PROPOSAL FOR RECONNAISSANCE SURVEY (G-4 STAGE) FOR COPPER, LEAD, ZINC AND GOLD IN TARICHAR KHURD BLOCK (101.00 SQ.KM) DISTRICT- NIWARI, MADHYA PRADESH

COMMODITY: COPPER, LEAD, ZINC AND GOLD

BY

MINERAL EXPLORATION CORPORATION LIMITED
DR. BABASAHAB AMBEDKAR BHAWAN
SEMINARY HILLS
NAGPUR (MH)

PLACE: NAGPUR
DATE: 08.04.2022

Summary of the Block for Reconnaissance Survey (G-4 Stage)
GENERAL INFORMATION ABOUT THE BLOCK

	Features	**Details**
	Block ID	TARICHAR KHURD BLOCK
	Exploration Agency	Mineral Exploration Corporation Limited (MECL)
	Commodity	Copper, Lead, Zinc and Gold
	Mineral Belt	Bundelkhand Gneissic Complex
	Completion period with entire Time schedule to complete the project	15 months
	Objectives	Based on the evaluation of previous work, the present exploration program has been formulated to fulfil the following objectives: i) To carry out Geological & structural mapping on 1: 12,500 scale for demarcation of Copper, Lead, Zinc and Gold bearing formations (host rock) with the structural features to identify the surface manifestations and lateral disposition of the mineralized zones. ii) To collect surface (Bedrock/soil/stream sediment) samples & analyse for Cu, Pb, Zn & Au and decide further course of Exploration program. iii) To carry out trenching to expose Copper, Lead, Zinc and Gold bearing formation concealed under soil. iv) To carry out channel and trench samples collect from Copper, Lead, Zinc and Gold bearing formations to demarcate mineralised zones. v) To carry out surface geophysical survey (Magnetic & SP) to demarcate structure and concealed Copper, Lead, Zinc and Gold bearing formations. vi) To drill few scout boreholes involving 500m to prove the strike and depth persistence of ore bearing formation mapped in the area which in turn will decide the future course of Exploration program at G-3/G-2 category of UNFC.

		vi) To estimate reconnaissance Copper, Lead, Zinc and Gold resources along with accessory elements as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules-2015 at G-4 level.
	Whether the work will be carried out by the proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsource agency	Work will be carried out by the proposed agency (MECL).
	Name/Number of Geoscientists	Two no. Geoscientists
	Expected Field days (Geology, Geophysics, surveyor)	Geologist Party days: 180 days at field 60 days at HQ
		Survey Party days: 10 days

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<tr><td>1.</td><td>Location</td><td></td></tr>
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<tr><td></td><td>Villages</td><td>Tarichar Khurd, Murara, Nivari, Karguwara, Sakuli villages in Niwari Tehsil of Niwari district situated in the Block. Nivari town, district headquarter situated at the south western corner of the block and well connected by metal road from Jhansi about 30 km. The nearest railway station is Nivari, Nivari, M.P. situated at South western corner of the Block. Real head is Jhansi is about 30km from the proposed block. The nearest airport is Gwalior, Madhya Pradesh is about 130Km.</td></tr>
<tr><td></td><td>Tehsil/Taluk</td><td>Niwari</td></tr>
<tr><td></td><td>District</td><td>Niwari</td></tr>
<tr><td></td><td>State</td><td>Madhya Pradesh</td></tr>
<tr><td>2.</td><td>Area (hectares/ square kilometres)</td><td></td></tr>
<tr><td></td><td>Block Area</td><td>101.00 sq.km</td></tr>
<tr><td></td><td>Forest Area</td><td>The block co-ordinates were subjected in the Decision Support System (DSS) of Forest Department, Ministry of Environment, Forest and Climate Change (MOEFCC). It has been found that the block area is under “not inviolate”. (Go)-Non Forest area.</td></tr>
<tr><td></td><td>Government Land Area (Bilanam)</td><td>Data not available</td></tr>
<tr><td></td><td>Charagaha</td><td>Data not available</td></tr>
<tr><td></td><td>Private Land Area</td><td>Most of the area is private cultivated land</td></tr>
<tr><td>3.</td><td>Accessibility</td><td></td></tr>
<tr><td></td><td>Nearest Rail Head</td><td>Niwari (0km) and Jhansi (30km)</td></tr>
<tr><td></td><td>Road</td><td>The block is 30 km south west of Jhansi and connected by metalled road, which passes through southern part of the block.</td></tr>
<tr><td></td><td>Airport</td><td>Gwalior (130 km)</td></tr>
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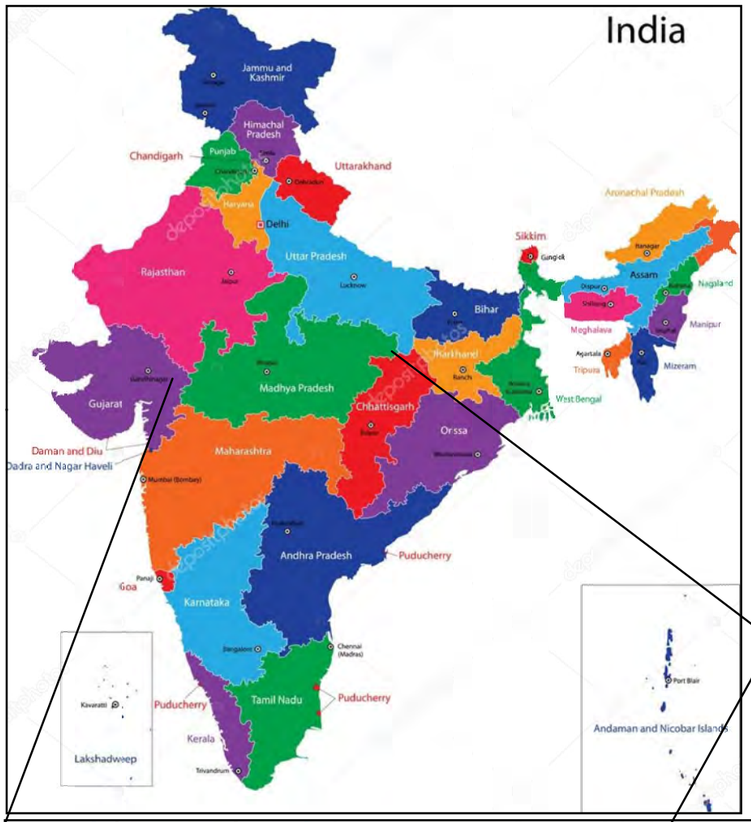
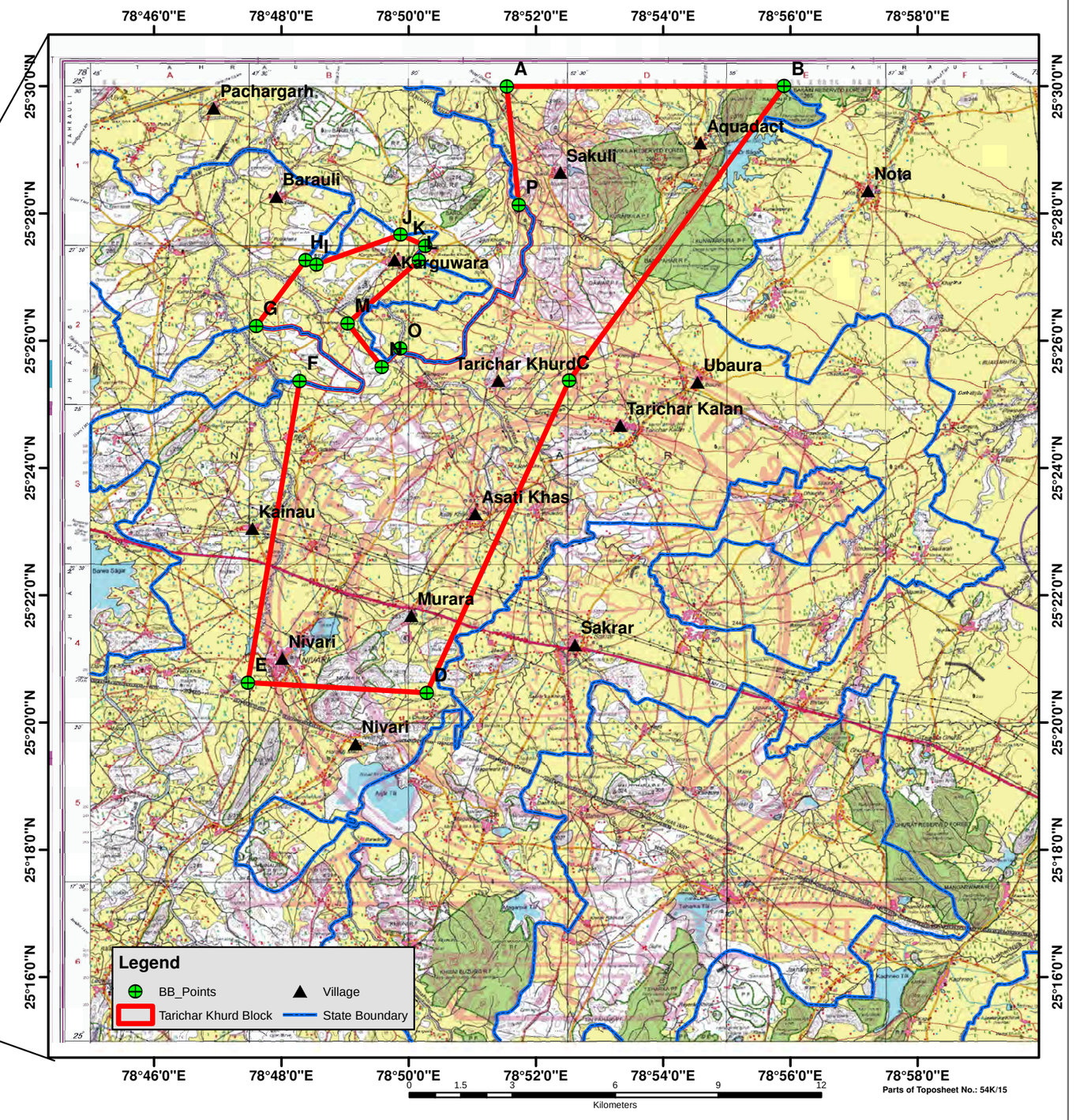
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Bundelkhand Region lies between the Indo-Gangetic Plain to the north and the Vindhyan Range to the south. The Bundelkhand Plateau lies to the east of the Central India Plateau and is bounded on the northeast by the Rewa – Panna plateau. The topography is slightly undulatory plain with isolated hills rising abruptly and form steep and nearly inaccessible scarps. The elevation of the study area ranges from 215m above mean sea level to 298m above mean sea level. The highest elevation of the area is 298m above MSL north of Nivari RF. The mean slope of the entire region is towards north west.
	Rivers/ Streams	Major drainage of the Bundelkhand region is through its numerous perennial rivers and their tributary rivulets and seasonal streams, which join the Yamuna River in the north. Singa Nala, Dungrai Nadi and Kaina Nadi are the major rivers whose tributaries are flowing in the area. The overall drainage pattern in the study area is sub dendritic to dendritic, characteristic of granitic terrain. Small to large dams have also been constructed at the junction of river course and quartz reef. Quartz reefs are excellent natural barrier to impound water in form of small reservoir to meet the requirements of local people.
5.	**Climate**	
	Mean Annual Rainfall	The annual average rainfall recorded is about 910 mm
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum temperatures $7^{O}C$. Maximum temperatures up to $48^{O}C$.
6.	**Topography**	
	Toposheet Number	54K/15
	Morphology of the Area	The study area forms part of Bundelkhand plateau. Low dissected hills and valley of structural origin, pediment and pediplain of denudational origin. The general elevation 320m.
7.	**Availability of baseline geosciences data**	
	Geological Map (1:50K/25K)	Geological map on 1:50000 scale (Source: Bhukosh)
	Geochemical Map	NGCM Map (Source: Bhukosh)
	Geophysical Map (Aeromagnetic, ground geophysical, Regional	Gravity and Magnetic Map (Source: Bhukosh)

