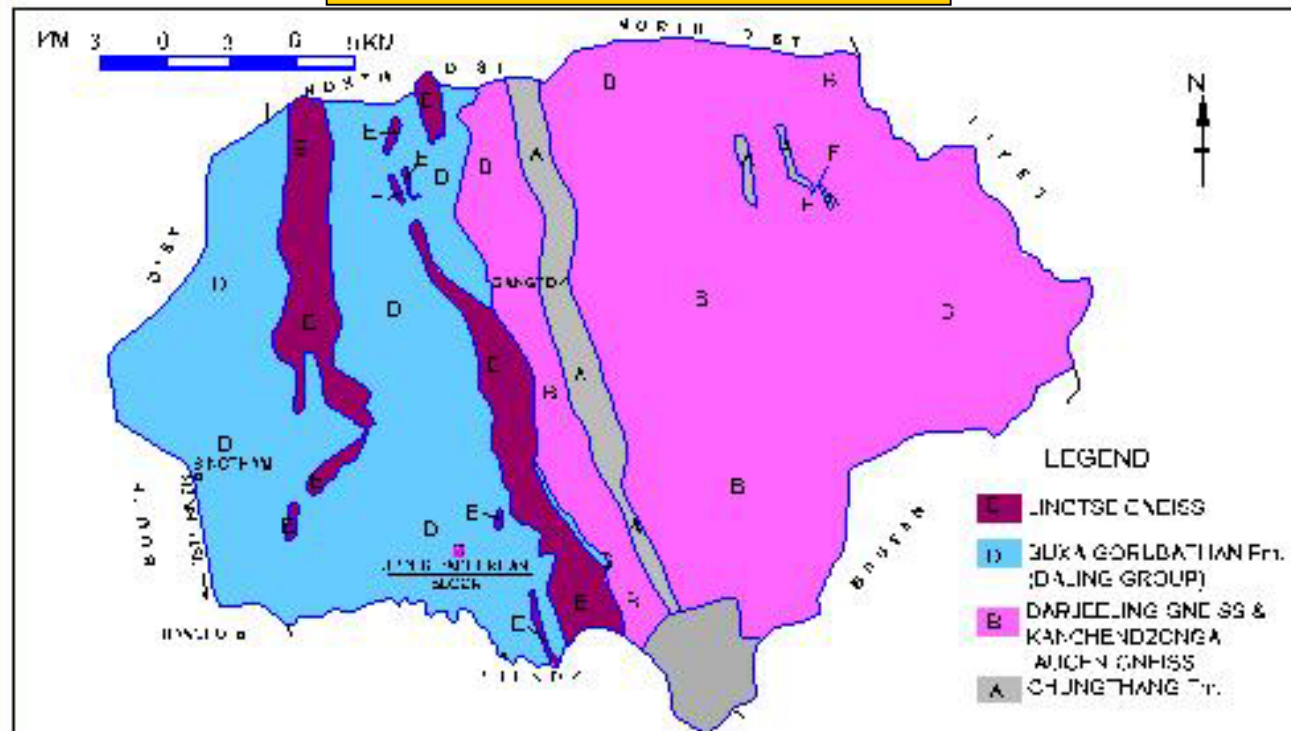


GEOLOGICAL REPORT ON EXPLORATION FOR COPPER UPPER PACHEKHANI BLOCK DISTRICT - EAST SIKKIM, SIKKIM

EXECUTIVE SUMMARY



MINERAL EXPLORATION CORPORATION LIMITED

(A Government of India Enterprise)

REGIONAL EXPLORATION CENTRE

RANCHI - 834003

JHARKHAND

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GEOLOGICAL REPORT ON EXPLORATION FOR COPPER
UPPER PACHEKHANI BLOCK
DISTRICT: EAST SIKKIM, SIKKIM

EXECUTIVE SUMMARY

1.0 LOCATION

The Upper Pachekhani Block located in the East district of Sikkim on the Eastern Himalaya and falling in the Toposheet No. 78 A/12, is bounded by the latitudes 27°12'18" & 27°12'35" and longitudes 88°36'16" & 88°36'53". The block, lying on one of the hill slopes, is at a road distance of 20 km from Rangpo lying on the National Highway No.31A connecting Gangtok, the State Capital with bordering towns of Siliguri / New Jalpaiguri in the plains of West Bengal, the nearest railheads at about 92 km/97 km. Bagdogra is the nearest airport at about 102 km.

