks in the RP area are the "Older granites and migmatites", which are Na-rich tonalitic sialic crust -migmatite, composed of a complex of banded gneiss and less deformed nearly massive gneiss. These rocks have been described by Radhakrishna and Vaidyanathan (1997) as "Older gneiss Complex" where as Balasubrahmanyam (2006) gave the name "Penninsular Gneisses I". The Study of SHRIMP U-Pb ages of detrital zircon in supracrustal rocks of the Sargur Group by Nutman et al. (1992) indicate an age older than 3230 ± 5 m.y. for these rocks and the pattern and abundance of REE in these gneisses and migmatites indicates their origin could be by partial melting of mantle or crustal anatexis of amphibolites (Monard, 1983).

These oldest gneisses comprise the basement to the Sargur Group of rocks. Various opinions are expressed regarding their stratigraphy and environment (Swami Nath and Ramakrishnan, 1981; Radhakrishna and Naqvi, 1986). The group is composed of intensely metamorphosed, deformed rocks, representing incomplete sequences of shelf-facies sediments with intercalated mafic rocks and iron formations. Zircon from the banded chromite-fuchsite quartzite near Arsikere gave an age of 3232 ± 10 to 2942 m.y. (by Nutman et al. 1992).

The basement gneiss to the Dharwar Supergroup herein labeled as Penninsular Gneissic Complex ("Penninsula Gneisses II" by Balasubrahmanyam) has been dated by Rb/Sr, Pb/Pb techniques to be 3150 m.y. and 3000 m.y. in the Chickmangalur and Chitradurga areas (Balasubrahmanyam, 2006).



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However, Taylor et al. (1988) assigns this Peninsular Gneiss event at 3000 m.y. and the higher initial strontium ratio indicates them to be the reworked older crustal material.

Dharwar supracrustal rocks are considered as platformal and volcanic sediments deposited in sialic basins and geosynclines (Chadwick et al., 1978- Balasubrahmanyam, 2006). They comprise clastic and chemical sediments developed with volcanism and several cycles of sedimentation during the time interval of 2900-2600 m.y. (Radhakrishna and Vaidyanadhan, 1997).

Two main divisions of the Dharwar Supergroup are recognized.

The older group is an igneous suite named as 'Bababudan Group'. The litho units show that sedimentation started at severe hydrodynamic condition and under conditions of intense chemical weathering. A lower sedimentary cycle with a basal oligomict conglomerate at its base and basic volcanics at the top is followed above by numerous quartzite horizons with several differentiated gabbro sills and a subsequent differentiated mafic to felsic volcanic complex comprising basalt, andesite, dacite and rhyolite. At the top of the sequence, dolomite, ironstone and exhalative magnesian schist indicate transition from chemical sediments to volcanoclastics.

Overlying this is a more extensive group of schistose rocks, largely sedimentary in character known as the 'Chitradurga Group'. This group is largely made up of sediments starting with a mixed pebble (polymictic) conglomerate followed by a limestone-manganese-iron formation, phyllite and extensive development of greywacke, in the deeper parts of the basin. However there are differing views on stratigraphy and structure for the Chitradurga Group of rocks (Naqvi, 1973 and Mukhopadhyay et al, 1981).

Stratigraphically above the Chitradurga Schist Belt there is a N-S trending, narrow belt of younger potassic granites (the 'Closepet' granite) dividing the greenstone terrain into an eastern and western block and is located at the site of differing crustal thickness.

Two groups of granite intrusions are observed; an early silica-poor porphyritic granite and later silica-rich anatectic group of grey and pink granites. The earlier phase is inferred to be due to mixing lines at the magmatic stage whereas the later phase is thought to be due to partial melting of Peninsular Gneiss (Jayananda et al. 1993). The oldest dyke suite cutting the granites is 2500 to 2400 m.y. aged, suggesting the granites to be ~2600 m.y. (Balasubrahmanyam, 2006) in age.