	as well as local scale GP maps)	
8.	**Justification for taking up Reconnaissance Survey/ Regional Exploration**	i) Application of Hyperspectral / Multispectral Remote Sensing techniques towards Mapping of Alteration / Mineralized Zone and Building up of Spectral Library in parts of Bundelkhand Gneissic Complex, Tikamgarh and Chhatarpur districts, Madhya Pradesh and Jhansi district, Uttar Pradesh carried out by GSI during the F.S. 2016-18 (Trina V. Vyas et. al.), to established mapping of alteration / mineralized zones using ASTER & Landsat 8 (OLI) data and field studies in Bundelkhand Massif. In this study they mentioned that sulphide (Pyrite, Chalcopyrite, Azurite) and carbonate minerals (Malachite), have been identified during the field work near Tarichar Khurd, Karguwan, Laron, Murara, Parara, Biraro Khas, Kumarpura, Sakera and Baron. Thin section study showed the presence of pyrite, chalcopyrite and malachite. The XRD analysis of Tarichar khurd and Baron samples confirm the presence of sulphide mineralization in the form of chalcopyrite, chalcocite and malachite. **Based on the potential of the block, GSI strongly recommended for further exploration potentiality in these areas.** iii) Filed visit depicts malachite encrustation and pyrite specks within quartz veins at many places. iii) Based on the evaluation of previous work and field visit, the present Reconnaissance Survey program at G-4 level has been prepared. Geological Mapping & surface sampling combined with Geophysical Survey (Gravity and Magnetic) will be helpful to locate anomalous, zones, if any. iv) The Exploration will be helpful in estimation of Copper, Lead, Zinc and Gold reconnaissance resources in the block. v) The Reconnaissance Survey will help in planning of detailed exploration program (in case upgraded to G-3/G-2 level) which in turn will facilitate the state Government for Action of Block.

LOCATION MAP OF TARICHAR KHURD BLOCK, NIWARI DISTRICT, MADHYA PRADESH (AREA: 101.0 SQ. KM)





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मिनरल एक्सप्लोरेशन कार्पोरेशन लिमिटेड
MINERAL EXPLORATION CORPORATION LTD.
Govt of India Enterprise, A miniratna PSE
MECL