2.0 GEOLOGY AND STRUCTURE

The area lying on the Eastern Himalaya, represents the Gorubathan Sub-group under the Daling Group of Middle to Late Proterozoic age, as per the mostly adopted stratigraphic classification based on the geological works of Ray (1989), Ravishankar et al (1989) and Acharyya et al (1989). It is represented by the lithounits of chlorite quartz schist, chlorite schist. / phyllite with or without sericite, quartz sericite schist, sericite quartz schist, slaty phyllite/slates and quartzite. It forms a part of the northern limb of the Rangpo-Chu antiform. The rocks have attained metamorphism up to lower green schist facies.

Three phase of deformation have been interpreted in the area. Primary bedding planes are found to be absent in the area of exploration. Minor slips and microfolds are very commonly observed both on surface as well as on drill cores. Three sets of joints, trending N-S, E-W and N50°E – S50° W respectively have been observed in this area. The N-S trending sets of joints dips 55° westerly while the other two sets are vertical. Although the attitudes of the foliations vary widely due to the structural disturbances, the general strike is observed to be N80°E – S80°W with a normal northerly dip ranging from 35° to 40°.

3.0 MINERALISATION

The sulphide materialization in this area can be traced from surface manifestations like slag dumps, gossans, old workings and ore outcrops. It is observed to be confined to quartz chlorite schist/ chlorite schist. The trend of the ore lenses is found to be at an acute angle to the strike of the lithounits. The sulphide mineralisation in the area has both lithological and structural controls. Chalcopyrite, pyrite and pyrrhotite are the ore minerals along with trace of sphalerite while magnetite, goethite, hematite and quartz from the bulk of the gangue minerals. Oxides of copper like malachite and azurite are the secondary derivations of the primary copper sulphides. Sulphide mineralisation in the area occurs mainly as veinlets, dissemination and stringers. Like all other Himalayan sulphide deposits,

there is no zone of secondary enrichment, as the zone of oxidation dies right over the primary sulphide body of copper mineralisation.

4.0 QUANTUM OF WORK DONE

MECL has carried out detailed Geological Mapping & topographical survey covering 0.5 Sq/Km area. 1095.50 m. of drilling in 10 boreholes, 301 (294 +7) number of primary and check samples for Cu & Au. 4 Nos.of composite samples for Emission Spectroscopy, 4 Nos. of composite samples for 5 radicals (Pb, Zn, Ni, Bi & Co), 4 Nos. of composite samples for 2 radicals (Au & Ag) by fire assay and 4 Nos.of samples for whole rock analysis (15 radicals), were analysed. Petrographic studies on 19 Nos.of samples and Minerographic studies on 23 Nos of samples and 19 Nos of specific gravity determination test were carried out by MECL in the Block. Based on the above data and earlier data of GSI, an exploration report was submitted by MECL.

5.0 ORE RESERVES ESTIMATION

The ore zones have been demarcated at 0.30% Cu cut-off with a minimum average grade of 0.75% Cu and 1.20m as minimum stopping width. Three ore lenses, namely Lens No. 1, 2 (2A, the hanging wall split of 2) and 3 have been identified in the block as designated from footwall to hanging wall side.

The estimation of ore resources is confined to a total strike length of 340m lying between cross sections AA' and EE' and to a vertical column of 92m between 904 m RL and 812 mRL.

The confidence level for delineating the geometry and shape of the mineralized bodies ailing the dip and strike directions are on lower side because of:

- i) Highly deformed and disturbed nature of the lithounits.
- ii) Insufficient surface and sub-surface geological data to prove the continuity of the mineralized bodies both laterally and at depth.

A total of 35420 tonnes of ore resources with a grade of 1.21% Cu has been estimated. The ore lens no.2 contributes a total of 28,140 tonnes of ore resources, i.e. 79% of the total with a grade of 1.09% Cu. The entire ore resources estimated as above has been put under Possible category.