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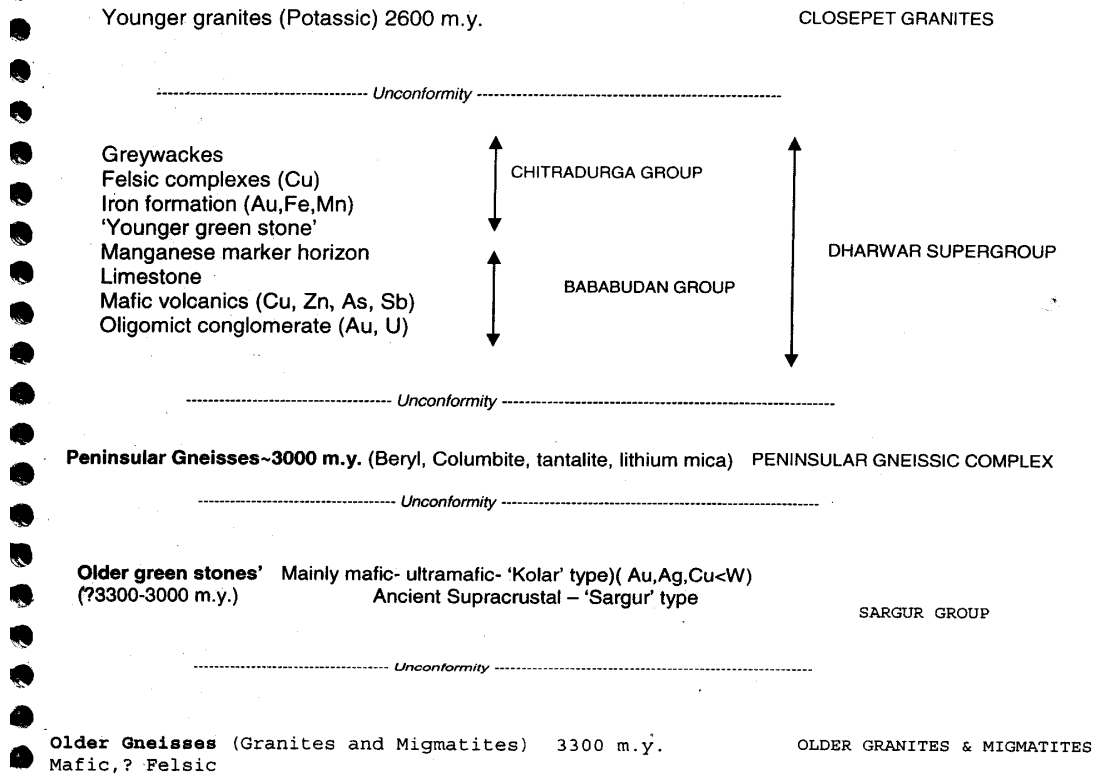


Figure 1. Karnataka Granite-greenstone stratigraphy – (after Swami Nath and Ramakrishnan, 1981)

A generalized stratigraphic sequence is shown in the above Figure.

Geomorphologically, the RP area (Map 3) covers the catchments of the Syagali River and Haridra River (tributaries of the Tungbhadra River) which flow northward within the RP area

3 Activity during the period (01/03/2006 to 26/02/82008

3.1 Pre-field operations

Purchase of topo sheets (on 1:50000 scale) for the license area from the Survey of India and converting them into digital form.

Study of Land Sat TM data and production of digital images.



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Mobilisation of field equipment.

3.2 Reconnaissance Sampling

A total of 314 reconnaissance samples were collected in the RP area (Map 4).

Stream samples comprised 75 liters of unscreened material, collected from natural heavy mineral trap sites and field screened to -2.0 mm (Table 1).

The samples were sent to the DeBeers Sample Treatment Centre in Bangalore and the concentrates were consigned to the Bangalore Mineralogical Lab, India for sorting.

Results were received for all recce samples (Map 5 and Table 2). A total of 80 samples reported positive with respect to kimberlitic indicator minerals, and total of 464 Spinals and 1 Ilmenite were reported. No Garnets or clinopyroxenes were recovered. ✓

3.3 Mineral Chemistry

Probe results were received for all the grains. The RP area is dominated by spinals and the ilmenites recovered are very less. The spinal chemistry is difficult to interpret, as their origin can not be denied from the older ultramafics in the Penninsualr Gneissic Complex. However some spinals do appear to show a higher probability of deriving from kimberlites, and samples which are positive in visual and probe were the areas over which follow up work was focused. No further work is planned as the results received for the pending samples are negative.

Mineral Chemistry plots are shown in Figures 1 – 10.

3.4 Ground Geophysical survey

A mega block was surveyed as ground follow up of spinal anomaly with ground magnetic geophysical survey with 100m line spacing using the instruments GSM. 19W and 19T. ✓

A total of 130.202 line kilometers were covered (Map 6). There are no anomalies to drill for kimberlites in the area surveyed

4. 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 trainings completed to date.

All Geologists attended a training programme on Data Mine software.

All staffs attended a training programme on First Aid.



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Office and Treatment plant staffs attended training programme on Emergency preparedness.

Selected staff members also attended a programme on use of Personal Protective Equipments (PPE) in their relative fields.

Name	Designation	Education
K.V.Suryanarayana. Rao	Technical Specialist-Geology	M.Sc. (Tech) – Applied Geology
Krishna Pande	Project Geologist	M.Sc. – Applied Geology
Anand Kumar	Geophysicist	M.Sc.(Tech.) Geophysics
Manjunath	Kimberlitic Mineral Analyst	M.Sc. Geology
Sanjay Deogiri	ICT Manager	B.Sc. Electronics, MCSE
Jai Prakash	SHE Officer	Post-Graduate
K. Narayanan	FSLO	Graduate
Gajanana Naik	Treatment Plant Supervisor	Graduate
R.Shrinivaslu	Field Assistant	Grade 12
Venu Kumar	Field Driver	Grade 12
B S Dinesh	Field Driver	Grade 10

5. Expenditure

Total expenditure of Rs. 27, 244, 452/- has been incurred for exploration in the reconnaissance permit area during the total period.

6. References

1. Geology and Tectonics of India - An overview: N.BALASUBRAHMANYAN.
2. Geology and Evolution of the Indian plate: S.M. NAQVI.
3. Geology of Karnataka-B.P.RADHAKRISHNA: R.VAIDYANADHAN.


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