GEOLOGICAL MAP OF TARICHAR KHURD BLOCK, NIWARI DISTRICT, MADHYA PRADESH

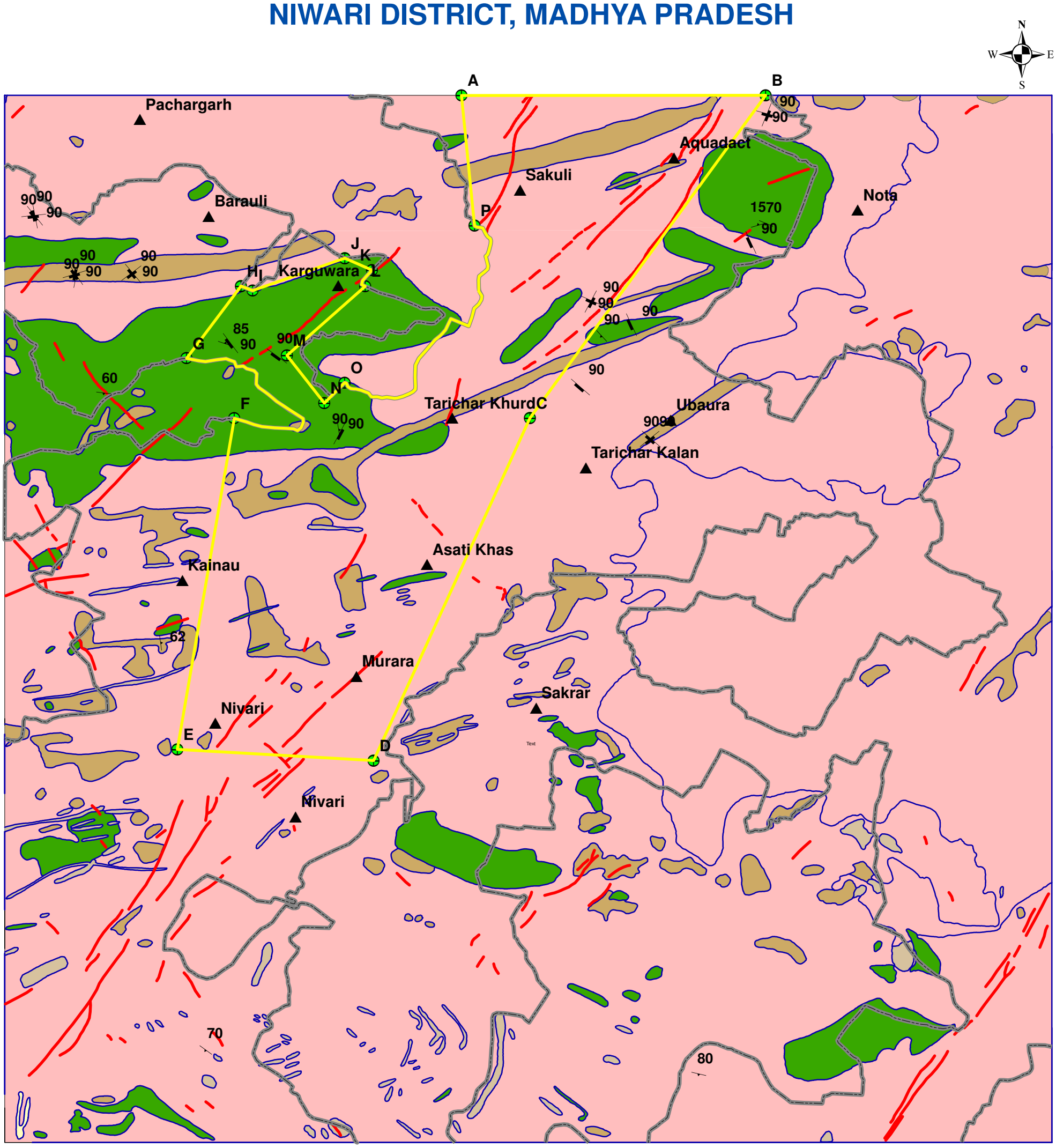

Plate-II **Source: Bhukosh**

Parts of Toposheet No. 54K/15

Legend

- Tarichar Khurd Block
- BB Point

Lithology

LITHOLOGIC

- ALLUVIUM
- AMPHIBOLITE
- COARSE GRAINED, PORPHYRITIC GRANITE
- FINE GRAINED GRANITE
- MEDIUM GRAINED GRANITE
- SAND/CHANNEL ALLUVIUM

Oriented_Structure_Plane

POINT_TYPE

- CLEAVAGE/FOLIATION/SCHISTOSITY (S1)
- JOINT
- State Boundary
- Shear_Zone
- Fold
- Fault
- Quartz Reef
- Boundary
- Village

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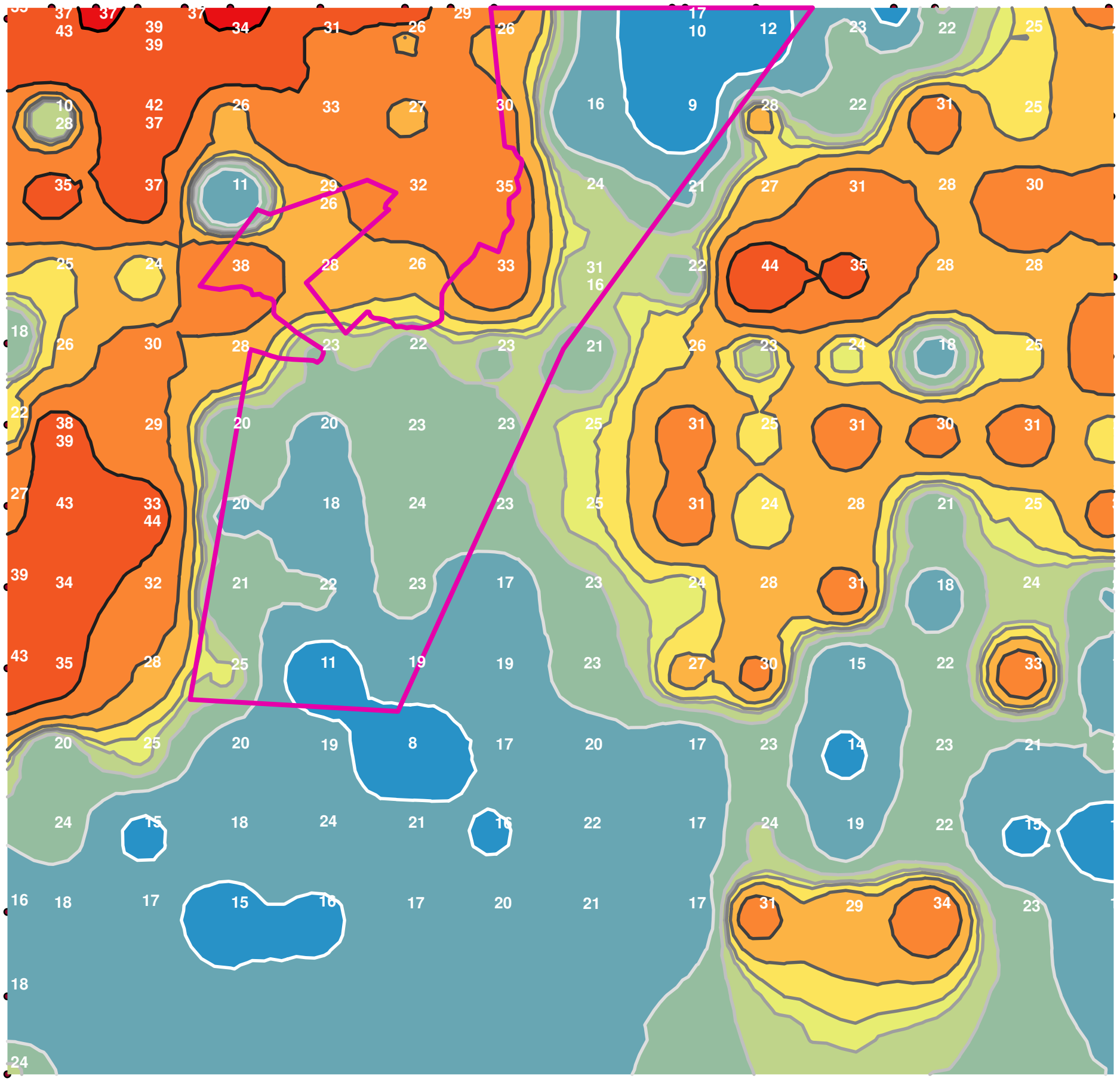
MECL

Secondary Dispersion Map of Copper of Tarichar Khurd Block, District Niwari, Madhya Pradesh