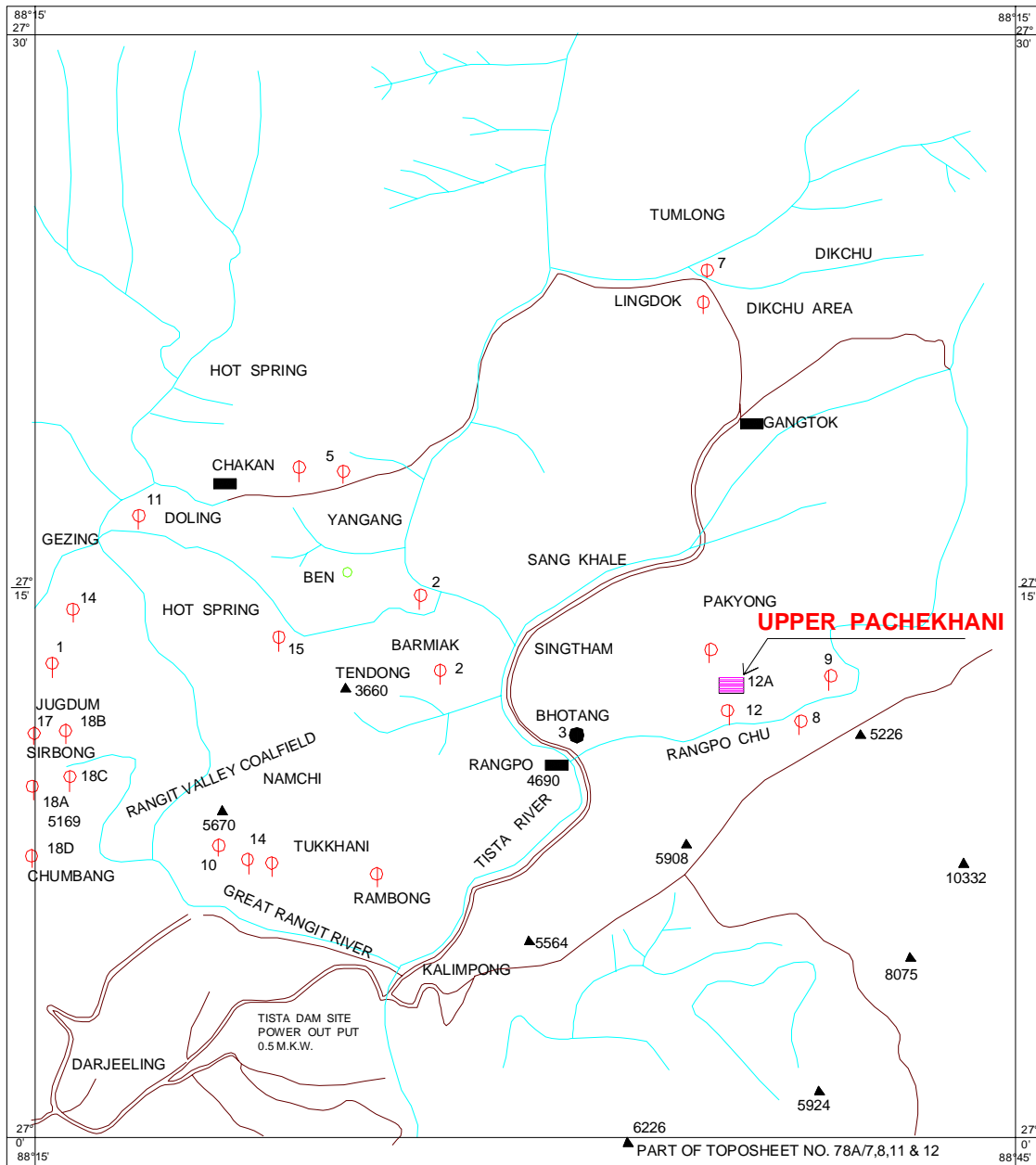
Although very few gold values have been recorded in a range of 0.5 GPT to 0.8 GPT, most of the values are in traces only. However, the number of samples analysed is insufficient to make an assessment of the precious metals associated with the ore.

The Deposit has been classified as Category 'C' of UNFC 332.

The Total Cost of Exploration is Rs. 268.54 Lakhs.

