



ORI-14

**FINAL REPORT FOR RP
NO.81 AREA 2600.00
SQ.KM. IN BOLANGIR,
KALAHANDI &
KANDHAMAL
DISTRICTS OF ORISSA**

**REPORTS FROM 19TH
FEBRUARY 2005 TO 18TH
FEBRUARY 2008.**

FINAL REPORT OF R.P. NO. 81 AREA OF 2600.00 SQ. KM. FROM 19.02.2005 TO 18.02.2008

CHAPTER-I

1. INTRODUCTION :

In order to search diamondiferous Kimberlitic and allied rocks including precious stones and metals, regional exploration measures have been undertaken in the area held under R.P. No. 81. (Location Map attached as annexure - 1). This report represents the highlights of the explication activities undertaken during the period from 19.02.2005 to 18.02.2008. Initially the search activities were aimed to delineate the positive mineragraphic haloes and to define the negative blocks systematically. To achieve such objectives, regional loam & gravel sampling procedure was adopted to have a quick picture of the area. This practice was supplemented by adding additional information derived from Landsat imagery and aerial photographs followed by ground truthing in the field. The exploration job was designed in such a way that the sampling density should reach 1 sample per 20 sq.km area.

1.1 LOCATION :-

The area investigated under report is featured in T.S.No. 64P, on the index map is appended here with for reference. Major part is falling in Bolangir District.

1.2 ACCESSIBILITY:-

Accessibility to the area is moderate during dry season only. In rainy season the accessibility becomes very limited due to the poor road network. However the targeted sampling sites are approached mostly by walking. The nearest towns are Saintala, Belgaon.

1.3. GEOMORPHOLOGY :-

As the area forms a part of the eastern Bhandara cratonic block, erosional processes and peneplanation have resulted in a terrain of gentle rolling topography with occasional residual hills. As the gradient of the area its mild no large network drainage system has developed. The Tel River is the principal river controlling the drainage of the area.

South west monsoon influences the rainy season in this part. Extreme climatic conditions prevailed during summer and winter season. The summer temperature goes up to 45° invariably particularly in May. The average annual rainfall is 1400 mm.

1.4 Drainage :-

The area is characterised by a poorly developed dendritic drainage pattern. But the area around Tel River s has a semi- trellis pattern drainage network. The 1st & 2nd order drainages are observed mostly, which carry water during rainy season. The gravel discharge into the drainage is moderate.

1.5 Previous work :-

Systematic gemological mapping in 1:63360 scale was undertaken by officers of G.S.I. Officers from state D.G.M. (O) had undertaken investigation for heavy metals around Saintala- Sisakhal area. No agency had reported the occurrence any diamonds and/or precious stores.

1.6 Scope of Work :-

The present work aimed at striking diamond and other precious stone bearing primary rocks through regional exploration. It also aimed at discarding negative areas and delineating positive areas.

CHAPTER-II

2.0 Geology :-

The R.P. area is an integral part of the Eastern Bhandara Craton of Archaean age. The area exposes the thrust contract of Archaean units with the Eastern Ghats super group of rocks. Granite gneisses and granites have occupied large parts of the area which form the basement. Deep seated intrusive bodies are encountered too. The assemblage is further intruded by dolerite dykes, pegmatites and quartz rains. The generalized geological sequence of litho units exposed in the area can be tabled as below.

Recent.....	Soil / Alluvium
Tertiary.....	Laterite
Pre-Cambrian	Eastern Ghats Super Group
	Quartz vein
	Pegmatite
	Anorthosites
	Younger granite
	Charnockite
	Keptynite
	Basic granulite
	Calc-granulite
	Khendralite
	Archaean Basement Gneiss and older metamorphites.

The general trend of the litho units is N.E. SW which often swing to N-S to NW-SE, as the area had been subjected to tectonic activities. The litho assemblages have suffered severely, thereby producing three sets of joints. The rocks have been shattered too. Residual hills are often seen in the area all around occupied by gneissic rocks.

2.1. Structure :-

The R.P. area shows a fabric of NE-SE and NW-SE trending lineaments. Minor E-W trending lineaments are often observed. The regional trend of the area is NE-SW. Three sets of Joint planes are observed trending in NW-SE, NE-SW and E-W. The E.W. joints are sympathetic. Structural features developed due to tectonic activity. Mineral lineation and slickenside features are commonly observed in the older rocks.

CHAPTER -III

3. EXPLORATION :-

During the period, collection of regional samples and follow-up samples, ground checking and examination of rock exposures were undertaken. Attention was given to collect representative samples from each shedding area. Excavations were made at certain localities to check the sub-surface materials. Close spaced geological traverses were completed also to check the ground in a grid pattern. Care was taken to collect loam samples from exact place so as to obtain right concentration of heavy minerals including D.I.M. and other precious minerals. The following are the summarized accounts of exploration measures undertaken.

3.1. WORK DONE :

During the period under report 109 Nos of gravel and 4 Nos of loam samples were collected for study of heavy concentrates to find the occurrence of suspected D.I.M. grains and other heavy precious metals and minerals. The samples collected are processed to obtain the magnetic and non-magnetic fractions for study under binocular microscope. Importance was given to non-magnetic fraction study in detail as they are possible source of positive suspected D.I.M. grains. The samples processed have yielded concentrates ranging from 5 grams to as high as 1000 grams. The concentration mostly includes crystal garnets with suspected pyrope garnet, limonite, rutile, magnetite, zircon, epidote, chromites, & opaque minerals. The black ones from the area were identified as grains of galena.

The morphological features of the grains indicate that the materials derived have traveled within 5 to 10 kms of distance. Some confusion arose in identifying the pyrope garnets as the features are almost similar to that of almandine garnets. The observation results of the magnetic and non magnetic fractions have indicated suspected positive mineragraphic haloes in the southern part.

Approximately 150 Kms of traverse lines were made to check the ground with respect to soil, lithology and geomorphic features.

3.2 Progress of work :-

During the period under reports 109 Nos of gravel and 4 Nos of loam samples have been collected. The samples were dispatched to ore dressing Lab, for processing. So far 113 nos were processed to obtain the heavy concentrates. The heavy concentrates of 26 Nos of samples have been observed for suspected D.I.M. grains and other heavy metals. In general, the samples collected from the southern part of the R.P. area yield positive grains, where as the northern part shows no positive grains. At the moment, the southern part seems to be potential for further exploration work in detail. Detailed picture would come out only after full receipt of all the sample results.

3.3 Results of Exploration :-

From a diamond exploration perspective, the area of R.P. is heavily diluted due to agricultural and other manmade activities. Accordingly the sampling process lacks precision due to difficulties in identifying undisturbed sampling points.

26 samples of HM concentrate show a positive indicator mineral presence. The sample points are distributed in the southern part and hence the southern area should be investigated in detail for further action.

3.4 Relinquishment:

During February 2007 an area of 1600.80 Sq. Km. has been relinquished and retained an area of 999.20 Sq. Km. The RP expired on 18.2.2008. (Relinquishment map attached as annexure - 2)

3.5 Expenditure:

The expenditure incurred during the period i.e. from 19.2.2005 to 18.2.2008 attached as ENCL - 1.