Data Source: NGCM, Bhukosh

Plate-III

Legend

- Tarichar Khurd Block

Copper(in ppm)

Prediction Map

[Stream Sediment].[CU]

Contours

- 17
- 21
- 23
- 25
- 25
- 26
- 28
- 33
- 42

Filled Contours

- 8 – 17
- 17 – 21
- 21 – 23
- 23 – 25
- 25 – 25
- 25 – 26
- 26 – 28
- 28 – 33
- 33 – 42
- 42 – 60
- Stream Sediment

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MECL

Ministry of Mines
National Mineral Exploration Trust

Minutes of the 40th Technical-cum-Cost Committee (TCC) meeting held on 27th and 28th April, 2022 through videoconferencing at Geological Survey of India, DGCO, A-II Pushpa Bhawan, New Delhi

The 40th Technical-cum-Cost Committee [TCC] meeting of National Mineral Exploration Trust [NMET] was held under the chairmanship of Shri Janardan Prasad, Additional Director General, Geological Survey of India [ADG, GSI] and Chairman, TCC, NMET on 27th and 28th April, 2022 at GSI, DGCO, A-II Pushpa Bhawan, New Delhi through videoconferencing. The TCC members and representatives of Exploration Agencies [EAs] participated through their respective VC nodes. The list of participants is in **annexure-1**.

Shri Suresh Chander, Director, GSI and Member Secretary, TCC NMET, welcomed Shri Janardan Prasad, ADG, GSI & Chairman, TCC; Members of the TCC, and participants representing various EAs. He conveyed that total five new project proposals have been received from MECL for technical evaluation of the committee.

Shri Janardan Prasad, ADG, GSI, and Chairman, TCC also welcomed the TCC members and other participants from various EAs. The proceeding of the meeting was initiated as per the circulated agenda.

Agenda-wise discussions are summarised as follows.

40.1: Technical evaluation of new project proposals:

40.1.1. Reconnaissance survey (G4) for Copper, Lead, Zinc and Gold in Tarichar Khurd block (101.00 sq. km), District: Niwari, Madhya Pradesh.

a) The project proposal was discussed in the 38th TCC meeting wherein the Committee has reserved its decision for want of clarification on the background information, geological milieu, and analytical results.

b) The same project was again discussed in 39th TCC meeting wherein the Committee suggested to collect some of the samples (say 10 samples) from the proposed area and analyze them at the laboratory of MECL and in case of encouraging results, the project may be resubmitted in the next TCC.

c) Now MECL made a field visit to the area and submitted that the quartz reefs locally exhibit disseminated sulphide mineralization mainly in the form of specks of pyrite, chalcopyrite and encrustation of malachite. The quartz reefs show anhedral quartz, alkali feldspar with opaques, recrystallized quartz, sericite, vug filling, granulation etc.

d) MECL has collected and analyzed seven samples from the area and submitted that two of the samples i.e. BRT-4 and BRT-5 have shown anomalous values 1.04% and 0.22% of Cu respectively. The other elements like lead (15ppm to 97ppm), cobalt (18ppm to

36ppm), nickel (14ppm to 56ppm), and chromium (0.01% to 0.06%) are also reported from the samples.

e) Based on the deliberations, the Committee suggested to take up the reconnaissance survey (G4 stage exploration) in the Tarichar Khurd block by implementing geological mapping, sampling, pitting/ trenching and petrpgraphic study. The project will be reviewed after six months. The decision on geophysical survey and drilling will be taken after reviewing of the project. In case of encouraging results the geophysical components and drilling may be implemented.

The committee recommended the proposal for approval by EC for Reconnaissance survey (G4) for Copper, Lead, Zinc and Gold in Tarichar Khurd block (101.00 sq. km), District: Niwari, Madhya Pradesh with an estimated cost of Rs. 49.35 Lakhs including GST in a time schedule of 12 months for carrying out the proposed work and submission of the geological report as per annexure- 2A & 2B.

40.1.2. Reconnaissance survey (G4) for REE mineralization in Maniram-Bhajyang area (70.42 sq. km), District: South Sikkim, Sikkim.

a) Geologically the Sikkim-Darjeeling Himalayas have been defined by four tectonic units from South to North viz. i) Foot Hill Belt, ii) Inner Belt, iii) Axial Belt and iv) Trans Axial Belt. Foot Hill belt comprises of Siwaliks, Gondwanas and impresistant Buxas. The inner belt comprises of metamorphites of Daling - Darjeeling sequence. The Axial Belt is defined by highest grade of metamorphic rocks represented by Tsungthang Formation, Calcareous gneiss and Kanchendzongha gneiss (migmatite gneiss). The Trans Axial belt is represented by the Tethyan sequence comprised of Everest pelitic and calcareous sequence, Lachi series and Cho-lhamo series.

b) It has been conveyed that the Atomic Mineral Division (AMD), Government of India and Teshering Tashi of Department of Mines and Geology Government of Sikkim had reported occurrences of basic intrusives at few places in the area which are anomalous for U-Th-REE mineralization and could mark a potential zone for such mineralization and recommended for detail survey in the area.

c) The Buxa series in this area includes dolomite, dolomitic slates and quartzites. In conformity with the regional structure, the dolomite group of rocks dip with moderate to high angle in the north or north-eastern directions. Zone of U-Th-REE mineralization is spatially confined to the Buxa-Gondwana tectonic zone into which the alkaline rocks have been emplaced.

d) The pre-approved Temi-Tarku-Damthang Block is also located to the north of the proposed block and is being explored by MECL for basemetal and REE.

e) It has been conveyed that the GSI had reported high K enrichment, high K/Rb ratio and low Rb/Sr ratio which indicates formation of rocks from unfractionated melt in the area and is favorable for REE mineralization.

f) Committee suggested to do ground evaluation of the radiometric data available with RSAS, Bangalore to demarcate potential zones.

g) Based on the deliberation, the committee recommended to take up the proposal for

06/05/22

Government of India
Ministry of Mines
National Mineral Exploration Trust [NMET]

Minutes of the 24th meeting of the Executive Committee (EC) of National Mineral Exploration Trust (NMET) held on 18th May, 2022

The 24th meeting of EC of NMET was held under the Chairmanship of Shri Alok Tandon, Secretary (Mines) on 18th May, 2022 in Khanij Kaksh, Ministry of Mines, Shastri Bhawan, New Delhi through video conference. The list of participants is given in **Annexure-1.**

Shri Sanjay Lohiya, Additional Secretary, Mines welcomed all the participants in the meeting. He informed that the project proposals put for approval in the meeting are from remaining in 22nd EC meeting and recommended by 39th TCC & 40th TCC meetings.

Shri Vivek Sharma, Director & HoD, NMET presented the agenda points for the EC meeting.

Following are the agenda points discussed and decisions taken.

1: Approval of minutes of 23rd meeting of EC held on 11th March, 2022 and supplementary 23rd EC meeting on 16th March, 2022.

The minutes of the 23rd meeting of EC held on 11th March, 2022 and supplementary 23rd EC meeting on 16th March, 2022 was circulated on 16th and 17th March, 2022 respectively to all EC members and no comments have been received.

Decision of EC:

EC approved the minutes of the 23rd meeting of EC held on 11th March, 2022 and supplementary 23rd EC meeting on 16th March, 2022 and which were circulated on 16th and 17th March, 2022.

2: Action Taken Report (ATR) for minutes of 23rd meeting of EC held on 11th March, 2022 and supplementary 23rd EC meeting on 16th March, 2022.