LOCATION MAP OF UPPER PACHEKHANI BLOCK

LOCATION PLAN OF UPPER PACHEKHANI BLOCK DISTT. EAST SIKKIM, SIKKIM



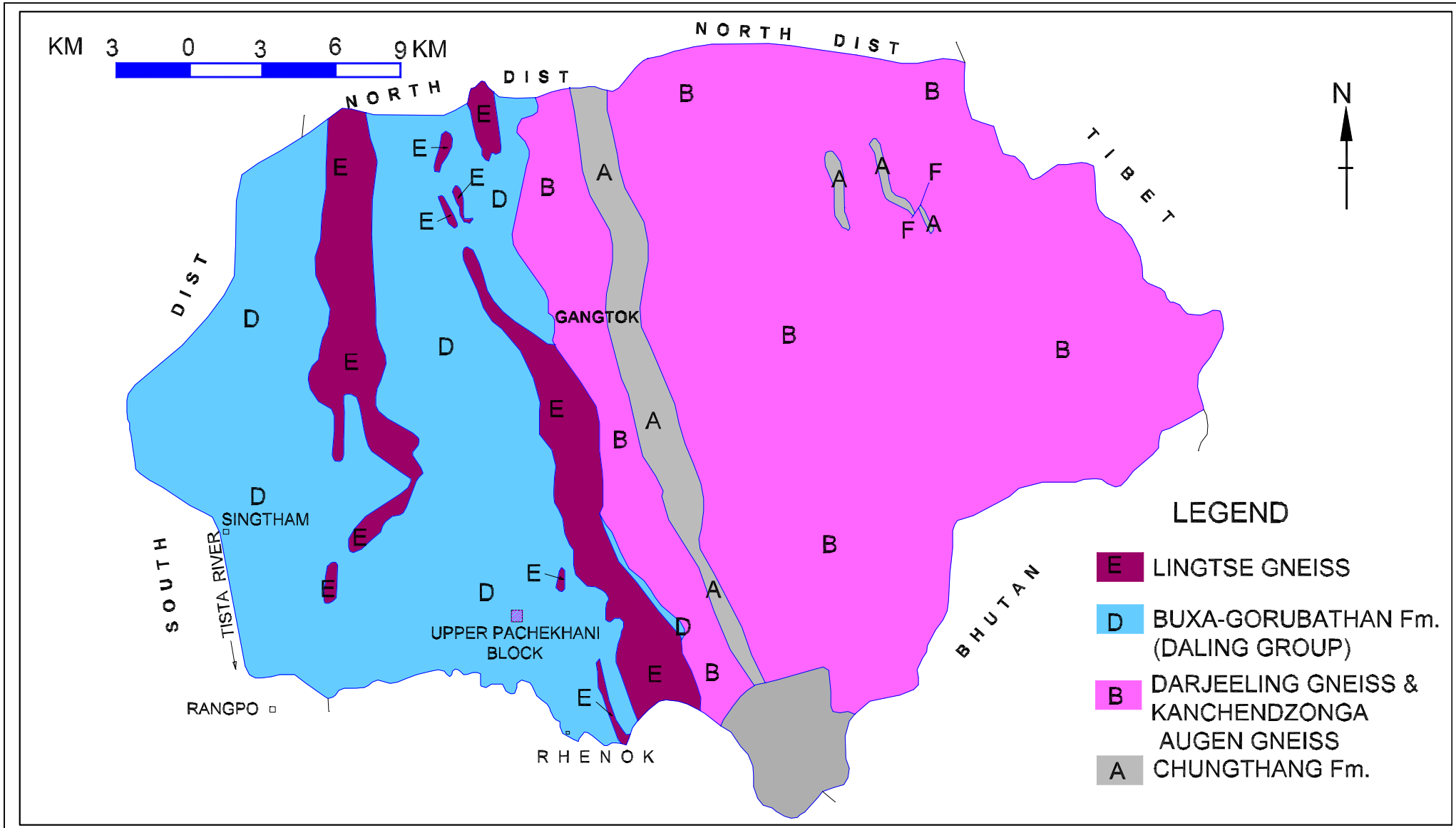
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- COPPER ORE OCCURRENCES
- HEIGHT OF PEAK (m)
- PRODUCING MINE (BHOTANG)
- RIVER / NALA
- RAILWAY LINE
- PACCA ROAD
- KUCHCHA ROAD
- IMPORTANT TOWNSHIP

LIST OF COPPER OCCURRENCES OF SIKKIM

- | | | |
|---------------------|-----------------------|-----------------|
| 1. BAM | 9. LINGUI | 16. TUKKHANI |
| 2. BARMIAK | 10. MIK | 17. JUGDUM |
| 3. BHOTANG | 11. MONGBRU | 18. SISNIKHANI |
| 4. PAMPHAK KHANI | 12. LOWER PACHEKHANI | 18A. RHOTOKHANI |
| 5. DAJONG | 12A. UPPER PACHEKHANI | 18B. SIRBONG |
| 6. DENTAM | 13. RANGLICHU | 18C. SONTALI |
| 7. DIKCHU & LINGDOK | 14. RINGHINPONG | 18D. CHUMBONG |
| 8. RHENOX | 15. TEMI | |

GEOLOGICAL & MINERAL MAP OF EAST DISTRICT, SIKKIM



GEOLOGICAL CROSS SECTION