The ATR on minutes of the 23rd meeting of EC held on 11th March, 2022 and supplementary 23rd EC meeting on 16th March, 2022 was presented in the meeting. Shri Vivek Sharma, Director & HoD, NMET informed that necessary action has been taken on decision of the minutes of 23rd EC Meeting except one point S. No. 7 project proposal for Reconnaissance survey for PGE in Chandiposh block (111.00 sq. km), District: Sundargarh, Odisha. MECL will be submitting the project proposal in next TCC meeting after incorporating modifications and suggestions of technical expert members of EC.

xvii. **Reconnaissance survey (G4) for Nickel, Copper, and associated minerals in Salewara-Kumarwara-Murum block (52.00 sq. km), District: Rajnandgaon, Chhattisgarh. [Duration- 9 months & Estimated cost ₹0.39 Cr.]**

EC decision:

EC approved the project with estimated cost of **₹0.39 Cr.** and timeline of **9 months**.

xviii. **Preliminary exploration (G3) for phosphorite in Pahadi Kalan-Gora Kalan block, District: Lalitpur, Uttar Pradesh. [Duration- 12 months & Estimated cost ₹3.62 Cr.]**

EC decision:

EC approved the project with estimated cost of **₹3.62 Cr.** and timeline of **12 months**.

xix. **Reconnaissance survey (G4) for Copper, Lead, Zinc and Gold in Tarichar Khurd block (101.00 sq. km), District: Niwari, Madhya Pradesh. [Duration-12 months & Estimated cost ₹0.50 Cr.]**

Discussion:

The Director General, GSI informed that GSI has carried out work in these area and samples of quartz reef had been analyzed. The malachite stains are seen at places in quartz reef only.

Dr. D. K. Sinha, Director, AMD suggested that values associated with malachite may not be an encouraging one.

The Secretary, Mines asked to take comments from GSI regarding the feasibility for further exploration work in proposed area.

EC decision:

EC deferred the project and suggested MECL to take comments from GSI regarding the feasibility for further exploration work in proposed area.

(Action: MECL/GSI)

PROPOSAL FOR RECONNAISSANCE SURVEY (G-4 STAGE) FOR COPPER, LEAD, ZINC AND GOLD IN LARON BLOCK (45.00 SQ.KM) DISTRICT- JHANSI, UTTAR PRADESH

COMMODITY: COPPER, LEAD, ZINC AND GOLD

BY

MINERAL EXPLORATION CORPORATION LIMITED
DR. BABASAHAB AMBEDKAR BHAWAN
SEMINARY HILLS
NAGPUR (MH)

PLACE: NAGPUR
DATE: 24.08.2021

Summary of the Block for Reconnaissance Survey (G-4 Stage)
GENERAL INFORMATION ABOUT THE BLOCK

	Features	**Details**
	Block ID	LARON BLOCK
	Exploration Agency	Mineral Exploration Corporation Limited (MECL)
	Commodity	Copper, Lead, Zinc and Gold
	Mineral Belt	Bundelkhand Gneissic Complex
	Completion period with entire Time schedule to complete the project	18 months
	Objectives	Based on the evaluation of previous work, the present exploration program has been formulated to fulfil the following objectives: i) To carry out Geological & structural mapping on 1: 12,500 scale for demarcation of Copper, Lead, Zinc and Gold bearing formations (host rock) with the structural features to identify the surface manifestations and lateral disposition of the mineralized zones. ii) To collect surface (Bedrock/soil/stream sediment) samples & analyse for Cu, Pb, Zn & Au and decide further course of Exploration program. iii) To carry out surface geophysical survey (Induced Polarization (I.P), Magnetic and Time Domain Electromagnetic to demarcate concealed Copper, Lead, Zinc and Gold bearing formations. iv) To carry out trenching to expose Copper, Lead, Zinc and Gold bearing formation concealed under soil. v) To carry out channel and trench samples collect from Copper, Lead, Zinc and Gold bearing formations to demarcate mineralised zones. vi) To drill 5 scout boreholes up to 50m vertical depth to prove the strike and depth persistence of ore bearing formation mapped in the area which in turn will

		decide the future course of Exploration program at G-3/G-2 category of UNFC. vi) To estimate reconnaissance Copper, Lead, Zinc and Gold resources along with accessory elements as per UNFC norms and Minerals (Evidence of Mineral Contents) Rules-2015 at G-4 level.
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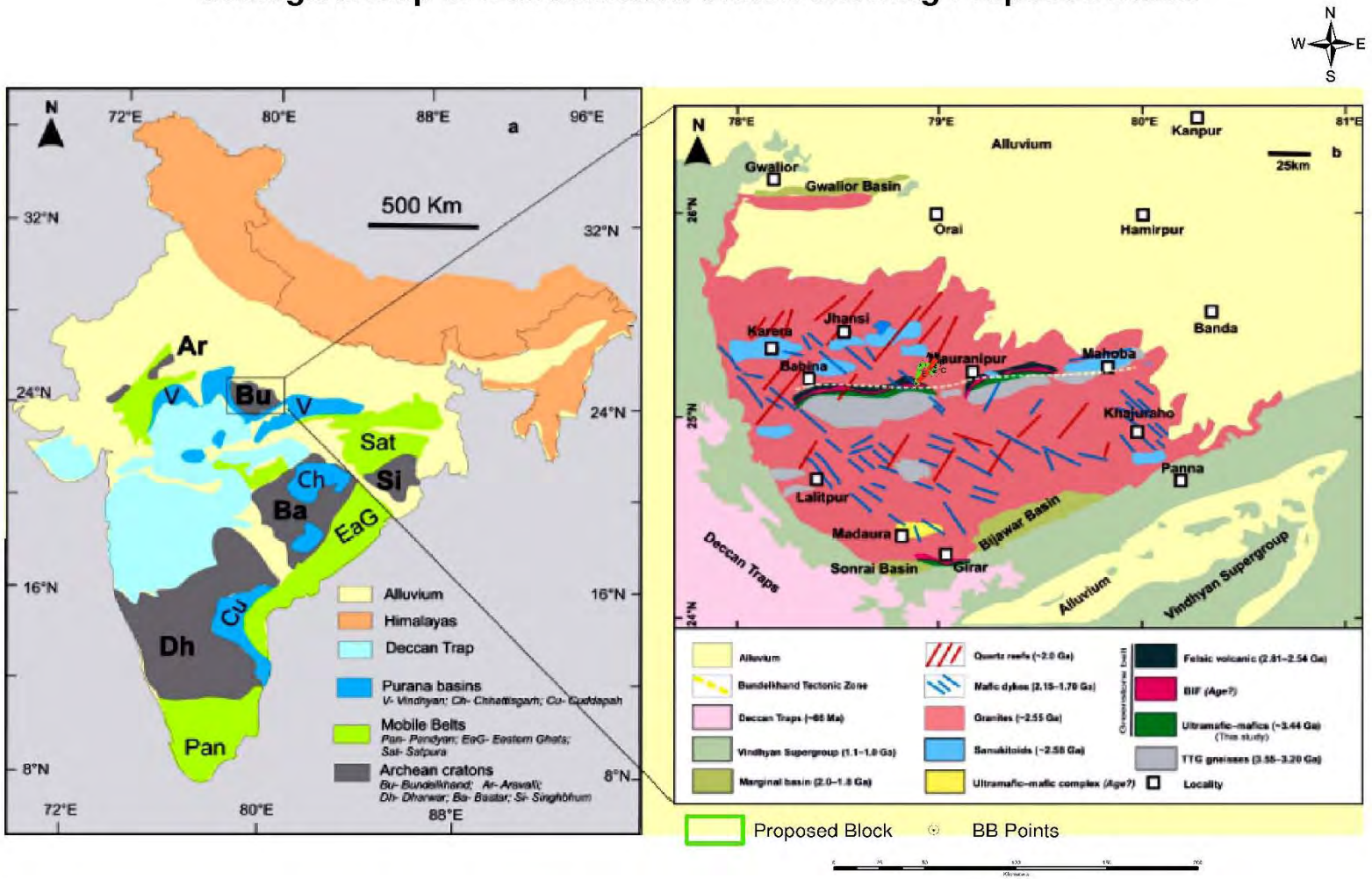
</table>
</td></tr>
<tr><td></td><td>Villages</td><td>Katera village in Katera Nagar Panchayat of Jhansi district situated northern corner of the Block. The block could be approached from Jhansi city and Mauranipur city by metal road of 60km and 30km respectively. The nearest railway station is Teharka, Madhya Pradesh which is 7Km and real head is Jhansi. The nearest airport is Gwalior, Madhya Pradesh is about 150Km.</td></tr>
<tr><td></td><td>Tehsil/Taluk</td><td>Mauranipur</td></tr>
<tr><td></td><td>District</td><td>Jhansi</td></tr>
<tr><td></td><td>State</td><td>Uttar Pradesh</td></tr>
<tr><td>2.</td><td>Area (hectares/ square kilometres)</td><td></td></tr>
<tr><td></td><td>Block Area</td><td>45.00 sq.km</td></tr>
<tr><td></td><td>Forest Area</td><td>The block co-ordinates were subjected in the Decision Support System (DSS) of Forest Department, Ministry of Environment, Forest and Climate Change (MOEFCC). It has been found that the block area is under “not inviolate”. (Go)-Non Forest area.</td></tr>
<tr><td></td><td>Government Land Area (Bilanam)</td><td>Data not available</td></tr>
<tr><td></td><td>Charagaha</td><td>Data not available</td></tr>
<tr><td></td><td>Private Land Area</td><td>Most of the area is private cultivated land</td></tr>
<tr><td>3.</td><td>Accessibility</td><td></td></tr>
<tr><td></td><td>Nearest Rail Head</td><td>Mauranipur (30km) and Jhansi (60km)</td></tr>
<tr><td></td><td>Road</td><td>The block is 10 km south east of Teharka village on Jhansi-Mauranipur Road and connected by metalled road, which passes through the block.</td></tr>
<tr><td></td><td>Airport</td><td>Gwalior (150 km)</td></tr>
<tr><td>4.</td><td>Hydrography</td><td></td></tr>
<tr><td></td><td>Local Surface Drainage Pattern (Channels)</td><td>Bundelkhand Region lies between the Indo-Gangetic Plain to the north and the Vindhyan Range to the south. The Bundelkhand Plateau lies to the east of the Central</td></tr>
</table>

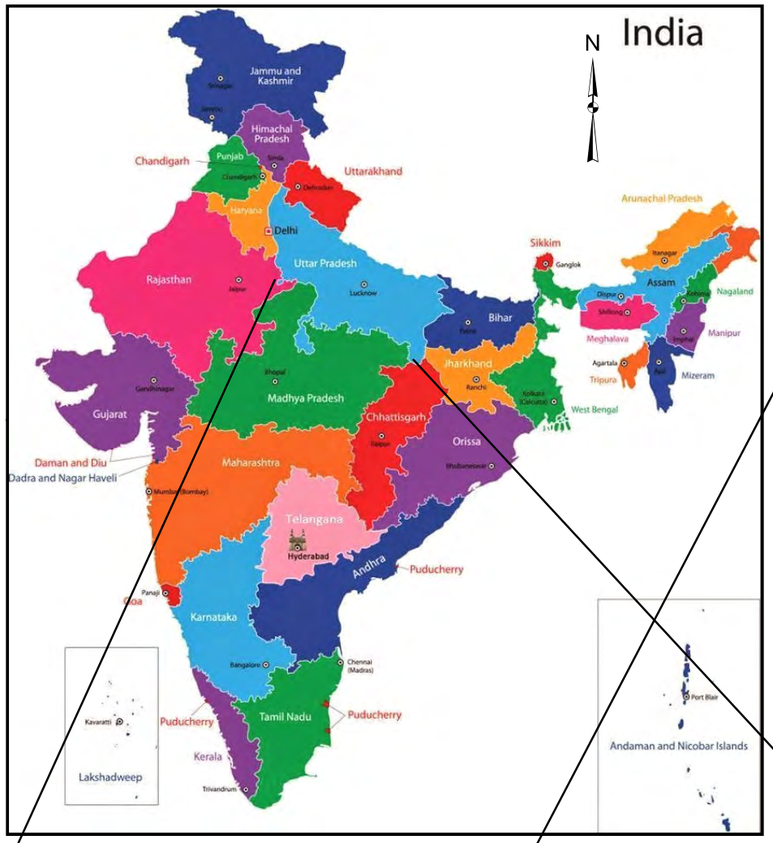
		India Plateau and is bounded on the northeast by the Rewa – Panna plateau. The topography is mostly undulatory plain with isolated hills rising abruptly and form steep and nearly inaccessible scarps. The elevation of the study area ranges from 220m above mean sea level to 407m above mean sea level. The highest elevation of the area is 407m above MSL north of Katera RF. The mean slope of the entire region is towards east.
	Rivers/ Streams	Major drainage of the Bundelkhand region is through its numerous perennial rivers and their tributary rivulets and seasonal streams, which join the Yamuna River in the north. Jaldabar Nala and Sukhnai Nadi are the two major rivers flowing in the area. The overall drainage pattern in the study area is sub dendritic to dendritic, characteristic of granitic terrain. Small to large dams have also been constructed at the junction of river course and quartz reef. Quartz reefs are excellent natural barrier to impound water in form of small reservoir to meet the requirements of local people.
5.	**Climate**	
	Mean Annual Rainfall	The annual average rainfall recorded is about 900 mm
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Minimum temperatures $6^{O}C$. Maximum temperatures up to $47^{O}C$.
6.	**Topography**	
	Toposheet Number	54K/16
	Morphology of the Area	The study area forms part of Bundelkhand plateau. Low dissected hills and valley of structural origin, pediment and pediplain of denudational origin. The general elevation 300m.
7.	**Availability of baseline geosciences data**	
	Geological Map (1:50K/25K)	Geological map on 1:50000 scale (Source: Bhukosh)
	Geochemical Map	-
	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	-

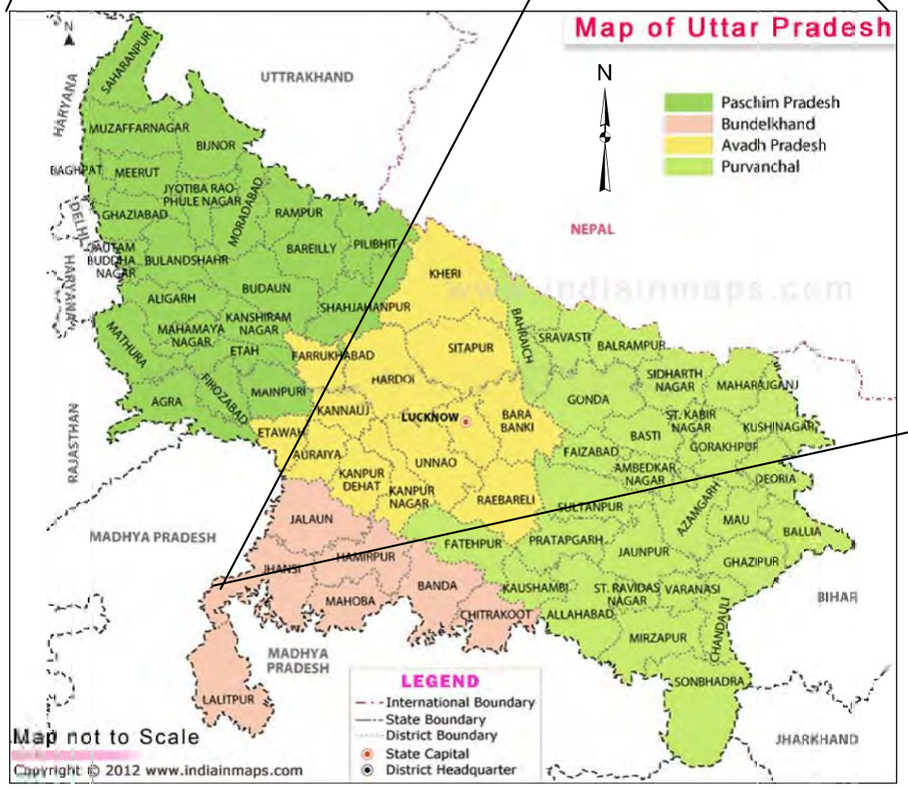
8.	**Justification for taking up Reconnaissance Survey/ Regional Exploration**	i) Application of Hyperspectral / Multispectral Remote Sensing techniques towards Mapping of Alteration / Mineralized Zone and Building up of Spectral Library in parts of Bundelkhand Gneissic Complex, Tikamgarh and Chhatarpur districts, Madhya Pradesh and Jhansi district, Uttar Pradesh carried out by GSI during the F.S. 2016-18 (Trina V. Vyas et. al.), to established mapping of alteration / mineralized zones using ASTER & Landsat 8 (OLI) data and field studies in Bundelkhand Massif. In this study they mentioned that copper sulphides like azurite were seen in quartz reefs south of Laron, while chalcopyrite was seen in E-W trending quartz reef north-east of Parara and NE-SW tending reef north of Baron. Malachite disseminations were observed in quartz reefs south of Laron. Sulphide mineralization (azurite, chalcopyrite and other Cu sulphides and malachite stains were observed in brecciated quartz based on field observation. **Based on the potential of the block, GSI strongly recommended for further exploration potentiality in these areas.** ii) Based on the evaluation of previous work, the present Reconnaissance Survey program at G-4 level has been prepared. Geological Mapping & surface sampling combined with Geophysical Survey (Induced Polarization (I.P), Magnetic and Time Domain Electromagnetic) in anomalous areas will be helpful in assessing the disposition of the mineralized zones, structural features like shears and faults if any. iii) The Exploration will be helpful in estimation of Copper, Lead, Zinc and Gold reconnaissance resources in the block. iv) The Reconnaissance Survey will help in planning of detailed exploration program (in case upgraded to G-3/G-2 level) which in turn will facilitate the state Government for Action of Block.

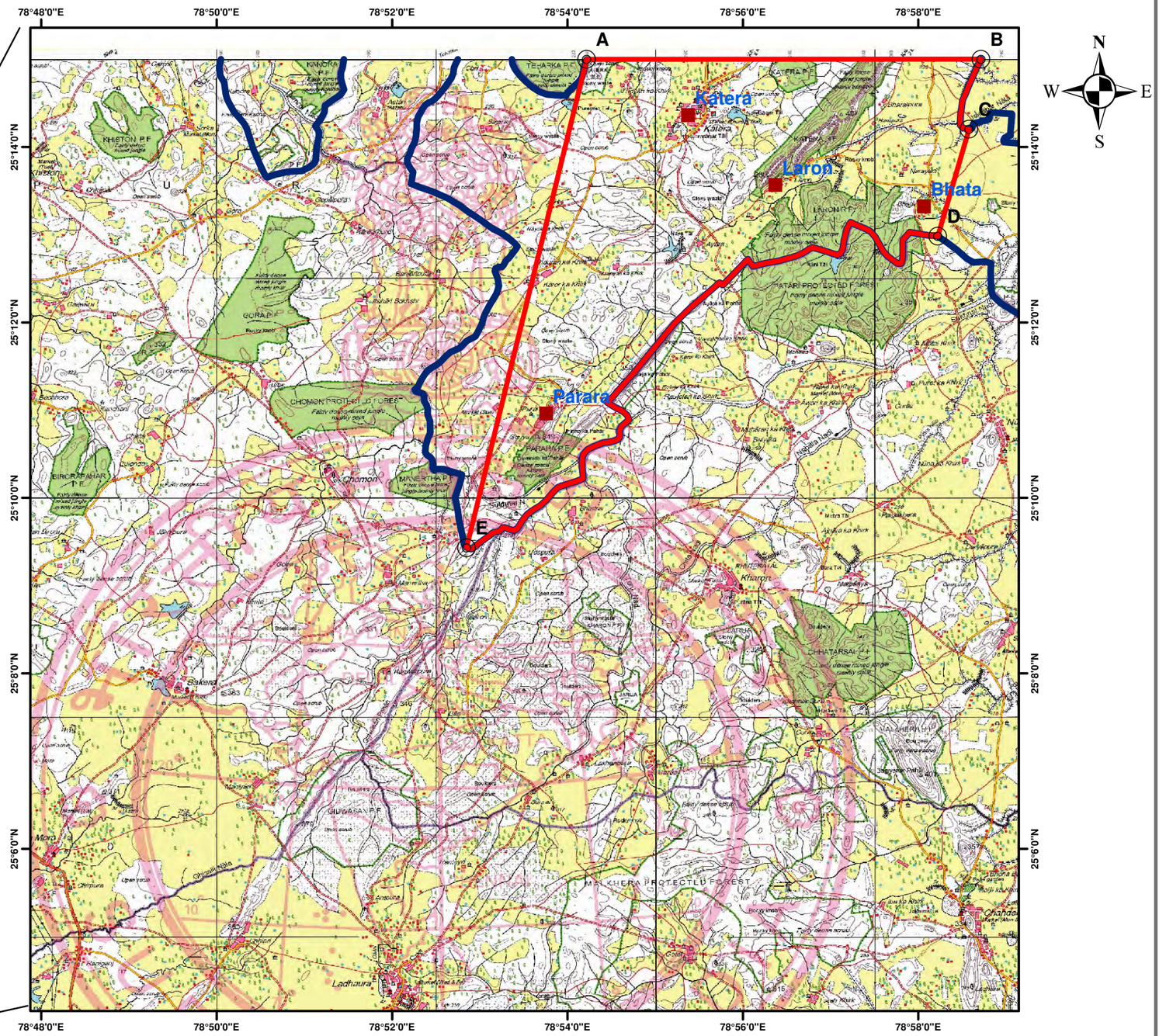
Geological Map of Bundelkhand Craton showing Proposed Block



LOCATION MAP OF LARON BLOCK (45 Sq. Km.), DISTRICT- JHANSI, UTTAR PRADESH







BB POINT	LONGITUDE	LATITUDE
A	78° 54' 13.0893" E	25° 14' 59.9315" N
B	78° 58' 42.8811" E	25° 15' 00.0356" N
C	78° 58' 34.7954" E	25° 14' 12.1729" N
D	78° 58' 13.3562" E	25° 12' 58.9486" N
E	78° 52' 50.9459" E	25° 09' 26.0193" N
B to C	Along the State Boundary Between M.P. and U.P.	
D to E		

(Part of Toposheet No. 54K/16)

1.5 0.75 0 1.5 3 4.5 6
Kilometers

Plate- I

मिनरल एक्सप्लोरेशन कार्पोरेशन लिमिटेड
MINERAL EXPLORATION CORPORATION LTD.
Govt of India Enterprise, A miniratna PSE
MECL

Regional Geological Map of Laron Block, Jhansi, U.P.

78°45'0"E 78°50'0"E 78°55'0"E 79°0'0"E

25°20'0"N 25°15'0"N 25°10'0"N 25°5'0"N 25°0'0"N

N W E S

Murara
Nivari
Katera
Laron
Bhata
Parara
Birora Khas
Baron
Kuwanpura
Sakera
Siaoni
Parakhera
Jeora Mora
Ladhaura
Gotet
Chandera

A B C D E

Kilometers

Part of Toposheet No.: 54K/15 & 54K/16

Plate- II

LEGEND

- ALLUVIUM
- AMPHIBOLITE
- COARSE GRAINED, PORPHYRITIC GRANITE
- FINE GRAINED GRANITE
- MEDIUM GRAINED GRANITE
- SAND/CHANNEL ALLUVIUM
- CLEAVAGE/FOLIATION/SCHISTOSITY (S1)
- JOINT
- Shear_Zone
- Dyke
- Proposed Block Boundary_54K_16_UP
- BB POINT_54K_16_UP

34.1.2. Proposal for Reconnaissance Survey (G4) for Copper, Lead, Zinc and Gold in Laron Block (45.00 sq. km) District: Jhansi, Uttar Pradesh. [Implementing Agency: MECL]

a) MECL has proposed to take up the G4 stage exploration in Laron block by deploying geological mapping, surface sampling, geophysical survey, trenching, scout drilling, etc. in time schedule of 19 months.

b) It has been submitted that the alteration minerals like pyrophyllite, diaspore and chlorite have been observed as vug fillings, fracture fillings and small pockets (at places) in quartz reefs around west of Laron and east of Parara. The presence of azurite in south of Laron; chalcopyrite in E-W trending quartz reef in NE of Parara; and malachite disseminations in quartz reefs in south of Laron and north of Baron Village indicate the presence of copper mineralisation in the area.

c) The committee opined that the geochemical, geophysical data available with GSI, if any, in the area may be consulted before implementation of G4 stage Reconnaissance Survey to avoid any duplication.

d) The review of the exploration work carried out will be done after 6 months.

The Committee recommended the proposal for approval by EC for Reconnaissance Survey (G4) for Copper, Lead, Zinc and Gold in Laron Block (45.00 sq. km) District: Jhansi, Uttar Pradesh with estimated cost of Rs. 265.48 Lakhs including GST in time schedule of 15 months for carrying out the proposed work and submission of report as per Annexure-2A & 2B.

34.1.3. Proposal for Reconnaissance Survey (G4) for Sillimanite in Chippilangso Block (37.93 sq. km) District: Karbianglong, Assam. [Implementing Agency: MECL]

a) Geologically the area mainly constitutes gneissic complex of the Archaean age with predominance of migmatitic biotite gneiss, quartzo-feldspathic gneiss, biotite/ amphibole gneiss, quartz-sillimanite schist, grey and pink gneiss with porphyritic granitoids. Metamorphism of alumina-rich sediments has given rise to small bodies of quartz-biotite-sillimanite schist and quartz- garnet- biotite schists/ gneiss. Towards the southwestern part of the area, an outlier of Tertiary sediments rests un-conformably over the gneisses.

b) It has been submitted that the migmatitic biotite gneiss and quartzo-feldspathic gneiss are the dominant rock types of the proposed block. Subordinate quartz sillimanite schist, massive sillimanite boulders and quartz sillimanite gneiss are also present. Quartz sillimanite schist and gneissic rocks occur as alternate bands in the area. Massive sillimanite occur in the form of minor pockets within the gneissic rock. Some metabasic rock boulders are also occurring in the area whereas, the plain area is mainly covered by recent alluvium.

43.2. Review of the Geological report /Ongoing projects

43.2.1. Reconnaissance survey (G4) for Emerald in Rajgarh block, District: Ajmer, Rajasthan. [Implementing Agency: MECL]

a) The project was recommended in 34th TCC meeting held on 28th and 29th October, 2021 and approved in 22nd EC meeting held on 22nd December 2021 with estimated cost of ₹97.20 lakh for a time period of 14 months.

b) MECL has carried out large-scale geological mapping (1:12,500 scale) and altered Ultramafic bodies are reported over more or less 9 km long curvilinear.

c) These altered utramafic bodies comprise talc-chlorite schist, talc-tremolite schists, altered peridotite, and occur as small, disconnected more or less continuous belt having ellipsoidal to circular shape.

d) Bedrock samples collected from the contact zone having Cr values ranging from 96ppm to 868ppm, Ni value ranging from 105ppm to 1180ppm. Lepidolite-rich pegmatite with Li (0.68% to 1.2%) is found within two working pegmatite quarries.

The committee noted the progress of work and opined that the gem variety of Beryl has not been discovered from the demarcated potential zone of 5 sq. km area. The committee suggested for rigorous sampling is to be carried out in the block area for targeting the emerald host rock. It was also suggested to consult with the field geologists of GSI working in the same area for emerald exploration.

The committee suggested not to initiate the second phase of exploration unless significant emerald crystals are not encountered.

43.2.2. Reconnaissance survey (G4) for Copper, Lead and Zinc in Laron block, District: Jhansi, Uttar Pradesh. [Implementing Agency: MECL]

a) The project was recommended in 34th TCC meeting held on 28th and 29th October, 2021 and approved in 22nd EC meeting held on 22nd December, 2021 with estimated cost of ₹265.49 lakh for a time period of 15 months.

b) MECL informed that the geological mapping with surface sampling and geophysical survey has been completed. Analytical results of bedrock and stream samples have not given promising results of Cu (6.23ppm-214.64ppm), Pb (<1ppm-123.04ppm), Zn and other elements.

c) It has been submitted that at few locations the small outcrops of BIF have been observed in the block which contain magnetite and contains 11.45% to 20.38% of Fe, 1.24% to 8.31% of Mn and 590.82ppm to 1027.39ppm of Ni contents in 3 bedrock samples.

The committee noted the outcome of the exploration and opined that the analytical results of the samples are not encouraging hence drilling may not be required. The

committee suggested to conclude the project and submit the geological report to NMET Secretariat.

43.2.3. General exploration (G2) for Copper in Tonda block, Eastern Khetri Copper Belt, District: Jhunjhunu, Rajasthan. [Implementing Agency: MECL]

a) The project was recommended in 24th TCC meeting held on 07th, 08th, and 09th October, 2020 with an estimated cost of ₹650.39 Lakh with timeline of 14 months and approved in 17th EC meeting held on 05th November, 2020.

b) The proposal was discussed in the 42nd TCC meeting wherein it was suggested to recalculate the resource for copper mineralization considering different lodes and possible boreholes depth. The revised modifications need to be incorporated in the report.

c) It was informed that MECL has recalculated the resource at 8.79 MT at 0.49% Cu (average grade) and 2.18 MT at 0.96% Cu (average grade) as per the suggestion.

The committee noted the outcome of the project and suggested to submit the geological report to NMET secretariat.

43.3. Timeline extension of the approved/ongoing projects

43.3.1. Reconnaissance survey (G4) for Copper in Mincheri block, District: Ballari, Karnataka. [Implementing Agency: MECL]

a) The project proposal was recommended in 29th TCC meeting held on 11th and 12th March, 2021 and approved in 20th EC meeting with estimated cost of ₹203.48 Lakh and timeline 12 months.

b) MECL informed that geological mapping and geochemical sampling has been completed in November 2021 and analytical results of 300 nos. of primary samples has been receive in the month of April, 2022.

c) The results of geological mapping and geochemical sampling were reviewed in 40th TCC meeting held on 27th and 28th April, 2022. As per the committee suggestion, trenching was taken in areas where anomalous Cu values were observed. Trenching could not be achieved as Tungabhadra high level canal is passing through the mineralization, permission for trenching could not be obtained. Hence MECL decided not to go for further trenching work.

d) It was informed that Au & Ag sample analysis are under process and requested two months (up to 31st August, 2022) extension for finalization and submission of the geological report to NMET Secretariat.